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MEETING, IN THE SEVERAL SECTIONS, TOGETHER WITH THE
MEDICAL LITERATURE OF THE PERIOD

EDITED FOR THE ASSOCIATION UNDER THE DIRECTION OF THE BOARD OF TRUSTEES
BY
JOHN B. HAMILTON, M. D., LL. D.

VOLUME XXXI
JULY — DECEMBER
1898

3249⁰⁰
28. 2. 36.

CHICAGO
AMERICAN MEDICAL ASSOCIATION PRESS
1898

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INDEX TO VOLUME XXXI

PAGE		PAGE		PAGE
<p>"ABAISSEMENT" method of inguinal herniotomy 74</p> <p>Abbott, W. C. General principles of alkaloidal medication 824</p> <p>Abdomen, contusions of the 71</p> <p> gunshot wounds of 50, 1240</p> <p> penetrating wounds of 1468</p> <p> value of leaving salt solution in 1114</p> <p>Abdominal and pelvic surgery, anatomic points in 596</p> <p> cavity, foreign bodies in 1591</p> <p> cavity, irrigation of the 54</p> <p> fixation of uterus 1543</p> <p> massage 302</p> <p> section 1572</p> <p> surgery, nursing in 791</p> <p> viscera, bullet wounds of 1468</p> <p> vs. vaginal section 860</p> <p>Abortion, abortive attempts at instrumental 1560</p> <p>Aboulin in relation to hysteria 1200</p> <p>Abrahams, R. Belladonna poisoning simulating puerperal insanity 96</p> <p>Abrahamson's method of amputation femoris intercondylarica 415</p> <p>Abscess (vide liver, lung).</p> <p> cranial 927</p> <p> double tubo-ovarian, gonorrhoeal following typhoid 1293</p> <p> glandular 1352</p> <p> indolent 203</p> <p> mediastinal 277</p> <p> pararectal 1406</p> <p> prostatic 928</p> <p> tubercular 1591</p> <p>Abscesses 1350</p> <p>Absorption vs. digestion of milk 1449</p> <p>Abt, I. A. Gonorrhoea in children 1474</p> <p>Abuse of alcohol 873</p> <p>Academy of Medicine (vide Chicago, Cincinnati, Detroit, San Francisco).</p> <p> Accidents at sea, etc. 1181</p> <p> Acclimatization in tropics 619</p> <p> Accommodation, anomalies of 1336</p> <p> strain of the 1220</p> <p> Acconcheurs of Illinois, to 1451</p> <p> Acetanilid poisoning, case of 1571</p> <p> Acetylene gas 66</p> <p> worry 1587</p> <p> Achyia gastrica, diarrhoea with 225</p> <p> Aeromegaly, case of 1347</p> <p> Actinomycosis, ano-rectal 943</p> <p> of the lung 140, 351, 1173</p> <p> of umbilicus 1521</p> <p> potassium iodid in 185</p> <p>Action for injuries sustained before birth 874</p> <p>Adams, W. T. Injuries to the cervix uteri 71</p> <p>Address before Woman's Medical School 1263</p> <p> change of 44, 98, 150, 202, 262, 322, 374, 434, 490, 558, 626, 678, 746, 814, 878, 946, 1006, 1074, 1132, 1198, 1262, 1328, 1384, 1442, 1496, 1548, 1592</p> <p> on J. N. Quimby 1399</p> <p> Addresses 281</p> <p> of chairman 45, 491, 500, 679, 1123, 1385, 1502</p> <p>Adenin 18</p> <p>Adenoid vegetations 640</p> <p>Adenoids, pharyngeal 1190</p> <p>Adiposals dolorosa, case of 1156</p> <p>Administration of drugs 1309</p> <p>Adnexa, catarrhal affections of 1001</p> <p>Adrenal extract 918</p> <p> tumors of the kidney 408</p> <p>Adulteration Act in Canada 986</p> <p> of food and drink 1125</p> <p>Advancement of recti muscles 848</p> <p>Aerial convection of smallpox 425</p> <p>Africa, Koch's plague focus in 482</p> <p> plague in 671</p> <p>African troops, sanitation for 1255</p> <p>Age in causing opacity of crystalline lens 698</p> <p>Agglutination of blood corpuscles 1000</p> <p> of meatus 485</p> <p>Agrypic delirium, transient 41</p> <p>A heavy rise 320</p> <p>Aikin, J. M. Symptomatology in tabes 1160</p> <p>Air-cell, the illustrating 683</p> <p>Air, explosion of liquefied 1195</p> <p> passage, foreign bodies in 415</p> <p> transmission of typhoid fever through 425</p> <p>Alameda County Medical Society 315</p> <p>Albany, red ant pest at 1494</p> <p>Albert's rule 315</p> <p>Albumin, artificial 1129</p> <p>Albuminuria complicating gynecologic operations 792</p> <p> in malarial fever 1320</p> <p> physiologic 1093, 1191</p> <p>Albumosuria in medical practice 199</p>	<p>Albutt, T. Clifford. Address 1071, 1072</p> <p>Alienists and Neurologists, Congress of 929</p> <p>Alcohol (vide stimulants and narcotics).</p> <p> abuse of 873</p> <p> and nervous system 1453</p> <p> consumption in United States 1035</p> <p> food value of 1452</p> <p> in diabetes 1331</p> <p> in cancer 429</p> <p> in health and disease 1454</p> <p> in Hodgkin's disease 192</p> <p> in tuberculosis 1009</p> <p> on tissue and cell growth 1271</p> <p> symptoms following 1146</p> <p>Alcoholic somnambulism 744</p> <p>Alcoholism in Russia 941</p> <p> in France 1537</p> <p>Allimentary canal, fish bones in 1130</p> <p>Alkalescence 270</p> <p>Alkaloidal medication, general principles of 824</p> <p>Allen's "Devil's Die" 993</p> <p>Alloxur bodies and their estimation 17</p> <p>Alms-house may be enlarged 489</p> <p>Alpine accident 1193</p> <p>Altitude in phthisis 267</p> <p> on anemia 873</p> <p> on the blood 1322</p> <p>Alumni Society of Medical Department of University of Pennsylvania 1983</p> <p>Aluminium for artificial vitreous 713</p> <p>Alvarenga prize 1323</p> <p>Amber in medicine 1003</p> <p>Amblyopia, cases of tobacco and quinin from auto-intoxication 772</p> <p> tobacco, some results in 770</p> <p>Ambulance companies, organization of company, the 144</p> <p> corps, regimental bands as an 145</p> <p> legislation 44</p> <p> train 1857</p> <p> work in London 1583</p> <p>Amendments to Constitution and By-Laws 86, 124</p> <p>Amenorrhoea, primitive 791</p> <p>American Academy of Railway Surgeons 57, 741, 940, 1380</p> <p> Association of Obstetricians and Gynecologists 549, 789</p> <p> breakfast, irrational 1508</p> <p> cities, unification of statistics of 38</p> <p> Electro-Therapeutic Association 315, 997</p> <p> Humane Society 1319</p> <p> hypnotic grasses 1588</p> <p> Medical Association minutes 82, 123</p> <p> (vide also Association and Colleges)</p> <p> Medical Association, politics in 864</p> <p> Medical Association proceedings, comments on 864</p> <p> medical literature 134</p> <p> medical operations in Persia 556</p> <p> Medico-Psychological Association 1380</p> <p> Microscopical Society 483, 997</p> <p> Pediatric Society 949</p> <p> Public Health Association 305, 737, 873, 925, 984, 1585</p> <p>Ammonium, value of the salts of 803</p> <p>Amputation femoris intercondylarica 415</p> <p>Amputation, hip-joint 198</p> <p>Amusements 85</p> <p>Amyloform and dextroform 28</p> <p>Amyl nitrate in post-hemorrhagic anemia 1055</p> <p>Anacrobic bacterial purification of sewage 789</p> <p>Anal imperforation 40</p> <p>Analgesic in gastric pain, condurango as an 28</p> <p>Analysis of Crawfish Springs water 35</p> <p> of water-supplies for army camps 143</p> <p>Anatomic studies in insane asylums 1230</p> <p>Anatomy, teaching of 1492</p> <p>Anchylostomiasis 74</p> <p>Anders, James M. Rare cases of arrhythmia 113</p> <p>Anemia, acute central nervous system in 369</p> <p> effect of altitude on 878</p> <p> pernicious, case of 1591</p> <p> pernicious, of the puerperium 989</p> <p> post hemorrhagic, amylnitrate in 1055</p> <p> progressive pernicious 989</p> <p> thyroid extract in 1230</p> <p> hemoglobin determination in 357</p> <p>Anesoon 1180</p> <p>Anesthesia, Bonain's local 1533</p> <p> chloroform 74, 1191</p> <p> cocain and sparteln 1533</p> <p> from blood expulsion 1116</p> <p> general, Schleich method of 186</p> <p> local 317</p> <p> local, in operation 97</p> <p>Anesthetic, anesoon, the new 1180</p>	<p>Anesthetics in Scandinavia 1881</p> <p> reasons for giving 69</p> <p>Anesthetist, the indifferent 613</p> <p>Anesthetization in England, ether 810</p> <p> of the aortic arch 496, 1064, 1367</p> <p> of transverse arch, appearing as tumor 396</p> <p> subclavian 485</p> <p>Aneurysms, gelatin in 1180, 1306, 1370</p> <p> of arteria ileo-femoralla 1533</p> <p>Angina pectoris 1367</p> <p>Ankle clonus in tabes 1306</p> <p>Ankylostomum duodenale 1586</p> <p>Angiotripsy: hemostasis without clamps or ligatures 73</p> <p>Animals and plants, physiology of 1524</p> <p>"Annals of Gynecology and Pediatrics" 199</p> <p>Annis, E. L. Employment of female assistants by dental surgeons 670</p> <p>Annuities for medical men 1070</p> <p>Ano-rectal actinomycosis 948</p> <p>Ant pest at Albany 1494</p> <p>Anthrax 433, 1284</p> <p> menthol in 1056</p> <p> of lungs 1257</p> <p> on nose 1533</p> <p>Antifebrin, a warning against 803</p> <p>Antimalarial agents, therapeutic value of 1162</p> <p>Antipyrin, incompatibilities of 802</p> <p> in treatment of fat diabetes 186</p> <p>Antiseptic, salt as an 415</p> <p> sunlight an 1266</p> <p>Antiseptics and astringents, intestinal 892</p> <p> and diphtheria toxins 585</p> <p>Antistrepococcal serum 752</p> <p> serum, report of cases with 1580</p> <p>Antistrepococci 481</p> <p>Antitoxin, Behring's American patent on, Behring's American patent on, resolutions against 424, 1037</p> <p> 484, 875, 1173, 1176</p> <p> botulism 315</p> <p> electric conductivity of 660</p> <p> in diphtheria 868, 1269</p> <p> in tracheotomy for diphtheria 1574</p> <p> Mulford's concentrated 37</p> <p> nature of the antagonisms between toxins and 473</p> <p> presence of an 40</p> <p> taxing 191</p> <p> tetanus, first application to man 312, 743</p> <p> toxins and 1305</p> <p> treatment of consumption 685</p> <p> tetanus 554</p> <p>Antitubercle serum in tuberculosis 687</p> <p>Anti-tetani party, motto for 1434</p> <p>Antivivisection resolution 84</p> <p>Anus, artificial, in amphyasia 1068</p> <p> congenital absence of uterus and 479</p> <p> advantages of permanent abdominal in cancer of the rectum 928</p> <p>Anytin 1320</p> <p>Aorta, sign of sclerosis of 142</p> <p>Aortic arch, aneurysm of the 336</p> <p> regurgitation, parenchymatous nephritis and 722</p> <p>Ape, incident concerning an 794</p> <p>Aphasia, dumbness or congenital, without deafness 1178</p> <p>Apoplexy of the uterus, concerning the so-called 305</p> <p>Appendectomy, ventral hernia after 402</p> <p>Appendicitis 252, 1411</p> <p> blood examinations in 663</p> <p> early treatment and operation in 832</p> <p> in negroes 499</p> <p> medical aspects of 330</p> <p> medical treatment of 584</p> <p> time to operate in 454</p> <p> toxicity of 1573</p> <p> trauma as cause of 809</p> <p> when to operate for 1529</p> <p> with concretions 928</p> <p>Appendix vermiformis, function of 1064</p> <p>Appetite for drink, European 97</p> <p>Applegate, J. C. Regression vs. progression, etc. 300</p> <p>Appointments (vide also army) 1591</p> <p> medical, confirmed 41</p> <p> of medical officers 43</p> <p>Appropriation 1495</p> <p>Argil for wounds 1423</p> <p>Arrhythmia, rare cases of 113</p> <p>Armies in recent campaigns 1378</p> <p> typhoid fever and the 1317</p> <p>Army (vide troops, typhoid).</p> <p> and Navy League 657</p> <p> and navy mortality in life insurance 1487</p> <p> appointments 487, 877</p>		

	PAGE		PAGE		PAGE
Army, bills to reorganize	1545	Austin, J. Herbert. Diseases of nerves re-	1284	Barber, J. P. Notes on typhoid fever	904
camp diseases and insurance	1420	quiring surgical treatment	911	Barbers, bill for	551
camp, analysis of water for	143	"Auto-lindoscope," demonstration of an	1082	Barnes Medical College	299
camp, typhoid fever of the	1547	Auto-infection vs. typhoid in children	1514	Barr, M. W. Diseases of feeble-minded	1011
camp, visit to Southern	489	and pathogenic physiology	1434	Basham, D. W. Prophylaxis of diseases of	592
changes	44, 98	Auto-intestinal intoxication, delirium from	26	women	182
Columbia graduates in the	1546	Autointoxication	772	Bassoe, Peter. Report of epidemic cerebro-	1176
conditions at Chickamauga	650	amblyopia from	1113	spinal meningitis	1509
Corps, camp notes from the	144	and neurasthenia	821	Bath, electric light	475
Corps, Second, the field medical service	145	of intestinal origin	445	Battle casualties	1122
of the	542	Avan surgery	540	Baum, Wm. L. Therapeutic value of Mar-	1049
Corps, Seventh, at Jacksonville, Fla.	1858	Axilla, primary carcinoma of the	877	morek's serum	1545
Corps, Fifth	1121	Axis, removal of bullet from	617	"Bay State," accident to the	848
deaths in the	372	Ayer laboratory	86, 124	Beard, C. H. Recent experience with ad-	446
field hospital system	143		82	vancement of recti muscles	761
Headquarters, temperance order from	995	ASSOCIATION NEWS.	84	R. O. Principles underlying infant	1477
health reports	431	AMENDMENTS to Constitution and By-Laws	85, 94	dietary	1290
hospital, destruction of an	557	American Medical Association minutes	1003	Beates, Henry. Continuous use of digitalin	36
hospital, diet for sick in	431	Antivivisection, resolution on	125	in vasomotor and cardiac lesions of	90
hospital train, service on	547	Association and the colleges	193	senility	89
"Incompetent and inefficient" Medical	251	Badge	95	Beck, Carl. Echinococcus of lungs	1238
Department of the	813	Columbus meeting, the	123	Bequerel rays, bactericidal properties of	1320
inebrates in the	945	Association proceedings, comments on	85	Beggs, W. N. (See McLauthlin, H. W.)	1320
investigating committee	1004, 1005	Committee on nominations	124	Belfield, Wm. T. Instrumental examination	1477
investigation	696, 1382	on transportation	194	of bladder in cystitis	1230
medical affairs	421, 477, 546	Denver meeting: comments of the medical	125	Bell, Samuel. Thyroid extract in anemia	36
medical conditions	360	press	193	Beliadonna poisoning simulating puerperal	40
Medical Department	1355	Dividends	95	insanity	96
Medical Department, arraignment of	1590	Mathews, Jos. M. Presentation speech	193	Bellevue Hospital, reform at	30
Medical Dept. during Spanish War	44	Medical colleges	95	Benedict, A. L. Medicinal treatment of	74
Medical Dept. examination papers	1121	relief association, plan for	123	digestive diseases	89
Medical Department in the field, in-	1493	Minutes of the general session	95	Benefactions made by women	89
spection of the	1579	National legislation, committee on	92	Benzonaphthol	1592
Medical Department of the future	1258, 1544	New York State Medical Society	86, 92	Bequests	23
Medical Department of Manila	1493	Politics in the American Medical Associa-	364	Bergey, D. H. Polluted water-supplies, etc.	322
Medical Department, responsibilities of	1325	tion	37	Beriberi, cases of	28
Medical Department, Sem's defense of	374	Proceedings, official, further delay in pub-	123	Bernay's sponge as a hemostatic	872
Medical Department, work of	1325	lication of	92	Berne, operations for golter at	817
medical examining boards	434, 538, 746, 814, 878, 1073, 1262, 1323, 1381, 1543, 1592	Report of Business Committee	124	Bertilionage to receive tardy recognition	673
medical inspector of	75	of Committee on Nominations	88	Bergelin, the Swedish avant	1543
Medical Museum, contributions to	362	of Judicial Council	86	Betain hydrochlorate vs. tetanic toxin	415
medical officers, assignments of	1258	of Special Committee on Department of	84	Betanaphthol, camphorated, toxicity of	1115
medical officers, movements of	73	Public Health	85	Bettman, Henry. Pachymeningitis hemor-	1057
558, 746, 814, 878, 1073, 1262, 1323, 1381, 1543, 1592	626	of the Board of Trustees	85, 94, 125	rhagica interna	1208
medical organization, progress of	652	on national legislation	85, 94	Bicycle, again the	868
Medical School	1189	Resolution concerning delegates	83, 92	Bierhoff, F. Early myxedema in childhood	96
medical service (vide Camp Thomas,	1370	concerning general secretary	85, 92	Bille not secreted by liver	1131
transport)	1248	concerning libraries	92	Biliary lithiasis, bacterial pathogenesis of	734
durses	660	concerning medical colleges	125	Bill, may testify as to	1895
regulations, red tape of	74	concerning text-books	364	to regulate marriage	251
surgeon in India, heroism of an	626	of amity	88, 92	was disallowed	1138
Surgeon-General of, and Red Cross	652	submitted to the American Medical Asso-	424	Billings, Frank. Differentiation of cardiac	99
the returning	1189	ciation	124	incompetency of intrinsic heart dis-	951
training for the	1370	Rush Monument Committee	1539	ease	1545
Arsenic as alterative	1248	monument fund	86	Frank. Limitations of medicine	834
destruction of locusts by	660	vs. Hahnemann monument fund	424	Bills to reorganize the Army	1318
Gosio's rapid test for	74	Section officers	124	Bilroth's operation, field of, etc.	1318
todd in scrofula	862	Laryngology and Otology	1123	Birth-rate of England and Wales	243
Arteries, large, subcutaneous rupture of	1245	on Neurology, chairman's address of the	86	Bishop, L. F. Care of chronic cardiac dis-	174
Arteriosclerosis	1840	on Stomatology	548	ease	1082
and melancholia	1806	Some suggestions regarding the Association	1443	L. F. Debility of adolescence	643
insomnia in	1228	BABCOCK, Robert H. Dietary of heart dis-	1149	L. F. Influence of sex on diseases	897
arteritis in pathology of nervous system	1586	ease	1459	Bismuth, for burns	896
syphilitic	956	Bachal's description of old age	1380	phosphate	897
Atery, external iliac, ligation of the	1176	Bacilli	751	pyrogallate	895
mesenteric, ligation of	199	differentiation of	1175	subgallate	886
Arthaud and Butte estimation of uric acid	554	multiplication of	998	Black, Melville. Large probes in stenosis	320
Arthritis deformans, lactic acid in	429	of tuberculous sputa	316	of lachrymal duct	621
Articulation, creation of an	781	Bacillus teroides	797	Bladder anomalies	470
Artists, insane	1493	of whooping cough	1245	extirpation of	1477
Asia Minor, surgical scenes in	96	prodigious (vide sarcoma)	43	in cystitis, examination of	522
Ascaris lumbricoides, liver abscess due to	74	pyocyanus in human pathology	749	irritation of neck of	1572
Aseptic and cosmetic suture	881	rhabditic	1282	removal, case of	989
animal suture's place in surgery	74	tubercle, wax in	722	route in operation of	1069
Ascites, permanent drainage of	791	tuberculosis, life history of, etc.	96	stone in	1177
Asdale, W. J. Extruterine pregnancy with	1846	Bacon, E. K. Anatomy, etc., of nervous sys-	1320	tumors	417
maturing fetus	137	tem and bearing on pelvic, abdominal	544	Blastomycetic dermatitis	199
Asexualization	811	and mental troubles	1388	Blastomycosis of the skin	641
Ashmead, A. S. Melancholy in a leper	813	Bacteria in gastro-intestinal disturbances	941	Blepharitis, formalin in treatment of	1276
A. S. Pottery evidences of leprosy	128	intestinal, necessity of	1281	Blind, statistics of	1835
Ashburat, Jr., Dr John	128	one of chief etiologic factors in diseases	1423	Blindness, causes of	929
Asparagus, uncommon form of idiosyncrasy	438	of eye	185	from ligature of carotis communis	186
contra	416	province of	116	in Spain	1369
Aspermia, apparent	1325	through system by portal vein, how	1459	"Block bed," the	272
Asphyxia, chloroform, Laborde treatment of	670	soon	722	coagulation and non-coagulation	269
Assignments of medical officers	48, 144, 202, 374	pathogenesis of biliary lithiasis	96	corpuscles, agglutination of the	1000
Assistants, artificial	1261	Bactericidal properties of Becquerel rays	1320	corpuscles, effects of thyroid extract on	1230
dental surgeons, female	677	Bacteriologic methods, purification of sew-	544	corpuscles, effect of altitude on	1822
Health Authorities of Pennsylvania	22	age by	1281	corpuscles, origin of red	258
Association and the colleges	193, 364, 547, 617, 735	studies of milk	1423	examinations	146
badges	88, 94	Bacteriology, culinary	941	examinations for plasmodia	982
dividends	1003	in preventive medicine	1281	examinations in surgical affections	668
of American Med. Colleges	297, 548, 617, 1413	of wounds	1423	expulsion, local anesthesia from	1116
of "Big 4" Railway Surgeons	940	report on progress in	185	iodin in the	40
of French Medical Press	1540	vaccinations from standpoint of	116	method of introduction of	271
Southern Medical College	1489	Bacterium	1459	of typhoid patients	1008
Asthma, vesical	415	Bailhache, Preston H. Marine Hospital	37	of tubercular patients	1527
Astigmatism not always congenital, etc	777	service	808	Blood clusters	815
Asylum, vegetarian orphan	872	Baldwin, S. C. Congenital scoliosis	486	Blood-vessels, remedies in diseases of heart	279
Asystole, treatment of	1370	Balloon flights, more high	1071	and	904
Atkinson, Wm. B. Permanent Secretary	82	Baltimore Medical University	625	Blume, Fred. Complications following vag-	789
explains	1254	notes	1116	inal hysterosalpingo-oophorectomy in	789
Wm. B. Rush Monument	525	Bandage for post-partum hemorrhages	44	pelvic suppuration	789
Atresia, congenital uterine	1257	Bandages, colloidum	777		
Atrophy of optic nerve	244	Bane, W. C. Corneal astigmatism not con-	1421		
Atropin in hemoptysis	803	genital	659		
Atwood, Mary A. Instruments for Fen Cho	754	W. C. Vision destroyed by kick			
Fu Hospital		Barbat, J. Henry. Tubercular peritonitis			
Auric sodii chloridum, observations on the					

	PAGE		PAGE		PAGE
Blunt, Walter Frazer	481	Burns, dry bismuth for	1055	Gotthiel, William S. Illustrated Skin Dis-	95, 140
Board of Health (vide health).		modern treatment of	856	cases	
of Pharmacy	876	potassium chlorate for	1482	Gould, George M. Pocket Medical Dictio-	1877
Roasting of no use	96	T. Mitchell. False labor pains	644	ary	
Bock, A. F. Alcohol injections in Hodgkin's		Burr, A. H. Gonorrhoea a factor in puer-	538	Green, T. Henry. An Introduction to Pat-	1127
disease	192	peral fever		ology and Morbid Anatomy	
Bolton, B. Report on progress in bacteri-		A. H. Psychology of habitual constipa-	180	Griffith, J. P. Crozer. The Care of the	1186
ology	185	tion		Baby	
Bombay, bubonic plague in	29	A. H. Regulation of marriage for pre-	1834	Groff, John E. Handbook of Materia Med-	867
female medical inspector at	1002	vention of communicable diseases		ica for Trained Nurses	
Bonatti's local anesthesia	1583	Butler, George F. Chronic parenchymatous	722	Grunwald, L. Atlas and Abstract of the	198
Bond, C. S. Cases of epilepsy with refer-		nephritis and aortic regurgitation, etc.		Diseases of the Larynx	
ence to cause	268	Buying patients (vide commission evil)	1428	Guide to Clinical Examination of the Blood	806
Bone clamp and fractures	40	Buzzing in the ears	1107	to Clinical Examination of the Blood	550
elimination per urethra	620	in the ears, cimicifuga racemosa for	802	for Diagnostic Purposes	
Bones and joints	1300			Haig, Alexander. Uric Acid as a Factor in	130
introduced for inspection of experts	878			Caustion of Disease	
Bonney, S. G. Climatic change and serm-				Hamilton, John B. Lectures on Tumors	867
therapy in pulmonary tuberculosis	907			Handbook for Hospital Corps of U. S. Army	867
S. G. Functional nervous disturbances	1395			and State Military Forces	
Book-hol'er for schools	1857			of Materia Medica for Trained Nurses	867
Boston, sewage in	956			Hardaway, W. A. Clinical Manual of Skin	806
Botulismus antitoxin	315			Diseases	
Bovee, J. W. Leaving salt solution in ab-				Hare, Hobart Amory. Practical Diagnosis. 1127	
domen	1114			Hobart Amory. Text-book of Practical	806
J. W. Use and abuse of normal salt				Therapeutics	
solution	1471			Hartley-Auvard System of Obstetrics	1377
Boyd, Robert	149			Hayden, Jas. R. Manual of Venereal Dis-	1187
Braces in spinal curvature	610, 737, 1184			eases	
Brachialgia and brachial neuralgia	1437			Hay Fever and its Successful Treatment	256
Bracken, H. M. Leprosy in Minnesota and				Healy, D. D. Official Messages to Board of	1127
the northwest	985			Cook County Commissioners	
H. M. Materia medica and therapeutics	688			Hewlett, Richard T. Manual of Bacteri-	367
Bradycardia	1155			ology, Clinical and Applied	
Brain, an enormous	1068			Hill, John W. The Purification of Public	95
prolapsus, heteroplastica for				Water Supplies	
surgery of	621			History of Yellow Fever	560
tumor, eye symptoms of	1225			Hollopeter, W. C. Hay Fever and its Suc-	256
tumors, optic neuritis and	1069			cessful Treatment	
Brazil quadriceptennial	1000			Hygiene of the Voice	1187
Bread for diabetics, a new	1106			Illustrated Skin Diseases	95, 140
Breakfast, irrational American	1508			Inflammation of the Bladder and Urinary	314
Breast (vide cancer, carcinoma, sarcoma).				Fever	
feeding, counter-indications to	1423			International Clinics	95, 428
milk, indications for withdrawal of	1013			Introduction to Pathology and Morbid An-	1127
Brena, Juan. Rough notes on etiology of				atomy	
typhoid fever	987			Ireland, William W. Mental Affections of	367
Bridge, Norman. Physical signs and symp-				Children; Idiocy, Imbecility and In-	139
toms in chest diseases	472			sanity	
Bridging nerve gaps	209			Johns Hopkins Hospital Reports	1487
Bright's disease	1097			Journal of Proceedings of National Food	428
disease and syphilis, the pathologic				and Drug Congress	
analogy of	277			Kelsey, Chas. B. Office Treatment of Hem-	1126
disease, iron and opium in	172			orrhoids	
disease, morphia in	817			King's American Dispensary	806
Britton, Daniel G. Diseases of nations	1132			Klein, E. Elements of Histology	1128
British Sanitary Institute	1380			Laboratory Guide in Urinalysis and Toxi-	550
experience, to profit by	1545			cology	
Soudan forces, sickness in	1425			Work in Physiologic Chemistry	805
Bronchi, foreign bodies in	293			La Cura Razionale del Tisici a l Sanatorii	806
Bronchiectasis	286			Lazarus-Barlow, Walter Sydney. Manual	814
indol and	203			of General Pathology	
Bronchiectatic cavities from 1873 to 1897	287			Lectures on Tumors	1126
Bronchitis	1490			Lloyd, John Uri. (Vide H. W. Felter)	1126
Bronchoscopy, direct	273			McFarland, Joseph. Text-Book on Patho-	740
Brooklyn, sterilized milk in	620			genic Bacteria for Students of Medicine	428
Brower, Daniel R.	198			and Physicians	
D. R. Acute meningitis	1050, 1233			Magnetismo e Ipnosisma	89
D. R. Dietetic treatment of gout	1445			Manson, Patrick. Tropical Diseases	367
D. R. Limitations and treatment of				Manual of Bacteriology, Clinical and Ap-	1126
juvenile criminals	1333			plied	
D. R. Observations on auri et sodii				of Chemistry	427
chloridum	754			of Diseases of Children	
Brown bread delusion	1426			of General Pathology for Students and	314
Caleb. Use of electricity by general				Practitioners	
practitioner	968			of Hygiene and Sanitation	139
E. J. The commission evil	1429			of Instruction in the Principles of	89
G. V. J. Chairman's address	1502			Prompt Aid to Injured, A	429
Geo. V. J. Official irritation and				of Modern Surgery	
neural disturbances	1140			of N. Y. County Medical Association	1186
Philip King. Case of acetanilid poison-				of Oology	429
ing	1571			of Physical Diagnosis	1376
Sanger	1434			of Practice of Medicine	429
Browne, Sir James Critchton	992			of Surgery for Students and Practitioners	1187
Brunette peoples of Europe?	1589			of Venereal Diseases	
Bruns, Wm. B. Rectal fistula and ischio-				Manual Hoeph. Spiritismo	89
rectal abscess	1118			Martindale, William. The Extra Pharm-	192
Brunton, T. Lauder. Remedies in diseasea				copia	
of heart and blood-vessels	815			Massey, G. Retton. Practical Treatise on	428
Bryae, F. F. Pelvic cellulitis and peritonit-				the Diseases of Women and their Treat-	
is	1114			ment by Electricity	
Bryant, D. C. Experiments in aluminium				Medical Communications of Massachusetts	1186
for artificial vitreous	713			Medical Society	
Bubonic (vide plague)				Disease of Infancy and Childhood	1539
pest, mode of spreading	1372			Record Visiting List	
Bucke, R. M. Sewage disposal at asylum				Register and Directory of the Indian	1127
for insane, London, Ont.	926			Empire	
Bukley, L. D. Absorption vs. digestion of				Mental Affections of Children; Idiocy, Im-	367
milk	1419			becility and Insanity	
L. D. Association minutes	82			Methodist Episcopal Hospital Reports	193
L. D. Hereditary syphilis	1077			Michigan a Summer and Health Resort	870
Bullard, J. W. Congenital absence of uterus				Miller, Maurice N. Student's Histology	1127
and anus, rectum ending in vagina	479			Minutes of Maysville Meeting of Kentucky	1000
Bullet, removal of from axis	540			State Medical Society	
wounds of abdominal viscera	1468			Modern Gynecology	89
wounds, modern	429			Morison, Alexander. Cardiac Failure and	193
wounds, Krag-Jorgensen	1412			its Treatment	
wounds of chest	213			Morris, Henry. Essentials of Materia Medica.	1187
Bullets, locating, finding and extracting	48			Therapeutics and Prescription Writing	
on the soft tissues	1165			Moulin, C. Mansell. Inflammation of the	814
Burial grounds (vide cemeteries).				Bladder and Urinary Fever	
ocean (vide thalassae).				Mraeck, Franz. Atlas of Syphilis and Ven-	867
Burn of scalp with loss of calvarium	70			ereal Diseases	
				Nettleship, Edward. Diseases of the Eye	256

BOOK NOTICES.

Abdominal Surgery	159
American Pocket Medical Dictionary	1187
Text-Book of Diseases of Children	740
Text-Book of Gynecology, Medical and Surgical	739
Annual and Analytic Cyclopaedia of Practical Medicine	256
Report of Health Officer, Port of New York	1486
Antiseptic Methods as Applied in Active Military Field Operations	143
Aphasia and Other Speech Defects	39
Archives of the Roentgen Ray	1128
Arnold Carl, Repetitorium der Chemle	1432
Atlas and Abstract of Diseases of the Larynx	198
and Epltope of Operative Surgery and Essentials of Pathologic Anatomy	89
of Legal Medicine	193
of Syphilitic and Venereal Diseases	367
Bacon, Gorham. A Manual of Otology	1186
Balfour, George William. Clinical Lectures on Diseases of Heart and Aorta	95
Bartley, E. H. Text-Book of Medical and Pharmaceutic Chemistry	1127
Baruch, Simon. Principles and Practice of Hydrotherapy	1126
Bastian, H. Charlton. Aphasia and Other Speech Defects	39
Belfiore, Dott. G. Magnetismo e Ipnosisma	89
Bollinger, O. Atlas and Essentials of Pathologic Anatomy	89
Bnek, Albert H. A Treatise of Diseases of the Ear	1128
Bulletin of Harvard Alumni Association	870
Burr, C. B. A Primer of Psychology and Mental Diseases	429
Bushong, Charles H. Modern Gynecology	39
Butler, George Frank. A Text-Book of Materia Medica, Therapeutics and Pharmacology	741
Cahot, Richard C. A Guide to the Clinical Examination of the Blood for Diagnostic Purposes	550
Cardiac Failure and its Treatment	193
Cars of the Baby	1187
Chasky, Khan Bahadur N. H. Report on Bubonic Plague	95
Clinical Lectures on Diseases of Heart and Aorta	95
Lectures on Mental Diseases	1378
Manual of Skin Diseases	806
Text-book of Medical Diagnosis for Physicians and Students	740
Clouston, Thomas S. Clinical Lectures on Mental Diseases	1376
Coleman, W. L. History of Yellow Fever	550
Collins, Joseph. Genesis and Dissolution of the Faculty of Speech	189
Compend of Diseases of the Skin	368
Country Doctor, A	140
Crippa, Harrison. Ovariectomy and Abdominal Surgery	429
Currier, C. Gilman. Outlines of Practical Hygiene	95
DaCosta, John Chalmers. Manual of Modern Surgery	429
Davenport, Francis H. Diseases of Women	806
Diseases of the Eye	256
of the Stomach	89
of Women	549
of Women. Manual of Gynecology	806
Doty, Alvah. A Manual of Instruction in the Principles of Prompt Aid to Injured	89
Drill Regulations for the Hospital Corps	143
Dudley, E. C. Diseases of Women	549
Egbert, Seneca. A Manual of Hygiene and Sanitation	139
Einhorn Max. Diseases of the Stomach	389
Electricity in Diagnosis and Treatment of Diseases of Nose, Throat and Ear	428
Elements of Histology	806
Essentials of Histology	806
of Materia Medica, Therapeutics and Prescription Writing	1187
Examination of Sources of Public Water-Supplies	806
Exercises in Practical Physiology	428
Exiled for Lesc Majeste	866
Felter, Harvey W., and Lloyd, John Uri. King's American Dispensary	1126
Freyberger, Ludwig. Pocket Formulary for Treatment of Diseases of Children	1187
Genesis and Dissolution of the Faculty of Speech	139

	PAGE		PAGE		PAGE
Norris, William F. System of Diseases of the Eye.	814	Transactions of Iowa State Med. Soc. of Maine Med. Ass'n.	1486	Cannabitol.	884
Notes on Disinfectants and Disinfection.	1127	of Med. and Chir. Faculty of Md. of Med. Ass'n of Ga.	870	absorption of.	886
on Military Hygiene for Officers of the Line.	193	of Med. Soc. of Cal.	807	derivatives of.	887
Novy, Frederick G. Laboratory Work in Physiologic Chemistry.	550	of Med. Soc. of State of N.Y.	815	Cannabils India, pharmacology of.	882
Office Treatment of Hemorrhoids, Fistula, etc.	428	of Mich. State Med. Soc.	1486	Canned goods, nitrous poisoning by.	868
Official Messages to Board of Cook County Commissioners.	1127	of N.Y. State Med. Ass'n.	870	Cannon fired by students.	1008
Oliver, Charles A. (Vide William F. Norris).	314	of Ohio State Med. Soc.	192	Canula, an improved.	1130
Onzleme Congres de Chirurgie.	740	of Pathologic Soc. of Phila.	807	Capsulotomy.	1172
Osler, William. Principles and Practice of Medicine.	1126	of R. I. Med. Soc.	1486	and expression.	128
Outlines of Practical Hygiene.	95	of Section of Laryngology and Otology of the A. M. A.	999	Car sanitation.	987
Ovariotomy and Abdominal Surgery.	429	of 65th Annual Session Med. Soc. of Tenn.	741	Carbid of calcium (vide calcium).	
Pamphlets received.	262, 550, 741, 870, 1187, 1432	of S. C. Med. Ass'n.	870	Carbohydrates in diabetes.	1330
Pappalardo, Di Armando. Manual Hoeppli: Spiritismo.	39	of State Med. Soc. of Wis.	807	Carbolic acid given with impunity.	146
Philippe Pinel of France.	807	of Texas State Med. Ass'n.	999	acid in eye.	1491
Physician's Visiting List.	1539	of Vt. State Med. Soc.	140	poisoning, treatment with vinegar.	304
Playfair, W. S. Treatise on the Science and Practice of Midwifery.	806	Traumatic Separation of Epiphysis.	1376	Carbonic acid in phthisis.	267
Pocket Formulary for Treatment of Diseases in Children.	1187	Treatise of Diseases of the Ear.	1126	Carcinoma.	492
Poland John. Traumatic Separation of Epiphysis.	1376	on the Science and Practice of Midwifery.	806	calcium carbid in.	63, 356
Practical Diagnosis.	1127	Tropical Diseases.	428	hardened with formalin.	1490
Treatise on Diseases of Women and their Treatment by Electricity.	428	Twelfth Annual Report of State Board of Health of Ohio.	867	in six weeks' pregnant uterus.	69
Primer of Psychology and Mental Diseases.	429	Twentieth Century Practice.	39, 805	of axilla, primary.	445
Principles and Practice of Hydrotherapy.	1126	Twenty-fifth Session of Fla. Med. Ass'n.	1187	of breast.	622, 1174, 1530, 1591
and Practice of Medicine.	1126	Twenty-fourth Annual Report of State Board of Health of Mich.	140	of esophagus.	920
Proceedings and Addresses at a Sanitary Convention at Detroit.	140	Tyson, James. Manual of Physical Diagnosis.	429	of pylorus, removal of stomach, for.	538
of Association of American Anatomists.	550	Uric Acid as a Factor in Causation of Disease.	139	of uterus, diabetes and.	660
of Connecticut Medical Society.	999	Van Hofman, E. Atlas of Legal Medicine.	193	of the uterine, note on treatment of.	63
of Dedication Hunt Memorial Building.	140	Vierordt, Oswald. Clinical Text-Book of Medical Diagnosis for Physicians and Students.	740	aporoza of.	1585
of Kansas State Medical Society.	1127	Waller, Augustus D.	428	uteri, laparo-hysterectomy for.	73
Purification of Public Water-Supplies.	95	Wells, William H. (vide Taylor, John Madison).	427	uteri, vaginal extirpation for.	1578
Quarterly of Clinical Lectures.	1377	Whitaker, J. T. Exiled for Lese Majeste.	366	(vide also cancers, tumors).	
Raggi di Roentgen e loro pratiche Applicazioni.	805	Williams, Dawson. Medical Diseases of Infancy and Childhood.	805	Cardiac disease, chronic, care of.	243
Repetitorium der Chemie.	1482	Withhaus, R. A. Laboratory Guide in Urinalysis and Toxicology.	1128	incompetency, differentiation of.	99
Report of 12th Annual Meeting of Association of Executive Health Officers of Ontario.	741	Woodhull, Alfred A. Notes on Military Hygiene for Officers of the Line.	193	lesions of senility, digitalin in.	761
on Bubonic Plague.	95	Wounds in War.	427	Cardiation.	1569
Retrospect of Medicine.	367	Yellow Fever.	140	clinical lessons taught by.	1670
Rose, William. Manual of Surgery for Students and Practitioners.	429	Young, A. G. Notes on Disinfectants and Disinfection.	1127	Oarotid, blindness from ligature of.	929
Rumbold, Thomas F. Hygiene of the Voice.	1187	Zublan, Ausrorio. La Cure Razionale del Tiside i Sanatori.	805	Carpenter, J. G. Sigmoid surgery from intra-abdominal standpoint.	580
Sajous. Annual and Analytic Cyclopaedia of Practical Medicine.	256	Zuckerkindl, Otto. Atlas and Epitome of Operative Surgery.	428	Geo. T. Method of handling alveolar pyorrhea.	1566
Sanitary Institutions of Imperial Government of Japan.	550	CACHEXIA (vide tumors).		Carrin.	18
Schafer, Edward A. Essentials of Histology.	806	Cæsarian (vide Cæsarian).		Carrion's disease.	1543
Schamberg, J. F. Compend of Diseases of the Skin.	368	Caglieri, Actinomycosis of the lung.	1173	Carroll, Francis E. Hygiene and dietetics in diabetes mellitus.	1549
Schenck's Theory: Determination of Sex.	256	Caïsson disease at Gouverneur Hospital.	320	Carson, S. C. Limit to operative gynecology.	1114
Scheppegrell, W. Electricity in Diagnosis and Treatment of Nose, Throat and Ear.	428	Calcium carbid (vide cancer, carcinoma).		Carter, J. M. G. Artificial feeding of infants in gastro-intestinal disturbances.	1012, 1348
Scientific Memoirs by Medical Officers of the Army of India.	265	chlorid in hemorrhage.	10	J. M. G. Treatment of typhoid fever.	1112
Seventeenth Annual Report of State Board of Health of N. Y.	315	sulphocarbonate in tuberculosis.	180	Cartledge, A. M. Posterior displacement of uterus.	1175
Shasted, Thomas Hall. A Country Doctor.	140	Calcutti and cancer.	1496	A. M. When to operate for appendicitis.	1529
Simon, W. Manual of Chemistry.	1126	California State Board of Health.	37	Cartledge-Bullitt.	261
Smart, Charles. Handbook for the Hospital Corps of U.S. Army and State Military Forces.	367	Calmette's gift.	1823	Case, an interesting.	438
Smith, J. Grieg. Abdominal Surgery.	139	Calomel, absorption of, by leucocytes.	369	of medico-legal interest, a.	322
Stengel, Alfred. Text-book of Pathology.	1377	an intestinal antiseptic.	26	Castration for enlarged prostate.	399, 466
Stevenson, W. E. Wounds in War.	427	in lupus.	1423	Casts.	1098
Stretcher Drill.	143	Calorie, definition of.	1329	Cataplasms, hot, simple and effective substitute for.	244
Student's Histology.	1127	Camden Water Committee.	1197	Cataract cases, dressings of.	1172
Studies from the Department of Pathology of the College of P. and S.	315	Camera's method of estimation of xanthin bases.	18	cases, refractions of.	1172
System of Diseases of the Eye.	314	Camp George H. Thomas.	34	operation and after-treatment of.	127
of Medicine by Many Writers.	256	Geo. H. Thomas, empyema in.	1497	operations, acute mania after.	1573
of Practical Medicine by American Authors.	815	ghost at Camp Wikoff.	1070	proper use of word.	698
Taylor, Fred. Manual of Prac. of Medicine.	1376	Meade.	945	traumatic.	1365
John Madison. Manual of Diseases of Children.	427	notes from Army Corps.	144	Cataractous family.	997
Tenth Report of State Board of Health, Maine.	1187	Thomas and Second Division Hospital.	866	Catarrh, American.	1242
Text-book of Materia Medica, Therapeutics and Pharmacology.	741	Wikoff.	653	chronic post-nasal.	1242
of Medical and Pharmaceutic Chemistry.	1127	Wikoff and typhoid.	941	pharyngeal, curettement in.	1116
of Pathology.	1377	Wikoff, surgery of.	1295, 1350, 1406	pharyngeal affections of adnexa, electric treatment of.	1001
of Physiology.	139	Wikoff, to inspect.	628	Catgut, preparation and sterilization of.	384
of Practical Therapeutics.	806	Camphor bromid in chorea.	415	Cathartics, adaptation of, to gastro-intestinal system.	961
on Pathogenic Bacteria, for Students of Medicine and Physicians.	740	Camphorated beta naphthol, toxicity of.	415	Catheterism, aseptic.	930
The Extra Pharmacopœia.	192	Camphoroxol.	129	Catheterization of Eustachian tube.	1433
Thirty-Seventh Annual Report of the Cincinnati Hospital.	367	Camps (vide sanitary).		Cattle.	201
Thompson, John. Guide to Clinical Examination of the Blood.	806	on Pacific Coast.	1584	"ticky".	1073
Tiffauy, France. Philippe Pinel of France.	807	Canada, Adulteration Act in vaccination in.	866	Celiotomies, suprapubic.	861
Tonti, Italo. Raggi di Roentgen e loro pratiche Applicazioni.	805	Canadian Medical Association.	142, 548	Celloridin.	1370
Toussard, Just. Yellow Fever.	140	Canaliculi, method of division of.	429	Cemeteries, morbid influences of.	1378
Trade pamphlets.	550, 741, 871, 1188, 1432	Cancer, alcohol injections in.	429	unsanitary management of.	1378
Transactions of Academy of Stomatology.	815	among Indians.	493	Census, quinquennial, necessary.	1492
of Am. Ass'n of Obstet. and Gyn.	39	calcium carbid in.	1288	Central Dispensary and Emergency hospital (vide Washington notes).	
of Am. Surg. Ass'n.	740	calcium and.	1496	Cerebral neoplasms.	429
of Ill. State Med. Soc.	550	epithelial, electric treatment of.	673	syphilis and its mental aspects.	5
of Ind. State Med. Soc.	806	etiology of.	35	tetanus.	1060
		in Buenos Ayres.	40	Cerebro-spinal axis, therapeutics and surgery of.	87
		liability of.	1546	fever.	258
		of breast.	622, 1174	meningitis: a correction.	82
		of the pylorus, cases of.	525	meningitis epidemic.	20, 316
		of the rectum, total closure of sacral end of.	328	meningitis, etiology of.	138
		of the stomach.	483	meningitis, potassium iodid in.	697
		of the thoracic duct.	96	(vide also meningitis.)	
		of uterus, treatment of.	1470	meningitis, with recovery following lumbar puncture.	182
		pathology of.	63	Cerebrotome and aspirator.	1323
		pyloric, gastro-enterotomy for.	1496	Cervantes as patient and physician.	1002
		the tomato as cause of.	816	Cervix, lacerations of.	523
				uteri, endothelioma of.	556
				uteri, plastic surgery on.	566
				Cæsarian operations.	873, 1176
				section.	69, 804
				section, Fritsch's incision in.	862
				Chairman's address (vide address).	
				Chancreids.	521
				Charity, abuse of.	69, 374
				expensive.	1325
				in hospitals, abuse of.	378
				New York, medical.	26
				unorganized.	369
				Charlton, Fred. R. Camp Thomas and Second Division Hospital.	866

	PAGE		PAGE		PAGE
Chase, W. B. Primitive amenorrhea.	791	Cirrhosis of the liver, minute micro-organ-	305	Congress of Railway Physicians.	1001
Chattanooga Medical Society.	35	isms in cases of.	661	of Surgery, French.	257, 1479
Cheese in nervous dyspepsia.	303	of the liver, splenomegaly with.	38	of Urology, French.	1532
Chemical relations of remedies in scientific		Cities, American, unification of statistics of	1261	Pan-American Medical.	1256
therapeutics.	679	civil center.	742	Conjunctiva, epithelial grafts for replacing	
Chemistry, physiologic, chair of.	612	Civil service change.	316	ocular.	775
Third International Congress of Applied		Clamp to draw down rectum.	518	suture of.	928
Chemistry, physiologic, chair of.	1491	Clarke, Augustus P. Management of uter-	1525	Conjunctival secretions, medications from	
Chest diseases, physical signs and symp-		ine displacements.	1293	bacteriologic examinations of.	658
penetrating wounds of.	1531	Augustus P. Development of vital force.	1019	Conjunctivitis and iritis, gonorrhoeal.	715
toms in.	272	Augustus P. Sterilization of foods and	1107	catarrhal.	704
gunshot wounds of.	49, 1169	drinks.	1123	Connecticut Valley Medical Association.	87
Cheyne, Watson. Operation for hour-glass		Clarkson, Philip, Judge Kohlsaat defended	1019	medical registration in.	1546
contraction of stomach.	27	Clavicle fracture in children.	547	Connor, P. S.	876
Chicago Academy of Medicine.	1242, 1361, 1527	Clean tubes, a handy way to.	667	Connor, Leartus. Diseases of lachrymal	
epidemic cerebro-spinal meningitis in.	20	Clements, Joseph, Dentition.	675	passages, their causes and manage-	
Gynecological Society.	860, 1476	Joseph. New Interpretation of opera-	1247	ment.	1
health in (vide heart).	803	tive principles.	1462	Leartus. Sources of failure in treating	
Health Department's circular concern-		Clergymen, practice of medicine by.	45	lachrymal obstructions.	834
ing milk.	804	Climate, Caribbean, in its medico-hygienic	1071	Conquest and annexations, sanitary results	
Medical Society.	126, 724,	relations.	544	of our.	664
988, 1173, 1301, 1419, 1432, 1474		for tuberculous.	83	Constipation, habitual, etiology of.	181
Ophthalmological and Otolological So-		of Colorado.	1572	pathology of.	180
ciety.	127, 1171, 1364	Clinic Pathologic Society of Washington.	269	(vide intestinal occlusion).	180
Polyclinic.	258	teaching.	989	Constriction of limb, results from.	47
Society of Internal Medicine.	922, 982,	Clothing in war, importance of.	1533	Consultant pay general practitioner, shall	
1050, 1110, 1415		Clinfroot, spina bifida and double.	97	the.	1480
Chickamanga, a story of.	650, 665, 854	Coagulation.	1538	Consumption among negroes.	672
Chilblains, Paradism for.	1370	Cocain, abuse of.	97	to prevent spread of.	1440
Child, influence of stimulants and narcot-		and spartein anesthesia.	796	Consumptives, sanitarium for.	433
ics on.	1021	eucalin and nitrous oxid.	303	Contagion among nurses.	941
Child-bed treatment.	585	in ophthalmic practice.	1434	from typhoid fever in hospitals.	743
Childhood, cholelithiasis in.	258	Intoxication.	1586	meaning and sanitation.	1541
early myxedema in.	1268	poisoning.	433	Contagious diseases.	27, 1828
normal urology of.	1490	use and abuse of.	1428	diseases to disinfect the stools in.	356
Children, auto-infection vs. typhoid in.	1032	Cochran, Sam.	1847	diseases, transmission.	1378
colitis in.	1421	Cod-liver oil, aromatic.	1020	Contusions of abdomen and surgical treat-	
fatigue of nerves in.	875	Coe, H. W. Case of acromegaly.	939	ment.	71
fracture of clavicle in.	1019	Cokenower, J. W. Neuro-deformities in	883	Convalescents, furlough the.	186
gonorrhoea in.	1474	children.	28	Cooksey, T. L. Secretary department of	
heart affections in.	1422	Colea, J. A. Disease of intemperance.	548	health.	803
heart and circulation in feeble-minded.	1101	Coley on hurried sutures.	1421	Cooper Medical College.	1883
hernias of.	28	W. B. Hernias of children.	786	Cordier, A. H. Intestinal obstruction.	1175
hygiene for.	941	W. B. Treatment of inoperable sarcoma	553	A. H. Pelvic inflammatory diseases.	578
hygienic management of.	1556	with mixed toxina of erysipelas and	1481	A. H. Some pathologic and clinical	
bacteria in.	1183	bacillus prodigiosus.	1254	phases of gall-stones.	61
illegitimate, support of.	1254	Colitis in children.	1207	Cork in pharynx.	1440
multiple oecritis in.	1207	College resolution, medical.	1020	Cork and labels.	621
neuro-deformities in.	1020	Women's Medical, of Pennsylvania.	43, 148, 149, 1388	Cornea for leucoma, artificial.	1001
nervous phenomena in.	485	Colleges.	735	Corneal astigmatism not always congenital	
osteomalacia in.	1320	Association and the.	365	turbidity easily overlooked, form of.	701
precordial area in.	1099	Association of American Medical.	1424	Coroner's report.	623
acurvy in.	553	consolidation of.	620	Corse, strychnin-like alkaloid in.	1381
sleep for.	258	Collea' fracture, avoidance of splints in.	1117	Corr, A. C.	670, 742
treated with physiologic horse serum.	185	Collisions in foga.	1116	A. C. To physicians and accoucheurs	
tubercular infection in.	750	Collodion sacs.	129	of ill.	1431
urine of healthy.	872	Collodium bandages.	1116	Correction in Prof. Landenzy's article.	872
(vide infants, paralysis.)		in pruritus analls and hemorrhoids.	1483	Coughs, heroin in.	1423
Children's diarrhea, water treatment of.	186	Colon puncture in typhoid fever.	1483	Coulter, J. Homer. Prophylaxis in nose	
diseases.	1266	bacillus, studies of.	1516	and throat diseases.	1049
Hospital.	1004	Infection of urinary tract.	976	County has no right to discharge physician	
Child, mortality in.	941	Coloring matters and ferments.	569, 645, 716, 782, 856, 921,	without cause.	674
Chinosol, antiseptic and therapeutic values		Colpoepitheliorrhaphy and structures in-	569	Cowles, J. E. Unusual case of ruptured	
of.	180	olved.	1255	tubal pregnancy.	641
Chloroform and gaslight intoxication.	1123	Colpotomy, anterior, vaginal fixation.	1251	Cow's milk analysis.	1013
anesthesia.	74, 1191	Columbia Historical Society.	134	Cox, Geo. W. Present status of serum ther-	
asphyxia, Laborde treatment of.	416	Columbian University Hospital.	1589	apy.	829
danger signal in.	1306	Columbus meeting, the.	7	Crafts, Medical education.	70
death from.	624, 1073	and his medical advisers.	200	Craig Colony Prize.	1384
in insomnia.	761	Coma, Buzzard's syphilitic.	1591	Colony report of.	1001
in throat operations.	1310	Commercial greatness of the United States	85, 92	Cranial abscess.	997
oxygen to prevent vomiting after.	1573	Committee on Nominations.	261	bones, separate.	1124
treatment of yellow fever.	176	Committees.	1586	Cranium, congenital separation of bones of.	930
Chlorosis.	1178	Communications to veterinarians not priv-	811	Crawfish Springs.	85, 855
of tuberculosis.	1527	ileged.	193	Crawford, S. K. Therapeutics and surgery	
Cholelithiasis.	1177, 1367	Compensation for attending papers, right	356	of the cerebrospinal axis.	387
age when most frequent.	258	to.	1192	S. K. Mechanism of man: its ego and	
in infancy and childhood.	371	Complaint, a com. n.	1016	cosmos.	156
of typhoid causation.	371	Compresses, absorb. t.	873	Cremeries, sanitation of.	87
Cholera and typhus vaccin, preservation of		Concussion vs. intoxication.	429	Creation of an articulation.	429
bands for troops.	620	Condensed milk.	138, 186	Crementation.	1092
belts.	477	Condition, can exhibit etnal.	266	Creosote.	862
infantum.	1028, 1189	Conductors can employ surgeons in emer-	874	in gastric affections.	874
in India.	429	gencies.	266	in phthisis.	266
pads.	364	Condurango as analgesic in gastric pains.	1069	in tuberculosis.	1069
vibrios, agglutinating power of.	368	Condylocoma.	1092	not a specific.	1092
Chondrosarcoma.	463	Congenital deformities among Indians.	1171	(vide valerianacea).	1304
Chorea.	1176	diastichiasis.	742	Cretinoid condition (vide also myxedema).	
camphor bromid in.	1381	lacerations.	800	Cretinism, sporadic.	802
minor.	1274	(vide syphilis, talipes, uterine and	800	(vide also myxedema, thyroid).	802
rest in.	1274	uterus).	87	Crime, factors relating to.	1844
rheumatic origin of.	129	Congress for study of potable and mineral	483, 604	Criminals, condemned, euthanasia for.	188
Choroidis, value of paradism in.	685	waters, climatology and geology.	800	how to limit overproduction of.	1348
Closky, Dr. Report on bubonic plague.	29	for study of tuberculosis.	40	juvenile, limitations and treatment of.	1333
Christian Science.	1438	International Temperance.	929	Criticism of medical department	
Science and the law.	1247	Latin-American Scientific.	87	of a medical directory.	802
Science, medicine and.	1494	of Alienists and Neurologists	1176	Crothers, T. D. Alcohol on tissue and cell	
Wilmar. Precocious pregnancy.	188	of Applied Chemistry, Third Interna-	1429	growth.	1271
Christison, J. S. Proposed medical exam-		national.	1178	T. D. Buying patients.	1428
iners' bill.	1123	of German Naturalists and Physicians.	1178	T. D. Diabetic causes of inebriety.	1456
J. S. Treatment of typhoid fever.	666	of Gynecology, Obstetrics and Pediat-	1178	T. D. Gold cures.	1429
Chvostek's symptoms in tetanus.	1084	rics, French.	619	T. D. Gold cures in inebriety.	765
Cimicifuga racemosa for buzzing in the ear		of Gynecology and Obstetrics, Inter-	22, 1177, 1245	T. D. Inebriates in the army.	251
Cincinnati Academy of Medicine.	807,	national.	1090	T. D. Moral insanity in inebriety.	1144
928, 944, 1055, 1114, 1261, 1319, 1366, 1531, 1572		of Hydrology and Balneology.	1180	Group (vide diphtheritic).	698
Notes. 260, 373, 812, 876, 944, 1070, 1261, 1546, 1592		of Hydrology, Climatology and Geology	1178	Crystalline lens, age in causing opacity of.	698
Obstetrical Society.	1866	of Hygiene, Italian.	619	Cuba, for free.	43
Society for Original Research.	1070, 1319, 1540	of Hypnotism.	928	Guitars will remain in.	821
Circular No. 5.	426	of Internal Medicine.	1432	libre, for.	1544
No. 6.	490	of Medicine, International.	1128	medical and hospital service in.	64
Circulation (vide heart).		of Ophthalmology.	1128	official advice for soldiers in.	112
Circumcision, Rebreyend's method of.	1574	of Otolaryngology.	1128	our inspection of Spanish hospitals in.	132
Cirrhosis, etiology of progressive hepatic.	1307	of Pharmacy.	1128		
of the liver, new collateral route in.	1116				

	PAGE		PAGE		PAGE
Cuba, smallpox in.	1466	Delirium, transient, from medico-legal point of view.	929	Disease, how does the cause of disease produce?	13
resolution on sanitary administration of	25	Dellvery, retarded.	1186	Influence of sex on.	643
Cullinary bacteriology.	941	Demography and vital statistics in their sanitary relation.	985	Diseases of lachrymal passages.	1
Cullen, G. I. Cremation; Plagiarism.	188	Dengue (vide yellow fever).		of nations.	1182
Culture medium in micro-biology, artichoke as a.	554	Dennis, F. W. Malingering.	999	Discussion of perforation peritonitis.	55
Cumbering the record.	181	Dental surgeons, female assistants of.	670	Disinfectant, a valuable.	990
Cumberland Co. (N. J.) Medical Society 258, 1064		Denison, Charles. Modern treatment of tuberculosis.	682	Disinfection among the poor.	605
Cumston, C. G. Considerations on septic infection of ovarian cysts.	790	Dentists. Irregularities of.	1564	and disinfectants.	987
Curare in epilepsy.	1056	higher standard for.	1071	at New York Quarantine Station.	366
Curettsage and drainage on diseases of tubes, effect of.	528	skill and care required of.	147	of sperm.	671
Curette in acute infection of uterus with adherent placenta.	527	Dentistry law.	1824	Dislocation of the hip, congenital, treatment of.	451
Curettement in pharyngeal catarrh.	1116	to regulate.	1440	Dispensary bill.	27
Cure worse than disease.	1001	Dentition.	1107	Displacement of lens of eye in successive generations of one family.	708
Cutaneous affections in insecticides.	1011	Denver and Arapahoe Med. Soc., 71, 989, 1115, 1420		Dissecting-room, flroid adage for.	579
diseases, statistics of.	810	meeting: comments of medical press.	194	Distichiasis, congenital.	1171
Cuthbertson, Wm. Enteric diseases of army camps.	1420	notes.	1003, 1439	District of Columbia, returned soldiers of.	1355
Wm. Med. Dep't. of the army.	421	Department of Health, resolutions on.	1430	Divorce, syphills and.	874
Cutter, Ephraim. Uterine hyperesthesia. 1404		Depopulation of Ontario.	1059	Doctors of long ago.	1495
Ephraim. Cardiation.	159	Depositions taken before trial.	1437	Dog, vicious, duty of persons bitten by.	872
Cutts, R. E. Causes of maternal dystocia. 71		de Renzi's pneumonia serum.	316, 681	Dogs, rabid, quarantine against.	1547
Cuzner, A. T. Tuberculosis: Its hygiene and dietetics.	1458	Dermatitis, blastomycetic.	417	Dohm's test.	489
Cyanosis in diphtheria.	1039	Dermatoly cases, ferric chlorid in.	1569	Douche, ear and nose.	368
Cycle, fool on a.	555	statistics.	1194	Douglas, Richard. Acute general peritonitis.	1472
Cystitis and tumors of bladder.	1177	Descensus and suspension of ovaries.	514	Drainage.	54
in female.	1476	nature of.	515	Drayton, H. S. Cases in suggestive therapeutics.	1398
Instrumental examination of bladder in.	1477	Des Moines (Ia.) Path. Soc.	1380	Dressing, physiologic.	1116
prevention of.	1478	Despondent outlook for Spain and other Latin peoples.	79	Dried blood specimens, Widal's test results from.	1110
remedial treatment of.	1477	Detroit Acad. of Med.	1064, 1189, 1433	Drink, European appetite for.	97
surgical treatment of.	1478	Med. and Library Ass'n.	812, 1483, 1572	Druggist's revenge, sequel of a.	870
urine in diagnosis of.	1477	notes.	678, 745, 812, 876, 1003, 1439, 1501	Drug stores on Sunday, closing.	872
Cystoma (vide ovarium).	1369	Dextroform, amyloform and.	28	therapy in tuberculosis.	1463
Cystorrhaphy by imbrication.	1369	Diabetes.	28	trade in Europe.	1438
Cyatosomy (vide saprapubic).	1369	and carcinoma of the uterus.	660	Ducker, Orlando. Condition of Santiago, Orlando. Troops in Santiago.	669
Cysts, hydatid, dry nature of intra-abdominal.	302	earliest disturbances in.	1090	Duct of Müller, anomalies of.	729
hydatid of lung.	350	fat, antipyrin in the treatment of.	186	Duffield, S. P. Isolation in a great city.	1274
ovarian, rarity of in negroes.	1530	mellitus.	1129	Duffour's milk modification method.	1015
ovarian, sepsis of.	790	mellitus, chlorid of gold and sodium in.	755	Dunham, W. R. How does the cause of disease produce disease? A new interpretation of operative principles.	13
Cyotofin.	18	mellitus, dietetic in.	1549	Duodenum, diagnosis and treatment of diseases of.	223
		mellitus, dietetic treatment of.	1329, 1416	Dumbness or congenital aphasia, etc.	1173
		mellitus in Masa. Gen. Hosp.	165	Dural infusion.	621
		milk.	88	Durante, souvenir volume to.	198
		pancreas in.	1543	Dust conveyance of typhoid fever.	541
DABNEY, T. S. A grave menace to public health.	667	Diabetic gangrene.	108	Dwight, E. S. Post-partum hemorrhage with uterine contraction.	69
T. S. Pulse; diagnostic and prognostic value.	1153	Diabetics, new bread for.	1106	Dynamics of extrinsic ocular muscles.	846
Dacryocystitis, treatment of chronic suppurative.	836	Diagnostic value of reflexes in lesions of cord.	742	Dysentery, etiology of.	1377
Dactylitis syphillitic.	1079	test in gunshot wounds of abdomen.	51	Dysmenorrhea, manganese in.	1558
Daland, Judson. Method of administering and use of enteroclysms.	242	Diarrhea, children's, water treatment of.	186	Dyspepsia, choice of alkaline in acid.	472
Damages, ratings for.	180	with achylia gastrica.	225	in boarding schools.	1421
Danforth, L. N. Introductory to annual course of instruction.	1263	Diazo-reaction in the urine, the.	728	nervous, cheese in.	903
Dante, Anne Sturgis. Multiple neuritis in young children.	1207	Dickey, John L. Another cataractous family. 997		nervous, treatment of.	868
Davies, M. A. Therapeutic indications from bacteriologic examination of conjunctival secretions.	658	Diehl, C. Lewis. Some preparations of the National Formulary.	690	Dysphagia evidence of syphills.	472
Darling, G. G. Ligation of external iliac artery.	721	an effect of.	1198	Dystocia, maternal, causes of.	71
David, E. L. Gastro-Intestinal choleric form catarrh.	1028	following laparotomy, importance of.	1507		
Davis, Jr., N. S. A new bread for diabetics. 1106		for laboring men.	1540	DISCUSSION.	
N. S. Diabetic gangrene.	103	for sick in army hospitals.	431	Abbott, Dr.	70
N. S. Importance of regulating dietetics.	1393	in disease.	1503	Agney, Dr.	1043
Byron B. Surgical treatment of peritoneal tuberculosis.	409	in tuberculosis.	1463	Ahrer, C. F.	588
M. L. Disposal of garbage.	23	lecture on.	1827	Allport, Frank.	630, 700, 708, 839
Dead, Thalassic submersion in disposal of. 1285		lists in diabetes.	1891, 1832	Anders, J. M.	102, 226, 265
transportation of.	23	massage and intragastric electricity in dilatation of stomach.	220	Andrews, Dr.	70
Deaf and dumb in Norway.	1429	of Porto Rican peasantry.	1586	Babcock, Dr.	102, 723, 1100, 1416, 1445, 1451
Deardoff, A. G. Tuberculosis and its treatment by later methods.	177	Diabetic points.	678	Bacon, Charles S.	1362
Death from electric shocks, cause of.	873	causes of inebriety.	1456	Baily, Dr.	588
from insect stings.	811	Dietetics, importance of regulating.	1393	Baldwin, A. E.	1244
moment of.	994	In diabetes mellitus, hygiene and.	1549	Balling, Wm. L.	1243
penalty.	1346	Dietary, infant.	1446	Bane, W. C.	641, 780
Death-rate of children.	1386	of heart disease.	1443	Barbat, J. Henry	1304, 1571, 1572
Deaths in Philadelphia.	98	Digestion, effect of stimulants and narcotics on.	1023	Barker, Dr.	243
Debility of adolescence.	1082	Irrational American breakfast and.	1508	Baum, W. L.	1363
Decision, German medico-legal.	200	Digestive diseases, medicinal treatment of. 899		Baxter, George A.	1469
on removal of professor.	40	Digitalin, continuous use of, etc.	761	Beard, Charles H.	128, 630, 854
Decisiona, legal.	40, 41, 147, 200, 251, 317, 318, 319, 321, 369, 370, 372, 485, 486, 673, 674, 676, 809, 810, 811, 872, 873, 874, 1069, 1130, 1131, 1150, 1193, 1324, 1437, 1478, 1494, 1586, 1587, 1588, 1592	Digitalis in heart troubles.	431	Beggs, Dr.	275
Declaration of Independence, medical signers of.	935	in pneumonia.	472	Bevan, A. D.	447, 465, 1301, 1303
Defecation in infants.	1091	Diphtheria.	830	Billings, Frank.	60, 102, 722, 723, 724
peristalsis and.	180	acute primary.	140	Bishop, Louis Faugères.	60, 1083
Defective classes, rights of public in dealing with.	1276	and treatment.	1175	Black, Melville.	637, 639, 840, 854
Defectives, how to limit over-production of. 1343		and general practitioner.	1040	Boardman, M. W.	926, 985
Deformity, congenital.	1054	and intubation.	1038	Bond, Dr.	101, 171, 265
in clavicle fracture.	1020	and public schools.	944	Bonfield, Charles I.	512, 520
Deformities in children.	1020	antitoxin in tracheotomy for bacteriologic study in.	1574	Bonfield, C. L.	1368
Degeneracy.	1312	control of.	1423	Boncheron, M.	659
Degenerations, embryonal neuronal.	13	death rate in.	1269	Bovée, J. W.	1470
Degrees.	149	early diagnosis of.	257, 618	Boyd, Dr.	631, 639
Delaware State Med. Soc.	68	in Philadelphia.	1046, 1175	Bracken, Dr.	927, 928
Deligation of innominate artery.	554	laryngeal.	1068	Brena, Dr.	986
Delirium from auto-Intestinal intoxication. 1434		observations in.	1036	Brewer, Dr.	113
from sodium salicylate.	1381	of the eye.	554	Bridge, Norman	102, 275
nervous, cases of.	448	of the scrotum.	316	Bridges, Dr.	227
transient agryptic.	41	prevention.	1197	Briggs, Dr.	69
		serum, solid.	998	Brown, D. R.	725, 1068, 1173, 1214, 1291, 1458
		statistics.	1275	Brown, Dr.	101, 173
		toxicity of woman's milk with.	1066	Brown, G. S.	1468
		toxins, composition of.	1258	Brown, P. K.	1571
		toxins, antiseptics and.	535	Brown, Sanger.	1051
		transmission of.	1275	Brown, T. L.	1367
		Diphtheritic cases, school quarantine in. 868		Brun, Harold.	1571
		croup, intubations for.	1089	Bryant, D. C.	631, 714, 774
		Diplopia or polyopia, monocular.	1137	Bulkeley, L. D.	1452, 1466, 1553
		Disability existing prior to enlistment.	262	Bulson, Dr.	1172, 1365
		Discoveries, can not disclose.	809	Burns, T. M.	531
				Burt, George F.	724

	PAGE		PAGE		PAGE
Byford, Henry T.	861	Hughes, Charles H.	575, 1225, 1342	Ridlon, John	1027, 1301
Caglieri, Dr.	1174	Himlston, William H.	512, 520, 531	Ries, Dr.	1243, 1364
Carpenter, F. B.	1305	Hunkin, Dr.	1054, 1571	Riggs, Dr.	1341
Carstens, I. Henry	1175	Hunter, Dr.	70	Riggs, E. Eugene	575, 1219
Chapin, Dr.	927	Hurty, J. N.	415, 926	Robertson, Dr.	1172
Cheney, Wm. Fitch	1304	Ingaïs, E. Fletcher	275	Robertson, H. D.	1571
Chesbro, Dr.	1103	Jackson, Edward	700, 703, 779	Robinson, John A.	724
Chestnut, J. H. W.	520	James, Dr.	588	Robinson, W. L.	1468, 1471
Clarke, Augustus P.	520	Jaques, William K.	1042, 1043, 1049	Robison, Dr.	265, 1224
Clements, Joseph	1106, 1110	Jayue, Dr.	1115	Rodman, William L.	447, 1469, 1170
Coc, Dr.	1214	Jellinec, Dr.	1304	Rogers, E. A. J.	587
Cokenower, Dr.	60	Jerowitz, H. D.	2009, 1045	Rogers, F. T.	636
Colburn, Dr.	1171	Johnson, W. B.	240	Rohé, Geo. H.	986
Cole, Dr.	101	Johnson, George W.	471, 1048, 1529	Rosenthal, Edwin	723, 1010, 1032, 1083, 1106
Coleman, Dr.	1171, 1172, 1365	Johnstone, A. W.	1866, 1368	Ross, James F. W.	789
Coley, William B.	465	Jonea, Allen A.	227, 265	Ruth, C. E.	513
Connor, Leartus	637, 639, 700, 774, 840	Jones, Dr.	69, 927, 985, 986	Sampson, Dr.	848
Cool, Dr.	71	Jonea, P. M.	1570	Sangree, E. B.	1048
Coolidge, F. S.	1362	Joalin, Elliott P.	171, 227	Savage, G. C.	634, 700, 777, 778, 817, 854
Cooper, E. W.	414	Keen, W. W.	58	Seaffe, H. W.	1063, 1451
Cordier, A. H.	513	Kegley, Dr.	840	Schrader, J. C.	985
Cotton, A. C.	1020, 1032, 1101	Kelley, E. E.	1571	Schwartz, Dr.	927
Coulter, J. Homer	1049	Kelly, Howard A.	511, 519, 1470	Searcy, Dr.	1342
Craig, W. B.	511	Kengler, Dr.	1174	Seavey, Dr.	1214
Crothers, T. D.	1225, 1458	Kenyon, Dr.	1054	Selbert, W. H.	1043
Crowley, E. D.	414	Kerr, Dr.	1054	Sewall, Henry	587
Cumston, Charles Greene	789, 791	Kiernan, James G.	1243, 1362, 1304, 1528, 1529	Sexton, Dr.	1218
Curtis, Dr.	926, 985	Kinney, Dr.	854	Sherman, Harry M.	453, 1054
Deland, Judson	69, 243	Kinyonn, Dr.	113	Sherwood-Dunn, B.	631
Darrier, Mr.	659	Kopff, Mr.	659	Simme, Dr.	265
Davis, Dr.	102, 1416	Krotoszyner, M.	1571	Simmons, Dr.	1044
Davis, N. S., Jr.	725	Lanphear, Emory	632	Slack, H. R.	1456
Davis, W. E. B.	790, 791, 1469, 1471	Lautenbach, L. J.	703, 775, 1027	Slagk, Dr.	1009, 1027, 1031, 1088, 1105, 1109
Dayton, W. L.	777	Lawrence, F. F.	531, 1010, 1175	Small, A. R.	1301
Dayton, H. S.	1206	Lee, Benj.	986	Sonhard, W. F.	1570, 1571
Duff, John M.	791	Lee, Elmer	588	Speville, Mr.	658
Dunn, B. Sherwood	789	LeMond, E. F.	631, 637, 640, 889, 840	Spivak, Charles V.	220, 1102, 1115
Dunning, L. H.	789	Lewinga, A. H.	409	Springer, Willard	69
Durgin, S. H.	928, 986	Lewis, Denslow	465, 532	Stark, S.	1366
Eastman, Joseph	513, 519, 580	Lewis, E. S.	1470	Starkey, H. M.	631, 637, 708, 710, 1365
Edson, C. E.	276	Lewis, H. F.	1416	Stockton, Dr.	69, 226
Egan, J. A.	414	Lichty, Dr.	1341	Stockton, C. G.	171, 173, 265
Ellegood, J. A.	70	Lindsay, Professor	114	Stover, Dr.	1115
Ellett, E. G.	630, 689, 708, 775, 839	Lockard, John A.	265, 1045	Stubbs, H. J.	69
Engleman, George J.	513, 531	Loeb, L.	1218	Stucky, J. A.	1049
Engleman, Rosa	1009, 1042, 1101	Lodor, Dr.	470	Stuver, E.	976, 1028, 1454, 1466, 1553, 1558
Erdman, Dr.	71	Lydton, G. Frank	1051	Sudduth, W. X.	1368
Eskridea, J. T.	573, 1206, 1218, 1223	Lyman, H. M.	326, 407, 465	Sulzer, Mr.	658
Etheridge, James H.	513, 811	McArthur, L. L.	1032, 1046, 1102, 1105	Sweeney, Dr.	70
Ferguson, A. H.	681	McClanahan, H. M.	60, 220, 1010, 1083, 1106	Tait, F. Dudley	1174
Fischer, Louis	1010, 1041, 1109	McConnell, H. M.	926	Talbot, Eugene S.	1245
Fisher, Dr.	1417	MacFarlane, Mr.	1572	Thomas, Dr.	70
Fisher, John	73	MacMonagh, Beverly	1471	Thomas, Homer J.	1528
Fisk, S. A.	1214	McMurtry, Dr.	71	Thomas, J. L.	632, 637, 689, 777, 779, 839, 848, 844, 846
Ford, Adam A.	710, 714, 889, 840	McLaren, Dr.	1469	Tiffany, F. B.	631, 640, 710, 848
Fox, L. W.	1367	McRae, Dr.	512, 574	Tilley, Dr.	127
Freiberg, Dr.	1367	McReynolds, J. O.	631, 637, 640, 839, 848, 847, 854	Tinker, Dr.	836
Frisbie, E. G.	1571	Marcy, Henry O.	801	Tomlinson, Dr.	1206, 1218, 1342
Fulton, J. F.	708	Martin, Franklin H.	71, 471	Tuley, H. E.	1009, 1082
Fütterer, Gustav	724	Mayo, W. J.	828	Tyson, Dr.	171, 174, 220, 265, 275, 588
Gallant, A. E.	1020	Metcalf, William F.	1205, 1214, 1310	Valentine, F. C.	471
Garten, Dr.	690	Meyer, Dr.	336	Valnde, Mr.	658
Gehrman, Dr.	985	Miel, George W.	1049	Van Horn, Dr.	174
Geuties, Dr.	70, 722	Milliken, Samuel E.	630, 634, 637, 640, 710, 770, 839, 844	Van Zant, C. B.	1449, 1451, 1455, 1520
Gibson, Dr.	928	Minor, Charles L.	1049	Wagner, John	1304
Gifford, Harold	634, 703, 714, 777	Montgomery, W.	127, 128, 714	Walker, Dr.	588
Gilbert, R. B.	976, 1020, 1027, 1044, 1083, 1103, 1105	Moore, James E.	453	Walling, Dr.	70
Gillihan, Mr.	1174	Morax, Mr.	668	Walla, F. X.	1362
Givens, J. W.	1224	Moyer, Harold N.	725, 1221, 1225	Ward, Milo B.	512, 531, 573
Goffe, J. Riddle	514	Murphy, J. B.	71, 326, 447, 471	Waxham, F. E.	1045
Goldspohn, Albert	511, 513, 521, 530	Musser, J. H.	59, 1100	Welch, Dr.	1043
Goodkind, M. L.	723, 1050	Neal, W. D.	1050	Wells, Dr.	723
Gordon, S. C.	512, 531, 575	Nelson, D. T.	1062	Wescott, C. D.	630, 634, 708, 844, 1171, 1172
Gond, George M.	637, 839, 843, 844, 847	Newman, H. P.	511	Wesener, J. A.	1529
Graddy, L. B.	1049	Newton, R. C.	243	West, H. A.	101, 102, 113, 171, 173, 220, 265, 588
Gradle, H.	127, 703, 780, 1225, 1365	Noble, Charles P.	69	Westmoreland, W. F.	1469
Graham, D. W.	447	Norbury, Frank P.	1224, 1342	Wetherhill, H. G.	530
Gramm, Dr.	1244	Norton, C. E.	637, 640, 779	Whetstone, Dr.	71
Grant, H. H.	328, 1468	Nusbaum, Dr.	1055	Whita, Josephine	68
Grant, James	928	Ochsner, Dr.	447, 471	Whitney, H. B.	1010, 1054, 1100, 1104, 1115
Grant, W. W.	532	Oliver, Dr.	335	Wildner, W. H.	127, 710, 714, 774, 840
Grav, Crosby	23, 986	O'Shea, David	1062	Wilkinson, Dr.	985
Green, Mary E.	976	Packard, Dr.	73	Wilson, J. C.	55, 60, 1102, 1108
Griffith, J. P. Crozer (Chairman)	1031, 1103, 1106	Palmer, C. D.	1366	Wilson, John T.	1469
Grigg, T. A.	630, 637, 639, 779, 839	Palmer, John	68	Wingate, U. O. B.	927
Haight, Dr.	127	Parent, Mr.	658	Withrow, J. M.	1368
Hall, J. N.	1100	Parker, Dr.	1469	Wood, Casey A.	128, 713, 778, 833, 840, 1171
Hall, Rufus B.	789, 791, 1366, 1368	Patricks, Hugh T.	1052, 1225	Woodson, Dr.	1224, 1342
Hamilton, John B.	826	Patterson, Dr.	926, 927, 985	Woodward, Dr.	928
Hancker, W. H.	63	Peavy, Dr.	1520	Woody, S. E.	1103
Hardon, Virgil	1470	Peavy, J. F.	1465	Würdemann, H. V.	127, 128, 630, 707, 779, 858
Hare, Dr.	60	Peterson, Reuben	801, 1214, 1361	Young, H. B.	639, 775, 779
Harlan, Herbert	641	Pettit, J. W.	724	Zluke, E. Gustav	520, 1868
Harris, Dr.	465	Pinckard, Dr.	127, 1171, 1172, 1364		
Hawley, G. F.	1244	Plummer, C. G.	520		
Helms, Dr.	1219	Porter, Miles F.	409, 447, 989		
Henry, W. O.	512	Powers, Charles A.	1051, 1528		
Herdman, W. J.	1214, 1341	Preble, H. B.	513, 520, 574, 789, 791		
Herrick, H. J.	60	Price, Joseph	926		
Herrick, J. B.	587, 721, 1416, 1418	Probat, Dr.	1206, 1341		
Hersman, C. C.	1219, 1225, 1291	Purdy, Charles W.	1418		
Hiers, J. L.	639	Randall, B. Alex.	847		
Hinckley, Dr.	637	Randolph, Robert L.	631, 637, 640, 708		
Hobby, C. M.	1291	Reed, C. A. L.	790, 791, 1367		
Hollister, Dr.	724, 1416	Reed, R. H.	409		
Hollister, William C.	975	Reik, H. O.	840		
Holmes, C. M.	630	Reynolda, Dudley S.	631, 640, 773, 774, 898, 1048, 1049		
Holmes, C. R.	639, 774	Richard, Dr.	1109		
Holmes, Dr.	844	Ricketts, Dr.	1867		
Holton, Dr.	927	Ricketts, B. Merrill	885, 836		
Hoppe, Dr.	1206, 1219	Ricketts, Edwin	789, 1366, 1368		
Horbeck, H. B.	985, 986				
Hotz, F. C.	127, 128, 700, 708, 773, 777, 778, 1171, 1172, 1365				

EARACHEs in infancy and childhood. 1017
 Ear and nose, foreign bodies in. 371
 buzzing in. 1107
 chorea minor from body in
 chronic suppurations of. 1381
 foreign body in. 1254
 maggots in. 619
 trumpet, improved. 1192
 trumpet, phonendoscope aa. 1138
 Eastman, Joseph. Causes of nervous dis-
 turbances. 570
 Joseph. Diagnosis of gonorrhœa in
 women. 1175
 Eaters of human flesh. 1381
 Ebrley, in praise of. 259
 Eccles, R. G. Pons salinorum of therapeu-
 tica. 692
 Echinococcus of liver. 415

	PAGE		PAGE		PAGE
Echinococcus of lungs...	1238	Epileptic colony in New Jersey...	1540	Clinical teaching...	544
Eclampsia, infectious nature of...	1190	Epileptics, report of Craig Colony for...	1001	Comments on work of Army Medical Department...	1579
instructive case of...	316	Epiphora, treatment of, etc...	780	Commission evil, the...	1183
(vide also puerperal)		Epithelium, power of, to live outside the human organism...	991	Compulsory notification of venereal diseases...	1119
Ectopia lentis, cases of hereditary...	710	Erb's symptom in tetanus...	1084	Concerning iodine reaction with seminal and other fluids...	609
lentis, five cases of...	708	Erections, painful...	438	the so-called apoplexy of the uterus...	305
Eczema, naftalin in...	1573	Ergot in chronic malaria...	1180	Cresote not a specific...	1062
Edehohis on buried sutures...	888	Erie Railroad Surgeon's Association...	871	Cumbering the record...	184
Edema of eyelids...	1116	Erysipelas...	497, 832	Curability of epilepsy...	611
of larynx...	1543	and bacillus prodigiosus, treatment of...		Danger of chloroform anesthesia in operations on the throat...	1310
Edes, R. T. Relations of pelvic and nervous diseases...	1183	sarcema with toxins of...	389	Dangers of tinned foods...	248
R. T. Treatment of insomnia...	757	antistreptococic serum in...	1530	Death of John B. Hamilton...	1575
R. T. What are the symptoms of nephritis?	1098	meta-cresol-antylol in...	1320	Depopulation of Ontario...	1069
Editorial change, an...	199	Erysipeloid...	1406	Despondent outlook for Spain and other Latin peoples of Europe...	79
Edson, Cyrus. Scientific ozone inhaler...	1064	Erythrocytes in tuberculosis...	1528	Destruction of an army hospital by atom...	965
Education, enforced higher...	370	Eshner, A. A. Case of adiposus dolorosa...	1156	Doctor in the schoolroom, the...	1057
for physicians, better...	813	Esophagus, carcinoma of...	720	Double-headed monsters in fiction...	307
physiologic approach to...	615	Estate liable for support of lunatic...	678	Dual conveyance of typhoid fever...	541
Egan, J. A. Remarka at Detroit Conference...	481	Ether anesthetization in England, growth of...	810	English and American armies in recent campaigns...	1373
Egypt, quarantine in...	941	inhaler, Wagner and Longard's...	1574	Eosinophilia...	991
Eichberg, Dr...	82	vapor as diagnostic agent...	191	Epilepsy and insanity...	1372
Eisendrath, D. N. Pathology of gonorrhoea...	1475	Etheridge, J. H. Note on treatment of carcinoma of the uterus...	68	Etiology and classification of peritonitis...	1371
Ejaculation, disturbances of...	438	Ethics as practiced...	481	Euthanasia for condemned criminals...	188
Elbow-joint, fracture involving...	1471	in medical colleges, a chair of...	478	Furlough the convalescenta...	136
Electric lighting filament...	1069	of homeopathy...	1434	Hay-fever...	474
light bath...	1509	Eudoxin...	896	Health of Santiago de Cuba...	76
light in rheumatism and neuralgia...	28	Euphorbium in surgical tuberculosis...	1482	Hemoglobin and its prognostic value...	857
shock...	728	Eureka hot-water vaginal applicator...	254	Homicide by microbes...	992
shocks, cause of death from...	378	Europe, drug trade in...	1488	Histologic changes produced by venom of poisonous snakes and lizards...	858
treatment for vomiting in pregnancy...	73	brunette peoples of...	1589	Hygiene of music...	189, 784
treatment of catarrhal affections of adnexa...	1001	first woman physician in...	148	Immigration and insanity...	359
treatment of epithelial cancers...	678	European appetite for drink...	97	Importance of clothing in war...	38
treatment of psychoses...	302	cities, refuse disposal in...	926	Indifferent anaesthetist, the...	613
treatment of sciatica...	802	Enstachian infiator and ear and nose douche...	368	Inheritance of circuncial effects...	30
Electricity, accidents in connection with...	1438	tube, catheterization of...	1433	Injury of spinal cord with symptoms of syringomyelia...	1435
by general practitioner, use of...	968	tube, cherry-stone in...	1491	International medical statistics...	1252
in gynecology...	1069	Euthanasia for condemned criminals...	189	Temperance Congress...	800
in intestinal occlusion...	970	Evidence, standard medical works as...	486	Insane artists...	781
intra-gastric, in dilatation of stomach...	220	Evolution of apealism...	792	Legitimate prescribing...	799
static, in tuberculosis...	180	Examination of physicians to fill vacancies in volunteer regiments...	143	Limitations of operative treatment of epilepsy...	1251
treatment of intestinal occlusion by (vide galvanism, faradism)...	1124, 1254	questions...	1590	Luxations of joints in infectious diseases...	1428
Electrization as a purgative...	1574	Examinations...	201	Malarial affections of the eye...	1118
Electrolysis for nevus...	1867	result of...	489	Malingering...	247
in stricture...	11	Exercise in tuberculosis...	1468	Marriage of the unfit...	864
Elgin, W. F. Present status of vaccin and vaccination...	115	Exhibition of rupture to jury...	485	Mastib, Claudius Henry...	988
Ellett, E. C. Tobacco and quinin amblyopia...	767	Exophthalmus and endothalmua, intermittent...	315	Medical confidences and medical testimony, signers of the Declaration of Independence...	985
Ellis, H. Burt. Two cases of acute glaucoma...	841	Experimenting with instruments, against...	319	Microbe of contagious pleuro-pneumonia...	1117
Embolism (vide fat)		Expert, bones can be introduced for inspection of...	673	Military governor of Santiago...	245
Embryos, vertebrate...	1311	testimony...	489	Mode of spreading of bubonic peat...	1372
Emergency call required by fine...	675	witness, admission of...	1324	Mustering out of the volunteers...	541
Emmet method in plastic surgery...	1469	Explanation, an...	87	Nature of antagonism between toxins and antitoxins...	473
operation, the...	665, 922	Explosion of liquefied air...	1195	Neurologic nomenclature...	417
Emphysema, circumscribed, about bullet track...	51	Extrauterine pregnancy with mature fetus...	791	New pathology in epilepsy...	662
Empyema of gall-bladder, indol and in Camp Geo. H. Thomas...	203, 1497	Eye, bacteria in diseases of...	704	News from the front...	133
operation for...	1500	carbolic acid in...	1491	Non-combatants...	245
Enarteritis of the renal arteries...	480	diphtheria of...	554	Northwest frontier disturbances in India...	1425
Endocarditis...	1176	displacement of lens of...	708	Our inspection of Spanish hospitals in Cuba, prospects as a profession...	132
Endo-lascopy, internal...	1001	exposre to bright light...	1220	Oystera and disease germs...	932
Endometritis, treatment of...	129	malarial affections of the...	1118	Pathology of pineal gland...	1576
Endothelioma of cervix uteri...	553	operations, accidents in...	910	Power of epithelium to outlive the human organism...	991
Endothalmus, Intermittent exophthalmus and...	815	removal of steel from the...	127	Pension problem, the...	545
Enemas, milk for...	302	visioul, destroyed by kick...	1421	Postoperative psychoses...	798
England and Wales, birth-rate in...	1818	symptoms of brain tumor...	1225	Premature old age. How to avoid it...	78
care for revaccination in...	141	Eye-ball, injury to...	1366	President's messages...	1425
decline of vaccination in...	1488	foreign body penetrating the...	1570	Prognosis of epilepsy...	810
English, D. C. Patriotism in the medical profession...	183	Eyelid, sarcoma of...	1171	Progress of army medical organization...	75
family, a long-lived...	743	plastic surgery of...	153, 105, 111, 6	Psychologic question of practical importance...	1181
life-table, an...	1582	raising paralyzed...	105, 111, 6	Purification of sewage by bacteriologic methods...	544
Enlistment, disability existing prior to...	262	edema of...	111, 6	Red Cross aid at Siboney...	995
Ensniform cartilage dislocation...	1327	Eyes, case of "mathematically perfect"...	63, 612	Red tape...	75
Enterectomy...	54	examine railway employes...	612	Regimental hospitals in field service...	81
Enteric diseases of army camps...	1420	for detection of hysteria, examination of...	119, 6	Relation of disease of accessory cavities to ophthalmology...	1250
fever, treatment by cold baths...	475	Eyesight in open air...	87, 452	of malaria to renal disease...	1181
Enteritis, nervous...	1306	Eye-strain...	452, 6	Renal hematuria...	932
Entero-anastomosis without resection, gangrene cured by...	40	EDITORIALS.		stone...	865
Enterocarditis, chronic...	1378	Aberrant forms of chronic lead poisoning...	1486	Responsibilities of Army Medical Department...	780
Enterocylms, methods of administering and use of...	242	Across the Pacific in transports...	865	Retinal hemorrhage...	543
Eosinophilia...	991	Again the bicycle...	1057	Return of Shafter's army...	421
Eosol...	821	Alcoholism in France...	1587	Roentgen ray in war surgery...	38
Epidemic, what constitutes an...	926	Anomalies of duct of Müller as cause of ectopic pregnancy...	729	Saline infusions...	806
Epilepsy...	430	Antitoxin treatment of pneumonia...	863	Sanitary results of our conquests and annexations...	664
alcohologenic cardiac...	1321	Army Medical Department of Manila...	1121	Seventh Army Corps at Jacksonville, Fla...	542
and insanity...	1372	Medical Department of the future... 1874...	1533	Sickness in British Soudan forces...	1425
artificial serum in...	862	Arrangement of Army Medical Department...	360	Skin affections of typhoid fever...	76
curability of...	611	Association of traumatism and infection...	1188	Splenomegaly with cirrhosis of the liver...	661
curare in...	1056	Auto-intoxication and neurasthenia...	1485	Stereochemistry and vitalism...	931
four cases of, with reference to cause...	263	Bacillus pyocyanus in human pathology...	797	Story of Chickamauga...	665
idiopathic, morbid anatomic evidences of lymphatic constitution in...	4	Bactericidal function of liver and etiology of progressive cirrhosis...	1307	Struggle for existence between human organs...	1811
heart...	1000	Blastomycetic dermatitis...	417	Studies of the colon bacillus and the changes of the ganglion cilia and the changes that occur in them in general diseases and other conditions...	131
hypnotic suggestion in...	1000	Blood crystals...	1182		
Jacksonian...	1177	examinations in surgical affections...	663		
limit of operative treatment of...	1251	Braces in spinal curvature...	610		
microbe origin of...	30	Brown bread delusion...	1426		
new pathology in...	662	Bubonic plague...	1578		
of Napoleon...	725	plagne in Bombay...	29		
pathogenesis of...	1129	Cachexia of malignant tumors...	32		
prevention of...	1067	Caribbean climate in its medico-hygienic relations...	1247		
prognosis of...	310	Cerebral tetanus...	1060		
syphilitic...	7	Chair of physiologic chemistry in medical colleges...	612		
Epileptic, a needle-swallowing...	1192	Cholera bands for troops...	310		

	PAGE		PAGE		PAGE
Suffering of troops on transports.	800	Football casualties.	1441	Gastro-enterectomy for non-cancerous ste-	27
Taxing antitoxin.	191	Forceps, new.	1432	dosis.	1028
"The moment and the article of death."	994	Foreign bodies in the ear and nose.	371	Gastro-intestinal choleric form catarrh.	216
Time and manner of administration of	1309	Formaldehyde house disinfection.	1125	intestinal disorder, rest in.	1176, 1348
drugs.	475	disinfection.	1482	intestinal infection.	1092
Treatment of enteric fever by systematic	187	in catgut sterilization.	384	intestinal system, rational adaptation	961
cold bathing.	1808	only a surface sterilizer.	258	of cathartics to.	244
Tuberculosis of the mammary gland.	420	penetrating power of.	1180	Gastrostomy.	1482
Typhoid fever in military camps.	1118	Formalin, carcinoma hardened with.	308	Gas with urine.	875
fever of army camps.	384	deodorizing properties of.	641	Geelmuym method of uric acid estimation.	956
with prominent renal symptoms.	305	for insect bites.	660	Gehrmann, Adolph. Results of Widal's test	1110
Upon the existence of a minute micro	418	in catgut preparation.	365	etc.	1261
organism in cases of cirrhosis of the	1536	in treatment of blepharitis.	1534	Gies, Otto.	1174
liver.	1577	Formol, application of.	996	Gelatn-formol fluid.	862
Urine of the malarial fevers.	1154	Formosa, bubonic plague on the island of.	199	for gastric hemorrhage.	1180
Use and abuse of cocaine.	190, 248	Formula for changing cow's milk.	201	hemostasis with.	1180, 1306, 1370
Value of transfusion.	188	Formula for cuticle ointments.	745	Genital organs, nervous disturbances due	792
Veneral disease in fiction.	1120	Fort Clinch damaged.	1547	to changes in.	70
War Investigating Committee.	250	Myer, hospital at.	142	Genito-urinary tract, relation of, to rectum.	429, 946
news of the week.	801	Fortress Monroe as a hospital point.	1019	Gentles: Treatment of pneumonia by cold.	485
What are the symptoms of nephritis?	556	Fourth, a glorious.	148	Georgetown Medical School.	821
Why should we estimate for urea?	527	Fowler, J. W.	556	Georgia, a skeptic in.	627
Wounds and diseases at the front.	877	Foyet, John M.	796	Geost.	200
Yellow fever, the.	40	Fracture, cases of.	40	German congress (vide congress, socie-	317
		Coles: avoidance of splints in.	1471	ties, etc).	1188
		of clavicle in children.	865	influence in medicine and surgery.	627
		of lower extremities.	1537	medico legal decision.	200
		of patella.	738	Germany, B. rillonnage to receive tardy rec-	317
		of patella, compound.	743	ognition in.	1188
		(vide clavicle.)	149	Germs, pathogenic, resistance to gastric	316
		Fractures, bone clamp and.	1326	juice.	18
		involving elbow joint.	1247	Gerontin.	42
		France, free medical assistance.	868	Gestation, precocious, research on.	1178
		alcoholism in.	618	Gheel insane colony.	1433
		phosphorus poisoning in.	1540	Gibbs, H. Sarcoma.	1198, 1326
		to improve medical certification in.	1070	Gifford, H. German influence in modern	627
		Frank, Louis.	361	medicine and surgery.	1547
		Frazier, Charles II.	1035	Gift contested.	808
		Frederic, Harold.	1895	Gifts (vide bequests).	1162
		Free medical assistance in France.	339	Gihon, Albert L. A grave menace to the	876
		French army, reduction of typhoid in	862	public health.	1162
		congresses (vide congress).	1293	Gilbert, J. R. Therapeutic value of anti-	876
		Medical Press Association.	183	malarial agents.	1162
		physician fined.	1425	Gillette, Miss Nellie.	876
		"statesmen," nostrum manufacturers	1429	Gilliam, D. Tod. Operative technique for	700
		as.	70	intra-ligamentous ovarian cystoma.	792
		Freund, H. W. Subnormal temperature in	1420, 1544	D. Tod. Treatment of granular erosions	1491
		typhoid.	722	of cervix.	943
		Friend, a valued.	1302	Ginseng in Korea.	1284
		S. II. The wax-paraffin dressing.	1013	Girard, chief surgeon, defense of.	187
		Fritsch's incision in Cesarian section.	314	Glanders.	1576
		From the little red schoolhouse.	1154	Gland, mammary, tuberculosis of.	918
		Front, the news from the.	1129	perineal, pathology of.	841
		Frontier disturbances in India.	867	Glandular extract.	848
		Fruit, sulphurous acid and.	495	(Glaucoma, acute, two cases of.	316
		Fulton, J. F. Improvement in modern	660	and detachment of the retina.	841
		methods of teaching.	61	cure of by resection of sup. cervical	316
		Fundus oculi, lesions of.	966, 1543	sympathetic.	841
		Fütterer, Gustav. How soon do bacteria	61	hereditary, case of.	1180
		become disseminated?.	1302	results of treatment of.	1195, 1260, 1384, 1439, 1495, 1558
		GAERTNER'S fatty or mother's milk.	1013	Gleanings.	628
		Gage, W. V. Non-slipping pedicle liga-	314	Gleoma of retina.	368
		ture.	1154	Globuloidal properties of tapeworm.	40
		Galen's pulse table.	203	Glossitis in typhoid fever.	792
		Gallaui, A. E. Fracture of clavicle in chil-	251	Glooucester County (N. J.) Medical Society.	622
		dren.	1129	Gloves in surgery.	311
		Gall-bladder, iodol and empyema of.	867	Glück, Dr. Leopold.	1423
		Galloway, D. H. Bill was disallowed.	495	Gluten capsules.	1017
		D. H. Chloroform and gaslight intoxi-	660	Glycerin in chronic rhinitis.	1331
		cation.	1129	Glycosuria, diabetic, diet in.	1013
		D. H. Judge Kohlsaat and the probate	867	Goat's milk.	624
		court.	495	Godfrey, Guy C. M. Medical and hospital	119
		Gall-stones and the negro.	966, 1543	service in Cuba.	1544
		diagnosis of.	61	E. L. B. Medical law of New Jersey.	1544
		intestinal obstruction from.	966, 1543	Goethe, the pathologic in.	1544
		pathologic and clinical phases.	61	Goffe, J. Riddle. Treatment of retro-dis-	508
		tubal pregnancy and.	1302	placements of uterus by shortening	878
		Galvanic current for treatment of ptery-	634	round ligaments.	969
		gium.	555	electric treatment of.	1075, 1175, 1323, 1434
		Galvano-cautery, use of.	941	operative dislocation of.	1479
		Game, parasites in.	181	surgical treatment of.	1429
		Ganglion cells and changes in general dis-	1175	Gold cures.	755
		eases.	1246	cures in inebriety.	514
		Gangrene and treatment.	40	Goldsphohn, A. Descensus and aspension	279
		carbolic.	108	of ovaria.	808
		cured by entero-anastomosis.	291	Golf from a neurologic viewpoint.	399, 1113
		diabetic.	288	Gonorrhea in ophthalmia neonatorum.	658, 704
		from 1870 to 1897.	816	Gonorrhoea a factor in prostatic fever.	435
		of lung, multiple neurotic.	1056	chronic anterior, symptoms of.	437
		pulmonary, treatment of.	856	chronic posterior, symptoms of.	1476
		Gangrenous phlegmons.	408	from view of internal medicine.	1474
		Gaps in nerves, filling.	23, 25	in children.	528
		Garbage, cost of disposal of.	24	in gynecologic cases.	120
		tabulated amounts of.	86	in male.	1175
		Garcelon: Report of Board of Trustees.	1012	in women.	1368
		Garrison, Harriet E. Treatment of congen-	1180	iodin in.	1475
		ital talipes.	816	pathology of.	1831
		Garvin, Samuel H.	28	prevalence of.	365
		Gas fixtures, deaths from leaky.	302, 930	prophylaxis of.	1474
		Gaslight intoxication.	325	why still a much-dreaded disease.	960
		Gasserian ganglion resection.	1496	Gonorrhoeal (vide abscesses, conjunctivitis,	627
		Gastric affections, creosote in.	900	psoriasis).	627
		catarrh.	1102	Gosio's rapid test for arsenic.	960
		diseases, discussion of.	1012		
		disturbances, feeding of infants in.	1180		
		fermentations.	816		
		juice, resistance of germs to.	28		
		oils, co. drungo as analgesic in.	302, 930		
		Gastro-enteritis, iodin for.	325		
		Gastro-enterostomy for carcinoma.	1496		
		for pyloric cancer.	1496		

	PAGE		PAGE		PAGE
Gould, Geo. M. Case of "mathematically perfect eyes"	632	Hatch, Thos. L. Physiologic question of practical importance	1315	Hemoptysis	244
Geo. M. Demonstration of an "autofundoscope"	911	Haughton, R. E. Appendicitis	254	Hemorrhage	209
Geo. M. Inexpensive 60-lens ophthalmoscope	911	Havana, sewerage the prime necessity	552	arrest of, on the field	47
Geo. M. Jugglery of statistics	1183	yellow fever at	1255	following tonsillectomy	554
Gould's method in lachrymal disease	2	Havard, Valery. Krag-Jorgensen bullet-wound	1412	gastric, gelatin for	862
Gout, dietetic treatment of	1445	Hawaii, leprosy in	675	hot water in	1056
Gracie, A. Corneal turbidity easily overlooked	701	Hawking physicians	1481	in yellow fever	107
H. Diagnostic characteristics of headaches	1222	Hawley, C. W. Traumatic cataract	1365	post-partum, with uterine contraction	69
Henry. Phlyctenular or scrofulous ophthalmia	1303	G. F. Chronic post-nasal catarrh	1242	post-partum, bandages for	625
Grafting, ptoxis cured by	73	Hayem. Gastro-enterostomy for non-caecous stenosis	27	retinal	542
Grafts, epithelial, for replacing ocular conjunctiva	775	Hay-fever	474, 1254	Hemorrhagic internal pachymeningitis	370
Graham, D. W. Primary carcinoma of axilla	445	Head, gunshot wounds of	1166	Hemorrhoids	146, 522, 1408
Gramm, Carl Theodore. Implantation of foreign objects in maxilla	1244	injury	1366	colloid in	129
Granby, Dr., made surgeon	143	Headache, diagnostic characteristics of	1222	in Indiana	499
Grant, W. W. Effect of uterine curettage and drainage on disease of tubes	528	in syphilis	1229	Hemostasis with clamps or ligatures	73
H. H. Management of bullet wounds	1468	naal	807	with gelatin	1180
Grasses, hypnotic	1588	nervous, methylene blue in	302	Hemstatic, Bernay's sponge as a	28
Graves' disease	1180	ocular	1219	hot air as a	989
Gray's neuralgia definition	1089	Healer without drugs	1547	new	660
Greene, Chas. L. The commission evil	1376	Health Board, California	37	Henrotin, Fernand. Indications for interference via vagina in pelvic diseases	861
Chas. L. Treatment of heart disease by saline baths—Schott method	901	Board, appeal to	1547	Hepatoptosis, traumatic	129
Greenley, T. B. Therapeutic value of some medicinal agents	912	Board, Florida, proclamation	998	Herdman, W. J. Neural dynamics	1211
T. B. Doctors of long ago	1495	Board, Indiana	433	Hereditary syphilis (vide also marriage regulation)	1077
Griffith, J. P. Crozer. Rise, progress and present needs of pediatrics	947	Board, Illinois, report of	1195	Hereditarily as a causative factor of inebriety	1278
Grippe prevailing	1547	Board, Kentucky	1328	oblique	1000
protracted	1543	Board Rules, Massachusetts	1388	statisties	1844
Gualacal (vide valerianate)		Board, Michigan	37	Herrmann, Arthur L. Hygiene of music	689
Guaiaul	18	Bureau of	1003	Hernia	1299
Guerin and Thorin method of uric acid estimation	956	Conference of State and Provincial Boards of	413	in old men, hypertrophied prostate and	395, 465
Gullotine decapitation	994	Committee, Public	1198	of children	208
Guitras, John	321, 374, 432, 1544	Department of	311	of lung	212, 1068
Gunshot fracture of femur	1300	grave menace to	666, 803	operation	1803
injuries, cases of	490, 1412	in Chicago	257, 426, 806, 1125	right inguinal	928
wounds	1240, 1408	in Indiana	365, 1487	sacropublic	856
wounds in military practice, modern treatment of	35, 46	in Michigan	140, 365, 414, 803, 998	strangulated umbilic	1246
wounds of the abdomen	50	Mich. Board of	37	ventral, after appendectomy	402
wounds of the chest	49	New Orleans Board of, and yellow fever notes for	1582	Herniotomy, inguinal, "abaissement" method of	74
wounds of the extremities	48	officers and sanitarians in Ills.	548	Heroes, unsung	200
wounds of the skull	49	officers, appointment of	149	Heroin	1176
wounds of spine, hematomyelia from	317	Officers' Ass'n, Tenn.	548	in coughs	1423
Gunsols, K. Cranial abscess	997	officers, Blunt, Texas	481	Herolsou of army surgeon in India	808
Guthrie, Joseph A. Discordant sounds a menace to nerves	1143	officers' recommendations	876	Herpes iris, histopathology of	555
Gynecologic cases, treatment of ambulatory operations, albuminuria complicating surgery of insane	521, 792, 485	officers, removal at pleasure	370	Herpes zoster, orthoform in	1090
Gynecologists, conservative manipulation by	28	officer's report	321, 483, 623, 1546	zoster, treatment of	244
Gyneology during four year's service	69	officer sustained	1004	Herrick, J. B. Epidemic cerebrospinal meningitis in Chicago	724
electricity in	1069	of District of Columbia	487, 537, 677, 812, 876, 945, 1005, 1071, 1131, 1198, 1261, 1327, 1440, 1496	J. B. On the existence of epidemic cerebrospinal meningitis in Chicago, with report of a case with autopsy	20
limit to operative	1114	of Santiago de Cuba	76	J. B. Treatment of ulcer of stomach	1303
orthoform in	129	regulation enforced	1198	Hersman, C. C. Nervousness an element in hyperpyrexia	1142
Gyromele	223	report, Cincinnati	1546	Hessler, Robert	1128
		report, Detroit	678, 745, 812, 876, 1003, 1439, 1591	Heteroplastics for brain prolapsus	1482
		reports of troops in the field	143	Hiccough, sodium bicarbonate for	1369
		resorts	1179	Higgins, F. W. Stammering	1539
		San Juan board of secretary department of	481	Hill, F. E. Plagiariam	138
		Society, Woman's State and Provincial boards of	808, 1487	W. B. Antistreptococci serum	752
		work in Michigan	37	W. B. Method of teaching materia medica	1520
		Hearing, tests for the	414	Hillard, W. Lesions of fundus oculi	1420, 1544
		Heart	1056	Hildekoper, Dr., a defense of	940
		affections in children	1190	Hip-joint amputation	198
		and blood-vessels, remedies in diseases of	1422	Hip, treatment of congenital dislocations of	451
		and circulation in feeble-minded children	815	Hirth, G. J. Hemoglobinuria and hemoglobinemia	227
		anomalous cords of the	1101	Histopathology of herpes iris	555
		dilatation of, aortic regurgitation and disease, differentiation of cardiac incompetency of	259, 722, 99	Historic research in Maryland	808
		disease, dietary of	1143	Histrionic spasm	1235
		disease from standpoint of life insurance	674	Hobby, C. M. Some causes of wry-neck	1290
		disease, treatment of by Schott method	901	Hodgkin's disease, alcohol injections in	192
		epilepsy	1000	Hollpeter, W. C. Auto-infection vs. typhoid fever	1032
		murmurs (vide also, mitral)	1415	Holmes, Bayard. Adrenal tumors of the kidney	408
		sounds, double duplication of	111	Bayard. Surgical treatment of exophthalmic goiter	1175
		surgery of	1436	C. R. Case of eyeball injury	1366
		suture of auricle of	1586	C. R. Case of foreign body in eye	1114
		tonics, pharmacologic assay of the	958	Holoceal	472
		troubles, defective compensation in	431	conclusions from clinical and bacteriologic experiments with	706
		wounds of	1584	Holt, O. P. Case of pernicious anemia	1531
		Heat in diseases of infancy	1267	Homeopaths, another wall from	877
		production in fever	26	want insane hospitals	1072
		Heath, F. C. Accidents in eye operations	910	Homeopathy, ethics of	1434
		Hebrews, rectal diseases among	499	Hornelbe by microbes	992
		tetanus among	497	Honors	620
		Heidenhain	1060	international memorial	1322
		Heidingsfeld, M. Electrolysis for nerves	1367	Hopkins' estimation of uric acid	958
		Heitz method of uric acid estimation	955	Hoppe, H. H. Uremic focal lesions	1214
		Hellotherapy founded by Diogenes	1068	Horfbeck, H. B., before Quarantine Convention	1316
		Heller, J. M.	558	Horn, A. J. Removal of foreign body from trachea	137
		Helmerich's salve	1055	Hospital, an ancient	485
		Hematocrit percentage tubes	547	army	41, 490
		Hematomyelia from gunshot wounds of the spine	317	at Ft. Myer	812
		Hematosalpinx, congenital uterine atresia and double	525	Camp Thomas and Second Division	670
		and pyosalpinx	1541	Central Dispensary and Emergency	866
		Hematuria, renal	932	changes	487, 876, 1327, 1495
		sources of	1065	children's	623, 946
		Hemiplegia of uremic origin	1218	College of Medicine	948, 1004, 1072
		Hemoglobin estimation and its prognostic value	357	Columbia University	149
		in thyroid administration	1230	contributions	558, 1261
		Hemoglobinemia, hemoglobinuria and	227	corps	1442
		Hemoglobinuria, hemoglobinemia and paroxysmal	227	corps, mounts for the	80, 490, 1366
		Hemophylla, inherited tendency to	540	destruction of an army	995

	PAGE		PAGE		PAGE
Hospital, Episcopal...	1071	Hyatonic black mall	320	Influenza bacillus...	802
for Foundlings..	488, 1547	hyperpyrexia..	1143	Influenzal prevalence...	1539
for Incurables..	558	hyatonic joints..	430	Infusions, saline..	806
for Insane..	1322	vs. true peritonitis..	258	Inglia, David. Diabetic points..	678
for Red Cross..	316	Hystero-epilepsy, black excretions in..	1322	David. Social factors of today..	1064
Ft. Myer, President Inspecta..	812			Inhalation of tooth filling..	1434
fund., contagious..	1327			Inhaler, ether..	1574
Fen Cho Fu..	803			Inherited tabes..	429
Georgetown University..	488, 1440	ICE-CREAM, typhoid fever from..	1480	tendency to hemophilia..	540
German town..	1326, 1441	Ice-water enterocolitis in typhoid fever..	363	Injectious, coagulating, for erectile tumors..	416
Gouverneur, caisson disease at..	840	Ichthyol for tuberculosis..	862	for general weakness..	1062
gynecology at Delaware..	69	in urogenital tuberculosis..	1177	intravenous saline..	809
health officer after Freedman's..	876	in variola..	1055	Murphy's technic in..	343
Jewish..	814	Interoides, the bacillus..	1423	of hot water, gastrorrhagia cured with..	244
King's County, N. Y..	1540	Idaho State Medical Society..	998	subcutaneous, of phenic acid..	185
Laura Memorial..	1261	Idiosyncrasy contra asparagus, uncommon form of..	741	technic of intravenous..	1424
Letter General..	84	Ileus, massage for post-operative..	128	Injunction..	149
London..	1194	Ilio-femoralla, aneurysms of..	1369	Injured employe assumes risk..	806
lying-in..	620	Illio-femoralla, aneurysms of..	1533	Injuries sustained before birth, action for..	874
modern..	1438	Illinois Army and Navy League..	657	Injury liability, scope of personal..	810
Moscow, syphilis statistica of..	1077	Medical College..	269	Impaction of foreign bodies..	500
municipal..	1132, 1495	State Board of Health, Annual Report of..	1195	Insane, after-care of..	1321
Nurses' Home, Emergency..	1546	Imbeciles, care of..	1278	asylum, anatomic studies in..	1230
point, Fortrea Monroe as..	199	Imbrication, cystorrhaphy by..	1369	care of, in Indiana..	1439
New York Post Graduate..	40	Immigration and insanity..	359	colony..	1178
overcrowded, Philadelphia..	43	Innominate artery, deligation of..	554	gynecologic surgery of..	485
Pennsylvania..	624	Immunity..	1048	New York State Hospital for..	1322
Presbyterian..	1442	and cure of infectious disease..	1435	overcrowding of..	1442
reform at Bellevue..	40	concerning..	1282	service of writa upon..	809
report of Howard..	261	non bacterial..	319	surgical intervention on..	1544
Roman, discovery of..	1587	sero-reaction and..	316	tuberculous, management of..	431
St. Anthony's..	553	the fundamental principle underlying..	747	Insanitary wall papers..	88
St. Elizabeth's..	1071	all treatment of tuberculosis..	1129	Insanity among adolescents..	1377
St. Louis, Eye, Ear, Nose and Throat..	484	to mixed infection..	621	civilization as cause of..	1403
St. Joseph's..	433, 1132	Implantation, suprasympysar..	555	epilepsy and..	1372
Samaritan..	1072	Incarceration of penis..	402	immigration and..	359
service..	145	Incisions in bernia..	916	legal opinions of..	1150
ship, accident to..	42, 312, 478, 490, 1357	Incompatibles..	302	moral, in inebriety..	1144
ships..	42	Incompatibilities of antipyrin..	1302	post-operative..	447
ships, coast of..	143	Incontinence, rectal..	134	puerperal, belladonna poisoning simu- lating..	36
ship for Manila..	1086	Index Medicus..	429	relation of neurasthenia to..	1203
statistics of Boston Infanta..	1547	India, cholera in..	1425	statistics..	359, 1277, 1344
students and the municipal..	145	disturbances in..	1179	Insect bites, formalin for..	788
trains..	41, 483, 490, 624, 677, 945, 1132, 1197, 1326	health resort in..	670, 1188	stings, death from..	811
trains, field of..	557	plague in (vide also plague)..	884	Insects, contagion transmitted by..	1378
train, service on..	558	Indian hemp, cause of inactivity of..	1544	protection from..	1545
Washington asylum..	43, 148, 149, 487, 744, 944, 1262, 1882, 1546	doctor, "Pugwash Plant" of the..	1438	Insomnia..	481
Hospitals..	790, 1359	Indiana, care of insane in..	1321	in arteriosclerosis..	1306
general..	132	dentistry law..	365	treatment of..	757
in Cuba, Spanish inspection of..	1317	health in..	365	Inspection of Army Medical Department in field..	44
in Soudan..	147	osteopathy in..	438	in municipal schools, medical..	1582
liability for nurse's negligence..	31, 1382	State Board of Health figures..	365	Instruction for religious orders..	1539
regimental..	1327	Southern, Medical Society..	1152	Instruments for Fen Cho Fu Hospital..	803
to be reimbursed..	989	Indians, immunity to certain diseases (vide race)..	1035	dry sterilization of..	1368
(vide also marine)	1544	Indian test..	203	Insurance for septic poisoning, no in its earliest stages..	148
Hot air as a bemostatic..	775	Indicanturia in children..	251	risk and Spanish war..	1419
"Hot-foot," tachypodia or..	959	Indol: relation to prolonged suppuration and lardaceous change..	755	Intemperance, disease of..	939
Hotz, F. C. On use of epithelial grafts for replacing ocular conjunctiva..	959	Inebriates in army..	1461	Interesta, objects and business of our so- ciety, the..	68
Houghton, E. M. Pharmacologic assay of heart tonic..	1125	Inebriety, gold cure in..	1456	International Association of Railway Sur- geons..	142
House disinfection..	790	diabetic causes of..	1273	congresses (vide congress)..	944
Howitt, Henry, Surgical treatment of Intus- suspception in Infants..	1128	heredity as a causative factor of..	1144	Intervae..	675
Hughes, C. H. Chairman's address of Sec- tion on Neurology..	956	normal insanity in..	258	Interviewer, the profession and the..	326
C. H. Progress in neurology..	1075	Infancy and early childhood, cholelithiasis in..	1017	Intestinal anastomosis by new method..	26
J. W. Intercepting trap in private sewers..	813, 1132	Injection in, gastro-intestinal infec- tions of..	1092	antisepsis..	892
Huidkoper, Dr..	1544	tetany in..	1084	bacteria, necessity of..	1194
Human flaps, vitality of severed..	1055	Infant dietary, physiologic principles or..	1416	coupler, Ramange's..	1065
Humerus, ununited fracture of..	1291	Infants and children, care of..	974	obstruction..	1175
Humiston, W. H. Do we drain too fre- quently in pelvic surgery?..	792	care of premature and feeble..	1423	obstruction from gall-stones..	966, 1543
W. H. Nervous disturbances due to or- ganic changes in genital organs..	1385	counter-indications to breast-feeding in..	1091	obstruction, acute..	500
Hunt, Randall, Chairman's address..	1464	defecation in..	1102, 1436	occlusion by electricity, treatment of occlusion due to lumbricoids..	970, 1124, 1254
Randell, Influence of mind on body, etc..	414	feeding, experiences in..	1012	perforation, resumé of cases of..	58
Hurty, J. N. Secretary's report of Michigan State Board..	1079	feeding in gastro-intestinal disturb- ances..	1348	stenosis, consecutive to gangrene..	40
Hutchinson's teeth..	1300	feeding, milk for..	258	surgery..	1424
Hydrocele..	712	gastro-intestinal disturbances in..	1086	Intestine gangrenous, is a green..	1578
Hydrocephalus interna, case of..	324	Hospital, statistics of..	1067	Intestines, fermentation test for..	1176
acid in disease of the stomach..	818	malt soup for..	1004	parasite in..	1586
Hydrogen-peroxid..	1368	milk-mixtures as food for..	927	puncturing the..	1388
Hydrophobia quarantine..	1326	mortality, cause and prevention..	620	small, stricture of..	869
Hydrotherapy in stomach diseases..	1118	steriliz-d milk for..	790	Intoxication, concussion va. (vide chloro- form)..	1192
Hygiene and dietetics in diabetes mellitus..	1549	surgical treatment of Intussusception in..	44	from meat..	1487
for children..	941	Infantile (vide hereditary, paralysis, aphy- liis, tuberculosis)..	489	Intraabdominal sarcoma..	450, 462
in schools..	1254	Infantryman, U. S., the outfit of a..	1183	Intrauterine fracture of the femur, com- pound..	536
in tuberculosis..	1462	Infected during an operation..	1318	injections..	1180
new institute of..	1317	Infection, association of tranmatism and..	1116	Intravenous saline injections..	809
of music..	189, 734, 939	infiltration in..	73	Intubation..	1037
progress in State medicine and..	184	modern treatment of..	316	for diphtheritic croup..	1038
Hygienic treatment in tuberculosis..	1002	of thread by fingers..	1483	indications for..	1088
Hymen, needlessness of lacerating the..	28	of urinary passages..	4573	Intussusception..	500
Hyperpyrexia, nervousness an element in..	1142	of urinary tract, colon..	1592	in Infants, surgical treatment of..	790
Hypnic suggestion in the treatment of epilepsy..	1000	stitch hole..	1482	infective nuisance, abatement of the..	1000
(vide therapeutics.)	1588	vesical..	1008	Inverso uteri, irreducible..	660
grasses, American..	619	Infections, sulphuric acid in..	926	Iodifer for acute gastro-enteritis..	802
Hypnotism, Congress of..	1131	Infectious diseasea..	1435	in blood..	40
Hypothetic questions, preparation of..	18	diseases, cause and prevention..	1423	in gonorrhoea..	1368
Hypoxanthin or Darkin..	369	diseases, immunity and cure of..	240	in saliva and urine..	989
Hysterectomy, Porro operation va. total..	559	diseases, luxation of joints in..	202	reaction with seminal fluids..	609
suprapubic, first to perform..	1304	diseases, milk as culture-medium and ita capacity to spread..	1055	treatment of trachoma with..	600
vaginal..	1200	fevers..	698	Iodoform in tuberculosis..	180
(vide laparo-hysterectomy.)	1151	Inflammations, white of egg for..	491	treatment, psychosis consecutive to..	816
Hysteria, aboufia in relation to..	1138	Influence of age in causing opacity of crys- talline lens..	1464	Iodol, metholized..	1056
case of..	1186	of age, sex and race in surgical affec- tions..	188	Iodothyrim..	918
in children..	1186	of mind on body and relation to edu- cation..	188	Iowa State Association of Railway Surgeons vaccination in..	985

	PAGE
Lichty, D. Thalassic submerison disposal of our dead.	1285
Liebig's foods.	1017
Lienteric diarrhea.	225
Life insurance and albuminuria.	1095
Insurance, army and navy mortality in.	1487
Insurance, heart disease from standpoint of.	674
Life-saving invention, premium for.	1194
Life-table, an English.	1582
Ligation of right subclavian and common carotid arteries.	936
of external iliac artery.	721
of mesenteric artery.	1585
Lightning, prevention of death from.	260
Light screen, new.	1379
Limitations of medicine, the.	951
Lion's serum.	687
Lipoma of foot.	930
Lippert, Frieda E. Physiologic approach to education.	616
Lithiasis, biliary, bacterial pathogenesis of.	96
biliary, ox-gall in.	415
Liver abscess due to ascaris lumbricoidea.	96
appendicular.	1380
bactericidal function of.	1307
bile not secreted by.	368
cleaturation of wounds of.	1321
echinococcus of.	415
indol and abscess of.	293
micro organism in cases of cirrhosis of.	305
splenomegaly with cirrhosis of.	661
"Locke Amsden or the School Master".	1264
Locomotor ataxia (vide tabes).	
Locusts, destruction of by arsenic.	1245
Lodor, Charles Howard. Neuralgia and nerve crises.	1085
Loeb, L. Transplantation of skin and origin of pigment.	1362
London for study of smallpox.	869
ambulance work in.	1583
hospital.	1194
notes.	1383, 1440, 1496, 1546
research laboratories.	482
"water famine" in.	869
water-supply of.	998
Longevity and wine.	480
Long lived couple, a.	1000
English family, a.	748
Long, W. P. Fetal monstrosity.	988
Loomis Sanitarium, treatment.	430
Lord, John Prentiss. Intestinal obstructions from gallstones, with report of case.	966, 1546
Lorenz's method of operative reposition.	452
Louisville Medical College.	321
Louisville Medico-Chirurgical Society.	1489
Louisville notes.	149, 201, 261, 628, 745, 876, 1072, 1261, 1328, 1439, 1495, 1502
Ludwig's magnesia mixture.	19
Lumbago and ischias, movement test for.	302
Lumbar puncture, case of recovery in epidemic cerebrospinal meningitis following.	182
puncture, dangers of.	1594
Lumbricoids, intestinal occlusion due to.	130
Lunatic, estate liable for support of.	673
Lunettes, gall-stones in.	61
Lung abscesses from 1878 to 1897.	284
actinomycosis of.	140, 1178
anatomy of.	152, 159
anthrax of.	1257
echinococcos of.	1238
fat embolism in.	1001
fetal, radiography of.	1246
hernia of.	1068
surgery of.	151, 208, 281, 341
Lunn, Henry S.	943
Lupus, calomel in.	1423
caustic potash in.	660
erythematodes.	1482
of face.	1176
potassium permanganate in.	1246
treated with Roentgen ray and hot air.	748
treatment with Roentgen ray and sunlight.	903
Luxation of large joints in infectious diseases.	1428
of lower radio-ular articulation.	673
Lyle, B. F. Aneurysm of aorta.	1867
Lymphatic apparatus of uterus.	989
constitution in idiopathic epilepsy, the morbid anatomic evidences of.	4
of chest wall.	155
Lymph excretion.	1090
sterilized.	140
the.	1490
MACCALLUM, W. G. (vide Kelly, H. A.).	375
MacCammon, Vernon.	745
MacDonald, G. Total removal of stomach for carcinoma of pylorus, recovery.	538
MacFarlane, Thomas. Disposal of refuse in some European cities.	926
McAllister, Alex. Diphtheria viewed by general practitioner.	1040
McCaasy, J. H. How to limit over production of defectives and criminals.	1843
McClanahan, H. M. Indications for intubation.	1038
McClintock, Chas. T. Immunity.	1048

	PAGE
McCoy, J. C. Foreign body in the esophagus.	240
McDaniel, E. D. Therapeutic importance of a rational adaptation of cathartics to physiologic functions of gastro-intestinal system.	961
E. D. Artificial respiration in relation to State medicine.	1335
E. D. Physiology of animals and plants.	1524
McDermith, S. T. Medico-insurance.	280
McFadden, W. Gaston. Objects to new designation.	423
McLaughlin, H. W. Aneurysm of the concavity of the transverse arch, etc.	275
McMurtry, L. S.	261
L. S. Treatment of cancer of uterus.	1470
McRae, F. W. Penetrating wounds of abdomen.	1468
McReynolds, John O. Absorbable sutures in looping tendons of ocular muscles.	853
Maggots in ear.	619
Magnetic stress on physiologic action.	1075
Maisch, H. C. C. Estimation of uric acid in urine.	955
Maker, Lewis E. Carcinoma of breast and tubercular abscess.	1591
Malady, old plantation.	1495
Malaria.	1178
and lemon extract.	1178
clinical study of 15 cases of.	1180
ergot in.	1066
governmental research on.	952
is not a disease.	346
new light on.	872
perniciosa tanica.	1181
relation to renal disease.	1118
Malarial affections of eye.	1582
attacks, obliteration of.	1320
fever, albuminuria in.	1368
phenocoll in.	1129
fever, communicability of.	1583
fever, soil disturbance and.	1544
fever, quinin in.	418
fever, urine of the.	1491
fevers on Pacific coast.	492
Malignant disease.	247, 423, 492, 548
Malingering.	1534
Mal perforans, radical cure of.	120
Malsbury, J. O. Gonorrhoea in the male.	1173
Malt, proteolytic value of.	1492
combinations.	1067
soup for infants.	492
Mammary gland, malignant disease of.	1567
Man, mechanism of; its ego and cosmos.	96
Manchinal tree, beware of.	1558
Manganese in treatment of dysmenorrhoea.	1573
Mania, acute, after cataract operations.	1121
Manila, Army Medical Department of.	143
hospital ship for.	1317
seasons at.	1585
sickness at.	28
Manipulation by gynecologists, advised, conservative.	1177
Maragliano ou venesection.	744
treatment of tuberculosis.	381
Marcy, H. O. Aseptic animal suture, place in surgery.	1386
H. O. Milk-supply of cities.	559
H. O. Surgical treatment of uterine myomata.	312
Marine Hospital extension.	37
hospital service.	434
hospital service, promotion in the.	1049
Marmorek's serum. Therapeutic value of.	1324
Marriage no defense.	864
of unfit.	1437
ovaries and.	676
prior removal of ovaries ground for annulling.	1334
regulation as preventive of disease.	1344
statistics.	622
Marriages, legal restraint of.	443
Martin, Thos. Chas. A new simplest proctoscopy.	1112
Thos. Chas. Complete inspection of rectum by mechanic contrivances.	1091
Thos. Chas. Further contribution to study of defecation in infants.	882
Marshall, C. R. Pharmacology of cannabis indica.	261
Marvin, J. B.	808
Maryland, historic research in.	1430
Masks for tuberculous patients.	1388
Massachusetts Board of Health rules.	165
General Hospital, diabetes mellitus at.	657
Volunteer Aid Association.	302
Massage, abdominal.	129
abdominal, stimulation of lacteal secretion by.	220
and intragastric electricity in dilatation of the stomach.	1369
for post-operative ileus.	1191
in Italy.	938
Mastin, Claudius Henry.	1538
Mastoid process, plastic surgery in.	1365
Mastoiditis and sinus thrombosis.	1049
when to operate in.	312
Match factories, sanitation of.	688
Materia medica and therapeutics, study of.	1520
medica, method of teaching.	261, 433, 876
Mathews, J. M.	125
J. M. Presentation speech.	1244
Maxilla, foreign bodies in.	582

	PAGE
Maxwell, T. J. Treatment of septic peritonitis by irrigation.	582
Mayo, J. W. Diagnosis and surgical treatment of malignant obstruction of the pylorus.	323
Measles, an epidemic of.	37
complications of.	88
new diagnostic sign of.	146
new symptoms of.	1534
phototherapeutics of.	1123
prophylaxis of.	998
recurrence of.	1321
Meat inspection, governmental.	1435
Mea us, agglutination of.	435
Meckel's diverticulum, inflammatory processes in.	302
Mediastinum.	155
"Medical Age" and osteopathy.	1194
Medicinal agents, therapeutic value of.	912
Medical and Chirurgical Faculty.	1071
and Surgical Monitor.	41
appointments confirmed.	41
aspects of appendicitis.	230
attendance, not bound to furnish.	317, 1180
Association, Connecticut Valley.	87
Association, Northwestern Ohio.	1540
Association, Tri-State.	619, 1064, 1189
Association, White Mountains.	37
Association, White River.	317
Board.	202
certification in France.	743
College, Louisville.	251
college, new.	1383
College, Ohio.	484
college resolution.	735
colleges.	193
colleges and the Association (vide Association).	
chair of ethics in.	478
corps, the.	1360
Department, Columbia University.	916
department, criticism of.	802
department in camp.	145
department of the army (vide army).	
department U. S. A., memoranda relating to operations of.	489
Department, University of California.	1131
directory, criticism of a.	802
education.	26, 70
education, donations for.	1587
education in Mexico.	304
examination of plaintiff in Kentucky.	818
examiners' bill.	724, 1123
Examining Board.	261
experts.	1148
faculty, new.	486
inspector at Bombay.	1002
inspector of army.	1403
officers.	489, 1356
officers, appointments, assignments of.	48, 144
officers, military status of.	619
officers, movements of.	41, 150, 262, 434, 1558
practice act.	557
profession, mortality of.	372
profession, women in.	554
Record again.	1322
Record and Association minutes.	96
Record and Surgeon-General W—n.	320
Record, letter to.	319
registration in Connecticut.	1546
relief, yacht, a.	486
responsibility.	744
schools of Baltimore.	1071
service in battle.	145
service on the march.	145
signers of Declaration of Independence.	935
Society of London.	1496
Society, Gynecological and Obstetrical.	1128
Society, Kings County.	1258
Society, Mildraugh Hill.	1489
Society, Minnesota State.	70
Society, Nelson Co. (Ky.).	1489
Society, Washington.	1005, 1256, 1489
Society, Wayne Co. (Mich.).	678, 745, 807, 871, 996, 997, 1008, 1328, 1432
societies, State, secretaries of.	85
(vide Chicago, Cincinnati, Denver, Detroit, Louisville, New York, Philadelphia, San Francisco, Societies, Washington and various States.)	
supplies.	490
supplies recommended to regiments.	432
Temperance Association.	257
treatment, gratuitous, value of can not be recovered.	370
Medicine and therapeutics, progress in.	181
a remedial substance.	1494
limitations of.	951
now in disrepute.	873
preventive, bacteriology in.	1281
scientific, regeneration of pharmacy and X-rays in.	41
Medicines, absorption of in stomach.	1586
Medico-Chirurgical College.	1517
Medico-cleric gets some advice gratis, a.	259
Medico-insurance.	280
Medico-legal aspects of senile dementia.	1148
surgery.	485
Melanchoia.	199,
in lepers of Iceland.	808
Melanchoy, short recurrent.	1152
Melanotic sarcoma.	463
Memorial gateway.	1004

	PAGE		PAGE		PAGE
Mendelsohn, M. Nursing the sick	1177	Mitral regurgitant murmurs, causes of in-	175	Nasal douche, dangers of	810
Mendizabal, Gregorio. Diseases of the skin	987	constancy of	175	septum, resection of	1369
and hairy scalp	987	Modern magazine	1232	Nasopharynx, fibroma of the	370
Meningitis (vide cerebrospinal).		medicine and surgery, German influence	627	National bureau of health, for a	996
acute	1233	in	627	cry, the	654
acute cerebral	1050	Mold and cerebrospinal meningitis	138	Formula, some preparations of the	690
infantile	1369	Molluscum contagiosum	1546	Quarantine Convention	1315
tubercular, diagnosis in children	1489	"Moment and the Article of Death"	994	relief	316
Menopause, dangers of certain faulty im-		Mongols, lamaistic practice among the	608	Relief Association	1198
pressions concerning	900	Monsters in fiction, double-headed	307	Relief Commission	1072, 1132, 1198, 1327
Mesenteric artery, ligation of	1586	Montauk not criticized	1382	Relief Committee on pure water for	486
Menstruation and lacteal secretion	1177	Montgomery, Liston H. A department of	311	troops	486
Mental diseases following pelvic operations	572	health	311	Relief contributions	1442
disturbances, post-operative	929	Liston H. American Public Health As-	738	Relief Society	877
Menthol in anthrax	1056	sociation	738	Nature's cure of phthisis and an effort to	265
Menthoxol	129	Liston H. Resolutions on Department	1430	imitate it	265
Meralgia, parasthetic	673	of Health	1430	therapy	1553
Mercury for snake bites	862	Liston H. Some observations on acute	40	Naval medical incident	1382
Meta-cresol-antylol in erysipelas	1320	inflammation of the prostate gland	400	surgeons, report on	1193
Metcalf, Wm. F. Intestinal anastomosis by	326	Monument to Pasteur	40	Navy, reorganization of medical department	1128
new method	326	Moody, H. A. Potassium iodid in cerebro-	697	of the	1128
Mettler, L. Harrison. Aboulia in relation to	1200	spinal meningitis	697	Nauheim baths, the	816
hysteria	1200	Moral nature, effect of stimulants and nar-	1023, 1026	Neck, gunshot wounds of	1167
L. H. Defense of music	613	cotics on	1023, 1026	Needle holder, a threaded	314
Methylene blue in migraine and nervous		Morbid anatomy in tetany	1085	in perineum, not liable for leaving	372
headache	302	Morfit, J. C. Importance of early diagnosis	1113	swallowing epileptic	1192
Mexico, medical education in	304	in surgical cases	1113	Need not submit blindly	1324
sanitation in	1254	Morgan, L. C.	1072	Negresses, rarity of ovarian cysts in	1530
Meyers, Sidney J.	261, 433	Morgue, a new	488	Negroes, consumption among	672
Michigan, health in (vide health).		Morphia in Bright's disease	817	Negro immune to varicocele	494
public health work in	414	Morphin poisoning, acute phosphorus and	302	immunity of	491
recruits, examining	1585	transmissibility of	1366	statistics concerning	1345
State Board of Health quadricentennial	413, 481	Morphinism, home treatment of	1423	Neoplasms, benign	493
	37	Morris, C. G.	558	cerebral	429
State Board of Health	37	Robert T. The commission evil	1314, 1591	of the chest wall and lung requiring	354
Microbe of contagious pleuro-pneumonia	1117	Morse, John Lovett. Tetany in infancy	1084	pneumectomy	354
Microbes, homicide by	992	Mortality of cities, how increased	202	Nephrectomy for cystic and fatty degenera-	1128
Micro-organisms resembling tubercle bacil-		of medical profession	372	tion of kidney	1128
lus	200	statistics	149, 260, 322, 489, 624, 677, 813	Nephria in uremia	680
Microphthalmos, case of double congenital	111	876, 945, 1003, 1072, 1132, 1197, 1326, 1441, 1548	1077	Nephritis, chronic	1369
Microscope of fifty years ago	1548	Moscow hospital, statistics of	1077	chronic cardiac incompetency of intrin-	99
Microscopic sections, rinsing apparatus for	1374	lying-in-hospital in	620	chronic parenchymatous and aortic re-	722
Microscopy of stains on linen	436	Moses, J. E. Recognition of temperament;	763	urgitation	1178
Midwife institute	619	a factor to selection of remedies and	618	infertilitation	1178
Midwifery practice	862	their dosage	618	what are the symptoms of	188, 1038
Miel, George W. Penetrating wounds of the	334	Mosquito and leprosy	618	Nephrolithiasis, radiographs in	1573
popliteal artery	334	Mosquitoes, how to exterminate	1481	Nephrotomy	1478
Migrainator, The	1306	Motel's operation for prosis	40	Nerve-cell, fibrils in the	872
Migraine and nervous headache, methelyne		Motor neuron	548	cries, neuralgia and	1088
blue in	302	Motte, Murray Galt. Malingering	1434	diseases requiring surgical treatment	1234
treatment of	1423	Motto for antivaccine party	460	fatigue of school children	875
trifacial neuralgia and	1423	Moulin on malignant tumors and toxins	460	optic, tabetic atrophy of	1257
Milbury, Frank S. Gonorrhoeal conjunctivi-		Moulin, H. Formalin in the treatment of	641	stretching	1234, 1236
tis and iritis	715	blepharitis	641	Nerves, discordant sounds a menace to	1143
Military camps, typhoid fever in	1308	Mounds for hospital corps	44	peripheral, injury to and surgical treat-	407
sanitaria for African troops	1255	Mouse typhus	1429	ment	407
status of medical officers	619	Mouth, perforating ulcer of	1490	Nervous affections, relation of, to pelvic	792
surgeons assigned	1328	Movements of army medical officers (vide	1490	organs	792
surgeons, qualifications and duties of	503	army and medical)	1490	and mental diseases	572
surgery after battle of Santiago	1239	Moyer, Harold N. Dumbness or congeni-	1173	diseases, reclassification of some on	11
Milk, absorption vs. digestion of	1449	tal aphasia, etc.	1173	basis of neuron	11
albumose	941	Harold N. Nervous and mental diseases	572	diseases, relations of pelvic and	1133
as carrier of infection	241	following pelvic operations	1321	disturbances, causes of	570
as culture-medium and its capacity to		Mud baths	1171	disturbances, due to changes in genitals	792
spread infectious diseases	240	Mule's operation, cases of	37	disturbances, in pulmonary invalids	1395
Chicago Health Department and	804	Mulford Company, H. K. An explanation	424	dyspepsia, treatment of	868
dirt	1150	Company, H. K. Antitoxin	1337	phenomena in children	485
fin de siecle	38	Mumm, Wm. P. Administration of sanitary	989	syphilis, stigmata of	1228
for infant feeding	258	laws	989	system, alcohol on	1453
formula for change of cow's	1349	Wm. P. Choice of route in operation of	424	system, effect of stimulants and narco-	1025
for nutritive enem.	302	the bladder	1531	tics on	1025
human	1012	Munson, Edward L. Wounds requiring oper-	1190	system, chlorid of gold and sodium in	755
laboratories	1015	eration	1190	functional diseases of	1190
mixtures as food for infants	1104	Murfree, J. B. Penetrating wounds of chest	1130	system, verdict for injuries to	1142
modified	1013	Murmurs of mitral insufficiency	1130	Nervousness an element in hyperpyrexia	1142
preservation	624	Murphy button, obstruction of	1424	Nettelroth, Alexander W.	493
spread of throat illness by	1430	Murphy's button, use of	192	Neuman's scheme of formation of alloxur	18
sterilized, for infants	620	J. B. Surgery of the lung	151, 208, 281, 341	bases	18
supervision by municipal sanitary		Muscles (vide ocular)	1221	Neural disturbances, official irritation and	1140
boards	738	Muscular insufficiency	1000	dynamics	1211
supply of cities	1386	rheumatism	1000	Neuralgia	943
toxicity of woman's	1066	system, effect of stimulants and narco-	1024	and migraine	1423
veiling task of boiled	620	tics on	1235	and nerve cries	1088
Miller, A. E. Hygienic management of chil-		Music, defense of	613	brachialgia and brachial	1437
children	1556	hygiene of	189, 734, 939	electric light in rheumatism and	28
C. H. Normal salt solution	480	Mustering out of volunteers	541	local treatment of	1481
C. H. Proteolytic value of malt	1173	Mydriatics, unusual intolerance of	1171	Neuralgias	1235
V. D. Alcohol in health and disease	1454	Mydrin, new mydriatic	623	Neurasthenia, auto-intoxication and	1485
Mills, Charles K. The reclassification of		Myers, F. C. Heredity as a causative factor	1273	first use of the term	1203
some organic nervous diseases on basis	11	of inebriety	1273	relation of to insanity	1203
of the neuron	11	Myocarditis, the course and management of	174	Neuritis, ascending	1543
Milwaukee Medical College, resolutions of		complicating	1115	multiple	258
the	299	Myoma of left broad ligament	1115	multiple, in children	1207
Mind, effects of stimulants and narcotics		Myomata, uterine, surgical treatment of	1489	peripheral	1180
on	1026	Myopathy	1055	traumatic	1236
influence of, on body	1464	Myopia, cases of	1056	Neuro-deformities (vide deformities)	1585
Mink, Arthur E. Cerebral syphilis and some		Sattler's operation for	1056	Neurofibroma	417
of its aspects	5	Myositis ossificans progressiva	1543	Neurologic nomenclature	1489
Minnesota, etc., leprosy in	985	Myxedema (vide also thyroid)	1208	Neurological Society, Philadelphia	1075
State Medical Society	70	in childhood, recognition and treatment	1573	Neurology, progress in	1296
Minor, C. L. Hygiene vs. drugs in pulmon-		NAPHTHALIN in eczema	415	Neuromata	40
ary tuberculosis	1048	Nail, to remove body from under	129	reclassification of some organic nervous	11
J. C.	872	Napoleon Bonaparte, physician of	318	diseases on basis of	674
Minutes of general sessions	82	epilepsy of	725	theory tottering	1212
Miss. Valley Medical Ass'n.	258, 433, 549, 741	Narcotics, influence on child	1021	Neurons, sensory	316
	1047, 1064, 1112, 1174	Nasal discharge of liquor cerebrospinalis	1320	Neurotic gangrene of skin	1367
"Missouri" The	1357	diseases leading to headaches	1223	Nevus, electrolysis for	667
Mitchell, E. W. Angina pectoris	1367			"New Interpretation of Operative Princi-	1540
E. W. Some considerations of uremia				ples," the; a pertinent question	792
and its treatment	238			New Jersey, epileptic colony in	118
Henry. Report on progress in State med-				Gloucester County Medical Society	118
icine and hygiene	184			medical law of	118
Mitchell's new novel	1198				
Mitral insufficiency	1190				

	PAGE		PAGE		PAGE
Rutz, G.	1257	Ontario, depopulation of	1059	Paralysis, hysteric	1306
Scalus, W. B.	618	Oophorectomy for nervous disorders	1133	in children, surgical treatment of	1174
Scarboro, H.	742	Operating-table of sail-cloth	1323	infantile	1328
Schafer, Albert F.	808	Operation, secondary	1172	shoulder muscles in infants	1301
Schopen, Emil	1319	not bound to undergo serious	1586	traumatic	1236
Seaman, Frank G.	198	Operations in Persia, American	556	Paraplegia, partial, two cases of	1139
Seaton, Leander	1542	Operative reposition	451	Parasites in game	941
Sevier, C. H.	942	Ophthalmia (vide gonorrhoeal conjunctivitis)		Parasitism, peculiar	620
Sharp, Christopher C.	1257	Ophthalmia, acute epidemic	1431	Paraxanthin	18
Sherwood, John I.	1542	neonatorum, purulent ophthalmia and	1180	Parenchymatous (vide nephritis)	
Shimer, Jacob S.	366	phlyctenular or scrofulous	1303	Parises of extra-ocular muscles	1227
Shirmer, Charles D.	808	protargol in	989	Park R. Etiology of cancer	482
Shohe, Norman	1542	Ophthalmic practice, cocain in	796	Parker, Wm. E. Gunshot wounds	1468
Simmonds, Thomas W.	1490	Ophthalmologic Society (vide Chicago and society)		Parotid, sarcoma of	459
Smth, Alan Penneman	257	Ophthalmology, advances in	1055	Passaic River polluted	551
Smith, Gouverneur Mather	1542	German Congress of	928	Pasteur institutes	1191
Smith, James M.	1819	relation of disease of accessory cavities to	1250	mountment to	40
Smith, L. Chapman	1542	Ophthalmoscope, inexpensive 60-lens	911	Pasteurized cream and "Viscogen"	795
Smth, Lawrence S.	551	Opium eating, relation of to stone in bladder	497	Pasteurization	1294
Snodgrass, Thomas	872	in appendicitis	332	Patella, fracture of (vide fracture), suture of	356
Snow, Abhion P.	1190	in Bright's disease	172	Pathogenesis of epilepsy	1129
Snyder, H. T.	1129	Optic (vide nerve)	1257	Pathologic Laboratory, New York State	1539
Starr, Hezekiah	1128	atrophy	1227	Pathological Society (vide Chicago, Des Moines and Phila.)	
Stearns, John	918	neuritis	1225	of pineal gland	1459
Stefel, E.	742	neuritis and brain tumors	1069	Patient, preparation of	1576
Stein, Robert	1129	Orbital cellulitis	1433	Patriotism in the medical profession	183
Stevens, William S.	1542	Orchidectomy (vide gonangiectomy), or gonangiectomy in hypertrophy of prostate	399	"Pay courses," official	553
Stillman, E. M.	1542	Orchitic extract	679	Peace Jubilee	1132
Stowe, William N.	1542	Ordinance concerning milk	1389	Pearce, F. Experiments in uric acid—urea	1150
Straw, William R.	1128	Oregon State Medical Society	37	Heart and circulation in feeble-minded children	1101
Strong, F. E.	1377	O'Reilly, R. M. ordered to Jamaica	1545	Peavy, J. F. Coloring matters and ferments	1516
Stuart, John G.	997, 1066	Organ therapy	1177, 1245	Pediatric journals	948
Sturtevant, Edward Lewis	866	Orificial irritation and neural disturbances	1140	societies	948
Sullard, A. E.	1577	Orphan asylum, vegetarian	872	Pediatrics, rise, progress and present needs of	947
Swan, S. M.	314	Orthoform	1090	text-books on	947
Swanson, W. E.	1066	for larynx	1306	Pedicel, ligature, non-slipping	314
Swearingen, Richard M.	427	for toothache	1573	Pellagra in Italy	1429
Swisher, W. F.	39	in gynecology	129	Pelvic (vide surgery), and nervous diseases, relations of	1133
Sykes, W. H.	872	in intramuscular injections	1057	cellulitis and peritonitis	1114
Sylvester, A. A.	742	the organism	369	disease, peritonitis following	1571
Taylor, Donald A.	1066	in vasomotor rhinitis	1369	disease, remote symptoms and complications of	576
Taylor, T. Archibald	142	non-toxicity of	1246	inflammatory diseases	578
Thompson, Frank P.	1257	Osmess, A. H. Diphtheria and treatment	1175	kidney, congenital	368
Todd, F. A.	871	Osteoarthropathy, hypertrophic pulmonary	147	operations, diseases following	572
Todd, Francis Walton	551	Osteomalacia	74, 1543	organs, relation of nervous affection to	792
Townsend, Richard	618	in children	1320	suppuration (vide Blume, F.)	1201
Trojana, Giovanni	871	Osteoma of frontal sinuses	620	surgery, do we drain too frequently in	1291
Trowbridge, George	808	Osteopathy	321, 1496	Pelvis, pus in	1177
Turner, Joseph M.	141	and the "Medical Age"	1194	resection for tuberculosis	1177
Tyaon, James Lawrence	1584	assertion, on	618	Penalty of philanthropy remitted, the	258
Vanness, William	618	in Indiana	365	Pence, L. W. Twins with complications	1033
Vau Valzar, F. H.	1490	Osteosarcoma, case of	457, 460, 463	Pennship, typewriting vs.	1430
Voelter, Herman	1377	Otologic Congress (vide Congress)		Pennington, J. R. Fistula in ano	1301
Vogel, Frederick W.	257	Otologists (vide ophthalmologists)		Treatment of intestinal occlusion by internal electricity	1124
Walker, C. I.	808	Ott, Isaac. Glandular extract	918	Pennsylvania, Associated Health Authorities of	22
Wallace, John Borland	551	Ouida's "Toxin"	918	Hospital	1094
Ward, Charles S.	866	"Oxidation"	993	sick soldiers of	488
Ward, Owen J.	484	Ovarian cystoma	44	vaccination laws	869
Warner, S. C.	1542	cystoma operative technique for intra-ligamentous	1292	Pension problem	545
Warren, J. J.	198	cysts in negroes	790	to Durant	258
Wehster, J. T.	1377	cysts, septic infection of	1530	Pepper, Wm. Anecdote concerning	1554
Wegforth, J. A. W.	1542	growths	498	bronze statue to	432
Werner, Henry E.	257	therapeutics	74	esteemed	945
Wheelwright, F. D.	942	Ovaries and marriage	1437	obseques of	432
Whittaker, D. W.	808	descensus and suspension of	514	will of	488
Wiginton, R. M.	1066	prior removal of ground for annulling marriage	676	successor to	483, 944
Wilcox, Joseph O.	742	Ovary, conservative treatment of	1442	Peptones in the organism	1435
Wilkinson, J. M.	618	recurrent sarcoma of the	461	Perforations, search for	53
Willard, A. E.	1377	Ovum, acetanilid as a preventive in premature expulsion of	964	tympenic, trichloroacetic acid in	1423
Wilson, John Hewitt	257	Ox gall in biliary lithiasis	415	Pericarditis, surgical treatment of	990
Wright, Benjamin F.	484	Oxygen to prevent vomiting after chloroform	573	Perimeter, a new	767
Wright, Thomas D.	1542	Oysters and disease germs	1484	Perineal flap operation, Tait's	857
OBESITY, cure for	1321	green, no copper in	1195	Perineorrhaphy, general indications for	784
Objects to new designation	423	Ozema, jequirity in	415	methods of performing	718
Obseques of Dr. Pepper	432	Ozone inhaler	1064, 1379	Perineum, not liable for leaving needle in	372
Obstetric and Gynecologic Society (vide Cincinnati Medical, Washington)		PACHYMEMINGITIS hemorrhagica interna	370, 1115	lacerations of	522
cases, short history of 1800	68	Pacific Coast, army conditions on	1382	rupture of, treatment of	1469
Obstetrics, case in	736	Coast, camps on	1584	Penis, incarceration of	555
Ocean burial	1287	Coast, malarial fevers on	1491	Peristaltic stimuli	181
Ocular affections of utero-ovarian origin	1116	in transports across the	865	Peristalsis and defecation	180
disease, school hygiene with reference to the production of	243	Pain and barometric pressure	1089	Peritoneal adhesions	316
headaches	1219	in bones after extirpation of spleen	316	tuberculosis, surgical treatment of	409
muscles, dynamics of extrinsic	846	Palate and fauces, sarcoma involving the	457	Peritonium, syphilis of	745
muscles, sutures in looping tendons of	853	Palmer, C. D. Proper field of salpingo-oophorectomy	1367	Peritonitis (vide tubercular)	
O'Donovan, Charles. Manganese in treatment of dysmenorrhoea	1558	Pamphlets received (vide Book Notices)		acute general	1472
Odontalgia	1090	Pan-American Medical Congress	1256	diagnosis of chronic diffuse	1361
O'Dwyer's name, to commemorate	1064	Pana's total combined keratectomy	990	diseases in which acute general may arise	57
Officers, Associated Health Authorities of Pennsylvania	26	Pancreas extract	918	etiology and classification of	1371
election of	300	in diabetes	1543	following pelvic disease	1591
movements of (vide medical)		Pancreatitis, acute fatal	1190	general and pelvic	1292
of New Jersey Medical Society	301	Parham, F. W. Resection of thoracic wall for tumors	1530	hysteric vs. true	258
Ohio Hospital for Epileptics, cases at	4	Parker, E. F. Congenital, bilateral, symmetric displacement of lens of eye in three successive generations	708	perforation, discussion on	55
Medical College	484	Wm. E. Gunshot wounds	1468	purulent tubercular, treatment of	412
Medical University	298	Paquin's antitubercle serum in tuberculosis	687	septic, treatment by irrigation	582
show spread smallpox in	552	Paraldehyde	761	stimulating	1432
State Hospital for epileptics	663	Paralysis agitans, treatment of	303	symptoms of	57, 58
volunteers	1070	clinical study of uremic	1216	tubercular	659
Ohlmacher, A. P. Morbid anatomic evidences of lymphatic constitution in idiopathic epilepsy	4	diphtheric	1442	Peritonitis, or quinsy	1050
Oidymycosis	942, 1068	facial, sodium salicylate in	1116	Persia, American medical operations in	556
Ointments, formule for	1534	Park R. Gunshot wounds	1468	Personal	677, 814, 877, 942
Old age, premature, how to avoid it	78	Paralysis agitans, treatment of	303	Pertussis, etiology of	40
Oldberg, Oscar. Regeneration of pharmacy a vital necessity of scientific medicine	828	clinical study of uremic	1216	Pessary, extraction of incarcerated	1246
"Olivette," hospital ship	478, 490, 1357	Omentum, excision of	1237	Phagocytes, importance of role of	369
Omentum, excision of	1237	sarcoma of	459		

PAGE
Pharmacologic assay of heart tonics . . . 958
Pharmacy, International Congress of . . . 1128
 regeneration a necessity of scientific medicine . . . 828
Pharyngeal adenoids . . . 1190
Pharyngotomy, removal of epitheliomatous tonsil by . . . 837
Phelps, A. M. Braces in spial curvatura . . . 1184
Phenic acid, subcutaneous injections of . . . 185
Phenocoll in malarial fever . . . 1368
Phenol-bismuth . . . 896
Philadelphia County Medical Society 1432, 1541
 Notes . . . 43, 97, 148, 201, 260, 321, 373, 432, 489, 624, 677, 813, 877, 944, 1003, 1071, 1132, 1197, 1326, 1441, 1547
 Pathological Society . . . 1256
 Polyclinic . . . 489
 water-supply . . . 552
"Philadelphia Medical Journal"
Philippine Islands, the . . . 1434
Phlebitis, chronic, of saphenous vein . . . 137
of leg in pneumonia . . . 88
Phlegmons, gangreous . . . 356
Phonendoscope as ear trumpet . . . 1138
Phosphaturia . . . 439
 efficacy of urotropin in . . . 244
Phosphorus and morphin poisoning . . . 302
 poisoning in France . . . 738
 poisoning, sanitary precautions against . . . 743
Phototherapeutics of measles . . . 429
Phthisis, nature's cure of (vide consumption and tuberculosis) . . . 265
Physiatrics, or nature's therapy . . . 1553
Physical examination indispensable . . . 1069
Physician's account outlawed, part of . . . 321
Physicians and accoucheurs, to . . . 1431
 appointed . . . 1198
 attending, alone prohibited . . . 1131
 book-keeping of . . . 974
 fined . . . 1070
 in trouble . . . 373
 licensed . . . 487
 no right to discharge . . . 674
 of olden times . . . 317
 strike . . . 1494
 to the poor . . . 487, 876
Physiologic question of practical importance . . . 1315
Physiology and dietetics (vide surgeon).
 of animals and plants . . . 1524
 of respiration . . . 102
 pathogenic, auto-infection and . . . 1514
Pieric acid as first aid in buras . . . 138
 intoxication . . . 660
Picrotoxin . . . 1585
Pierson, William. The umbilical cord . . . 239
Pigment of skin, origin of . . . 1302
Pinckard, Sarcoma of kid . . . 1171
Pineal gland, pathology of . . . 1576
Pischel, Kaspar. Foreign body penetrating the eyeball . . . 1570
Pituitary extract . . . 918
Placenta, adherent, use of curette in . . . 527
 method of removing . . . 69
Plagiarism . . . 138
Plague, again epidemic . . . 481
 bubonic . . . 1254, 1578
 epidemic in Samareand . . . 1591
 in Bombay, bubonic . . . 29
 in central Africa . . . 671
 in Formosa, bubonic . . . 365
 in India . . . 670, 1188
 in Russian Turkestan . . . 1317
 in Vienna . . . 1067
 mode of spreading . . . 1372
 new focus of . . . 482
 precautions . . . 1198
 spreading . . . 672
Plaster cast, easy method of making . . . 186
 of Paris, setting of . . . 622
Plastic operations on tubes . . . 198
 (vide surgery).
Pleura, infection of . . . 211
 the . . . 157
Pleuritic exudation, spirilla in . . . 1069
Pleuro-pneumonia, the microbe of . . . 1117
Plumbers examined as health measure . . . 1192
Plummer, Chas. G. Importance of physiology and dietetics to surgeon . . . 1551
Pneumatic cabinet in phthisis . . . 268
Pneumatoma . . . 375
Pneumectomy . . . 345, 351
Pneumococcus . . . 1178
Pneumogastric, bilateral resection of . . . 1491
Pneumonia . . . 832
 acute . . . 1115
 acute lobar, nitrate of silver in . . . 129
 antitoxin treatment of . . . 863
 caseous, etiology of . . . 620
 contagiousness of . . . 1125
 de Renzi's treatment for . . . 316
 ephemeral . . . 317
 phlebitis of leg in . . . 808
 salicylic acid and salol in . . . 660
 serum . . . 681
 treatment of by cold . . . 70
 value of digitalis in . . . 479
Pneumothorax . . . 202
Poisoning (vide coccin, phosphorus).
 belladonna, simulating puerperal insanity . . . 36
 by castor beans . . . 1327
 by canned goods . . . 868
 microbes . . . 992

PAGE
Poisoning, case of . . . 1442
 obscure sources of . . . 674
 phosphorus, in France . . . 738
 ptomain . . . 43
Police reports . . . 514
Politics in the American Medical Association . . . 364
Polk, R. L. & Co . . . 802
Pollakuria . . . 1099
Pollution of surface waters, restriction of . . . 23
Polycythemia . . . 268
Popliteal artery, penetrating wounds of . . . 334
Polyclinic hospital, method of mild modification . . . 1014
Polyopia, monocular diplopia or . . . 1137
Pons asinorum of therapeutics, the . . . 692
Porro operation vs. total hysterectomy . . . 369
Portal vein, new collateral route for . . . 1116
Portman, Adeline E. Iritis spongiosa . . . 766
Porto Rican campaign, typhoid fever in . . . 569
 Rican campaign, wounded of . . . 918
 Rican pansantry, diet of . . . 1586
Porto Rico from medical standpoint, invasion of . . . 594
Post-coital seminal dribbling . . . 438
Post-Graduate Hospital, in favor of the . . . 258
 medical schools . . . 315
Postpartum (see hemorrhage).
Potash, caustic, in lupus . . . 660
Potassium chloride for burns . . . 1482
 deficiency in livers . . . 206
 iodid, absorbing power of . . . 1056
 in actinomyces . . . 185
Potion for whooping-cough . . . 1521
Pottery evidences of leprosy . . . 311
Pott's disease . . . 71
 early diagnosis and treatment of . . . 301
Powelson, Esigisn . . . 1004
Powers, Geo. H. Convergent squint . . . 1380
Practice of medicine by clergymen . . . 675
 requirements for . . . 942, 1195
 unlawful . . . 1587
Practitioner, general, from a scientific standpoint . . . 300
 the general . . . 792
Pratt, E. H., concerning . . . 618
Precocious gestation, a research on . . . 42
Preordial area in children . . . 1099
Pregnancy, cases of early . . . 42
 early diagnosis of . . . 356
 ectopic, anomalies of duct of Müller as cause . . . 729
 extra-uterine . . . 1422
 following ventrofixation . . . 371
 operations for extra-uterine . . . 1130
 precocious . . . 138, 192, 253
 precocious, from births . . . 424
 recurring tubal . . . 315
 ruptured tubal . . . 1292
 tubal . . . 867, 1366
 tubal, with gall-stones and floating kidney . . . 1302
 uterine and extra-uterine . . . 1381
 vomiting in, electric treatment for . . . 73
 vomiting of . . . 1482
Prescribing, legitimate . . . 799
Prescriptions go wrong, why . . . 42
Prescott Albert B. Therapeutic economies of open composition . . . 891
President inspects Fort Myer hospital . . . 812
President's message . . . 1425
Presumption as to qualification of physician . . . 486
Price, Joseph. Abdominal vs. vaginal section in pelvic surgery . . . 860
 an answer to Dr. Joseph . . . 861
 Joseph. Chairman's address . . . 500
 Joseph. Nursing in abdominal surgery . . . 791
Pride before a fall . . . 369
Prince, A. E. Treatment of chronic suppurative dacryocystitis . . . 836
Priolean, William Hutson. Antitubercule serum (Paquin) in tuberculosis . . . 687
Prison reform . . . 1345
Prize . . . 1323
 Craig Colony . . . 1384
 Zambaco . . . 673
Probate court, the . . . 312
 court, Judge Kohlsaat and . . . 867
Probes, large, in lachrymal stricture . . . 837
 large, in stenosis of lachrymal duct . . . 836
Proceedings, official, further delay in publication of . . . 37
Proclamation of Florida State Board of Health . . . 998
Proctoscopy, a new simplest . . . 443
Prodigious, bacillus (vide W. D. Coley).
Profession and the interviewer . . . 675
 our prospects as a . . . 922
Professional secrecy . . . 1193
Professorship not in nature of an office . . . 318
Professorships, traveling . . . 429
Prognostics by proxy . . . 553
Progress in neurology . . . 1075
Prolapse, etiology of . . . 785
 in operating . . . 74
 of urethra . . . 1321
 operations for . . . 785
Promotions in Marine-Hospital Service . . . 434
Propylaxis of diseases of women . . . 532
 of measles . . . 998
Proposed new designation . . . 364
Protopsis . . . 1572
Prostate and testes, proportion between enlarged . . . 495
 gland, anatomy of . . . 400

PAGE
Prostate, hypertrophied (vide G. W. Johnson).
 recent observations in inflammation of . . . 400
 Prostatic abscess, rupture of . . . 928
 hypertrophy . . . 396
 retention, treatment of . . . 803
Prostatism, suprapubic cystostomy for . . . 990
Prostatitis, chronic . . . 396
 chronic, and its treatment . . . 440
Protargol in ophthalmia . . . 989
Protection by the organs . . . 620
Proteolytic value of malt . . . 1173
Prurigo, dry treatment of . . . 1306
 orthoform in . . . 1090
Pruritus . . . 522
 anal and hemorrhoids, colloidum in the treatment of . . . 129
 success of salophen in curing . . . 303
Pryor, Wm. R. Vaginal ablation in pelvic inflammatory cases . . . 1114
Pseudo-appendicitis, nervous . . . 356
Psychologic question of practical importance . . . 1181
Psychology of crime . . . 1343
Psychosis consecutive to iodoform treatment . . . 316
 Psychoses, electric treatment of . . . 302
 post-operative . . . 798
Pterygium, galvanic current for treatment of . . . 634
Ptomain poisoning . . . 43, 489
Ptomains, toxicologic relations of the . . . 1588
Ptosis cured by grafting . . . 73
 Mottet's operation for . . . 1481
Puberty . . . 1322
 Public health (vide health).
 service . . . 43, 98, 150, 202, 262, 374, 434, 558, 626, 678, 746, 814, 878, 1005, 1073, 1262, 1384, 1548, 1592
Publications, new (vide news).
Pudic nerve resection . . . 1347
"Pugwash Plant" of Indian doctor . . . 1544
Purgative, electrization as a . . . 1574
Puriculture, professional liberty and practical . . . 1002
Puerperal eclampsia, veratrum viride in . . . 795
 fever, gonorrhoea as a factor in . . . 533
 insanity, belladonna poisoning, simulating . . . 36
 (vide sepsis, septicaemia.)
Puerperium, pernicious anemia of . . . 989
Pulmonary gangrene . . . 1056
 invalids, nervous disturbances in . . . 1395
 tuberculosis . . . 430
Pulse, how to take the . . . 1154
 diagnostic and prognostic value of . . . 1153
Puaton, John. Relation of neurasthenia to insanity . . . 1203
Pupil, changes in the . . . 1227
Purdy, C. W. Dietetic treatment of diabetes mellitus . . . 1329, 1416
Pure water for troops . . . 486
Purification of surface water . . . 415
Pus in the pelvis . . . 368
 pockets, dry treatment of . . . 1246
Pyemia, chronic . . . 227
Pyelorectomy for carcinoma . . . 324
Pylorus, carcinoma of, total removal of the stomach for (vide cancer) . . . 538
 malignant obstructions of the, diagnosis and surgical treatment of . . . 323
Pyonephrosis of ectopic kidney . . . 620
Pyorrhoea, alveolar, method of handling . . . 1566
Pyosalpinx, gonorrhoeal . . . 1292
 hematosalpinx and . . . 1541
 operation, double . . . 928
QUACKERY, how to suppress . . . 614
Quadricentennial (vide Michigan).
Qualification of physician, presumption as to . . . 486
 Qualifications and duties of military surgeon, the . . . 503
 Quarantine burned . . . 198
 against rabid dogs . . . 1547
 commissioners . . . 1261
 convention . . . 1315
 convention delegates . . . 1254
 detention camp, Egmont, Fla . . . 1067
 for Federal . . . 814
 in diphtheritic cases . . . 868
 in Egypt . . . 941
 proclamation . . . 998, 1073
 smallpox . . . 261
 station in Philadelphia . . . 677
 station, the New York . . . 366
 Quimby, I. N. Memorial address on . . . 1199
 Quinin . . . 1162
 amblyopia, cases of tobacco and . . . 767
 and urothran injections . . . 302
 in malarial fever . . . 1544
 wash for scalp . . . 1573
Quinsy . . . 1050
RABIETIC bacillus . . . 1245
Race in surgical affections, the influence of age, sex and . . . 491
 question . . . 1442
Rachitic deformities . . . 621
 theory of tetanus . . . 1085
Radiography in dental surgery . . . 316
 of fetal lung . . . 1246
Radiographs of encapsulated trichina . . . 533

	PAGE		PAGE		PAGE
Radiographs in nephrolithiasis.	1573	Resolution of druggists.	1073	Rush vs. Hahnemann monument fund.	424
Radio-linear articulation, luxation of.	673	Milwaukee Medical College.	299	Ruth, C. E. Anatomic points in abdominal and pelvic surgery.	536
Radius, osteo-sarcoma of.	457	National Relief Committee.	486	SACCHARIN, sale and importation of.	365
Railroad Surgeons' Meeting (vide medical societies).		on Behring.	1173, 1176	Sailor dead, a.	1004
Railway casualties in 1897.	942	on death of Donald A. Taylor.	1066	St. Joseph's Hospital.	433
Ramage's intestinal coupler.	1065	on department of health.	1430	St. Louis Eye, Ear, Nose and Throat Hospital.	484
Ramirez, José. Ought we reopen the leper asylums?	985	on national bureau of health.	996	"St. Louis Medical Gazette".	146
Ramsey, Myxedema.	70	on quarantine.	1317	Salaries of prison inspectors.	945
Randell, E. Catheterization of Eustachian tube.	1433	Respiration, artificial, in reference to State medicine.	1335	Saline Infusions (vide normal salt solution).	
Randolph, R. L. Conclusions from clinical and bacteriologic experiments with holocain.	706	precautions in.	1130	Salicylic acid and salol in pneumonia.	660
Rapa by boy between 7 and 14.	1069	physiology of.	162	Salicin in place of quinin.	1163
Ranshoff, Joseph. Case of bladder removal.	1572	Rest; a neglected factor in treatment of gastro-intestinal disorder.	216	Salkowski-Ludlow estimation of uric acid.	957
Ranson, S. W. Care of premature and feeble infants.	71	in chorea.	1274	Salkowski's magnesia mixture.	19
Ravogli, A. Posterior urethritis.	1175	Retina, glaucoma and detachment of.	843	Salol in pneumonia, salicylic acid and Salophen in articular rheumatism.	660
Raynaud's disease, case of.	1400	glioma of.	628	in curing pruritus.	303
Rebreynd's method of circumcision.	1574	home of guiding sensation of.	844	Salpingo-ophorectomy, proper field of.	1367
Recruits, physical examination of.	143	Retinal hemorrhage.	542	Salt as an antiseptic.	415
Rectal diseases in negroes.	499	Retrodplacements of uterus.	508	solution in abdomen, value of.	1114
feeding in ulcer of stomach.	1303	Revaccination in England, the care for.	141	solution, normal.	480
incontinence.	1302	Revenue law, war.	42	solution, use and abuse of.	1471
Recti muscles, advancement of the.	848	Revisita de la Med. y Cir. de la Habana.	1325	Samarcand, plague epidemic in.	1591
Rector mean, what did the.	809	Revising apparently dead.	1369	Sanatoria for convalescents.	1254
Rectum, affections of.	1406	Revocation of certificates.	1588	Sanatorium and sanitarium.	1585
clamp to draw down.	316	Reyburn, Robert. Life history of bacillus tuberculosis in its relations to the treatment by tuberculin.	749	Sanders, W. H. Resolutions before Association.	364
closure of sacral end of, in cancer of.	328	Reynolds, Arthur R. Health work in Michigan.	412	Sanfelice's inoculations in guinea-pigs.	674
ending in the vagina.	479	A. R. Letter to handlers of milk.	414	San Francisco Academy of Medicine.	659, 1113
extirpation of the.	990	Dudley S.	638	County Medical Society, 260, 483, 755, 1053, 1304, 1432, 1570.	940
inspection of.	1112	Dudley S. Association and the colleges.	618	Medico-Chirurgical Society.	260, 373, 676, 745, 1131, 1383
relation of genito-urinary tract to.	1113	Rheumatic origin of chorea.	129	Society of Eye, Ear, Nose and Throat.	1380
Red Cross aid at Sihoney.	995	Rheumatism, acute articular.	1176	Sangre, Ernest.	677
ambulances.	322	and neuralgia, electric light in.	28	Sanguiform.	1534
assistance for U. S., international.	556	articular, salophen in.	914	Sanitarium for consumptives.	432
Association.	36	electuary for gouty.	129	proposed.	1382
headquarters.	488	in children.	1267	the model.	605
Hospital.	316, 1072	muscular.	1000	Sanitary Institute, British.	1360
literature.	143	Rhinitis, chronic, glycerin in.	1017	laws, administration of.	1337
Society.	656, 1197	membranous.	1383	measures against typhoid in camps.	1005
Surgeon-General and the.	626	orthoform in.	1369	order from War Department.	434
tape.	75	Richardson, H. Alloxur bodies and their estimation.	47	organization of State, suggestions for.	23
Reed, Boardman. Dilatation of stomach, with report of cases, treated by diet, massage and intragastric electricity.	220	Ricketts, B. M. Aneurysm of the aortic arch.	356	precautions against phosphorus poisoning.	743
Boardman. Irrational American breakfast.	1508	B. M. Myoma of left broad ligament.	1115	results at Santiago.	868
Boardman. Place of hydrochloric acid in diseases of the stomach.	818	Ridlon, John. Braces in spinal curvature.	737	results from filtration plant.	804
C. A. L. Cholelithiasis.	367	Ries, Emil. Carbide of calcium in treatment of cancer.	1288	results of our conquests and annexations.	664
Charles A. L. The evolution of specialism in medicine.	792, 879	C. E. Results of extended operation for carcinoma uteri.	861	service, obstacles to.	1487
R. Harvey. Post-operative insanity.	447	Riggs, C. E. Raynaud's disease, case of.	1400	surgery.	1067
Reflexes in lesions of the cord, diagnostic value of the.	743	Right to compensation for attending paupers.	811	work twenty-five years ago.	414
Refraction of cataract cases.	1172	Ringer, Sidney. The use of morphia in Bright's disease.	817	workers should be divorced from politics.	482
Refuse disposal in European cities.	926	Ringworm of scalp and sodium chlorid.	1306	Sanitation in Mexico.	1254
Regimental bands as an ambulance corps.	44	Rinsing apparatus for microscopic sections.	1574	of an oriental city.	1318
hospitals in field service.	31	Risley, S. D. The conservative treatment of epiphora and affections of the lachrymal apparatus.	780	of crematories.	671
Regiments, medical supplies recommended to.	432	Robinson, Byron. Colpoparaneorrhaphy and the structures involved.	589, 645, 716, 782, 856, 921, 976	of Havana; Sewerage the prime necessity.	552
Regression vs. progression, etc.	300	John A. A chemical study of fifteen cases of malaria.	982	of match factories.	312
Rehabilitation of severed parts.	1437	John A. The probate court.	312	practical.	804
Reik, H. O. Large probes in lachrymal stricture.	837	W. L. Antistreptococic serum in puerperal septicemia.	1530	report of committee on.	986
"Relief," hospital ship (vide hospital ship) societies, our.	42, 312, 490, 604, 656, 1357, 656	Rodman, Wm. L. Influence of age, sex and race in surgical affections.	491	San Juan Board of Health.	481
Religious orders, instruction for.	1539	Roentgen plant, a colossal.	369	Santiago campaign.	1355
Remedies and dosage, temperament a factor in.	763	ray and hot air, lupus treated with the.	743	condition of.	423
Removal of health officers at pleasure.	370	ray in tuberculosis.	1436	de Cuba, health of.	76
Renal arteries, arteritis of.	430	ray in war surgery.	33	fever at.	540
disease, relation of malaria to.	1181	ray, treatment of lupus with.	1303	healthful.	1255
stone.	855	ray (vide X-rays).		medical work.	133
surgery.	1190	Rogers, John T. Contusions of the abdomen and their surgical treatment.	71	military governor of.	245
surgery, progress of.	1114	T. B. A defense of Dr. Huidekoper.	940	military surgery after battle of.	1164, 1239, 1322
symptoms in typhoid.	1118	Rohé, George H. Rush monument fund.	424	sanitary operations at.	1317
Report of Commissioners on Pharmacy.	946	Rolandus' case of hernia of lung.	213	good sanitary results at.	868
Craig colony.	1001	Roman hospital, discovery of.	1587	the troops in.	669
committee on cause and prevention of infectious disease.	926	Rome (N. Y.) Medical Society.	1380	Saphenectomy; chronic phlebitis of the saphenous veins.	68
executive committee American Public Health Association.	987	Roncali's sarcoma studies.	64	Sarcoma (vide chondro-sarcoma).	492
Illinois State Board of Health.	1195	Read, L. Drakely. Precocious pregnancy.	138	excision of fibula for.	303
medical supervisors.	1261	Roseberry, R. Separation of cranial bones.	939	in omentum, large primary.	315
Royal Tuberculosis Commission.	619	Rosenthal, Edwin. Milk-mixtures as food for infants.	1104	its prevention.	1433
treasurer of American Public Health Association.	984	Rosse, Irving C. Golf from a neurologic viewpoint.	279	of breast.	461
on typhoid fever.	451	Rothwell, Wm. J. The stigmata of nervous syphilis.	1228	of the lid.	1171
on "U. S. Pharmacopœia".	606	Rough Riders at University Hospital.	489	treatment with toxins of erysipelas and bacillus prodigiosus.	389, 456
Reports from Spanish medical service.	132	Round ligaments, shortening per vaginam.	508	Sattler. Advances in ophthalmology of interest to general practitioner.	1055
Reposition, manipulative.	452	Roussel, Albert E.	202	Robert. Proptosis.	1572
operative.	451	Rovsing's study of infections of urinary passages.	316	Sattler's operation for myopia.	1056
Ropulsed by fever.	540	Roye, P. S. Diagnosis of tubercular meningitis in children.	1489	Savage, G. C. Field of binocular fixation, etc.	844
Requisites for a tuberculosis retreat.	804	Ruddiman, A. E. Incompatibles.	916	G. C. Medical college resolution.	735
Restlessness, extreme, in diphtheria.	1039	Rupture, exhibition of to jury.	485	Scaife, H. W. Formative nutrition.	971
Resection of pelvis for tuberculosis of pneumogastric, bilateral.	1491	of perineum, treatment of.	1469	Scallops in sewage waters.	1539
of sympathetic, cure of glaucoma by.	316	Russia, alcoholism in.	941	Scalp, diseases of skin and.	987
Resolution, antivivisection.	84	Russian navy, venereal diseases in.	868	quinin wash for.	1573
concerning leprosy.	986	Rush Medical College.	1585	Scarification in vaccination.	671
on bacteriologic work.	987	monument.	1254	Scarlet fever of swine and kind.	869
on sanitary administration of Cuba.	23	monument fund.	88, 424	fever after laparotomy.	1481
toward forest reservation.	23			fever, sodium sulphocarbonate in.	1096
before American Medical Association.	364			Scheppegrell, W. Practical ozone inhaler.	1379
American Public Health Association.	925, 927, 984, 986, 987			W. Book of.	669
concerning post-graduate schools.	315			Schlenker's autopsy statistics.	265

	PAGE		PAGE		PAGE
School of Medicine for Women	943	Shain scholarship	878	Soldiers, contributions for	1071
of Medicine (vide Kentucky)		Shaffer's army, the return of	421	death among	1326
quarantine in diphtheritic cases	868	Sharp practice	369	flannel underclothing for	364
hygiene in	1254	Sharp, W. H. Concerning criticism of the		government allowance for	1441
Schoolhouse infected	813, 877	medical department	802	ill	677
Schoolroom, Doctor in the	1057	Shaw, Charles S. Medicinal treatment of		in Cuba, official advice for	96
Schools, municipal, medical inspection in	1382	congenital infantile syphilis	1081	in Phila. hospitals	814
Schoff method in heart disease	901	Shelley, J. F. cerebrospinal meningitis; a		knock-out drops given	1197
Schulze, Bernhard S., father of bimanual		correction	82	memorial gateway to	1004
palpation	514	Shepard, Charles H. Children's diseases	1296	nurse, death of	1194
Schwabinger's cure for obesity	1321	Charles H. Diet in disease	1503	pay for	945
Sciatica	1234	Charles H. Memorial address on I. N.		Penn. Hospital and sick	1004
combined electric treatment of	302	Quimby	1199	Pennsylvania, sick	488
Science reveals nature's beauty	342	Sherman, Harry M. Faulty union in a frac-		relief of sick	677, 1326
Sclera, stool in, located by skiagraphy	1305	ture of femur	1063	sick	1072
Scleroderma, generalized	1068	Harry M. Questions in treatment of		to Jefferson Hospital	1132
Sclerosis, artificial	267	congenital dislocations of hip	451	Somatose in syphilis	690
of aorta, sign of	1482	Sherrill, E. S. Accidents in connection with		Some preparations of the National Formu-	
Seefeld, A. H. Retarded delivery	1186	electricity	1433	lary	690
Scoliosis, congenital	1048	Sherwood-Dunn, B. Relation of nervous		Somnambulism, alcoholic	744
Scott, N. Stoa. Precocious pregnancy	192	affections to diseases of the female		Soporific reform	1442
Scriber, W. E. Typhoid treated without		pelvic organs	792	Soudan, defective hospitals in the	1317
medicine	807	Shields, E. H. Pictures of skin affections	1572	Sound, remedial effects of the	9
Scrofula, arsenic iodid in	74	E. H. Hypodermic treatment of syphilis	1531	the endioscopic	73
Scrofulosis and tuberculosis	1007	Lawrence	1546	Sounds a menace to nerves	1143
Scrofum, diphtheria of the	316	Ships, hospital (vide hospital)		"So. African Jour. of Health"	619
Scurvy in children	553	Shoemaker, John V. The chronic relations		Southern Ill. Med. Ass'n	1189, 1380
Sears, M. H. An inquiry into the normal		of remedies in scientific therapeutics	679	Ind. Med. Soc.	365
angle of junction of the neck, with the		Shotwell, A. N. Criticism of a medical direc-		Ky. Med. Ass'n	1255
shaft of the femur	388	tory	802	Medical College Association	1489
Seasickness, treatment of	471	Shutt, F. T. The farm well	926	Surgical and Gynecological Ass'n.	808, 907, 1468, 1529
Season in relation to crime	1344	Sibony, Red Cross aid at	995	Spain and other Latin peoples of Europe,	
Sea water for an artificial serum	147	Sick and wounded	490	despondent outlook for	79
Secretaries of State medical societies, list of	85	Sickness in British Soudan forces	1425	blindness in	186
Secretary, department of health	803	Sigmoid surgery	580	Spanish-American War and risks to insur-	
general, resolution concerning	85, 94	Silver nitrate in acute lobar pneumonia	129	ance companies	1419
permanent, explains	82	soluble	1574	cruelties	199
Section on Practice of Medicine, concerning	45	Simonton, A. C. Bicycling	1253	losses	653
on Laryngology and Otolaryngology	1539	Sinus thrombosis, diagnosis of	1000	War, work of Army Med. Dep't in	1356
"Seeing the case a little sooner," on	472	Sinus, frontal, osteomata of	620	Spartein anesthesia, cocaine and	1533
Seeley & Co., injunction against	149	Sippy, B. W. Gonorrhoea and inter. medicine	1476	Special senses, effect of stimulants and nar-	
Seidel case, the	200	Sisson, Ellet Orrin. Bacteria one of chief		cotics on	1025
Seminal dribbling, post-coital	438	etiologic factors in diseases of ear	704	Specialist in trouble	148
emissions	438	Skeel sign in meningitis	1233	Specialism	300
fluid, iodine reaction with	609	Skeleton, the human	557	evolution of	792, 879
Senile (vide dementia)		Skeptic in Georgia, a	485	Specula of glass and celluloid	73
Senility, digitalin in vasomotor and cardiac		Skiagraphy, location of bullet by	540	Speech defects	485
lesions of	761	located by	1305	Spermatorrhea, stains as evidence of	437
Senn, N.	742, 1190	Skin affections of typhoid fever	76	Spermin	18
N. Invasion of Puerto Rico from a medi-		and scalp, diseases of	987	Spiders, venomous	259
cal standpoint	594	blastomycosis of	199	Spina bifida and double clubfoot	807, 1572
N. Empyema in Camp Geo. H. Thomas	1477	flaps retain their vitality	73	Spinach, roborant properties of	808
N. Etiology and classification of cystitis	1476	mechanic stimulation of	1423	Spinal curvature, braces in	610, 737, 1184
N. Military surgery after battle of Sao-		multiple neurotic gangrene of	316	cord injury with symptoms of syriago-	
tiago	1164, 1239, 1320	transplantation and origin of skin's		myelia	1535
N. Modern treatment of gunshot wounds		pigment	1362	Spine, gunshot injuries of the	430
in military practice	46	Skull, gunshot wounds of the	49	gunshot wounds of	1168
N. Our relief societies	656	to close defects in	1068	hematomyelia from gunshot wounds of	317
N. Qualifications and duties of military		Smallpox	433	reduction of deformed	621
surgeons	503	aerial convection of	425	Spirilla in pleuritic exudation	1069
N. The National cry	654	diagnosis sustained	1347	Spivak, C. D. Rest: a neglected factor in the	
N. The returning army	652	epidemic	1592	treatment of gastro-intestinal disorder	216
N. Typhoid fever in Porto Rican cam-		in Cuba	1466	Spleen extirpation	1177
paigo	599	in summer hotel	943	extirpation, pain in bones after	316
N. Surgery of Camp Wikoff 1295, 1350, 1406		in Ohio	552, 1531	extract	918
N. Surgical diseases of Spanish-Amer-		prevalent in North Carolina	482	primary tuberculosis of the	304
ican War	1419	quarantine	261, 623	Splenectomy	318
N. Wounded of Porto Rican campaign	98	study of in London	869	Splenitis from tight lacing, suppurative	796
N. Method of catgut preparation	384	Smart, Chas. Jugglery of statistics	1063, 1186	Splenomegaly with cirrhosis of the liver	661
to go to the front, Prof.	41	Chas. Medical Department of the Army	546	Sponge, Bernay's, as a hemostatic	28
Senn's War correspondence	34, 79, 198, 361	Chas. Vital Statistics of the war	1252	disinfection of	415
Sense of touch, excitation of	1212	Smith, Henry O. A leaf from an old book	480	Spongiosa, iritis	769
Sepsis, puerperal	370	Louis P. The Medical Department of		Sporozoa of carcinoma	1585
September weather	677	the Army	477	Springer, Frank. A case of Cesarean section	69
Septic infection of ovarian cysts	790	Matthew M. Treatment of tetanus	250	Willard. Short history of 1800 obstetric	
cellulitis, antistreptococic	1530	Fayette. Laryngeal cancer, etc.	185	cases	68
poisoning, no insurance for	148	T. C. What have you to offer that is		Sputum, disinfection of	671
Septicemia, puerperal	853	better?	988	Squint, convergent	1380
puerperal, anti-streptococic serum in	1530	Snake bite	831, 1268	Stab wounds of chest	213
puerperal, cured with injections of sub-		bites, mercury for	862	Stahl, Frank A. Abortive attempts at in-	
limate	186	Soap, mineral	1368	strumental abortion	1560
Septien, Manuel. Compulsory vaccination	984	Social factors of today	1064	Staining ganglion cells	131
Serodiagnosis of tuberculous effusions	356	Societies (vide also medical)	97, 150, 201, 261, 432, 487, 678, 812, 878, 944, 1005, 1070, 1195, 1262, 1326, 1383, 1439	Stains on garments	435, 437
Seroreaction and immunity	316	Society American Physiological	1541	Stammering	1539
Serotherapy in rheumatic iritis	129	d'Antopsie	309	and comma bacillus	1380
Serum and toxin treatment of tuberculosis		for Original Research (vide Cincinnati)		Standard medical works as evidence	486
antistreptococic	752, 1049	Internal Med. (vide Chicago)		Staples, Franklin. Bacteriology in prevent-	
artificial, success of in lead colic	416	Microscopic (vide Washington)		ive medicine	1281
humao, in yellow fever	862	Obstetrical and Gynecological (vide		Starkey, Horace M. Galvanic current for	
in epilepsy, artificial	252	Washington)		treatment of pterygium	634
Marmorek's	1049	of Ophthalmologists and Otolologists	1128, 1541	W. M. Judge Kohlsaat and the probate	
physiologic horse, 800 children treated		of Ophthalmology of Paris	658	court	1122
with	185	of Ophthal. and Otol. (vide Washington)	1128	State and Provincial Boards of Health	37
solid diphtheria	908	Philadelphia Neurological	1489	medicine and hygiene, report on progress	
treatment with, from convalescents	1068	of Physicians and Surgeons	745	in	184
therapy, present status of	829	Sterilized Milk	1441	medicine, artificial respiration in rela-	
Severed parts, rehabilitation of	1437	Surgical	745	tion to	1335
Sewage, anaerobic bacterial purification of	739	Washington Chemical	6541	medicine at present time	1281
disposal at asylum for insane	926	Sodium chloridum, observations on auri et	754	regulation of marriage	1334
of towns, the necessity for legislative re-		Sodium, bicarbonate as dressing	1116	Statistics, international medical	1252
striction of pollution of surface waters		bicarbonate for hicough	1369	jugglery of	1176, 1376
by	23	chlorid in rigo worm of scalp	1306	of American cities, unification of	38
purification of by bacteriologic methods	544	salicylate, delirium from	1381	Infant's Hospital, Boston	1080
the Paris park	482	salicylate in facial paralysis	1116	war, vital	1252
waters, scallops in	1539	sulphocarbonate in scarlet fever	1066	on syphilis	1077
Sewers, the intercepting trap in private	986	Soil, relations of to the spread of disease	482	Statue to Dr. Pepper	432
Sex and race in surgical affections, influence		disturbance and malarial fever	1583	Stenosis, intestinal, consecutive to gangrene	40
of age	491	Solace, the	42	non-cancerous, gastro-enterostomy for	27
determination, temperature on	1544			of the lachrymal duct, probes in	896
in relation to crime	1344			Stenosis duct, transplantation of	916
influence of, on disease	643			Stereochemistry and vitalism	931
Sexual desire, excessive	438			Sterility, surgical treatment of	198
life, statistics in regard to the	1000			Sterilization of foods and drinks	1293
neurasthenia	438				

PAGE

Sterilization of instruments. 1368
 Sterilized Milk Society. 1441
 Sternberg, Geo. M. American National Red Cross. 626
 Geo. M. Circular No. 5. 426
 Geo. M. Circular No. 6. 490
 Geo. M. Dangers of yellow fever. 41
 Geo. M., Surgeon-General, defense of. 362
 Geo. M. Letter to "Medical Record". 319
 Geo. M. Reply to War Commission. 1004
 Geo. M. Work of Army Medical Department. 1356
 Sterne, A. E. A trilogy of diseases. 1176
 Stetsou Laboratory of Hygiene. 955
 Stiles, Geo. M. Ethics as practiced. 481
 Stimulants, influence on child. 1021
 Stimulation before operation. 1068
 Stitch hole infection. 1573
 Stockard, C. C. Human serum in yellow fever. 252
 Stomach, cancer of the. 483
 absorption of medicines in. 1586
 contents, stagnation of. 40
 dilatation of the, treated by diet, massage, etc. 220
 diseases, hydrotherapy in. 1113
 gases, inflammable. 308
 hydrochloric acid in diseases of. 818
 operation for hour-glass contraction of. 27
 surgery of. 146
 syphilitic lesions in. 129
 total removal of. 538
 ulcer of, surgical treatment of. 1303
 treatment of. 1533
 Stone in bladder. 497, 1069
 in the bladder with hypertrophied prostate. 468
 in the kidney. 498
 F. S. Rarity of ovarian cysts in negroes. 1530
 Richard French, Association badge. 84, 94
 Stools in contagious diseases, to disinfect the. 356
 Story of Chickamauga. 650, 665, 854
 Strabismus, treatment of. 416
 Strangulation, internal. 500
 Streams, typhoid fever from. 38
 Streptococcal infection. 833
 Stricture of small intestine. 369
 of urethra. 1411
 urethral, treatment of. 8
 Strophanthidin. 960
 Strophanthin. 960
 Strophanthus. 959
 Struggle for existence between human organs. 1311
 Stubbs, H. J. Abuse of charity. 69
 Stucky, J. A. Peritonitis or quinsy. 1050
 Thos. Hunt, Auto-intoxication of intestinal origin. 1113
 Students and municipal hospital. 1547
 Study of materia medica and therapeutics, the. 688
 Staver, E. Influence of stimulants and narcotics on child. 1021
 E. Food value of alcohol. 1452
 Subclavian aneurysm. 485
 Subconjunctival injections. 1056
 Sublimate, puerperal septicemia cured with injections of. 186
 Substitution, just ordinary. 1365
 Suffering of troops on transports, the. 800
 Sugars, levorotatory, the value of green vegetables and. 130
 Suggestion (vide therapeutics).
 Suggestions regarding the Association. 548
 Suicides in Italy. 866
 Sulphocarbols, the. 914
 Sulphonal. 761
 Sulphuric acid in infections. 1482
 Sulphurous acid and fruit for market. 1429
 Summers, Thomas Osmond. Wet dressings in surgery. 340
 Sunday, closing drugstores on. 872
 Sunstrokes are common. 433
 Superintendent can contract. 1002
 Supplies, medical and hospital. 1356
 Suppuration, prolonged, relation of Indol to. 203
 Suprapubic (vide hernia, celiotomies).
 cystostomy for prostatism. 990
 Suprarenal extract. 680, 1246
 Suprasymplysar implantation. 621
 Surg.-Gen. of Army and Am. National Red Cross. 626
 Surgeon, heroic. 553
 importance of physiology and dietetics to the. 1551
 sued. 1198, 1328
 of Keystone State being discriminated against. 201
 responsibility of the. 1323
 return. 678
 Surgery, anatomic points in abdominal and pelvic. 536
 avan. 321
 dental, radiography in. 316
 encroachment on internal medicine. 56
 gloves in. 622
 insana, gynecologic. 485
 medicolegal. 485
 of Camp Wilkoff (vide Senn).
 of eyelids, plastic. 1533
 of lung. 151, 208, 281, 341
 pelvic, abdominal vs. vaginal section in. 860
 plastic. Emmet methods in. 1469

PAGE

Surgery, plastic, in mastoid process. 1533
 suture in aseptic animal. 381
 war, Roetgen ray in. 33
 wet dressings in. 340
 Surgical affections, influence of age, sex and race in. 491
 cases, early diagnosis in. 1113
 experiences in war in India. 320
 interference in gunshot wounds of abdomen. 52
 scenes in Asia Minor. 1493
 society (vide medical societies). 745
 Suspended animation, a case of. 374
 Sutton, E. M. Ether vapor as a diagnostic agent. 191
 R. Stansbury. 742
 R. Stansbury. A story of Chickamauga. 650
 665, 854
 Suture, an aseptic and cosmetic. 74
 aseptic animal. 381
 material. 259
 of auricle of heart. 1586
 Sutures absorbable in looping tendons of ocular muscles. 853
 Suturing of external incisions. 54
 perforations. 54
 Swedish savant, Bergelin, The. 673
 Swift, Wm. N. Anterior colpotomy with removal of one ovary and both tubes. 569
 Swine and kine, scarlet fever of. 869
 Switzerland, hay fever in. 1254
 Syphilis and divorce. 374
 cause of lachrymal. 1
 cerebral and marital aspects. 5
 chloride of gold and sodium in. 755
 congenital. 1323
 Fournier's classification of. 6
 hereditary. 1077
 Huebner's classification of. 6
 hypodermic treatment of. 1331
 in physician. 620
 medicinal treatment of infantile. 1081
 nervous, stigmata of. 1228
 of peritoneum. 745
 painful dysphagia, evidence of. 472
 paternal hereditary. 1587
 pathological analogy of Bright's disease and. 277
 somatose in. 660
 strap bacterium in. 26
 Syphilitic lesions in stomach. 129
 products, peculiar stainable bodies in. 1490
 Sympathetic, cure of glaucoma by resection of. 316
 Symphysiotomies, eighty-nine. 990
 Symphysis pubis rupture in labor. 1257
 Syuechia, intranasal. 302
 Syringomyelia, symptoms of in cord injury. 1535
 TANES, ankle clonus in. 1306
 inherited. 429
 symptomatology in. 1160
 Tabetic (vide nerve).
 Tachycardia in pulmonary tuberculosis. 302
 Tachypodia or "hot foot". 1544
 Tait's perineal flap operation. 857
 Talbot, Eugene S. 258
 Eugene S. Irregularities of dental arch. 1564
 Talbot's researches concerning circumcision effects. 31
 Talipes, congenital, treatment of. 1163
 Tamponade of, the uterus, aseptic. 1056
 Tanner, Governor. 670
 Tannalbin. 894
 Tannigen. 892
 Tannin albuminate. 892
 Tannoform. 893
 Tannopin. 895
 Tate, Magnus, Transmissibility of morphin. 1366
 Tax, a prohibitive. 484
 Taxing antitoxins. 191
 Taylor, A. Miler. Vaginal hysterectomy. 1304
 Taylor, J. Madison. Heart and circulation in feeble-minded children. 1101
 Wm. H. Dr. Eichberg. 82
 Teaching, improvements in modern methods of. 70
 Teeth, casts for filling. 1581
 Telegraphy without wires. 1194
 Telelectro-therapeutics. 1306
 Temperament a factor in selection of remedies. 763
 primary. 764
 Temperance congress. 800
 order from army headquarters, a. 144
 Temperature, stability of. 1142
 on determination of sex. 1544
 Temple of Esculapius. 1070
 Ten Broeck, W. H. Etiology of cerebrospinal meningitis. 138
 Tendon, sterilization of. 385
 sutures. 384
 Tendons of ocular muscles, looping. 853
 Tenement houses. 1276
 Tennessee Health Officers' Ass'n. 548
 Testes, proportion between prostate and. 316
 Test, Dohme's. 439
 for arsenic. 660
 urine. 862
 paper for iodine in saliva and urine. 930
 Widal. 41
 Tests for standardizing toxins. 872

PAGE

Tests for the hearing. 1056
 Testicle extract. 918
 Testimonial performance. 1072
 Testimony, medical confidences and medical. 309
 Testify as to another's bill, may. 1131
 Tetanica, malarial pernicious. 872
 Tetanic toxin, betain hydrochlorate vs. 1543
 Tetanus. 830, 1191, 1237
 and race predisposition. 496
 antitoxin, Behring's. 312
 antitoxin, treatment of. 554
 bacillus, derivation of the. 317
 case of chronic. 1114
 cerebral. 1060
 cerebral, inoculations in. 1369
 cured with intracerebral injections of antitoxin. 743
 disappearance of. 993
 gastric. 1434
 toxin increases the pressure. 317
 traumatic, recovery from. 430
 treatment of. 250
 Tetany in infancy. 1084
 "Texas clinic". 1070
 State health officer. 481
 yellow fever epidemic in 1897. 105
 Text-books, resolution concerning. 85, 92
 Thalassic submersion in disposal of dead. 1285
 Theaters, medical attendance at. 1125
 Therapeutic digest and formulary. 619
 economics of open composition. 891
 importance of rational adaptation of cathartics to gastro-intestinal system. 961
 Therapeutics, an advance in. 484
 progress in medicine and. 184
 scientific, the chemic relations of remedies in. 679
 suggestive (bypnotic). 1398
 the pons asinorum of. 692
 the study of materia medica and. 688
 Therapy, scientific, and materia medica in cura of disease. 826
 Thomas, F. S. Civilization as factor in insanity. 1403
 Thompson, H. M. Observations in gynecology during four years' service at the Delaware Hospital. 69
 J. A. Nasal headaches. 807
 J. L. Glioma of the retina. 628
 Thoracic duct, cancer of. 96
 operative wounds of the. 199
 Thoracopagus. 938
 Thornton, James. New light-screen. 1379
 Throat illness spread by milk operations, chloroform in (vide nose). 1310
 Thrombosis, sinus. 1080, 1365
 Thrombus of left jugular vein. 109
 Thymin. 18
 Thyms gland in disease. 680
 Thyroid extract. 918
 extract, cases treated with. 1210
 extract in anemia. 1290
 extract in myxedema. 679
 gland a demitoxicant. 1176
 in bleeding fibroids. 809
 medication. 485
 on the use of. 795
 Thyroidectomy, partial. 620
 Tibia, correction of curved. 258
 osteosarcoma of. 457
 substituted by fibula. 743
 Tiffany, Flavel B. Dynamics of extrinsic ocular muscles. 846
 Timberman, Andrew. Mastoiditis; when to operate. 1049
 Tinea tonsuraria. 318, 713
 Tobacco amblyopia, some results in cases of and quinin amblyopia. 767
 effects of. 1394
 Tomato as a cause of cancer, the. 316
 Tomlinson, P. W. The interests, objects and business of our society. 68
 Tone-measure, an objective. 129
 Tonics (vide heart).
 Tonsil, bristle in. 1367
 epitheliomatous, removal of the. 337
 Tonsils an open gate. 315
 suppuration of. 1381
 Tonsillotomy, hemorrhage following. 554
 "To see ourselves as others see us". 365
 Toothache. 1299
 orthoform for. 1573
 Tooth filling, inhalation of. 1434
 Township trustee can not bind county to pay. 485
 Toxicity of camphorated betanaphthol. 415
 Toxicologic relations of ptomaines. 1588
 Toxin, tetanic, betain hydrochlorate vs. 1543
 Toxins (vide diphtheria).
 and antitoxins. 1305
 and antitoxins, nature of antagonism between. 473
 and antitoxin tremor. 1370
 in sarcoma, preparation of. 389
 of erysipelas and bacillus prodigiosus treatment of sarcoma with. 380
 on sarcoma, action of. 463
 tests for standardizing. 872
 Trachea and bronchi, the. 161
 removal of foreign body from. 137
 Tracheloplasty, new method. 565
 Tracheotomy. 1037
 Trachoma, bacteriology of. 706
 iodine treatment of. 660

	PAGE		PAGE		PAGE
Tracy, J. F. A chair of ethics in medical colleges	478	Tuberculosis, specifics in.	749	Urea, normal excretion of.	1121
J. S. Ice-water enteroclysis in typhoid fever	363	spread of.	1591	why estimate for?	1120
Trade pamphlets (vide book notices).		static electricity in.	130	Uremia and its treatment, some considerations of.	238
Training school for nurses.	487	streptococcal infection complicated by urogenital, ichthyol in.	1177	nephrin in.	680
Transactions (vide book notices).		variola and.	868	Uremic focal lesions.	1214
Transfusion in phthisis.	268	(vide also consumption, phthisis).		Urethral anastomosis.	1529
value of.	1577	weighing in.	402	Urethra, bone elimination per female, prolapsus of.	620
Transmission of typhoid fever through the air.	425	Tuberculous effusions, serodiagnosis of.	356	restoration of the.	1321
Transports, across the Pacific in.	865	hip processes.	1177	washing the anterior.	438
Trauma as a cause of appendicitis.	809	insane, management of patients, masks for.	431	Urethral pains.	439
Traumatism from the uterus and rectum.	515	Tubes, automatic kelene.	1430	pencils.	303
Traumatic paralysis and neuritis.	1236	plastic operations on the.	198	stricture, treatment of.	8
Traumatism and infection, association of.	1183	Tufts, A. H. A case in obstetrics.	736	surgery.	416
Traveling professorships.	429	Tuley, H. E. Use of term "typhoid pneumonia" justifiable.	1030	Urethra and quinin.	302
Tree, Manchinea, beware of.	96	Tulley, F. E. Picric acid in burns.	138	Urethritis, apparent anterior.	437
Tremor toxin.	1370	Tulpi's case of hernia of lung.	213	chronic, a contribution to the study of the symptoms of.	435
Trial, important factor in a.	98	Tumor (vide brain).		posterior.	1175
Tribenzoylgallic acid.	897	Tumors, anomalies of bladder from.	621	Urethroscopic symptoms of gonorrhoea.	436
Tribromphenol bismuth.	897	canerous, permanency of cure after ablation of.	74	Urethrotome, Otis' and Maissoneuve's.	10
Trichine, encapsulated, radiographs of.	533	erectile, coagulating injections for.	416	Uric acid (vide also urea).	17
Trichinous pork in Germany.	1188	from 1884 to 1896.	350	acid and hay fever.	474
Trichloroacetic acid in tympanic perforations.	1423	malignant, cachexia of.	27	acid and neuritis.	1030
Trional.	761	of chest.	32	acid in urine, estimation of.	955
Tri-State Medical Association (vide medical societies).		of thoracic skeleton, resection for.	1530	acid, method of estimating.	19
Troops, African.	1255	kidney, adrenal.	403	acid urea, experiments in.	1150
cholera bands for.	310	Turkistan, Russian plague in.	1317	Urinary passages, Rovsing's study of infections of.	316
health of.	1357	Turkish bath in infantile diseases.	1267	tract, colon infection of.	1483
in home camps.	1358	Turnbull, Thomas. Suggestions for legislation in the interests of a more complete system of sanitary organization of the State.	23	Urine, diazo-reaction in.	728
on Pacific coast.	1359	Turck, Fenton B. The diagnosis and treatment of diseases of the duodenum by direct methods.	223	elimination of alloxur bases in the.	18
pure water for.	486	Twinn, S. A. The early diagnosis and treatment of Pott's disease.	301	estimation of uric acid in the.	955
in Santiago.	669	Twin births: precocious pregnancy.	424	from either kidney, instrument for obtaining.	940
suffering of on transports.	800	Twins, large.	1376	in diagnosis of cystitis.	1477
transport of, to Manila.	865	with complications.	1063	in gonorrhoea.	438
Tropics, acclimatization in the.	619	Typoid fever.	832	in yellow fever.	107, 108
Tropen.	941	fever, abscess following.	1353	of healthy children.	872
Trousseau's symptom in tetanus.	1084	fever, a coming report on.	481	lead oxid test for.	862
Troy, E. H. Cholera infantum.	1189	fever and the armies.	1317	methods of detecting sugar in.	167
Tubercle bacilli (vide bacillus).	200, 312	fever at Camp Wikoff.	944	of malarial fevers.	418
Tubercular cavities, incisions and drainage of (vide abscess).	343	fever, dust conveyance of.	541	separately from both kidneys, collecting.	405
infection of pericardium, etc.	928	fever from ice-cream.	1430	specific gravity of.	553
lungs, what is to be expected from the surgical treatment of.	136	fever from infected water-supply.	926	stains.	439
meningitis in children.	1489	fever from ordinary streams.	38	supposed incontinence of.	437
patients, blood of.	1527	fever, glossitis in.	40	to detect acetanilid in the.	964
peritonitis.	659	fever, enteroclysis in.	363	Urogenital organs, lack of sensibility in the female.	317
peritonitis cured by laparotomy.	553	fever in camps.	420, 481, 1308	Urotropin in phosphaturia, the efficacy of.	244
peritonitis, purulent, treatment of.	412	fever in children, auto-infection vs.	1032	Urology of childhood, normal.	1490
Tuberculin.	266	fever in French army.	618	Useful device, a.	660
treatment, Koch's.	685	fever in hospitals, danger of contagion from.	743	Utah State Med. Soc.	1064
treatment of bacillus tuberculosis by.	749	fever in Porto Rican campaign.	599	Uteri (vide carcinoma, cervix, myomata).	
Tuberculosis.	294, 831, 1426, 1460	fever in Porto Rico.	597	adherent retroposed.	1257
affected with.	261	fever, jaundice in.	199	carcinoma, laparo-hysterectomy for.	73
among Indians.	494	fever, notes on.	904	injuries to the cervix.	71
and food.	1378	fever, puncture of colon in.	1116	irreducible inversio.	660
and inebriety.	1461	fever, report on.	241	Uterine (vide curettage, myomata).	
and its treatment by later methods.	177	fever, seventy cases, treatment based on.	1112	atresia, congenital.	525
antitubercle serum (Paquin) in.	687	fever, the skin affections of.	76	contraction, post-partum hemorrhage with.	69
bacillus in its relation to tuberculin.	749	fever, subnormal temperature in.	1035	disease, abuse of mechanic treatment of.	1115
cause of.	1461	fever through the air, transmission of.	425	displacements, experiences in management of.	518
chlorid of gold and sodium in.	755	fever, the treatment of.	666	hyperesthesia.	1404
climate for.	1462	fever, Widal's test in.	1110	Utero-ovarian origin, ocular affections of.	1116
Commission's report.	619	infection, sanitary measures against.	1005	Uterus and anus, congenital absence of.	479
creosote and ichthyol for curability of.	1461	patients, the blood of.	1003	abdominal fixation of.	1543
decreasing.	945	pneumonia a justifiable term?	1030	and vagina, case of double.	792
diet in.	1463	transmission.	1294	a note on the treatment of carcinoma of.	63
drug therapy of.	1463	treated without medicine.	807	aseptic tamponade of the.	1056
euphorbium in surgical.	1482	warning.	1188	cancer of.	493
exercise in.	1463	with renal symptoms.	1118	concerning the so-called apoplexy of.	305
experimental.	1543	Typoidal causation, cholelithiasis of.	371	diabetes and carcinoma of.	660
how to use millions against.	670	Typo-malarial fever.	624	flexion of.	316
hygiene vs. drugs in.	1048	Typus fever, notes on the etiology of.	987	lymphatic apparatus of the.	989
immunity the fundamental principle underlying all treatment of.	747	Typewriter, the.	555	myomatous.	1366
in cattle.	374	Typewriting vs. penmanship.	1430	104 total extirpations of.	968
infantile.	1007	Tyson, James. General practitioner.	792	posterior displacements of.	1175
in man and animal.	483	James. Use of iron and opium in Bright's disease.	172	sarcoma of.	457
in New Hampshire, bovine.	928	ULCER, gastric, hour-glass contraction of the stomach from.	27	treatment of cancer of.	1470
in North Carolina.	1125	of mouth, perforating.	1490	treatment of retrodisplacements of.	508
Internal Congress for Study of its hygiene and dietetics.	604	of stomach, surgery of.	1533	(vide cervix).	527
Maragliano treatment of.	744	of stomach, treatment of.	1303	VACATIONS.	433
measures against.	672	Ulrich, C. F. Water-supply of cities.	1278	Vaccin and vaccination, present status of.	115
modern method in treatment of.	179	C. F. Physiatrics, or nature's therapy.	1553	cholera and typhus.	620
modern treatment of.	682	Umbilic cord.	1246	not liable for use of impure.	1193
number, that.	259	hernia, strangulated.	1246	Vaccination a paramount necessity, compulsory.	984
of bones, joints, serous membranes and glands.	493	cord, rupture of.	1544	avoiding.	377
of kidneys, primary.	943	Umbilicus, actinomycosis of.	1321	compulsory.	1004
of mammary gland.	187	cutting the.	1369	in England, decline of.	1489
of spleen, primary.	304	Unguentum Credé.	1574	laws of Pennsylvania.	869
peritoneal, surgical treatment of.	409	United States, alcohol consumption in.	1035	law, evading.	1072
prevention of.	489	States Army field-hospital system.	372	scarification in.	671
prophylaxis of.	619	States, commercial greatness of the.	200	story, a.	260
pulmonary.	430, 1318	States infantryman, the outfit of an.	44	Vagina, interference by, in pelvic diseases.	861
pulmonary, climatic change and serum therapy in.	907	States Pharmacopoeia, report on.	606	rectum ending in.	479
pulmonary, climatic vs. serum treatment in.	906	University of California, Medical Department.	553	Vaginal abdominal section.	1424
pulmonary, tachycardia in.	302	of Pennsylvania.	149, 877, 1197	ablation in pelvic inflammatory cases.	1114
pulmonum traumatica.	1191	of Pennsylvania, additions.	1072	applicator.	254
pure water in.	1463	Unlawful practice.	1587	disinfection, the value of.	316
resection of pelvis for.	1177	Urea elimination.	1075	extirpation for carcinoma uteri.	1573
re-treat, requisites for.	804			hysterosalpingo-oophorectomy in pelvic suppuration.	789
Roentgen ray in.	1436			operations.	861
sero-therapeutics of.	1306			section, abdominal vs.	860
serum and toxin treatment of.	605			Valade, F. X. Administration of the adulteration Act in Canada.	986
society for "repression" of.	738				

	PAGE		PAGE		PAGE
Valentine, Ferd C. A contribution to the study of the symptoms of chronic urethritis	435	War surgery, Roentgen ray in	33	Wiggin, Frederick Holme	146
Valerianates of creosote and guaiacol, application of	821	vital statistics of	1252, 1315	Frederick Holme. Abuse of medical charity	26
Value of gratuitous medical treatment can not be recovered	370	wounded in this and previous	205	Wilder, Wm. H. Cases of hereditary ectopia lentis	710
Van Hook, Weller. Hernia operation	1303	Warren, Hobart E.	1003	Wm. H. Ocular headaches	1219
Van Noorden on diabetes	1090	Washington Asylum Hospital	558	Wilkinson, A. D. Compound intra-uterine fracture of the femur, with report of a case	536
Varices, treatment of	1116	(D.C.) Medical Society Association. 946, 1319	1189, 1256, 1319, 1541	D. L. Precocious pregnancy; twin births. 424	424
Varicocele	494, 1176, 1299	(D.C.) Medical Society,	946, 1064, 1128,	Will, the	1200
among Indians	495	1071, 1255, 1540	1071, 1131, 1198, 1261, 1327, 1440, 1495, 1546	Williams, Charles H. A new perimeter	767
treatment of	1180	Microscopical Society	1071, 1255, 1540	Gardner S. Purification of surface water. 415	415
Varicose veins	497	notes, 487, 557, 623, 677, 812, 876, 945, 1005,	1071, 1131, 1198, 1261, 1327, 1440, 1495, 1546	Wilmarth, Alfred. Rights of the public in dealing with defective classes	1276
Variola and tuberculosis	868	Obstetrical and Gynecological Society,	988, 1128, 1255, 1432, 1541	Wilson, John T. Fractures involving elbow-joint	1471
ichthyol in	1055	Society of Ophthalmologists and Otologists	1128, 1585	Wina, longevity and	430
Vasectomy statistics	466	Water, bad	43	Wingate, U. O. B. Report of Special Committee on Department of Public Health. Resolution on "epidemic"	88
Vasomotor lesions of senility, digitalin in	761	famine in London	869	Wire, gold, introduction of into aortic aneurysm	336
Vaux, F. Leonard. Indol; its relation to prolonged suppuration and lardaceous change	203	gymnastics	1482	Wistar Institute, president of	878
Vegetables, green, and levorotatory sugars, the value of	130	hot, gastrorrhagia cured with injections of	244	Woman in medicine	1263
Vegetarian orphan asylum, a	872	surface, purification of	415	in medical profession	554
Venom of poisonous snakes and lizards, histologic changes produced by the	358	treatment of children's diarrhea	186	physician, first in Europe	148
Venereal disease in fiction	476	Water-plant village, model	1488	Women, gonorrhoea in	1175
disease in Russian navy	868	Water-supplies for army camps, analysis of	143	physicians, official privileges to	369
diseases, notification of	1119	inspection of	1255	Women's Clinic, Washington	677, 1261
wants	521	polluted, necessity for legislative restriction of pollution of surface waters through sewage, etc.	23	Dispensary	557
Venesection and organ therapy	1177	Water-supply of Northeast London	998	Health Protective Ass'n	878
Ventrofixation, pregnancy following	371	of cities	1278	health society, an efficient	1487
Veratrum viride in puerperal eclampsia	795	of District of Columbia	623	Medical College of Pennsylvania	553
Verdict against telephone company for injuries to nervous system	1072	of Philadelphia	552	Medical College	877
of \$3500	1004	typhoid from infected	926	Patriotic Relief Ass'n	657
Vesical complication, to avoid	185	Watson, Irving A. Bovine tuberculosis in New Hampshire	928	Wood, Casey A. Congenital distichiasis	1171
infection	1532	Watts, C. W. Dietary following laparotomy. 1507	1507	Casey A. Methods in examining eyes for hysteria	1136
Veterinarians not privileged, communications to	1586	Waugh, Wm. F. Modern methods in treatment of tuberculosis	179	Gen. Leonard	245, 620, 1585
Vienna, plague in	1067	Wm. F. Sulphocarbolates	914	H. C. Myopathy	1489
Viko, E. Chronic phlebitis of the saphenous veins; saphenectomy	68	Wax in tubercle bacillus	43	Woodbridge, S. H. Report on car sanitation, treatment	1515
Vinegar, the treatment of carbolic acid poisoning with	304	Waxham, F. E	1003	Woodson, R. S. Smallpox in Cuba	1466
Virginia Medical Society	724	F. E. Climate vs. serum treatment of tuberculosis	906	Work, J. A. Thoughts on the care of infants and children	974
Visceral disease not yielding to medical treatment	55	F. E. Intubations for diphtheritic croup. 1039	1039	Wossilo, H. R. Chronic prostatitis and its treatment	440
"Viscogen," pasteurized cream and "Visible mark," sufficiently	1069	Wax-paraffin dressing	339	Wound infections	1164
Vision, defects in field of	1137	Weather effects, hot	202	Wounded, care of sick and	1358
impairment of	1228	in Philadelphia	53	in this and the previous war, the	200
Vital statistics for June, 1898, New York	426	Weaver, George H. Bacteriologic contamination of vaccin lymph	118	Wounds and disease at the front	250
statistics of war	1315	Weeds, removal of	1327	of heart	1534
force, development of	1525	Weighing in tuberculosis	402	modern bullet	429
Vitalism, stereo-chemistry and	931	Weir-Mitchell rest treatment	217	requiring operation	424
Vitality of severed human flaps	1544	Weismann's microbial origin of epilepsy theory	30	Wright, John. Flannel underclothing for soldiers	364
Vitreous, aluminium for artificial	713	Welch, William H	368	Wry-neck, some causes of	1290
Volunteer Aid Association, Mass regiments, examinations to fill vacancies in	143	Wm. H. Relations of soil to spread of disease	482	Wyman, Surgeon-General, concerning	320
relief work	1359	Wells, Frank. Annual address	413	Wyoming Medical Society	871, 1255
Volunters, mustering out of	541	Wm. H. Experiences in infant feeding. 1012	1012		
Volvulus	500	Wesener, John A. Urine in diagnosis of cystitis	1477	XANTHIN	18
Vomiting in pregnancy, electric treatment for	73	Wescott, C. D. An additional case of double congenital microphthalmos	711	bases, methods of estimation of	18
after chloroform, oxygen to prevent	1573	West, H. A. The differential diagnosis between dengue and yellow fever, with some account of the epidemic of 1897 in Texas	105	X-ray for military posts	1382
of pregnancy	1482	S. L. Eureka hot water vaginal applicator	254	in fractures of long bones	1319
		Westmoreland, W. C. Carcinoma of breast. 1530	1530	in medicine	41
WAINWRIGHT, J. W. Recent therapeutic application of the valerianates of creosote and guaiacol	821	Western Surg. and Gyn. Ass'n	940	in military practice	1165
Wagner and Longard's ether inhaler	1574	Wet dressings in surgery	340	lectures, (vide also Roentgen ray)	1326
Waiver of privilege, a	369	Whery, W. P. The Philippine Islands	148	YELLOW FEVER . 38, 150, 322, 537, 801, 803, 832, 868, 941, 998, 1066	1066
Wall papers, insanitary	388	Whipping as cure for hysteria	1139	fever among the troops	191
Walls, F. X. Diagnosis of chronic diffuse peritonitis	1361	Whitacre, Horace. Chronic tetanus	1114	fever at Havana	1255
Walter, Will. Eustachian inflator and ear and nose douche	368	H. Injury to head	1366	fever, chloroform treatment of	176
Walsh, J. F. Vital statistics of the war	1315	White, J. William	1003	fever, diagnosis between dengue and	105
War commission of investigation	1004	Whitney, H. B. Precordial area in children. 1099	1099	fever, etiology of	927
correspondence	34, 79, 198, 361	Whittaker, H. W. Early diagnosis of diphtheria	1175	fever, human serum in	252
department, sanitary order from	434	James T. On nature's cure of phthisis and an effort to imitate it	265	fever, New Orleans Board of Health and fever pamphlet	1582
horse, wounded, kindness to the	143	Whitehead, W. H. The Pathologic analogy of Bright's disease and syphilis	277	fever, still watching for	433
importance of clothing in	33	Whooping-cough, the bacillus of	316	fever, Surg.-Gen. Sternberg on the danger from	41
investigating committee	1184, 1258, 1326	potion for	1246, 1521	jack and Philadelphia	488
medical statistics of	1359	Widal reaction, results of	1132	journalism rebuked	319
news of the week	190, 249	test	41	Young, H. B. Amblyopia from auto-intoxication	772
of northern India, surgical experiences in	420	test, results of	1110		
revenue law	32	Wiener, Alex. C. Surgical treatment of paralysis in children	1174	ZAMBACO prize, the	673
risk, Spanish-American war and	1419			Zinc chlorid in edema of eyelids	1116
				Zinke, Gustava. Abdominal section	1572

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, JULY 2, 1898.

No. 1.

ORIGINAL ARTICLES.

DISEASES OF THE LACHRYMAL PASSAGES—THEIR CAUSES AND MANAGEMENT.

Read before the Monroe County Medical Society.

BY LEARTUS CONNOR, A.M., M.D.

DETROIT, MICH.

The lachrymal passages are insignificant in size, but their diseases tax to its utmost the resources of surgical art. There are few constitutional conditions with which they may not be associated, while the technique of their diagnosis and operation calls for sound judgment and the finest manipulative skill. Failure to recognize anatomic deformities or the cause of the lachrymal disease renders futile the highest operative technique; while the most profound appreciation of causation or pathology can not cure without such technique.

The study of a million cases, treated in public clinics, shows that diseases of the lachrymal passages form about 2.5 per cent. of all eye cases. In private practice the proportion is larger, as well-to-do people seek surgical relief sooner. My records of 7909 cases show that 493, or about one in eighteen, had some disease of the lachrymal passages.

The causes of diseases of the lachrymal passages are general and local, functional and organic. Notable among general diseases is syphilis. By lesions of the eyelids it may evert the puncta, causing epiphora; by lesions of the conjunctiva directly, or indirectly through the iris, it may evert the puncta or obstruct the canaliculi or extend to the sac and cause a dacryocystitis. More frequently syphilis induces dacryocystitis by attacking the nose, the duct or adjacent bones. This may take the form of periostitis, endostitis or subperiosteal gumma. A mucous patch on the wall of the nose over the site of the mouth of the duct may obstruct the flow of tears. Purulent dacryocystitis indicates, generally, disease of the periosteum or caries of the bone about the duct. The bony wall of the duct may be destroyed by caries or necrosis, the sequestra of the latter calling for removal by operation. Gummy growths occur in the wall of the duct and sac, obliterating the passage very rapidly and leading to suppuration. Hyperplastic processes of the bones themselves have been known to encroach upon and obstruct the lachrymal passages. Gout, rheumatic gout or the state antedating the acute attacks is responsible for many cases of lachrymal diseases attacking the bony, fibrous or mucous tissues here as in other portions of the body. Tubercular and scrofulous disease not infrequently invades some portion of the lachrymal passages, as also do the infectious diseases, scarlet fever, diphtheria, measles, typhoid fever smallpox. All these and other constitutional diseases may approach the lachrymal pas-

ages by first inducing a conjunctivitis or disease of the nose, and so attack the passages from either end or both. But a purely local conjunctivitis or blepharitis may cause obstruction, obliteration or malposition of puncta; narrowing of the lachrymal canals, inflammation of the lachrymal sac or engorgement of the lining membrane of the duct. This obstruction may be temporary as in congestion, or permanent as in stricture; it may be attended with an overflow of tears alone or tears thickened by mucus or pus, or both.

In like manner local disease of the nose may cause engorgement of the mucous membrane of the duct and its surrounding plexus of blood vessels; a thickening of the connective tissue, forming strictures; an ulcer may close the duct; a tumor may occlude it; hypertrophies or atrophies of the nares may obstruct to a greater or less degree the current of tears to the nose. Finally, defects of refraction may cause, directly or indirectly, disease of the lachrymal passages. That these defects do cause conjunctivitis and blepharitis is a fact long since established. It is also established that conjunctivitis and blepharitis may cause diseases of the puncta, canalicula and sac, therefore the possibility of eyestrain causing lachrymal disease must be granted. Besides, careful observation will show that the strained efforts to secure better correction of optical defects does occasionally turn the puncta from its normal position and so cause an overflow of tears or their undue retention within the tear passages and so favors their decomposition and renders them irritating. It disturbs the muscular rhythm by which the tears are forced through the canaliculi, sac and duct. In short, eye strain does in some cases derange the normal current of tears to the nose and incite disease of the lachrymal passages.

It is not true that every case of eye strain induces lachrymal disease, nor is it true that it induces blepharitis and conjunctivitis; it is only affirmed that in some cases it has such an effect. Clinically, for many years, I have observed that all cases of disease of the lachrymal passages had some defect of refraction, the correction of which clearly promoted treatment and in the milder forms was curative alone.

These several causes may induce disease of the lachrymal passages: By occluding the puncta in whole or part or by displacing it from its position against the eyeball in the lachrymal lake; by swelling the mucous membrane; by weakening or otherwise disturbing the action of the orbicularis; by diminishing the elasticity of the sac; by engorgement of the vascular plexus about the duct; by occlusion of the lower end or any portion of the duct; by the formation of strictures; by ulceration of the mucous membrane, or by disease of the bony walls.

All lachrymal obstructions afford the microbic hordes an opportunity to render the tears so irritating as to extend the existing inflammation and intensify its character. As this process continues mucus and

then pus or a mixture of tears, mucus and pus results; the sac becomes distended and finally passes into a phlegmon of the connective tissues about the sac; the pent-up accumulation finally breaks through the skin and discharges upon the cheek. Watching the progress of these events in a patient, we find at first a slight cold, with red and tearful eyes. While the redness and constant epiphora soon disappear, slight irritation by dust or wind causes the tears to again overflow, first at long intervals, then at shorter and shorter ones. A little swelling is observed at the inner angle of the eye, pressure upon which is followed by discharge of mucus and tears into the lachrymal lake or the nose. The intervals between the refilling of the sac gradually diminish until it is almost constantly full. Now, after some undue exposure, a swelling is noticed about the sac, red, tender, growing with much rapidity, very painful, often mistaken for erysipelas and finally after great suffering the phlegmon breaks and discharges its mucopurulent contents upon the cheek. Unless the natural openings of the sac become free with the reduction of the swelling, the discharges continue upon the cheek causing distressing excoriation, the tears and mucus gather between the eyelids, obstruct vision and finally flow over the lids to the cheek, keeping the eye red and the subjacent skin inflamed. If by some accident an abrasion of the corneal epithelium occurs the malignant germs enter and take possession, causing corneal ulcers, abscesses or even iritis. Neglect of these, equal to that of the lachrymal passages, is followed by great crippling of vision if not entire loss.

It will aid an intelligent management of these cases to bear in mind a few points relative to the structure and functions of the lachrymal passages. They begin with the puncta of the upper and lower lids, continue inward to the sac, thence through the duct to the nose. The puncta are hardly larger than the point of a pin and held firmly against the eyeball, within the lachrymal lake. The canaliculi starting from the puncta pass perpendicularly to the edge of the lid for a little, then turn and pass horizontally inward to the sac, which they generally enter by a common canal. They are lined with pavement epithelium on basement membrane, surrounded by connective tissue and muscular fibers, offshoots from the orbicularis. The sac is lined with columnar epithelium, as is the duct, resting on basement membrane, and this upon an elastic wall, all filling the lachrymal fossa and partially covered by the internal ligament, which alternately compresses and relaxes the sac. The mucous membrane of the duct is like that of the sac, but surrounded by a rich plexus of blood vessels and the whole encased within bony walls and opening into the floor of the nose, behind the lower turbinated bone. Its membrane is thrown into folds at its mouth and at junction with the sac, which may easily be injured by careless probing. The canaliculi are narrowed at the junction of the horizontal portion with the sac and the perpendicular. As the tears emerge from the conjunctival and lachrymal glands they are swept along the eyeball by the closure of the lids toward the lachrymal lake, being set back from the inner commissure by the caruncle. The contractions of the orbicularis now force the secretion through the canaliculi into the sac; the latter by suction caused by its elastic rebound from previous compression aids in the movement. As the eyelids open the sac is compressed by the internal ligament and the tears pressed into the

duct, whence they pass to the floor of the nose. Doubtless this is aided by the weight of the fluid, by capillary attraction and possibly by syphonage. In any given case the problem presented is to secure a permeable lachrymal passage with smooth lining membrane, puncta pressed against the eyeball in the lachrymal lake and normal muscular action and elasticity of the sac. The forces propelling the tears through the lachrymal passages are muscular action and sac elasticity. In the management of a case of lachrymal obstruction:

1. All eye strain should be removed, from either refractive error or loss of muscular equilibrium.

2. In all stages of every case much aid can be secured by the systematic local application of hot water; because of its convenience a tumbler is employed. Filled with hot water it is so placed that the entire eye is immersed within its contents. Varying with the effects called for, this application may be made for from ten to fifteen minutes every hour, or less frequently. The water must be as hot as the skin can bear without scalding. Thus used, hot water contracts the vessels with flabby walls, securing a more rapid current of blood therein, allays irritation, is a powerful aseptic and antiseptic and promotes repair of the diseased tissues, even within the sac and duct. To the water may be added any aseptic drug, as boric acid, and the conjunctiva washed therein by winking the eyelid.

3. In the earlier stages of lachrymal disease, the regular and systematic helping nature to empty the sac, using an aseptic solution to refill it, is attended with excellent results. It promotes a more nearly normal current of fluid through the passages, aids in restoring the lost elasticity of the sac, improves the tone of the orbicularis, reduces the engorgement of the mucous membrane and cleanses it of debris. Gould suggests the following method: The patient is placed in a reclining position, with the head thrown back and toward the side opposite the eye to be treated, in such a manner as to form a basin in the corner of the affected eye. This basin is filled with a solution of boric acid or other aseptic solution, and the forefinger alternately presses and relaxes the sac, practically pumping the fluid in the basin through the lachrymal passages. This should be done three or more times daily, for from five to ten minutes, according to the indications in each case. This is expected only to reach functional and inflammatory derangements, though if practicable it will benefit organic lesions.

4. For purposes of diagnosis and treatment, syringes with tips small enough to readily enter the puncta, are of value. There are many forms of these, but Anel's is most commonly employed. When the canaliculus is so opened as to admit of passing a fair-sized probe through the duct, de Wecker's canula probes may be used. Being introduced as is the probe, the style is withdrawn and a syringe attached to the upper end and the fluid passed through the passages. A syphon or fountain syringe may be attached and medicated or hot water forced through the passages to any desired amount, an advantage over the small syringes that compel removal with the discharge of the contents of one barrel, and a reintroduction, which is more or less painful.

5. In all cases the puncta should be examined with minutest care. If an eyelash be found within, it is readily removed with forceps; if a concretion or other foreign body be engaged in the perpendicular portion

of the canaliculus, it is removed by dilating and manipulation, or this failing, by slitting the puncta. If the puncta be permanently everted, the perpendicular portion of the canaliculus must be divided on the inside. A fine pointed scissors readily does this little operation. Should this fail a bit of conjunctiva is removed from the base of the vertical cut, and if this fails the canaliculus must be divided. The end sought by these operations is to secure apposition of the outer end of the canaliculus to the eyeball, within the lachrymal lake. If the puncta is partially occluded it must be dilated; if it is closed it must be opened, best by the canaliculus knife when the edge of the lid is placed upon tension by being pulled outward.

6. If there be reason to suspect stricture of the canaliculus, its location is decided by passing a lachrymal probe through the canaliculus to the sac. A small probe, No. 2 Williams' or Bowman's, is taken in the right hand between the thumb and finger and the patient's head steadied against the operator's chest. The forefinger of the left hand draws the edge of the lower lid outward and downward so as to make the canaliculus straight and tense. The point of the probe is inserted vertically in the puncta and when fairly entered, turned horizontally in the line with the canaliculus. With gentle, firm movement it is moved along till it meets the hard resistance of the inner wall of the sac. If there be resistance, as shown by wrinkling of the skin about the canaliculus the probe is withdrawn a little and then moved forward in a slightly different direction, a maneuver which may need repeating many times before a tight stricture be safely passed. Care must be exercised not to push the probe through the canal wall at the side, rather than through the stricture. In this manner, by using one probe after another, the stricture may be definitely located and dilated.

If after the sac is entered it be desired to explore the duct, the handle of the probe is raised while its point is kept against the inner wall of the sac, until it has reached a vertical position, the direction of the probe being toward the wrinkle at the ala nasi, when it is moved gently but firmly downward till the floor of the nose is reached. The same care must be exercised in passing obstructions as in the canaliculus. Here also we may use probes of varied sizes and shapes, as the case may call for, in diagnosis or treatment. In no operation is gentleness and constant care more necessary than in the probing of the lachrymal passages. One must have such self-control as to wait, if failure attends the first effort, until swelling has been reduced or the exact twist of the passage ascertained. It is easy to make false passages at the entrance to the sac, at the opening of the duct, and farther down to denude the bone. It is easy to break through the lachrymal bone at the floor of the orbit and otherwise do such damage as shall make the further management of the case extremely difficult and disappointing.

Many strictures may be managed by dilatation with probes of various sizes, in addition to the treatment already described, but most of those coming to the surgeon are of such long standing as to require a division of a portion or all of one or both canaliculi. This operation is done as follows: A probe-pointed little knife as Weber's or Agnew's is taken in the hand as was the probe, the patient and operator occupying the same positions. The lid is placed upon stretch in the same manner and made to enter the

puncta as was the probe. The edge of the knife is turned slightly inward so that the incision shall lie in contact with the eyeball in the lachrymal lake, and then pushed inward, as was the probe, to the hard inner wall of the sac. The knife is now lifted to a position more or less near the vertical position, and as is called for by the amount of the canaliculus, desired to be divided, it is then drawn outward cutting through the thin wall of the passage. If it is desired to divide the stricture at the neck of the sac or within the duct, the knife is raised to a vertical position, as was the probe, and guided into the duct and pushed through the stricture. If freer division is called for the blade is withdrawn a little, turned partially about and again moved through the obstruction.

The probes employed for dilating lachrymal strictures are numerous. The first were introduced by Bowman, and they still retain their hold upon the profession; for general uses they have never been excelled. They range in size from 1 to 8, are made of silver sufficiently stiff to retain any given form, and malleable enough to admit of being molded into the form of the canal under treatment. Williams introduced bulb-pointed, flexible-shank probes, adapted to feeling their way about obstructions whose exact location is undetermined, with pleasing facility. Their sizes have the same range as those of Bowman. Other probes, as those of Theobald, are of sizes reaching to that of the bony canal, or as Weber's conical, the end of the cone being at the point, so that many sized probes are united in one. While I have used every variety, the ones best suited to ordinary cases are the Bowman and Williams probes.

To keep open dilated strictures, styles are used. They are left in place constantly, except at the time of cleansing or altering the size. They are introduced as probes and of such length that the tip may be at the floor of the nares and the head just outside the sac, with such enlargement as admits of easy grasping for removal. Silver and lead are favorite materials, as these metals are little acted upon by the secretions. It has seemed to me that their use was much like the treatment of urethral stricture by the constant wearing of sounds. In place of these styles, if unable to keep the patient under observation, I teach him or some of his family to pass the probe.

Cases of mucocoele or dacryo-cystitis are treated by opening the lachrymal passages by operation, keeping them dilated by probes, promoting their nutritive activities by means already described, and treating the constitutional diseases with which they are associated. If it be impossible, in case of lachrymal phlegmon, to enter the sac through the canaliculi, it is best to open it between them. Even cases of lachrymal fistula recover by means already described. It is granted that cases of excessive destruction of the mucous membrane lining the canals furnish little hope of securing a permeable smooth passage, with an elastic sac. Yet one is often agreeably surprised by the excellent results of most unpromising cases.

If permanent occlusion of the duct occurs, from unremovable conditions, and the suffering of the patient demands, the sac may be destroyed, or the lachrymal gland removed, or both. It has never been my fortune to meet a case calling for such operations. In no case should the constitutional condition of the patient be overlooked. In syphilis specific treatment cures many cases without operations. In cases of

gout or gouty rheumatism, local treatment without constitutional, is unsatisfactory. In cases of infectious disease, the general treatment will not be forgotten.

In general it may be said that if treated in the early stages disorders of the lachrymal apparatus result satisfactorily; if later, the chances of satisfactory results rapidly diminish, and at the last some are failures in spite of the best directed medical and surgical skill. Illustrative of certain types of lachrymal diseases are the following brief abstracts of cases:

N. H. aged 6 years, on recovering from scarlet fever was attacked with inflammation of the left lachrymal sac and surrounding cellular tissue. The tears constantly discharged themselves on the cheek. The pain was intense. The swelling when first seen, was as large as a small egg and exquisitely tender, red and hot. The mother said that the tears began to overflow soon after the onset of the fever and had rapidly grown worse. Under chloroform the sac was opened, through the lower canaliculus and the pus evacuated, the cavity cleansed with a warm solution of boric acid, and poultices applied when the hot water could not be used. The relief to the child was prompt and the treatment soothing. In about four weeks the swelling had entirely disappeared and the lachrymal passages pervious.

General K., aged 68 years, sought relief from an annoying epiphora of the right eye of long standing. Mucus and pus escaped with the tears, causing an inflammation of the cheek, blurred vision, etc. He was an old sufferer from rheumatic gout. Strictures were found at the junction of the canaliculus with the sac, at the entrance of the duct into the sac and at its lower extremity, and much bare bone between. There was considerable bare bone at the inner and upper portion of the external meatus of the right ear, showing that the constitutional disease was not limited to the lachrymal duct. The canaliculi, both upper and lower, were divided to the sac with the strictures therein, and at the same time the strictures of the duct. The passages were kept open with suitable probes, and as aseptic as possible by measures described, and the local and general nutrition promoted by exercise, diet and mineral baths. The recovery was perfect in about eight months, the bare bone having become entirely covered with a smooth membrane.

Mrs. F. P., aged 25 years, had suffered from red weeping eyes many years, rendered much worse by exposure to wind, cold or any irritant. Examination showed half a diopter of hyperopic astigmatism with the rule in each eye. This was corrected, the patient directed to soak her eyes in hot water for ten minutes, each eye three times daily, and to irrigate the lachrymal passages with a saturated solution of boric acid after each soaking. In two months the patient reported complete recovery.

Mr. J. B., aged 35 years, desired relief from a watering and stickiness of the right eye. The lachrymal sac was found moderately dilated, so that pressure upon it caused a flow of its contents from the puncta and into the nares. Examination revealed a stricture at the junction of the canaliculi and duct with the sac. These were divided and treated by dilatation, with perfect recovery in four months, the sac having fully regained its elasticity, an essential condition of a good result, because the mechanism of the passage of tears through the passages depends very largely upon that elasticity.

Mr. S., aged 28 years, a molder, was attacked by lachrymal obstruction in the tertiary stage of syphilis. The progress from simple epiphora to mucocoele and dacryocystitis was very rapid. After reducing the acute inflammation, by opening and aseptic cleansing, the strictures at the junction of common canaliculus with the sac and at the opening of the duct were divided. Bare bone was found throughout most of the duct. He was placed upon large and cumulative doses of iodid of potassium, and the passages kept as aseptic as possible and fully dilated by probes. Recovery was complete in about a year, the passages becoming lined with a smooth membrane. At first visit the necrosed turbinated bones were removed.

CONCLUSIONS.

1. Among the predisposing causes of diseases of the lachrymal passages are such defects of structure as flattening of the bony canal or other irregularities, and defects of refraction.

2. Syphilis, gout, phthisis, scrofula, or any of the infectious diseases may cause lachrymal disorder.

3. Among the local causes are conjunctivitis at the upper end of the lachrymal passage, and nasal disease at the other end, the morbid process in either instance spreading to the canal nearest.

4. The management of any case will never overlook the bearings of any constitutional disease; especially does antispasmodic treatment furnish gratifying results.

5. All defects of the refraction should be corrected under a mydriatic and muscular equilibrium assured.

6. Diseases of the conjunctiva and eyelids, as well as all nasal disease, should be removed.

7. The treatment of the lachrymal passages with aseptic solutions through small syringes, or the forced washing by Gould's method, and the systematic external use of hot water, contribute to better results in all forms of these disorders.

8. The puncta should be rendered pervious, and their position against the eyeball assured by local treatment if possible or, this failing, by operation, so that the ends of the canaliculi may be fully within the lachrymal lake.

9. Strictures should be located by probes and either dilated or divided by instruments, the extent of the operations depending upon the nature of each special case.

10. Cases treated early in the disease give uniformly good results; those attended with large destruction of tissue are less hopeful, the epiphora often remaining in spite of treatment, but they are protected against the danger of future attacks of dacryocystitis.

103 Cass Street.

THE MORBID ANATOMIC EVIDENCES OF THE LYMPHATIC CONSTITUTION IN IDIOPATHIC EPILEPSY.

Remarks accompanying a demonstration of specimens before the Chicago Pathological Society at its annual meeting, May 9, 1898.

BY A. P. OHLMACHER, M.D.,

Director of the Pathological Laboratory of the Ohio Hospital for Epileptics.

GALLIPOLIS, OHIO.

This opportunity of demonstrating before the Chicago Pathological Society a series of specimens illustrating some recent studies upon the morbid anatomy of epilepsy is one for which I am grateful, and it is a pleasure to thank my friend, Dr. Hektoen, and his associate, Dr. Le Count, for their kindness in according me the privilege of bringing to your notice a subject in which I am intensely interested, and one which, since it involves the intelligent examination of gross pathologic objects, seems especially adapted for presentation before a society composed of experienced pathologists. Not to overstep the bounds of propriety incident to this particular meeting I shall endeavor to condense as much as possible what seems necessary to say in explanation of the objects submitted to your inspection.

In the course of an investigation into the pathology of epilepsy, carried on since last July at the Ohio Hospital for Epileptics, a series of uniform and hitherto undescribed conditions have been found at autopsy in certain cases of epilepsy, and it is to these particular conditions that your attention is respectfully invited.

It is scarcely necessary to remind you that no constant gross or microscopic lesion has been discovered in epilepsy, especially in what we might style "pure"

epilepsy, or "primary" epilepsy, or idiopathic *grand mal*. This may, in part at least, be due to the fact that attention has too exclusively been concentrated upon the central nervous system to the neglect of the body as a whole, and that too much weight has been laid upon changes in the brain which are doubtless of a secondary character, due to the action of some extrinsic cause. This poverty as regards somatic details will be fully appreciated by anyone who searches the literature of epilepsy with the desire of obtaining postmortem records in which the data has been determined with that exactness and fulness demanded by modern pathologic research.

It was precisely this condition of affairs that led us, on commencing our work, to look with especial care to the gross and microscopic pathology of the cases which came to autopsy, in the hope that the data carefully gathered and reliably recorded would ultimately furnish statistics from which conclusions could be drawn; and that eventually there might be established what has always been lacking as a foundation for the study of epilepsy, and what is fundamental for the rational study of any disease, viz.: a morbid anatomy.

Eighteen cases have been examined postmortem since this work was inaugurated, and in eight of these cases some distinctive features were met, which, from their comparative constancy and singularity were regarded as more than accidental occurrences. These eighteen cases represented various types of epilepsy and the insanities accompanied by epileptoid phenomena. The findings at autopsy naturally varied widely in these cases, as would be expected from their clinical diversity. The details with reference to the first six of them were recorded in the *Bulletin* issued by the hospital last January; and in another publication, to be ready in a short time, the full account of the eighteen cases will be given.

So far as the clinical side is concerned it is important to note that these eight cases include all of the examples of typical idiopathic *grand mal* which have thus far been examined at postmortem. The patients were all young adults, varying in age from 17 to 35 years. All of them, except one, suffered with epilepsy from childhood. Four of them had periodic epileptic mania. One man died from maniacal exhaustion; one committed suicide; two women and one man were found dead in bed after having retired in apparent good health, which is to say (and this should be emphasized), that out of the eight cases there were three instances of sudden death, in at least two of which no lesion to account for the abrupt ending could be found.

The gross pathologic anomalies in these eight cases, which are illustrated by the specimens to be submitted for your examination, may be summarized as follows: A persistent, enlarged, and apparently active thymus body; a pronounced hyperplasia of the intestinal and splenic lymph-follicles; a more or less marked hypertrophy of the lymphatic glands, and of the lymph-adenoid follicles of the the tongue, larynx, trachea, esophagus, tonsils, and even of the stomach; a narrowing of the arteries; an abundant development of fat; an enlargement of the thyroid; and certain osseous changes indicative of old rickets. Not all of these abnormalities were present in a single case, though the persistent thymus, with one or more features added, was constant. With the specimens before you it will not be necessary to enter into

minutiae of description since you will readily recognize the thymic body, the enlarged follicles, narrow arteries, etc.

Taken collectively, these morbid anatomic conditions make a picture of what the German pathologists style the "lymphatic constitution." The evidences of the lymphatic constitution have been noted for a number of years in connection with several diseases, but never, so far as I can determine, have they been described in connection with epilepsy.

There are two morbid conditions, accompanied by a more or less perfect picture of the lymphatic constitution, which seem especially important in relation to what we have found in our epileptics. One of them is laryngismus stridulus, or more exactly, what the Germans style "thymic asthma," which is well known clinically, and which is often responsible for very sudden death in the infants affected. The other condition is sudden death in apparently healthy adults with no assignable lesion, and in whom only the persistent thymus, with other evidences of the lymphatic constitution, is found at autopsy. It is impossible to discuss these extremely interesting morbid states in the time at our disposal, and it must be sufficient simply to emphasize the fact that the morbid anatomy of the lymphatic constitution is peculiar, not only to these conditions, but, apparently also, to at least certain cases of idiopathic epilepsy. Of this morphologic analogy there can be little doubt, and in the report upon four of our cases in the January *Bulletin*, arguments were advanced for defining a clinical as well as anatomic analogy between thymic asthma, thymic sudden death, and epilepsy.

What the significance of the lymphatic constitution is, in its relation to thymic sudden death, is not at all clear, although numerous hypotheses have been called into account; and this is precisely the case in relation to our own work where this peculiar anatomic picture has been shown to occur in certain epileptics. Without resorting to pure speculation the present state of our knowledge in relation to the lymphatic constitution prohibits an explanation, and since speculation has played too exclusive a part in the attempts to account for that mysterious malady, epilepsy, we propose to refrain from indulging in this very tempting pastime.

With this naturally very much condensed introduction, which will, I trust, make them more intelligible, I beg to submit the specimens which illustrate the persistent and hyperplastic thymus; the intestinal and splenic lymphatic hyperplasia; the narrow arteries; the hypertrophied lymphatic glands; and the excessive development of fat; which were obtained from three of the eight epileptics, all of whom presented the typical picture of the lymphatic constitution at autopsy.

CEREBRAL SYPHILIS AND SOME OF ITS MENTAL ASPECTS.

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The complicated manifestations of brain syphilis, when given their proper interpretation, are of the utmost value to the student of scientific medicine.

Nature, working in her own laboratory with its marvelously delicate adjustments and contrivances, is continually performing a series of brain experiments which infinitely surpass those performed by man with his crude and clumsy technique.

The syphilitic neoplasms are of such an ephemeral character, coming and going, here today and there tomorrow; that they frequently give us the opportunity to study in one and the same case all of the kaleidoscopic and complicating phenomena of focal and diffuse, destroying or discharging lesions, present simultaneously or successively. It is just this lack of order, this protean appearance and disappearance, which is characteristic of the phenomena of cerebral syphilis. So we may meet with cases which up to a certain time have shown signs of focal involvement only, and then develop suddenly symptoms of syphilitic melancholia, hallucinatory insanity or dementia; or, on the other hand, we may meet with cases which have shown for a long time only the mental phases of cerebral syphilis, suddenly develop hemiplegia and ataxic aphasia in an apoplectic attack. Again, we meet with cases in which the history and examination show the presence of focal and diffuse, destroying and discharging lesions side by side and complicating each other. The lesions of cerebral syphilis are either osteal, meningeal or cerebral, but only those tissues of mesoblastic origin are involved *per se* by the luetic process.

When the bones of the cranium are affected, we either find a simple sclerotic or gummatous periostitis. There may be a gummatous osteomyelitis and the inflammatory atrophy of Virchow (*caries sicca*). When the dura is involved we have to deal with a pachymeningitis externa or interna combined with a gummatous meningitis. The gummata occupy by preference the processes of the dura. More usually gummata are found in the subarachnoidal space. They are whitish-red, grayish or grayish-red masses. They are diffused or circumscribed, but are never sharply demarcated from the neighboring brain substance, which is usually in a state of white or red softening. They undergo caseation from the center to the periphery, slowly becoming changed into yellowish masses. On the convexity of the brain they cause adherence of the meninges to each other and to the softened brain tissue. At the base adhesions are rarer, and usually instead of gummata we find a gelatinous grayish exudate, similar in extent and appearance to that of a tuberculous meningitis. If the syphilitomatous mass is absorbed there is left a thickened cicatrix. It is rarely or never that we find gummata in the brain substance proper without any anatomic connection with the meninges. We often meet with diffuse encephalitis, more particularly of the cerebral cortex.

One of the most important lesions of cerebral syphilis, one that does most damage to the circulation and nutrition of the brain, is that form of endarteritis first described by Huebner, which involves largely the endothelium of the interna along with an exudate of leucocytes from the vasa nutritia, which together form a new growth, ultimately obliterating the lumen of the vessel affected. Those of the base are usually involved and especially the arteries of the fossa of Sylvius and corpus callosum. Softenings are naturally produced in the areas supplied by these obliterated arteries. This more particularly is found in the nucleus lenticularis and caudatus. The

cranial nerves are also often affected through the shrinking of basilar exudates.

It is claimed by some authors that no definite lesions can be found postmortem in some cases of cerebral syphilis. There may be some truth in this and we think it is especially so of those cases of brain disturbance which sometimes occur in the earlier stages of the disease. The writer recalls two cases of syphilitic coma occurring before and during the first cutaneous manifestations, which can only be explained by assuming the presence of cerebral intoxication, due to intensity of infection. Broadly speaking, we can say that there is a certain relation between the location of the lesions and the resultant symptoms produced by them. So can a gummatous lepto- or pachy-meningitis produce symptoms of cortical irritation, especially of epilepsy, often accompanied by mental disturbance. Occlusion of the larger arteries often produces the characteristic symptoms of syphilitic coma or symptoms due to thrombotic ischemia of cortical or subcortical areas, such as brachial or crural monoplegia, facial palsy, amnesic or ataxic aphasia, etc.

A gummatous basilar meningitis gives us an interesting mixture of cranial nerve palsies, accompanied by hemiplegia. Alternating hemiplegia of the ocular type accompanied by ptosis is very common in basilar syphilis. In fact, ocular palsies are so common in cerebral syphilis that Ricord used to say: "*Un paralysie oculaire c'est en quelque sorte la signature de la vérole sur l'œil d'un malade.*" Many endeavors have been made to properly classify the syndromes characteristic of brain syphilis. Huebner in his classic article, divides them into the following forms: Psychological disturbances with epilepsy, incomplete paralyzes (seldom of the cranial nerves) and a final comatose condition of short duration; genuine apoplectic attacks with succeeding hemiplegia, in connection with peculiar somnolent condition occurring in often repeated periods and generally at the same time paralyzes of the cerebral nerves. Lastly, he distinguishes forms with a course similar to that of parietic dementia.

Fournier distinguishes six different forms: 1, the cephalalgic; 2, the congestive; 3, the epileptic; 4, the aphasic; 5, the mental; 6, the paralytic. These classifications have both performed splendid service in the study of cerebral syphilis; but we believe that cerebral pathology has advanced sufficiently to show the relations between certain definite lesions, their location and extent and the symptoms produced by them. So we adopt the following classification: 1. Syphilis of the base. 2. Syphilis of the vertex. 3. Syphilitic endarteritis, which can be either basilar or vertical in situation. 4. Mixed forms, being both basilar and vertical in location and consisting usually of both specific endarteritis and meningitis. 5. Meningo-encephalitis corticalis syphilitica. There are certain general symptoms common to nearly all varieties of brain syphilis. Headache, especially in the earlier stages, is one of them. It is dull and diffuse and is worse at night in some cases. Sometimes it is referred to the vault, at others to the base of the cranium. This is soon followed by insomnia, doubtless due to the continued pain. Vertigo develops in many cases and may be complicated with nausea and vomiting. These patients are morose and irritable. In cases where a syphilitic endarteritis predominates, the patient is just in the opposite condition. He is

drowsy or even stuporous, going to bed early and staying late; those working at sedentary occupations falling asleep at their work. In some cases this state deepens into a veritable coma (Buzzard's syphilitic coma) where the patient can only be aroused by energetic shaking, answers a few questions in monosyllables and on being left alone sinks again into a deep stupor. In some cases the patient is unable to attend to the most pressing demands of nature, such as micturition, defecation, etc. The countenance of the patient often shows a stupid or expressionless aspect, owing to the obliteration of the characteristic lines of facial expression. In many cases of cerebral syphilis we have found pronounced cardiac and gastro-intestinal irritability and a condition of vasomotor paresis of the cutaneous arterioles. These were especially pronounced in cases where there were signs of cortical involvement.

It is known that gummatous meningitis more frequently involves the base than any other part of the brain. The gelatinous exudate is more frequent about the optic chiasm, the interpeduncular space, pons and oblongata, obscuring and enveloping cranial nerve roots. They become infiltrated with the exudate and often the vessels supplying their nuclei become affected, thus producing a thrombosis and softening of them. The cranial nerve palsies of brain syphilis are numerous, but the optic and ocular nerves are especially involved. It is therefore common to meet with ptosis, unequal pupils, strabismus, etc., as a result of the involvement of the third nerve. Involvement of the optic nerves produces contractions and irregularities of the visual field.

There may be a bi-temporal hemianopsia due to involvement of the chiasm, or a lateral or homonymous hemianopsia may be present. In 100 cases of brain syphilis, Uhthoff found the oculomotor involved 34 times, the abducens 16 times, the patheticus 5 times and the trigeminus 14 times. Pupillary disturbances are found, such as the Argyll-Robertson pupil, loss of both light and convergence reflex and the hemiopic pupillary reaction. Optic neuritis of the acute type is often present. Blindness is present in some cases due to excessive pressure upon the optic tract. Neuralgic pains are met with in the trigeminus area or anesthesia or hyperesthesia may possibly occur.

Loss of smell or hallucinations of smell, and loss of taste or hallucinations of taste, occur from pressure upon the olfactory or gustatory nerves, or irritation of their cortical areas by pressure of the specific exudate, at the base. Facial palsy may result from involvement of the facial nerve. Deafness rarely occurs from affection of the auditorius. The roots of the eighth pair of Willis are involved in some rare cases. In many of the mixed cases there are symptoms of involvement of the arteries of the base, due to a concomitant syphilitic endarteritis, especially of those arteries supplying the basal ganglia, the internal capsule, the motor areas, etc. These symptoms are most usually due to thrombosis. The symptoms are very sudden, the hemiplegias and monoplegias developing slowly without loss of consciousness. Another characteristic of palsies of this kind is their ephemeral character, coming and going as the thrombosis caused by the syphilitic endarteritis increases or diminishes. The hemiplegia of syphilis is usually accompanied by oculomotor palsy of the opposite side. The palsies do not occur simultaneously; when they do the presumption is in favor of a non-specific palsy due to a peduncular

hemorrhage. The presumption is usually in favor of syphilis when one attack of hemiplegia is followed by another of the opposite side.

Amnesic and ataxic aphasia are often a complication in these cases, and may be due to either arterial thrombosis or gummata in the sensory or motor speech areas. The same may be said of ataxia or agraphia. Symptoms pertaining to the pons or medulla are often due to involvement of the basilar and vertebral arteries. In syphilis of the vertex we have symptoms which are the result of cortical irritation and showing themselves as attacks of Jacksonian epilepsy. Focal symptoms due to involvement of sensory areas, are occasionally met with. An helter-skelter collection of symptoms pointing to other local or diffuse, destroying or discharging lesions of the cerebral cortex, is often met with in cases of this type. The epileptic attacks are often followed by a paresis of a leg or arm or one-half of the body. Aphasia both of the sensory or motor types or types of bradyaphasia are of frequent occurrence in syphilis of the convexity. In many cases the epilepsy resembles the idiopathic type and simulates the types of grand and petit mal. Another peculiarity characteristic of syphilitic epilepsy is that it suddenly breaks out after middle life and so, as Fournier says, when a patient past thirty years of age suddenly develops epilepsy, it is ninety-nine chances out of a hundred that it is due to syphilis. *Appliquons-nous à démasquer l'épilepsie syphilitique, à peine sera-t-elle connue qu'elle sera guérie*, says Yvaren, and there is no truer saying in medical science.

This class of patients are often morose or irritable or even pronouncedly melancholic. They are, in my experience, the only syphilitics who become maniacal. In some cases we have to deal with a marked disturbance of ideation, apperception and memory. The patients sometimes seem to have their volition impaired, suffering in a marked degree from abulia. When these cases are untreated or improperly treated, the fits increase in number, consciousness becomes more and more beclouded until the patient becomes comatose, involuntarily evacuating urine and feces, respiration and pulse becoming more and more feeble until finally death ensues. In this form of brain syphilis as in many others, we frequently find polydipsia, polyphagia, mellituria and even hemoglobinuria. These last symptoms point to involvement of the bulb. Nearly all cases of cerebral syphilis are accompanied by morbid mental phenomena. The patient may merely have a morbid fear of syphilis or he may become a chronic hypochondriac and imagine that he is afflicted with a new disease every day. The psychoses of weakness or depression are the characteristic mental symptoms in these maladies. Stuporous dementia or hallucinatory confusion are often found in the earlier stages of cerebral syphilis. In the last mentioned variety hallucinations of hearing and sight are especially prominent, particularly the former. The patient may imagine that he hears his neighbors and the public in general speaking about his disease, saying that he is rotten, that he should be shot, drowned or hung. He imagines that on this account he is worthless, that he should be done away with or that his family are conspiring to do so. In some of my cases auditory hallucinations have been among the most persistent and intractable symptoms. In many cases patients who were formerly very neat and tidy became very slovenly and filthy in their attire and

extremely neglectful of all their personal interests. In some of my cases I have also noticed a peculiar weak and bleating tone of voice.

One of the most characteristic cerebral affections of syphilis is a diffuse disease of the cerebral cortex due to a meningo-encephalitis, the so-called syphilitic dementia. That is to say that most cases are due to this definite pathologic condition. Nevertheless, a basilar gummatous meningitis or luetic endarteritis can undoubtedly produce the same symptoms by constricting or occluding the cortical arteries and so producing a diffuse nutritive famine in the areas supplied by them.

Focal and diffuse symptoms are often inextricably mixed. The patient may have transitory attacks of facial, brachial or crural palsy mixed with motor or sensory aphasia, agraphia, alexia or word blindness, and all of these may come or go in a random way. With these are mingled amnesia, abulia, impairment of association and lack of apperception. Somnolence is often present combined with nocturnal headache, made worse by pressure on the skull. Vertigo too is often present. The patient's capacity for exertion is reduced. He is morose and irritable. His face has a stupid and expressionless aspect. He becomes more and more melancholic and soon develops delusions of suspicion, imagining that every one knows and talks about his disease. In some cases suicidal mania develops. Hallucinations of hearing, taste and smell are pronounced. In the writer's experience delusions of grandeur, such as we find in parietic dementia, are pronouncedly absent in syphilitic dementia. Another characteristic is what Erlenmeyer terms the partiality of the defects. Musicians lose their nicety of touch, bookkeepers their power of calculating and artisans their deftness. Only certain mental functions are harmed and others left intact. One of my patients lost his fluency in a foreign language, and his memory for recent events and his volition were slightly impaired. As in nearly all forms of brain syphilis, the disease progresses by jumps, symptoms appearing and disappearing and mixing with new ones. Pathognomonic of brain syphilis is its course, especially in this form, the disease progressing by jumps. Intermissions occur in which the patient is in a state of comparative health or improvement.

Ocular palsies are frequent in many cases, as well as the Argyll-Robertson pupil, mydriasis, myosis, ptosis, etc. We may have amblyopia, optic neuritis, etc. Apoplectiform and epileptiform attacks are common. The delusions from which the patient suffers are unsystematized and the disease frequently simulates the phenomena of parietic dementia, for which it is often mistaken by incompetent diagnosticians. It can easily be distinguished, however, from paresis by the absence of delusions of grandeur and by the presence of numerous focal symptoms occurring in random order. The following phenomena are peculiar to both focal and diffuse forms of cerebral syphilis: 1, sudden shifting of symptoms; 2, the predominance of cranial nerve palsies; 3, the multiplicity of palsies along with their coming and going; 4, the loss of particular accomplishments; 5, the concomitant appearance of symptoms due to destroying lesions of various cortical areas, *e. g.*, left hemiplegia with aphasia or brachial or crural monoplegias, etc.; 6, the sudden coming or going of apparently fatal symptoms such as coma, followed by perfectly lucid states; 7, the comparatively rapid termination in dementia. In the

treatment of brain syphilis there are only two sheet anchors: mercury and the iodids. The writer uses mercury in the form of an inunction, rubbing in from one-half to one dram daily for a period of about three weeks. I intermit this treatment when salivation appears, which can be greatly retarded by carefully cleansing the teeth every three hours. I no longer torture my patients by giving them the ordinary iodids of potassium or sodium, for I have never yet seen a single patient who could tolerate the enormous doses of these salts which we find necessary to give in cases of nervous syphilis. I find their administration to be followed by great anorexia, headache, malaise, diarrhoea, coryza, cutaneous eruptions, etc.

But the iodids are necessary in some form, owing to their destructive action upon luetic exudates and their stimulating action upon the lymphatic and glandular systems. So, for the last three years I have been using, with most gratifying results, the excellent syrup of hydriodic acid made by Mr. R. W. Gardner of New York.

There is no preparation more widely substituted than this by unscrupulous druggists, but in my experience no other preparation has had the same beneficial results. It agrees well with the stomach and can be given before meals, when it can best be absorbed. It can be continued for a long time without producing symptoms of iodism and yet is just as efficacious as the salts of sodium, potassium, etc. Robust patients I am in the habit of putting upon a spare diet in order to facilitate destructive tissue change. I also have them drink plenty of water and take a hot air or water bath in order to increase the excretory functions of the skin and kidneys. Anemic or weak patients are to have a plain but nutritious diet. The use of inunctions should only be resumed at the end of two or three weeks after the appearance of stomatitis. The syrup of hydriodic acid I give continuously. After a certain length of time I give the patient a tonic course of iron, strychnin, arsenic, quinin, cod-liver oil and hypophosphites and mercauro. Half-way measures are of no avail in the treatment of brain syphilis. Yvaren has well said that our treatment must be as energetic as the disease. The physician should first make sure of his diagnosis, then map out his line of treatment and stick to it with bull-dog pertinacity. Pursued in such a manner as this, no disease can give more gratifying results in its treatment, than brain syphilis.

TREATMENT OF URETHRAL STRICTURE.

BY FREDERICK LEUSMAN, M.D.

CHICAGO, ILL.

It is not here intended to speak of the expedients and methods called for by cases of emergency rendered singular by the rarity of their occurrence as well as their complications. For all practical purposes we have three accepted forms of treatment: Dilatation, electrolysis and urethrotomy.

True, we have an Oberlaender, who with a dilator that bears his name dilates the urethra and controls the effect of this procedure with the endoscope, and we have a Tuttle with a dilator of his own. There is the famous Guyon, who, with a syringe named after him, and an elongated nozzle, injects medicines into areas assumed to be the seat and cause of the disease. More workers with methods and appliances might be mentioned, bound to give some returns in the hands

of a thoughtful, skilled surgeon, ably seconded by an obedient patient. But correctly or incorrectly, while these gentlemen are justly classified as authorities in their chosen lines, their practice finds few imitators in the profession, as a whole, either in hospitals, clinics or private practice.

It is curious to retrospectively view some of the remedies and modes used in days gone by, such as slippery-elm tents, horsehair, hydrostatic dilatation, quadrangular sounds, Holt's divulsor, cauterization with potassa fusa.

Henry Thompson narrates an instance in which a surgeon passed a caustic 486 times during six years, seconded by the daily introduction of a bougie, which was left *in situ* for half an hour. The patient, so it was claimed, continued free from relapse. Another case required twenty-two years for cure. E. Home published a case where a caustic had been applied 1258 times. Honor be due to both surgeon and patient. Thielman¹ recommends the internal use of potassium iodid.

Even in these days many efforts are made to cure organic stricture and its attendant symptom, gleet, with internal remedies, injections, gelatin bougies and other hobgoblins too numerous to name. The patient must swallow sandalwood oil, copaiba balsam and other drugs that furnish but little palliation, and certainly no cure, but irretrievably damage the tender cells of the uriniferous tubes in his kidney, and the no less delicate cells of the mucosa lining his stomach. When at last the stomach or kidneys rebel, injections are ordered for a change. That in the nature of things also failing, a small sound is passed, also with no relief, until the patient tires and goes from doctor to doctor, with some kaleidoscopic changes but no cure. Even the bacteriologist, armed with centrifuge, immersion-lens, culture-tube, rabbits and the authority that a position in the laboratory apparently conveys, is unable to draw valuable or practical conclusions by means of his scientific paraphernalia. The patient leaves the bacteriologist entertained and edified but not cured. W. Bruce Clark² says: "If we would gain a clear knowledge of the best methods of treatment, we must extend our knowledge of pathology from the museum spirit to the human flesh, which is more than ever possible today by the aid of the urethroscope and cystoscope. What up to quite recently has been a matter of supposition and inference is today often visible to personal inspection. Once a stricture, always a stricture, represents the views of twenty years ago. Rectal strictures of a fibrous nature certainly yield to free division, accompanied by persistent dilatation subsequently, and if large bougies are used for a year, at first daily for ten minutes, and after a few months less often, the stricture disappears and shows no tendency to return, a fact which I have been able to verify on several occasions." The idea that strictures can be cauterized away by means of potassa fusa, etc., is happily antiquated. The benefit occasionally received from such treatment must be attributed to removal of tender spots and the incidental dilatation. The man who treats gleet with injections finds his congener in the man who treats nasal catarrh with washes and sprays only.

Before proceeding to local treatment we must appreciate the necessity to arrive at a thorough understanding of all underlying causes so as to be enabled

to direct the hygienic, dietetic, moral and constitutional treatment accordingly. Be on the lookout for complications, and bear in mind the ever-present enemies such as syphilis, tuberculosis, uric acid diathesis, polypi, granulations, in brief, make a wide-gauge diagnosis. Life is too short, opportunities too limited, cases too varied to allow any one man to speak the last word as to what method is the best in a general way. Probably in the nature of things there is no such generally successful and always applicable procedure. The individuality of the patient, as well as his attendant, will reassert itself. Some patients will submit to anything rather than the knife; some medical gentlemen entertain an equally wholesome horror for the keen edge of the blade, while again we meet with the resolute patient who is tired of compromises, and the resolute surgeon with confidence in his art, who will cut the stricture. Besides, other considerations frequently enter, which in practical life sweep away all theories and opinions of even the authorities. The very interpretation of the case, the diagnosis, whether or not certain symptoms result from a stricture or not, will frequently be ushered in only after prolonged labor pains. It has been perhaps justly claimed that all the good that ever came out of any of these means is mostly due to the incidental dilatation. The therapeutic or remedial effects of the passage of the sound may be classified as follows:

"1. The allaying of urethral hyperesthesia.

"2. The restoration of the urethral canal to its normal caliber and the absorption of inflammatory products.

"3. By expressing the contents of the suppurating urethral glands and lacunæ, it exerts a curative influence."³

Almost all modern authors agree on the value of dilatation and the ease of its application. In accordance with their teachings the large majority of surgeons and physicians in their daily practice dilate their patients' strictures, unless the strictures give rise to difficulty in urination, when, other conditions permitting, the surgeon will cut and the physician still get along with filiform bougies, aspiration, continuous dilatation, rest, heat and baths, eventually bringing his patient's stricture to a caliber that will admit metallic sounds. I will pass over Guyon's irrigations, endoscopic applications and examinations, for they come into play only in the absence of stricture, and in the presence of stricture only when stenosis is complicated by granulations, polypus, chronic localized catarrhal conditions and ulcers that will not yield to the use of the knife and sound.

Strictures that are not organized beyond all hope of resorption will frequently be cured by intelligent and patient efforts at sounding. To do that effectually requires in many cases meatotomy. This little operation I have found has difficulties of its own. We must cut enough, but beware of over-cutting and remain in the center, cutting a part and relying on the bougie *à boule* to tell us whether to stop or continue seems the safest way. Hemorrhage out of all proportion to the operation is apt to occur primarily or secondarily for a week or more after. The insertion of horsehair sutures for the approximation of the urethral mucosa to that of the glans has been recommended as a preventive measure of this very annoying complication. There is a general agreement that sounding should not be repeated till all the

¹ Med. Ztg. Russlands, St. Petersburg, 1857. xlv, 51.

² London Lancet, iv, 137-149.

³ Stewart: Diseases of the Urethra.

reaction caused by their use has disappeared. The interval will thus vary from three to five or seven or more days, depending on the character of the case and rapidity of increase in the size of the sound used. The length of time that the sound should be allowed to remain will also vary with this modification, that the oftener sounding seems advisable the less time should they be permitted to remain within the urethra. When sounding is done at less frequent intervals, every two to four weeks or so, ten to fifteen minutes duration has proved in the writer's experience not to be any too long a time. It is axiomatic to always remove the sound when the pain attendant upon its introduction in place of dying away increases in severity. Extreme distention long enough applied, frequently repeated, results in a thinning out of these fibrous bands and finally snaps them to pieces, when they are ultimately absorbed. That this result frequently happens and follows the exertions of a conscientious physician assisted by a faithful patient, there can be no doubt. The clinical result is meant, and not the microscopic-anatomic one that the pathologic anatomist will bring before our vision in instructive serial sections. Surgery even of the mildest kind, such as sounding, causes cicatrices of its own. Surgery can not be done without cicatrix formation; still surgery in modern times furnishes the greatest clinical results. Thus if success attends our efforts at dilatation, if the stricture is gradually melting away, if the symptoms disappear, if recontraction, even after putting intervals of months between the soundings, does not take place, then the physician can claim a cure, and such cures must be frequently obtained if we believe the testimony of the great surgical writers of the day. But if in the presence of a well organized stricture the patient is not willing to put in a year or five years' sounding as an experiment as to whether this mode of treatment will cure or not; if, further, in the judgment of the surgeon the case seems one unsuitable for sounding alone; if time is an object and the most rapid way, most promising in results is sought after; if the patient is willing to be treated for one year only, but not ready to carry his sound in his portmanteau and thus carry on treatment to the time of his grave; if the surgeon is aware that a bladder is better off without life-long instrumentation with its dangers of vesical and renal infection; if, further, the patient has been sounded by a half dozen physicians with no relief from symptoms, then under such and other conditions it becomes our duty to cut; by cutting the ring or rings of fibrous tissue at one point we can now introduce properly-sized sounds, reach extreme dilatation, get absorption and produce a clinical cure. Otis' urethrotome in narrow-caliber cases, preceded by Maisseuneuve's instrument, is the best and last device in the progress of evolution. It is a combination of dilatation, divulsion and cutting. The difficulty of properly cutting a stricture, of dividing the last fibers, will be realized when you test your case ten days later with a bulbous sound of proper size and find a stricture where everything appeared free after cutting ten days before. If stricture in such cases be still present, it must be cut again (Otis); you must follow strictured fibers as relentlessly as infection in carcinoma or tuberculosis.

Sounding after cutting has to be maintained for one year, once or twice a week in the beginning, and in the end the interval is lengthened to once a month.

The patient must be informed before submission to the operation that he has to remain under your care for one year, or else his second condition will be worse than his first. But if he be a man determined to get rid of a filthy, enervating affection, he will gladly submit to one year's treatment. He is then done with sounding and troubles referable to that part of his economy. With aseptic care there is no danger from cutting; no danger at all compared to the dangers incidental to the presence of the stricture. An annoying, but, in my experience, never dangerous feature is hemorrhage. But given a patient who follows instructions and is no hemophile, the writer has usually controlled all bleeding promptly by means of pressure applied externally and rest in bed with elevated pelvis.

Clifford Perry,⁴ at the suggestion of Maisch, has successfully stanchd the hemorrhage following an incision in an alveolar abscess of a bleeder by the internal administration of calcium chlorid. This was given in 1.30 gram doses every four hours, and with magic results. Sounding is begun the third or fourth day after operation, and made painless by means of cocain anesthesia. The urine is rendered non-irritating and the nervous system tranquilized by a solution of potassium citrate and bromid. The addition of secale cornutum lessens the disposition to hemorrhage. Some patients will attend to their business the next day, but it is a good rule to confine them to their bed or couch for a week or two. The average patient is able to be about in from three to seven days.

There is no question of choice between internal urethrotomy and perineal section; the latter operation is the only one suitable in strictures posterior to the anterior layer of the triangular ligament. Perineal sections should be supplemented by anterior internal urethrotomy if necessary. Abner Post remarks: "We may consider strictures as to their effect upon life and as to curability of the local lesion. A very important point in prognosis is the extent to which the kidneys have suffered, a matter by no means easy to determine in every way. Some evidence of their conditions can be gained by careful examination of the urine, noting the quantity secreted and the amount of urea and albumin, even when the amount of pus makes microscopic examination difficult. The condition of the heart ought also to be considered, as it is affected by renal disease of varied origin." E. H. Fenwick has drawn attention to the amount of residual urine in cases of stricture as of value in estimating the damage to the kidneys, by showing the amount of pressure the kidneys have been working against. It may be safely assumed that five ounces of residual urine, which is probably near the average of unreleased narrow strictures, would indicate sufficient damage to cause anxiety as to the effect of any intercurrent inflammation or disease, while an amount over ten ounces would make us cautious in operating for stricture by internal urethrotomy and in giving anything but a grave prognosis of the ultimate effects of the constriction. The behavior of the bladder in its progress in regaining the power to completely empty itself will teach us much as regards the future course of the case. It is a great advantage to perform this operation under the influence of a general anesthetic, for a number of reasons, not the least of which being the opportunity it affords of investigating the rectum and to do such rectal surgery at the same time as the exigencies of the case demand.

⁴ The Journal of the Amer. Med. Association, March 13, 1897.

The treatment of electrolysis is carried out mainly by physicians of non-surgical tendencies. That it has done good in the hands of such men as Newman of New York, we can have no doubt. Failure to obtain results should be charged up, not so much to the method as to the operator. This statement applies with equal force to the cutting operation and dilatation without previous urethrotomy. We must remember that others may accomplish what we do not, and when we compare methods, we usually are experienced only in one or the other way: for the balance, we are compelled to be satisfied with reasoning *a priori*. Keyes⁵ says: "I believe that a strong current is full of danger, both immediately from irritating effect and ultimately from cicatricial effect, and that employment of the negative pole does not prevent this. My study of the subject and the experience it has brought me, digested with all the impartiality I possess, led me to state that the allegation that electricity, however employed, is able to remove organic urethral stricture radically lacks the requirement of demonstration. The confidence of its advocates that it will radically cure organic fibrous stricture is, in my opinion, due to the combined credulity of the patient and imagination of the surgeon, or to some special but fortuitous act of Providence upon the co-operation of which, in the case of his own patients, the general practitioner can not with any confidence rely."

CONCLUSIONS.

1. Dilatation is the best treatment in strictures if it cures.
 2. Electrolysis is a modified dilatation; it is a good treatment unless contra-indicated.
 3. Cutting is the cure in non-dilatable cases, and in all strictures at or near the meatus.
- 100 State Street.

THE RECLASSIFICATION OF SOME ORGANIC NERVOUS DISEASES ON THE BASIS OF THE NEURON.*

[ABSTRACT.]

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CHARLES K. MILLS, M.D.

A few neurologic writers have already spoken of organic neuron diseases, and many views and theories, as well as a considerable terminology springing from the doctrine of the neuron have rapidly been developed.

The most important point of the present communication is to direct attention to the fact that the time has arrived for applying the theory of the neuron, or the nerve cell regarded as an anatomic unit in the classification of some of the most important organic nervous diseases, and especially many of those which have been hitherto placed under such heads as system diseases and primary degenerations.

In a general way, the diseases to which I shall chiefly refer may be classified under the three heads of *toxemias*, *inflammations* and *primary degenerations*, but more especially the last. In a fundamental sense they might probably all be classed as toxemias, since the chronic scleroses and degenerations, as well as various recognized forms of peripheral and central inflammation are primarily due to a toxic cause, using here the word toxic in its broadest sense.

Accepting the classes of toxemias, inflammations and degenerations, many of these would be better grouped as neuronal or neuron diseases, rather than as diseases of the brain, spinal cord or of the peripheral nerves, as they have usually been designated.

Not only do toxic agents resulting in inflammations and degenerations tend to attack special systems of neurons; but not infrequently a selective tendency is exhibited as regards the sensory, the motor, the intercalary, or the association systems of neurons; and more than this, special portions of the motor, of the sensory, or of the intermediate chain of neurons are liable to be attacked in particular instances, while other portions of this particular system escape. The facts at our command are chiefly with regard to the sensory and motor projection systems, but the evidence is accumulating that in particular cases commissural, associating and storage systems may also be liable to elected system diseases.

The term "system disease" is one which has long been in use in neurology. Commonly it has been applied to those diseases of the neuraxis, and especially of the spinal cord, which attack, or are supposed to attack, exclusively certain tracts or regions of nerve fibers or nerve cells having common anatomic relations and physiologic properties. It is, however, more scientific and more helpful practically, to consider system diseases from the basis of the neuron, than to regard them as diseases of the cord or of the brain.

One point to be strongly emphasized incidentally is that the toxic agents tend primarily to attack systems of neurons as a whole, and not this or that particular part, as the cell corpus, the axon, the collaterals or terminals. It is true, however, that the destructive influence of the poisoning agent may be first exhibited, so far as can be learned by the means of investigation at our command, in one or in another portion of the nerve cell.

Dr. Spiller and the writer have recently made a study of acute ascending paralysis (Landry's paralysis), in the case of a patient who died in the wards of the Philadelphia Hospital¹. A careful postmortem examination was made, this including not only an examination of the organs in general, and of the central nervous system, but also that of some of the motor and sensory nerves. The conclusions reached in this study are of interest in connection with the views here presented. Both the peripheral nerves and the cell bodies were the seat of extensive degeneration.

It has been held by some that in multiple neuritis it is presumable that the poison acts on the entire sensory neuron at the same time, which accords with the views of the writer that in most neuron diseases of toxic origin the poison tends to attack the neurons elected as a whole.

The disease which has so long been known by such names as locomotor ataxia, tabes, tabes dorsalis and posterior spinal sclerosis needs, from the standpoint of the neuron, to be presented in a new pathologic light, but I can not review here the recent literature of this sub-

¹ Mill, C. K., and Spiller, W. G.: See *Jour. of Nerv. and Ment. Dis.*, vol. xxv, No. 6, June, 1898. The paper giving the results of this investigation was read at the meeting of the Am. Neurolog. Assoc., held in New York, May 25, 27, 28, 1898.

⁵ New York Med. Jour., Oct. 6, 1888.

*The substance of this paper was read before the William Pepper Medical Society of the University of Pennsylvania, March 11, 1898; and before the Baltimore Neurological Society, April 20, 1898; and was presented to the Section on Neurology and Medical Jurisprudence of the American Medical Association in June, 1898, as above indicated. Just before sending the paper to the last named meeting I received a copy of a work by J. M. Gerest, entitled "Les Affections Nerveuses Systematiques et la Théorie des Neurones," 1898. The author of this work takes in many respects the same points of view as the writer.

ject; indeed, this is not the purpose of the present contribution, which is rather to present broad suggestions regarding neuron classification. Using terms as we now commonly employ them, tabes, like other diseases to which attention will presently be directed, is neither purely spinal nor purely neural, neither purely central nor purely peripheral; but it is an affection primarily of sensory neurons or nerve cells, and Langdon², with others, has very properly suggested to regard it as a "sensory neuron degeneration." "As a result of predisposition, hereditary or acquired, and the action of a toxin or toxins (left by a preceding syphilis, usually though not invariably), the nutrition of the nervous system as a whole is lowered. In certain groups of sensory neurons (muscle sense, iris reflex, optic nerve), the impairment is greater or the resistance of the tissue is less, and in these groups degenerative changes occur."

Tic douloureux and some of the forms of primary degeneration which single out the olfactory, optic, cochlear, vestibular and glossopharyngeal nerves should, in the opinion of the writer, be classified with tabes as sensory neuron degenerations.

Let us now, in the development of the same line of thought, turn our attention to some of the well known forms of "sclerosis" and "degeneration."

Most authors still content themselves with describing the pathology of ataxic paraplegia as sclerosis attacking the lateral columns and part of the posterior columns, the posterior root zones usually escaping disease. The lesions in the so-called spinal form of hereditary ataxia differ from those of acquired ataxic paraplegia in that the lesions are more extensive and involve the posterior root zone in all regions of the cord, and the whole of the posterior columns except the small region to the inner side of the neck of the posterior cornu, the direct cerebellar tract being also involved. It would be better to class these diseases as instances of mixed neuron system degeneration. We have in them degeneration beginning both in the sensory neuron systems and in the motor neuron systems, and in the case of hereditary ataxia involving additional special systems.

In amyotrophic lateral sclerosis the parts early invaded are the terminals and collaterals of the cortical motor neuron, and later the ganglion cells of the ventral horns. Both the direct and crossed pyramidal tracts and some of the systems of short fibers in the lateral columns, as well as the cells of the ventral horns, have been found degenerated in careful postmortem examinations. Somewhat frequently in this disease the nuclei of the cranial nerves and the pyramidal tracts in the oblongata and pons are implicated in the degeneration, and in rarer cases this has been traced upward to the peduncles, and even to the motor cortex. In extremely rare cases even the cells of the motor cortex have been found to take part in the disease. It is not improbable that implication of the entire extent of the cortical motor neuron will be more frequently found when the present methods, advanced as they are, are improved and investigations are more complete. The disease is in reality one attacking two systems of neurons, and at least one of the names used as descriptive of it should indicate this fact.

Those forms of progressive muscular atrophy, either acquired or embryonal which presumably have their origin in the nerve cell, should be classified under the head of motor neuronal degeneration, and then sub-

classified according to their position and extent. Bulbar paralysis should also be classified under motor neuronal degenerations, and subclassified according to the special cranial nerve system involved. More or less generalized cranial motor neuronal degenerations would include the different types of bulbar paralysis; and motor neuronal degenerations of special nerves would give such well known affections as lingual atrophy, facial atrophy (here including painless tic), and the atrophic ophthalmoplegias.

The so-called "primary lateral sclerosis" is something of a stumbling block in our efforts at neuron classification. According to views long accepted, in this affection the lesion is a degeneration or a sclerosis of both lateral columns, usually beginning in the white matter of the lumbar cord and subsequently passing up the cord, but without involving the cells of the ventral horns. In other words, according to this view we have a primary degeneration attacking and confining itself to the processes of the nerve cells. While this disease has, however, long held its place in the nosology of nervous diseases, only an exceedingly limited number of autopsies *apparently* uphold the pathology above indicated. The probabilities are altogether against the idea of a true primary lateral sclerosis; and the cases which present the well-known symptomatology of this affection can probably all be otherwise relegated, as to Erb's spinal paralysis, amyotrophic lateral sclerosis and hysterical spasmodic paraplegia.

The application of the theory of the neuron to classification is most readily made in the case of the degenerative diseases, and yet the same truths are applicable to diseases which more rapidly run their course, as overwhelming toxemias or active inflammations. In Landry's paralysis the peripheral motor neuron is attacked and largely destroyed. In poliomyelitis, both of the infantile and of the adult type, in the polio-encephalitis superior and inferior of Wernicke, and in the cortical polio-encephalitis of Strümpell, motor neuron systems are attacked. Much controversy has taken place as to whether in multiple neuritis the affection is primarily one of the peripheral nerves (that is, of the axis cylinder processes), of the cell bodies, or of both. Much evidence, clinical and pathological, is certainly in favor of the view that polyneuritis in many cases is a true peripheral disease; but in many other cases those forms of inflammation which are usually designated as neuritis and as poliomyelitis involve the entire neuron, and not simply the peripheral nerve (in the ordinary acceptance of the use of the word "peripheral"), on the one hand, or the cell bodies in the ventral horns on the other. Those forms of so-called polio-encephalitis and polyneuritis which have been most studied are now almost universally conceded to be either of infectious or toxic origin. With regard to multiple neuritis it is no new thing for me to teach the involvement of both nerve and cord in a large number, if not in a majority, of the cases. Long before the theory of the neuron was thought of, I expressed my belief that in many cases of so-called multiple neuritis both periphery and spinal centers were implicated, in other words, as then expressed, we had a concurrence of multiple neuritis and of generalized poliomyelitis in the same case. Several recent investigators have shown involvement of the posterior roots and even of the entire sensory and motor neurons both in multiple neuritis and in cerebrospinal meningitis. Long ago I also

recorded clinical observations on cases of multiple neuritis which eventually became cases of true tabes. Cases of poliomyelitis with implication of the peripheral motor nerves are also on record.

These diseases are, therefore, in some cases at least, neither instances of neuritis in a strict sense or of poliomyelitis. They are perhaps what might be termed "neuronitis," and this term has been suggested, but seems to have an unnatural sound even to a neurological ear.

While the facts which point to the importance of reclassifying certain diseases on the basis of the neuron are clear and convincing, it is difficult to determine on a simple and practical method of doing this. It will probably be best for clinical reasons to arrange these diseases in the first place under the heads of *embryonal* and of *acquired neuronal diseases*, and then to subclassify these according to the particular system or systems of neurons attacked. This subdivision would include (1), diseases of the sensory neuron systems; (2), diseases of the motor neuron systems; (3), diseases of both sensory and motor neuron systems at the same time; (4), diseases of intercalary or associating systems of neurons; and (5), diseases in which numerous systems of neurons are more or less indiscriminately attacked. The fourth and fifth categories will receive only passing attention in this paper. Within these groups an effort could of course be made to subclassify toxemias, inflammations and degenerations, but this will not be attempted in the present paper, and perhaps it would not answer any useful purpose to make the attempt. By far the larger number of neuronal affections are perhaps to be classed under the general head of primary degenerations, at least with our present pathological knowledge; but toxemias and inflammations which do not lead to degeneration are also, as I have already indicated, to be included.

Every thinking neurologist has felt the importance of having some good method of classifying under some general head the numerous hereditary or family affections. The theory of the neuron offers us one of the best methods of doing this. The embryonal or family diseases can be classified with some approach to success under the different physiologic systems of neurons. Under primary embryonal degenerations of motor neuron systems, for instance, such affections as Little's disease, and perhaps other forms of infantile diplegia or hemiplegia, and some of the forms of juvenile muscular atrophy might be grouped; under embryonal degenerations of sensory or of mixed sensory and motor neuron systems might be included Friedreich's ataxia, hereditary cerebellar ataxia, and the common type of syringomyelia; and under special forms of embryonal neuronal degenerations could be classed amaurotic family idiocy, so-called Huntingdon's chorea, for which Halleck has suggested the name of *dementia choreica*, and even perhaps some of the special types of the insanity of developmental periods.

Amaurotic family idiocy is a type of affections in which numerous systems of neurons are arrested in their development, while general paralysis of the insane is a type of acquired disease in which numerous systems of neurons are more or less indiscriminately attacked. Hirt, by classifying this disease under the head of general diseases of the nervous system, recognized the importance of taking it from the category of cerebral affections or of ordinary insanities.

Provisionally the views expressed in the previous pages might be in part summarized in tabular form as follows:

EMBRYONAL NEURONAL DEGENERATIONS.

- I. Sensory or sensorimotor types. 1, Friedreich's ataxia; 2, hereditary cerebellar ataxia; 3, syringomyelia.
- II. Motor types. 1, spastic diplegia (some types, as Little's disease); 2, progressive muscular atrophy (some types).
- III. Mixed and multiple types. 1, amaurotic family idiocy; 2, dementia choreica (Huntingdon's chorea); 3, developmental insanity (some types).

ACQUIRED NEURONAL DEGENERATIONS.

- I. Sensory types. 1, tabes; 2, tic douloureux; 3, primary degeneration limited to nerves of the special senses.
 - II. Motor types. 1, progressive muscular atrophy (some types); 2, amyotrophic lateral sclerosis; 3, progressive bulbar paralysis; 4, primary degeneration of particular motor nerves, as of the hypoglossal, facial, trigeminal and ocular.
- For the present it will perhaps be best to place neuronal inflammations and toxemias in a special class, including, 1, acute ascending paralysis (Landry's paralysis); 2, anterior poliomyelitis; 3, polio-encephalitis superior and inferior of Wernicke; 4, cortical polio-encephalitis of Strümpell; 5, multiple neuritis and neuromyelitis.

HOW DOES THE CAUSE OF DISEASE PRODUCE DISEASE? A NEW INTERPRETATION OF OPERATIVE PRINCIPLES.

BY W. R. DUNHAM, M.D.

KEENE, N. H.

The following direction of research was suggested by J. M. DaCosta, M.D., LL.D., in his address before the Association of American Physicians, at Washington, D. C., May 4, 1897: "The great advance of our time it seems trite to say, is the ardent study of the causation of disease. And often what we consider the cause, may thus be only the consequences of disease. The soil and the forces, too, are to be studied and critically examined."

There has been much written respecting the soil of disease, while it is a new suggestion that we critically study the nature of the forces which present disease phenomena. And with such review it may be well to mention, that the science-mind for many generations has been satisfied with the interpretation, that forces from without, that active medical principles and active causes of disease in addition to active vital forces, have taken part in the operations presented by the living human organism, while of recent date the more advanced thinkers deny that supplementary forces can be introduced to operate the machinery of life. Such expectancy, however, has prevailed for a long period and will doubtless be slow of elimination until a clear comprehension is developed respecting the nature of the vital forces.

A distinguished editor of an American medical journal states, as late as January, 1898: "There is no drug yet discovered, unless it be alcohol, which adds to the forces of the body." But even this one source will be discredited when it is recognized that medico-biologic science is based entirely on the functions and operative principles of the vital force energies. Thus in the near future a different operative plan of medical science will be taught in the schools, effecting as great a revolution of ideal *modus operandi* as was experienced in the acceptance of the Copernican interpretation of astronomic plan. Therefore, in place of teaching medico-biologic science as being based on functions and operative principles, derived from both within and without, this division of natural science will have its recognized first principles begin-

ning with a comprehension of the nature of the vital force agency. But in making research for the discovery of such primary principles we shall be required to differentiate between the functions of the several ultimate active divisions, which enigma has never had a pretense of solution from the many teachers of medico-biologic science. And furthermore, we shall be confronted with high authority alleging that the mind can not grasp the nature and ultimate functions of the vital force agency. That distinguished authority, Henry Maudsley, M.D., F. R. C. P., states: "It is easy to perceive how impossible it is in the present state of science to come to any positive conclusion in regard to the nature of vital force. This, generation and generations to come, will have passed to their everlasting rest before a discovery of the secret of vital activity is made." Notwithstanding such statement, the vital force problem as implied in the operative plan of its several ultimate principles is already solved, and is no more difficult to comprehend than the Copernican plan of astronomic science and may be as positively demonstrated. The fact is, the cultured mind is so well satisfied with the long accepted interpretation that active principles from without may be introduced to operate the human organism, that little or no desire is experienced for the making of research, for exercising original thought, to discover the operative plan of the vital force function. And it is only of recent date that a review of the alleged situation has been suggested.

It has always been difficult to eliminate ideal errors of long acceptance, which is most significantly illustrated in the incident, that such entire satisfaction prevailed with the Ptolemaic interpretation of astronomic plan, that it required more than one hundred years to develop a comprehension that any scientific advantage would result from a review of the alleged situation. And it is a fact that can be demonstrated, that the medical science mind has committed a far more serious error of interpretation of operative plan than was perpetrated by the ancient astronomic investigator, which lamentable misfortune is not generally known.

Says Dr. Lionel S. Beal, M. B., F. R. C. P. Lond., F. R. S., in the London *Lancet*, May 24, 1896: "I am particularly desirous of directing attention to the question of vitality just now because during the past year there have been indications of a change of opinion, and the prospect of obtaining a patient hearing is better than it has been for thirty or forty years. Vitality is a distinct force and every pathologic change is directly consequent upon vital action." Rudolph von Virchow, M. D., in his address before the International Medical Congress in Moscow, 1897, stated: "I freely confess that the seeking of the point at which medicine begins to form a part of biology has been one of my fads; hence I have devoted the last days of my life to establish and spread the idea that pathology should be considered a branch of biology. This is natural, but the delicate point is, in order to realize it in a precise manner, how to establish the relations uniting life with disease." A patient research in this direction will certainly reveal to the comprehension that active vital functions constitute all the "active principles" that may operate the living human organism in health and disease. Consequently, the doctrine as now taught, that some mysterious active principle is introduced from without in association with the cause of disease, that acts to produce

disease, in other words, that forces from without, forces not vital, attack the human organism, is an error of great and serious magnitude. Therefore, to understand how the cause of disease produces disease, it will be necessary to first comprehend the special functions of each ultimate operative vital principle, and the co-operative working plan for the presentation of the two grand divisions of life activities, voluntary and involuntary, both health and disease being manifested by the department of involuntary activity.

To comprehend how the involuntary organism is set into that special disturbance constituting disease, we must examine the working plan of ultimate vital functions, normal and abnormal. And in seeking the solution of the vital force problem implied in the *modus operandi*, we will consider first the special function of each ultimate life principle, as expressed in the terms, sensibility, instinct, sensation and contractility; and later, the co-operation of said functions.

Sensibility, the mind function, relates the individual to the external world and superintends the voluntary acts, using the life principle contractility to execute voluntary motion. Among the numerous subdivisions of this department there may be included the ability to think, reason, originate ideas and experience a variety of emotions.

Instinct is that life function which superintends all involuntary acts comprised in organic construction and structural repairs; using food material and eliminating waste and foreign material. Instinct is a life function but not a mind function, a distinction to be ever recognized, while sensibility is both a life and mind function.

Sensibility can not execute the functions of instinct, nor reversely.

Sensation is an operative life principle entirely different from the two departments mentioned. It is a life function but not a mind function, and is the life principle which relates the organism to the contact world, while sensibility relates the individual to the external world. Sensation is a life principle of great magnitude and importance to consider, in fact a department that would require much time to describe, entering into a vast multitude of obscure life problems. Among the numerous subdivisions of expressed special functions included in this division may be mentioned taste, smell, heat, cold, itching, pain and all degrees of irritability, which last term includes a great variety of disagreeable sensations. Sensation is a life function expressed from relations of contact, and is manifested by the entire human organism, while sensibility is manifested only through the brain.

Contractility is the life principle that manifests animal strength and executes motion, and is the vital principle exercised by the mind for presenting voluntary motion, and by the instinct in the presentation of involuntary activities.

The foregoing terms, which represent the distinct departments of ultimate operative life principles, are not of new coinage, but have ever been attended with the great misfortune that no practical distinction has been recognized and taught respecting the special function of each department, and their co-operation as expressed in the complex affairs presented by the living human organism, while it is not possible to understand the nature of vital force until we first distinguish the difference between such operative functions and determine what each department executes as a life act. Thus a knowledge of such functions consti-

tutes the starting point of thought in medico-biologic science. In other words, we can not explore thought regions existing as transpiring events prior to the manifestation of such special principles of life expression. And we must recognize, also, that the nature of vital force is implied in what those functions execute, normal and abnormal.

While distinguished authorities allege that the vital force problem is impenetrable, such is not the fact, and this belief is perpetuated because the mind has failed to discover that any practical knowledge may be acquired from a recognized distinction of function, as executed by the four mentioned departments of operative life principles, a department easy to comprehend and demonstrate. Consequently, from this omission of distinction the terms sensation and sensibility are used synonymously without any apparent clear idea of their precise application. Some textbooks allege that the skin is the organ of sensibility and the brain of sensation, while the late Thomas H. Huxley has committed a similar error in attributing to the skin the function of sensibility and consciousness. The function of instinct is also confounded with that of sensibility, and nearly all writers give credit to that life ability called instinct, for the exercise of both voluntary and involuntary activities; and no practical distinction appears to be recognized between instinct and innate intelligence.

After the thoughtful mind has made original research and become satisfied that the four mentioned divisions of alleged operative principles really exist, and mean something in each, executing a function peculiar to itself, it will next be important to consider the working plan of co-operation, in other words, the *modus operandi* for the presenting of the two grand divisions of life activities, the voluntary and involuntary. The following is suggested as the real plan, and is easy of demonstration: That voluntary acts are exercised in response to the mind, while involuntary acts are exercised in response to sensations. In illustration, sneezing is an involuntary act executed in response to a sensation.

The alleged reflex act executed in response to stimuli, or irritation, which language is slightly misleading, represents a similar operation to that implied in the phrase: "Involuntary vital acts are exercised in response to a sensation." A sensation is a primary expression of life principle. There has been no previous action for its development, but merely a passive contact. Thus the term "reflex action" is not the correct language for the best explanation of the event. The irritability of a nerve is not an action on the nerve, but an expression of contact relation by the nerve, as a previous condition that may determine whether a physiologic or pathologic vital act is to succeed.

The conditions called health and disease are each presented or executed as involuntary acts in response to existing sensations, normal or abnormal. There are problems in medico-biologic science that require a clear mental perception, not the microscope, to effect a correct solution.

In accordance with the operative plan of the vital force agency, it is to be recognized that the mind directly superintends voluntary activities and indirectly superintends, to a limited degree, involuntary life acts, by developing such special sensations from contact relations as will be succeeded by the kind of involuntary act that it is desired to have established,

or set into special operation. Consequently, medicine is useful, not because of an associate active principle, but as the means from a relation of contact for the developing of special sensations. The idea that medicine acts is misleading; there is no medical power, but medicine causes special sensations in response to which involuntary life acts are exercised.

When we comprehend that physiologic acts called health, succeed to normal sensations, and pathologic acts called disease, succeed to abnormal sensations, it then becomes easy of solution as to how the cause of disease produces disease. The contact of the cause of disease produces abnormal sensations in response to which pathologic vital action is exercised, and this pathologic act in itself constitutes active disease. There is no "active principle" except pathologic vital action associated with disease problems. While this interpretation of operative plan may be easy of demonstration, there is something more than intellectual pride to be considered in association with this view of the situation. The present doctrine that "active principles" from without may be introduced to operate the machinery of life, opens the door for the ignorant to practice medicine, even to the satisfaction of the large majority who have been thus educated. Therefore, it is regarded as of minor importance from whose hands the supplementary powers may be supplied. While with a correct theory and general understanding by the lay mind, of the operative plan of medico-biologic science, as is now understood of the general plan of astronomic science, then no intelligent invalid would employ a physician who did not comprehend the working plan of the vital force energies.

In returning to the consideration of scientific principles it becomes evident that the condition expressed as an abnormal sensation constitutes the intervening situation always existing between the cause of disease and the development of disease as the first change experienced from the departure of health.

That ultimate life function expressed in the name of sensation is a department having many complex relations with the human organism, vastly more than can be considered at this time. Some sensations are recognized by the mind while many are not, that have direct relations with the involuntary department superintended by instinct. Keeping in mind that the involuntary department is set into special activity in response to a sensation, and not from an active principle introduced from without, it may be understood that the cause of disease does not attack the organism, and that all causes including microbes and germs are passive and merely cause abnormal sensations, that condition necessary for the presentation of involuntary pathologic activities; thus there is no warring of forces from without with the forces within.

When considering the relation of causes we should also recognize that while many causes are introduced from without, there is a larger number developed within. And we should observe a distinction between primary and secondary causes. The former may occasion a disturbance which, in itself, later develops a great variety of secondary causes for the continuance of disease. Such causes may exist as pathologic fluids which may undergo chemic changes having most virulent relations, together with congestions producing abnormal sensations of various kinds and degrees, with an increased temperature of the blood, often a dangerous cause, each being a secondary

cause for the perpetuation of pathologic activities.

The foregoing statements, when considered in association with the plan now taught, respecting operative medico-biologic science, may seem void of practical utility, but after the mind has grasped the correct interpretation implied in the separate functions of the four departments of ultimate active principles, it may then be recognized that this view of the situation is of exceeding great value in the management of disease. With medico-biologic science as well as with astronomic, it is important that we start right, that we recognize the correct operative plan, which will enable us to better understand the many details that are extremely practical to consider in persuading what we should do with the numerous variety of causes of disease, in other words, enabling us to better protect the patient from the relation of such causes. Some causes require to be neutralized by chemic changes which include the antiseptic, while other causes should be eliminated as early as possible. In many instances we should change the existing sensation, often completely swap sensations with medicinal contacts, and even abrogate sensations temporarily with opiates. And there can always be very much done to prevent the development of secondary causes within. It is often important to diminish the rapidity of production of the specific causes that develop as secondary causes with non-recurrent contagious disease, thus allowing elimination to keep up with the supply, and great success may attend the deploying of vital activity.

In the treatment of disease each of the several methods require consideration as to their applicability separately and jointly, a kind of thought exercise vastly superior to the treating of disease from a basis of experimental statistics. And there are two grand divisions of disease, one existing simply as abnormal sensation, and the other an associate disturbance existing as pathologic vital action. Both divisions may prevail separate from pathologic cellular construction, which constitutes malignant disease.

In summing up, we must keep in view the distinct functions of the four divisions of ultimate operative principles, how the cause of disease produces disease, the two divisions of causes existing as primary and secondary and protection of the organism by resort to different methods of treating causes existing in association with the two grand divisions of disease. Thus that higher education which is to contribute to a more successful treatment, and also protect invalidism from medical sharks, must be acquired through a better knowledge of the nature of vital forces expressed in special co-operative principles, that department of possible erudition which distinguished leaders allege must await the advent of future generations for its solution.

The authority quoted at the commencement of this paper suggested that we examine "the soil and that often what we consider the cause may be only the consequence of disease." Thus, respecting the soil, it is evident that micro-organisms will multiply rapidly wherever there is a food supply, and expire equally as rapidly when the supply is arrested. And the special food or soil favorable for this development in the human system is made to exist largely from pathologic vital action. Thus in the virus produced by non-recurrent contagious disease, the micro-organisms will multiply into millions and perish when the food supply or *materies morbi* is no longer elaborated. In

such instance the presence of the microbe becomes a consequence rather than a cause of the disease. And the reason why certain contagious disease is non-recurrent, is that the human organism can seldom develop such special virus but once in a lifetime, the *materies morbi* of such disease being a product from pathologic vital action and not a poison excreted or secreted by the microbe. The microbe does not come in and attack the human organism, but they simply multiply and consume the virus as scavengers. And in close association with such facts we are required to consider that complex problem represented in the term immunity. This problem, as well as the reason why certain contagious disease is non-recurrent, can not be explained from the present plan taught of operative medico-biologic science, while it is very easy of solution when considered from the correct plan of operative vital energies relative to existing causes of disease.

Scientifically considered, the immunizing principle is not operative except with non-recurrent contagious disease, while the temporary protection afforded with other forms of disease is not from immunity, but a protection from the deployment of pathologic vital activity. Whereas that protection experienced in the name of immunity, made possible with non-recurrent contagious disease is explainable as follows: With such form of disease a special morbid change prevails but once in a lifetime as the general fact, which pathologic act elaborates the virus of dangerous relations. And the danger attending such disease exists because such virus is produced more rapidly than it can be disposed of by elimination, thus becoming a secondary cause for complex disturbance. But when attenuated virus is introduced, a mild and incomplete pathologic disturbance will prevail, developing the special virus within the limit of safely possible elimination. And later, when pure virus becomes introduced, the previous partial change already effected has made it impossible for the organism to produce such virus rapidly in excess of elimination, as would be the fact had no previous mild disturbance been developed. Thus safety is practically insured because such pathologic disturbance has been effected on the installment plan. And with such disease the microbe or alleged germ develops rapidly from the abundant supply of food, but doing no harm to that organism which is the land of its birth, although such micro-organisms may become carriers of the poison, bottling up the special virus by their organization and giving it a longer existence. Such virus constitutes a secondary cause of disease in the organism where it is elaborated, and a primary cause when introduced within an organism that has never experienced such form of pathologic disturbance, while harmless to an organism that has previously experienced such disturbance. It is the virus, not the microbe, that becomes the cause of disease. The microbe or alleged germ may be a carrier of virus, while the virus of microbe construction is the real cause of disturbance. M. Pasteur states that the "virulency of the microbe depends on the quality of the material from which it is constructed." The microbe is not sufficiently complex in its organization to perform the function of excretion or secretion of poison, but does multiply and perish rapidly, to be succeeded by new births from the same material; and in the meantime the special pathologic virus may undergo chemic changes and become a more dangerous poison. Thus when we keep in mind the *modus*

operandi of how the cause of disease produces disease, we shall experience less fear of the microbe family and have less to say of disease germs. It is only the micro-organism that have been developed from some virus cause of disease that occasion pathologic disturbance to be manifested.

The cause of disease does not attack the living human organism. It does not act. The machinery of disturbance is operated wholly by the vital force. The cause is passive and only occasions abnormal sensations by its contact, generally expressed as irritability, in response to which pathologic vital action is developed, which in itself constitutes active disease. The superior success in modern surgery, alleged to be due to the killing of micro-organisms, may be better explained through the fact that the microbe-killer has changed the elaborated synthetic organic fluids, harmless as such, but which may soon enter into chemic changes in their downward career, producing poisonous products of dangerous relations existing as causes of disease developed within. Yet while the result of such practice has been construed in support of the germ theory of cause, the other explanation of protection is equally as well supported and certainly in better accord with the correct plan of operative life functions.

There is no army of disease microbes hovering in the air awaiting opportunity to attack exposed tissues, and the phrase "disease germ" is a misnomer failing to represent the correct situation of complex associations. The term is destined to become eliminated, being without usefulness in explanation of medico-biologic problems. Some forty years ago distinguished surgeons discovered that in operations, were the flaps allowed to remain exposed to the air until the oozing had ceased and the surface became glazed over, great advantage was insured to the individual.

And there is another discovery to be made of significant importance, implied in the fact that there is a vast amount of alleged medical science education inculcated that fails to develop scientific intelligence adding confusion in place of illumination to the vision of mental perception.

In closing I will call attention to another special feature of the situation, to be critically considered within the department of medico-biologic science, in the fact that ancient men made a serious mistake of interpretation respecting the operative plan, equally as fallacious scientifically as that perpetrated and long accepted by the early astronomer, as the Ptolemaic version. And this great error of dangerous infliction has been perpetuated unto our generation, and is now being thrust upon a defenceless people who are without thoughtful ability of escape, being assured through the influence of revered names that have become historic for presumed intellectual achievements, while such fame will be recorded in future history inglorious of scientific merit, and on a level with that of the early astronomers who failed to think in accordance with nature's methods regarding the operative universe. And among the numerous inflictions that have been thrust upon a civilized people from such error, may be recognized the misery which comes from a belief in the doctrine that alcoholic spirit may supply an "active principle" from without, as a supplementary power that will assist vital strength as remedial of weariness and debility. And no doubt there are many learned men who are so well satisfied with the present pseudo-scientific education, and so persistent that new

facts must be weighed by old methods, so over-persuaded by their early convictions, as to not care to give time for the comparison of this modern interpretation with the life phenomena presented. Yet it will ever remain a fact, not possible of supported contradiction, that medico-biologic science is based on the ultimate vital functions, normal and abnormal, of the four mentioned divisions of operative life principles.

THE ALLOXUR BODIES AND THEIR ESTIMATION.

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The alloxur bases have recently excited considerable interest among pathologists, partly on account of the difficulties of their direct estimation, but principally from the failure of exact analysis to confirm the "uric acid diathesis" theory.

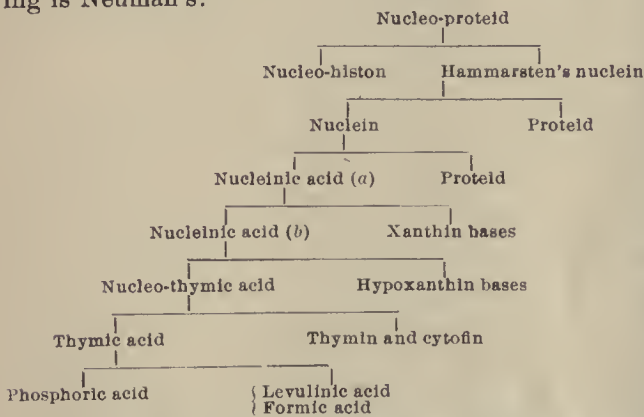
The latter theory dates from Garrod's discovery of an excess of uric acid in the blood in true gout, to culminate in Haig's teachings, who sees no difference between true gout, articular rheumatism, epilepsy, the "rut" of the springtime, rheumatic excess and masturbation. He bases his theories on the formation of uric acid in the kidney, in a proportion of 1 to 33 of urea, when, owing to not very clearly defined conditions, a portion of the uric acid fails to be eliminated and is carried into the general circulation, to be deposited in the system, causing all sorts of ills when it is brought again into the circulation. Horbacewsky has proved that uric acid and the alloxur bases are formed from nuclein, and therefore we should expect, and we find, an increase of uric acid in leucocytosis, or any wasting disease, where there is excessive cell destruction. Haig's method of estimation of uric acid, viz., Haycraft's, is admittedly inaccurate, and further he administered salicylic acid or the salicylates to eliminate the uric acid. Boden has pointed out that the salicylates produce a leucocytosis, and in some very careful experiments shows that the elimination of uric acid runs parallel with the number of leucocytes.

Roberts, in his very elaborate investigations, finds that the uric acid exists in solution in the blood as a quadriurate ($C_5H_2N_4O_3HMC_5H_2N_4O_3H_2$), and that in the presence of an alkali the biurate is formed ($M_2C_5H_2N_4O_3$), which is barely soluble. This explanation accounts for the comparative failure of the alkaline treatment in gout and the insolubility of the tophi. He accounts for the precipitation of the uric acid in the joints, by the analysis of the synovial fluids, which he claims are the most alkaline secretions in the system. If the biurate comes in contact with a weak free acid or an acid salt, it is converted into the quadriurate and dissolved in the blood. Acid sodium phosphate (NaH_2PO_4) is the one used by nature and clinical experience partly goes to show that it acts as an eliminate of uric acid, besides in some cases reducing the tophi.

There are three ways to account for the excess of uric acid in the system: Imperfect excretion, increased formation, and both combined. In the early stages of gout, pathologists have failed to find any kidney lesion, and as other substances are eliminated in normal quantity, if kidney insufficiency was the cause, it would point to a special cell in the tubules, whose duty it is to eliminate uric acid, which presupposes an exactness of method not usual in the economies of

nature. It follows, therefore, that we must look to an increased production, and as in gout there is no leucocytosis and no pus, an excess of cell destruction, usually described as of nervous origin, is the conclusion by exclusion; added to this gout is usually associated with digestive disturbances pointing to defect in nutrition as the primary cause.

In the so-called gouty diathesis or uric acid diathesis, the clinical symptoms are so numerous that it has become a haven of refuge for the perplexed diagnostician. Careful analyses have shown that the elimination or non-elimination of uric acid bears no constant relation to the symptoms; it has therefore become necessary to look elsewhere. At present we are prepared to inculcate the xanthin bases. There are twelve alloxur bases, mostly found in the vegetable as well as the animal kingdom. They are adenin ($C_5H_5N_5$), hypoxanthin ($C_5H_4N_4O$), guanin ($C_5H_5H_5O$), xanthin ($C_5H_4N_4O_2$), heteroxanthin ($C_6H_6N_4O_2$), paraxanthin ($C_7H_8N_4O_2$), episarkin ($C_4H_6N_3O$), carnin ($C_7H_8N_6O_3$), epiguanin ($C_{10}H_{13}N_5O_2$), and others which have not yet been investigated. There are several schemes given for their formation. The following is Neuman's:



Thymin and cytofin are two recently discovered bases, of which the reactions have not yet been published.

The total amount of alloxur bases eliminated in twenty-four hours in the urine is very small, varying very considerably with diet. Camera found that with mixed diet the elimination was 87.0 mg., with flesh diet, 44.0 mg., with cabbage and apples 111.0 mg., with vegetable diet (peas and cabbage) 72.0 mg. He finds that the proportion of nitrogen in the xanthin bases to that of the uric acid is as one to 18.1, 7.6, 35.8, 18.1 respectively. Salkowski finds the proportion of uric acid to xanthin bases to be about 13 to 1; Flatow and Reitzenstein make the average quantity eliminated 29.2 mg.

Adenin ($C_5H_5N_5$), was discovered by Kossel in 1885 and is the simplest member of the group; it is apparently a polymerization of hydrocyanic acid. It is oxidized into hypoxanthin by the substitution of oxygen for an amido group. Lillienfeld, in his study of the chemistry of leucocytes, has shown that the nucleus of the cell contains a complex nucleohiston which is decomposed by acids into histon and leucocnuclein; the latter can in turn be decomposed into albumin and nucleinic acid, which, on heating with mineral acids, yields phosphoric acid and the nuclein bases. Adenin is best prepared from the mother liquor of tea. It does not appear to have any physiologic action. It has been found in the urine of leu-

kemia. Hypoxanthin, or sarkin ($C_5H_4N_4O$), is the oxidation product of adenin, from which it can be formed with nitrous acid. It is a normal constituent of human urine and has been found in excess in liver and kidney diseases by Thudichum, also in fevers and nervous diseases by Pouchet; according to von Jaksch it is present in exudates and transudates. Its physiologic action has been studied by Filhne, who states that 25 to 100 mg. begin to act on frogs in six to twenty-four hours, causing increased reflex excitability with convulsive attacks.

Guanin ($C_5H_5N_5O$) is principally made from guano. Von Jaksch states he has found it in transudates and exudates. Most observers have failed to find it in normal urine. Pouchet has found it in fever and nervous diseases.

Xanthin ($C_5H_4N_4O_2$) occurs rarely as calculi, more often as crystals in the urinary sediment. Normal urine is said to contain 0.032 to 0.025 grams in twenty-four hours. In the urine of leukemia, Stadthagen found an average of 0.07 gm. In tabes dorsalis, Pouchet found 0.08. The physiologic action is said to be a muscular rigor and paralysis of the spinal cord; the heart muscle is also affected.

Paraxanthin ($C_7H_8N_4O_2$), or dimethylxanthin, occurs in very small quantities in normal urine, it being only capable of detection in five to six liters. Rachford has found that it exists in excess in cases of migraine, and in epilepsy which is accompanied or preceded by migraine. He has not been able to find it in other forms of epilepsy. It is probably the most toxic of all the xanthin bodies yet studied, 1 to 2 mg. producing almost at once a rigor mortis-like condition of the muscles injected, with diminished reflex excitability without previous increase. Six to eight milligrams introduced into the lymph-sac bring on gradual loss of voluntary motion as well as of reflex excitability. In mice the reflexes are increased almost to a tetanus. The injection of 0.2 gm. in a 500 gr. guinea-pig produced convulsions and death in half an hour. The action of xanthin, hypoxanthin and paraxanthin seems similar, differing in degree.

Carnin ($C_7H_8N_6O_3$) appears to have no physiologic action.

Gerontin ($C_5H_4N_4$) has not been investigated, but is said to effect the nerve centers and heart ganglia; 0.5 mg. will kill 10 grams of frog.

Spermin ($C_5H_7N_3$) (?) is said to be tonic in its action.

From our knowledge of these bases it seems as if they are hardly likely to be of any great importance in diagnosis. Paraxanthin and possibly xanthin are the only members of the group which up to the present have been definitely associated with a disease.

There are three methods by which the xanthin bases can be estimated as a whole, viz.: The methods of Camera, Krüger-Wolf and Salkowski. The first two are open to the objection that they do not estimate the xanthin bases directly, but by estimating the nitrogen of the alloxur bodies and deducting the nitrogen of the uric acid estimated by some other method, thus throwing the whole of the error on to the xanthin bases.

Camera's method is as follows: Take a given quantity of urine and add a solution of sodium hydrate containing about 1.0 and dilute the urine to 1010 or 1011 specific gravity. Take aliquot part of diluted urine, add 5 c.c. Salkowski's magnesia mixture, filter; take aliquot part of filtrate, add 0.5 calcium carbonate and 5

c.c. of 3 per cent. solution of silver nitrate, allow to stand about two hours, filter; wash free from chlorin and silver, dry over sulphuric acid and estimate the nitrogen by Kjeldahl method.

Camera's modified method is somewhat more simple: Take 240 c.c. of urine, add 30 c.c. Ludwig's magnesia mixture and 30 c.c. 20 per cent. ammonia; shake well and filter; take 125 c.c. of filtrate (equal to 100 c.c. urine), add 10 c.c. of 3 per cent. ammonia silver nitrate solution, filter, wash and estimate nitrogen by Kjeldahl method.

Salkowski's magnesia mixture is made with magnesium sulphate 1 part; ammonium chlorid 1 part; ammonium hydrate, sp. gr. 0.924, 4 parts; water 8 parts.

Ludwig's magnesia mixture is made with magnesium chlorid, 100.0 grams, dissolved in water; add ammonia in excess and then ammonium hydrate until the precipitate is dissolved and fill up to 1000 c.c. with water.

The Krüger-Wolf method: Take 100 c.c. urine, boil, filter and add 10 c.c. of a 50 per cent. solution of sodium bisulphite, then 10 c.c. of a 13 per cent. solution of copper sulphate; after short boiling add 5 c.c. of a 10 per cent. solution of barium chlorid; remove from heat and allow to stand for two hours; filter, wash about five times with boiled water cooled to 60 degrees C., and estimate the nitrogen in the precipitate by the Kjeldahl method.

In all of the above methods the uric acid has to be estimated separately, the nitrogen calculated and deducted from the nitrogen found, the remainder being the nitrogen of the xanthin bases.

The usual method of estimating the uric acid is that of Hopkins of London, England. The writer uses the following modification: Take 100 c.c. of urine, acidulate with acetic acid, neutralize to slight alkalinity with ammonia and saturate with ammonium chlorid (about 30 grams is required); after standing three hours the precipitate is filtered, preferably with a suction-pump, the precipitate well washed with a saturated solution of ammonium chlorid, dried at 100 degrees C. to drive off any ammonia; then dissolve in distilled water, boil, cool, add 50 c.c. of a decinormal solution of hydrochloric acid, raise to the boiling point, cool and titrate the excess of acid with a decinormal soda solution, using dimethyl-amido-azo-benzol as indicator. The difference between the quantity of decinormal hydrochloric and soda solutions multiplied by 0.0163 will give the amount of uric acid, which divided by three will give the amount of nitrogen. As will be shown below, this method is not correct as some of the xanthin bases are partially precipitated by saturation with ammonium chlorid.

Salkowski's method recently published has the advantage over the above methods in that it estimates the xanthin bases directly: Take 600 c.c. of urine and add 200 c.c. of magnesia mixture, allow to stand one hour; filter; take 700 c.c. of the filtrate and add about 18 c.c. of a 3 per cent. solution of silver nitrate and allow to settle; if the precipitate appears granular or does not settle quickly add a little more ammonia, but as the xanthin silver salts are not perfectly insoluble in ammonia this requires care; take a specimen of the supernatant liquor and add nitric acid; if a precipitate takes place then the silver is sufficient. After standing one hour filter in a large filter and wash until on the addition of silver nitrate to the washings only a slight cloud is produced. The precipitate is suspended in water, a few drops hydrochloric acid added and the solution saturated with dihydrogen sulphid, warming

gently on the water-bath; filter and wash well; evaporate the filtrate to dryness, first on the flame and then on the water-bath. To the residue add 20 c.c. of a 3 per cent. solution of sulphuric acid (H_2SO_4 , 30 c.c., H_2O 900 c.c.), warm gently and allow to stand twelve to eighteen hours; filter; wash twice with the 3 per cent. sulphuric acid solution and once with water; add excess of ammonia and 1 or 2 c.c. of silver nitrate, testing as above as to quantity required; filter; wash well; dry, ash the filter in a porcelain crucible, dissolve the silver residue in nitric acid and estimate the silver by the Vohlhardt method.

Salkowski prefers estimating the silver instead of the nitrogen, on the ground that some ammonio-silver compounds are formed, which cause high results, on the other hand, adenin at least, and probably others of the xanthin bases form two silver salts which would tend to give high results by his method also. It is probable that by boiling the silver xanthin precipitate with magnesium oxid the ammonio-silver salt would be broken up and the ammonia set free.

The method is cumbersome, the filtration and washing of the large gelatinous precipitate, and the evaporation of a liter to dryness take considerable time. The author has substituted the following process, which gives the same results and is less troublesome:

It was necessary first to find out whether the whole of the uric acid was precipitated by the saturation with ammonium chlorid; to this end a sample of bought uric acid was purified by warming with 3 per cent. sulphuric acid, cooling, filtering and washing with water and then dissolving in a little potassium carbonate. Three portions of 100 c.c. each of the solution were each acidulated with acetic acid, neutralized with ammonia, saturated with ammonium chlorid, allowed to stand three hours, filtered, washed with a saturated solution of ammonium chlorid, the filtrate and washings made strongly alkaline with ammonia, 3 per cent. silver nitrate solution added, filtered, the precipitate washed, dried at 100 degrees C., and the nitrogen estimated by Kjeldahl's method; at the same time, to prevent error from possible nitrogen containing impurities in the reagents used, and from the ammonia in the atmosphere of the laboratory, a control test was carried through at the same time; four other tests were subsequently made under the same conditions with the following results:

	No. 1.	No. 2.	No. 3.	No. 4.
Nitrogen in filtrate found.	0.00014	0.00085	0.00042	0.00014
Nitrogen in control	0.00023	0.00028	0.00028	0.00007
Actual nitrogen in filtrate.	-0.00014	+0.00007	+0.00014	+0.00007
		No. 5.	No. 6.	No. 7.
Nitrogen in filtrate found		0.00007	0.00042	0.00042
Nitrogen in control		0.00007	0.00028	0.00028
Actual nitrogen in filtrate		0.00000	+0.00014	+0.00014

The average actual nitrogen found in the filtrate, after precipitation by saturation with NH_4Cl , on the seven experiments was therefore 0.00006 or 0.18 mg. uric acid, showing that the whole of the uric acid was precipitated.

Being satisfied with this result, the following process was tested against the Hopkins and Salkowski methods: To 600 c.c. of urine add 200 c.c. of Salkowski's magnesia mixture; allow to stand one hour; filter; acidulate 700 c.c. of the filtrate with acetic acid; neutralize to faint alkalinity with ammonia, and saturate with ammonium chlorid (about 150 grams are required); allow to stand three hours; filter and wash with saturated ammonium chlorid solution. Warm the precipitate in a porcelain dish with 3 per

cent. sulphuric acid and allow to stand twelve to eighteen hours; filter; wash twice with 3 per cent. sulphuric acid and once with water. The filtrate including washings should not exceed 50 c.c. (3 per cent. H₂SO₄ dissolves uric acid in the proportion of 1 to 20,000). The filtrate containing the xanthin bases is added to the first filtrate, the mixture made strongly alkaline with ammonia, 3 per cent. silver nitrate solution added, filtered, washed and either the nitrogen estimated by Kjeldahl's method or the filter incinerated, the silver dissolved in nitric acid and estimated by the Vohlhardt method.

As some of the xanthin bases are precipitated by saturation with ammonium chlorid, in the following estimation the solution of xanthin in 3 per cent. H₂SO₄ solution and the filtrate from the saturation were estimated separately.

Hopkin's method.	No. 1.	No. 2.	No. 3.	No. 4.
Uric acid nitrogen	0.05208%	0.04082%	0.03522%	0.03268%
Xanthin nitrogen in filtrate from ammonium chlorid solution.	0.00238%	0.00112%	0.00294%	0.00182%
Sulkowski's method.				
Nitrogen of xanthin bases.	0.00825%	0.00284%	0.00267%	0.00346%
Author's method.				
Xanthin nitrogen in saturation filtrate.	0.0026%	0.0018%	0.00226%	0.00173%
Xanthin nitrogen in H ₂ SO ₄ filtrate.	0.00109%	0.0016%	0.0008%	0.00093%
Total xanthin nitrogen,	0.00368%	0.0034%	0.00306%	0.00266%

It will be seen from the above four analyses made from urine that the methods employed give practically the same results, the average difference being 0.000536. The first three were mixed urines; No. 4 was a normal urine and it will be noticed that the proportion of xanthin base nitrogen to uric acid nitrogen is higher in No. 4 than in the pathologic mixed urines.

The author claims that his method is more simple and occupies less time than Sulkowski's, while giving practically the same results. Owing to laboratory difficulties the estimations of the nitrogen were made by Kjeldahl's method, a control being run through at the same time, and not by estimation of the silver.

Some experiments made some months ago led to the conclusion that xanthin was precipitated by saturation with ammonium chlorid out of an alkalin solution; whether completely was not discovered. Allen of Sheffield, England, states that it is probably almost completely precipitated under the above conditions. An attempt was made to settle the point by the following experiments.

A solution was made from some bought crystal xanthin, containing by calculation, 0.0033 nitrogen per 100 c.c. The solution was acidified with acetic acid, made slightly alkaline with ammonia and saturated with ammonium chlorid, allowed to stand three hours, filtered and washed with saturated solution ammonium chlorid. The precipitate was then warmed with 3 per cent. sulphuric acid and allowed to stand eighteen hours, filtered, washed and the filtrate precipitated with ammonio-silver nitrate solution, filtered, and the nitrogen estimated.

The filtrate from saturation with ammonium chlorid was also precipitated with the silver solution and the nitrogen estimated in the precipitate. The following results were obtained:

	No. 1.	No. 2.	No. 3.
Nitrogen of xanthin not precipitated by NH ₄ Cl.	0.00168	0.00191	0.00182
Nitrogen of xanthin precipitated by NH ₄ Cl.	0.00126	0.00102	0.00096
	0.00295	0.00293	0.00278

The experiments show that xanthin is only partially precipitated by the method employed.

The author has made a considerable number of estimations of the xanthin bases, but has failed to find any relation between them and mental disease, their total quantity varying in proportion to the metabolism, appearing to be greatest in quantity when the uric acid is small and lowest when it is excessive. He has failed to verify Rachford's results in epilepsy as yet, but a typical case of migraine epilepsy has not presented itself. In two cases of tabes dorsalis the total xanthins were excessive. As stated above it seems doubtful whether the xanthins are of much pathologic importance, their presence in excess being, probably, evidence of a want of oxidation in the metabolism.

ON THE EXISTENCE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS IN CHICAGO, WITH REPORT OF A CASE WITH AUTOPSY.

Read at the Meeting of the Chicago Society of Internal Medicine, June 23, 1898.

BY JAMES B. HERRICK, M.D.,
CHICAGO.

The object of this paper is to prove two facts, first that a genuine case of epidemic cerebro-spinal meningitis has occurred in Chicago, the proof resting on the clinical history and the autopsy, the latter showing the presence of the meninges of the diplococcus intracellularis meningitidis of Weichselbaum; second, that this case was not a sporadic one, but that many other cases have occurred, or in other words, that there is a mild epidemic of cerebro-spinal meningitis in this city. So far as I can learn this is the first case of this disease reported for some time in this city and the first case in which the presence of the meningococcus has been recorded as found, thus establishing the nature of the disease beyond a doubt. That many other cases have been recognized as epidemic cerebro-spinal meningitis, I am well aware from conversation with physicians.

The patient was a male of 40 years, who on Friday, June 10, 1898, had a severe headache and backache. About this time he vomited. Tuesday, June 14, he came under my care in the Presbyterian Hospital. There was severe frontal and occipital headache, causing sleeplessness, and only relieved by morphin. The neck was rigid, and painful on attempted motion; there was but slight retraction of the neck. There was no paralysis nor any sensory disturbance aside from the pain already mentioned. The examination of the chest was negative. Over the skin of the abdomen and the thighs were very many light purple or violet petechial spots, but a few of them being larger than the head of a pin. The spleen was not palpable. The urine showed neither albumin, sugar, nor casts. The mind was clear, but the patient was restless and constantly complaining of his head.

He lived until 10:45 P. M. Sunday, June 19, dying five days after entrance to the hospital and on the tenth day from the onset of symptoms.

During these five days he had a fever of a remittent type, varying from 100.6 degrees in the morning to 103 or 104 degrees in the afternoon, the records being axillary. There was no pre-agonal rise. The pulse at first was regular and relatively slow, often being found below 90 though the axillary temperature was as high as 103 degrees. During the last thirty-six hours the pulse became more rapid, averaging about

124. The bowels were moved by enemata. Several times he urinated involuntarily; once he had to be catheterized. He never vomited after admission to the hospital. He gradually became wildly delirious and at four on the afternoon of the day he died the nurse recorded a "spasm lasting about one quarter of a minute." On the morning of the 17th his respiration was rapid, forty per minute. Numerous moist râles were heard over both chests and a patch of dullness with broncho-vesicular breathing was made out in the left lower lobe, posteriorly. He coughed up a sero-purulent material. Just before death the respirations were for several hours between 70 and 80 to the minute. The petechial spots faded somewhat before death, no new ones appearing. There was no herpes. No paralysis was at any time made out. No foci of suppuration could be found.

The clinical diagnosis was acute epidemic cerebro-spinal meningitis, broncho-pneumonia.

The autopsy was made twenty-four hours after death, and I am indebted to Dr. Hektoen for the abstract of the protocol and for the cultures and stained specimens of the micrococcus which I exhibit.

Autopsy twenty-four hours postmortem, by Drs. Hektoen and Freeman. Anatomical diagnosis: Acute purulent leptomeningitis associated with the diplococcus intracellularis; bronchitis and hypostatic pneumonia; cloudy swelling of the solid organs.

Abstract of the protocol (No. 532): A well developed, well nourished thick-set man; pronounced lividity; brownish spots in skin over abdomen.

Scalp and skull normal; the entire cerebral leptomeninx is infiltrated with a thick, yellowish, purulent fluid which is especially marked about the posterior margins of the cerebellum. There are no miliary tubercles to be seen. The amount of cerebro-spinal fluid is small but the lateral ventricles contain quite a quantity of purulent fluid which in the horns becomes a thick, yellowish pus. The walls of the ventricles are soft. The ears, orbits, sphenoidal and frontal sinuses are normal. The nose could not be properly examined. There is exudate around the upper end of the spinal cord, but the spinal canal was not opened.

The liver and the kidneys show cloudy swelling; in the kidneys the glomeruli are prominent. The heart muscle is friable and flabby. In the left lung the bronchi contain muco-pus; the posterior parts of both lungs are congested and heavy; in the posterior part of the left lung are large areas in which the substance is solid, deep-red, and rather homogeneous on the cut surface. The other organs are normal.

The bacteriologic examination: The smears from the meningeal exudate show a minute coccus, occurring often as a diplococcus, and free as well as in the interior of polymorphonuclear leucocytes; this coccus has no capsule and destains by Gram's method. The exudate is very rich in leucocytes, many of which show evidences of disintegration; large, uninuclear cells also occur, but these are few.

Glycerin-agar and serum (Löffler) tubes inoculated with the meningeal exudate and the ventricular fluid show after twenty-four hours in the incubator a number of minute, dew-drop like colonies which (in the agar medium) have a pearly, translucent appearance; their outline is circular and well defined, the central parts brownish under the microscope; these colonies consist of cocci, in the form of heaps, pairs and fours; there are no chains; they are promptly decolorized by

Gram's method. One or two larger colonies in one tube of glycerin-agar and one of serum were found to be the staphylococcus aureus and looked on as due to contamination. Otherwise these cultures were pure.

Inoculation upon new tubes of agar and serum and also in bouillon gives rise to a quite rich, typical growth which corresponds in all essentials to the descriptions of the diplococcus intracellularis meningitidis by Councilman, Wright and Mallory except that in the glycerin-agar tubes a considerable diffuse growth in the form of a very delicate film developed as well as the typical colonies. The authors quoted lay much stress on the absence of any diffuse growth of the organisms obtained from the cases that form the basis of their extended study.

About 1.5 c.cm. of the ventricular fluid was inserted into the abdomen of a guinea pig; the animal seemed a little sick but is still alive and apparently not very ill forty-eight hours afterward.

From the heart's blood and from the lungs cultures show staphylococcus pyogenes albus and bacillus coli communis; the spleen, liver and kidneys contain the colon bacillus. The histologic study of the organs is not completed.

The acute onset with headache, backache and vomiting, the rigid neck, delirium, the pulse slow regardless of a high temperature, the absence of splenic tumor, the petechial rash, make a picture of meningitis wholly unlike the tuberculous form, unassociated with primary pus foci and clinically resembling the epidemic variety. The finding in the meningeal exudate of the organism first described in 1887 by Weichselbaum, and later especially in the last few years identified by many as the specific cause of epidemic meningitis, its absence from the viscera would seem to furnish conclusive evidence of the nature of this case and to prove the first proposition that a case of epidemic cerebro-spinal meningitis has occurred in Chicago and has been partially identified as such.

For the proof of the second proposition, that an epidemic of meningitis exists in Chicago, I shall advance the oral testimony of many physicians who have told me of cases of meningitis that have recovered, the recovery of a case of meningitis being one of the strongest proofs that the disease is not due to the tubercle bacillus or to the ordinary pyogenic organisms, but to the diplococcus intracellularis. And I shall also give the abstracts of the following cases of meningitis seen by myself since Jan. 1, 1898, to show that an unusual number of cases answering to the epidemic form have been met with, in two of these there being recovery:

Case 1.—Child, 2½ years, seen with Dr. A. C. Cotton, Jan. 17, 1898. Headache, fever, vomiting and symptoms suggesting tuberculous meningitis. Remission in symptoms. Later, return with coma and death. Whole duration of illness about three weeks.

Diagnosis: Meningitis, either tuberculous or the mild remittent type of the epidemic form.

Case 2.—Adult, male. Convalescent from croupous pneumonia. Meta-pneumonic inflammation of right ankle joint and of neighboring tissues. Gradual improvement. Suddenly developing headache, vomiting, delirium, retraction of neck, fever. Death in twenty-four hours. *Diagnosis,* probable meta-pneumonic meningitis.

Case 3.—Seen with Dr. E. E. Prescott, March 13, 1898. Boy, 5 years, acute, excruciating headache, child beating head and pulling hair on account of pain, marked rigidity and retraction of neck, pain on moving neck or back, temperature 104 degrees, pulse very variable. Passed from my observation but I was later informed that a period of marked improvement and a pyrexia was followed by a return of headache, fever, etc., but that finally after about four weeks the boy seemed quite

well. Six weeks after the onset he was still in good health. Original diagnosis was a typical tuberculous meningitis. Without doubt this was a case of epidemic cerebro spinal meningitis.

Case 4.—Child of 3 years visiting in Chicago from Boston. Poor appetite, slight fever, cross for a few days. When seen March 20, 1898, quite dull and drowsy. Temperature 100 degrees. Two days later slight improvement. Then low fever from 99 to 102 degrees. Stupor, Cheyne Stokes respiration, abducens paralysis, unequal pupils, muscular twitchings and rigidity and death.

Diagnosis: Tuberculous meningitis.

Case 5.—Female child 2½ years, seen with Dr. Becker, March 24, 1898. A few days before, headache, vomiting, rapid respiration, high temperature. When seen in consultation comatose, no paralysis, rapid respiration, consolidation of upper lobe of lung. Death same day.

Diagnosis: Pneumococcus, cerebro-spinal meningitis though possibly of epidemic form with secondary pneumonia.

Case 6.—Adult male with old endocarditis producing aortic regurgitation. Cerebral embolism with right hemiplegia and aphasia. After being in hospital several weeks convulsions oft repeated, temperature, conjugate deviation of eye, coma, death.

Autopsy: Aortic regurgitation, old cerebral embolism with secondary softening, acute meningitis with purulent exudate; no primary pue focus. Failure to obtain cultures.

Diagnosis: Probable epidemic cerebro-spinal meningitis.

Case 7.—Seen with Dr. S. A. Hemmi, March 8, 1898. Child of 2 years in coma. Moderate temperature, early history indefinite, but suggestive of tuberculous meningitis. Two other children previously dead of brain trouble. Death.

Diagnosis: Tuberculous meningitis.

Case 8.—Seen with Dr. T. A. Davis May 1, 1898. Male of about 20 years. Onset with headache, pain in back and abdomen and vomiting, suggesting at one time appendicitis. Later excruciating headache, rigid neck, edematous and reddened area on dorsum of left hand (culture from this negative). Remittent temperature with much irregularity, pulse variable. Remission in symptoms, then return, with opisthotonos, delirium, rapid pulse; death after about four weeks.

Final diagnosis: Epidemic cerebro-spinal meningitis.

Case 9.—Seen with Dr. C. E. Sharpe, May 7, 1898. Male about 22 years. Felt rather poorly on retiring May 5, but went to work next morning, May 6. Left work on account of pain in back and head. Saw doctor at office; temperature 102 degrees. Ate supper; in night vomited, headache severe, grew stupid. When seen in morning was comatose and hemiplegic, temperature 103 degrees, pulse rapid and weak, involuntary discharges. Later history not obtained as yet.

Diagnosis: Epidemic cerebro-spinal meningitis of fulminating type.

Case 10.—Child of 4 years seen with Dr. DeBey June 9, 1898.

Child taken suddenly four weeks before with vomiting, headache, delirium, retraction of neck, convulsions. Diagnosed by doctor as meningitis. Fever lasted about ten days; had disappeared when I saw the child. There was no complaint of pain, no rigidity of neck, but complete deafness. Child extremely cross and irritable. Great emaciation. Today, June 23, Dr. DeBey reports condition as practically the same, though emaciation and weakness are more pronounced.

Diagnosis: Epidemic cerebro-spinal meningitis.

Case 11.—Case just reported with diagnosis proven as epidemic cerebro spinal meningitis.

Case 12.—Adult male entered Presbyterian Hospital June 22 with diagnosis of typhoid fever with meningeal complication. From intelligent patient and from wife learned that onset was rather sudden two weeks ago with chill, intense headache and vomiting. Two nights later was delirious, as well as the day following. Temperature said by doctor to have been 104 degrees. No good sleep for these two weeks on account of severe headache, though other symptoms have improved. No spleen or other earmarks of typhoid. Temperature in evening 101 degrees.

Diagnosis: Possible mild case of cerebro-spinal meningitis.

Of these twelve cases, I believe two were tuberculous (4 and 7) in character, two were probably of pneumococcus origin (2 and 5). The diagnosis in case 1 may be questioned, though the phenomena are explained as well on the supposition of the epidemic form of meningitis as on any other. The case of the hemiplegia, case 6, was probably of the epidemic variety. The cases 8 and 9 are excellent examples,

the one of the subacute form with remissions, the other of the fulminant variety. Case 12 is a possible mild subacute case. The cases that recovered, cases 3 and 10, were certainly cases of meningitis; their history is typical of the epidemic and their recovery an almost positive proof that such was their character. In case 11 the proof is conclusive. In other words, of twelve cases of meningitis seen, one is proven of the epidemic variety by bacteriologic examination; two by the clinical history and fact of recovery; two by the clinical history and exclusion of other forms; three are probably of the epidemic variety, though this diagnosis might be questioned; two were probably tuberculous; two probably pneumococcal.

That my experience in meeting with an unusual number of cases of meningitis is not unique is shown by the fact that there is current comment among physicians on the frequency of meningitis in Chicago, and that not a few cases recover. And in other parts of the country cases are reported. Boston has had an epidemic that has furnished the basis for Councilman's report with 35 autopsies. Baltimore is furnishing its quota to the wards of Johns Hopkins Hospital; the army surgeons are meeting with cases among the soldiers. A physician practicing in a country town in Iowa told me three days ago that he had seen six cases of meningitis in about three months and that some had recovered.

This being the fact we can be more guarded in our diagnosis and prognosis in our cases of meningitis. And we should, when in doubt, put our diagnosis on a surer basis by attempting to obtain the organism by lumbar puncture, a procedure regarded as without danger in this class of cases and as furnishing us in the majority of instances, when done early, with a sure means of determining the etiologic factor in the case, which knowledge influences materially the prognosis, and it is to be hoped, at some near day, the treatment.

SOCIETY PROCEEDINGS.

Associated Health Authorities of Pennsylvania.

Fifth Annual Meeting held at Lancaster, Pa.,

May 18 and 19, 1898.

(Concluded from page 1522.)

SECOND DAY.

The report of the Executive Committee by Dr. Lee, detailed the doings of that committee to provide for this meeting, the change of time and the arrangement to a visit of inspection to the Vaccine Farm at Marietta conducted by Dr. H. M. Alexander. It mentioned the almost total want of attention to the meetings by the local boards of health, their unwillingness to subscribe to the funds, and the need of money to pay the indebtedness to Dr. W. B. Atkinson for publishing *Public Health* and the issue of a circular appealing to all to aid the Association by contributing yearly. Also it alluded to the success of the New Jersey State Sanitary Association and the Maryland Public Health Association, and presented the Constitution of the latter as an idea of how to obtain members in the want of better interest on the part of the local boards.

After some discussion on motion a committee was appointed to report to this session some plan of amendment of the laws of the Association by which to add to the membership, etc.

The Committee on Legislation reported efforts to obtain legislation by the State Legislature for several sanitary matters, all of which had failed owing to the want of money in the State treasury from the burning of the State capitol.

The Committee on Publication reported as to the need of money to continue the work of the Association, and the great desire on the part of all to keep the publication of the Journal from lapsing. Not 10 per cent. of the local boards had joined the Association, mainly owing to the lack of funds, as the vil-

large councils refused to vote them funds for any purpose. The committee commended the work done by the Journal and the courtesy of the editor in performing the work without hope of compensation.

Dr. D. H. BERGEY, first assistant in the laboratory of hygiene, University of Pennsylvania, read a paper entitled:

POLLUTED WATER SUPPLIES; THE NECESSITY FOR LEGISLATIVE RESTRICTION OF THE POLLUTION OF SURFACE WATERS THROUGH THE SEWAGE OF TOWNS AND BOROUGHS DRAINING INTO PONDS AND STREAMS THAT SERVE AS SOURCES OF WATER SUPPLIES FOR OTHER TOWNS AND BOROUGHS.

He said the frequent complaints made to the State Board of Health, of polluted water-supplies and the almost invariable verification of the truth of such complaints by careful analyses of such waters, make it necessary for the State at large to devise means for abating these nuisances in an effective manner. The water supplies of many towns and cities are grossly polluted at the present time. Perhaps the most notable example of this pollution, not only of the State but the whole country, is that of Philadelphia. There are many other cities and towns in the State whose water supplies are grossly polluted to such an extent that they are unfit for use as water-supplies without previous purification of the water. Wherever the water-supply of a town is derived from these streams, filtration of the water is necessary in order to protect the health of the community against water borne diseases. The necessity for legislative restriction of the pollution of surface waters does not rest, primarily at least, upon the fact that pollution of these waters will require their filtration to render them fit for domestic use. Such legislative restriction is called for more particularly from the fact that some of these streams are now, or were rapidly becoming, direct menaces to the public health of the communities through which they flow. It is no longer to be expected that these surface waters can be maintained in such a condition of purity as to serve as sources of water-supplies without previous purification of the water. The drainage areas of most of the water courses are already so thickly populated as to render this out of the question, so that aside from the drainage of towns and boroughs along their course, there is sufficient polluted material gaining entrance thereto from the thickly settled rural districts to continue to render the water unfit for domestic use unless purified. In order, therefore, to prevent these water courses from becoming direct menaces to the health of the communities through which they flow, it is necessary to restrict the pollution through sewage that is now taking place. The only way, it seems to me, that this can be accomplished is through the enactment of laws prohibiting such pollution. Such laws should prohibit the entrance of all new sewers into any water-course which, in any part of its course, serves as a source of water supply for another town. This law should also demand that whenever practicable the drainage of towns now draining into these towns shall be subjected to some reliable method of purification in order to render it innocuous before entering the streams. In order to lessen the expense and to render the purification of sewage more efficient, it is suggested that a number of towns be combined together into a single drainage area and erect a single purification plant for the entire area. Attention is also called to the objectionable character of manufacturing waste and the signal manner in which it increases the pollution of streams. So far, the States that have secured important legislation restricting the further pollution of streams, somewhat along the lines of the Rivers Pollution Act of England of 1876, are Massachusetts, New York and West Virginia. So far legislation in our own State has not been secured to this end, though several bills have been introduced into the State legislature since 1891 tending to bring this about. It is urgently demanded that such legislation be secured in Pennsylvania, on the strength of the knowledge already obtained with regard to the grossly polluted condition of our several streams.

Dr. Bergey's paper was discussed by many of the members, and on motion, the acts offered in 1891 and 1895 were again referred to the Committee on Legislation and they were instructed to urge their adoption by the legislature at the coming session of that body.

After allusion to the lecture of Professor Rothrock, the following was unanimously adopted:

WHEREAS, The Associated Health Authorities of Pennsylvania have already placed upon record their opinion that the best interests of the commonwealth would be subserved if the State should become the possessor of extensive areas at the head waters of our principal streams, and

WHEREAS, Up to this time no direct action has been taken

to secure these lands which are so essential to the future of the Commonwealth; therefore, be it

Resolved, That we again place ourselves upon record as endorsing for this State a system of forestry reservations, such as have proven to be of so much value to the health and commercial interests of the State of New York.

Dr. THOMAS FURNBULL, Assistant Bacteriologist of the State Board of Health, read a paper entitled

SUGGESTIONS FOR LEGISLATION IN THE INTERESTS OF A MORE COMPLETE SYSTEM OF SANITARY ORGANIZATION OF THE STATE.

He referred to the menace to cities and towns throughout the country districts, in the absence of any form of health authorities, all who were suffering from any form of contagious diseases were not prevented from being at large and thus constantly distributing the infection to others. He quoted the common belief that measles, whooping cough, even scarlet fever, were regarded by the people as not of import, hence the objection to report them and often the non need of any medical attendance. Thus these contagions were being carried everywhere, and thus were epidemics kept up. It was a prime necessity that such legislation should be enacted that would prevent this which was an outrage upon the people. He also alluded to the necessity for a codification of the existing health laws of the State, and quoted the admirable system now existing in the State of New York, which he held up as a model for Pennsylvania.

Dr. B. LEE read a paper on

TRANSPORTATION OF THE DEAD.

He said this is not a safe thing to do unless under certain restrictions. A physician's permit is not sufficient, boards of health alone should give the permission, and these only after very careful consideration. It is not a question of proper respect for the dead, but of health for the living. In our affection for the dead we are apt to forget the other and sanitary side. The danger is greatest in the country, where there is no supervision, but there the hold is to be had in the transportation companies, who are coming to understand the risk to the health of their employes and the trouble the law will give them. Diphtheria, he thought might be placed upon the free list of not absolutely contagious diseases, the use of formaldehyde doing away with the danger. The examination and registry of the embalmers and the responsibilities of undertakers were touched upon, the certainty that those who prepare the bodies understand their business being essential. The opposition by the members to the placing of diphtheria on the free list was very emphatic among those who discussed the matter, but Dr. Lee believed that if it could be done, if the concession could be safely made, it ought to be done.

CROSBY GRAY of Pittsburg thought in place of lessening the list, scarlet fever and measles should be added to it.

Dr. M. L. DAVIS of Lancaster then addressed the Association upon

THE DISPOSAL OF GARBAGE,

illustrating his remarks by pictures on the screen. He said: We would feel like apologizing to you for referring to the importance and necessity of the sanitary disposal of garbage were it not a fact that in the closing days of the nineteenth century the great majority of the centers of population are without any means or system for this purpose other than to remove it from the most objectionable place in or near the buildings to one a little less undesirable because more out of the way. The great State of Pennsylvania, with its 6,000,000 inhabitants, has forty-nine cities having more than 10,000 people; and in only eight of these forty-nine cities have any other means been adopted for the disposition of garbage than by dumping it at some unfrequented place. The practice for many decades has been for inland cities to convey their garbage to a dumping-place, while seaport cities loaded it on scows, which by the terms of contract were to be towed ten miles out to sea and the cargo then thrown overboard; this we presume, was sometimes carried out, but we know to a certainty that New York Harbor as well as Delaware Bay has been the depositing place for many a barge load. Philadelphia, until within the last five years, has emptied all of its sewage and much of its garbage into the Delaware and Schuylkill Rivers; the solid portions have deposited upon the bottom of the channel until it became too shallow for large vessels to enter the port, and we now witness the interesting spectacle of the United States Government expending millions of dollars to remove the filth which Philadelphia dumped in front of her own door.

Philadelphia, by this irrational and unwise action, had cut off the possibility of large vessels entering her port, thereby losing valuable shipping trade. Inland cities are doing just as irrational a thing, but in a different direction. They deposit their garbage in some old abandoned stone quarry, an abandoned

sand pit or "sink hole," there to decay and poison the air by the fumes arising from its decomposition, and the water-supply when well water is used by the filthy material carried into the ground by rain, finally finding its way into the wells.

It is interesting to note how the cities of America dispose of their garbage; an investigation some time since by Mr. Randolph Hering of New York into the methods employed by 150 American cities, elicited the following: Forty-six cities disposed of it by filling or plowing into the land; 14 by dumping it into the sea, lakes or large rivers; 43 cities employed it to feed animals; 17 employed reduction plants, recovering the grease for soap-making and making the residue into fertilizers; 30 disposed of it by burning in various kinds of garbage furnaces. Thus, while 103 of the cities investigated disposed of their garbage in dangerous and improper ways, only 47 adopted safe methods. It is only of late years that any scientific method of garbage-disposal has even been sought for.

The rapid advancement of sanitation, the establishment of boards of health in cities, enforcing greater cleanliness, made a demand for a better method of disposing of this dangerous refuse and nidus of disease-breeding germs. The law of demand and supply came to our relief. The inventor's mind was turned to the subject and as the substance to be destroyed was impure, naturally the only sure purifier in nature, heat, was suggested. Various methods were devised to apply the heat in the best possible manner to burn the material to be disposed of.

It is our desire to explain to you how this can be accomplished in the cheapest and most cleanly manner, by considering the various methods of disposal plants and their systems of operation.

Garbage, in this sense, should be confined to kitchen waste, that is, the rinds of oranges, bananas, apples, peaches, watermelons, cantaloups, waste scraps of bread, etc., and the many things of an offensive nature that accumulate in a kitchen and about a house, which are capable of undergoing putrefaction or carrying the germs of disease; the refuse of market stalls and the establishments for sale of fish, fruit and vegetables. Other substances should never be placed with garbage, as they either require separation from the garbage in some processes, or in others take the place of an equivalent amount of destructible material, and thereby encumber the economic destruction of the garbage proper.

In referring to the decomposition of garbage as being dangerous, we do not wish to be understood as advocating the theory of some that disease germs are produced by such decomposition, as we firmly believe that the particular germ of every disease which afflicts the animal body is placed in or received into that body in an embryonic state, to be developed, and to the processes of development and reproduction of its kind are due the manifestations of the disease to which the germ belongs. For example, in typhoid fever the germ enters the alimentary canal, the eggs lodge in Peyer's glands and there develop, and it is the irritation produced by this growth which causes the symptoms of the disease. That the decomposition of garbage or the decomposition of any other substance will produce these germs we do not believe; but filth of any kind, and putrescible filth especially, furnishes an excellent nidus for such germs, and no better material for their collection and preservation can be found.

The amount of garbage produced by different cities varies very much, dependent largely upon location, modes of living, employment, etc. American cities, owing probably to more lavish modes of living, produce much more garbage than European cities of the same size. Cities located as those along our Jersey coast, where transportation facilities are such that one or two hours' time will deliver at their doors any products from Philadelphia and New York, this, and the class of people who frequent such resorts, cause large quantities of perishable vegetables and fruits to be used, hence a very much greater amount of garbage will be produced than in inland cities of the same size.

The average daily amount of garbage produced by American cities is one half to one ton for each 1000 population. This can be taken as a safe basis to calculate from, as only in rare instances will it fall below or rise above this amount.

The following tabulated amounts of garbage collected from the cities named prove the correctness of this estimate:

Buffalo.	per capita, 0.245 pounds per day.
Boston.	per capita, 0.946 pounds per day.
Wilmington.	per capita, 0.805 pounds per day.
St. Louis.	per capita, 0.277 pounds per day.
New Bedford.	per capita, 0.890 pounds per day.
Cincinnati.	per capita, 0.566 pounds per day.
Philadelphia.	per capita, 0.832 pounds per day.
Lowell.	per capita, 0.408 pounds per day.

Two methods of disposing of garbage are being adopted at

the present time, to the exclusion of others; during the last five years all the cities which have abandoned their insanitary modes of disposal have adopted one or the other. The one process is known as the utilization process, and the other, by burning it in a furnace constructed particularly for the purpose, is misnamed the cremation process. We will consider first the utilization process. The idea that there was material in garbage which, if reclaimed, would be of value, was the incentive which developed this method of disposal, with a view to make a fortune out of the product. There are in use two kinds of utilization processes. In the one kind benzene or naphtha is used to dissolve the fat contained in the garbage. Among the principal ones of this kind are the Merz and the Pierce. The Preston, Halthaus and Arnold are purely mechanical processes, no chemicals being used. The machinery and appliances of both systems are practically the same, except in the one a naphtha tank. The special machinery consists of large iron tanks, fifteen feet high by five in diameter, provided at the top and bottom with means to be closed steam tight; they each hold seven tons of garbage, and upon their number depends the capacity of the plant. Presses to press out the grease, dryers to dry the solid portions, fume destroyers, grease-extracting tanks, naphtha tanks and condensers, screens, mills for grinding the coarse material after having been dried, together with boilers, engine and the many utensils required to operate a plant having so much machinery. The iron tanks which receive the garbage are called cooking tanks, extractors or digestors. As a description of one of these plants will suffice for most of them, we will describe the process the garbage goes through in such a plant. The garbage is conveyed to the reduction plant by carts, which are weighed upon scales; the cart then goes to the rear of the building, when it enters and dumps its load into a large pit, where two men stand in the foul mass and fork it into elevators, which convey it to the digestors; these men separate the tin cans and other substances found in the garbage. A visitor to a plant at Pittsburg describes the process thus from this pit: One line of these hoppers, the descending one, is empty. It turns upward and gathers up a great wad of the reeking refuse. Working like the belt of an engine, but slower, the hoppers carry their load up and come down empty. It is carried up to the third story. Round the rear of the building you come to a flight of stairs leading up to the second and thence to the third story. Here is where the process of reduction is begun. In the third floor room you realize that this place is less a garbage furnace than it is an odor-destroying institution. The process of cooking the refuse is simple and requires little, though awkward lumbering, machinery. The devices for carrying off any objectionable smells and holding them from ascension into the air are numerous and complicated and occupy most of the space of the room. There are fans and pipes and ducts and furnaces. A single narrow building where the digestors might be stored would be sufficient to get rid of the garbage. A great square building with many attachments inside and out is necessary for the destruction of the odors.

When the hopper is filled and ascends to the ceiling of the third floor its load is emptied into a duct. Carriers bring it along the roof until it is over one of the huge digestors. These are huge cylindrical vessels, probably fifteen feet high and five or six feet in diameter. Each of them is capable of holding seven tons of garbage. They are filled every four hours and are working night and day. The top of the digester is just under the duct that carries the material from the hoppers. This gives them some six feet on the third floor, while the under portion is upon the second floor and extends down to a vessel, technically known as the dryer.

The room in which the digestors are filled is as clean as an office. Attendants are kept busy about the big cylinders, as there are bits of garbage that can not be prevented from falling out when the hoppers empty their load. The boys have brooms, and as a bit of stuff falls on the floor it is swept up and put into the vessel. Every window of the room is open. Going to one of these windows you find it peculiar that there is only the draught of air inward. Not a breath goes outside. Yet the windows are open all about the room, and there are many windows. This is explained by the big fan and air pipe. Coming from the air-pipe are numerous cylinders extending from the pipe about halfway to the floor. These end in a funnel-shaped spread, and a hand placed at their mouth finds the air sweeping up into them. It is absolutely impossible for a disagreeable odor to get outside the windows. The fan is capable of carrying away 75,000 cubic feet of air a minute.

But to go on with the garbage. The seven-ton digester is full. The steam-tight and air-tight doors at the top are closed after having admitted the stuff. There are similar doors at

the bottom of the digestors. They are so arranged that they can easily be opened and shut. The digester is supported on a huge iron frame, and the fact that simply opening the doors at the top fills them and opening at the bottom empties them shows the facility of the work. It can be worked at both ends in a moment. Any bad air that may emanate while this process is going on is well taken care of by the big fan. There are valves and pipes arranged so that the steam for cooking may be admitted into the cylinder.

In many of the garbage furnaces there is a step here in the reduction that is not taken in the Pittsburg establishment. It is the crushing. Perforated cylinders are sometimes filled with the cooked and charred stuff now called tankage instead of garbage, and an immense pressure is applied to it. This squeezes out much of the water and grease in the tankage. The grease is utilized and considerable income, about \$500 a day, would be derived from this grease here. An estimate places the amount of grease that can be obtained from 400 tons of garbage, at that figure. But it is not all grease that is derived from the pressing process. Much of it is foul, rank water. This is the reason the pressing is omitted. The drinking water of the city is obtained from the river, and were the tankage pressed the water would be drained off into the river. Where they have an ocean in which to empty the dirty liquid the pressing can be done advantageously. Instead of pressing the tankage, therefore, it goes immediately to the dryer. There any water or moisture that still remains is vaporized or absorbed. From the fourteen digestors of the factory the tons of garbage are reduced greatly, and seven dryers hold the tankage. Each dryer receives about four tons. The dryers are steam-jacketed cylinders in which huge arms are constantly moving about. They stir up the contents and submit every portion of it to the heat, so that it is thoroughly dried. The heat, which is applied through the cylinders, is the same in every part. The garbage in this process is much broken up and disintegrated.

It is from the dryers that much of the objectionable odor comes. In the process the water and grease of the tankage is bound to be converted into vapor. This is evident in the fact that after the digester and the dryer have finished with the garbage only about 20 per cent. of the stuff remains. There is 80 per cent. odor, and such a vaporization might, if allowed free access to the atmosphere, bring misery to many noses and cause the condemnation of many Christian souls. So, heroic measures are used on the dryers.

There is a vacuum-pump next the engine room in the rear of the building. It is a pretty and powerful little arrangement. There is a big cylinder, and the pump by constant suction establishes in the cylinder a vacuum. Attached to the dryer are pipes and ducts similar to those upon the third floor. These pipes connect with the vacuum-pump and immediately the vapors take form and make for the aerial quarters they are seized, drawn into the pipes and brought along by the vacuum. None of the vapors can escape. This is evident, inasmuch as there is not a particle of odor in the room with the dryers.

When the dryer has done its work with the tankage the work is over so far as the garbage plant is concerned. There are little carts under the dryers that have air-tight tops fitted on them. These carts are somewhat similar to those the street cleaners drag about, scarcely a deviation from the ordinary fruit vendor's push-cart. From the dryers the carts take the tankage back to the rear of the building, adjacent to the pit; just where it came from a few hours previous reeking, foul-smelling, filthy. The load that the cart has is again elevated. There is a sort of permanent crane upon which the tankage is hoisted. Freight cars are run under this crane and all that remains of the garbage is dumped into the cars, a charred mass.

Of the possibly 100 tons that went into the digester there are about twenty tons left to be converted into fertilizer. The tankage is crushed, ground up and chemically treated, and its end is first-class fertilizer.

There are three furnaces that are used to get rid of the vapors. Some of the fumes that come from the dryer are susceptible to condensation by a spray of cold water. The greater part of them, though, must be destroyed by heat. The vapors from the pipes are usually sent through a spray of cold water, and some of the gases taken away. The remainder goes into the incinerating furnace. There are three of these furnaces, all with huge boilers. Inside the cylinders, the pipes are coiled up until many feet of pipe are there. The gas flame is applied to these coils. It is a process similar to distillation. The vapors are run through these pipes and subjected to an intense heat. They lose their identity there in decomposition. They are separated and destroyed. At the side of the engine there are exhaust pipes. Opening the exhaust, steam and water are discharged. In a few moments the odor is percep-

tible, and it grows more intense all the time. It is highly disagreeable, resembling hydrogen sulphid, the most disgusting chemie compound known. The odor is somewhat like putrefied cabbage boiling. By placing a handkerchief at the exhaust the odors and vapors will condense upon it, and an idea obtained of the insurrection that would arise were the vapors turned on the air. But when the incinerating furnace has finished with the vapors there is absolutely no odor left. There is therefore none to ascend to the bluff above or to cause trouble. From the pit in the rear it is possible that some may ascend, but that is the only place, and the effect is inconceivable. This is the odor that bluff residents occasionally smell. The huge fan at the top can cause a draught that sweeps the odors from all the floors. It is on the third floor, and its effect is felt on the first. From the digestors all odor goes into the pipes, and the same may be said of the dryers.

The outlay for the operation.—There are thirty wagons, each with a driver and a helper, and each with two horses. The driver gets \$1.66 $\frac{2}{3}$ a day, and the helper gets \$1.50. About the works on Second Avenue the forty-five men employed at various salaries are from office boy to superintendent. It is not unfair to place the wagon men at \$30,000 and the others at \$20,000. There is the sum of \$30,000 still to be used in the garbage furnace alone. Of the \$30,000 that remains, the horses must be kept, the factory must be kept up and incidental expenses must be borne. Incidentals cover a multitude of sins. But whatever else can be said of the garbage plant its efficiency can not be denied. It is visited by officials of other cities, and is called perfect.

To summarize, the utilization method is to receive the garbage in a pit, separate tin cans and other solid material from it, convey the garbage proper to the digestors, where it is treated by a cooking process by steam alone in the one case and in the other by steam and naphtha to extract the grease, the pressing out of the liquid, drying of the solid portion and grinding for fertilization, and the distillation of the naphtha to reclaim it.

The burning method of disposing of garbage is accomplished by two methods; the one utilizes the carbon in the garbage as fuel and the other does not. These furnaces are of the horizontal type; when the garbage is dumped through openings upon a grate a fire at the end furnishes the heat to dry and burn the garbage. A second fire in or near the stack destroys the odors from the burning garbage.

Let us consider the cost to the different cities using utilization or burning. Milwaukee pays \$1.48 per ton to have its garbage disposed of, St. Louis \$1.32 per ton, New York \$89,000 per year, Pittsburg \$80,000 per year; this does not embrace collection.

That the destruction of garbage is desirable by suitably built furnaces in the vast majority of cities is unquestionable.

The horizontal furnaces have burned of late, at Wilmington, 500 tons of garbage with ninety tons of coal, or 39.9 cents worth of fuel to destroy a ton of garbage. The Davis furnace has burnt forty tons of garbage with one ton of coal, or a record of 6 cents worth of coal for each ton of garbage; including the fireman's wages would only amount to, for a day's burning of forty tons, \$1.50 fireman and \$2.15 one ton of coal, or \$3.65 besides the interest of the plant. Whilst the reduction plants want for the same work \$52.80, besides the process of reduction is not only more expensive, but the separation of the offensive material is repugnant.

Before illustrating the different systems we would call your attention to the subject of the domestic disposal of garbage. There are many towns too small to use a garbage plant, but when the disposal of garbage is an important item we might show how this can be done in the ordinary stove or range.

The special committee reported an amendment to the laws allowing any one interested in sanitary matters to join the Association on payment of one dollar yearly, with all the rights of any members, and the addition to the name of the Association of the word sanitarians, making it "The Associated Health Authorities and Sanitarians of Pennsylvania." These amendments were unanimously adopted.

Dr. LEE offered a humorous resolution urging the removal of the constant menace of the filthy condition of Cuba by the proper administration of certain articles. After some discussion on the importance of such a matter a resolution was presented by Dr. Lee.

WHEREAS, In consequence of entire neglect of the Spanish authorities in the Island of Cuba to inaugurate and enforce such sanitary laws and regulations as exist in civilized countries, the diseases of smallpox, yellow fever and leprosy constantly prevail unchecked in that island, and

WHEREAS, In consequence of the proximity of Cuba to the United States and the intimate relations between the two countries, the condition referred to constitutes a constant men-

aces to the public health of this country, involving the most painful anxiety, considerable pecuniary loss, and in repeated instances serious loss of life, therefore

Resolved, That no settlement of the pending difficulties between the United States and Spain will be satisfactory to the sanitarians of this country which does not insure to the United States the absolute control of the sanitary administration of the Island of Cuba.

This was adopted by a unanimous vote.

The officers chosen were: Crosby Gray, Pittsburg, first vice-president; Moritz G. Lippert, C. E., Phoenixville, second vice-president; J. B. Tweedle, Weatherly, third vice-president; Wm. B. Atkinson, Philadelphia, secretary; Jesse C. Green, D.D.S., West Chester, treasurer.

The Association adjourned to meet in 1899 at the call of the Executive Committee.

German Congress of Internal Medicine,

April 13, 1898.

The President in his address referred to the campaign against Vivisection, which has been revived in Germany, and mentioned as an instance of the non-antagonism between vivisection and love of animals, that the physiologist, C. Ludwig of Leipsic, is president of the Society for the Prevention of Cruelty to Animals. The first session was devoted to "Medical Education." A ten-semester course was advocated, with increased facilities for practical technical training in diagnostic methods, laboratory work and general therapeutic methods (diestetics, inhalations, hydro-, mechano-, electro-, balneo- and climatotherapeutics), with practical bedside courses. The internal clinic should be four semesters, ten hours a week. The folly of creating a special chair for any branch of internal medicine or therapeutics was emphasized. Leo announced, in his address on "Diabetes," that the new preparation by E. Büchner of crushed and compressed yeast, which while filtered free from cells still contains the zymosis, the sugar-splitting element, produces a remarkable curative effect on dogs rendered diabetic by being fed with a solution of sugar fermented with yeast until the sugar has vanished. The diabetes thus induced lasts several days, and produces great emaciation if long kept up. It demonstrates that the elimination of sugar in individuals after copious beer-drinking, is due to some toxic metabolic product of the yeast cells. Beer, therefore, should be avoided by persons inclined by heredity to diabetes or already affected. He urged periodic investigation of the urine and weight in diabetics by the physician, "not the druggist," to determine periodically the capacity for assimilation. The "Heat Production in Fever" was attributed by Krehl to the fever-producing substances in the circulation. An increased amount of organic albumin is decomposed, with the albumin molecule hydrolytically split. The albumoses thus formed, far advanced in hydration, enter the circulation and are eliminated through the kidneys. The products of this decomposition of the albumin affect the nervous system as a toxin, especially those points which regulate the innervation of the vessels and the giving out of heat. Less heat is given out and the bodily heat rises. Von Ziemssen secures much clearer views by making his fluorescent screen flexible to fit the contours of the body. He suggests that a cloth vest might be impregnated with the chemicals and fit still more perfectly.

The addresses on "Intestinal Antisepsis" and "Auto-intoxication" proclaimed the paucity of our knowledge on this subject and the worthlessness of all antiseptics for this purpose. They are only kept in vogue by the advertisements of the manufacturers. Only one or two voices were raised in dissent to this sweeping condemnation, which leaves only prompt evacuation of the contents of the stomach and intestines for our reliance in intestinal auto-intoxication. Boas remarked that it is usually accompanied by renal insufficiency, and that calomel acts upon both the intestines and the kidneys, while salicylic acid reduces abnormal production of gas. He is now studying the relations between the "oxyacids" and the excretions. Stern related the results of his investigation of calomel feces. They contained so much calomel that in the course of a few hours the bacteria in them were partially or entirely destroyed. Fürbringer also expressed his belief in the value of calomel as an intestinal antiseptic. Albu suggested that auto-intoxication may be due to spontaneous alterations in the physico-chemical relations in the blood and organic juices, caused by abnormal metabolic products, such as alterations in the osmotic tension. The parallel between exogenous intoxications and the auto-intoxications *par excellence*: diabetes, gout, anemia, suggests that they are more properly disturbances in the intermediate metabolism; intestinal auto-intoxication is quite different. Quincke

suggests utilizing the antagonism that exists between different unicellular organisms, and cited his success in treating intestinal putrefaction (with excess of indoxyl and diarrhea) by means of pure yeast, 60 c.c., immediately after each meal. Sternberg announced that the accessorius is the motor and the cervical branches the sensory innervation of the sternocleidomastoides. Van Niessen described a small streptobacterium which he has found regularly in the blood in syphilis and also in specific progressive paralysis and tabes. He ascribes a specific noogenic importance to it in the probably complex etiology of syphilis. Trumpp asserted that cholera and typhus immune serum produces agglutination, which he considers establishes a connection between agglutination and immunity. It is not a mechanical phenomenon, but due to some effect on the walls of the bacteria, and immunity may be due to this same effect. Badt stated that 94 per cent. of his fifty-three cases of arthritis deformans were women, and in 80 per cent. of these, the affection had commenced with the menopause, to which he is inclined to attribute its etiology. The oöphorin tablet treatment recommended by Senator and others for the climacteric disturbances in the circulation seems indicated, therefore, in this disease.

SELECTIONS.

Medical Charity in New York.—Dr. Frederick Holme Wiggin of New York, presented to the recent Conference of Charities and Corrections, "An Historical Sketch of the Recent Movement to Restrict the Abuse of Medical Charity in New York." He said that the movement had been inaugurated about eighteen months ago by the efforts of Dr. Stephen Smith, recently president of the Department of Charities, and Dr. Landon Carter Gray, then president of the Medical Society of the County of New York, who showed that the ratio of those applying for medical aid had risen from 16 per cent. in 1860, to about 49 per cent. in 1895. A committee of the County Medical Society, consisting of gentlemen representative not only of the general medical profession, but of the larger teaching faculties in the city, were charged with the duty of investigating the question of the abuse, and if possible suggesting the remedy. They found no difficulty in proving the existence of a serious abuse, and consequently their efforts were chiefly directed toward seeking out the remedy. It did not take long to reach the conclusion that the evil was largely the result of a lack of proper methods of investigating the financial condition of those applying for medical relief, and that the Charity Organization Society considered it perfectly feasible to systematically investigate all applicants. The cost of such investigation, it was estimated, would be about \$25,000 the first year, and about \$5,000 each subsequent year. In the opinion of the Committee, another important factor in the production of the dispensary abuse was the system of charging small fees for the medicines and apparatus, thus leading many persons to feel that they were paying their way. As a result of this preliminary study of the question, the Committee felt convinced that the evil could be restricted by attention to these points, and also by making it a misdemeanor, punishable by a moderate fine, for a person to obtain, by reason of false representation as to financial condition, free medical or surgical relief at a dispensary. An effort was then made, by means of a circular letter, to secure the co-operation of the managers of the dispensaries, but although more or less definite replies were received from seventy-six dispensaries, it soon became apparent that it would be impossible to get the managers of all the dispensaries in this city to voluntarily agree to any general plan. The attitude of these managers was clearly presented in the report made to the legislature last January by the State Board of Charities, which says of them: "They apparently are not, and have never been in a temper to come to some mutual understanding whereby better conditions shall prevail. In a large degree, and for various reasons, they have become competitors in business to such an extent that it is probable that nearly half of the inhabitants of New York are now receiving practically free medical treatment." The original committee was soon reinforced by representatives from a similar committee appointed by the New York County Medical Association. As a new organization, known as the New York Society for the Advancement of the Practice of Medicine, had already introduced into the legislature a bill intending to rectify some of these abuses of medical charity, and as this bill contained a number

of objectionable features, its proposers were consulted, and persuaded to give their consent to the substitution of another bill that had been prepared. The main features of the latter or the first "dispensary bill" were: 1, forbidding the establishment of a dispensary in a drug store or tenement house; 2, requiring all dispensaries to be duly incorporated and to be licensed by the State Board of Charities; 3, providing that persons shall not obtain relief from dispensaries by false representations, and that a violation of this act shall be a misdemeanor; and 4, empowering the State Board of Charities to make rules and regulations, and to annul or suspend incorporations, and to revoke licenses. The bill having received the endorsement of the State Board of Charities, it was passed unanimously by both houses of the legislature, but did not become a law owing to the failure of the executive to approve it. Between this time and the opening of the legislative session of 1898, the subject was freely discussed, not only in the medical societies, but by both the medical and lay press, and the following medical societies endorsed the plan of appealing to the legislature to limit the abuse of medical charity: The New York State Medical Association, the Medical Society of the County of New York, the New York County Medical Association, the New York Medical League, the New York Society for the Advancement of the Practice of Medicine, the Medical Society of the County of Kings, the Kings County Medical Association, the Brooklyn Medical Society, the Brooklyn Medical Association and the Long Island Medical Society. Representatives of these societies formed a joint committee which, after much careful investigation, prepared the outline of another bill, which was milder in character, and which seemed to eliminate the features which had been considered objectionable in the previous bill. Before its representation to the legislature, this outline was submitted to the revision committee appointed by the Governor for the purpose of revising or preparing bills, so that they shall be constitutional, and shall not conflict with existing laws.

The essential points of difference between the second bill and this one were: 1, in the new bill the definition of a dispensary was limited to such institutions as derived their income, wholly or in part, from trust funds, public moneys or sources other than the individuals constituting the dispensary and the persons actually engaged in the distribution of its charities; 2, in the new bill the State board of charities was given control over dispensaries by empowering it to grant licenses to such institutions as, in their judgment, would be for the public benefit; 3, in the new bill, the board was given the power to revoke licenses for cause, after a public hearing, instead of, as in the previous bill, the power to annul the act of incorporation. It seemed to the framers of the measure that if the existing abuse of medical charity was to be controlled, the first requisite was an impartial body, which should control and make rules and regulations for the government of all institutions seeking to relieve the sick poor. Such a body is provided for by the legislature, under the constitution, in the State board of charities, and its powers are such that they would require to be but very slightly extended to allow this board to assume control and supervision of the dispensaries of the State by issuing and revoking licenses. This revised dispensary bill was very generally and favorably commented upon by the daily press at the time of its introduction into the legislature in the early part of the session. At first, the bill met with scarcely any opposition in the legislature, but when it was favorably reported by the committee on public health of the senate, to whom it had been referred, such vigorous protests were received by the chairman of that committee, that provision was made for a joint hearing of the friends and opponents of the measure, before the senate and assembly committee on public health. After full arguments on both sides, the senate committee reported the bill favorably to the senate, which passed it with only two negative votes; but the public health committee of the assembly failed to report the measure to the assembly, although vigorous efforts were made by its friends to secure a favorable report. The measure was therefore smothered in committee, and failed to become a law.

Operation for Hour-Glass Contraction of the Stomach from Gastric Ulcer.—Mr. Watson Cheyne has had an important case at the Kings College Hospital, of the above nature, with operation followed by recovery. The hour-glass condition of the stomach is not very infrequently met with at a necropsy, but is certainly rarely that it can be diagnosed clinically. The surgeon holds the opinion that the Heineke-Mikulicz operation which he performed was the most suitable under the circumstances. As more than three and a half months have elapsed since the

operation the hope that the patient is permanently relieved seems fully justified. A married woman, aged 46, was admitted to the hospital on November 8. About six years ago she began to suffer with great pain in the hypochondriac region and in the right shoulder and, in fact, with all the symptoms of ulcer of the stomach with the exception that she had at that time no hemorrhage. She was treated for this condition by diet and in various other ways, and had suffered much from time to time, but latterly the symptoms had been those of obstruction. She was emaciated and feeble and had almost daily vomiting. Her diet had of late been entirely a fluid one. Examination showed a moderate amount of gastric distention that was not uniform. On listening with a stethoscope over the middle of the stomach region, a gurgling could be heard from time to time as if fluid was running through a narrow orifice, and Dr. Burney Yeo, who saw the patient in consultation, stated that in his opinion the case was one of hour-glass contraction of the stomach, resulting no doubt from an old ulcer. On December 1 a vertical incision was made over the stomach, in the middle line, about four inches in length, and when the peritoneal cavity was opened the stomach was drawn out of the wound; it was then found, as had been expected, that just above the center of the stomach there was an hour-glass contraction. The stomach, especially toward the cardiac end, was very considerably dilated and there was also some dilatation toward the pyloric end. The contraction was very marked and when it was laid open it was found that the communication between the two portions of the stomach was extremely small; as a matter of fact, a crow quill could hardly have passed through. There was a good deal of scarring and cicatricial tissue in the neighborhood and at the actual point of the contraction there was no mucous membrane at all. An incision was made through this contracted portion in the line of the stomach so that the ring of cicatricial tissue was divided transversely; this incision was extended into the healthy parts of the stomach for about one and a half inches on each side, and then the angles of the incision were brought together and the rest of the part sewn up, first with a few stitches which went through all coats of the stomach and then with a row of Lembert's sutures; in fact, the operation performed was identical with that employed in cases of contracted pylorus under the name of pyloroplasty. After the operation was concluded an opening was left between the two portions of the stomach, which could readily take a couple of fingers. The wound was then stitched up and the patient put back to bed; she was not very much collapsed after the operation. The wound healed by first intention and the patient went on very well. After about a fortnight she was allowed to have solid food. She was discharged on January 7, having gained eight pounds since her admission, and she stated that she felt better than she had felt for many years; this improvement still continues. She is still somewhat troubled with flatulence, but beyond that her condition is practically normal. She still continues to gain weight. The interest of the case lies first in the diagnosis, that instead of being a pyloric obstruction as had been supposed by other physicians, it turned out to be a typical hour-glass contraction of the stomach. The diagnosis chiefly depended on the absence of the marked dilatation of the stomach, which would occur in pyloric constriction and in the bubbling of the fluid through a narrow orifice, which was heard, not in the situation of the pylorus, but about the center of the stomach. The further point of interest is in the treatment. One was very much tempted to excise the contracted portion of the stomach altogether and stitch the walls together on each side and no doubt that would have been followed by complete recovery without any risk of recurrence of the contraction, for it must be admitted that there may possibly be an increased contraction still and some recurrence of the symptoms, but the patient was in an extremely feeble condition and it did not seem justifiable to subject her to the prolonged operation which would have been involved in this procedure.—*London Lancet*, March 19.

PRACTICAL NOTES.

Gastro-enterostomy for Non-cancerous Stenosis.—Hayem reserves this operation for a last resort after the failure of all medical measures, except in the case of the poor, for whom repose and proper diet are impossible. The hyperacidity will usually disappear if the opening into the stomach is made large enough. If bile flows back into the stomach it may irritate the glands

to a certain extent, so that the ideal operation prevents any retention of food in the stomach and any regurgitation of bile.—*Bull. de l'Acad. de Méd.*, April 5.

Condurango as an Analgesic in Gastric Pains.—The pain accompanying ulcer and cancer of the stomach, etc., can be quieted by administering five to eight pills a day containing ten centigrams each of condurango bark. It often prolongs the life of the patient by facilitating alimentation. Lemoine believes that the condurango, like coca leaves, contains some alkaloid or glucosid, which exerts an analgesic action upon the gastric mucous membrane. It has almost invariably relieved his patients during an experience of several years.—*Semaine Méd.*, May 18.

Bernay's Sponge as a Hemostatic.—At the last annual meeting of the American Laryngological Association, held in Brooklyn, N. Y., May 16, Dr. W. K. Simpson of New York demonstrated the use of the Bernay sponge, which he maintained would swell to fifteen times its size and absorb twelve times its weight of liquids. Its efficacy in general surgery he claimed to be due to the absorbing power, acting as a cleansing agent and then serving to pack the wound. This sponge consisted of cotton fiber subjected to many hundred pounds of pressure and compressed to a disc one-sixtieth of an inch in thickness. It was especially adapted for use in the nares, was an excellent splint for the later stages of Asch's operation for deflected septum and could be used as a means of conveying medication to various parts of the nose.

The Hernias of Children.—Dr. W. B. Coley states that in upward of 300 operations for hernia in children under 14 years of age, he has had but one death, and that was from pneumonia. In seven operations in children under two years of age there was but one death, the patient being moribund at the time of operation. Bassini's method of operation is preferred. In four cases out of seven the cecum was found in the sac. Strangulation in infants is more common than is generally appreciated, and not infrequently arises from the bad advice to postpone wearing a truss until the age of one year. As to treatment, gentle taxis should be tried for one or two minutes; if this fails, applications of hot cloths should be made for them for from fifteen to twenty minutes, followed by taxis under chloroform, after all preparations for operation have been made. If this also is unsuccessful, immediate operation is to be undertaken. An attempt at radical cure can, in the great majority of cases, be made with safety.—*Archives of Pediatrics*, April.

Conservative Manipulation by Gynecologists Advised.—Dr. Howard Kelly has contributed to the *American Journal of Obstetrics* an article upon the needlessness of lacerating the hymen for the majority of gynecologic ailments. He speaks feelingly of the frequency with which the hymen is utterly disregarded, and attributes a much greater want of thought in this respect to female than to male practitioners. He urges that no one but an acknowledged expert should examine a virgin, basing his opinion upon the fact that delicacy of touch is needed to avoid lacerating the hymen, and upon the infrequency of any serious gynecologic lesion in this social condition. He then describes his method of examining virgins. He urges that while a skilled man can usually make a bimanual examination without lacerating the hymen, the latter is so frequently injured by the unskilled that most men should confine themselves to the use of the rectum in virgins, and that the patient should always be anesthetized and after anesthesia should be raised into the knee chest position and held there while air is admitted to the vagina and rectum. If she is then placed upon the back there should be no obstacle to the performance of a most satisfactory bimanual examination through the rectum. He describes a speculum which he has devised for use in the knee-chest position under anesthesia, in virgins. This

speculum is closely similar to well-known Kelly vesical specula, but is fitted with a beveled end in order to avoid the necessity of using an obturator.

Amyloform and Dextroform.—A new substitute for iodoform has recently been prepared by Professor Classen of Aix-la-Chapelle, which he names "amyloform," and which consists of a combination of formaldehyde with starch. It occurs as an almost impalpable white powder, devoid of all smell and insoluble in ordinary menstrua. In contact with the tissues of the living body, however, it breaks up, and when it was applied to extensive suppurating wounds formaldehyde could be detected in the purulent discharge. At the same time the urine was proved to be quite free from it by distillation with dilute sulphuric acid and the addition of fuming sulphurous acid, so that whatever formaldehyde enters the system must be fully oxidized therein. However much amyloform is applied no toxic symptoms are produced, though a slight and transient smarting sensation is sometimes complained of locally. The clinical effect of the substance is very similar to that of iodoform, only it is frequently more pronounced. In a number of cases of deep wounds with suppuration of bone from osteomyelitis or tubercle, a quantity of the powder very liberally applied caused the suppuration to cease in a very short time, in some instances where iodoform had previously been tried without much result. In varicose ulcers of the leg and in the primary sore of syphilis amyloform also proved useful. The above clinical observations were made by Bongartz in the Marienhilf Hospital, Aix-la-Chapelle. It has been mentioned that amyloform is insoluble, but a very similar substance has been prepared from dextrin instead of starch, which Classen calls "dextroform," and this is dissolved without much difficulty by both water and glycerin. Its 5, 10, or even 20 per cent. solution has proved very useful, as in injection in gonorrhoea, and the former of these solutions has been employed with success for washing out the cavity of an empyema. Internally the solution has been prescribed with advantage in a case of cystitis.—*Lancet*.

Electric Light in Rheumatism and Neuralgia.—Kozlovski, in *Vratch*, has published an account of his treatment of rheumatism and neuralgia by means of exposure to the electric arc. He was induced to make these observations by the statement of Ewald, who is medical officer to some large iron works, that he had noticed that since the introduction of the system of electric welding there had been a notable diminution in the number of cases of rheumatism, neuralgia, migraine and other nervous diseases among the workmen, which he attributed to the beneficial effect of the electric light. In order to bring this therapeutic agent within the reach of ordinary patients, Kozlovski has fitted up a consulting room with a suitable plant for producing the electric arc, which consists of a six-horse-power oil engine, a dynamo, thirty-five Tudor accumulators, a rheostat, ampere-meter and electric arc lamp with reflector. With these he obtains an electromotive force of 50 to 60 volts and a current of from 250 to 300 amperes. The patient is placed at a distance of one and a half meters from the light and protected by blue spectacles and also by a screen of cardboard in which an aperture is cut to allow the light to fall on the affected region of the body. To this it is exposed for from three-quarters of a minute to two minutes. The patient feels a slight sensation of heat, though the temperature is never raised more than 4 degrees F., where the light falls on the skin, but nothing more until six or eight hours afterward, when itching and tingling are felt and the skin becomes reddened. Some forty-eight hours later, desquamation occurs, which lasts for two or three days. In the course of three months Kozlovski has treated thirty-eight patients, varying in age from 13 to 70 years, by the electric light. There were eight cases of sciatica, all of which recovered; four of neuritis (locality not stated), two of which recovered; eighteen of chronic rheumatism, fourteen of which recovered; three of lumbago, all of which recovered; three of occipital neuralgia, of which two recovered; and two of trigeminal neuralgia, one of which was greatly benefited. In most cases three or four sittings produced an amelioration of the pain. They were continued at intervals of three or four days, according to the amount of cutaneous irritation, but the total number of sitting never exceeded a dozen.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	1.75
Single Copies	10 Cents.

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SATURDAY, JULY 2, 1898.

BUBONIC PLAGUE IN BOMBAY.

The plague has always been an interesting field for the litterateur as well as the scientist. The animated description of DE FOE, the child-like simplicity of PEPYS, have made accounts of the ravages of the frightful plague entertaining, and so far as science is concerned it is only necessary to look at the vast number of titles in the Index Catalogues of the Surgeon-General's office to see how much has been written on the subject of the plague. Many of the interesting points in the story we are in the habit of relegating to the past, and to think of these as having occurred at some time during the back ages, but by a report printed in our day we are brought face to face with the same conditions, the same panics, the same disturbances as those which characterized the plague days of the fifteenth and seventeenth centuries.

KHAN BAHADUR DOCTOR CHOSKY, in his report on the Bubonic Plague at Arthur Road's Hospital, Bombay, says: "The first plague patient was admitted on the 24th of September, 1896, and two more following before the end of the month. In the month of October there were 85 admitted, which gradually increased until there were 182 admitted in December, 277 in January and 365 in February. This taxed the hospital to its utmost capacity, as naturally enough with the increase of inmates there must be a comparative increase in the servants and assistants."

Dr. CHOSKY further says:

"Every effort was therefore made to secure additional servants, but in spite of the continuous efforts of the authorities to procure them even on double or treble pay, the greatest difficulty was experienced. There was extreme reluctance on the part of men, who had never been in their lives inside a hos-

pital, to take service, especially in a plague hospital, and when asked, they openly said that they would not endanger their lives under any consideration; some, however, were induced to join but only worked for a few hours or days and then ran away, never even coming to claim their wages. The number and the frequency of deaths, combined with the delirious condition of patients, used to frighten them, and indeed the sights and sounds of a plague ward in the dead of night, with the groans and moanings of the delirious patients, were enough to appal the stoutest heart. Old servants could with difficulty be induced to remain, and a majority of them on that account went on strike and refused to work. All of them were given a bonus to make them continue in service, and their pay all round had to be increased. They were asked to induce some of their own friends to take up work in the hospital, but to no purpose. They used to come, work for a short time and run away as before. Pay however large was no inducement. They had never seen so many people dying as they did in the plague, for the largest number died at the Arthur Road Hospital, both because of the numerous admissions and because so many cases were brought in a moribund condition. It was not until March, when the epidemic commenced to decline, that a considerable number could be induced to join, and strange to say among the latter were some people who had attended their sick friends in the Hospital."

There were three Hospital Assistants who worked practically night and day, Dr. CHOSKY himself putting in from six to seven hours' work every day.

"Apart from these difficulties," says the Doctor, "the Hospital had to contend against the ignorance and prejudice of the people, always averse to going to a hospital, and more so when sent there against their will and under compulsion. Time after time patients in a moribund condition were brought to the Hospital, to whom no relief could be given, as they were practically past all help and they came simply to die, the Hospital getting all the popular discredit attached to the heavy mortality. Nearly one-third of the total admissions during the six months died within twenty-four hours of admission, by far the greater number dying within a few hours and some even within a few minutes. At times patients were found dead when brought to the Hospital in ambulances, and the corpses were sent direct to the burning grounds. Added to this heavy mortality, the means used to resuscitate and support their strength, especially subcutaneous injections, were misconstrued, and it was openly said that the doctors were killing the patients in order to stop the further ravages of the epidemic. It was also freely stated that the patients were purposely killed and their hearts taken out in order to send them to Her Majesty, the Queen-Empress, to appease her wrath on account of the disfigurement of her statue, which occurred in the beginning of the epidemic. All this culminated in a raid on the Hospital in the forenoon of 29th of October, 1896, when a large number of mill-hands, estimated from 800 to 1000, rushed toward the Hospital, breaking open the gates and scaling the walls with a view to wreak their vengeance on the Hospital staff for the alleged killing of patients. Road metal was freely thrown at the Hospital staff, some of which reaching the wards, broke the tiles and injured some patients, but fortunately no one was seriously hurt; on learning that the police were approaching, the men dispersed in all directions. An armed police guard had to be quartered on the premises for a long period and Arthur Road, which is one of the main roads leading to the mills, was patrolled by mounted and foot police for a considerable time after the raid. The Hospital assistants were openly threatened with violence; they dared not go out of the compound for their meals, etc., unless shadowed by policemen in plain clothes, and it was under such conditions

that the work of the Hospital was conducted for some two months."

The usual crop of charlatans seemed to develop, following in the wake of the victims of the plague like vultures after a battle. The report says:

"The plague epidemic had suddenly created in our midst a host of pseudo-specialists who pretended to know all about the plague and who for a time, forgetting their usual avocations of tramway conductors, railway guards, engineers, postal inspectors, clerks, etc., suddenly blossomed forth into plague specialists, vaunting their nostrums day after day, and pestering the health officers as well as the medical officer of the hospital. Then again, the permanent quacks had their specialties, and in some cases even duly qualified medical men, who ought certainly to have known better, came out with strings of prescriptions and specifics with the view of obtaining a fleeting notoriety."

Being in India instead of America, we suppose the Doctor was spared the spectacle of seeing photographs of these people staring at him from every edition of the daily newspapers.

Of the hospital staff the assistant medical officer, Dr. P. N. DAVDA, and three ward boys were attacked with the plague. Dr. DAVDA unfortunately died, notwithstanding the naïve remark in the report (page 45), in speaking of preventive treatment: "None of the hospital staff were inoculated with Professor HAFKINE's preventive serum. The late Dr. DAVDA had, however, 10 c.c. of Dr. YERSIN's serum injected as a preventive about three weeks previous to his illness."

Preventive treatment in the hospital was directed toward lessening the risk of infection among the hospital staff and ward attendants who came in contact with the sick. Free ventilation, frequent disinfection of the hands, frequent changes of clothing were required. Floors were sprinkled with chemie disinfectants. The clothing and other belongings of the patients were destroyed by fire, and it may be assumed that this treatment was successful, inasmuch as but three of the attendants had the disease. As to the different methods of treatment, the author is of the opinion there is no specific treatment.

In regard to postmortem appearances, the author says: "If it were possible to convey in one word the principal postmortem signs of the changes that are found in the system, that word would be hemorrhage. Hemorrhages in every conceivable and inconceivable part of the body."

Our space is too limited to quote more from this very interesting report, a report which deals with the total number of cases, 939 in the short space of five months, a report so evidently written from a full knowledge of the disease that it will be turned to for many years to come as an authoritative treatise on the plague; therefore in sharp contrast with the emanations from the public press on this subject purporting to come from a certain official sanitary bureau, photograph of the incumbent duly attached.

INHERITANCE OF CIRCUMCISION EFFECTS.

No question in biology has been discussed with more animation than that of the transmission by heredity of acquired defects. Prominent among those who denied hereditary transmission of acquired effects was WEISMANN. His writings have been received with much favor and he has won a very numerous following. The effects produced by his criticisms have been undoubtedly beneficial in removing from certain ideas of heredity their crudeness. The older notions of heredity were much more vague and at the same time more sweeping than those held by modern biologists. WEISMANN's followers have cleared up much obscurity, but at the same time by too intense devotion to a theory have added even more. WEISMANN for example rides the germ hobby to death, in his attempt to explain the transmission by heredity of traumatic epilepsy in guinea pigs. He assumes that epilepsy is always of microbic origin. The reason therefore that the mother most transmits epilepsy is because the ovum being larger than the spermatozoon it necessarily carries more microbes of epilepsy than the latter. As his explanation fails to demonstrate that epilepsy is of microbic origin, it utterly fails not merely to exclude all other hypotheses but even to explain the facts themselves. This is a fair illustration of the weakness of WEISMANN's position in regard to the transmission of acquired defect.

Indeed such evident transmission has forced him to a concealed though rather complete reversal of his absolute position on the subject. In his latest work ("The Germ-Plasm," p. 535) he admits that nutrition of the germ-plasm will modify heredity. As nutrition of the germ-plasm depends, according to WEISMANN on the state of nutrition of the spermatozoon and the ovum it is obvious that this must depend on the state of nutrition of the male and female producing these. It is therefore evident that the state of mental and physical health of the parents will modify the offspring despite the tendencies to continuity of the germ-plasm on which such stress has been laid by WEISMANN. One of the "facts" on which the strongest stress has been laid by WEISMANN and his followers as an argument against hereditary transmission of defects, is that of circumcision. WEISMANN admits it is certainly true that among nations which practice circumcision as a rite ("Heredity," Chap. 8), children are sometimes born with a rudimentary prepuce. This however, according to WEISMANN, does not occur more frequently than in other nations where circumcision is not practiced as a rite. The truth of this last assertion is seemingly supported by instances recently appearing in the literature. P. C. REMONDINO of Los Angeles, California, has seen a large number of cases ("Circumcision") of prepuce absence in Hebrews which prove to be hereditary. After one confinement in a Gentile his attention was

called to the child by the nurse. She thought it was deformed because of the size and appearance of the glans penis. On examination the prepuce was found to be completely absent. On inquiry the father, and another son born more than two decades previously (these comprising every male member of the family), were found to have been born with the glans fully exposed. REMONDINO has seen a French family in which there was similar heredity.

The statements about the non-transmission by heredity of circumcision effects have been so strongly reiterated that it is hardly astonishing that they were long accepted and the non-inheritance referred to the healthy atavism of the maternal side. Of late these assertions of WEISMANN and others as to circumcision non-inheritance have been questioned. Dr. WILLIAM WOLFE of Baltimore some years ago (*American Medico-Surgical Bulletin*, 1895) reported as the results of long research that two per cent. of the Hebrews coming under his observation were born without a prepuce, and that a much larger proportion had defective ones. Stimulated by his researches Dr. EUGENE S. TALBOT of Chicago was led (*Medicine*, June 1898) to institute an inquiry as to the conditions of the prepuce found by the Hebrew clergymen of Chicago engaged in performing the religious rite of circumcision. He found that the percentage obtained by Dr. WOLFE was not as great as that occurring in Chicago. He obtained results from the Rev. Drs. S. BAUER, M. A. COHEN and B. GORDON. Dr. BAUER had circumcised 3400 and found that the prepuce was absent in 3½ per cent. of the cases. Dr. COHEN had circumcised 10,000 times. He had found the prepuce absent in 500 cases; partially developed in 300 cases and slightly developed in 2000 cases. Dr. GORDON had performed 4400 circumcisions in 25 years. He had found the prepuce absent in 150 cases; partly wanting in 200 and slightly developed in 2200. These, it should be remembered, were cases where preputial deformity casually forced itself on observers who were not pursuing special investigations as to the inheritance of the results of circumcision.

Considering the emphasis with which the non-inheritance of the preputial effects of circumcision has been reiterated, the most astonishing result of Dr. TALBOT'S researches was the discovery that rabbinical literature contained disputes on the subject of the religious treatment of cases where the child had been born circumcised. There was very early a difference of opinion on this subject between the schools of Shammai and Hillel. The school of Shammai maintained that if a child be born circumcised it is still necessary to draw from him the dram of covenant blood; the school of Hillel maintained that this was not necessary. According to another authority this point was not involved in the discussion since both schools were of the opinion that where a child had been born circumcised the drop of the blood of

the covenant had still to be drawn from him on the eighth day. The dispute related however to an adult proselyte who happened to have been born circumcised. In this case the school of Shammai insists upon the ritual drawing of blood. The school of Hillel claims that ritualistic drawing of blood was in such case unnecessary.

In the Medrash (the homiletic commentary of the Rabbis on the Old Testament) nearly every prominent man mentioned in the Bible as well as some of the later prominent rabbis, are stated to have been born circumcised. Among these were MOSES, SAMUEL, ISAIAH and Rabbi AKIBAH. The law relative to children born circumcised was codified 1567 A.D., in the Schulchan Aruch. Joreh Deah, Hiltroch Milah, Beth Shammai and Beth Hillel quoted in it flourished between 70 B.C. and 70 A.D. These results of Dr. TALBOT render it clear that not only does circumcision produce inherited defects more frequently among the Hebrew than among other races which do not practice circumcision but that this has occurred to such an extent that the treatment of such cases has long been recognized as a subject for discussion in the religious literature of the Hebrews.

REGIMENTAL HOSPITALS IN FIELD SERVICE.

As a people we are learning by experience that it takes time to turn out a volunteer army of 125,000 men fully armed and equipped. Early in April, when the war cloud was gathering, we read in our newspapers about the active work of preparation going on in the armories, and how this and the other regiment was ready to take the field at an hour's notice. In fact, we were led to believe that when the call to arms should sound the quota of each State would be ready to fall in. And grave doubts arose in our mind as to whether, in the short time that would be needful to form the regiments into brigades and divisions for purposes of field command, the medical department would be able to put itself on a fighting basis with field hospitals and ambulance companies properly manned and efficiently equipped. We were aware that however well drilled a company or regiment of citizen soldiers may be, some little time in a camp of instruction is needful before they can form an efficient part of an army. Besides purely military drills, the men have to learn how to live in canvas shelters carried by themselves, and even how to cook for themselves when the wagons can not come up with the mess-chests and camp-kettles; and the officers have to learn how to utilize the army ration that their men may have as full and varied a diet as may be found in the company messes of our regular troops. But we doubted whether the time required for these purposes would suffice to enable our military brethren to get ready their system of organized relief for the sick and wounded of a large army.

However, the mustering in of the men, associated

as it was with a strict medical examination, took much longer than was anticipated; and when mustered in and transported to war camps at Chickamauga and Washington, and even nearer their possible battle-fields, as at Tampa, Fla., it was found that there was still much to be done that must consume time before the regiments could be considered fit to undertake the field duties of soldiers. Meanwhile the Medical Department has been utilizing the time to the best advantage. The hospital corps has been recruited by enlistments and transfers from the line, medical and hospital supplies have been provided, ambulance wagons have been built and distributed and the organization for field service has been progressing on the lines outlined by us in the JOURNAL of May 21. Lieut.-Colonel B. F. POPE, U. S. Vols. (Major and Surgeon U. S. A.), chief surgeon of the Fifth Corps, at present before Santiago de Cuba, has perfected his organization and is ready to meet any of the emergencies of military life in time of war. The troops of this corps are mostly regulars and their medical officers are accustomed to obey orders, so that Chief Surgeon POPE has found it an easy matter to perfect his organization.

It is not so, however, with Lieut.-Colonel A. C. GIRARD (Major U. S. Army), chief surgeon of the Second Army Corps at Camp Alger, Falls Church, Va. In our recent discussion of the subject of organization we showed that the regiment is too small a unit on which to build a satisfactory medical service for the care of the wounded of a great battle. The regimental hospital is an excellent institution when a regiment of the National Guard goes into camp for a ten days' summer picnic, or even when called out for duty as a State public force; but it is valueless when an army corps of twenty-seven regiments is drawn up in line of battle. Wherefore, when the new regiments arrived at the camps of organization and instruction, the duty of the chief surgeon was to prepare the medical department of the corps for field service by breaking up the regimental hospitals and organizing the medical relief by divisions. The Second Army Corps consists wholly of volunteers, and certain of the regimental medical officers have taken exception to Dr. GIRARD's efforts to prepare them for war service. They object to having their hospitals broken up and their regimental medical service turned into a mere dispensary service, although the seriously sick receive the best medical attention which the division can provide. Yet some of the volunteer colonels have espoused the cause of their medical officers and protested to the War Department against the change of method. This action of local commanders has so emboldened one of the medical officers that, according to newspaper accounts, he has declared that his hospital shall not be broken up until the whole military strength of his State has been overpowered.

It is to be regretted that medical men who have voluntarily offered their services to aid the Medical Department of the Army in caring for the sick and wounded of the war, should be the obstacle to a proper organization by their failure to recognize any conditions in the present different from those of the summer picnic; but fortunately this difficulty in the Second Army Corps appears to be an isolated experience, for we have heard of no trouble in the organization of the medical departments of the other corps of the Army.

CACHEXIA OF MALIGNANT TUMORS.

The condition of emaciation, anemia and general prostration which accompanies many of the malignant tumors was formerly believed to be a specific symptom of the disease and was called cachexia. Even earlier, the condition, under the general name of a dyscrasia or diathesis, was supposed to precede and induce the growth of malignant tumors. At the present day as well, cachexia is considered by many to be one of the essential symptoms of a malignant growth, yet this opinion must be much modified in the light of observations made upon any given series of patients suffering from malignant tumors.

Cachexia is a term also used to express the condition of patients suffering from a variety of chronic general diseases, such as insufficient food, chronic septicemia or intoxication, leukemia, Addison's disease and anemia. In these diseases there is a general disturbance of metabolism which is chronic in its course and unassociated with temperature. There is an excessive waste of proteids and fats in all of the organs of the body with a resulting condition of malnutrition and weakness; fat disappears from the body; the blood is altered in its composition to produce a pale, anemic appearance to the skin; edema may be present; the patient is feeble and emaciated and the prostration may become extreme. These symptoms are the same that are assigned to the cachexia of malignant tumors, and, in a study of those malignant cases in which cachexia is present, it will uniformly be found that there is, either some interference with the proper nutrition of the patient by reason of the location of the tumor, or there is an absorption of deleterious materials, a chronic intoxication from ulceration, sloughing or degeneration in the tumor.

The most typical examples of cachexia, it will be remembered, are seen in cases of carcinoma of the stomach, esophagus and intestine, where the assimilation of food may be almost entirely prevented. As has been previously stated, insufficient food alone may produce a condition of cachexia, and it is easy to understand how a carcinoma of the esophagus or pylorus, no larger than a walnut, may produce a total obstruction. In carcinoma of the body of the stomach a similar malnutrition is present, because very little nitrogenous food can be digested in the absence of

free hydrochloric acid and rennet. A fact in favor of such dependence of the nutrition upon diet is found in the marked decrease of the cachexia after a gastrostomy has been performed for carcinoma of the esophagus.

Secondly, those cases of cauliflower carcinoma of the cervix, ulcerating carcinoma of the breast and huge sloughing sarcomata, form another class giving prompt and decided cachexia. In such cases it is a plain surgical question of septic intoxication by the toxalbumins of the bacteria of decomposition, which are developing in the necrotic tissue, and it is a fact that, when such a mass is freely curetted away and the field maintained aseptic, as is possible in the inoperable cauliflower carcinomata of the cervix, the symptoms of cachexia disappear. Furthermore, from such ulcerating surfaces there is a continuous discharge and this escape of albuminous material from the body must act injuriously on the system.

The pain accompanying many forms of malignant tumors often deprives the patient of his sleep, and the mental worry together with the universal horror of cancer must contribute much toward the failing nutrition. The demands made by the rapid growth of such tumors upon the nutritive supply of the body can not have a very great influence upon the general body nutrition, because the drain made by the simple growth is not, under ordinary circumstances, very considerable. It must be remembered that, clinically, the most malignant of tumors do not, as a rule, give rise to cachexia, unless they have undergone degenerative change or are so situated as to prevent food assimilation. Patients the subject of operation for a third extensive recurrence, or in the presence of tumors of long standing, usually have no cachexia when such conditions of degeneration or obstruction are not present.

Whether the tumor itself manufactures substances which are poisonous to the body in general is unknown. RINDFLEISCH assumes that the normal epithelial cells aid in the elimination of certain chemie substances from the system. When, however, these cells are enclosed in spaces in the interior of the tissues, as in cancer, the substances can not be thrown off, and at the same time the products of the degenerative processes that are going on in the growth are carried into the circulation, and they exert a poisonous influence upon the blood.

THE IMPORTANCE OF CLOTHING IN WAR.

Medical men on reading the heading of this article would naturally think that we purposed referring to texture, porosity, conductivity, and with Cuba and the Philippines constantly in mind, to the importance of protection from chill; but clothing is important from another point of view as was brought to our notice by a column in the *Daily Mail* of May

11, 1898, on "Why British Officers in India are so Often Killed." Captain NORTON, M.P., holds that as these officers wear a different head-dress from that of the native officers and troops under them, they are rendered especially distinguishable to the enemy's marksmen. This danger in modern warfare has long been recognized in Europe; but in native regiments in India where all but the English officers wear an Eastern head-dress while the pith helmets of the latter are a fatal distinction. It is gratifying to know that the needful protection has been given to our Volunteer officers on field service. General Orders No. 39, of May 9, 1898, from the Headquarters of the Army, prescribe a light brown blouse of cotton drilling or khakie, with trousers of the same color, for all commissioned officers from the major-general commanding down. As the campaign hat is similar to that worn by the enlisted men, and the insignia of rank require close inspection for their detection on the collar and flat strap on the shoulder, the officer, from the point of view of the enemy's marksmen, is indistinguishable from his men. This will have an important bearing on the make-up of the nominal killed and wounded when such have to be rendered by the medical officers of our Army.

THE ROENTGEN RAY IN WAR SURGERY.

The English papers of May 21 give considerable space to a lecture delivered on the previous day before the Royal United Service Institution by Surgeon-Major BEEVOR of the army medical staff. The object of the lecturer was to give his experience in the working of the X-ray in military surgery, and to show by the results obtained in the recent frontier expedition in India that the apparatus can be carried on a campaign and be of the greatest possible benefit to the wounded. He maintained, in view of his success, that it was the duty of every civilized nation to supply its wounded in war with an X-ray apparatus, among other surgical aids, not only at base hospitals but close at hand wherever there might be fighting. There is no doubt of the desirability of having this aid in field hospitals nor of the possibility of furnishing it for the field hospital of a particular expeditionary force, but we doubt the ability of any army medical department, with our present experience of the X-ray, to have it available in the field hospitals of a large army during the hours of activity that follow the incoming of the wounded from a great battle. Surgeon-General STERNBERG has provided the apparatus for the Philippine expedition, for the hospital ship *Relief* and for the general hospitals to which the wounded from the field hospitals will be sent for treatment; and the experience thus gained in its applicability to war surgery may lead hereafter to a further extension of its use on behalf of the wounded in war.

CORRESPONDENCE.

WAR CORRESPONDENCE.

BY LIEUT.-COL. NICHOLAS SENN, U. S. VOLS.,

CHIEF SURGEON SIXTH ARMY CORPS.

CHICKAMAUGA, GA., June 22, 1898.

CAMP GEORGE H. THOMAS.

From early dawn until taps, Camp Thomas is the scene of a busy, active life. It is the gathering point of the largest army concentrated in one place since the War of the Rebellion. It is at the present time the temporary home of 45,000 men representing almost every State in the Union. Many of the regiments are short of their quota, and recruits to the number of 500 on an average arrive daily to complete the organization of the regiments now in camp. The commander of the whole army in camp is Major General John R. Brooke, General in Chief in charge of the Department of the Lakes. He came here from Chicago with his entire staff. He enjoys the reputation of being a strict disciplinarian who does everything through the legitimate military channels. The greatest sources of confusion and consternation to the officers of the volunteers from civil life are these mysterious military channels which extend from the General's tent to the heads of the many departments in Washington. One of the blue books in constant use by officers, high and low, young and old, is the U. S. Army Regulations, 1895. The thousands of questions asked the professional soldier daily by his less informed volunteer officer are answered more often than otherwise by "Study the Regulations, Study the Regulations, STUDY THE REGULATIONS." Such advice, as a rule, is more easy to give than to follow with any expectation of approval at headquarters. The experience here has satisfied me more than ever that the National Guard officers need more thorough training in executive, clerical work, so essential in the efficient management of troops at home and in the field. One of the common sights in camp is to see an officer hide himself away under a solitary tree and pore over a work on tactics or the much feared "Regulations." If this war does nothing else but demonstrate to our people and to the legislators, State and National, the necessity of a well-organized militia it will have accomplished a great deal. If we had in this country, as we ought to have, a well organized, well equipped militia force of 200,000 men, we would have been in possession of all the Spanish islands and Spain itself, if we wanted it, long ago. As it is, it takes two millions a day and the hardest kind of work to bring our volunteers into fighting trim. The officers of the regular army have reason to be thankful to Spain for having given them a chance to fight. They have been looking a long time anxiously for such an opportunity. They are the recognized salt of the army. The Government has fully recognized their claims. Nearly every day the newspapers bring columns of names of lucky officers who have been advanced in rank, in fact it seems almost impossible for any one of them to escape promotion of some kind. This is probably as it should be, but occasionally such promotions lead to giddy heights. To make a lieutenant-colonel out of a second lieutenant of very limited practical experience is a transition of doubtful propriety and often followed by the most detrimental results, both to the over-ambitious officer and the over-confiding troops placed under his charge. Officers thus honored by promotion and assigned to the army of volunteers are, as a rule, more anxious to change the shoulder straps than to add the V. to the U. S. on the collar of the blouse. On the whole, the regular army officers are perfect gentlemen and great favorites in the camp, and the feeling between them and the officers from civil life is of a most cordial nature.

The First Army Corps under General Brooke is nearly completed. The Third Army Corps under command of Major-General Wade is nearing completion. The Sixth Army Corps is

soon to be organized under Major-General James H. Wilson. General Wilson gained an enviable reputation during the late war as a dashing cavalry officer and will undoubtedly make a creditable record during the present war if it lasts long enough to bring his army into the field. Lieut.-Colonel Hartsuff, an experienced medical officer of the regular army, is Surgeon-in-Chief of the army gathered here, and as such is attached to the staff of General Brooke. Lieut.-Colonel Van Hoff is Chief Surgeon of the Third Army Corps, and has worked incessantly in completing the organization of the medical department under his supervision. He is regarded as one of the ablest executive officers of the medical service, and is known as a warm friend of the medical officers of the National Guard. He has from the very beginning taken a deep and active interest in the work of the Association of Military Surgeons of the United States. Every medical officer of the Third Army Corps should consider it a great privilege to serve under Lieut.-Colonel Van Hoff. The medical department of the First Army Corps is in charge of Lieut.-Colonel Heidekoper of New York, a hard-working, conscientious officer. Major Kimball of Marion, Ind., and Ma-



Major-General John R. Brooke.

General in Chief in charge of the Department of the Lakes.

Major Woodbury of New York, have reported here and are awaiting with the writer the formation of the Sixth Army Corps. At present my time is profitably occupied by consultations in the camp and by performing operations in the Leiter General Hospital and the St. Vincent's Hospital, Chattanooga. The evenings are occupied by giving lectures on first aid to the Hospital corps. St. Vincent's Hospital has been used as a temporary hospital for the troops until the Leiter Hospital was in condition to receive patients. The abandonment of regimental hospitals meets with the same opposition here as elsewhere, but the wisdom of such a course must be apparent to all who have had experience in the field. Major E. C. Carter, U. S. A., is now in charge of the Leiter General Hospital. He is one of the busiest men in the camp. He is in every way admirably adapted for the position he now occupies. He is straining every nerve to improve and equip the building for the accommodation of from 300 to 500 patients. He has the hearty co-operation of the Surgeon-General and Colonel Hartsuff

in pushing the work. About thirty patients are at present in the hospital and in less than two weeks the number of patients will exceed one hundred. Hospital furniture and supplies are arriving every day, and in the course of two weeks the hospital will be fully equipped. The value of this hospital to our sick soldiers can not be overestimated. Mrs. Leiter will have the respect and sincere gratitude of every one of the inmates and of hundreds yet to come. Chickamauga is a quiet little country hamlet where our patients can enjoy to the fullest extent what they are so much in need of, rest and quietude. Six trained nurses have been sent by the Surgeon-General and are now on duty. With the increase in the number of patients more will be sent. A corner room in the tower on the second story has been set aside as an operating room and is now undergoing the necessary repairs to adapt it for this purpose. The first operation performed in this hospital was for empyema following pneumonia. Two additional cases await a similar operation during the course of the week.



Major-General James H. Wilson.
CRAWFISH SPRINGS.

One of the great attractions near the National Park and adjacent to the Leiter General Hospital is the famous Crawfish Springs. At the end of a large basin and at the base of a rock a large volume of water, as clear as a crystal, is poured out with considerable force. This spring yields 62,000,000 gallons of water in twenty-four hours. The temperature of the water is 56 degrees F., summer and winter alike. The dam a little below the springs, utilized to furnish water power for the hotel, has been removed for the reason that it interfered with the supply of water, deviating it evidently through subterranean channels in another direction. As soon as the property was transferred to Mrs. Leiter for Government use I had the basin cleaned out of moss and dirt by a detail of soldiers furnished by the Fifth Illinois Infantry. The sides of the hill around the basin were ditched a few feet above the level of the water for the purpose of draining the surface water to a safe distance below the springs. The Hospital is supplied with water from this spring. Besides, hundreds of barrels of water are brought daily into the camp by mule teams. The water is wholesome and palatable.

The following is the result of a chemical analysis made by a competent chemist:

ANALYSIS OF CRAWFISH SPRINGS WATER.

Bicarbonate of lime.	0.6753
Bicarbonate of magnesia	0.4544
Sodium chlorid.	0.856
Potassium chlorid.	0.048
Silica.	0.0537
Free ammonia.	0.0029
Albuminoid ammonia.	0.0025
Oxygen absorbed.	0.031

The presence of free ammonia and albuminoid of ammonia, although small in quantity, led us to suspicion the presence of organic matter which might possibly prove to be a source of danger. For the purpose of testing the water still further as to its fitness for hospital and camp use, samples were sent at three different times to the professor of chemistry in the Chattanooga Medical College. Dr. H. Berlin made a very careful chemic analysis and bacteriologic examination with the result that he pronounced the water free from dangerous organic matter and pathogenic microbes. The only microbe which he was able to cultivate was the colon bacillus, and the presence of this microbe could be readily accounted for by the blocking of the sewer pipe, an evil which was promptly removed. The springs would furnish an ample water-supply for the whole army if the Government would only erect a pumping station near it, a project which is now under serious consideration. With such an improvement Camp George H. Thomas would be one of the most salubrious camping places in the United States for a large army. The intake now is some distance below the springs where the flow of water is impeded by a dam two miles and a half below the springs. Above the dam is a narrow beautiful lake two miles and a half in length, extending to near the springs, which is leased by the Chickamauga Fishing Club.

CHATTANOOGA MEDICAL SOCIETY.

This medical society meets twice every month, on the first and third Friday. At the last meeting the subject selected by the committee was "The Modern Treatment of Gunshot Wounds in Military Practice." The writer was invited to open the discussion. After a brief résumé of the character of wounds inflicted by the modern bullet, the treatment was considered in detail. Special stress was placed upon the inutility of the ordinary and Nélaton's probe in locating and finding bullets lodged in the body. Attention was called to the value of the X ray as a substitute for the probe in making a reliable diagnosis. The use of the bullet probe on the battlefield was condemned and the advice given that bullet wounds should be hermetically sealed with the first aid package, which should contain an antiseptic powder composed of boracic acid and salicylic acid (4:1), and no exploration made until the patient reaches the field hospital, where all facilities for aseptic surgery and the necessary instruments for diagnosis and operation should be at hand. A new bullet probe and bullet forceps devised by the writer were exhibited and their manner of use explained. The balance of the paper treated of gunshot wounds of the extremities, cranium, chest and abdomen. For want of time consideration of the last subject, "Gunshot Wounds of the Abdomen," was postponed until the next meeting. Invitations to attend the meeting were sent to the military surgeons in camp, consequently the attendance was large and the discussion became general and proved of interest to all present. Considering that Chattanooga has only 40,000 inhabitants and that the average attendance at these meetings on ordinary occasions is never less than from thirty-five to forty, is the surest indications that our colleagues in this city take an active interest in the scientific work of the profession.

AMUSEMENTS.

The civilian soldier finds it difficult to satisfy his mind and body with what is required of him in camp life. But a few weeks ago he was a professional man, a clerk, teacher, or left-

the school, workshop and plow, and now it is hard for him to imagine that he should not be kept busy from sunrise to sunset. He is only too anxious to drill in sunshine or rain, and considers it a privilege to do guard duty, where his power and military significance can be made to appear at greatest advantage. He finds it difficult to occupy his many leisure hours in a profitable manner. To the credit of our soldiers it must be said that evidences of intemperance are rarely seen in camp. Temperance canteens are common and are better patronized than those in which beer is sold. I have not seen an intoxicated soldier since I arrived in camp. The more common amusements of the soldiers during the heat of the day, between 10 A.M. and 3 P.M., between drill hours, consists in reading, writing letters, playing cards, and the college boys are bound to play base- or football. The chaplains make themselves useful not only in caring for the spiritual welfare of their soldiers, but they also look after their intellectual interests. They extemporize reading rooms and supply them with writing and reading material. These reading tents are very



Major-General Joseph C. Breckinridge.

popular, and when the men are off duty they are always crowded. The many regimental bands furnish excellent music, which does so much in cheering up and amusing the soldiers. Two theaters have sprung up in the camp, mushroom-like. Performances are given in the afternoon and evening. The admission fee is twenty-five cents, box seats fifty cents. I have been told by those who have been in the habit of attending that the plays are good and that the patrons are made to feel that they have received their money's worth.

RED CROSS ASSOCIATION.

The Medical Department during the present war is in a condition fairly well prepared to supply the sick and wounded with the necessary instruments, medicines and food. There will be only a very limited field of usefulness for the Red Cross Association to fill in defects here and there as occasion and circumstances may require. The work of the Red Cross Association is, however, recognized by the War Department, as becomes evident from a circular letter received a few days ago from the Surgeon-General:

SURGEON-GENERAL'S OFFICE, WASHINGTON, June 9, 1898.

Lieutenant-Colonel Nicholas Senn, Chief Surgeon, U. S. Volunteers, Sixth Army Corps, Chickamauga Park, Ga.

Sir:—The Secretary of War has approved the following

proposition made by the American National Red Cross Association, and the chief surgeons of Army corps and divisions will co-operate with the authorized agents of this Association for the purposes indicated:

"We can put any desired amount of hospital supplies—ice, malted milk, condensed milk, Mellin's food, etc., into any of the volunteer camps in a few hours. Will you be kind enough to bring this letter to the attention of Secretary Alger and ask him if there is any objection to our appointing a Red Cross representative to report to the commanding officer and the chief surgeon in every camp, confer with them as to their immediate needs and, if anything of any kind is wanting, open there a Red Cross station and send in the supplies. We can do this, not in a few weeks or a few days, but in a few hours, and can furnish any quantity of any desired luxury or delicacy for hospital use. We hereby tender our aid and put our organization at the War Department's service for co-operation in the field."

Very respectfully,

GEO. M. STERNBERG, Surgeon-General U. S. A.

It was prudent and wise that the Surgeon-General and the Secretary of War granted this modest request. Dr. Gill of New York represents the Red Cross Association here. He arrived a few days ago and intends to erect a frame building near the general headquarters as a storehouse for the supplies. He possesses excellent executive abilities combined with modesty, which will ensure him a wide avenue of usefulness and the hearty appreciation of the medical officers. In my next communication I will speak of the hospital corps, its organization and scope of work in actual warfare.

Belladonna Poisoning Simulating Puerperal Insanity.

NEW YORK CITY, June 25, 1898.

Mrs. G., 26 years old, was delivered last January of an anacephalous male child. Labor was short and natural. Two days after, to prevent the secretion of milk with the consequent painful distention of the breasts, a belladonna plaster was applied to each gland in addition to the usual bandage compression. The nipples were not covered by the plasters. In about twelve hours I was hurriedly called to my patient and found her condition as follows: Flushed face, pulse 100 and good; temperature 100.5 degrees and quite actively delirious. She sang, whistled, laughed, cried and made futile attempts to get out of bed and house. Finding no appreciable cause for the combined disturbance of body and mind, puerperal insanity suggested itself as the most probable diagnosis.

The second visit was made sixteen hours after the first; the woman's condition was found to be much worse, namely: Her delirium was intensely maniacal in spite of the fact that she received large and frequent doses of chloral and bromid. However, at this visit new features were added to the old clinical picture which at once removed the diagnosis of insanity and established one of belladonna poisoning. The patient's lips, tongue, mouth and throat were dry, the pupils fully dilated and the secretion, as urine, was almost totally suppressed.

The belladonna plasters were quickly removed and the breasts washed with soap and water. The breasts were examined for a scratch or an abrasion which could serve as an avenue for absorption, but as none was found the drug evidently found its way into the system through the unbroken skin.

All the symptoms disappeared within ten hours of the removal of the cause excepting the pupillary dilatation, which lasted thirty-six hours.

It may be interesting to add that the very same condition was produced in the same patient four days later by the application of one plaster only and the removal of which resulted in the removal of the trouble.

The points of interest in this report appear to be these: 1. The remarkable susceptibility of this woman to the influence of belladonna. 2. The minimum amount of the drug which produced the symptoms of poisoning. 3. The possibility of mistaking that condition for acute insanity when it occurred in

the puerperium. 4. The caution to be observed in prescribing belladonna plaster or ointment—an old warning, but one that can bear repetition.

R. ABRAHAMS M.D.

An Explanation.

PHILADELPHIA, June 16, 1898.

To the Editor:—We note the letter recently addressed to your JOURNAL (May 28, p. 1301) by Dr. J. H. Davison of Los Angeles, Cal., ex-president of the State Board of Health, relative to an irregular use of a recent report made by him, which was published in our antitoxin brochure about a year ago.

It was far from our intention to cause Dr. Davison any annoyance, or to make any improper use of his name. It was not our intention to have it appear that the Doctor personally endorsed our product, but that the State Board of Health of California discriminated in favor of American antitoxin, and since, at the time our brochure was published, we were supplying, and have continued to supply, the California State Board of Health with Mulford's Concentrated Antitoxin, the statement as published in our brochure is correct. Our copy supplied the publisher, incorporated the above with a quotation from Dr. Davison's report. Unfortunately, our instructions regarding the use of the bracket were not carried out. The article should have read according to our copy as follows:

CALIFORNIA STATE BOARD OF HEALTH.

The antitoxin used in California is made in this country and after considerable investigation and trial of the German and French products, we are giving our preference to the American production. The American product is put up in better form for transportation and handling, which is of itself an important item. [The antitoxin now used by the Board is that of H. K. Mulford Co. of Philadelphia. The concentrated "Extra Potent" (500 units to each c.c.) is the best.]

We extremely regret that the bracket was omitted in placing this matter in type. Certainly we did not intend to have it appear that our product was personally endorsed by Dr. Davison, but the fact that the California Board of Health was being supplied with Mulford's Antitoxin at the time our brochure was published, makes the statement as appears in our brochure, with the exception of the personal endorsement of Dr. Davison, absolutely correct.

Thanking you in advance for the publication of this explanation, we are Very truly yours, H. K. MULFORD COMPANY.

Marine Hospital Service.

TREASURY DEPARTMENT,
OFFICE OF THE SUPERVISING SURGEON GENERAL
MARINE-HOSPITAL SERVICE.

WASHINGTON, D. C., June 24, 1898.

JOURNAL AMERICAN MEDICAL ASSOCIATION, 61 Market Street,
Chicago, Ill.

Sirs:—With the close of the present fiscal year, June 30, the subscription for eighteen copies of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, for the use of this Service, will expire, and will not be renewed for the ensuing fiscal year. By direction of Supervising Surgeon-General, M.-H. S.

Respectfully yours,

PRESTON H. BAILHACHE, Surgeon M.-H.S.

ASSOCIATION NEWS.

Further Delay in Publication of Official Proceedings.

4 EAST 37, NEW YORK, June 21, 1898.

To the Editor:—Your telegram is at hand in regard to the resolutions and report of Executive Committee. I was more than half sick at Denver and could not write up the proceedings of the Executive Committee; in my book of notes there was an immense mass, and so put the book and all in my trunk to do it here at home. The trunk got separated from me and

only reached me just now, and I have been overwhelmed with accumulated work that I have not yet tackled it, but will do so at once, and send on the resolutions, etc., very shortly.

In haste, yours sincerely,

L. DUNCAN BULKLEY, M.D.

SOCIETY NEWS.

American Academy of Railway Surgeons.—The next meeting of the American Academy of Railway Surgeons will be held in Chicago, Oct. 5, 6 and 7, 1898. D. C. Bryant, Secretary, Omaha, Neb.

Michigan State Board of Health.—The quarter-centennial celebration of the establishment of the Michigan State Board of Health, to be held in Detroit, will include addresses by leading sanitarians of this country. It will commence August 9, at 9 A.M., and continue throughout the day, there being three sessions, morning, afternoon and evening.

The Third International Congress of Applied Chemistry, Vienna, July 28 to August 2, will discuss the international unification of the methods of analysis for tests of products whose commercial value is based on their chemie constitution; also for tests to control various chemie industries; also instruction in chemistry and numerous other subjects of general interest. Secretary, F. Ströhmer, Schonburg Strasse, No. 6.

Annual Meeting.—The Annual Meeting of the White Mountains Medical Association, Connecticut Valley Medical Association, and White River Medical Association will be held at Hanover, N. H., July 29 and 30, 1898. The program includes: "Early Operation for Gall Stones," by W. H. Conant of Boston; "Racial Aspects of Disease," by Prof. C. D. Wells of Dartmouth College; "Fractures," by P. S. Conner; "Diagnosis of Pelvic Disease," by Paul F. Mundé; "Clinical Remarks on Treatment of the Eye," by David Webster, and a paper, subject unannounced, by Wm. H. Parish.

Oregon State Medical Society.—The twenty-fifth annual meeting of the Oregon State Medical Society was held in the parlors of the Imperial Hotel at Portland, June 2 and 3. The meeting was quite well attended, and the papers presented, although small in number, were of exceptionally high order. Several visitors were in attendance from outside of the State. The officers elected for the coming year were: President, C. H. Hall, Salem; secretary, William F. Amos, Portland; treasurer, Mae H. Cardwell, Portland. The next meeting will be held at Portland in June, 1899. After the close of the meeting a party of delegates from Oregon and Washington State Medical Societies left for Denver to attend the AMERICAN MEDICAL ASSOCIATION.

State and Provincial Boards of Health.—The thirteenth annual meeting of the Conference of State and Provincial Boards of Health of North America will be held in Detroit, Mich., Aug. 9, 10 and 11, 1898. The first day, August 9, will be given to meeting with the Michigan Quarter Centennial Celebration in effecting organization and hearing reports of committees; the second day to the subject: "What are the Principal Lines of Work of Your Board? How is Each Accomplished? What Modification, if any, does the Experience in Your State Suggest?" The third day will be given to discussion of the various phases relating to the restriction and prevention of tuberculosis. The phases proposed are: 1. Etiology. 2. Morbid Anatomy. 3. Statistics. 4. Identity of Tuberculosis in Man and Animals and its wide Distribution among the Latter; also its Communication to Man through Food. 5. Economic Phases. 6. How may Tuberculosis be Prevented?

PUBLIC HEALTH.

Contagious Diseases.—No colonists affected with contagious diseases are allowed to settle in western Australia, according to a recent official decree.—*Sem. Méd.*, May 25.

An epidemic of measles has precipitated by a few weeks the closing of a school in the Borough of the Bronx, New York City.

The building has been fumigated, but it is not known when it may be reoccupied. The parents of over a thousand children are somewhat clamorous over the anticipated loss of educational advantages and are said to connive at the suppression of reports. The same old conflict between the individual and the State therefore still prevails.

The Complications of measles are liable to be much more serious in hospitals as the patients are exposed to contagion from streptococci which seem to acquire increased virulence in passing from one person to another. The contagiousness of measles during convalescence has been confirmed again by a number of soldiers recovering from scarlet fever, who were placed in a ward occupied by a few convalescents from measles, and all contracted measles, which suggests that disinfection is required also after this disease.—*Progrès Méd.*, May 21.

Fine de Siecle Milk.—An establishment has recently been opened at Berlin to supply "diabetes milk," made according to v. Noorden's formula: 1 per cent. sugar and 6 per cent. fat. Also Jaworski's "strength milk" for forced nutrition with passive exercise; 10 per cent. fat. But the main object is the production of milk for infants, made to correspond to mother's milk by diluting and centrifugalizing cow's milk and adding milk sugar, according to the formula of Professor Gaertner of Vienna.

Utilization of the Statistics of American Cities.—A motion introduced in Congress through the Reform Club of New York authorizes the Commissioner of Labor to compile and publish annually as a part of the bulletin of his department an abstract of the main features of the official statistics of the larger cities of the country. The public are now dependent for their statistics upon local reports, which too often confuse and bewilder rather than make clear the criminal, vital and social facts they attempt to collate. The object of the present movement is to give uniformity of scope to these statistics and bring them together in one intelligent tabulation, or series of tabulations, as the commissioner's means will afford, and we trust that the Reform Club will bear in mind that this class of skilled work requires "the sinews of war" not less than the other lines of work assigned to the commissioner.

Yellow Fever.—Dr. Lacerda reiterates his assertions that it is possible and practicable to entirely eradicate yellow fever in a town by tearing down the old damp, sunless houses that are known to be foci of infection, and disinfecting those that it is impossible to destroy, as also the holds of vessels. The germs die in the sewers and in sunshine, the usual means of transmission being the air, and only in a circumscribed radius, although they can be carried in clothing, merchandise, etc. He concludes by stating that persons who have become acclimated to yellow fever may lose their immunity by an eight months' residence in a temperate climate.—*Gaz. Méd. de Bahia*, February.

Two new cases of yellow fever were reported at McHenry, Miss., June 20, a total of seventeen cases since May 20.

Insalutary Wall Papers.—The fact is of no small importance to be kept in mind that, though the unwholesome exhalations of papered walls mostly emanate from such papers as have a blue or a green ground, they also occur where the blue or green constitutes the largest part of the pattern, the dye stuff being chiefly composed of blue or green ultramarine. The latter is entirely harmless, but has the property of becoming decomposed by slightly sour liquids and diffusing a most disagreeable odor, a development of sulphuretted hydrogen during the slow process of decomposition. The paste used for fixing wall paper is frequently of a somewhat sour or readily souring character and quickly penetrates the paper, causing the above-mentioned effect, a very slight degree of fermentation sufficing to bring about the offensive result, and this appears, too, the more markedly if the walls are slightly damp and already

covered with several layers of paper so that the lime plastering can not have a neutralizing tendency on the lactic acid in the paste, etc. In such cases, therefore, where it is necessary to affix wall paper on a ground of old paper, as well as in all cases where green or blue is used, it is recommended to employ only such gluing agents as do not sour, or if inclined to decomposition, contain slight quantities of lime, milk or soda solution before use.

Typhoid Fever from Ordinary Streams.—The secretary of the State Board of Health of Michigan has issued the following warning to young men and all who bathe in streams: Recent reports to the State Board of Health show that at least two cases of typhoid fever have been caused by drinking the water in or from the Kalamazoo River. In no case should water be used for drinking or culinary purposes from a river or stream into which sewage is emptied or privies are liable to drain; and as most of the rivers and streams of this State have towns situated upon or near their banks, from which sewage is received, and privies are liable to drain, therefore it is very dangerous to use the water from any of the rivers or streams for any culinary purpose whatever, except the water be first boiled, and it should not, in any case whatever, be drunk, unless previously boiled. Cases have been reported where typhoid fever has been contracted by bathing in streams. Probably this will be most likely to occur through accidentally or carelessly taking the infected water into the mouth. Especially should no person bathe in any ordinary stream just below any city, village or other source of sewage or privy drainage.

NECROLOGY.

RICHARD CHANNING MOORE PAGE, M.D., died June 19, in Philadelphia, after about a week's illness. He was born at Keswick, Albemarle Co., Va., Jan. 2, 1841, the youngest child of Dr. Mann Page and Jane Frances Walker. After remaining in the University of Virginia until the close of the session in 1861, he entered the Confederate Army as an artillery man and served under Gen. Joseph E. Johnston and on the staff of Gen. John C. Breckinridge, where he remained until the end of the war. He was an active participant in the battles of Fredericksburg, Chancellorsville, Mine Run and Gettysburg, in the last of which he was severely wounded. Subsequent to the war he returned to the University of Virginia to study medicine, but removing to New York City in 1867, he received his medical degree from the New York University in 1868 and at once began his career in the eastern metropolis. He was indefatigable as a teacher and likewise wrote acceptably, "A Practice of Medicine," "Physical Diagnosis," "Sketch of Page's Battery," and the "Genealogy of the Page Family" being among his more important contributions. As a member of a large number of medical and historical societies he became widely known and appreciated.

JOHN S. MCGUIRE, M.D., Seattle, Wash., aged 65 years. Dr. McGuire had the honor of being one of the famous six hundred whose deeds are told in the "charge of the light brigade." He also received medallions and marks of honor for brilliant services at Inkerman in the Crimean War. In 1871 he resigned his commission in the British Army and after a short residence in Australia went to San Francisco, where he practiced for a short time. He came to Seattle in 1889, where he resided until the time of his death.

SAMUEL GRAHAM, M.D., Butler, Pa., died June 21, aged 62 years. He was a member of the class of 1862, Jefferson Medical College, and for thirty-three years one of the leading practitioners of Butler County, Pa.

EBEN JACKSON, M.D., Castleton Medical College, Vt., 1856, of Somerville, Mass., died June 22, aged 73 years. He served under Grant, and was in charge of hospitals at Memphis,

Vicksburg and elsewhere, at different times. From having participated in several battles he was known as a "fighting doctor," but at the close of the war he entered upon civil practice, in which he remained until his death.

J. B. JOHNSON, M.D., Allegheny, Pa., June 20, aged 61 years.—Calvin D. McDonald, M.D., Kansas City, Mo., June 19, aged 63 years.—W. F. Miller, M.D., Louisville, Ky., June 17, aged 74 years.—W. F. Swisher, M.D., Woodburn, Iowa, June 23.—T. N. Cunningham, M.D., Princeton, Ill., June 22, aged 54 years.—E. J. DeRaimes, M.D., New York University, 1882, died at his home, Hudson Boulevard, Union, N. J., June 18, aged 39 years.—J. A. McCoy, Tacoma, Wash., aged 71 years.—W. W. Beach, M.D., Tekoa, Wash., aged 50 years.

BOOK NOTICES.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science, by Leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In Twenty Volumes. Volume XIV, "Infectious Diseases." New York: William Wood & Company, 1898.

This volume is devoted, as its name implies, entirely to infectious diseases, viz.: Scarlet fever, measles, German measles, chickenpox, glandular fever, whooping-cough, cholera infantum, cholera nostras, Asiatic cholera, dengue, beri-beri, miliary fever and Malta fever.

The contributors to this volume are: Dillon Brown, M.D.; David Bruce, M.B., C.M.; Sir Joseph Fayrer, Bart., M.D., LL.D., F.R.S., F.R.C.P., R.C.S.; Frederick Forchheimer, M.D.; A. Jacobi, M.D.; A. Metter, M.D.; Nathaniel Read Norton, M.D.; Joseph O'Dwyer, M.D.; Theodor Rumpf, M.D.; A. A. De Azevedo Sodre, M.D.; Dawson Williams, M.D., F.R.C.P.

The high character of the contributors prepares us for the excellent quality of the work and one is not disappointed at the result.

This volume is a fitting companion of its predecessors in this magnificent series and one to which the reader may turn for complete information on this important class of diseases.

Aphasias and other Speech Defects. By H. CHARLTON BASTIAN, M.A., M.D. New York: D. Appleton & Company, 1898.

In this work the author has reproduced with additions the Lumleian Lectures delivered before the Royal College of Physicians of London, 1897, and published in the *Lancet*. These lectures form parts of chapters 1 and 2, and nearly the whole of chapters 6, 8 and 9. Chapter 7 was the Clinical Lecture delivered at the University College Hospital, which appeared in the *Lancet* for September, 1897. With these exceptions the remaining matter is entirely new.

This author, who is well known in other biological fields, in this volume is seen at his best. Nothing unnecessary, nothing redundant, the sentences go straight to the mark with the practiced skill of the literary expert. The student wishing to acquire knowledge of this interesting disease, and the practitioner wishing to refresh his memory and gain additional knowledge, will be charmed with this work by Bastian, and as of its accuracy there is no question, we have no doubt about its reaching permanent popularity.

Modern Gynecology. A Treatise on Diseases of Women, comprising the results of the latest investigations and treatment in this branch of medical science. By CHARLES H. BUSHONG, M.D. Illustrated, second edition and enlarged, pp. 404. New York: E. B. Treat & Company, 1898.

A man who inflicts on the profession a work on gynecology at a time when our shelves are loaded with them, should either have something very new and striking, or else apologize for writing the work. The older authors usually commenced their work with an apology for having written. Careful examination of this work does not show any very particular reason for its

publication, although its statements are clear, the illustrations are good and the compilation of existing knowledge fair.

The old dosage, however, is used in the prescription writing.

Diseases of the Stomach. A text-book for practitioners and students. By MAX EINHORN, M.D., Instructor in Clinical Medicine at the New York Post-Graduate Medical School and Hospital; Visiting Physician to the German Dispensary. Second Revised Edition. 502 pages. Price, cloth, \$3.25 net; flexible leather, \$3.75 net. New York: William Wood and Company, 1898.

Members of the ASSOCIATION will remember with pleasure demonstrations of gastro-diaphany made in the ASSOCIATION meeting by the author of this work, and it may be said that since that time medical literature has been enriched by a large number of treatises on the subject. The first edition was a thorough exposé of the existing state of knowledge on the subject.

This edition is not materially altered from its predecessor, which was published late in 1896, and in our notice of that edition we took occasion to commend the work, a commendation in every way merited.

Manusli Hoeppl: Spiritismo. Di ARMANDO PAPPALARDO. Milano: Ulrico Hoepli, 1898.

Magnetismo e Ipnotismo. Per il DOTT. G. BELFIORE. Milano: Ulrico Hoepli, 1898.

These are two of the more recent of the little pocket manuals issued by the Italian house of Ulrico Hoepli. The first of these discusses the phenomena of spiritualism in rather a more respectful manner than an American medical author would; the second is a discussion of the phenomena of hypnotism according to the latest European literature of the subject. Both are compilations, but such have a very useful function and will probably be serviceable to those who can read them. While spiritualism has interest only as a psychic aberration, and some of the literature of hypnotism also has in it a larger element of human credulity than is consistent with genuine science, such manuals as these are not without interest, and that on hypnotism appears to be on the whole a fair statement of verified facts.

A Manual of Instruction in the Principles of Prompt Aid to Injured, including a Chapter on Hygiene and the Drill Regulations for the Hospital Corps for the U. S. A. Designed for Military and Civil use, by ALVAH DOTY, M.D. Second Edition, New York: D. Appleton Company, pp. 302, 1898.

The second edition of this Manual presents a thorough revision and some enlargement.

A chapter on Hygiene has been introduced, and a chapter on the recently adopted Drill Regulations for the Ambulance Corps of the U. S. A. has been added. National guardsmen, railroad employes and those exposed to accident will find the book of great value.

Transactions of the American Association of Obstetricians and Gynecologists. Vol. 10, pp. 483, Philadelphia: Wm. J. Doran, 1898.

This volume includes the minutes of the meeting and the papers read at the meeting at Niagara Falls, New York, August 17, 18, 19 and 20, 1897. The exhibition of specimens presented with their illustrations occupies an important place in the work. Obituary articles on the late Traill Green, Fletcher D. Mooney and James Greig Smith of England, are included in the volume, which is only just to say surpasses its predecessors. The illustrations are finer than those usually found in volumes of transactions.

Atlas and Essentials of Pathological Anatomy. By Dr. O. BOLLINGER. Volume II. Urinary Apparatus, Sexual Organs, Nervous System and Bones. With 63 colored figures upon 52 plates and 17 illustrations in the text. Pp. 252. New York: William Wood & Co. 1898.

This excellent series of atlases has a valuable addition in this volume by Bollinger. The plates are prepared from the actual specimens and the coloring is strikingly natural. For reference this atlas is invaluable.

MISCELLANY.

The Monument to Pasteur in front of the Pantheon in Paris is now almost completed. The sculptor, M. Falguière, has added a group of a mother with her child thanking Pasteur, whom Fame is in the act of crowning with laurels. The international subscription to the memorial, according to the *British Medical Journal*, now approaches £13,000.

Ansl Imperforation in a newborn infant that required an iliac anus was followed by intestinal prolapsus. Kirmisson then introduced a sound through the artificial anus into the lower intestine, working it through to the perineum, and successfully re-established a normal anus. The infant, four days old, was presented at a recent meeting of the Paris Acad. de Méd.

Etiology of Pertussis.—The results of recent research by R. Behla confirm the announcement of Deichler and Kurloff that the micro-organism of this affection is not a bacterium but an ameba belonging to the protozoas, propagating by division and spore-formation. It is not found in the blood nor epithelium and does not grow inside the cells.—*Deutsche Med. Woch.*, May 12.

The Presence of an Antitoxin in the bile of animals dying from the cattle plague has been established by Koch, and now by E. I. Frantzius in regard to animals dying from rabies. The introduction of equal parts of bile and cerebral substance derived from the same rabid animal, rabbit, introduced under the dura mater of another rabbit, was not followed by any morbid manifestations, but if the bile had been taken from a non rabid animal, the rabbit promptly succumbed to rabies.—*Wratsch*, April 18.

Reform at Bellevue Hospital.—The Commissioner of Charities of New York has decided to reorganize the staff of the chief hospital. He hopes to so select the staff that educational interests will be conserved, but he purposes to break up the "practical monopoly," as it has been called, of the great schools. Inasmuch as there will be candidates forthcoming in number sufficient to fill ten such staffs, it can well be understood that his self-assumed lot will not be a happy one for some time to come.

Iodin in the Blood.—Gley asserts that the iodine discovered by Baumann in the thyroid gland is in reality derived from the blood. His research has resulted in establishing the presence of iodine in the blood, stored in the red corpuscles, but only in adult animals.—*Semaine Méd.*, May 25.

The Latin-American Scientific Congress opened auspiciously in Buenos Ayres in April with 110 members inscribed and crowded attendance. A number of interesting and valuable communications were presented on hygienic and medical subjects by delegates from the various Latin-American countries. We note among them that cancer seems to be increasing in South America as rapidly as elsewhere. In Buenos Ayres it has risen from 91 in a thousand deaths to 115, in the last twenty-six years. The next Congress will convene at Montevideo in 1901.

Intestinal Stenosis Consecutive to Gangrene Cured by Entero-anastomosis Without Resection.—J. Schulz reports a case in which eight days after the dark blue loop of intestine had been reduced during herniotomy, symptoms of severe stenosis appeared, fecal vomiting, pain, etc. It was found that the stenosis, ten centimeters in length, involved the whole of the intestine that had been incarcerated. On account of the threatening general condition he abstained from resecting and merely performed an entero-anastomosis, which proved perfectly successful. Only two similar cases are on record.—Garré and Maas; *Münch. Med. Woch.*, May 17.

Bone Clasp and Fracture.—Parkhill (*Annals of Surgery* for May) presents a method for the fixation of the fragments in recent fractures where there is a tendency to displacement, and

ununited fractures after resection, and in fractures with mal-union after resection, with reports of a number of cases. He claims for his instrument that union has been secured in every case in which it has been used; that it is easily and accurately adjusted; that it prevents both longitudinal and lateral motion between the fragments, and that the presence of the shafts in the bone stimulates the production of osseous tissue; that nothing is left in the tissue to reduce their vitality or cause pain and infection, and no secondary operation is necessitated.

Mr. David H. King Jr. of New York, has offered to the Red Cross relief committee his house at Jekyl Island, S. C., for use as a hospital. Judging from the newspaper illustrations, the surroundings are unexceptional and the residence itself already built on the pavilion plan. Jekyl Island is within an hour's travel of Fernandina, Fla., and its healthfulness and location make it an ideal site for an army hospital. Soldiers becoming ill at the camp which, it is reported, will be established at Fernandina, can be easily taken to this island. It is also conveniently situated for the care of soldiers wounded on Cuban battlefields. Not only will Mr. King give the use of the house for hospital purposes, but he will maintain it as well.

The New York Post-Graduate Hospital.—In the case of Dr. Charles B. Kelsey, who was removed from a professorship in the New York Post-Graduate Hospital by a majority vote of the Board of Directors of that institution, the appellate division of the supreme court has reversed the decision of the special term directing his reinstatement. The higher court holds that the Board has power to remove a member of the faculty by a simple majority vote, in cases where no charge of misconduct was made, but that a vote of three-fourths was necessary to effect a removal upon charges. In the first instance, the power is declared to be absolute, and in the second it is judicial. "It seems reasonable," says Mr. Justice Marrett, "that a majority vote should have been deemed sufficient for a removal at pleasure, while a three-fourths vote should have been required for a removal upon charges. When a professor is removed at pleasure, no stigma attaches to the act of removal. His services are no longer required and he is told so. That is what, in substance, such a removal amounts to."

Stagnation of Stomach Contents.—Benedict (*Medicine*, May) in discussion of this subject includes the following diseases: Atony, slight dilatation (the usual condition in cases called gastropnoia), true dilatation due to essential weakness and stenotic dilatation, from cancer, ulcer, fibroma, or external pressure involving the pylorus. Hour-glass contraction may fall either under the second or third. Stenotic dilatation is most frequently found with pyloric cancer and next with cicatrizing ulcer at the pylorus, or it may be first ulcerative and then malignant. Malignant diseases may sometimes have no obstructive bearing on the dilatation.

Glossitis in Typhoid Fever.—In the *Johns Hopkins Hospital Bulletin* for May, McCrea reports a case of glossitis complicating typhoid fever, which occurred in the Johns Hopkins Hospital, the first such case in over seven hundred cases of typhoid fever there. He considers it of especial interest in that it occurred during convalescence from the original attack and ushered in a relapse, being apparently the first symptoms of the relapse after twenty-four days of normal temperature. The relapse itself was mild except for the severe onset, and no further trouble in swallowing affected the patient after subsidence of the swelling. Diminution of the swelling in the left half of the tongue followed after the removal of the blood for cultures, and he considers this a support of the value of free incisions into the tongue in severe cases.

Motor Neuron.—In *Medicine* for May, Patrick of Chicago writes on "Motor Neurons in Practical Diseases." He finds that, "A lesion of any part of the lower motor neurons causes

paralysis, flaccidity, atrophy, loss of the deep reflexes, and reaction of degeneration. A lesion of any part of the upper motor neurons causes paralysis, spasticity, no atrophy, exaggeration of the deep reflexes and no change in the electric reactions."

Professor Senn to go to the Front.—It is announced in army medical circles that the regular troops of the Fifth Army Corps will shortly have the benefit of the professional services of Col. Nicholas Senn. Since his appointment and muster Colonel Senn has been at Chickamauga, organizing the medical department of one of the army corps there stationed; but it is considered that his services could be employed to much greater advantage in the field hospitals near Santiago, Cuba. It is probable that he will be assigned to special duty with General Shafter's command. The chief surgeon of the corps is Lieut.-Col. Benjamin F. Pope, United States Volunteers.

Movements of Medical Officers.—Captain John L. Phillips, Assistant Surgeon U. S. Army, just returned from the Pacific Coast, has been assigned to the 2d Army Corps at Camp Alger, Virginia; Acting Assistant Surgeon, Medwin Leale, has been placed on duty with the cavalry squadron at headquarters of the Corps, and Assistant-Surgeon Whitmore Steele, 8th N. Y., has resigned on account of physical disability. Three medical officers have been sent to the 3d Corps at Chickamauga, Ga.; Captain Chas. B. Ewing, U. S. A., from Tampa, Fla., Captain Adrian S. Polhsmus from Fort Wingate, New Mexico, and Captain John S. Kulp from his late station on the Pacific Coast. Two officers have been ordered to report to General Fitzhugh Lee, commanding the 7th Army Corps at Jacksonville, Fla.; Captains Paul Clendenin and Henry S. T. Harris. Changes at the hospitals are: Captain H. A. Shaw, U. S. A., from the general hospital at Key West to Key West barracks, Fla.; Captain R. S. Woodson, U. S. A., from the ambulance train at Tampa, Fla., to the hospital at Fort McPherson, Ga., and Acting Assistant Surgeon, John R. Devereux of Washington, D. C., to the Leiter Hospital at Chickamauga, Ga.

Medical Appointments Confirmed.—Dr. L. L. Seaman of New York to be Surgeon of the 1st Regiment of Engineers. Dr. Seaton Norman of the U. S. Marine-Hospital Service to be Surgeon of the 3d Regiment of Volunteer Infantry. Drs. John W. Cox and Zachary D. Massey of Tennessee to be Assistant Surgeons of the 6th Regiment of Volunteer Infantry. Drs. M. Landry of Louisiana and R. T. Burr of California to be Assistant Surgeons of the 7th Regiment of Volunteer Infantry. Dr. James H. Hepburn of the District of Columbia to be Surgeon of the 8th Regiment of Volunteer Infantry. Dr. A. Pallones of New Jersey to be Surgeon of the 9th Regiment of Volunteer Infantry. Dr. Wm. M. Fuqua of Kentucky to be Surgeon of the 10th Regiment of Volunteer Infantry.

An Army Hospital on Wheels.—Major Charles Richard, Surgeon U. S. Army, has been in Washington, D. C., recently superintending the outfitting of the R. R. Hospital train to the command of which he has been assigned. The train left for Tampa, Fla., June 17, by way of the Southern Railway to Columbia, South Carolina, and over the Florida Central and Peninsular to its present field of duty. It consists of ten Pullman sleeping coaches, a dining car, a cooking car and a combination coach, and is well equipped with such medical and surgical supplies and apparatus as would be likely to be of use while on the road with sick and wounded. Major Richard is assisted by Captain H. R. Stiles, Assistant Surgeon U. S. Army, with two hospital stewards, three cooks and twenty-two nurses of the hospital corps of the army. From time to time as may be required a section or the whole of the train will return with sick and wounded, who will be conveyed to one or other of the army general hospitals; and when not en route the train will be used as a receiving general hospital at the port of connection with Cuba. Ambulant hospitals of this kind were in

use during the last eighteen months of the Civil War. In 1864, when General Sherman was at Atlanta, Ga., three trains ran regularly between that place and Louisville, Ky., a distance of 472 miles.

Surgeon-General Sternberg on the Danger from Yellow Fever.—In a letter to the *Army and Navy Journal*, Surgeon-General Sternberg expresses his views of what would happen if we should send an army to occupy any of the infected Cuban ports during the unhealthy months. He says:

In your issue of April 23, page 642, the statement is made that Gen. Sternberg "expresses confidence in the excellent sanitary provisions of the military service and does not fear that yellow fever will prove more harmful to the troops than diseases which are common in the northern latitudes," etc. I have not expressed any such optimistic opinion, and regret to say that it is not justified either by my studies relating to yellow fever or by my personal experience. History teaches that when a considerable number of unprotected persons are exposed in a yellow fever infected locality during the months when this disease is most prevalent (May 1 to November 1, in the latitude of Havana), an epidemic almost infallibly results. In the last week in April of last year, there were seventeen deaths and seventy new cases of yellow fever in the city of Havana. Now, suppose that we had a similar number of cases at the same season in New Orleans and that 20,000 strangers from the North should go there to spend the summer, what would be the result? All past experience supports the belief that a majority of them would have yellow fever, and that from 20 to 40 per cent. of those taken sick would die. This is what I anticipate would happen if we should send an army to occupy Havana, or any other infected seaport on the coast of Cuba during the summer months. If, however, these troops could be camped upon high land in the interior, and circumstances were such as to enable them to comply with all of the exactions of modern sanitary science, I am of the opinion that our loss from yellow fever would not be serious. But in time of war military commanders are expected to take their troops to the points occupied by the enemy, and a picnic in the interior with frequent changes of camp, etc., is perhaps not exactly what we may expect. I am not an alarmist, but I believe in looking facts fairly in the face, and can not allow your statement of my opinion to have currency at such an important moment in our country's history without a protest.

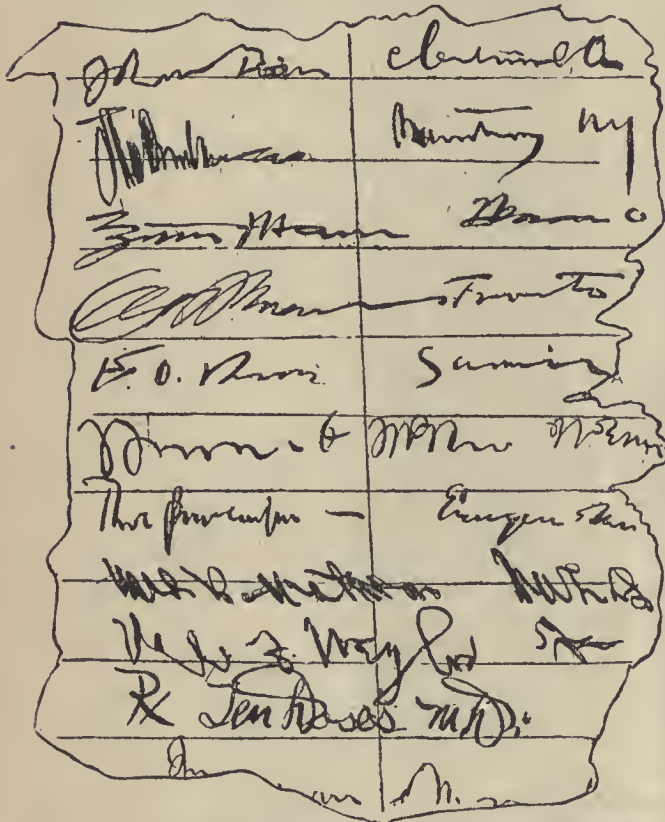
Transient Agryptic Delirium is the term proposed by Agostini for the psychosis observed after prolonged insomnia. He cites a couple of serious cases, both recovering after a couple of days sleep, and describes experiments with two healthy dogs kept awake for two and three weeks. The central nervous system showed the same histologic alterations as after intoxication with arsenic, lead, alcohol, etc., and he assumes that in the same way psychoses such as mania, lypemania and mental confusion, hitherto considered essential morbid forms, *sine materia*, are frequently of autotoxic origin, the result of lesions of the nerve cells produced by the action of the autochthonous poisons of the organism.—*Semaine Méd.*, May 14.

X-Rays in Medicine.—Williams (*Medical News*, May 14) says that in making the diagnosis, "Physicians will find that although much that the X-ray reveals can be recognized by other means it would often be an advantage to have this information confirmed by another method, and we must also appreciate that it can extend our knowledge into a field which was previously beyond our reach." By the X-ray alone, in certain cases, aneurysm, emphysema and pneumothorax, diagnosis may be made, but as a rule it is only one method and should be used only in connection with others. In suitable cases the X-ray gives earlier evidence of disease than the older methods. He finds it indispensable in making a complete examination in diseases of the chest where they completely change the diagnosis previously made.

Widal Test.—Blackburn (*Medical News*, May 7) makes a report concerning this test in typhoid fever from data obtained during his service in the Presbyterian Hospital in Philadelphia, May to October, inclusive, 1897. In all suspected cases of typhoid fever, the blood was subjected to this test, and a specimen was taken immediately on admission of the

patient to the hospital, the object being to find the first day of the disease on which the test was positive. In eighty cases of enteric fever, as established by the clinical course, the test was positive except in two. In one case of catarrhal fever the test was, on the seventh and ninth days negative, eleventh and thirteenth days doubtful, and positive on the fourteenth day. In one case of uremia positive reactions were secured twice. This patient had had typhoid fever five years before. In one case of catarrhal, having had typhoid three years before, there was a positive reaction. He concludes that it is a good corroborative test; in doubtful cases early in the disease it does not assist in diagnosis, and that in severe cases test is positive early, yet in a few typical cases it appeared to be negative.

Why Prescriptions Go Wrong.—Here is a squib from one of the New York City evening papers, one of the saffron-colored variety of which you have heard:



“This cut represents a page from a Denver hotel register at the time of a recent national convention of physicians. It shows why drug clerks make mistakes in prescriptions.”

A Research on Precocious Gestation.—Dr. Sage of Bordeaux recently delivered by means of forceps, a girl aged 13 years and six months, of a male child at term weighing eight and a half pounds. The mother seems to have become pregnant a month after her first menstrual period. There was nothing abnormal regarding the puerperium. This has led Dr. Sage to look up the subject of early pregnancies, which are less common in France than in other European countries. He has been unable to find any mention of a case occurring at so early an age as his own in recent medical literature, the earliest being at the age of 14 years and one month. In a medical dictionary published in 1823 mention is made of girls having been received into the Paris lying-in hospitals at 13 years of age, and during the Revolution at 11 years, and even before that age. The earliest cases recorded in other countries are Molitor's case in Luxemburg, where a child aged eight years and three months, became pregnant and was delivered of a mole containing a dead fetus seven months afterwards (this

was in 1877); Outrepoint's case (1825) of a German girl, aged 9, who aborted in her fourth month; Haller's case in Switzerland of a girl born in 1751 and delivered in 1759, and Dodds case in England (1881), where a Yorkshire girl, aged nine years and eight months, was delivered of a living child at term. Here the young mother had menstruated from twelve months of age.—*Lancet*, April 23.

Cost of the Hospital Ships.—The Government has paid more than \$1,000,000 for the two hospital ships, the *Solace* and the *Relief*, \$450,000 being to the Maine Steamship Co. for the *John Englis*, renamed the *Relief*. The price paid to the Cromwell Line for the *Creole*, now the *Solace*, was \$600,000, making a total of \$1,050,000 for the two hospital vessels. The estimated cost to the War Department for fitting up the *Relief* is \$50,000 in addition to many things which are to be presented by various organizations which are working to aid in reducing the horrors of war as much as possible. An army officer said that about twice as much had been expended in fitting up the *Solace*, as the Navy Department had a special appropriation for the purpose and also greater facilities for doing work upon ships, as it controlled the navy yards. The total expense of procuring and equipping the two vessels will not be far from \$1,250,000. This amount would be increased 50 per cent. if a third vessel should be purchased and equipped, as would be necessary if an expedition was sent to Porto Rico. “It would bankrupt the Department,” said an army surgeon yesterday, to get another hospital ship; but one will be needed for any additional expedition. The English Government sends a hospital ship with every military expedition. We have never had to send one beyond the confines of our own country, but in the Civil War transports were used to convey the wounded to points from which they could be readily transferred to hospitals on land. There has been a noble response to the request for gifts to fit up the hospital ship with all that can be put aboard to aid the work of the surgeons and nurses. We hope to have the vessel fully equipped and ready for us in five weeks from the time she was turned over to the Government, but it will depend on the speed of the contractors. The most important things are being done first, so that if a sudden emergency arises the vessel can answer a call for its services. The staff of physicians has been engaged, there have been six female and ten male trained nurses secured, while from the hospital corps of the army men have been secured who will do the heavy work of lifting patients and attending to the wards, while they will be trained in nursing, so as to relieve the regular staff and assist when the vessel has many patients. We may get orders any day to start as soon as possible, and everything is being made ready.”—*N. Y. Tribune*, June 20.

The War Revenue Law.— . . . The new law requires that every medicinal preparation shall be subject to the stamp tax, excepting: 1. Physicians' prescription medicines. 2. Extemporaneous preparations put up “for any person” by a retail druggist. 3. Uncompounded drugs or chemicals. 4. Non-proprietary preparations which are not put up “in style or manner similar to that of proprietary medicine in general,” which is presumably intended to mean galenic preparations which bear on their labels only their official names and nothing concerning their properties, uses or any claims to superior virtue. The preparations specifically included, according to the evident meaning of the act, comprise: 1. All medicinal articles having a trade-marked name, or in which proprietary rights are claimed. 2. All medicines compounded according to a secret formula. 3. All medicines advertised on their labels or otherwise as remedies or specifics for any ailment, which includes all ready-made preparations of the retail druggist, all the “non-secrets” and all “patent” medicines. 4. All preparations of whatsoever nature which are put up in style or manner similar to that of a proprietary medicine. In brief, the act subjects to tax ready-made preparations of whatsoever description, excepting those only in which no proprietary right is claimed and which bear on their labels simply their recognized descriptive names. The act is in some particulars very

loosely phrased, and will give rise to much misunderstanding and litigation. What, for instance, is the "style or manner of a proprietary medicine" package? Are phenacetin, antipyrin and the myriad other German chemicals subject to tax? It is true they are vended "under letters patent and trade mark," but the special proviso in Section 20 declares that "no stamp tax shall be imposed upon any un-compounded medicinal drug or chemical." These German chemicals are "un-compounded" and, it would seem, therefore are made the subjects of specific exemption. Should the internal revenue office so rule and these products of all others escape taxation, the tide of protest would indeed be loud and deep. The law took effect July 1. By special provision, goods in retailers' stock on that date will not be subject to tax, but will require stamps only as they are actually sold. . . . No reason can be given for taxing non-secret medicines which does not equally apply to non-secret foods and other merchandise. No reason can be given for taxing non-proprietary medicines that does not as forcibly apply to other non-proprietary products. Why then this discrimination against druggists' merchandise and the drug store? . . . Many reputable manufacturers are carefully canvassing the situation with a view to bearing their fair share of these war taxes. The profit margin in numerous products is too small to justify the retention of present prices. The intelligent pharmacist will know how and when to discriminate between a justifiable and reasonable advance and an arbitrary and extortionate demand for further tributes. In the former class are few products adapted for manufacture in the retailer's laboratory; it is in the latter class where the injustice will quite invariably be found and where the remedy is at hand.—*Western Druggist*.

Wax in the Tubercle Bacillus.—Aronson has been experimenting with large quantities of bacilli grown on glycerin bouillon and also on Proskauer's mineral medium. He found that treating 300 grams of the bacilli with ether and alcohol resulted in securing a brown tenacious substance, representing about one-fourth of the original mass, assumed by Klebs and others to be fat. Closer chemic analysis, however, has proven that this substance only contains 17 per cent. of free fatty acids, while the rest is true wax, which stains with carbol-fuchsin. The wax is also found in diphtheria bacilli, but not more than 3 to 5 per cent. of the total bulk, and it is not affected by the fuchsin in the same way. After the wax is extracted from the tubercle bacilli, if they are treated with 1 to 50 sodium, and compressed at a temperature of 130 degrees C. according to Behring's method, a very powerful toxin results. It can also be obtained without the heating, but in smaller amounts.—*Berlin med. Gesellsch.*, Session of May 11.

Colleges.

HAMLIN UNIVERSITY, Minnesota, graduated a class of twelve from the medical department June 9.—The graduating class of Harvey Medical College, Chicago, at the annual commencement held June 15 numbered eighteen.—At the annual commencement of the University College of Medicine, Virginia, there were forty-nine graduates in medicine.—Beginning with the next school year the Medical College of Niagara University will be consolidated with that of the University of Buffalo, N. Y.

Hospitals.

THE JAMAICA EMERGENCY HOSPITAL ASSOCIATION, New York City, dedicated the new hospital building on June 18.—The Lackawanna (Pa.) Hospital has received \$950 from the estate of William T. Smith.—The new wing of the Cook County Hospital, Chicago, a three-story brick structure was opened for use June 20.

Philadelphia.

PHILADELPHIA HOSPITAL OVERCROWDED.—From time to time it has been suggested that it would be best to separate the almshouse from the hospital department of this institution, but up to the present time nothing has been done and the patients keep the managers busy providing the necessary room. The Mayor of the city has suggested consolidation of all the poor districts in the county of Philadelphia and placing them under the care of the Department of Charities and Correction. Further, that while the almshouse is at present overcrowded some of the district poorhouses in the suburban sections of the city have comparatively few inmates and therefore could be used to advantage in caring for some of the patients now at Blockley. It seems that the insane department is most pressed for room and that while 1050 cases are being cared for, the facilities are entirely insufficient. Since all of the State institutions are taxed to their utmost with these unfortunates, they can not be removed from this city and the question regarding their final disposition is still an open one.

PTOMAIN POISONING.—In previous issue of the JOURNAL, notice has been taken of several cases occurring in Philadelphia. During the week just passed two households consisting of nine persons have also been poisoned in this manner. The first cases resulted from eating pork, the second from oysters, and it is now recorded that ham is responsible for the illness of these latter cases. In the early part of the week these all partook of boneless ham which seemed fresh, but within a few hours all became ill and suffered with intense pains in the abdominal region and accompanied by nausea and vomiting. A physician called in pronounced it ptomain poisoning. A day or two later another family bought ham from the same grocer and after the two elder sons had eaten of it for lunch they were shortly afterward likewise afflicted. The following morning two daughters and a younger son ate of the ham and were shortly afterward seized with similar symptoms. The attending physician pronounced the cases ptomain poisoning. All the cases terminated favorably.

BAD WATER.—After weary months of incessant toil, after constant vigilance by the physicians of Philadelphia and after the worst epidemic of typhoid fever possibly ever known here the City Council has been forced to pass the "Loan Bill" which was voted by the people a year or two ago. Much praise should be given to those who entered personally into the fight and brought to light the underhand dickerings of the councilmen. Dr. William Pepper and Dr. John K. Mitchell were among the most earnest workers along this line. Of the \$11,200,000 which will now be expended in greater Philadelphia, several million dollars will be spent in erecting and maintaining a proper filtration system. It is also gratifying to know that a large portion of this amount will be spent in the equipment of a large museum and also that the condition of the health of the people will be further improved by the construction of better streets and sewage systems.

FOR FREE CUBA.—In the death of Dr. John Blair Gibbs, who fell at his post of duty in Guantanamo, the University of Pennsylvania loses a worthy son and the United States Army a valuable assistant. Dr. Gibbs was graduated at the head of his class in this institution in 1881, and for several years made this city his home. Some time afterward he moved to New York and entered the Bellevue Hospital, serving on the resident staff. Subsequently he matriculated at the College of Physicians and Surgeons, N. Y., and was graduated in 1882. When the first call to arms was sounded he responded and is the first army surgeon to sacrifice his life for free Cuba.

WEATHER IN PHILADELPHIA.—There were three deaths and four prostrations as the result of the intense heat for the week ending July 18. In several cases the patient had suffered with heart trouble and the effects of the heat acted more remotely. Later the weather has become more pleasant and enteritis and cholera infantum has not been manifested to a very great degree.

THE PUBLIC SERVICE.

Appointments, Assignments, etc., of Medical Officers.—To the 1st Corps at Chickamauga, Ga.: Capt. Henry P. Birmingham, U. S. A. To the 2d Corps at Camp Alger, Falls Church, Va., as brigade surgeons: Major Wm. H. Devine, U. S. Vols., to report to Major General Graham, brigade not specified; Major Peter D. McNaughton, U. S. Vols., to report to General Duffield; Major George W. Crille, U. S. Vols., to the 2d brigade, 1st division. To the 3d Corps at Chickamauga, Ga.: Capt. Eugene L. Swift, U. S. A. To the 4th Corps, General J. J. Coppinger, at Tampa, Fla.: Major W. Fitzhugh Carter and Capt. P. R. Egan, U. S. A. To the 7th Corps, General Fitzhugh Lee, at Tampa, Fla.: Major Geo. T. Vaughan, U. S. Vols., brigade surgeon, and Capt. Jefferson R. Keen, U. S. A. To the Philippine expedition: Lieutenant Franklin M. Kemp, U. S. A.; Acting Asst. Surgeons C. F. de Mey from Louisville, Ky., and A. E. Halstead from Chicago, Ill. To the Letter Hospital: Major John W. Bayne, U. S. Vols., brigade surgeon, and Acting Asst. Surgeon Edwin P. Hayward. To the general hospital at Ft. McPherson, Atlanta, Ga.: Capt. Chas. E. B. Flagg, U. S. A.; the order sending Capt. R. S. Woodson, U. S. A., to this hospital was revoked. To the hospital train under Major Charles Prichard, U. S. A.: Capt. H. R. Stiles, U. S. A. From the hospital ship *Relief* to Ft. Slocum, N. Y.: Acting Asst. Surgeon Thomas A. Smith. From Washington Bk., D. C., to San Francisco, Cal., accompanying a battalion of artillery: Acting Asst. Surgeon S. Melville Waterhouse, returning thereafter to his station.

Resignation.—Major G. Frank Lydston, 2d Illinois Vol. Infantry. **Nominations.**—1st Vol. Infantry: Wm. F. Starley of Texas as Surgeon and Henry A. Ingalls of Texas as Asst. Surgeon. 3d Vol. Infantry: James A. Toole of Georgia, as Asst. Surgeon. 9th Vol. Infantry: James Mitchell of Pennsylvania and Joseph T. Scott of Louisiana, as Asst. Surgeons. 10th Vol. Infantry: Thomas McCormick Lippitt of Virginia, as Asst. Surgeon.

Nominations confirmed.—Dr. Edward Martin of Pennsylvania and Dr. Ernest Taylor Tappey of Michigan, to be brigade surgeons with the rank of Major. Wm. F. Starley of Texas, to be Surgeon, Henry A. Ingalls of Texas and James Greenup Boyd of Texas, to be Asst. Surgeons of the 1st Regiment of Volunteer Infantry. Joseph A. Guinu of Georgia, to be Asst. Surgeon of the 3d Regiment. Frank P. Robinson of Tennessee, to be Surgeon of the 6th Regiment. John F. Dunshire of Louisiana, to be Asst. Surgeon of the 9th Regiment; and George N. Stoney of Georgia and John C. Dysart of Texas, to be Asst. Surgeons of the 10th Regiment.

An Inspection of the Army Medical Department in the Field.—Colonel Charles R. Greenleaf, chief surgeon of the army in the field, has recently returned to headquarters in Washington, D. C., from an inspection of the medical department in the camps at Chickamauga, Ga., and other points. He expresses himself as well satisfied with the progress made under the many difficulties with which chief surgeons had to contend. He found the health of the troops to be remarkably good, the aggregate percentage of sick to the effective force being less than 1 per cent. in General Lee's command and only a trifle over 2 per cent. at Tampa, Fla., and Mobile, Ala. It is probably about the same at Chickamauga, Ga., and Falls Church, Va., although absolute figures could not be obtained at these places because of the inability of corps surgeons to obtain records from regimental medical officers. From an examination of regimental books, Colonel Greenleaf satisfied himself that the rate of sickness was not much greater than in regular army commands. The diseases were generally those of the digestive apparatus, due to change of habits and unavoidable errors of diet and cooking incident to this early stage of the field service. There were also a few cases of pneumonia and typhoid fever, menses and mumps. Infectious cases were promptly isolated and measures were taken to prevent the spread of the disease. The advantage of caring for those who are seriously ill in general hospitals rather than in the field hospitals, is very manifest. The Surgeon-General has established general hospitals at the McPherson Barracks, Atlanta, Ga., to receive the sick from Tampa, Mobile and Chickamauga, and at Fort Myer, Va., for the care of serious cases from Camp Alger, Falls Church, Va. In addition to these there is the Leiter Hospital, capable of accommodating 400 or 500 patients, adjacent to the grounds at Chickamauga. The transfer of sick between the camps on the southern coast and these hospitals is effected by the hospital train of ten tourist sleepers, one dining and one dispensary car, Major Charles Richard, U. S. Army, in charge.

Mounts for the Hospital Corps.—An order issued from Headquarters of the Army, June 22, 1898, specifies the allowance of horses for mounts, wheel transportation, tentage, etc., for the Medical Department of the Army in the field:

	Hospital stewards.	Acting hospital stewards.	Privates.
To each regiment of infantry	1	.....	1
To each artillery battalion (3 light batteries) . . . . .	.....	3	1
To each cavalry regiment	1	.....	2
To each corps headquarters	1	.....	2
To each division headquarters	1	.....	1
To each brigade headquarters	1	.....	1
To each division ambulance company	7	3	12
To each corps reserve ambulance company	7	3	12
To each division field hospital	2	2	6
To each corps reserve hospital	2	2	6

Wheel transportation.—One ambulance to 400 men of the effective force. One 4-horse wagon to 800 men of the effective force. One 4-horse wagon to each brigade.

Tentage.—For each ambulance company: 17 common tents for privates; 2 common tents for noncommissioned officers. For each division field hospital: 15 common tents for privates; 2 common tents for noncommissioned officers; 1 common tent for supplies. Hospital tents on a basis of 6 patients (beds) to each tent. Hand litters, with slings, to be furnished by the Quartermaster's Department; 1 for each company; 2 for each ambulance.

Regimental Bands as an Ambulance Corps.—The Assistant Adjutant General, U. S. forces, has issued orders to the following effect, that all members of regimental bands will be instructed in hospital drill and as much of first aid to the injured as is practicable under existing circumstances. To this end all musicians will hereafter report to a medical officer attached to the regiment to which the band belongs for one hour each day for instructions until they are pronounced qualified by the medical officer who instructs them. This arrangement will add largely to the numerical force and efficiency of first-aid bearers upon the battlefield. Men will be needed who know how to handle a wounded man so as to place him with care and expedition upon a litter and transport him smoothly and without jolt to the first dressing station or to the ambulance. Practically, therefore, the instruction that band members are receiving consists of exercises in the manual of the litter, viz., marching with the litter, as litter squads composing a detachment so as to mobilize at a given point; searching for the wounded by scattering the several squads under charge of their respective squad leaders; the proper loading of the litters with the wounded, and their easy conveyance to some designated spot, and the placing of the loaded litters in ambulances.

The Outfit of an U. S. Infantryman in active service consists of the following: Two blankets, 10 pounds; one rubber poncho, 2 pounds; one-half shelter tent, 2 pounds; one overcoat, 6 pounds; one pair shoes, 2 pounds; one cake soap, 3.5 ounces; one pair trousers, 3 pounds; one shirt, 1 pound; one shirt, 1 pound; one pair drawers, 1.54 ounces; one pair socks, 3.45 ounces; one towel, 2.4 ounces; one blanket bag, 2 pounds; haversack and rations, 9 pounds; rifle, bayonet, field belt, scabbard, 12.5 pounds; canteen filled and cup, 4.5 pounds; ammunition, 100 rounds, 6 pounds; total, 64.5 pounds. This does not include the weight of the clothing and incidentals, as pocket-knife, pipe, tobacco, money, etc., which would make the total nearer seventy pounds. But by a recent order from provisional headquarters, at Chickamauga, the men in the ranks are to be somewhat relieved. The knapsack, tent, blanket, overcoat, canvas suit, change of underclothing, soap and towels are to be carried on a wagon, two of which will be furnished to each company. This will leave some forty-seven pounds, enough of a burden under the tropical sun, where every pound pulls down with double the force of its actual weight.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from June 18 to 24, 1898.

Major Junius S. Powell, Surgeon, will proceed from Ft. Riley, Kan., to Mobile, Ala., and report in person to Brigadier General William C. Oates, U. S. Vols., Fourth Army Corps, for duty as chief surgeon on his staff.

Acting Asst. Surgeon Wylie G. Woodruff, U. S. A., will proceed from Lawrence, Kan., and report in person to the commanding officer of that post for duty.

Acting Asst. Surgeon John R. Devereux, U. S. A., will proceed from Washington, D. C., to Chickamauga, Ga., and report to Major E. C. Carter, brigade surgeon U. S. Vols., in charge of Leiter general hospital, for duty.

Capt. Jefferson K. Kean, Asst. Surgeon U. S. A., ordered to Jacksonville, Fla., to report to Major General Fitzhugh Lee, U. S. Vols., commanding Seventh Army Corps, for duty.

Capt. Peter R. Egan, Asst. Surgeon U. S. A. ordered to Tampa, Fla., to report to Major General John J. Coppinger, U. S. Vols., commanding Fourth Army Corps.

Capt. Henry R. Stiles, Asst. Surgeon T. S. A., having reported in person to the Surgeon-General of the Army, will report in person to Major Charles Richard, surgeon in charge of hospital train, for duty.

Capt. John S. Kulp, Asst. Surgeon U. S. A., ordered to Camp George H. Thomas, Chickamauga National Park, Ga., and will report to Major General James F. Wade, U. S. Vols., commanding Third Army Corps, for duty.

Major Charles Richard, Surgeon U. S. A., having reported in person to the Surgeon-General of the Army is assigned to duty in charge of the hospital train.

A board of officers to consist of Col. Charles C. Byrne, Asst. Surgeon-General; Major James P. Kimmall, Surgeon, and Major John D. Hall, Surgeon, is appointed to meet at Governor's Island, New York City, for the examination of such officers of the Medical Department as may be ordered before it, to determine their fitness for promotion.

Capt. William C. Gorgas, Asst. Surgeon, ordered to report to the president of the examining board, New York City, for examination for promotion.

CHANGE OF ADDRESS.

- Adams, S. S., from Washington, D. C., to Mt. Lake Park, Md.
- Bannister, H. M., from Oak Park to Evanston, Ill.
- Bubna, C. W., from 180 Croton St. to 667 Quincy, Cleveland, Ohio.
- Crndup, C. F., from Omaha, Neb., to Ryan, Ind. Ter.
- Campbell, C. H., from Clarks to Osceola, Neb.
- Chapman, W. S., from Gluch, Colo., to San Carlos, Ariz. Ter.
- Chamberlin, W. A., from Rochester to Waseca, Minn.
- Froat, C. A., from Chicago, Ill., to Almond, W. Va.
- Hillard, W., from California Bldg. to Box 742, Denver, Colo.
- Hertel, L. L., from 233 22nd to 2212 Dearborn St., Chicago, Ill.
- Isham, I. D., from 2441 Wabash Ave. to Chicago Beach Hotel, Chicago.
- Jackson, E., from Philadelphia, Pa., to McPhee Bldg., Denver, Colo.
- Lundgren, C. E., from 455 Pacific St. to 58 Norman Ave., Brooklyn, N. Y.
- Martin, A. R., from 467 Milwaukee to 732 N. Boyne Ave., Chicago, Ill.
- Reamy, T. A., from Cincinnati to Stockton, Ohio.
- Storie, J. G., from Shell Creek, Tenn., to Elk Park, N. C.
- Searles, L. M., from Omaha, Neb., to Box 423, Kansas City, Mo.
- Shattuck E. C., from 35 Myrtle St. to 614 Tremont St., Boston, Mass.
- Wagner, T. H., from Chicago to Silver Cross Hospital, Joliet, Ill.
- Wray, W. E., from Waupun, Wis., to Jacksonville, Fla.
- Weaver, T. A., from Dayton, to Blachleyville, Ohio.

LETTERS RECEIVED.

- American Sports Pub. Co., New York, N. Y.
- Brown, R. W., Glenwood, Wis.; Bischoff, C. & Co., New York, N. Y.;
- Blincoe, A. G., Bardstown, Ky.; Brown, J. E., Columbus, Ohio; Bondurant, E. D., Mobile, Ala.; Braden, J. Marshall, Well Spring, Tenn.; Brophy, Truman W., Chicago, Ill.; Bateson, J. C., Seranton, Pa.; Burwell, W. M., Willis, Va.; Betz, F. S. & Co., Chicago, Ill.; Bischoff, C. & Co., New York, N. Y.; Bubna, C. W., Cleveland, Ohio; Bevan, A. D., Chicago.
- Carlaw, C. M., Minneapolis, Minn.; Canton Surgical and Dental Chair Co., Canton, Ohio; Campbell, A. M., Haslett Park, Mich.; Crandall, F. M., New York, N. Y.; Care, J. R., Worcester, Pa.; Cole, C. K., Helena, Mont.
- Dios Chemical Co., St. Louis, Mo.; Davis, T. B., Prescott, Ariz.; Douglas, Wm. A. H., Mt. Clinton, Va.; Dumm, J. M., Mackeyville, Pa.; David, E. L., Louisville, Ky.
- Engleman, Rosa, Chicago, Ill.; Eagleson, J. B., Seattle, Wash.
- Fite, B. W., Resaca, Ga.; Ford, Ward R., Omaha, Neb.; Fuller's, C. H., Adv. Agency, Chicago, Ill.; French, Pinckney, St. Louis, Mo.
- Garber, J. B., Dunkirk, Ind.; Grant, Thos., North Bend, Neb.
- Howard, E. F., Vicksburg, Miss.; Herrick, A. B., Santa Rosa, Cal.; Harris, E. E., New York, N. Y.; Hatch, Theo. L., Owatonna, Minn.; Heidingsfeld, M. L., Cincinnati, Ohio; Huston Bros., Chicago, Ill.; Hall, J. N., Denver, Colo.; Hyndman, J. G., Cincinnati, Ohio; Hektoen, L., Chicago, Ill.; Herrick, J. D., Chicago, Ill.; Hartman, F. T., Waterloo, Iowa; Howe, H. E., Omaha, Neb.
- Imperial Granum Co., New Haven, Conn.
- Johnston, G. W., Washington, D. C.; Johnson, H. L. E., Washington, D. C.
- Keasby & Matteson Co., Ambler, Pa.; Kinneman, J. G., Goodland, Ind.; Kremer, V., St. Louis, Mo.
- Leal, Maurice T., City of Mexico, Mex.
- McCord, F. C., Jacksonville, Fla.; Macmillan Company, The, New York, N. Y.; McKesson & Robbins, New York, N. Y.; Mitchell, H., Buffalo, N. Y.; Mattison, F. C. E., Pasadena, Cal.; Mills, H. B., Philadelphia, Pa.; Miller, W. G., New Castle, Pa.; Mead, Ella O., Greeley, Colo.; Medical Examiner, New York, N. Y.; Mercer, Alfred, Syracuse, N. Y.; Murray, M., Baltimore, Md.; Miel, G. W., Denver, Colo.
- Norwich Pharmacal Co., Norwich, N. Y.; New York Polyclinic, New York, N. Y.
- Pick, Albert, Brockton, Mass.; Priestman, J. L., Neponset, Ill.; Phenique Chemical Co., (2) St. Louis, Mo.
- Rutherford, Frances A., Grand Rapids, Mich.; Randall, B. A., Philadelphia, Pa.; Reik, H. O., Baltimore, Md.
- Schleffelin & Co., New York, N. Y.; Street, David, Baltimore, Md.; Smith, J. Whitefield, Bloomington, Ill.; Straw, E. E., Rural Retreat, Va.; Smart, Charles, Washington, D. C.; Steele, D. A. K., Chicago, Ill.; Seaman, Frank, New York, N. Y.; Smith, J. T., Baltimore, Md.; Sloan, M. G., Dexter, Ill.; Snoko, W. A., Des Moines, Iowa.
- Tarrant & Co., New York, N. Y.
- Veit & Co., Leipzig, Germany; Voje, J. H., Oconomowoc, Wis.; Wall & Ochs, Philadelphia, Pa.; Wachter, M. M., Axtell, Kan.; Walling, P. A., Park Rapids, Minn.; Whitacre, H. J., Cincinnati, Ohio; Woldert, E. A., Philadelphia, Pa.; Walker, O. D., Keokuk, Iowa; Williams, W. M., Chicago, Ill.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, JULY 9, 1898.

No. 2.

ADDRESS.

ADDRESS OF CHAIRMAN.

Delivered before the Section on the Practice of Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY SAMUEL A. FISK, M.D.
DENVER, COLO.

It affords me peculiar pleasure to extend to you a welcome to Denver and Colorado. Having come to Colorado myself, some eighteen years ago, severely afflicted with acute pulmonary tuberculosis, which was thought to be of a fatal nature, my professional life has been almost entirely in Denver, and I have looked upon this meeting of the AMERICAN MEDICAL ASSOCIATION as one of the best ways of informing the profession of this country of what the climate of Colorado is and what it can accomplish, and so of repaying, to a slight degree, some of my obligations to this State, and of making thousands of others sharers with me in the benefits that climate can offer. I am fully aware that the Colorado climate is not always uniform; that frequently, like a pretty girl, she pouts; and that too, at times when one would like to have her at her best. But taking her for all in all, the climate is unsurpassed, and favorable results, so far as pulmonary disease is concerned, can be seen on every hand, and recoveries are to be numbered by the tens of thousands, which is the best proof of the efficacy of the Colorado climate in such disease.

The welfare of the AMERICAN MEDICAL ASSOCIATION especially demands our attention. Starting as she does on a fresh half-century of work, we who are interested in her well-being have every reason to look for a greatly enlarged field of usefulness and of influence. The good of the ASSOCIATION as a whole is closely allied with the good of each individual Section; and in connection with the work that has devolved upon me during the past year, with reference to the Section on the Practice of Medicine, a few things have suggested themselves which I wish to call to your attention.

I have found that the time of meeting conflicts with the work of many of the profession engaged in medical education, their final examinations and graduations coming at this time. To me, this is a matter of serious consideration, as in the present instance it has robbed us of the presence of a number of men prominent in medicine, and whose assistance is certainly to be desired. If the ASSOCIATION is to be a National one, and not confined to the narrow limits of the East, it seems to me that this subject will need adaptation. To me, it is to be deplored that the old discussion on the ethics deprives us of the assistance of still another set of men, whose co-operation would be valuable. As some effort is now being made to bridge over the old rupture, I wish to express the hope that we may, ere long, reclaim those who left on this score, and I wish

to urge that, on our part, we do not require too great exactions. Still another party stands aloof from a feeling of disgust at what they call the "politics" of the ASSOCIATION. It may be that they place too great stress upon this one point, yet it does seem to me as though we should make every effort to have our ASSOCIATION known as a scientific rather than a political body.

The man practicing medicine exclusively, is frequently hampered by the professional brother on the one hand, who demands that he shall put the hand into the side and have a demonstration to his senses; and, on the other, of the laboratory man, who demands that the clinical results shall tally with those of mechanical appliances. As was ably pointed out by Prof. F. C. Shattuck in his official address before a State society a year or so ago, "Internal Medicine" should use these different results, rather than be used by them. Even now, having been thoroughly scared, she is again resuming courage and great things are to be hoped for in the future. It may be that she, herself, is somewhat to blame for these conditions and that many a fault has been allowed to be covered up by a theory rather than a fact. "The peculiar type of disease," it seems to me, is often used as a cloak for one's short-comings, or where this fails, one is wont to take refuge behind the theory of "self-limitations," which led the first Dr. Warren many years ago, when asked what was good for acute rheumatism, to reply, "six weeks." Fortunately for us, text-books do not contain the whole of medicine and disease does not necessarily direct her course according to the tactics of a treatise on practice. We recognize nowadays, that if our joints are swollen and painful with acute articular rheumatism, we do not have to wait the whole six weeks, and we know that the old idea of "twenty-one days" as applied to typhoid fever does not hold, and that we have the peculiar types of disease known as *typhus levissimus*, *afebrile* and an abortive typhoid. The fact that we do have these peculiar types, whether it be the result of practice or in spite of practice, leads us to hope that disease of any sort which has once been aborted can be aborted a second time, and that after a while the *peculiar* type may become the *prevailing* type. It seems to me, that in the direction of abortive as well as of preventive medicine, our Section has a considerable scope for the future.

I wish to remind you that this is the centennial anniversary of Jenner's famous discovery, that persons accidentally inoculated with cowpox were subsequently insusceptible to smallpox. It is needless for me to do more than make mention of this fact and to recall the blessings which have accrued to the world from its introduction, how that one of the greatest blights to mankind, one that frequently decimated a population, has been blotted out and that the average limit of man's days has been increased in consequence.

It may not be amiss to mention the fact that these are the results of the purest clinical observation and not those of laboratory toil. I do not wish, gentlemen, to depreciate the results of experimentation and of exactness, so-called, but I do chafe under what at times, looks like absurd demand and unjust restriction. One is frequently reminded of Hamlet's fine frenzy: "Why, look you now, how unworthy a thing you make of me. You would play upon me; you would seem to know my stops; . . . 's blood! do you think that I am easier to be played on than a lute?"

Gentlemen, I will not detain you further. An attractive program awaits us, and in its consideration I know that we shall derive pleasure and profit, and I trust that in succeeding years the Section on the Practice of Medicine may look back to its Denver meeting as productive of good and as a disseminator of knowledge; one accompanied as well with much pleasure.

ORIGINAL ARTICLES.

THE MODERN TREATMENT OF GUNSHOT WOUNDS IN MILITARY PRACTICE.

BY N. SENN, M.D.

LIEUTENANT-COLONEL U. S. VOLUNTEERS, CHIEF OPERATING SURGEON
WITH THE ARMY IN THE FIELD.

Two important causes are destined to bring about a radical change in the treatment of gunshot wounds as practiced in the war of the rebellion and as will be taught and advised in the Spanish-American and future wars: 1, the modifications which the weapon and projectile have undergone since that time; 2, the introduction into general practice of aseptic and antiseptic surgery. The diminution in the caliber of the bullet, the metallic jacket, the substitution of smokeless for black powder, the greater velocity and power of penetration of the missile, are conditions and influences which must necessarily modify the character of wounds inflicted with the modern weapon. Volumes have been written on this subject by writers in all countries in which the old weapon has been abandoned and the new one introduced. Numerous experiments have been made on cadavers and animals for the purpose of studying the effects of the modern projectile on the tissues with a view of obtaining reliable information as to the changes which will become necessary in the rational treatment of gunshot wounds in modern warfare. Experimental investigation has done much in pointing out some of the changes we may expect to see in the character of gunshot wounds during the present and coming wars, but many of the conclusions drawn from them will have to be modified after we have had an opportunity to study such wounds on a large scale on the battlefield. There can be no question but that the living body and the cadaver represent two entirely different mediums in studying the effects of the modern bullet. From a practical standpoint there remains no doubt as to the following facts, which will be confirmed by future experience in the treatment of gunshot injuries inflicted with the small caliber bullet: 1. Few bullets will be found lodged in the body. 2. Wounds will resemble more closely incised than contused wounds. 3. Range will have more influence in changing the character of the wound. 4. Diminished risk of infection. 5. Dangerous primary hemorrhage will be more, secondary hemorrhage less frequent. 6. More difficult extraction of the

bullet. As to the relative number of dead and wounded and the adaptation of the jacketed bullet to become encysted, are subjects on which we can only theorize and conjecture, subjects which can only be definitely settled by an extensive experience. We are better prepared to predict the influence wrought by the recent discoveries and advancements in surgery on the treatment of gunshot wounds and the fate of the wounded. The antiseptic treatment of wounds as taught and practiced by the immortal Lister, and asepsis as developed by the German surgeons with the distinguished Volkmann as their leader, are destined to minimize the remote dangers of gunshot wounds and other open injuries inflicted on the battlefield. We can safely repeat with the late Professor von Nussbaum, the most enthusiastic follower of Lister: "*The fate of the wounded rests in the hands of the one who applies the first dressing.*" This is the motto that every military surgeon must adopt and carry into effect. To this motto I should like to add a cast-iron rule that should never be transgressed and which, if observed without exception, will guard against one of the most fruitful sources of infection and that rule should be: *Never probe a bullet wound on the battlefield.* The experience of the past has taught us the wisdom of adopting such a universal rule. As our enemy is armed with the Mauser rifle, the cases will be few where there is any indication for probing wounds, and in those few where the bullet has lodged in the body, exploration should be absolutely prohibited until the patient reaches the field hospital where the facilities for asepsis are at hand and instruments of precision in diagnosis can be employed in locating the missile.

FIRST AID DRESSING.

The idea of rendering first aid to the wounded immediately upon receipt of injury in modern warfare must be abandoned. Alarming hemorrhage from a large vessel of any of the extremities will in many instances be arrested by the patient himself or his nearest comrade by the use of some sort of circular constriction, but the legitimate function of the hospital corps men will begin after the engagement. Desirable as it may appear, attempts at disinfection of the wound or wounds will prove impracticable and useless on the battlefield. Time alone is an important element in contraindicating such a course. Hundreds and thousands may demand attention, to say nothing of the limited facilities for procuring for the wound and its vicinity an aseptic condition. The wisest and safest course to pursue under such circumstances is to make an intelligent use of the first aid dressing package which should be found upon the person of every soldier, officers and men. The average first aid package, the one devised by von Esmerch included, is too cumbersome. A first aid package, to meet the indications for which it is employed, should include: 1, an efficient antiseptic powder; 2, a sufficient quantity of a hygroscopic material to absorb the primary wound secretions and serve as a filter for the wound; 3, a handkerchief or bandage with which to retain the dressing and in case of necessity to be used in constructing a Spanish windlass; 4, safety pins. A few years ago I devised such a package. It contains about a teaspoonful of a powder composed of four parts of boracic acid, one part of salicylic acid, about one drachm of absorbent cotton, a piece of sterile gauze forty inches square and a number of safety

pins. The powder is lodged in the center of the cotton compress and is to be applied directly to the wound when the package is used. The package when compressed is small and wrapped in gutta percha. Every soldier of the Illinois volunteers carries such a package and is conversant with the manner in which it should be employed. The piece of gauze can be readily transformed into a Mayer triangular bandage and serves as an excellent substitute for Esmarch's bandage, which is heavier and requires much more space. The figures printed on Esmarch's bandage are useful for instruction but absolutely without value on the battlefield. In rendering first aid the injured part should be divested of clothing with as little disturbance of the wound as possible. Instead of removing the clothing it is much better to make free use of scissors and knife in gaining access to the wound. If two wounds are found, both must receive the same attention and care in protecting them against infection. I have used the antiseptic powder which I have referred to on a very large scale and can speak in positive terms of its potent antiseptic properties. It resembles in its effects on the tissues Thiersch's solution, being odorless, non-irritating and non-toxic. It forms with the cotton and primary wound secretions a crust which effectually seals the wound. In the absence of grave symptoms such as hemorrhage, this dressing should not be disturbed until the patient reaches the field hospital, and in many cases healing of the wound will take place without further interference. The immobilization of the injured part, particularly in cases of compound fracture of the extremities, constitutes an important part of the manifest duties of those who render first aid to the wounded. In all large engagements the supply of mechanical supports carried by the men of the hospital corps will be exhausted long before all of the wounded have received attention. Splints must be improvised. Rifles, sabers, bayonets, bark, branches of trees, shrubs, etc., the chest in fractures of the upper extremity, the opposite limb in fractures of the thigh or leg, will have to be utilized in procuring rest for the injured limb in transporting patients from the line of battle to the first dressing station. It is here that the surgeons will supplement or improve the work done by the litter bearers and hospital corps. It is for the purpose of doing away with the necessity of using splints that a German military surgeon has recently devised a litter on the plan of a double inclined plane for the lower extremities, a description of which he gave before the military section of the International Medical Congress held in Moscow last summer. In the absence of a litter of such special construction the same object is attained by securing the same position for the injured limb by a roll made of a blanket, clothing, knapsack, drum, straw, etc. It is my opinion that the transportation of the wounded suffering from a fracture of the lower extremity can be done with less pain and with greater security against additional injuries if the fractured limb is placed in a flexed than a straight position. If this statement is found to be correct by future observations the manner of dressing such cases must undergo a material change in the future. The manner of handling, carrying and conveying patients from the field to the hospital, suffering from fracture of the lower extremity, is a subject of great importance to those who have in charge the instruction of the hospital corps and company bearers.

ARREST OF HEMORRHAGE ON THE FIELD.

Life will be placed in jeopardy and deaths will occur more frequently from internal than external hemorrhage; in the treatment of the former little can be done in the field, and the latter class will come more frequently under the care of more professional men than surgeons. Ligation of arteries in the field will prove impracticable in most instances. The company bearers and hospital corps men should be fully instructed in the details of the various hemostatic resources applicable in emergency work. Elevation of the injured part, hyperflexion, digital compression and antiseptic tamponade are some of the measures employed which can be entrusted to intelligent and well instructed laymen in arresting hemorrhage. Some form of circular constriction will, however, most frequently be relied upon in arresting hemorrhage complicating gunshot wounds of the extremities. The advantages and dangers attending this method of arresting hemorrhage must be made a prominent feature in giving instructions on first aid. The technique of the procedure, whether it consists in the use of the typical Esmarch's elastic constrictor, a pair of suspenders or the Spanish windlass, must be fully explained and demonstrated on the living subject. The fact must be impressed that it is of great importance to render the limb that is to be constricted comparatively bloodless by elevation before the constrictor is applied. The next most important advice to be carried into effect in the use of circular constriction is to *constrict quickly and with sufficient firmness to interrupt at once and completely both the arterial and venous circulation*. A question of immense and far reaching importance, and one which has not as yet been definitely answered is: How long is it safe to continue the constriction? There must be, and there is, a limit as to length of time it is safe to exclude blood supply from living tissues. Although cases have been reported in which elastic constriction was continued for three to twelve hours without any serious immediate or remote consequences following, yet the consensus of opinion among surgeons, I am sure, at the present time would be opposed to excluding the blood supply from an entire limb, the seat of a gunshot injury, for a longer time than three to four hours. The danger of gangrene is always greater in constricting an injured than a healthy limb. A number of years ago I made an extended series of experiments on dogs to determine if possible, the maximum length of time it would be safe to continue elastic constriction. The limb was invariably constricted near its base. The time varied from an hour and a half to twenty-seven hours. In a number of cases temporary incompetence of the muscles and temporary paralysis followed when constriction was continued beyond four hours, but the degree of functional disturbance was not always proportionate to the length of time. In only one instance did gangrene occur, and in this case constriction was continued for seventeen hours, while the maximum time was twenty-seven hours. This subject is of special interest to the military surgeon, as from the very nature of things if circular constriction is resorted to as a hemostatic agent on the battlefield a considerable length of time must necessarily intervene before the wounded reach the first dressing station or field hospital, where it is removed and hemorrhage arrested by direct and permanent hemostatic measures. I should consider it dangerous to extend the time beyond from three to six hours, and should

insist that within this limit of time the patient should be placed in charge of a surgeon fully equipped to substitute for it the ligature, aseptic tamponade or some other direct hemostatic agent.

LOCATING, FINDING AND EXTRACTING BULLETS.

The new weapon will minimize the surgeon's work in locating, finding and removing bullets. In the vast majority of cases requiring surgical treatment two wounds will be found, the wound of entrance and exit marking the location and direction of the tubular wound made by the bullet. The cases in which the jacketed bullet will be found in the body indicated by the existence of only one wound will be exceptional. During my visit to the military hospitals in Greece last summer I found a good many wounds made by the small caliber projectile, but only in two cases could I obtain authentic information to the effect that the bullet was found in the tissues of the body and was removed by operative procedure. In the military hospitals in Turkey I found numerous cases in which the old-fashioned large caliber lead bullet used by the Greeks have been removed by operation or remained lodged in the body. The search for bullets in modern warfare, if made at all, will be reserved until the patient has reached the field hospital, when the surgeons will have at their disposal the necessary instrument for making an accurate diagnosis, and the essential facilities for making operations under the strictest aseptic and antiseptic precautions. Before using the finger or probe in exploration for a bullet the wound and the surface for a considerable distance around it should be thoroughly disinfected to guard against all possibility of infecting the wound during the examination or attempts at removal of the bullet, should such a course be deemed advisable after the completion of the examination. One of the most important rules to be followed in locating a bullet in the body is to place the patient and the part injured as nearly as possible in the same position as when occupied the moment the injury was received. The truth of this statement was well exemplified in the case of Gen. Hancock. A number of surgeons of good repute had made repeated attempts to find the bullet by probing but failed. At last he availed himself of the services of Dr. Reade, the present Surgeon-General of Pennsylvania, who placed the General in the same position he occupied in the saddle, and the first attempt to locate the bullet proved successful. The metal clad bullet has to a certain extent rendered the famous Nélaton probe obsolete. However, leaden bullets will be used to a greater or less extent by certain branches of the military force, and the porcelain tip will occasionally prove of service. The great objection to Nélaton's bullet probe is the size of the porcelain tip. *The end of the probe should correspond approximately in size to the caliber of the tubular wound.* By using an instrument constructed on this principle the danger of making false passages is greatly reduced. I have had a bullet probe constructed by Truax, Greene & Co., with two porcelain tips, one at each end rivited to the end of the silver probe, one 22 and the other 38 caliber. In parts of the body composed of deep muscular planes and layers of fascia it is often found absolutely impossible to follow the track of the bullet with any kind of probe. It is in such cases, when it is deemed prudent, from the symptoms presented and the probable location of the bullet, to explore the track that the surgeon will take

advantage of the use of the knife in dilating the track, using the probe step for step as a guide. The use of the X-ray will prove of the greatest value in all future attempts to locate bullets. In order to locate the bullet with sufficient accuracy to enable the surgeon to determine the propriety of an operation for its removal, and to guide him safely in his work photographs from at least two directions will have to be taken. Every field and general hospital should be supplied with an X-ray apparatus, and in all difficult cases this, one of the most recent diagnostic inventions, should be made use of before undertaking an operation, and in preference to repeated recourse to the probe. The famous old-fashioned American bullet forceps has lost its distinction in military surgery by the introduction of the metal clad bullet. The bullet forceps which I show you I devised a few years ago. It is so constructed that it serves at the same time as a useful bullet probe. The grip of the instrument upon any metallic bullet regardless of its caliber is firm, the bullet once grasped can be extracted without difficulty, as slipping of the instrument is almost an impossibility. It seems to me that when a small caliber bullet lodged in an important anatomic locality, difficult of approach and not giving rise to any serious symptoms, it should be allowed to remain with the hope that it may become encysted without causing any remote serious consequences. Such a conservative course in well selected cases will unquestionably yield better results than the too common routine practice to extract the bullet at all hazards.

GUNSHOT WOUNDS OF THE EXTREMITIES.

Besides the ordinary treatment of gunshot wounds regardless of the anatomic location of the injury, bullet wounds of the extremities, where complicated by fracture or joint injury, present to the surgeon special clinical features of great importance. Injuries of soft tissues not implicating important vessels and nerves, under modern treatment, should heal in a short time under the first dressing with little or no functional impairment. The existence of a gunshot fracture regardless of the extent of bone injury no longer furnishes a legitimate indication for a primary amputation. Such injuries under appropriate aseptic and mechanical treatment are amenable to a satisfactory repair in the course of time. They are the cases that tax the ingenuity of the surgeon in applying and maintaining the necessary mechanical support until the fracture heals by bony consolidation with the limb in a satisfactory useful position. In gunshot fractures of the femur extension and immobilization will now, as it has for a long time, constitute the generally accepted treatment. A determined, strong protest must be made against the unnecessary removal of detached and partially detached fragments of bone. If the wound remains aseptic the loose fragments of bone will not only retain their vitality but will take an important part in the restoration of the continuity of the bone and add materially to the functional result. Débridement, more or less extensive, only becomes necessary and should be performed in case the wound becomes infected. In such an event the loose infected fragments of bone should be promptly removed, free tubular drainage established, and the wound throughout subjected to thorough disinfection. If the ordinary measures should fail, continued irrigation with a saturated solution of acetate of aluminium will very often bring about the desired

results and obviate the necessity of an amputation. Fixation and suspension in such cases will not only procure comfort for the patient but will answer an excellent purpose in securing and maintaining coaptations and in facilitating drainage and irrigation. As soon as the fracture has united with sufficient firmness to render extension superfluous, the limb should be immobilized in a circular plaster of Paris splint, extending from base of toes to the groin, and in high fractures including the pelvis, after which the patient can be permitted to walk about with the aid of crutches. In gunshot fractures of the leg early immobilization in a circular plastic splint is to be advised and yields the most gratifying results. Watchful control of patients suffering from such injuries and treated by the use of the plaster of Paris bandage is essential in guarding against disastrous complications and in obtaining satisfactory functional results. Gunshot injuries of any of the large joints are now within the range of successful conservative treatment. I have seen in the military hospitals, both in Greece and Turkey, soon after the close of the war, gunshot wounds of the hip, knee, ankle, shoulder, elbow and wrist joints, not only recover without any operative interference whatever, but in many of the cases a fair degree of motion and good use of the limb rewarded the conservative treatment. The indications for primary amputation of a limb, or part of a limb, should at present be restricted to cases in which the nutrition is suspended or seriously threatened by the coexistence of vascular lesions incompatible with the vitality of the tissues at and below the seat of injury. In cases of doubt the soldier is entitled to the benefit of the same, and the conservative treatment should be carried to its ultimate limits until the appearance of complications demonstrate its futility and dictate the propriety of resorting to a mutilating operation. It is always more creditable to the surgeon to save a limb than to remove it, and the soldier is entitled to the benefit of conservative surgery as much as the civilian, and the plan of the military surgeon of the future should and will be to limit more and more the indications for amputations.

GUNSHOT WOUNDS OF THE SKULL.

It is my intention to limit my remarks under this heading to penetrating gunshot wounds of the skull. The few cases of this class of injuries that will come under the observation of the military surgeon will invariably require operative interference, provided it holds out any encouragement whatever of saving life. In case a bullet has passed through the skull and its contents the entire scalp should be thoroughly shaved and disinfected. The wound of entrance must be enlarged sufficiently to expose the perforation freely, which is then enlarged with chisel, DeVilbiss or rongeur forceps sufficiently to enable the surgeon to remove the loose spicula of bone, which are frequently found some distance in the brain. With a long eyed probe a strip of iodoform gauze large enough to loosely pack the tubular visceral wound should be inserted from the wound of entrance to the wound of exit, and the rough gauze drain made to project a few inches beyond the surface of each wound. Thorough capillary drainage of this kind will prevent accumulation of primary wound secretion in the interior of the skull, and will be of value in arresting capillary hemorrhage. A large hygroscopic dressing enveloping the entire scalp and covering both wounds, con-

stitutes the dressing and must be held in place by a few turns of plaster of Paris bandage. The drain must be allowed to remain until the danger of infection is passed, when it is to be removed gradually by shortening it every day or two. In case the bullet should be found lodged in the interior of the skull the wound of entrance must be treated in the same manner and the bullet located by the careful use of Flubrer's aluminium probe. A counter opening may become necessary in removing the bullet if it has reached the opposite side of the skull or when it has become deflected or arrested in its course near the surface of the brain, in case the locality in which it has become lodged warrants operative intervention. In all visceral injuries of the contents of the skull resulting from gunshot wounds capillary or tubular drainage or a combination of the two is indicated and should be continued until there is no further danger of infection, hemorrhage or accumulation of wound products, when the drain is to be gradually removed. The value of the X-ray in locating bullets in the interior of the cranium has as yet not been definitely ascertained.

GUNSHOT WOUNDS OF THE CHEST.

Penetrating gunshot wounds of the chest are attended by an enormous mortality owing to the physiologic importance of the organs which it contains. Visceral wounds of the heart and large blood vessels usually result in death in a few moments from acute anemia. Hemorrhage into the pleural cavity and into the large bronchial tubes interferes mechanically with the respiratory functions and frequently proves fatal in a short time and if the patient recovers from its immediate effects life is placed in danger by complications which so often are caused by the hemothorax. The accumulation of such a large quantity of blood in the pleural cavity is not incompatible with a speedy recovery, as when the blood is aseptic its removal by absorption is accomplished in a short time.

Experience during the War of the Rebellion proved that in gunshot wounds of the chest the chances for life were much better if the bullet passed through the chest than if it remained lodged in the body. I saw a number of soldiers of the Graeco-Turkish war that had been shot through the chest convalescent and in fair health a few weeks after the injury was inflicted. We have made little progress in the treatment of penetrating wounds of the chest. Direct operative treatment of visceral wounds of the heart and lungs is always attended by imminent risk to life from pulmonary collapse. This source of danger stands in the way of direct treatment of visceral wounds of the chest. Hemorrhage from wounds of the lung is often corrected spontaneously by the accumulation of blood in the cavity of the chest, causing temporary pulmonary collapse and tamponade of the tubular visceral wound by the formation of a blood clot. Free incision of the chest wall has been strongly advocated by several French surgeons in cases of penetrating gunshot wounds of the chest with a view of arresting hemorrhage by ligature, tamponade or the use of the cautery, but the profession on the whole, for good reasons, is opposed to such heroic treatment. Unless the source of hemorrhage is one of the intercostal or the internal mammary artery it is advisable to rely on nature's resources in arresting the bleeding. Hemorrhage from the intercostal arteries can be effectually checked by tamponade, using for this

purpose an hour glass shaped tampon of iodoform gauze. Rest in the recumbent position, with the chest slightly elevated, is essential in aiding spontaneous arrest of hemorrhage and in the prevention of complications. A rise in the temperature during the first forty-eight hours is no indication of the existence of sepsis, as with few exceptions it indicates a febrile disturbance, caused by the absorption of fibrin ferment, the so-called fermentation fever. Should later symptoms set in suggestive of septic infection, aspiration should be promptly resorted to and if not followed by speedy improvement no time should be lost in subjecting the patient to the same medical treatment as advised and practiced for empyema, that is, rib resection, free incision and drainage. The production of an artificial pneumothorax or hydrothorax by the introduction into the pleural cavity on the injured side of a non-toxic gas or filtered atmospheric air or sterilized water or non-toxic antiseptic solutions has not proved satisfactory in the treatment of intrathoracic traumatic hemorrhage. From what has been said it is clear that the best treatment in penetrating gunshot wounds of the chest consists in hermetically sealing the wound of entrance and exit, if such exists, under strict aseptic precautions and watch for and treat subsequent complications as they present themselves.

GUNSHOT WOUNDS OF THE ABDOMEN.

The greater part of this paper will be devoted to this subject, as recent discoveries and improvements in surgery have done more for the successful treatment of visceral wounds of the abdominal organs than the injuries of any of the organs contained in the remaining large cavities of the body. The triumphs that have signaled the practice of civilian surgeons in the operative treatment of intra-abdominal injuries must be repeated on the battlefield. I look hopefully for many successful results in the operative treatment of gunshot wounds in military practice. I will in this connection limit my remarks to penetrating wounds, taking it for granted that when patients suffering from abdominal wounds are brought to the field hospitals the surgeons in charge will consider it their imperative duty to make a positive distinction between penetrating and non-penetrating wounds before assuming the responsibility of opening the abdomen. In the discussion of penetrating wounds of the abdomen I shall quote freely from the forthcoming third edition of the American Textbook of Surgery from the chapter which treats of this subject. Sword, bayonet and other stab wounds will diminish in frequency with the development of modern scientific warfare. The penetrating wounds of the abdomen that will come under the observation of the military surgeon will with few exceptions be wounds inflicted with the modern small caliber projectile. The visceral wounds, the wound of entrance and exit will be small, too small for digital exploration. It is perhaps superfluous to make the statement here that *a penetrating wound of the abdomen should never be probed either for diagnostic or therapeutic purposes*. If any doubt exists as to whether or not the bullet has entered the abdominal cavity it is far better and safer to dilate the track by the use of the knife, relying on the probe as a guide, than to work in the dark with the probe and by doing so increasing the possibilities of infecting the peritoneal cavity. Quite recently the assertion has been made by several prominent surgeons that laparotomy should

be performed in all cases where it can be shown that penetration has occurred. It must, however, be admitted that, in the absence of serious visceral lesions, penetrating wounds of the abdomen are injuries from which the patients are very likely to recover without operative treatment, and that when such patients are subjected to laparotomy death may occur solely in consequence of the operation. It is undoubtedly true that in most cases of spontaneous recovery after penetrating gunshot wound of the abdomen the favorable termination has been due to the absence of serious visceral lesions, which some hold to be invariably present in such cases. A number of years ago I made a series of experiments on the cadaver for the purpose of demonstrating that occasionally a bullet can traverse the abdominal cavity in certain directions without producing a visceral wound that would warrant a laparotomy. The cadaver, a marasmic adult male was placed in the erect position against a wall and the shooting was done with a 38 caliber rifle at a distance of 30 feet. The bullet was fired in every instance in an antero-posterior direction and invariably passed through the body. Sixteen shots were fired and examination of the abdominal cavity carefully made by following the track of each bullet, showed that four of the bullets traversed the abdominal cavity without injuring the stomach or intestines or any of the large abdominal vessels. In each of these four experiments the bullet entered the abdomen at or a little above the umbilical level. In all experiments in which the bullet entered below the umbilical level intestinal perforations were found. Absence of visceral lesions has been also demonstrated during an operation or at the postmortem. During the Graeco-Turkish war several cases of gunshot wound of the abdomen recovered under a conservative plan of treatment. In nearly all of these cases the bullet entered the abdomen above the umbilicus, the most favorable location for the escape of intestines from the missile, the patient being in a standing position.

In two out of sixteen cases of penetrating gunshot wounds of the abdomen which came under the observation of the writer the absence of visceral injuries of the gastro-intestinal canal was demonstrated by the use of the hydrogen gas-test, and both of these patients recovered without resort to laparotomy. Clinical experience and the result of experiment show conclusively that laparotomy should not be performed simply because a bullet has entered the abdominal cavity, but that its performance should be limited to the treatment of intra-abdominal lesions which, without operative interference, would tend to destroy life. A bullet which passes through the lower part of the abdomen from side to side or obliquely is almost sure to produce from four to fourteen perforations of the intestines, while absence of dangerous visceral complications may be inferred with some degree of probability if it crosses the abdominal cavity in an antero-posterior direction at, or a little above, the umbilical level.

SYMPTOMS.

The general symptoms in cases of penetrating gunshot wounds of the abdomen, with the exception of those due to profuse hemorrhage, furnish very little information in reference to the existence or absence of visceral complications. Severe shock may attend a single non-penetrating wound; and it may be wanting, or at least slight, in cases of multiple perforation

of the intestines. It is not an uncommon occurrence for a patient who has received a penetrating wound of the abdomen to walk several blocks, or even a number of miles, without a great deal of suffering and without showing any symptoms of shock, and yet for a number of intestinal perforations to be revealed at a subsequent operation or autopsy. Vomiting occurs with equal frequency in parietal wounds and in simple penetrating wounds as when the viscera have been injured. Vomiting of blood points to the existence of a wound of the stomach.

Pallor is present in all penetrating wounds of the abdomen, soon after the receipt of the injury, and it is only more pronounced when produced, at least in part, by sudden and severe hemorrhage. Pain is very unreliable and often misleading symptom, as it may be moderate or almost completely absent soon after the injury has been inflicted, even when multiple perforations are present. The pulse at first is slow and compressible in all cases, and nothing characteristic in its qualities is observed even if the stomach or intestines have been wounded. Hemorrhage caused by wounds of any of the large organs, as the spleen, liver or kidneys, gives rise to progressive acute anemia, small rapid pulse, cold clammy perspiration, dilated pupils, yawning, vomiting, and in extreme cases, syncope and convulsions. The local symptoms are of no more value in determining the existence of visceral injuries in penetrating wounds of the abdomen than are the general symptoms which have just been enumerated. External hemorrhage is slight or entirely wanting, unless an artery or vein in the abdominal wall has been injured. The bleeding from visceral wounds gives rise to accumulations of blood in the peritoneal cavity, occult or internal hemorrhage; this can be recognized by physical signs which denote the presence of fluid in the free abdominal cavity and by general symptoms indicating progressive anemia; increasing pallor of the face and of the visible mucous membranes, small feeble pulse, superficial sighing, respiration and dilated pupils. Wounds of the stomach often occasion hemorrhage into this organ and hematemesis. Blood in the stools seldom follows hemorrhage into the bowels from intestinal wounds sufficiently early to be of any diagnostic value.

Circumscribed emphysema in the tissues around the track made by a bullet has been regarded as an important sign of the existence of intestinal perforation. This symptom is misleading and absolutely devoid of diagnostic value, as this condition has frequently been observed in non-penetrating wounds of the abdominal wall, resulting from the entrance of air into the loose connective tissue, or later by gas formation as one of the results of putrefactive infection. The accumulation of any considerable quantity of gas in the peritoneal cavity sometimes can be recognized by the disappearance of the normal liver dullness, caused by the presence of gas between the surface of the liver and the chest wall. This condition has been sought for in cases of perforating wounds of the abdomen as a diagnostic sign, and if found has been taken as a sure indication of the existence of visceral wounds of the gastro-intestinal canal. This is not, however, always the case. Adhesions between the surface of the liver and chest wall may have existed before the injury was received, or the amount of gas present may be insufficient to give rise to this sign. The escape of the contents of the wounded

stomach or intestines through the external wound, is a rare occurrence, and is possible only when the external wound is sufficiently large and straight and when it corresponds with the location of the visceral wound, or in the event of pre-existing adhesions between the abdominal wall and the injured portion of the gastro-intestinal canal. External extravasation occurs more frequently in wounds of the large than the small intestine. When this symptom is present it is conclusive proof of the existence of a visceral wound of the gastro-intestinal canal and the character of the extravasation will furnish reliable information as to the anatomic location of the visceral injury. With the exception of the last mentioned symptom and the indications pointing to the necessity of arresting internal hemorrhage, there is nothing about the local or general symptoms in cases of penetrating gunshot wounds of the abdomen that would enable the surgeon to decide with any degree of certainty soon after the injury was received, whether or not visceral injuries existed and consequently, whether laparotomy should or should not be performed.

DIAGNOSIS.

If a gunshot wound has penetrated the abdominal cavity and the general symptoms and local signs lead us to suspicion the existence of dangerous internal hemorrhage, *no time should be lost in further efforts to make an accurate anatomical diagnosis*, as sufficient evidence has been obtained to warrant a laparotomy for the purpose of preventing death from hemorrhage by the direct surgical treatment of the visceral injuries. If no such urgent indication presents itself it is desirable that the existence of visceral lesions demanding surgical treatment should be ascertained before the patient is subjected to the additional risk incident to a laparotomy, since a simple penetrating wound of the abdomen is an injury from which the majority of patients recover without operative treatment, and since visceral wounds of the gastro-intestinal canal are attended by such frightful mortality without surgical interference, the practical value and importance of a correct diagnosis before deciding upon a definite plan of treatment become obvious. It is apparent that if some reliable diagnostic test could be applied in cases of penetrating wounds of the abdomen which would indicate to the surgeon the presence or absence of visceral lesions of the gastro-intestinal canal, the indications for aggressive or conservative treatment would become clear. The writer has shown by his experiments on animals, and later by his clinical experience in the treatment of a number of cases of gunshot wounds of the abdomen that rectal insufflations of hydrogen gas can be relied upon in demonstrating the existence of perforations of the gastro-intestinal canal before opening the abdomen. He has shown conclusively that if the abdominal muscles are completely relaxed under the influence of a general anesthetic, hydrogen gas or filtered air can under safe pressure be forced from the anus to the mouth if no perforations exist, and if such are present the gas will escape into the peritoneal cavity, where its presence can be readily detected by the physical signs characteristic of a free tympanites or by its escape through the external opening. Theoretical objections have been made against this diagnostic test on the ground that it occasionally fails in demonstrating the existence of a perforation, and that it is instrumental in causing

fecal extravasation. In reply to this I must say that it has never failed in my hands in making by its aid a correct diagnosis, and the fallacy of the second objection I have shown repeatedly by experiments on animals. Hydrogen gas is a non-toxic substance, endowed with valuable inhibitory antiseptic properties, and is absorbed from all the larger serous cavities and connective tissue within a few hours. Pure zinc and sulphuric acid should be used in generating the gas, which is collected in a rubber balloon holding at least four gallons. The rubber balloon used for this purpose is square in shape and is connected with the rectal tip by means of a rubber tube six feet in length and supplied with a stop-cock near its proximal end. In applying the test an assistant presses the margin of the anus against the rectal tip, so as to prevent the escape of the gas, while another assistant forces the gas along the intestinal tube by pressing or sitting on the rubber balloon. The gas passes through the ileocecal valve under a pressure of two and a half pounds to the square inch and is announced by a distinct gurgling sound, which can always be distinctly heard by applying the ear or stethoscope over that region. If the rectum or colon has been perforated the gas will not reach the small intestine, as it will escape into the peritoneal cavity under less pressure than is required in rendering the ileocecal valve incompetent. As soon as the gas reaches a perforation large enough to permit its escape it will enter the peritoneal cavity and escape through the external wound if this has been freely laid open down to the peritoneum. If the external wound is in a location which points to injury of the stomach, this organ should be insufflated through a rubber stomach-tube, and if this test proves negative it is to be followed by rectal insufflation. It is impossible to inflate the intestines to any extent from the stomach.

TREATMENT.

The propriety of surgical interference in cases of penetrating gunshot wounds of the abdomen will depend upon one of three things:

1. General conditions of the patient.
2. Dangerous internal hemorrhage.
3. Wounds of the stomach or intestines large enough to permit extravasation. If the patient is pulseless and presents other indications of approaching death, operation is unjustifiable, as it would only hasten the end and bring reproach upon surgery and undermine the confidence in the life-saving value of the operation among the troops. Dangerous internal hemorrhage that will come to the notice of military surgeons in gunshot wounds of the abdomen will be the cases in which the vascular organs of the abdomen, the liver and spleen, or some of the larger vessels of the mesentery or omentum have been injured. Delay in such cases is dangerous. The abdomen should be opened and the hemorrhage arrested. The symptoms are apt to be unusually severe if the hemorrhage is sudden, progressive, if the loss of blood is gradual. In the latter case it may be prudent to watch the case for some time for more pressing indications, as it is well known that spontaneous arrest of hemorrhage may occur and large quantities of aseptic blood is removed from the peritoneal cavity in a short time. Visceral lesion of the gastro-intestinal canal large enough to permit extravasation are, with very few exceptions, mortal wounds, the existence of which can leave no doubt in the mind of the

surgeon to resort promptly to abdominal section as offering the only chance to save life.

PREPARATION OF PATIENT.

A patient suffering from a penetrating gunshot wound of the abdomen should be properly prepared before he is subjected to laparotomy. If the stomach is filled with food, a salt water emetic should be given for the purpose of emptying its contents, or better still, this can be done by the use of the stomach siphon tube. The rectum and colon must be emptied by a copious enema of warm water, to which may be added a tablespoonful of common salt. The unloading of the gastro-intestinal canal will not only facilitate the operation but will have a favorable influence in securing rest for the injured part. A hypodermic injection of gr. 1/4 of morphin and gr. 1/30 of strychnia should be given shortly before the anesthetic is administered, as these remedies in the doses specified assist the action of the anesthetic, secure rest for the intestines, and sustains the action of the heart. If the patient is much prostrated two ounces of whisky diluted with four ounces of warm water should be given by the rectum. The whole abdomen should be thoroughly disinfected. Before and during the operation the use of external dry heat will do much in preventing shock and in aiding the peripheral circulation. Compresses, towels and several gallons of warm normal solution of salt must be provided. The operator should do the work with as little assistance and as few instruments as possible, as the danger of infection in emergency work is apt to be proportionate with the number of assistants employed and number of instruments used. Hands, instruments, suturing material, in fact everything that is to be brought in contact with the wound, must be sterilized. In military surgery silk will have the preference over catgut. A hospital tent with a floor will be an admirable operating room in all semi-tropical climates. Anesthesia should be commenced with chloroform until the patient is under its full influence, when it should be continued with ether.

INCISION.

In the majority of cases the median incision should be made, as it affords advantages which give it the preference. It should always be selected in cases of gunshot wounds of the stomach, and where the wound of entrance is located near the median line. A median incision affords most ready access in the treatment of wounds of the small intestine. If the insufflation test is used, it will prove sometimes of value in deciding upon the location of the incision. If in gunshot wounds of the upper portion of the abdomen, direct inflation of the stomach through an elastic tube reveals the existence of perforation of this organ, the median incision should be selected. If rectal insufflation yields a positive result before the gas has passed the ileocecal valve, the incision should be made over the wounded portion of the colon, which is usually indicated by the course of the bullet. A wound in the transverse colon can be found and dealt with most effectually through a high median incision, perforation of the cecum or of the ascending colon calls for a lateral incision directly over the wounded organ, while a lateral incision on the left side is indicated if from the direction of the bullet it is evident or probable that the colon below the splenic flexure is the seat of the visceral injury. Laparotomy performed for the arrest of hemorrhage should always be done by mak-

ing a long median incision, which will afford the most direct access to the different sources of hemorrhage. Very often it will be advisable to make the incision in the line of the wound of entrance, more especially in cases where a lateral incision is indicated from the location of the wound from the course of the bullet, and perhaps from the results obtained by the insufflation test.

ARREST OF HEMORRHAGE.

In opening the abdomen in the treatment of internal hemorrhage the surgeon undertakes a task, the gravity of which it is impossible to foretell. To do the work quietly and well he must be perfectly familiar with the anatomy of the abdominal organs, their source of blood supply, and must have full knowledge of all hemostatic resources, the indication for their selection and details of application. Profuse intra-abdominal hemorrhage resulting from penetrating gunshot wounds of the abdomen is more frequently of parenchymatous and venous than arterial origin. Wounds of the liver, spleen, kidneys and mesentery give rise to profuse and often fatal hemorrhage. After opening the peritoneal cavity it is often very difficult to find the bleeding points, as the blood accumulates as rapidly as it is sponged out, and it becomes necessary to resort to special means in order to arrest profuse bleeding sufficiently to find the source of hemorrhage. One of two means should be employed: 1, intra-abdominal digital compression of the aorta; 2, packing the abdominal cavity with a number of large sponges or gauze compresses. Intra-abdominal compression of the aorta below the diaphragm can be readily made by an assistant introducing his hand through the abdominal incision, which in such a case must be larger than under ordinary circumstances. Compression made in this manner will promptly arrest the hemorrhage from any of the abdominal organs for a sufficient length of time to enable the surgeon to find the source of hemorrhage, and carry out the necessary treatment for its permanent arrest.

Hemorrhage from a perforated kidney may demand a nephrectomy, if it does not yield to tamponade. If the tampon is used an incision in the lumbar region must be made for the removal of the tampon and the parietal peritoneum should be sutured, so as to exclude the peritoneal cavity from the renal wounds. Wounds of the liver are sutured with catgut, cauterized with the actual cautery, or tamponaded with a long strip of iodoform or a typical Mikulicz tampon; in either case the gauze is to be brought out of the wound and utilized as a drain.

A wound of the spleen, if the hemorrhage does not yield to ligation, suturing or tamponade, necessitates splenectomy; very troublesome hemorrhage is often met with in wounds of the mesentery. When multiple wounds of the mesentery, and visceral wounds of the stomach or intestines are the cause of hemorrhage, it is a good plan to pack the abdominal cavity with a number of large sponges, napkins or compresses of gauze, to each of which a long strip of gauze is securely tied, these strips being allowed to hang out of the wound in order that none of the sponges or compresses may be lost or forgotten in the abdominal cavity after the completion of the operation. The sponges or compresses make sufficient pressure to arrest parenchymatous oozing as well as venous hemorrhage, if they are placed at different points against the mesentery and between the intestinal coils. The sponges

are removed one by one from below upward, and the bleeding points secured as fast as they are uncovered. The ligation of mesenteric and omental vessels, both arteries and veins, should be done by applying the ligature *en masse*. A round needle or Thornton's curved hemostatic forceps are the most useful instruments for this purpose. Catgut, as a rule, should not be relied upon in tying a mesenteric vessel, as it is greatly inferior to fine silk.

If hemorrhage is profuse this must be attended to before anything is done in the way of binding and suturing the visceral wounds. Troublesome hemorrhage from a large visceral wound of the stomach or intestines is best controlled by hemming the margin of the wound with catgut or fine silk. In hemorrhage from localities not accessible to ligation and not amenable to tamponade, pressure forceps are applied and allowed to remain for twenty-four or forty-eight hours. When used in this manner the instrument must be long enough to be brought out of the wound, and is then incorporated in the dressing. For the purpose of facilitating the binding and removal of the instrument a strip of gauze is tied to the handle.

SEARCH FOR PERFORATIONS.

A number of cases have been recorded, and I am sure many more have occurred, in which laparotomy was performed, one or more perforations sutured, and the postmortem showed that a perforation was overlooked, death resulting from extravasation and diffuse septic peritonitis. Such experiences are by no means limited to the practice of novitiates, but have occurred to men of large experience and in well equipped first class hospitals. The handling of the entire length of the gastro-intestinal canal in search for perforations requires time, adds to the shock of the injury and operation, and even if done by experts and with the utmost care, a perforation may escape the attention of the operator and become the sole cause of death. If the surgeon adopts this plan of detecting the perforations the work should be done systematically. The ileocecal region is the best landmark in beginning the search. From here the small intestine is traced in an upward direction, examining loop after loop and returning the intestine as soon as examined so as to avoid extensive eventration, which adds greatly to the danger of the operation. The large intestine is traced from the ileocecal region downward. In one of my cases a perforation of the rectum was found low down in the pelvis and certainly would have been overlooked if I had not used the inflation test, which promptly revealed not only its existence but also its exact location. If the air or gas test has been employed with a positive result before the abdomen was opened there will be no difficulty experienced in finding the first opening. If the stomach was inflated directly through an elastic tube, and the test has shown the presence of a perforation, a median incision is made from the tip of the ensiform cartilage to the umbilicus and the stomach is drawn forward into the wound. If no perforation is found in the anterior wall, the insufflation is repeated, and the escaping air or gas will direct the surgeon to the perforation. Through this perforation the stomach should again be inflated in search for a second and possibly a third perforation. In searching for intestinal wounds by the aid of inflation, further inflation should be suspended as soon as the lowest perforation has been found. If possible, the perforated portion of the

intestine should now be brought forward into the wound, and after emptying the intestine below the perforation as far as possible of its contents, including the gas or air, the bowel is compressed below the perforation by an assistant and the intestine higher up is inflated through the wound. As a matter of course, a perfectly aseptic glass tube should be inserted into the rubber tube in place of the rectal tip. The inflation is now carried as far as the second opening, when the first perforation is sutured, and after disinfection and emptying the intervening portion of its gas the intestine is replaced in the abdominal cavity. Further inflation is now made through the second opening, and if a third one is found the second is sutured, and so on until the entire intestinal canal has been thoroughly subjected to the test. By following this plan extensive eventration is rendered superfluous and the overlooking of a perforation is made impossible, likewise the objection to the test that reduction of the intestines owing to distension with gas or air is overcome if the intervening sections between the perforations are emptied of their contents before suturing the wound.

SUTURING THE PERFORATIONS.

The materials for suturing are an ordinary sewing needle and fine aseptic silk. Catgut should be dispensed with in all intestinal work. Trimming the margins of the visceral wounds is not only superfluous, but absolutely harmful, as it requires a useless expenditure of time and may become an additional source of hemorrhage. The same can be said of the Czerny-Lembert suture. All that is required in the treatment of a visceral wound of the stomach and intestines is to turn the margins of the wound inward and bring into apposition healthy serous surfaces by the continuous or by interrupted sero-muscular sutures, which should always be made to include fibers of Halsted's submucosa. From four to six stitches to an inch will suffice. If possible, wounds of the stomach should be sutured in the direction of the blood vessels, and transverse suturing of the intestine is necessary for the purpose of preventing constriction of the lumen. Defects an inch and a half in length, on the convex side, can be closed in this manner without fear of causing intestinal obstruction, while much smaller defects on the mesenteric side usually necessitate a resection, not only because the vascular supply in the corresponding portion of the intestine would be inadequate, but also because a sufficiently sharp flexion might be produced at the seat of suturing to become the immediate mechanical cause of intestinal obstruction.

ENTERECTOMY.

Enterectomy is often indicated in cases of double perforation and in marginal wounds of the mesenteric border. If in cases of multiple perforations it should become necessary to make a double enterectomy, and the intervening portion of the small intestine is not more than two or three feet in length, it is best to resect the same, as the immediate effect of the single operation will be less severe than that of a double resection with a corresponding double enterorrhaphy. After resection the continuity of the intestinal canal should always be restored by a circular enterorrhaphy, using for this purpose the Czerny-Lembert suture. Strips of sterile gauze are preferable to clamps in preventing extravasation during the operation. The gauze strip is passed through a small buttonhole made with hemostatic forceps in the mesentery near the

intestine and tied with sufficient firmness to prevent escape of intestinal contents.

IRRIGATION OF THE ABDOMINAL CAVITY.

This is necessary only if fecal extravasation or escape of stomach contents has taken place, an accident which, if it has not occurred before the abdomen was opened, should be carefully avoided during the manipulation of the wounded intestines. Flushing the peritoneal cavity with warm sterilized water or normal salt solution not only clears it of infectious material, but acts at the same time as a stimulant to the flagging circulation. The current must be sufficiently strong not only to fill the peritoneal cavity quickly, but to *flush it out*.

After completion of the irrigation, the patient is placed on his side and in this position the fluid contents of the abdominal cavity are poured out. The cavity is then rapidly dried with large sponges wrung out of a weak sublimate solution (1 to 10,000) or Thiersch's solution. Some surgeons have practically abandoned flushing of the abdominal cavity, and rely almost exclusively on sponging in removing pus and extravasated fecal material; others are partial to leaving the physiologic solutions of salt in the cavity, paying no attention to the peritoneal toilette practiced with conscientious care by all surgeons only a few years ago.

DRAINAGE.

To drain or not to drain, is the all absorbing topic among surgeons whose time and attention are largely engaged in abdominal work. I wish to place myself on record as being a strong advocate of drainage in all cases of abdominal surgery in which we have reason to believe that contamination of the peritoneal cavity has taken place by extravasation of contents of the gastro-intestinal canal or pus. In gunshot wounds of the abdomen complicated by visceral injury, the probability that infection has occurred must not be lost sight of, and the only safe course to pursue under such circumstances is to drain when you are in doubt. Cases which require irrigation should always be drained. Other indications for drainage are visceral wounds of the liver and pancreas and the existence of parenchymatous hemorrhage which can not be remedied by any of the different hemostatic measures. A glass drain reaching to the bottom of the pelvis, loosely packed with a strip of iodoform gauze, answers an excellent purpose. Occasionally multiple drains are indicated. The Mikulicz drain is to be depended upon in arresting troublesome surface oozing. Drainage must be suspended at once, or gradually, with the cessation of the primary wound secretion.

SUTURING OF EXTERNAL INCISION.

Incisions through the median line are rapidly closed by one row of silk or silkworm gut sutures, which are placed close together and include all the tissues of the margins of the wound. Incisions made in any other place are to be closed by buried catgut sutures uniting the peritoneum and muscular layer separately, and a superficial row of silkworm gut sutures including all the tissues except the peritoneum. A large hygroscopic compress composed of sterile gauze and absorbent cotton, held in place by broad strips of adhesive plaster, constitutes the proper dressing. The sutures are removed at the end of the second week, and the patient must not be allowed to leave the bed before the expiration of the fourth week. Four weeks in

bed and the wearing of a well fitting abdominal support for three to six months are the most reliable precautions against the occurrence of a post-operative ventral hernia. The drainage opening should be closed with secondary sutures, inserted at the time of operation as soon as the drain is closed, otherwise a ventral hernia will be almost sure to develop in the scar at former site of the drainage tube.

AFTER-TREATMENT.

Absolute rest must be strictly enforced. Opiates must be given in doses sufficient to quiet the peristaltic action of the intestines. Stimulants must be used to counteract the effect of shock and to restore the vigor of the enfeebled peripheral circulation. Absolute diet must be observed for at least forty-eight hours. During this time a mixture of brandy and ice water, in small doses frequently repeated, or iced champagne, is agreeable to the patient, as it quenches thirst, relieves nausea and exerts a favorable influence upon the circulation. If more active stimulation is called for to overcome shock and the effects of hemorrhage, whisky, strychnia, ether, musk, or camphor can be injected subcutaneously or by the rectum, while the peripheral circulation is restored by applying dry heat to the extremities and trunk. The subcutaneous infusion of one to two pints of normal salt solution is an excellent restorative and of special therapeutic efficiency in cases where the vital forces are depressed and life is in danger from the effects of hemorrhage.

Should symptoms of peritonitis set in, a brisk saline cathartic should be given at the end of forty-eight hours, as at this time the intestinal wounds will have become sufficiently united to resist the peristalsis provoked by the cathartic, while the removal of intestinal contents and the absorption of septic material from the peritoneal cavity thus attained are not only the most efficient means of averting a fatal disease, but also of placing the wounds in the most favorable condition for rapid repair. Reopening of the wound and secondary flushing have done little in arresting or limiting septic peritonitis. If the case progresses favorably, liquid food by the stomach can be allowed at the end of the second day, and light solid food at the end of the first week. Under ordinary circumstances no effort is made to move the bowels until the end of the third or fourth day. If early feeding becomes necessary in marasmic or exsanguine patients, this can be done by rectal alimentation.

From the contents of the paper the following conclusions can be formulated:

1. In theory and practice military surgery is equivalent in every respect to emergency practice in civil life.

2. The wounded soldier is entitled to the same degree of immunity against infection as persons in civil life suffering from similar injuries.

3. The fate of the wounded rests in the hands of the one who applies the first dressing.

4. The first dressing should be as simple as possible, including an antiseptic powder composed of boracic acid, four parts, salicylic acid, one part, a small compress of cotton, safety pins and a piece of gauze forty inches square.

5. Any attempt to disinfect a wound on the battlefield is impracticable.

6. The first dressing stations and the field hospitals are the legitimate places where the work of the hos-

pital corps and company bearers is to be revised and supplemented. All formal operations must be performed in the field hospitals where the wounded can receive the full benefits of aseptic and antiseptic precautions.

7. Probing for bullets on the battlefield must be absolutely prohibited.

8. Elastic constriction for the arrest of hemorrhage must not be continued for more than four to six hours for fear of causing gangrene.

9. The X-ray will prove a more valuable diagnostic resource than the probe in locating bullets lodged in the body.

10. Gunshot wounds of the extremities must be treated upon the most conservative plan, the indications for primary amputation being limited to cases in which injury of the soft parts, vessels and nerves suspend or seriously threaten the nutrition of the limb below the seat of injury.

11. Operative interference is indicated in all penetrating gunshot wounds of the skull.

12. Gunshot wounds of the chest should be treated by hermetically sealing the wounds under the strictest aseptic precautions.

13. Laparotomy in penetrating gunshot wounds of the abdomen is indicated in all cases where life is threatened by hemorrhage of visceral wounds and the general condition of the patient is such as to sustain the expectation that he will survive the immediate effects of the operation.

DISCUSSION ON PERFORATION PERITONITIS.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

By J. C. WILSON, Philadelphia; W. W. KEEN, Philadelphia; J. H. MUSSER, Philadelphia; C. G. STOCKTON, Buffalo; L. F. BISHOP, New York; H. A. HARE, Philadelphia; FRANK BILLINGS, Chicago; H. M. MCCONNELL, Pennsylvania; H. J. HERRICK, Cleveland, and J. W. COKENOWER, Des Moines.

J. C. WILSON of Philadelphia—The resources of modern surgery have greatly simplified the work of the medical clinician. Forms of visceral disease that long baffled the art of medicine now yield promptly to surgical treatment. In the general category of pathologic conditions thus transferred from medicine to surgery many are primary, many secondary to infectious or other processes. The greater number of them do not tend to spontaneous recovery, so that a pure expectancy is without avail, while that modified expectancy which consists in the administration of drugs for the relief of symptoms is futile as to cure. In point of fact symptomatic treatment, while it allays suffering, very often darkens council by deferring accurate diagnosis and too long postponing surgical intervention.

In the list of visceral diseases not yielding to medical treatment and sooner or later to be transferred to the care of the surgeon are the following: Empyema, which is to be treated by free drainage and in necessary cases by resection of the ribs; pericardial effusions, which if purulent, require free incision and drainage; large single abscesses of the liver; troublesome cases of cholelithiasis with persistent symptoms and empyema of the gall bladder, which Richardson of Boston has recently shown to be relatively com-

mon and amenable to surgical treatment; cysts of the pancreas; echinococcus cysts. As concerns the kidney, extirpation of the organ may be performed when it is the seat of malignant or other growths; nephrorraphy for the relief of symptoms due to displacement; hydronephrosis and nephrolithiasis may require operation; and as certain cases of stubborn nephralgia permanent relief results from incision of the capsule. In recent times the field of the surgery of the gastro-intestinal tract has been greatly extended. The establishment of gastric fistulæ in stenosis of the esophagus for purposes of alimentation; pylorotomy, the partial or total extirpation of the stomach; gastro-enterostomy and other devices by which mechanical obstructions have been relieved and life prolonged are practiced with success. The same is true with regard to operations for the relief of obstructive diseases of the intestines. Among the most brilliant and perhaps beneficent feats of surgery are the operations recently devised for the removal of the carcinomatous disease of the lower bowel. The surgical treatment of diseases of the appendix has led to a complete revision of the views held in regard to the diseases in this region and the establishment of principles which mark a new era in abdominal surgery. Scarcely less brilliant and radical, if not equally successful, is the recent surgical treatment of ulcerative lesions of the stomach and intestines, especially peptic ulcer and the perforating ulcer of enteric fever. Nor can I close this list without referring to the brilliant achievements of Macewen, Horsley, Keen and others in the management of intracranial tumor and abscess and to the operations for the destruction of the ganglion of Gasser for the relief of otherwise intractable neuritis of the trifacial, and to nerve-stretching and the excision of nerves in other forms of stubborn neuralgia, and to Quincke's spinal puncture, which, though thus far barren of results as regards treatment, has proved of the greatest value in diagnosis.

These fruitful encroachments of surgery into fields long almost barrenly occupied by internal medicine constitute great permanent advances in the art of healing. In fact one may challenge contradiction in saying that the greatest achievements of modern surgery are not so much in the improvement upon old methods as in the acquisition of new regions of usefulness. They bring the surgeon and the clinician into closer contact, into more useful co-operation. It is often said that the improvement in surgical technique has exerted a detrimental influence upon surgical diagnosis. If this be true a compensation has taken place, for the improvement in surgical technique has vastly increased the responsibilities of the medical clinician as regards prompt and accurate diagnosis. If the surgeon becomes more skilful and successful in new fields of operation, the physician must keep pace, nay, run ahead of him in promptness and skill in diagnosis, for it is under the latter's care that the greatest number of visceral diseases to be benefited by operation first come. In many conditions resulting from visceral disease the uncertainty of inadequate drugging now gives place to the precision of aseptic surgery; doubt and delay to the prompt employment of available resources. At any rate in operative interference in proper cases we avail ourselves of a definite procedure. It is of vital importance that practitioners should understand the limitations of drug therapy and recognize the point at which

surgery alone can be helpful. It is not necessary in this company to catalogue illustrations. The compressed lung after a time undergoes changes that forever prevent its expansion, and we have already reached a period in the history of medicine where extreme permanent deformity of the chest, the result of a neglected empyema, excites trains of thought far from agreeable to those interested in the higher medical education; or where the sudden perforation of a necrotic, over-distended gall bladder and the discharge of its infected contents into the peritoneal cavity can be viewed with professional complacency.

In the greater number of visceral conditions amenable to operative interference more or less satisfactory rules of management have been formulated. The progress of knowledge in this respect has in recent years been rapid. In many, nay, in most instances, dicta are provisional, not final, but the measures by which applied science makes progress, observation, comparison, experiment, tend steadily to throw out false views and unsatisfactory methods. Clear-headed diagnosticians and pathologists and experienced surgeons are in accord. Diagnosis being determined, but little difficulty arises as to the decision in regard to operable and inoperable cases. There are, it is true, unsatisfactory results. Complete failure and disaster frequently occur, but the successes are often real, permanent and brilliant. The profession has every reason to congratulate itself upon the achievements of visceral surgery.

In one field, however, the general conditions are different. Doubt and uncertainty hamper action. Tardiness in the recognition of imminent danger; indecision and hesitancy; a fatuous reliance upon drugs that can not cure and upon traditional applications that our forefathers would, with a tinge of our pathologic knowledge, have at once and forever discarded, too often lead up from the catastrophe of disease to the final catastrophe of death.

I refer to perforation peritonitis. Curiously enough, what I am about to say has practically no bearing upon purely surgical lesions followed by extravasation of the intestinal contents and infection of the peritoneum. The surgeons have settled that question upon a very definite basis and apparently for all time. Every hospital resident knows that a gunshot wound or stab of the abdomen demands immediate surgical intervention according to rule, and that his chief must be summoned without a moment's delay. Not to operate in such cases under ordinary circumstances would be to invite criticism of the gravest kind, even to raise the question of malpractice. Nor does the gynecologist in his more limited field occupy a position less secure. Symptoms indicating the rupture of the sac in extra-uterine pregnancy are no longer treated by opium or salines, but by the swift, precise, life-saving steel and suture. He is equally prompt and definite in his management of acute peritonitis occurring in consequence of pyosalpinx, a condition etiologically analogous to perforative peritonitis; and in suitable cases immediate operation is his only hopeful procedure in puerperal peritonitis.

In these conditions the proportion of successful results, that is, of lives saved, is the justification of his decision and promptness. For all these cases the surgeon and gynecologist have established for themselves satisfactory rules of diagnosis and clear principles for operation. The operable and inoperable cases are respectively recognized, with a strong lean-

ing toward courage. No *ignis fatuus* of drug therapy tempts from the firm ground of experience to the treacherous morass of a baseless hope. There is no question of expectancy or delay. Even the possibility of death upon the table, a disaster unduly fearful to the too conservative surgeon, receives no more than proper consideration. The worst cases, if they be not altogether hopeless, are subjected to immediate and well-devised treatment in accordance with rules already formulated and generally accepted, and the limitations of diagnosis are subordinated to the resources of an almost perfect technique. Thus in obscure cases exploratory incision is not only justifiable, it is imperative.

It remains for the medical cases, if they may be so designated, still to be enveloped in doubt and uncertainty; still to suffer the fatal risks of tardy diagnosis and a paltering indecision as to treatment. By medical cases in this connection I mean those coming primarily under the care of the medical practitioner as such, in contradistinction to the surgeon and gynecologist, or what amounts to the same thing, coming under that of the general practitioner when in his relation to his patient he is serving in the capacity of the worker in internal medicine.

Few of us adequately realize how large this group of cases is. Acute peritonitis, the result of infection by way of perforation of the wall of the alimentary canal or of other hollow viscus, rupture of abscess or by some other analogous process, is very common indeed. It is perhaps as much more common than ordinary traumatic peritonitis, as the visceral diseases capable of producing it are more common than homicide.

Aside from the traumatic and gynecologic cases the list of diseases in which acute general peritonitis may arise is most extensive:

1. In the alimentary canal, *a*, peptic ulcer, gastric and duodenal; *b*, enteric fever; *c*, appendicitis.
2. Other hollow viscera, the contents of which may be infected, *a*, the gall bladder; *b*, the pelvis of the kidney; *c*, the urinary bladder.
3. Rupture of abscesses, *a*, purulent pleurisy; *b*, subphrenic abscess; *c*, hepatic abscess; *d*, abscess of the pancreas; *e*, appendicular abscess, and *f*, other pus collections in regions in relation with the peritoneum.
4. Necrotic processes involving abdominal viscera, *a*, internal strangulation; *b*, intussusception; *c*, volvulus; *d*, embolism and thrombosis of the mesenteric vessels; *e*, gangrene of the pancreas or of the spleen; *f*, displaced kidney or spleen with twisted pedicle; *g*, acute hemorrhagic pancreatitis; *h*, fat necrosis.

In some of these conditions, as for example empyema, hepatic abscess, peptic ulcer with symptoms of appendicitis, the previous underlying disease can be readily determined and the patient has as a rule been under observation prior to the accident which causes peritonitis. In others, such as walking enteric fever or peptic ulcer without symptoms, the patient, while out of health, is able to be about and to attend in some manner to his ordinary duties up to the time of the accident. This is also true in some cases of conditions in which acute peritonitis supervenes upon or is associated with more or less extensive necrotic processes, as strangulation, volvulus and acute pancreatitis.

In cases in which the previous condition is known the sudden occurrence of the symptoms of peritonitis

bears a clear pathologic relationship to processes of the antecedent condition and a reasonably accurate diagnosis of the immediate cause of the inflammation of the peritoneum may be reached. Under such circumstances there are intelligible data for the guidance of the surgeon as to the site of the original lesion and the nature of the difficulties to be encountered. When, however, the symptoms of an acute general peritonitis arise in an individual not previously regarding himself as ill or who has not been under observation, the uncertainties of the case very often preclude diagnosis and the surgical procedure must be of the nature of an exploratory operation. But the distinction between the cases in which the immediate causal diagnosis can be made and those in which it can not be made is a matter of theory rather than of practice. It is the acute fulminant peritonitis that requires immediate consideration. Here is the question of diagnosis. If the diagnosis be correct the prognosis in the vast majority of instances without operation is fatal. Even under the most favorable conditions the percentage of recoveries will be comparatively low and this is just the point at issue. The medical cases must be placed upon the same basis as the surgical or traumatic and the gynecologic cases. In a large proportion of them the conditions for operation are more unfavorable, it is true, but a minority are now saved, and with the same promptness in operating and the same general recognition of the propriety of immediate operation this minority will be greatly increased.

"In the early stages when operative interference is advisable and not without hope, the symptoms may be grouped as follows:

- "1. Pain general, becoming local; or local, becoming general, according to cause.
- "2. Tenderness, general, becoming local; or local, becoming general.
- "3. Rigidity of the abdominal muscles.
- "4. Vomiting, green. *Exceptionally absent.*
- "5. Rise of pulse and temperature. *Exceptionally also absent.*

"6. Shock, varying in depth.

"7. Diminished peristalsis.

[I have added the words in italic. J. C. W.]

"In fully developed peritonitis, in which the wisdom of interference is questionable, the symptoms are:

- "1. Pain lessened or absent.
- "2. Tenderness general.
- "3. Distention excessive, replacing rigidity.
- "4. Vomiting excessive, green or fecal.
- "5. Obstipation; peristaltic movements not heard.
- "6. Rapid and feeble pulse.
- "7. High or low temperature.
- "8. Lividity of abdominal skin; cold extremities.
- "9. Peritoneal facies.
- "10. Mind clear.

"In hopeless cases the above symptoms are increased with collapse; and the patient is moribund."

In hospital practice almost all the cases present at the time of admission the symptoms of fully developed peritonitis and most of them are already in a condition which precludes operation. They come in to die; many of them are admitted moribund.

The importance of the condition of the abdomen can not be over-estimated. The early rigidity is a

¹ Richardson and Cobb: Park's "Surgery by American Authors," vol. 11, p. 356.

symptom of the utmost importance. My experience leads me to fear that its value is not sufficiently recognized by practitioners. To wait for distention in the diagnosis of general peritonitis is in the larger proportion of the cases to postpone operation until too late.

A well developed man, an athlete, 26 years old, complained of sudden pain in the epigastrium after exercising on the horizontal bar in the evening. The pain increased. I saw him the next morning, when the belly was flat, board-like in its rigidity, exquisitely tender and the seat of general pain. There was no rise in temperature. Operation was advised and additional counsel sought. Concurrence in my views as to the existence of acute peritonitis failed; operation was not endorsed; purgatives were administered. Ten hours later the patient died. Upon postmortem examination there was found a clean-cut circular perforating ulcer upon the anterior wall of the duodenum; general infective peritonitis; no other lesions.

A proportion of the cases are inoperable from the onset. Collapse occurs from which the patient does not rally.

A middle aged Italian in my service at the Pennsylvania Hospital in October, 1897, died within four hours of the first appearance of symptoms indicating perforation of the gut, at about the twentieth day of an attack of enteric fever. Perforation was found at the autopsy.

In a recent series of six cases of perforating ulcer of the stomach reported by different observers in which operation was performed within a few hours after the development of symptoms indicating perforation, five recovered.²

In Keen's recently published "Surgical Complications and Sequels of Typhoid Fever" there is a table of eighty-three well authenticated cases of operation for intestinal perforation in enteric fever. These cases were collected and carefully analyzed by Westcott. They give as a general result sixteen recoveries or 19.36 per cent. of cures and 80.64 per cent. of deaths. When this, as the author points out, is contrasted with Murchison's unchallenged figures of 90 to 95 deaths after perforation without operation we may well take courage for the future.

As regards the time of operation this table shows the following remarkable and most instructive facts:

"In the cases operated on within twelve hours, the percentage of recoveries was 26.7 per cent. Between twelve and twenty-four hours, 30 per cent. After twenty-four hours, the mortality was total, except one after twenty-six hours (No. 64) and the two that recovered between two and three days (Nos. 25 and 28)" And upon them Professor Keen makes this comment: "The last two cases we must consider as exceptional and not impairing the rule that if the operation is not done within about twenty-four hours after the perforation there is practically no hope of a recovery."

The following words of Keen with reference to operation in typhoid perforations are applicable to perforation peritonitis in general: "But, after all, the appeal must be to the facts in the case. This is the final arbiter. When once physicians are not only on the alert to observe the symptoms of perforation, but when the knowledge that perforation of the bowel can be remedied by surgical means has permeated the profession, so that the instant that perforation takes

place the surgeon will be called upon, and, if the case be suitable, will operate, we shall find unquestionably a much larger percentage of cures than have thus far been reported."

In conclusion I desire to formulate for discussion the following propositions:

As regards operation in acute general peritonitis due to perforation and analogous conditions,

1. A definite causal or local diagnosis of the lesions can be made in comparatively few instances.

2. The diagnosis of acute general fulminant peritonitis is of itself sufficient to justify operative interference in proper cases.

3. The earlier the operation the greater the prospect of success. After twenty-four hours, especially if great distention of the abdomen has shown itself, operation is not likely to be followed by recovery.

4. A small proportion of the cases are manifestly hopeless from the onset.

5. Where the patient is not obviously past hope the fear of death upon the table should not deter the surgeon from operating.

W. W. KEEN of Philadelphia—I have been in the Section on Surgery and Anatomy, but left there in order that I might be present in the Section on Internal Medicine, and I have been rewarded by so doing.

The catalogue of diseases which are shown as causing perforation peritonitis is sufficient to challenge our attention. But little time passes in which we are not called to see a case of perforation peritonitis from some cause. The urgency of these cases warrants a careful consideration of the whole subject of the treatment of perforation peritonitis; and also warrants the conclusions Dr. Wilson had reached and with which I am in full accord.

However, I do not agree with him as regards the symptoms which he has mentioned as being of value. The pulse and temperature in perforation peritonitis are of very unequal value. While, as a general rule, I believe the temperature to be the best index of a septic condition, yet it is actually of little weight or value. I remember a case of suppurative peritonitis in which the postmortem confirmed the diagnosis, where the temperature was at no time above 100 degrees F. In many cases the temperature is not above 99 degrees; in these cases the temperature is evidently of little value. However, if the temperature runs high or falls low, I respect it. I was glad to see that Dr. Wilson mentioned muscular rigidity of the abdominal wall as occurring in appendicitis, especially in perforation appendicitis.

Dr. Wilson, in quoting statistics, called especial attention to those operated upon within the first twenty-four hours; this is a matter of extreme importance. If we wait twenty-four hours after perforation we can assign the patient to the grave. Logic, reinforced by statistics, confirms the statement that, in typhoid fever perforation means a mortality of 95 per cent. Cases operated upon within twenty-four hours show that we can save nearly 30 per cent. Drs. Weir and Tincker collected seventy-eight cases, operated upon during sixteen years, which showed a mortality of 30 per cent.

In cases of appendicitis I am quite sure that this Section and the profession in general will agree that if perforation takes place, especially if it occurs without adhesions and localized abscess, operation offers practically the only hope, and the earlier it is done the better. As I do not think this Section objects to

² American Year-Book of Medicine and Surgery, 1898, p. 182.

surgical details I will say that Wells gives a table of ovariectomies in which the incisions were two and three inches in length, but I do not think that as far as the mortality is concerned it makes any difference if they are two or six inches long. In cases of appendicitis where perforation and general suppurative peritonitis has occurred, I know that the safety of the patient depends upon the thorough cleaning of the abdominal cavity.

I am quite sure the Section has taken up an important topic for discussion, one that touches the practical physician and surgeon, and we can unite and go arm in arm in the march for life and humanity.

Dr. J. H. MUSSER of Philadelphia—The subject has been so thoroughly and exhaustively considered by Dr. Wilson, supplemented by remarks by Dr. Keen, that I will not say much further except to speak of my personal experience in connection with this subject. I want to speak of perforation peritonitis arising from other diseases than typhoid fever. I am satisfied that it is very essential and important that we should early recognize the cause, and, if possible, the antecedent cause of perforation. Local rigidity, localized tenderness, with pain probably at first, followed by symptoms of shock, and especially the occurrence of vomiting, with increase of pulse rate, but not necessarily any change in temperature, all are important symptoms of this condition. If possible we should anticipate perforation. Pain continuing for twelve or twenty-four hours is of great significance and is one of great dread to me. There is no other symptom which I dread so much as this one of pain; when it does occur I am very apprehensive. If these cases be examined after death, we find a perforation that is preceded by a localized inflammation; a considerable amount of lymph covers the intestines in this region, and they are matted together, and in order to get at the point of perforation, one must separate these adhesions. The phenomena preceding this condition, consists of pain, the degree of which depends upon the intelligence of the patient at that time; a patient with typhoid fever is not susceptible to pain or else their state of mind is such that they do not complain of pain unless their attention is called to it. Pain, rigidity and localized tenderness is important, as Dr. Wilson has pointed out. Pain, localized tenderness, with an antecedent history of slight rigidity, followed by symptoms of shock, are the symptoms that should direct attention to perforation peritonitis. The occurrence of symptoms of shock, hemorrhage being excluded, are the ones that we must rely upon in making a diagnosis of perforation peritonitis. I am in accord with the opinion of the surgeon who makes an exploratory incision to make his diagnosis; it is certainly murder to wait. Cases occur from time to time in all our experiences, which are obscure, and which lead us into difficulty when it is not our fault that such cases are not distinctly recognized and promptly treated. I can no better illustrate what I mean than relate the history of a young girl, 14 years of age, who was seen in the first week of typhoid fever; the diagnosis seemed to be undoubted, although it is true the reaction did not verify the diagnosis. In the course of the disease, the temperature, the mental and intestinal symptoms all pointed to the fact that she had typhoid fever. At the end of the first week she complained of some pain in the abdomen; there

was no rigidity and she was without tympany. The day following, the pain was marked and severe in the back, and in order to exclude any pelvic disease—she had a discharge from the vagina—an examination was made and a large mass was found in the pelvis. I was somewhat mortified, for I thought I had been treating a case of pelvic abscess for typhoid fever. The surgeon that was with me agreed that such was the case. Evidences of general peritonitis being excluded we decided to operate. The patient died, and the autopsy showed that she did have typhoid fever, with perforation and peritonitis. There was also present a pelvic tumor.

Dr. STOCKTON of Buffalo, N. Y.—The question has been so ably presented by Dr. Wilson and so thoroughly discussed by members of the Section, that little is left to be said. Yet there are a few details that come up for discussion. In the first place it is a matter of great importance to discover whether the perforation has been one involving a hollow viscus, containing air like the stomach or intestines, or whether the gall or the urinary bladder. If we have a perforation from an abscess forming within the peritoneal cavity, the process is a more rapid one than that which occurs from an abscess forming in a solid organ and the symptoms are not so distinctive. The symptoms differ materially in different cases. Yet in my mind it is far from clear just when perforation is going to occur in a slow developing case. There is not much difficulty in the diagnosis and early recognition of perforation from a peptic ulcer, yet the symptoms sometimes mislead a very careful man. One case I will relate illustrates what I mean. A colored man was picked up who was in collapse and in intense pain. This pain was in the region of the bladder. The man was sent to the hospital, and we supposed that he was suffering from rupture of the bladder. For some reason an operation was not performed. The man survived nearly a week and then died. The autopsy showed perforation of the stomach. There was a round ulcer, which had opened into the abdominal cavity discharging the gastric contents there; yet after this the man survived several days. He had urinary pain and tenderness over the bladder, but no vomiting. To my mind the point that should stand out as the best guide to perforation of the stomach, intestines, gall-bladder or the urinary bladder is the suddenness of the onset of the symptoms. It is true, as Dr. Musser has said, that perforation may be preceded by slow inflammatory process preceding tympanites before symptoms of shock occur. There are symptoms which can not be referred to any particular part of the abdominal cavity. The sudden onset of pain with rigidity of muscles and a condition approaching shock makes out a case of perforating ulcer of the stomach. On the other hand, a man has often to deal with cases in which there is tenderness and rigidity of the muscles and pain, and the case goes on for several days with increasing symptoms and tympanites, and it is not easy to tell when perforation occurs. It is interesting to note the frequency with which pain is discovered remote from the time at which perforation occurs. My views of the symptoms must not be considered different from those already expressed. I should like, however, to state that it often happens that there is an absence of the symptoms one most expects, and one is so often surprised at the postmortem to find that such is the case. I have been so surprised time and again. These cases

do occur, and it is for this reason that attention should be called to details and symptomatology of peritonitis. Surgery of this field should be studied more closely. A fact that is indisputable is that perforation peritonitis is followed by certain death without operative interference. The difficulty arises, I think, when we have to determine whether we have perforation in certain class of cases.

Dr. BISHOP, Pennsylvania—A point of great importance was not emphasized. I refer to the use of opium. Opium obscures diagnosis and gives false confidence to the laws of life. I would like to call attention to the fact that relief of pain can be obtained by the use of ice-bags. This winter a physician consulted me who was suffering from peritonitis. That man never stopped speaking of the comfort he got from the use of rubber bags filled with cracked ice, which was laid upon the abdomen constantly for a number of days. It is of great importance to know that pain can be relieved by ice and so we can avoid the use of opium.

Dr. HARE of Philadelphia—The character of the pain has not been sufficiently emphasized. I confess that I have not had the experience in cases of perforation in typhoid fever that Dr. Keen has had. The surgeons get the idea that these cases occur quite frequently in the hands of the medical practitioner—much more often than they do occur. Statistics show that they do not occur with as great a frequency as one would imagine from Dr. Keen's remarks. In the few cases that I have seen are two classes. One case I recall was that of a student who was lying quietly in bed who was suddenly seized with pain; he screamed in agony and died two or three hours after the onset of the pain. Another case I recall was one in which the pain commenced gradually and at the end of twelve hours began to be insupportable. To pursue these cases one should have a postmortem. In the first case there was present a perforating ulcer of the bowel. In the other case, owing to an ulcerative process going on, and an inflammatory action there, the intestines were glued together, etc, and the general symptoms of peritonitis developed. It is a mistake to believe that a perforation in typhoid fever must be accompanied by violent pain, or slowly oncoming pain. Last summer I saw a case that had an attack of abdominal pain as violent as that of peritonitis; it was apparently one of wind colic and the passing of fecal matter relieved the pain.

In these cases I do not believe there is a more anxious surgeon than I. I believe in having a surgeon to operate who uses his judgment and wisdom.

Dr. F. BILLINGS of Chicago—I thank Dr. Wilson for the clear and general outline he has given us. The enumeration of the symptoms he has given us no one can deny as being accurate. Of course there are exceptions to the general symptoms as laid down by Dr. Wilson, and no one individual is present who could not recite some case where one or all the symptoms were present.

I want to emphasize some of the things already said, and especially the points mentioned in regard to the antecedent history of these cases, which I consider so important—quite as important, or more so, than the symptoms already enumerated. One must remember that it is the exceptional cases which are of the greatest importance to us, and not so much those that are classic in form. Pain is enumerated as an important symptom, yet pain may exist up to the time of perforation and then suddenly cease; all of

us have seen this happen. I have seen cases of perforation in appendicitis in which the patient seemed to be in a perfectly normal condition so far as pulse and temperature was concerned; there were no physical signs to show that there was anything the matter; the pulse was normal, the abdomen was flaccid, with no points of tenderness. But pain suddenly coming on, operation was advised and done and there was found a rupture of the appendix.

There is another thing about which I wish to speak, and that is in regard to rigidity of muscles, which is always present and always may be found.

It is the exceptional points which appeal to an individual. But the lines as laid down by Dr. Wilson are no doubt true in general terms.

H. M. McCONNELL of Pennsylvania—There are two important points of diagnostic interest that I should like to mention, absence of elevation of temperature and rapidity of pulse rate. In cases that I have seen in consultation I have had the greatest trouble to impress upon the attending physician that the absence of temperature indicates that there is no peritonitis present. I could not imagine a case of peritonitis where the pulse remained at the normal point for any length of time. I can not conceive any case of perforation where the pulse is normal.

Dr. H. J. HERRICK of Cleveland—I recognize that the discussion is upon suppurative peritonitis; the conclusions are well taken and the symptoms well given, but this question has not been entered upon, it seems to me.

Dr. COKENOWER of Des Moines, Iowa—I wish to emphasize a point in regard to the use of opium; this drug relieves the pain and it is then almost impossible to get the consent of the patient for operation.

Dr. WILSON of Philadelphia—I wish to emphasize one or two points which, it seems to me, has been overlooked. The purpose of my paper was to use such influence as I had with the profession to urge upon them the necessity of referring cases of acute peritonitis, arising suddenly, to the surgeon; and the surgeon should treat these cases. The medical cases should be recognized and managed the same as surgical cases are recognized and managed. These are not cases for the medical practitioner. In a large hospital in a large city I asked the medical director certain questions; he said that among 3000 in-door cases there were a great many cases of acute peritonitis that were brought into the hospital who died within twelve hours. Many of them upon admission were drugged with opium, either to relieve their pain or uncontrollable vomiting. I am pleading for the lives of people, under these circumstances. The medical practitioner, outside the hospital, who see these cases first should recognize them and not drug them with opium, or else they should call to their aid an experienced and skilled surgeon. They then will be looked upon, recognized and managed as surgical cases.

In regard to what has been said in the discussion, I wish to state that we all know that perforation peritonitis comes on in various ways; it may come on like shock. There are cases in which, owing to the mechanical condition present, there is a little rent, through which follows a local infection. This gives rise to an adhesive peritonitis which is local. Other symptoms are produced later.

I am pleading for the lives of those that die in the

first three, four or five days, many of which might be saved.

I must say a word on another point. Every now and then there occurs a case in which the symptoms are not classical and not well defined. The case shows no pain—none at all in the right iliac region. Presently comes on tympany and the patient appears to be ill and the case looks like peritonitis. Cases of this kind of acute peritonitis are not general. I have met with several cases like this. Eight or nine years ago, a girl had an attack; Dr. Keen and I watched the case thirty-six hours; she got well without operation. I have seen other cases, two years ago, and again quite recently—within six weeks—a woman presenting the same symptoms. The point is this: These cases are not different from cases of fulminating explosive peritonitis in the hands of the medical man and they are not to be drugged with opium.

SOME PATHOLOGIC AND CLINICAL PHASES OF GALL-STONES.

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Among the most common diseases of the abdominal cavity may be mentioned those of the biliary ducts, and of this class cholelithiasis is the most frequent. In fact, so common is this condition that in several thousand postmortems no less than 7 per cent. of cases with gall-stones were found, and it is a curious conclusion to which some clinicians have arrived, that as these cases did not present any evidence of the presence of the stones, it proves that the majority of those suffering with gall-stones will get well if left alone. Many cases of gall-stones present no direct testimony of their presence, while others give evidence in the most emphatic symptomatic language.

The causation of the formation of gall-stones has been a theme for discussion for many years by some of the ablest clinicians. A few years ago in the direct causes were enumerated stagnation of bile, inspissation of bile, advanced age, sedentary habits, tight lacing and abdominal tumors, all in a measure acting in the same way; that is, interfering with the free circulation of the bile.

The bile is a watery secretion containing 1 to 3 per cent. of solids, with bile pigment and bile acids as normal ingredients. It would seem in the young (under 20) the disease is rare, and that the age of 40 furnishes the largest number of cases until the age of 60 is passed, then the disease becomes relatively more frequent, and after this age there are fewer cases presenting symptoms pointing to the presence of stones (colic, etc.) Old people are more frequently affected with malignant diseases in the pyloric and duodenal segments of the alimentary canal, and modern pathologists recognize in the presence of gall-stones a factor in the production of these neoplasms; hence they are treated for the results and not the original cause.

Most of my cases have been in males. Most writers place the proportion at females five to males one. The cause especially present in females being tight lacing, laxity of abdominal walls, child-bearing—90 out of 115 cases in females had borne children.

Lunatics, from their sedentary habits, are said to be prone to gall-stones. I do not believe that idleness alone ever produced them; if so, the disease

would be more prevalent; heredity is not a cause, nor diet alone unless of a character to induce a gastro-duodenitis. The normal ingredients of the bile entering into the formation of gall-stones are bilirubin, biliary salts and cholesterin in abnormal quantities, often found in the gall-bladder. A pure cholesterin stone is rare and usually has some other ingredient as the nucleus. Those found in the hepatic ducts are, as a rule, the bilirubin-calcium stones, while those in the gall-bladder have bilirubin-calcium as a nucleus with cholesterin on this nucleus; the original focus having its origin in the hepatic duct and subsequently finding its way into the gall-bladder. The little hard, round, solitary stones found in the ductus choledochus are, as a rule, of bilirubin-calcium. Most stones are found in the gall-bladder, for it is here that the conditions most favorable for their formation and retention exist.

The old writers maintained that these stones were the result either of an overproduction of cholesterin by the liver or to a want of its proper solvent in the bile, thus permitting the substance to deposit and form stones. Later authors say that cholesterin is a result of disintegration of the epithelium of the mucous membrane and glands of the gall-bladder and larger bile ducts. Cholesterin is a substance of wide distribution over the body. It is found in various solids and fluids, in the expectoration of consumptives, in pus especially, in locations where there exists a mucous membrane. In bile from the liver .07 parts per 1000 of cholesterin is found, while the analysis from bile in the gall-bladder shows 3 to 11 parts per 1000. Occasionally pure masses of cholesterin are found in the gall-bladder. The preponderance of the evidence is against the old theory that these stones are formed by the bile failing to hold in solution the cholesterin, which was formerly held to be an abundant normal constituent of the bile. It would appear that cholesterin is formed in the gall-bladder and is in the bile as an emulsion. Bilirubin calcium is an insoluble compound, the outgrowth of the union of bilirubin and the lime salts. The bile salts sodium-glycocholate and taurocholate prevents this union naturally, even in the presence of a moderate excess of lime, but if an abundance of lime is added a precipitate of bilirubin-calcium results.

If to a weak ammoniacal solution of bilirubin there is added a few drops of lime water, an immediate precipitate of bilirubin-calcium takes place. If now to this same solution 2½ per cent. of glycocholate of soda be added it takes five times the quantity of lime water to cause any precipitate at all. This experiment has an important bearing in a prophylactic way.

Albumin favors the precipitation of bilirubin-calcium. The outpouring of a catarrhal change in a mucous membrane is largely albuminous. A gastro-duodenitis may lead to the stagnation of bile and thus act as one of the prime factors in the precipitation of this fluid, but it is not alone sufficient, for as long as no septic micro-organisms are present the disposition of the bile is to hold the stone-producing ingredients suspended or in solution. The bacillus coli communis is often the cause of catarrhal changes in the biliary passages. Naunyn found that if he injected the bacillus into the gall-bladder it excited no inflammation, but if the common duct was previously ligated the most intense cholecystitis was excited.

An infection of the gall-bladder gives rise to an

increase in the amount of cholesterol by destruction of and disintegration of the epithelial cells, and to a precipitation of bilirubin-calcium. The latter acts as a nucleus for most stones. The attacks of cholangitis may be of a transient character and yet leave the nuclei of many stones in the gall-bladder. These may or may not give rise to any symptoms directly attributable to their presence, yet the presence of stones in the gall-bladder may produce an influence on the general health of the individual that may become of a serious character.

Early diagnosis in many cases means prophylaxis. Obstructive jaundice, hepatic colic and ptomain poisoning are usually late manifestations. If in 10 per cent. of all postmortems there are found gall stones that were not suspected during life, owing to absence of symptoms of a severe nature, I am sure a close inquiry in some of these cases would have elicited a history of "bilious attacks," recurring headaches, a sense of uneasiness in the gall-bladder region, loss of weight, etc. If no infection exists when stones are in the gall-bladder their presence does not excite much pain, but when a stone becomes lodged in the common or even in the cystic duct then a paroxysm known as hepatic colic will supervene. Probably only two-thirds of patients with gall-stones ever have severe colic symptoms, but it is not the pain that kills in these instances.

Spasmodic closures of the pylorus may be mistaken for hepatic colic, but with a recognition of the accompanying gastric dilatation and by hyperacidity in these cases, a diagnosis can usually be made. It is not necessary that suppuration exist in order to have rigors and fever, the so-called "hepatic intermittents" of Osler. These irregular chills are due to the absorption of ptomains. When the stones are located in the common duct near its entrance into the duodenum absorption is especially liable to take place, for it is at this point that the lymphatics abound most plentifully. A small round stone will frequently become lodged just at this point and make for itself a bed in the mucous membrane by destroying the epithelium, thereby opening the avenues of lymphatic absorption. A stone in this location may remain for an indefinite period, giving rise to symptoms of a mild or severe character, depending on its disposition to become wedged into the duct and the completeness of this closure. These ball-valve stones are the most persistent in duration, the greatest in danger and the most difficult to cope with surgically. A stone lodged at this point and remaining for months or years is dangerous from the persistence of its health undermining properties, in a mild and gradual way (chronic sepsis and persistent mild cholemia) and from the remote danger of a cancerous development at the site of constant irritation. Where the obstruction is complete the ducts and gall-bladder become greatly distended with the bile and other normal and abnormal fluids. The lymphatics take up the coloring matter, distribute it through the blood channels to the whole mucous and cutaneous surfaces and thus jaundice is produced. A remarkable change takes place in the gall-bladder in some of these cases in which the common duct is occluded; that is, the bladder becomes contracted instead of dilated; this is in part explained by the action of Heister's valve and in part to the often present pericholangitis. A persistent and complete closure of the ductus communis choledochus frequently leads to cirrhosis of the liver.

The choledochus stones are found in about 10 to 15 per cent. of all cases presenting marked symptoms. Thornton (1848) was the first to remove a stone from the common duct, since which time the operation has been performed by many surgeons all over the world. Within the last five years the histories of cases have been carefully studied for the purpose of making early and correct diagnoses; this has led to an analysis of the symptoms, making it possible to differentiate stones in the gall-bladder from those in the common duct. The specific gravity of gall-stones is very light, 1020 to 1030, while that of bile is 1030. A ball-valve stone may float about in a dilated duct, changing its position easily. This in part explains the sudden cessation of the pain in some cases of colic, even though the stone does not escape into the duodenum. A change in the position of the body may cause a dislodgement of a light stone, provided the stone is not partially imbedded in the surrounding structures.

The function of the gall-bladder is not that of a reservoir for the bile, as it holds but an ounce and a half, while the twenty-four hours' secretion is about forty ounces. I believe the gall-bladder has some especial function. Most likely a digestive ferment is manufactured here in the quiescent stage of the liver.

The gall-bladder has been removed (Von Laugenburg, 1802) successfully several times, but so far no scientific clinical data is available bearing on the progress of these cases, post operative. Upon a proper diagnosis depends the correct management of these cases. Were the obscure symptoms presented by many chronic invalids interpreted correctly a goodly number of the cases would prove to be cholelithiasis. Many a swarthy (icteric tinge) patient with loss of weight and interference with digestion and proper assimilation will, I believe, be found to have gall-stones stored away in the bile passages, and that their presence has interfered with the formation of some especial digestive agent, or has given rise to the development of noxious substances which have gradually undermined the health.

While jaundice is an indication for surgical interference, it is at the same time quite a serious bar to operation, as these chronic cholemic patients are, almost without exception, bleeders and they stand surgery and anesthetics very badly. All arguments favor early surgery where symptoms point to its necessity at all.

The treatment of these cases depends upon the symptoms. An ordinary attack of hepatic colic, due to the passage of a small stone will, in all probability, terminate favorably within a few hours or days, and if the stone was the only one present and succeeded in finding its way into the duodenum the case will require no farther care. If the case is one with well marked ball-valve symptoms, the stone will probably remain in the duct, giving rise to painful and dangerous symptoms until its surgical removal is effected. If the stones are in the gall-bladder and are giving rise to infection or suppuration in this viscus then an operation should be early resorted to. It is rare that pain alone, as a persistent symptom, forms an operative indication, yet frequent exacerbations of pain with the usual attendant symptoms of jaundice may demand operation. The mortality in skilled hands is very low. The surgery is difficult and requires careful anatomic discrimination, a familiarity with the pathology and exact surgical acumen. If these

essential prerequisites are not possessed by the operator, his work will show imperfect results and high mortality.

DEDUCTIONS.

1. Cholelithiasis is of frequent occurrence and usually gives rise to symptoms either severe or obscure.

2. Cholesterin as a gall-stone producing agent must be present in an abnormal quantity.

3. Cholesterin is in a great measure a product resulting from the destruction and disintegration of the epithelium of the biliary ducts and gall-bladder.

4. Bilirubin-calcium, an insoluble compound formed by the union of bilirubin and the lime salts, forms the nucleus of most of the stones formed in the gall-bladder.

5. Jaundice, ptomain poisoning and suppuration are late symptoms of cholelithiasis.

6. Dyspeptic symptoms, swarthy skin, uneasiness in the region of the gall-bladder (congestion of liver) and loss of weight are some of the remote and local symptoms of the presence of gall-stones.

7. Inflammatory diseases of the duodenum and bile passages are the most direct causative factors in the production of gall-stones.

8. The surgery of these cases is especially difficult and the inexperienced should not undertake it.

9. A ball-valve stone usually continues to give rise to symptoms until removed by surgical means.

10. Stones in the gall-bladder, producing septic symptoms, should be removed.

A NOTE ON THE TREATMENT OF CARCINOMA OF THE UTERUS.

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The improvement in the condition of several cases of uterine cancer under the treatment herein described seems to me worthy of record. The idea of curing cancer by means of remedial agents has never found lodgment in my mind. Many patients have inoperable cancers; many others can not pay for the surgical operations in vogue for cancer today, and remain at home and suffer horribly till death comes to them as a welcome visitor. To such people, the treatment by the carbide of calcium will be a blessing. In two cases, the first ones treated by this agent, there was such a complete abolition of the trilogy of symptoms so characteristic of uterine cancer, viz.: discharge, odor and hemorrhage, one could easily be tempted to call them cures, did I not feel that I ought to wait at least two years for a possible return of the disease locally or remotely.

This dreadful disease has until very recently had but one termination, viz., the death of the patient. I know of no more loathsome malady in its last stages. The odor of it fills the sick room *ad nauseam*. I have known it to fill the entire house for weeks and months before death finally came. It so saturates a doctor's clothes that he can smell and fairly taste it the balance of the day. I know of no disease that emits a more repellant and disgusting offense to human nostrils.

In considering this subject, it is thought best to pass in review the investigations and opinions of the present day on the pathology of cancer. After that will follow the consideration of the carbide of calcium

and acetylene gas, the remedial agent used. Lastly, the cases treated will be presented.

An experience of seventeen months is too brief from which to draw lasting conclusions. Reports by many different observers from different countries are necessary to furnish results which shall remand the use of carbide of calcium to its proper place. It is desired to offer this initial paper as a contribution to the treatment of one of the most fatal diseases of the human race. Originality in discovering the application of this agent in its use herein described is distinctly disclaimed.

Recently vaginal hysterectomy has afforded one means of dealing curatively with this fell disease provided the operation be performed early enough. We never know in any case whether the operation be performed early enough to forestall death. I have done vaginal hysterectomy for uterine cancer when it occupied a space not larger than my thumb nail and have seen the patient die in less than thirteen months from a recurrence of the disease. Again, I have removed a uterus whose cervix had been wholly eaten away by carcinoma and seen the patient alive and well five years after the operation. I therefore conclude that vaginal hysterectomy can not be depended upon to bring lasting results in all cases. Indeed, I have seen so many cases of recurrence after total extirpation that I have long been searching for some means that promises better results. I have used many much praised remedies, and have turned away from them because of their failure to secure curative results. I used Chian turpentine faithfully, which I had had imported from London so as to be certain that I was using the article so much vaunted by Clay of Manchester, several years ago. It was a complete disappointment. Alcohol, greatly praised recently, used in parenchymatous hypodermic injections, has suffered the same fate. Arsenite of copper has likewise failed in curing cancer. Other remedies have been used that have had many claims made in their favor, but up to this date, not one stands the test of experience. If any one agent were reliable in curing cancer, we would hear of no other means of treating it. Such a remedy the medical profession is looking for.

Pathology of cancer.—The cause of cancer was well known a few years ago, it was thought. Now, it is acknowledged to be one of the most thoroughly unknown subjects in the whole range of pathology. As late as 1890, the following was written by Pozzi in his monumental work entitled "Medical and Surgical Gynecology" (Vol. I, p. 333): "The great predisposition of the cervix to the development of cancer has been noticed by all observers. Is there anything in general anatomy which will explain the fact? Cohnheim has supposed that the embryonal cells which have not been absorbed in the function of the organs, and which are found scattered through the connective tissue or gathered in islands at certain points, may be the matrix tissue of carcinoma. These tumors are found most frequently in the nests of embryonal cells which define the natural orifices of the body, where there is more or less irregular involution of the blastodermic layers; the cervix uteri, developed relatively late, at the expense of the Müllerian ducts, belongs to this class of congenitally vulnerable points. The presence of two varieties of epithelium at the external os and the consequent plastic polymorphism which results, may also be a factor in their production. There remains unex-

plained, however, the exciting cause of the neoplasm. The repeated afflux upon which Cohnheim lays so much stress does not account for it."

This elaborate explanation of cancer only serves to show that our knowledge of its etiology at that time was absolutely negative. Ever since bacteriology came into our work, investigators have been busy in attempts at solving unknown problems in etiology. Within a few years it has revolutionized surgical pathology. It has illuminated many places that were formerly as dark as Erebus. The causes of many of the commonest diseases have been made as clear as the noonday sun. Many diseases are still baffling our bacteriologic researches. One of the most important of these unsolved etiologic problems is cancer. Occasionally, a glimmer of light seems to come, promising a full illumination of the subject. Scheuerlin thought his investigations cleared up the subject. In 1886, he isolated from cancers of the mamma a bacillus which, he asserted, is the active agent in the causation of cancer. It grows rapidly on blood serum, agar and gelatin, slowest on the last; and forms a red deposit on potato. Its spores stain only by the Ehrlich method in use for the tubercle bacillus, but the bacillus itself stains readily by ordinary means. He injected pure cultures into the mammary glands of dogs with the effect of inducing a hard tumor which, he states, is epithelial in its character. However, Koch and other Berlin bacteriologists are inclined to doubt its having to do with cancer, and look upon the morbid condition of the mamma set up as being simply a mastitis ("Text-Book of Pathology," D. J. Hamilton, Vol. I, p. 407).

Very many forms of bacteria have been found in the microscopic examinations of cancers. Their presence is accidental. They are not causative. That they are not the essential etiologic factor of cancer is shown by the fact that, when inoculated into healthy tissue they do not produce cancer. Other pathogenic bacteria whose history and disease-producing power have been verified repeatedly, will produce the diseases from which they are taken. To illustrate: Tuberculous bacilli introduced into healthy animals will produce tuberculous animals, which in turn will supply new bacilli that can produce tuberculosis in other animals. Thus many successive animals can be successfully rendered tuberculous from one original inoculation, proving incontestably that the bacteria of disease produce their kind. Many other diseases can be produced at will. Tuberculosis is not the only one. The horrible malignity of cancer has made it an object of especial interest to bacteriologists, for, if we can isolate and demonstrate the especial bacterium of this dread disease, we stand in an infinitely better position to find its cure.

In 1896 Kahane, who was the first to describe the presence of blastomycetes in malignant tumors in his last communication (*Centralbl. f. Allg. Path. und Pathol. Anat.*, June 15, 1896) states that the blastomycetes which he has constantly found in malignant growths is nothing more than the common yeast, *saccharomycetes cerevisiæ*, and he defines, tentatively, epithelioma (on which his statistics have chiefly been made) as the expression of a peculiar symbiosis of epithelial cells, leucocytes and *saccharomycetes*.

Roncali studied five sarcomata, in all of which he found blastomycetes that resembled each other very much and were similar to those described by San-

felice, and by the author, as occurring in adenocarcinoma of the ovary. They take the specific stain of blastomycetes, and resist the action of acids and alkalis like those found in the adenocarcinoma of the ovary. The parasites may be found within and without the cells, exceptionally also in the nucleus: they multiply by budding, and may in the early stages, *i. e.*, when without membrane, possess an abundant chromatic protoplasm, or in the adult stage, *i. e.*, with membrane, may have but little chromatic protoplasm or a protoplasm that has entirely lost the power of staining with anilin dyes. (*Centralbl. f. Bakt. und Parasit.*, Oct. 26, 1895).

Sanfelice has made inoculations into guinea pigs, of a yeast which he terms *saccharomycetes ellipsoideus neoformans*. Animals that had received an inoculation into the subcutaneous tissue died, on an average, in thirty days. The inoculation was in a few days followed by a local swelling, which might or might not break down. The lymphatic glands of the groin and axilla also became enlarged. At the autopsy the tumor in the subcutaneous tissue was soft; not firmly adherent to the skin, and presented an appearance like that of the flesh of fish; the lymphatic glands had the same characters. The spleen was enlarged and was studded with elevated whitish nodules; the liver was but slightly increased in size, and rarely showed the whitish spots seen in the spleen. In the kidneys the nodules were more common than in the liver. The intestinal follicles and lymphatic glands were enlarged. The lungs were also enlarged and contained whitish areas. Brain, heart and adrenals showed no microscopic change. Guinea pigs that were inoculated into the testicle died in the course of twenty-five days. Testis and epididymis were enlarged and contained fish-flesh-like masses. Inoculation into the liver was followed by the development of tumors, single and multiple, in that organ. The changes were most marked after intra-abdominal inoculations. A severe peritonitis, which the author terms a neoplastic one, was always noted. The viscera also presented nodules as previously described. The nodules contained enormous masses of blastomycetes. Many leucocytes containing blastomycetes were seen. Histologically the tumors consist of a network of young connective tissue in the meshes of which a variable number of cells resembling lymphocorpuscles is seen. Parasites are so abundant as to constitute the greater part of the nodules. The majority of parasites lie free, and vary in their tingibility. The enlargement of the lymph glands depends more on the immense number of parasites present than on a proliferation of the cellular elements. The parasites could be demonstrated in nearly all the organs, but produced no reactive inflammation. The absence of epithelial hyperplasia in guinea pigs is explained on the ground that death occurs too soon for it to take place.

The author then proceeds to point out the striking similarity between the appearance of the blastomycetes in the tissues and the so-called coccidia described by many writers as occurring in the malignant tumors of man, and comes to the conclusion that the latter bodies are not protozoa, but blastomycetes, a view that had already been advanced by Russell. (*"American Year Book of Medicine and Surgery,"* 1897, p. 708).

At this point, I wish to make an extensive quotation from a reprint by Prof. R. Park of Buffalo on the

"Etiology of Cancer," just received from him. My work of looking up this topic had reached this point when his article appeared, most opportunely. The paragraphs quoted present to us the completest statement of our most advanced knowledge of this much studied topic: "The work of the Italians in this direction has been most creditable and apparently most convincing. It has been done for the most part by Prof. Sanfelice, of the University of Cagliari, in Sardinia, and Prof. Roncali, of the University surgical clinic in Rome. The former published his first paper on the subject in January, 1895, and the latter followed with his first only a month later. To these two men and their assistants we owe most of that which I shall epitomize below.

"As the work of these Italians points, with a high degree of probability, toward the blastomycetæ as the active agents, it will be worth while to stop for a moment and rehearse the most important facts known with regard to this class of fungi. It is best known as that to which the common yeast forms belong. These fungi reproduce themselves, not by division into halves, as do the common bacteria, but by the process of budding; the cells, when undergoing this process, appearing under the lens much like the common forms of cacti. Each bud provides itself with a membrane when separating from the parent cell, and thus becomes complete in itself. The parent cell does not die in this process, but gives rise to other buds, the entire process consuming about two hours in those forms where the life-history can be easily watched. This is slower cell division than occurs with the ordinary bacteria. The new cells thus produced are often bound together in clusters or irregular chains. Each cell has its proper membrane, which is filled with protoplasm, and contains a nucleus. It will average eight to ten millimeters in size. Under particularly favorable circumstances spore-formation may also take place, so that from two to ten endospores may be seen in one parent cell. These spores are less resistant than those of the common bacteria. They are killed by five minutes' exposure to 62-70 degrees C. Those blastomycetæ which are capable of spore-formation are the least hardy, living in the ground for about a year, while others can live, under the same conditions, for three years. This is worth remembering, because there is much reason to think that these fungi are introduced into the system from the most common sources and by the ordinary paths of infection.

"They will grow on media which are slightly or strongly acid, and by this means can be separated from many of the common bacteria. Each species has its own peculiarity as to behavior respecting the various sugars. For example, by an ordinary wine yeast 1000 grams of grape sugar were split up into 506 grams of alcohol and 30 grams of other products, including 21 grams of glycerin. (By the way, the taste of various wines is quite perceptibly influenced by the amount of glycerin present therein.) Alcohol fermentation can go on with or without access of air. If air be present, cell production is more active, and other cell activity is lessened and *vice versa*. Acetic fermentation and putrefaction are facultative aerobic actions.

"So far as pathogenic activities are concerned, blastomycetæ are known to be active disease agents in certain cases. They are commonly found in the urine of diabetic patients, but whether by accident or in some

other relation is not positively known. Numerous forms have been cultivated and inoculated, with resulting severe or even fatal symptoms, as in the morbid condition called saccharomycosis, which is known as an experimental disease. Thus it is established that a general infection from this cause is possible, and the question may arise whether general carcinomatosis is of this nature.

"Now, it is almost exclusively the blastomycetæ with which the Italians have worked, and have produced their remarkable experimental results, for they have found these organisms both within and between and around cancer cells, and have succeeded in making cultures in and upon acid media. Moreover, by inoculations with these cultures they have produced tumors in animals which bear the strongest possible resemblance to those neoplasms from which the cultures were originally made.

"These parasites must be sought for in the periphery of the tumors and in the juices of the same, but not in the central portions, for here they often seem to have disappeared. This is true both of sections for microscopic examination and of the portions which are taken for inoculation purposes. Furthermore, most of the experimental tumors thus produced have returned the same blastomycetæ upon further culture tests. Two or three different forms have been definitely named by their discoverers; thus Sanfelice has described a *saccharomycis lithogenes*, and Roncali a *blastomycis vitro-simile degenerans*. These names both call attention to the remarkable properties which some of these fungi possess, not only of undergoing rapid degeneration, but of displaying a peculiar calcareous deposit within the cell membrane, which is undoubtedly due to calcium carbonate, since when these are treated with 4 per cent. solution of hydrochloric acid the degeneration forms all disappear, while when treated with 4 per cent. sulphuric acid, crystals of calcium sulphate form. As showing also their marked tendency toward degeneration, Roncali placed two pieces of tumor in a Petri capsule and kept it 37 degrees C. for four days. In the juices the undegenerated forms were undoubtedly much more abundant than in the fresh specimens, which would indicate their truly parasitic nature.

"As an illustration of the method of securing cultures, he prepared in one case sixty tubes of distilled water containing a little sugar and acid; in each of them he placed small bits of tumor cut with a sterilized knife. These were kept at 37 degrees C. for ten days, when surface growths were found upon forty-seven of them, which, when examined in the hanging-drop, were easily recognized as blastomycetæ.

"Sanfelice has produced small tumors in numerous of the smaller animals by injection of his *saccharomycis* above alluded to. It is most interesting also that some of the blastomycetæ which he discovered in tumors were identical with those found upon the common lemon, which grows so abundantly upon Italian soil. Among other experiments he injected *saccharomycis* into the mammary gland of a bitch, which lived for fourteen months and then died with a definite tumor in the gland and with metastases in various organs. Also, after injecting this culture into the abdomens of guinea pigs, he saw them die in from twenty to forty days as the result of neoplastic lesions, while when injected beneath the skin, they killed the animals in from thirty to fifty days with local manifestations.

"Thus, without quoting in detail the experimental labors of Sanfelice, Roncali and their pupils, it may be stated as positively proven that the blastomycetæ above alluded to, *i. e.*, at least some of them, are capable, first, of being isolated by culture methods from certain carcinomata and sarcomata; second, of identification as belonging among the yeasts; third, of producing tumors in animals by injection under suitable precautions, the resulting tumors being strikingly analogous to or identical with those from which cultures were made; and fourth, of furnishing from these tumors further cultures, from which yet other experimental inoculations can be made.

"Without going so far as to say that this can be done in every instance, or that all cancers are necessarily of parasitic origin, one is justified by these results in at least maintaining that some cancers are positively of such origin. If upon this experimental ground, one should infer that all cancers are parasitic manifestations he would do, as will be seen, little violence to the laws of logic."

The foregoing quotation gives all that can be offered up to this writing on the latest investigations on this vexing question.

The agent used in the cases I herewith report is the carbide of calcium. Its name indicates its composition. M. H. Moissan first obtained, in 1894, a crystalline compound of carbon and calcium by employing the intense heat of his electric furnace whose temperature may approach 3500 degrees C. Its specific gravity is stated to be 2.262, the low figure being due to the fact that calcium is next to the alkali metals, one of the lightest of the metallic bodies. Exposed to the atmospheric air it is soon resolved into coarse powder-like sand. It is very refractory. A chisel and a hammer are necessary to reduce it to small pieces suitable for use in treating cancer. In the presence of water acetylene gas, the new illuminant, is instantly evolved. Upon dropping a fragment into a basin of water, one can ignite the escaping gas, which presents the apparent phenomenon of burning water.

The chemic formula of the carbide of calcium is CaC_2 . That of acetylene gas is C_2H_2 . It is liberated from the carbide of calcium by water. The equation representing this is $\text{CaC}_2 + \text{H}_2\text{O} = \text{C}_2\text{H}_2 + \text{CaO}$. A piece of the carbide of calcium can be thrown into a fiery furnace and it will not ignite. It can be fused and run into molds of any design without ignition. A piece can be held in a Bunsen burner without the least effect. But if a drop of water is put on the stony substance, it effervesces and the gas can be lighted and will burn like a piece of wood for a few seconds until the water is exhausted. Then it goes out.

Commercially, acetylene gas is very valuable. Discovered only five years ago, it has already become a most formidable rival of the old gas companies. It is rapidly being introduced as the illuminating agent in residences at a moderate expense. It is meeting with especial favor in small towns where no gas companies exist. Individual plants are set up in back yards where safety from explosions is secured, whence the gas is conveyed by proper piping to the houses, which are thus more brilliantly lighted, many times over, than by ordinary illuminating gas. It produces a singularly white, bright flame. Several jets of it can make the ordinary Edison incandescent coil appear like a red-hot hairpin. Many of the old time gas companies are adding a small proportion of acetylene gas to that used by them, with the effect of

giving their customers better light. So clear, steady and powerful is the light made by acetylene gas, it has been proposed to make it the standard for photometry. The numerous ways in which it is already used indicate the readiness with which its superiority is accredited. It is used in bicycle lamps. The oculist, aurist, and laryngologist are using it to illuminate the organs that they investigate. It is used in electrometers. It is used in lighting omnibuses. It is employed in the stereopticon and in photography. Microscopists and chemists in blow-piping, are employing it. It possesses a very low temperature of ignition. It can be solidified at a comparatively low pressure ("L'Acetilene e le sue Applicazioni." Published in Milan, Italy). When liquified, it passes into the state of snow, like carbonic acid. This snow, upon evaporating, lowers the temperature 180 degrees.

Acetylene, containing C and H, permits the curious fact that the proper amount of oxygen can be added to it to make pure alcohol. Commercially pure alcohol can thus be made at a cost of four cents per liter.

Acetylene gas is distinctly poisonous when administered to animals in a sufficiently concentrated form. Inhaled in the open air, it is but slightly harmful. The recent experiments of Grèhant, Berthelot and Moissan show that it is fatally poisonous when present in proportions as high as 40 per cent. by volume. One hundred volumes of air dissolve about eighty volumes of acetylene. If any compound of acetylene and hemoglobin is formed, it is very instable and is not analogous to carboxyhemoglobin (Brociner: *Boston Med. and Surg. Jour.*, July 30, 1896). One pint of pure acetylene given rapidly to dogs, guinea pigs and other animals caused severe symptoms of poisoning, but the animals recovered when placed in the open air. If given slowly, they did not recover when placed in the open air (Mosso and Ottolenghi: *Rif. Med.*, Jan. 23, 1897). Paralysis of the respiratory function is the toxic effect of this gas.

Recently many reports of explosions of acetylene have been made in current publications. Its explosive power is greater than that of ordinary illuminating gas, but it is not more dangerous when the ordinary precautions are taken. Brass should be avoided in pipes and burners intended for use with acetylene, since it unites with copper to form solid copper acetylene which explodes violently on percussion or on heating to 200 degrees C. Rosemann states positively that acetylene does not combine with hemoglobin (*Arch. f. exper. Path. u. Pharmacol.*, V. xxxi, p. 179). The poisonous action of acetylene, while admitted by all experimenters to exist, is now claimed to have been greatly exaggerated by earlier investigations because of the probable presence by impure gas (Grèhant, Berthelot, Moissan and Beocinet: "Comptes Rendus," 1896). Its odor is not unpleasant. To some people it is faintly aromatic. When the carbide of calcium is reduced to the pulverulent state, the gas can still be evolved and ignited.

In the fall of 1896, I first saw reference made to the use of the carbide of calcium in the treatment of uterine cancer in some medical journal. It was contained in about four lines, which stated that some German physician used it in treating cancer of the uterus. I have forgotten his name. I therefore distinctly disclaim all pretense to originality in its use.

Treatment.—After determining that I have to deal

with uterine carcinoma, the necrotic debris is thoroughly removed by curetting under anesthesia, till firm tissue is reached. Hemorrhage from arterial twigs is then checked by the use of the Paquelin cautery. Free irrigation with very hot water is then used to check the oozing, if necessary. It is desirable to have the seat of the operation as dry as possible before using the carbid. Into the cavity which extends to a greater or less extent up into the body of the uterus, a piece of the carbid about the size of the last phalanx of one's thumb, is placed. At once, acetylene gas is evolved which quickly fills the entire cavity with a froth, like soap-bubbles. The cavity is at once packed firmly with iodoform gauze. The vagina is packed full of the same material down to its ostium. The patient is then put to bed for three days, when the gauze and the carbid remains are removed and a new piece is used. The carbid remains are naught but a grayish clay covering the cavity in the body of the uterus. It can be sponged and irrigated away in a few minutes, dried by sponging and prepared thus for another application of the carbid. Upon depositing the carbid in the wound, we witness the same bubbling of gas as seen before. Gauze packing is then used and the patient is permitted to remain three days until the next dressing.

After a series of such applications of the dressings, the ragged, necrotic-faced ulcer is converted into a simple, clean ulcer. It presents a base covered to all appearances with pinkish-red granulations, destitute of the gray color which characterized its appearance after the second or third dressings. After a few treatments the edges of the cavity begin to draw in, and the area of the crater is diminished. Its entire appearance impresses one with the idea that it has taken on an entirely healthy character. Further persistence in its use is followed by progressive contraction till finally the cavity is entirely obliterated. There is a puckering of the vault of the vagina about the small uterine os that remains, the whole field being covered by healthy pink mucous membrane.

CASES TREATED.

Case 1.—Mrs. Y., aged 69 years. Her last child was born forty six years ago. She passed the menopause at 48 years of age. For twenty-one years she had no bloody vaginal discharge. On Dec. 14, 1896, she complained to me saying she had had menorrhagia for six months. At first, the bloody flow was only at intervals. At the time of her visit, it was continuous. Examination revealed about two-thirds of the cervix absent from carcinomatous ulceration. About one-third of the cervix remained uninvaded. Four days later, at the Presbyterian Hospital, I began to do a vaginal hysterectomy. A very careful examination under anesthesia revealed an invasion, as I interpreted it, of the right broad ligament with thickening and some degree of ankylosis of the uterus. All that was done was to curette very thoroughly and burn with the Paquelin cautery. A cavity was left fully two-thirds the size of an ordinary hen's egg. Into this I placed a piece of the carbid of calcium the size of the last joint of my little finger. I packed a large amount of iodoform gauze against the piece of carbid of calcium and filled the vagina with gauze. In a week, after leaving the first piece of carbid of calcium in four days, I repeated the treatment with this agent, leaving it in three days. After each treatment, upon the removal of the gauze, the wound was free from necrotic debris, hemorrhage and odor. The cavity left by the curetting was beginning to contract very rapidly. After the removal of each iodoform gauze packing, naught remained but sand. The third treatment was made ten days later with the same result, namely, the utter absence of hemorrhage, discharge of necrotic debris, odor, and the contracting of the cavity. These treatments were continued regularly till well along into May, 1897. The cavity produced by the curetting had entirely disappeared, the thickening in the right broad ligament had disappeared, and there had been no discharge nor hemorrhage.

I did not see the patient again until July 30, 1897. She was still without discharge or hemorrhage. I saw her again the first week in October, 1897, with exactly the same condition. I did not see her again until May, 1898. In the meantime, she had been remarkably well and strong, performing her accustomed duties that she had been used to for a quarter of a century. Her seventieth birthday was in January of this year. At her last visit in May, she informed me that she was having an occasional bloody, grumous discharge from the vagina, coming with a sort of gush as though the pent-up fluid, about a drachm in amount, was suddenly released. She said it had an odor like old fish, not like cancer. This discharge had been going on at intervals for a few days for about a month.

I am now waiting developments in her case. I do not pronounce the verdict in her case till at least two years have passed from the date of her operation. The vaginal examination, at her last visit, revealed exactly the condition of things that existed one year ago. The vault of the vagina was drawn together like the apex of a cone with an opening up through it, leading to what I take to be the remnant of the uterus. Not a particle of solution of continuity was visible.

I think the claim can be made that no other line of treatment known at the present time, would make a patient so comfortable and entirely free from the usual horrors of cancer for a space of a year and a half, as has been used upon this woman. While I make no pretense of calling this case one of cure of cancer of the uterus, yet I do claim for it what I have just mentioned.

Case 2.—Patient aged 53 years, had passed the climacteric seven years. The cervix was entirely absent through carcinomatous ulceration, which had left the body of the uterus a simple shell. She had had hemorrhages for five months before I saw her. She was emaciating rapidly and losing strength, and was generally septic. Her face presented the cancerous cachexia. After curetting away the necrotic debris, on July 30, 1897, naught was left of the uterus but its cortex. Treatment was precisely the same as in case No. 1. Similar results followed. After about five months the cavity of the ulceration had entirely disappeared by contraction. In February, 1898, she became very ill with a severe chill and pelvic pains. Relief came slowly under opiates and hot fomentations, and on the eleventh day an abscess suddenly discharged through the small opening in the vault of the vagina. She was up and around in a few days. Since then she has, to all appearances, fully regained her strength and color and has gained flesh. In the early part of May, of this year, examination revealed a total absence of any vaginal solution continuity. Nothing but pink healthy mucous membrane is visible. Since the beginning of treatment in July, 1897, there has been neither discharge, odor, nor hemorrhage. She is performing her customary duties just as she did eighteen months ago.

I have several other patients under observation who are receiving the carbid of calcium treatment. They are in varying stages of progress. No conclusions can yet be drawn from them. Concerning each one the remark may be made that they are free from discharge, hemorrhage and odor, and that the cavity is decreasing in size. Till the best way was learned to treat them, I did not always succeed in abolishing the odor.

As to the *modus medendi* of the carbid of calcium, I have no opinion. Bacteriologically, a series of experiments was made, both with the carbid of calcium and with acetylene gas, on several pathogenic bacteria, under the direction of Professor Hektoen, in the laboratory of Rush Medical College, with absolutely negative results. In a few cases an erysipela-

tous redness of the sound mucous membrane seemed to follow the use of the carbid, which would suggest that it resulted from an escharotic action of the acetylene gas. Whether the acetylene gas destroys the cancer cell by annihilative action, or by chemically changing it, remains to be seen. One thing seems to be certain, and that is that the carbid of calcium at least postpones death and makes carcinoma patients vastly more comfortable while they do live, than any treatment known to the writer.

31 Washington St.

CHRONIC PHLEBITIS OF THE SAPHENOUS VEINS; SAPHENECTOMY.

BY E. VIKO, M.D.

PARK CITY, UTAH.

The pathologic condition of chronic phlebitis is a sclerosis of the veins, similar to atheromatous changes in the arteries; the veins become cord-like. All the coats of the veins may be thickened and indurated, or the external coat only may be affected. In chronic phlebitis of the saphenous veins of the leg, the tissues around the veins are also swollen, often several times their natural size. Varices of the adjacent branches sometimes occur. In cases of long standing, eczema and ulcerated patches affect the skin, which becomes hard, thick and glazed. Severe pain, especially on standing or walking, is complained of.

Medicinal treatment of chronic phlebitis of the saphenous veins is very unsatisfactory. Drugs may ameliorate the eczema, pain and swelling to a certain extent, but this is only temporary.

Surgery promises better results. Lea recommends tying of the veins. The most rational method seems to be the removal of the veins. They have lost their function and act only as an irritant. No surgery to which I have access recommends removal of the saphenous veins for chronic phlebitis; but in view of the fact that their removal for varices effects the surest and speediest cure, I decided in one case to remove the internal saphenous vein for chronic phlebitis, with the happiest results.

Mrs. F., age 55 years, had been suffering for fourteen years with chronic phlebitis of the internal saphenous vein of the left leg. The limb was greatly swollen and walking or standing occasioned severe pains. A good part of the time she could not obtain the necessary sleep on account of the pain. The skin of the leg was covered with an intractable eczema. She had for several years used a variety of drugs, internally and externally, with very little result. I suggested the removal of the vein, and on Feb. 28, 1898, I cut down on the vein in front of the internal malleolus; it was considered easier to find the vein there than higher up on account of the swelling. The vein felt and looked like a tendon. The only way by which I could tell whether it was the vein or not was by pricking it. The tissues over the vein were then laid open to about an inch above the knee, where the vein seemed to be healthy. The swollen and indurated tissues over the vein were in most places about an inch and a half in thickness. The vein was tied in two places above the knee with No. 2 formalinized catgut and was severed between the ligatures. As the vein was dissected out downward, branches were tied with the same material. It was finally tied near the internal malleolus and removed. I was careful not to injure the internal saphenous nerve. The wound was

closed with No. 2 formalinized catgut and dressed with aseptic gauze and cotton. There was no rise of temperature at any time except on the second day, when the thermometer registered 99.5 degrees. The wound healed by primary union. All the swelling, induration and eczema have left the leg and she is now free from pain, the first time in fourteen years. Walking or standing does not cause any pain or swelling in the limb.

I have examined several surgical works, even of recent date, and find no mention of removal of the internal saphenous vein for chronic phlebitis.

These cases are frequently met with and the old treatment recommended is anything but satisfactory, while saphenectomy seems to be a sure and speedy remedy.

In my experience in varices of the internal saphenous vein removal is better than Phelps' operation.

SOCIETY PROCEEDINGS.

Delaware State Medical Society.

Meeting held in Wilmington, Del., June 14, 1898.

The meeting was opened by the President, Dr. P. W. TOMLINSON of Wilmington, who delivered an address entitled,

THE INTERESTS, OBJECTS AND BUSINESS OF OUR SOCIETY.

After commenting on the fact that the charter of this Society was only thirteen years younger than the Declaration of Independence he referred to some of the reasons why medical men did not take more interest in their annual medical meetings. He urged all to make known by writing and talking whatever new observations they may make of interest to medical men and considered a medical society the best means of conveyance for this information. He then dwelt at great length on the purposes of State medical societies in general and quoted fully from a number of letters received from other States, as to the results obtained by these societies in elevating the profession and killing quackery.

Dr. WILLARD SPRINGER read a paper entitled

SHORT HISTORY OF 1800 OBSTETRIC CASES.

The author divided this subject into eighteen groups of 100 each and mentioned one or two interesting cases in each group. He said concerning his management of cases: "If the case is an ordinary one and the labor well advanced and likely to be over soon after I first see it, I use the ordinary precaution of thoroughly washing my hands in hot water, but if the case is likely to be prolonged and to require many digital examinations or perhaps operative interference I use a bichlorid solution for my hands, carbolyzed vaselin as a lubricant and a solution of creolin for my instruments. Of course I occasionally have a case of septic infection and then, when the temperature is high and the lochia offensive, I use an intra-uterine douche of a mild bichlorid solution, 1 to 4000. Last winter I saw a case in another physician's practice in which the temperature was above 106 degrees just before the douche was given. The next morning it was down to 103 degrees and never went so high again, but the woman made a slow recovery on account of an attack of puerperal mania. I have great confidence in anti-septic and aseptic precautions in operations of all kinds, but I do not see that I have any fewer deaths in my obstetric practice now than I did in the early years when such precautions were unknown.

Dr. JOHN PALMER of Wilmington, gave the details of a case briefly referred to by Dr. Springer, in which the instruments were applied for five or six hours and the brain of the child squeezed out of the head before it was delivered, the mother making a good recovery.

Dr. JOSEPHINE WHITE asked how often Dr. Springer had administered anesthetics in the first stage of labor in his 1800 cases and in how many cases the temperature went above normal. She also commented on the indifference displayed by the better and upper middle classes toward absolute cleanliness in obstetric work and did not believe that the possibility of post-partem hemorrhage was a contra-indication to the administration of an anesthetic.

Dr. W. H. HANCKER of Farnhurst, Del., detailed a case of delirium following septicemia in which the emptying of the uterus was followed by death in two days.

Dr. H. J. STUBBS of Wilmington, inquired how often the author had used anesthesia in his large experience and also how soon he would advise curetting.

Dr. JONES believed that the sooner the uterus is emptied the better so as to prevent the absorption of germs. He advised that great care be taken in performing the operation, not to bruise any more surface than was absolutely necessary as these abrasions all acted as avenues for the absorption of septic material. For the purpose of sterilizing the instruments as well as washing out the uterus he strongly recommended a solution of lysol, for the latter purpose using a strength of 1 per cent.

Dr. SPRINGER closed by stating that he gave anesthetics whenever he deemed it necessary, considering each case a law unto itself. He admitted employing them more frequently of late years for three reasons: 1. That the method is more common than it used to be; 2, the different class of people composing his practice of late years, and 3, because people are becoming more educated to the use of anesthesia. He believed that frequently anesthetics prolonged labor and made the patient feel worse afterward and reported having known cases where it had been declined after the first administration. Although occasionally using ether his preference was for chloroform, but he had never found it necessary to use either in the first stage of labor. Referring to the question of douching he stated that he did not make a practice of doing so before labor and not even after labor if it had been a natural one without many digital examinations and without the use of forceps. When douching became necessary he preferred to use bichlorid 1 to 3000, always washing this out with a boric acid solution.

As to the removal of the placenta the author's method after cutting the cord is to place one hand upon the abdomen and with the other use slight traction on the cord. He did not think that breaking the cord was a serious matter, but rather thought it was good for it to bleed somewhat. In his opinion, when difficulty is experienced in removing the placenta, it is due to the fact that the whole bulk comes down right over the os and renders it difficult to compress it sufficiently to pull it through.

Dr. E. S. DWIGHT of Smyrna, Del., read a paper, entitled
POST-PARTUM HEMORRHAGE WITH UTERINE CONTRACTION.

After briefly describing the usual termination of a normal labor he referred to the premonitory symptoms of post-partum hemorrhage and to the sources from which this hemorrhage may come, mentioning among others, laceration of the perineum due to the passage of the head or more probably the birth of the posterior shoulder, a wound of one or other vestibular bulb, a tear of the vaginal wall, or a laceration of the cervix with the tearing of an arterial branch. He then gave details of four cases of post-partum hemorrhage all of which he had treated successfully by the applications of tampons. He referred briefly to other more recent and more scientific methods but pointed out the great difficulty of their application in a country practice, especially at night time.

Dr. CHARLES P. NOBLE of Philadelphia believed that the hemorrhage in most of these cases came from the vestibule, particularly when the baby had been delivered with forceps. He agreed with the author of the paper that the method of treating these hemorrhages must depend upon the facilities and experience of the individual in attendance, but strongly advised suturing whenever possible. Among other objections to the emergency tampon he mentioned that they were a great source of infection.

AFTERNOON SESSION.

Dr. BRIGGS reported a case of carcinoma in a six weeks pregnant uterus and showed the specimen removed with the fetus *in situ*, surrounded by a miniature bag of waters.

Dr. FRANK SPRINGER read a paper entitled

A CASE OF CAESAREAN SECTION.

The case occurred in a colored woman, aged 25 years, forty-seven inches high, with a small contracted pelvis and very much deformed lower extremities, that is to say, a marked case of rickets. The patient had been in labor seven days when first seen, and the pelvic diameter was so small that it was impossible to deliver her or even save her life except by performing laparotomy. This was done through an incision extending from the umbilicus to within two inches of the pubis, and a living female child was removed. The wound of the uterus was closed with catgut ligatures, while the abdominal wound was brought together by silk ligatures. The patient made an uneventful recovery, the wound being dressed once a day, the vagina douched twice a day, and turpentine and quinin being given for a few days. Four weeks from the time of the operation the patient washed her child, which, however, died shortly after the mother left the hospital.

Dr. CHARLES P. NOBLE of Philadelphia believed that Caesarean section was no more serious than any other abdominal operation if done at the right time, in the proper way, by a competent person and in suitable cases, and mentioned that the average mortality in Germany was scarcely more than 5 per cent. He referred to the fact that Sanger had done twenty-five of these operations without a death, Olshausen twenty-seven with two deaths, and Leopold fifty with one death, while the percentage of mortality in the United States is 40 per cent., principally due to the fact that the operation is badly done and is rarely performed except as a last resort. He also partially accounted for this mortality by stating that the profession in this country neglects to study the cases beforehand sufficiently to know when to interfere. He referred to the recent article by Dr. Reynold of Boston, reporting twenty-seven of these operations done by surgeons in the Boston Lying-in Hospital without a death, thus illustrating that just as good results can be gotten here as abroad if the cases are properly studied. He believed if these cases were brought to the surgeon sooner so that the operation could be done at the right time, and if physicians would learn to study more closely cases of pelvic deformity, the mortality would be brought down where it belongs.

Dr. H. M. THOMPSON of Wilmington, read a paper entitled
OBSERVATIONS IN GYNECOLOGY DURING FOUR YEARS' SERVICE
AT THE DELAWARE HOSPITAL.

He stated that more than 40 per cent. of the cases coming to the Dispensary complained either of simple or specific inflammation of the uterus or pelvic organs, the remainder being made up of displacements, lacerations, neoplasms, etc. In taking up the question of the advisability of making vaginal examinations of young girls the author hoped that the rule of every conscientious physician would be never to do so unless the history of the case indicated the definite existence of local disease. Chronic metritis was stated to be complained of by ten out of every fifteen women who applied to the dispensaries for relief, and the causes for this condition were inflammatory and non-inflammatory. Although the prognosis of these cases is often hopeless, yet at times much relief has been afforded by treatment, which was divided into medical and surgical, and the medical believed to be more valuable, consisting of hot vaginal douches and tampons, with rest and tonics combined at times with vaginal irrigation. While not speaking very strongly in favor of the curette he reported having obtained good results from this method in some cases. Intra-uterine medication was recommended in conjunction with the hot douches and tampons in suitable cases. Operative interference was referred to, but conservatism was advised in this direction. The paper closed with the histories of a few of the cases which illustrated points referred to in the paper.

Dr. H. J. STUBBS of Wilmington read a paper entitled

ABUSE OF CHARITY.

In referring to the growth of this abuse the author said: "It is not only an injustice to the older men, but a crying shame to the younger, that they are graduated by the hundreds from the various medical colleges with the just expectation of remuneration, and on the day they start practice they find the patients, they should expect, going to, and being treated by, the colleges from which they graduated."

The great difficulty was pointed out of ascertaining as to the rights of each individual to ask free medical advice at a hospital, and the results of such methods of treatment on the profession at large. Two methods were suggested to improve this condition: 1, that the family physician, when sending a patient to a hospital, should let the hospital physician or surgeon know positively of the financial position of the patient, and 2, the hospital physician or surgeon should be extremely careful to ascertain the circumstances of those that come without recommendation. Quoting Dr. Charles B. Burnett of Philadelphia, it was stated "last of all, and not least, the improper bestowal of medical charity pauperizes the recipients, the number of whom is now so large as to practically pauperize a large percentage of the community; . . . medical charity may be abused by the giver as well as by the receiver." Also quoting Dr. Frederick C. Shattuck of Boston: "medical charity in hospital dispensaries should be freely extended to those who require it and denied to those who do not."

Dr. JUDSON DALAND of Philadelphia stated that the average dispensary patient was inclined to view the advice received rather as something they could compel the physician to give than as an act of charity, and urged the necessity of a uniform course of action by all physicians. He attached very little importance to the truth of the average patient's remark that they could not afford to pay for medical advice, and re-

ferred to a method practiced by one institution in Philadelphia of sending people to visit the homes of patients and ascertain the exact state of affairs.

Dr. W. S. HAINES read a paper entitled

BURN OF SCALP WITH LOSS OF CALVARIUM, FOLLOWED BY RECOVERY.

The case occurred in a boy aged seven months, who was thrown into the fire-place by a larger brother, his head coming in contact with the fire. The burned surface was greased with various remedies, and bromide and morphin were given to relieve the pain and spasm. The soft parts sloughed off and subsequently considerable of the bone came away, leaving the brain exposed. Skin-grafting was unsuccessful and for some years past the open space in the skull, measuring about two and a half by four inches, has merely been covered with absorbent cotton or soft muslin, smeared with zinc ointment. The patient is now six and a half years old, and is having slight convulsions once or twice a month, although he is large and active and his intellect unimpaired.

Dr. J. A. ELLEGOOD read a paper on "Foreign Bodies in the Eye," and mentioned various methods for their removal.

The following officers were elected for the ensuing year: President, Robert Ellegood of Kent Co.; first vice-president, Dr. Robinson; second vice-president, W. H. Hancker of Farnhurst; secretary, Frank T. Belville of Delaware City; assistant secretary, John Palmer of Wilmington; treasurer, Wm. C. Pierce of Wilmington.

The next place of meeting will be Wilmington, at a date to be named later.

Minnesota State Medical Society.

Thirtieth Annual Meeting, St. Paul, June 15, 16 and 17, 1898.

FIRST DAY—MORNING SESSION.

The meeting was called to order by the President, JOHN F. FULTON.

Invocation, Rev. JOHN PAUL EGBERT of St. Paul.

The roll call and reading of minutes was dispensed with.

The report of the Treasurer, R. J. HILL, showed a balance in the treasury, after all expenses had been paid, of \$667.15. The report was adopted.

The Executive committee reported that all members of the society were invited by the Ramsey County Medical Society to attend a banquet at the Merchants Hotel on Thursday evening.

The Secretary read a communication from the chairman of the Rush Monument Committee, requesting that some action be taken in regard to raising funds for the Rush monument; laid on the table until following day.

The subject of the President's address was

IMPROVEMENTS IN MODERN METHODS OF TEACHING.

He believes medical men should take great interest in modern methods of instruction; that antique methods of set lectures have happily given way to more modern methods of demonstration; that this great progress has practically wiped out all schools, leaving but one school, viz., medical science. He said that while we have in a few States, notably New York, two societies, measures have been taken to correct this and leave but one society in each State, and that one united for the best and highest good of the profession. He then dealt with the history of medical teaching and said, all teaching should have for its highest aim the benefit of humanity. He did not wish to underrate or ignore theoretic teaching, but thought theoretic should be subservient to practical, and that the most important of all teaching is the ability to make correct diagnoses. One of the greatest advances in this direction is in the making of accurate records. This has been favored very much by the use of the microscope and improvements in chemic analysis. Anyone to be successful must be accurate, for inaccurate work is always unreliable and worthless. A source of congratulation is that in many States examinations are now protected by the strong arm of the law and nearly everywhere are required to be thorough, searching and based upon a thorough preliminary education. This is as it should be, for it is undesirable to have a doctor of indifferent general attainments. The doctor's education should be broad and consist of much general information outside of medicine, for anyone who is only educated in one line becomes narrow even in the subject in which he is supposed to be best informed.

Adjournment was then taken until 3 P.M.

FIRST DAY—AFTERNOON SESSION.

In the Section on Practice of Medicine Dr. GENTLES of Chicago presented a paper on

TREATMENT OF PNEUMONIA BY COLD.

He said the use of the cold bath had been given up on

account of the danger of shock and syncope. The gradual cold bath had also been abandoned on account of requiring absolute assistance, as the patient must not make any effort. He advocated the use of ice bags locally, filled first with ice water and later by chipped ice. They should be light and thin, so as to be easily applied and well borne. He claimed the red corpuscles would be increased by the application of cold. In delirium, cold sponging would reduce the temperature. A part of the body only should be exposed at one time and the part well rubbed. Cold in pneumonia must not be applied too suddenly.

Dr. HUNTER said that we might as well admit we had no special treatment for pneumonia. He had not seen cases modified much by treatment and, on the other hand, had seen cases get well almost in spite of treatment. The most we can do is to keep up the patient's strength until the disease runs its course. He has used digitalis, but does not believe it to be a specific or an abortant, and he thinks we have no remedy equal to cold, but it should not be used for the purpose of shock and not be continuous.

Dr. ABBOTT said that we have a localized inflammation in pneumonia, very unlike typhoid or similar fevers. He knows of no remedy equal to cold, but he uses Leiter's coil in preference to ice bags, having found that ice bags would get full of air and not lie smoothly on the surface. If used they must be kept free from air, a very difficult thing to do. He would keep up cold continuously.

Dr. ANDREWS thought the danger was not from high temperature and concluded the cold treatment was irrational. He believes the danger is in the temperature going below normal, and does not believe in the use of cold.

Dr. THOMAS thought the pyrexia was the result of reaction rather than toxin.

Dr. GENTLES, in conclusion, said that bad results depended rather on the amount of excretion than on toxemia.

Dr. RAMSEY of St. Paul then presented a supposed case of

MYXEDEMA.

The patient was a German aged 44 years and mother of ten children, the youngest 3 years old. She is now in the menopause; five years ago began to grow fleshy and weak mentally and physically; has pain in right shoulder; feels tired, sleepy, nervous and apprehensive; perspires a little; urinates without control and frequently. The urine is normal in every respect. Temperature normal. There is a deposit over the entire body; lips thick, hands and ankles enlarged but no pitting on pressure; skin thickened; eyes expressionless; hair falling out; has been taking 5 grains of thyroid extract three times a day for three weeks with no improvement. The patient was examined by many of those present and much interest manifested.

Dr. CRAFTS presented a paper on

MEDICAL EDUCATION.

He reviewed the advances of the last twenty years and expressed great satisfaction at the higher degree attained by the medical graduate of today over former times. He thought the working of the law in many cases unfair, e. g., when a man who had perfectly qualified himself was not allowed to write a prescription until he had a certificate from the State Board, while a quack could advertise and practice under the very eyes of the officers with perfect impunity and safety.

Dr. SWEENEY, in discussion, thought these cases should be prosecuted by the local doctors, and stated that the Board of Examiners had no power to prosecute.

The general trend of the discussion seemed to be in the line of a national control of medical practice and qualifications and that after we had a health officer in the Cabinet, a uniform management of these things would be an easy step.

SECOND DAY—MORNING SESSION.

Dr. WALLING presented a report on "Antitoxin in Diphtheria." The report was accepted and the committee discharged.

His Excellency, DAVID M. CLOUGH, governor of Minnesota, and Mayor KEIFER of St. Paul were introduced and made brief addresses.

The following were admitted to membership in the Society: H. H. Witherstine, W. A. Dennis, W. A. Darling, A. F. Strickler, U. G. Williams, Henry Cotton, Chester M. Conlan, R. V. Earl, C. W. Moore, R. J. Sewall, Joseph A. Smeadlie, Charles F. Dewey, M. H. Reynolds, R. R. Stover, C. A. Smith, C. S. Reimstead, J. R. Pederson, F. A. Knights, G. E. Sinkler, G. J. Tweedy, Charles Genuo, A. S. Flemming, T. E. W. V. Appleby, C. P. Robbins, Ralph Peters, E. E. Harrison, C. D. Huntington, C. P. Robbins and A. F. Munroe. Prof. John V. Shoemaker of Philadelphia was, by unani-

mous vote, invited to deliver an address at the next annual meeting.

In the Section on Practice of Medicine Dr. WALLING presented a report of two cases of appendicitis treated by calomel and high injections, and Dr. HATCH read a paper on "Appendicitis from the Standpoint of the General Practitioner."

The general consensus of opinion in the papers and the discussion which followed favored an early operation where there was no general glandular infection and when the surroundings would warrant opening the abdominal cavity. Other papers in this Section were: "The Value of the Diazo Reaction in the Early Diagnosis of Typhoid Fever," "Widal's Test," "Lead Poisoning from an Unusual Source" and "Induced Abortion, Sepsis Anurea During Eleven Days; Death."

SECOND DAY—AFTERNOON SESSION.

Dr. JOHN T. ROGERS presented a paper on

CONTUSIONS OF THE ABDOMEN AND THEIR SURGICAL TREATMENT.

He said contusions resulted from kicks, blows and being caught between two solid substances as by logs, etc. There might be death without visible injury to the walls or, in some cases, any appreciable injury to abdominal contents. The chief symptoms were pallor, lividity, vomiting, tympanites. A contusion might injure any of the contents of the abdomen. The pulse and temperature could not be depended on for diagnosis, but were useful in prognosis. A small hard pulse and subnormal temperature being indications of fatality. Where abdominal contents are ruptured 96 per cent. of the cases die. He favors an early operation and believes it better to open the abdomen and find nothing wrong than to wait and take many chances. Rupture of the kidney is not as serious as rupture of other organs, since it may be removed and the function performed by the other.

Dr. MAYO has seen many cases and believes the greatest trouble is that they never recover from the shock and thus render an operation nearly impossible. He saw one boy who was run over by a wagon, who afterward developed ascites; a quantity of bile-colored fluid was drawn off and he recovered.

Prof. J. B. MURPHY of Chicago said the time for operation was important, but could not be given with exactness. When there is pain without cessation and nausea, it is best to operate. Inflammations following this character of injuries are much more fatal than other infectious inflammations, but he could not tell why.

Dr. McLAREN favors an early exploration to determine the nature of the injury. He reported a case of rupture of the gall bladder by contusion. The inflammation developed slowly and death resulted in three days. The postmortem showed the patient had a large gall bladder with numerous gall stones and he believes that if an operation had been made early the chances would have been favorable.

Dr. MAYO presented a paper on "Abscess of the Lung." Dr. MURPHY of Chicago in discussing this paper gave his ideas of treatment of cavities in the lung by rest procured by filling the pleural cavity with gas, as advanced at the late meeting of the AMERICAN MEDICAL ASSOCIATION at Denver.

Many were the patriotic and witty responses to the toasts at the banquet tendered by the Ramsey County Medical Society in the evening.

The response to "Remember the Maine," by the president of the Society, Dr. JOHN F. FULTON, was particularly apt and patriotic.

D. PARK RITCHIE exceeded himself in an overflow of dry humor in his response to "The Fallacious Doctrine of Malthus."

THIRD DAY—MORNING SESSION.

The next meeting of the Society is to be held at Minneapolis, June 21, 1899.

Election of officers resulted in: President, F. A. Duns-moor; first vice-president, A. T. Couley; second vice-president, Mary Whetstone; third vice president, John Williams; secretary, William Davis; treasurer, R. J. Hill.

THIRD DAY—AFTERNOON SESSION.

The Section on Obstetrics and Diseases of Children convened at 2 P.M.

Dr. W. T. ADAMS, chairman of the Section, presented a paper on "Injuries to the Cervix Uteri." He thinks one more cause for laceration should be added to those usually enumerated by authors, and that is, that the anterior segment being unsupported by the walls of the vagina, is often pushed forward to a great degree, rendering a lateral rupture much more liable.

Dr. R. E. CUTTS, in a paper on

CAUSES OF MATERNAL DYSTOCIA,

Thought two causes were too much forward inclination of the

plane of the superior strait and lordosis of lumbar vertebra, either one throwing much of the expulsive force on the pubes. He also deplored the meagerness of clinical instruction in that the student is merely permitted to see and attend cases without a special instructor.

Dr. ERDMAN thought that whenever possible an examination should be made previous to labor and all probable or possible causes of dystocia should be known. He says students are not allowed to do this as much as they should be.

S. W. RAUSON of Dodge Center, in a paper on

CARE OF PREMATURE AND FEERLE INFANTS

Said, too little was done to save the great army of such children born annually. Many may be saved by proper feeding and protection from drafts. The latter may be accomplished in absence of more perfect apparatus by placing in cotton near a coal stove or over a lamp where a constant temperature may be maintained. The temperature must always be indicated by a thermometer at the head and be at first from 99 to 100 degrees. The best food is mother's milk, next a wet nurse, and next cow's milk properly diluted and prepared.

Dr. COOL suggested that the reason a wet nurse was not the best was because the milk was not properly constituted; the colostrum necessary to act on the bowels of the child is not present.

Dr. WHETSTONE said the first bath should always be omitted and the child oiled instead; if this were always done she thought the mortality would be greatly diminished.

The Denver and Arapahoe Medical Society.

Meeting held at Denver, Colo., April 25, 1898.

POTT'S DISEASE

Was the subject of the symposium. Dr. J. T. ESKRIDGE opened the discussion by reading a paper on the diagnosis of Caries of the Spine. He said: I regard what is commonly known as caries of the spine, or Pott's disease, as a tuberculous inflammation of the various structures that compose the spinal column, and shall endeavor to differentiate it from numerous affections of these structures that are, in all probability, non-tuberculous in their nature.

Until recently an account of caries of the spine could be found only in works devoted to surgical subjects. So far as my information goes, Gowers is one of the first writers on the diseases of the nervous system, to devote in his work a lengthy discussion of this subject. The symptoms of the diseases of the spine should be as well understood by the physician as the surgeon, because a failure to examine for these, and to appreciate their importance in an early stage of the disease, may result in irreparable damage before the surgeon is consulted.

Causes.—Caries of the spine, in proportion to the number of inhabitants, is more frequent in Colorado than in the eastern and southern portions of this country. There are two reasons for the comparative frequency of the disease among us. One is that a larger proportion of our population follow dangerous occupations, especially mining, in which the laborer is more subjected to injuries of the spine than are those who live in agricultural and manufacturing districts. The second is, that a large number of those who reside in Colorado are suffering from chronic tuberculosis. Tuberculosis and traumatism to the spine are the two principal causes that result in caries of the bones of the spinal column. In regard to sex, the cases which I observed in adults in Colorado show that males suffer about four times more frequently than females. Before the 15th year my cases show a slight preponderance of the disease in the female. Caries of the spine is common in childhood after the third year, and next in young adults; but in Colorado we find an exception to this rule, as adults from the 20th to the 45th year are by far the most frequent sufferers. It does not seem to me that children in Colorado are afflicted more frequently with the disease than what is found in eastern portions of the country, this too, in the face of the fact that a larger proportion of the children in Colorado have tuberculous parents. Old age is not exempt from the disease. I have met with it in a woman in her 65th year, and in a man aged 67. The disease has occurred as early as in the fifteenth month.

Caries may follow injuries to the back in which the bones have not been directly injured, but inflammation may extend to the periosteum and bone substance from torn and inflamed ligaments. Caries of the spine following traumatism that has not fractured the bones may come on several months after the receipt of the injury, and in some instances after all symptoms of the injury have passed away. Syphilis plays an uncertain role in the causation of caries of the spine. Adjacent inflam-

mation, abscess, and blood poisoning may give rise to disease of the vertebrae.

Location.—The dorsal, cervical and lumbar regions of the spine, in order named, are most frequently the seat of caries.

The symptoms of caries of the spine may be divided into general and local. The former are most commonly seen in children. They consist of an appearance of declining health. The child is pale, anemic, feeble, the appetite poor and the bowels irregular. Flesh is lost, strength is lessened and the gait resembles very much that of a feeble, tottering old man. The step is short, slow, the foot is carefully placed on the ground, the ball of the foot bearing most of the weight of the body; the legs are slightly bent at the knees, the body is thrown forward at the hips, and while the spine is slightly bent forward at the cervico-dorsal junction, the back of the head is thrown backward, and in consequence, the chin projects well forward. The gait might be classed among the local symptoms of the disease. I have chosen to speak of it under the general, as it is only typically seen in children, and usually in those who present well-marked constitutional symptoms of impaired health.

Local symptoms.—These may, for the sake of convenience of study, be divided into bone, nerve-root and cord symptoms.

Bone symptoms.—Judging from my own experience, the earliest and most important symptoms of caries of the spine in the adult, and in many children, are localized pain, tenderness and muscular rigidity. The pain in the spine is felt at the affected part. I have never seen a case in which active caries affected two regions of the spine at the same time, and in consequence I have never met with a case in which there were two seats of pain in the spine from caries at the same time. In fact, when the pain has a long vertical extent, or when two regions of the spine are the seats of pain, the indications are against, rather than in favor of caries, or any other organic disease of the bones. The pain may be increased by jarring or rotating the spinal column, by quickly bending the spine backward or forward or from side to side, and especially by firm pressure over the diseased bones. It is among the earliest objective symptoms, and is probably the most constant. When the disease is situated in the most movable portion of the spine, as in the cervical region, movements of the epinal column, both voluntary and forced, are the most painful. The patient instinctively fixes the head in an abnormal position. Sometimes it may incline to one side so persistently as to simulate torticollis, but the sterno-cleido-mastoid muscle is tense on the side toward which the head is inclined, just the opposite of what we find in the latter disease. I have seen a few cases with apparently considerable thickening of the spines in the dorso-lumbar region following injuries to this portion of the spinal column. Marked deformity is often absent when the morbid process occurs in the cervical region until the disease has made considerable progress. A person, either a child or an adult, who can jump from a low chair down on the floor and light on his feet without experiencing considerable discomfort in the spine is probably not suffering from an inflammatory condition of the spine. An easier and safer test than the one just referred to, is to get the patient to jump from the floor and light on his heels. This will usually cause pain in the spine if caries is present. So far, I have met with only one case of unilateral caries of the spine in which the symptoms were distinctly unilateral for a period of several months.

Nerve-root symptoms.—Nerve-root symptoms may be divided into four classes: sensory, motor, reflex and trophic. The earliest of these, as a rule, are the sensory. When the disease is high up in the cervical region, the pain extends over the posterior portion of the head; in the cervico-dorsal, the arms suffer, and when the lumbo-sacral is the seat of the morbid process the pain may be felt along the course of the sciatic nerves. When the pains are first felt, the skin over the area to which the affected nerves are distributed is hyperæsthetic, but later irregular areas of partial or complete anesthesia are present. Muscular rigidity from irritation of the nerve-roots is not an early symptom. The deep reflexes of the legs are probably not affected in caries of the upper two-thirds of the spinal column unless the cord is affected. I have seen a number of cases in which the plantar reflexes were greatly increased, and others in which they were normal or lessened before the disease had made much apparent progress. Trophic disturbances are seen only occasionally early in the course of caries of the spine. According to my experience, herpes zoster, occurring along the course of the irritated epinal nerves, is a very infrequent affection from bone disease.

Cord symptoms.—Are very frequent; they occur after the bone disease has made considerable progress. The mode of onset of cord symptoms varies greatly in different cases. They may come on slowly and require months or a year or more to

reach their height. In a few cases complete paralysis, especially of the legs, has developed suddenly. One case under my care some years ago, one leg was almost completely paralyzed six months before the other was perceptibly affected. The cord symptoms are motor, sensory, ataxic, reflex and trophic. It is not uncommon to have almost complete muscular paralysis of the parts below the lesion with sensory phenomena intact. If the lesion is high up in the cervical region so that the arms are not involved by damage to the nerves that supply them, the legs may be paralyzed before the arms. When the bone disease is on the level of the origin of the nerves that supply the arms, the latter will be affected by paralysis and wasting before the legs exhibit much impairment of motion. In caries of the spine affecting the lumbar enlargement of the cord, facial paralysis, muscular wasting and other pronounced trophic disturbances, with abolition of the reflexes of the legs, will be found. I have in two such cases obtained ankle-clonus, although there was no vestige of the knee-jerks. I have seen several cases of caries of the spine that had been mistaken for locomotor ataxia on account of the marked degree of muscular inco-ordination, together with shooting pains present. Persistent loss of voluntary control over the sphincters of the bladder and bowel in caries of the cervical or upper three-fourths of the dorsal region indicate a severe lesion to the cord.

Diagnosis.—Pain in a limited region of the spinal column, increased often by extreme lateral, forward and backward flexions of the spine; rigidity of the muscles that fix the bones at the affected part of the spinal column; the presence of tuberculosis, the history of injury to the spine or of tuberculosis in the family; areas of hyperæsthesia, anesthesia; muscular wasting in arms; rigidity or flaccidity of the muscles of the legs. When evidences of bone disease precede cord symptoms, a diagnosis of caries, with sequential nervous lesions, will rarely be wrong.

Primary pachymeningitis gives rise to nerve-root and cord symptoms similar to those following caries of the spine. The absence of the positive evidences of bone disease and the diffuse character of the nerve-root symptoms would be in favor of primary pachymeningitis. The absence of such causes of pachymeningitis as syphilis, alcoholism and repeated exposure to cold, is in favor of caries.

Progressive muscular atrophy.—The irregular distribution of the muscular atrophy in caries, the severe jams along the course of the spinal nerves injured as they emerge through the diseased vertebrae, and the presence of areas of hyperæsthesia or anesthesia, with perhaps local evidence of bone disease, such as pain and tenderness in a limited portion of the cervical spine and rigidity of the posterior cervical muscles, would serve to distinguish caries from progressive muscular atrophy.

Spinal irritation.—In spinal irritation there are usually two or more areas of considerable vertical extent of spinal tenderness. In spinal irritation deep pressure does not increase the pain over that produced by slight pressure. I am not prepared to accept Dr. Gibney's statement that "in Pott's disease, particularly in children, there is very rarely tenderness over the spinous processes." I can not recall a single case of caries in the early stage in the adult in which the spinous processes of the affected vertebrae were not somewhat sensitive to firm pressure and forcible lateral movements of the spine.

Hysterical paraplegia.—The presence of distinct evidence of bone disease in the vast majority of such cases, and the undeniable proof of an organic lesion of the cord, will be found if carefully searched for and should prevent such a mistake.

Sciatica.—When only one sciatic nerve is involved in caries beginning unilaterally, an error in diagnosis may occur. It can, as a rule, be prevented if it is remembered that in neuritis due to pressure the nerve below the seat of pressure, while it may be the seat of pain, is not tender until sufficient time has elapsed for descending neuritis to affect the peripheral portion of the nerve.

Torticollis.—A mistake in diagnosis may usually be prevented if it is remembered that in torticollis, the head is fixed by muscular contraction, and the face and head are turned to the side opposite that of the tense sterno-cleido-mastoid muscle, while in caries this muscle is tense on the side toward which the head is turned, this muscle being simply stretched on account of the fixation of the head from bone disease.

Neuralgia.—In all cases of supposed neuralgia of the fifth cranial nerves and of the spinal nerves, the spine should be carefully examined.

Syphilis.—I have never seen a case of disease of the spinal column in which I could, with any degree of confidence, make a diagnosis of syphilis, neither am I able to learn from the literature on the subject any reliable diagnostic symptoms, by the presence of which syphilitic lesion of the spinal column may be diagnosed. We must remember, however, that it

is sometimes impossible to distinguish between a tubercular and syphilitic dactylitis. A patient, a colored woman, has been in the Arapahoe County Hospital for a period of about two and one-half years, whose whole dorsal region is arched forward, with shoulders and hips thrown backward. There has been no tenderness of spines, no positive evidence of disease of any of the vertebrae and no symptoms of spinal cord or nerve-root lesion. The deformity is gradual, not acute, and involves six or eight vertebrae. The muscles of almost the entire dorsal and lumbar regions appear to the touch nearly as hard as wood, and are not tender under firm pressure. Her condition does not appear nearly as desperate as it did at the time of her admission into the hospital. She made considerable improvement at one time under large doses of potassium iodid and inunctions of blue ointment.

Rheumatism.—If the rheumatism attacks the joints of the spine there is said to be no pain caused by jarring the spine, as in walking or by crowding the vertebrae on themselves in vertical pressure. I am inclined to think that this test of Ransom is unreliable. In case deformity of the spine takes place from rheumatism, the kyphosis involves several vertebrae and is less acute than in caries from tuberculosis.

Gonorrhoea of the spine.—I have had no personal experience with gonorrhoea of the spine. The most reliable points in the diagnosis are the presence or gonorrhoeal rheumatism in other portions of the body and great tenderness of the spine.

Typhoid spine.—I published some years ago a clinical lecture which I delivered at the Arapahoe County Hospital, on a case of tender and disabled spine following an attack of typhoid fever. I have seen two cases of this affection during the past two years, one of them at the expiration of eighteen months is scarcely well yet. The diagnostic points are, it comes on a short time after an attack of typhoid fever, is attended by great pain and tenderness of the spine, often of considerable vertical extent.

Infectious diseases.—Personally I have had no experience with disease of the spine following such infectious diseases as diphtheria, scarlet fever and measles. The apparent cause, the sudden onset, the acutely painful condition of the spine without deformity, the affection of several vertebrae and the rapid recovery, would distinguish this morbid condition from caries.

Paget's disease.—It usually occurs late in life and is attended by a stiffening of the spine which is not very painful, and an exaggeration of the normal curves of the spinal column.

Hydatids of the spine.—It is probable that a diagnosis could be made only after the character of the cyst was ascertained.

Non tuberculous traumatic inflammation of the spine.—It is probable that most of the inflammatory conditions of the bodies of the vertebrae, if they are not tuberculous at first, soon become so if the disease is not arrested.

Dr. S. A. FISK said that his experience does not coincide with that of Dr. Eskridge. He has seen very little of tubercular bone disease in Colorado. He considers the idea that every bone disease is of tubercular origin to be a fallacy. It would be just as reasonable to say that every case of diarrhea in tubercular patients is of tubercular origin. He cited several cases which illustrated his standpoint. His treatment consists mainly in rest combined with fresh air and sunshine, a condition nowhere so ideally obtainable as in Colorado. He cited several cases of bone disease following typhoid fever, the affection having settled on the ribs, tibia, etc.

Dr. PACKARD discussed the mechanical treatment of Pott's disease. He said: It can safely be said that the results from medicinal treatment of Pott's disease in this country are generally superior to those obtained in any other country, and are largely due to the fact that the surgeon does not delegate to the instrument maker the adjustment and care of apparatus. Who would think of asking an instrument maker to adjust the splints in a case of fracture?

The results obtained vary according to the region of the spine involved. Caries in the cervical, lumbar and five lower dorsal give comparatively good results. It is the seven upper dorsal that give cause for anxiety.

The methods of mechanical treatment are limited to the jacket, the antero-posterior splint and the recumbent position. After having considered various methods of application, he concluded by saying: I want to emphasize the importance of continuing mechanical support for a long time after all the acute symptoms have disappeared, as the relief that follows efficient mechanical treatment is very great. Sometimes the friends of the patient are deceived by this and expect a rapid cure. There is also danger of the medical attendant becoming over-enthusiastic over the rapid improvement and consequently he may remove the support long before consolidation has taken place. Under these circumstances, a relapse is almost sure to follow.

PRACTICAL NOTES.

Ptosis Cured by Grafting the superior rectus on the tarsal cartilage, is reported by Motet of Angers; two cases.—*Progrès Méd.*; May 21.

The Endoscopic Sound is the name given by Remond and Noe to their instrument, presented at a late meeting of the Paris Académie de Médecine, which allows the insertion of the Crookes' tube into the cavities of the body, liquids, masses of muscle, etc., for diagraphy. Projections allowing for the known distortions complete the process and render the "views," mathematically correct.—*Bulletin*, May 10.

Skin Flaps retain their Vitality for weeks if kept in sterile ascites fluid as Ljunggren has demonstrated. He now reports a number of observations in which flaps six to nine days old were transplanted and healed into the tissues in the most perfect manner, with unmistakable evidences of practically unimpaired vitality.—*Deutsche Zeitschrift f. Chir.*, xlvii, 6.

Specula of Glass and Celluloid.—C. H. Stratz of Haag uses a speculum made of glass with an open tube space running through it to convey cauterizing substances to the portio and uterus without contact with the hand or vagina. The tissues can also be examined through the glass. He also recommends his celluloid speculum for hot water irrigations. Water of 40 to 50 degrees C. can be used without pain and with surprisingly favorable results in parametritis.—*Munich Med. Woch.*, May 10.

Infection of the Thread by the Flagers during the operation is the chief cause of stitch suppurations, O. Bloch believes. He recommends disinfecting catgut with phenicated water, which swells and softens it, hardening it again in alcohol. The needle and thread are held with forceps while being threaded and the latter not touched with the fingers more than can be avoided, and never any part that is to be left in the tissues.—*Revue de Chir.*, May 10.

Improved Technique of Electric Treatment for Vomiting in Pregnancy.—The patient eats at the séance, and then as the nausea appears, a single large electrode is applied, fitted to the neck, the median space insulated with rubber, each active end covering 20 square centimeters, over the vagus, with the negative electrode on the epigastric region, 150 square centimeters in size. Ten minutes arrested the nausea and six daily séances abolished it completely in one case reported.—*Semaine Méd.*, May 25.

Angiotripsy: Hemostasis without Clamps or Ligatures.—Tuffier reports twenty-three vaginal hysterectomies all successfully performed with the assistance of the new angiotribe. The ablation of the uterus proceeds as usual, but instead of applying clamps to the broad ligaments they are seized between the jaws of the angiotribe and crushed, the instrument then removed. The hemostasis is perfect (*Semaine Méd.*, May 25) Doyen's similar instrument exerts a crushing force of 400 to 1200 kilograms, and, he states, renders all operations in which it is used, much shorter and more certain.

Laparo-Hysterectomy for Carcinoma Uteri should be reserved for cases in the early stages, as otherwise even this serious operation proves merely palliative, like vaginal hysterectomy. Jacobs has only had two patients survive over two years out of seventy on whom he performed vaginal hysterectomy, and Bouilly's ultimate results in 127 are equally unfavorable. He considers it scarcely more effective than amputation of the cervix, as it is impossible to attain all the affected tissues. Out of eleven on whom he performed laparo-hysterectomy all recovered but one, who succumbed to pneumonia shortly afterward, but three already show symptoms of a recurrence in three to five months.—*Semaine Méd.*, May 14.

"Abaissement" Method of Inguinal Herniotomy.—Reille recommends this method for small and medium hernias as simple and reliable, after an experience of seventy-two cases. After the hernial sac is out of the way, the external oblique is slit at the external inguinal ring so as to expose the edge of the internal and transverse oblique. The spermatic cord is drawn down and the pillars of the external and transverse oblique are sutured, leaving only space for the cord, to the lower wall of the inguinal canal, and the slit in the external oblique is then sutured.—*Cbl. f. Chir.*, May 14.

In Operating Prolapsus, Saenger and Hegar both observe the following points: 1, very extensive denuded surfaces; 2, very exact, close stitches; 3, no catgut; Saenger uses fine silk and Hegar silver wire; 4, excision colli alta the sole operation on the uterus, as they consider ventrofixation entirely unnecessary, except with total prolapsus; 5, extreme care in details and time devoted to the operation, Saenger with all his dexterity, requiring three hours. The most scrupulous asepsis is a matter of course, and the patients are only anesthetized at the close, during the work on the peritoneum.—*Deutsche Med. Woch.*, May 19.

Osteomalacia.—Latzko has observed 120 cases and notes the diagnostic signs of sensitiveness to pressure of certain points of the skeleton, especially the pelvis and ribs, isolated paresia of the iliac psoas, contractions of the adducting muscles with impossibility to abduct the limbs, also exaggeration of the rotulian reflexes and absence of sensory disturbances. He has found phosphorus fully effective as castration in over 100 cases, and ascribes the failures of others with it to the fact that the doses were too small. He commences with one teaspoon a day of a solution of 6 centigrams of phosphorus in 100 grams cod-liver oil, increasing to eight or ten. The patient thus receives 4 to 6 milligrams of phosphorus a day. If there is no improvement in two or three months, the patient should be transferred to the hospital for better hygienic surroundings. If this also fails, then castration is indicated.—*Semaine Méd.*, May 14.

The Permanency of Cure after Ablation of Cancerous Tumors has acquired new interest since the publication of Schuchardt's case in which some of the probably affected glands, difficult of access during the laparotomy, were purposely left, to shorten the operation, although one of the neighboring glands examined by the microscope confirmed the diagnosis. The patient died some time after the operation and no cancerous glands were found at the necropsy. The question now is whether the laparotomy affected the cancer favorably as it does tuberculosis. A. Fraenkel thinks that permanent cures are more frequent than supposed, but Albert prefers the term "late relapses," observing that recurrences may develop as late as ten years afterward. Hochenegg states that out of 104 cancers of the rectum he has operated since 1887, forty-six are free from recurrences to date, one eleven years. A number of cases have been reported operated thirteen, eleven, eight and five years without recurrence. A recent discussion of the subject at Vienna concluded by urging operators to note whether the principle of "extensive regional ablation" is imperative in stomach, intestine, tongue and lip carcinoma, judged by the ultimate results, and what effect it has on remote metastases.

An Aseptic and Cosmetic Suture without a trace of the stitches is obtained by inserting the curved needles under the outer layer of the skin, first on one side and then on the other, and bringing it out at the extreme tip of the wound, fastening each end of the thread over a roll of gauze, after pulling it taut. This percutaneous suture ensures an absolute linear scar. To remove the thread pull hard on one end and cut it close to the skin. The rest is then easily pulled out at the other end, without carrying any germs from outside into the tissues. Each curved stitch should include a little larger space than the corresponding open space opposite.—*Münch. Med. Woch.*, May 24.

Permanent Drainage of Ascites is secured, by Prof. P. Fürbringer, by inserting the fenestrated end of a rubber tube fifty centimeters in length, inside a canula into the peritoneal cavity. The canula is then withdrawn and the tube fastened with a thread passing through the wall of the drain. While the fluid is draining out a small antiseptic dressing is applied around the point where it enters, and held with a circular bandage. When the fluid is evacuated the tube is closed with forceps where it emerges, the outer end rinsed with an antiseptic solution and then coiled and held in place with cords of tarlatan. Whenever the ascitic fluid has collected again, the forceps are removed, the tube uncoiled and drainage re-established.—*Semaine Méd.*, May 25.

Chloroform Anesthesia.—Groube has observed 40,000 cases of chloroform anesthesia, from 1851 to 1896, with three deaths. Examination of the urine before and after anesthesia showed that the chloroform does not affect the kidneys except in cases that have previously been chloroformed several times. He considers physiologic salt solution by far the best stimulant for the heart, denouncing alcohol and other carbohydrates on account of their depressing action. Asphyxia was threatened in 5 per cent.; relieved by a few manipulations for artificial respiration after removing the mucus accumulations. Vomiting was observed in 20 per cent.; ice was given in obstinate cases; bouillon and coffee only subdue the vomiting when they are very cold or very hot. He considers morphin useless in connection with chloroform anesthesia.—*Presse Méd.*, May 21.

Anchylostomiasis is frequent in the coal mines of Hungary. A physician at Brennberg reports 470 cases observed. He found santonin ineffectual, but ten grams of thymol a day resulted in the final expulsion of all traces of the parasite in four to six weeks. He usually administered extr. flic. mar. æth. in gelatin capsules, as much as fifteen grams in three hours, preceded by 0.4 gram calomel. Arsenic and iron for the pronounced anemia. The subjective disturbances were exhaustion, weakness below the knees, palpitations, dyspnea, buzzing in the ears, salivation, etc.—*Wien. klin. Woch.*, 1898, 19.

Ovarian Therapeutics.—Vigier has applied to ovarian substance the same process he has found so effective with thyroid tissue; after freeing the organ from all foreign substances, fibers, fat, etc., he mashes and mixes it with sodium bicarbonate and charcoal, which preserve it indefinitely without interfering with its therapeutic effect. Two to six capsules a day, each containing 0.20 gram have been found extremely effective in the troubles of the menopause.—*Gaz. Méd. de Liège*, May 19.

Arsenic Iodid in Scrofula has been found extremely effective by R. St. Philippe during the last three years in cases of chronic eczema, inflammation of the eyes, intestinal catarrh and other manifestations of "scrofula." In some cases the results were marvelous. Five to twenty drops a day of a 1 per cent. solution of arsenic iodid were administered, with no local treatment except rinsing with boiled water. The drug must be dissolved in cold water, and if symptoms of intolerance appear, suspended for a few days and resumed with smaller doses.—*Bull. de l'Acad. de Méd.*, April 19.

Prophylaxis of Movable Kidney.—Keller considers pregnancy unfavorable to the development of this condition, but after delivery everything tends to produce it. He advises, as prophylactic measures, the wearing of a belt tighter above than below, remaining in bed at least three weeks, not sitting up before the seventeenth day, and resorting to the sound rather than allowing efforts during urination. A belt should be worn during pregnancy if the abdomen is very much stretched and at least six weeks after delivery. Pads are useless, but very thin women may be benefited by a bandage with spring plates. The effect of nephrorrhaphy is too often transient for it to be recommended. Nephrectomy is the last resource.—*Monatss. f. Geb. u. Gyn.*, 1898, January.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance \$5.00
Foreign Postage 1.75
Single Copies 10 Cents.

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SATURDAY, JULY 9, 1898.

THE PROGRESS OF ARMY MEDICAL ORGANIZATION.

During the past month the organization for field service of the medical department of the various regiments aggregated in the camps of instruction at Chickamauga Park, Georgia; Tampa and Jacksonville, Florida, and Camp Alger near Washington, D. C., has been progressing on lines indicated by the surgeon-general and the chief surgeon of the army in the field. The latter officer, Colonel CHARLES R. GREENLEAF, Assistant Surgeon-General U. S. Army, made an estimate of the medical and hospital personnel of an army corps for the guidance of chief surgeons in the organization of their field hospitals and hospital corps companies. In this estimate an army corps was assumed to consist of 24 regiments of infantry, 3 light batteries of artillery and 1 regiment of cavalry organized in 3 divisions of 3 brigades each, and that to man this command medically there should be, in accordance with existing laws and orders, a total of 89 medical officers, 83 hospital stewards, 29 acting hospital stewards and 817 privates of the hospital corps. To organize for field service, each regiment of infantry would have assigned for service with it 1 medical officer, 1 hospital steward and 1 mounted orderly; the battalion of 3 light batteries of artillery 1 medical officer, 3 acting hospital stewards and 1 mounted orderly, and the regiment of cavalry 2 medical officers, 1 hospital steward and 2 mounted orderlies. For administrative purposes at headquarters of corps, divisions and brigades: At corps headquarters 2 medical officers, 2 mounted orderlies and 1 hospital steward; at the headquarters of each division 1 medical officer, 1 hospital steward and 1 mounted orderly, and at the headquarters of each brigade 1

medical officer and 1 mounted orderly. For each of four ambulance companies, one to serve with each division and one to be held as a reserve, 6 medical officers, 7 hospital stewards, 3 acting hospital stewards and 104 privates of the hospital corps; and for each of four field hospitals, of 200 beds each, one to serve with each division and one to be held in reserve, 6 medical officers, 6 hospital stewards, 3 acting hospital stewards and 90 privates of the hospital corps. The assignments of the medical force of the army corps would thus be:

	Medical officers.	Hospital stewards.	Acting hosp. stewards.	Privates of hosp. corps.
On duty with regiments, batteries, etc.	27	25	3	27
On staff or administrative service	14	4	..	14
With ambulance companies	24	28	12	416
With field hospitals	24	24	12	360
Unassigned . . . . .	..	2	2	..
Total	89	83	29	817

The difficulties encountered in effecting this organization have been due to opposition on the part of regimental officers, medical and line, to the breaking up of the regimental hospital which they have been accustomed to regard as an essential part of the regimental constitution. Chief surgeons were handicapped also by the dislike of volunteer soldiers to offer themselves for transfer into the hospital corps of the regular army. A third difficulty was found in the changes taking place in the composition of divisions as one or more regiments were sent from one command to another, from Chickamauga, for instance, to Tampa. When the medical department of a division is well organized and its members familiar with their work it is a simple matter to detach with one or two regiments an appropriate share of medical and hospital supplies and to adjust the duties of the remaining officers and men to the new conditions; but occurring frequently in the progress of organization such changes retard the work and increase materially the labors of the medical officers in charge.

RED TAPE.

Officers of the Volunteer Army are prone to consider as needlessly strict and formal many of the requirements of Army Regulations, particularly those relating to reports, returns and other so-called paperwork, and to make use of the term, red-tape, as embodying their opinion of all such requirements and as accounting for and excusing any ignorance of the subject on the part of those who, like themselves, have volunteered for the intensely practical work of grim-visaged war. But no business can be managed successfully without attending to the accounts. Even the small affairs of the family circle involve a certain amount of orders, memoranda and book-keeping to house, feed and clothe the members of the family and have the various bills settled at the end of the month. The company is the military family; and if its head, the company commander, fail to keep proper account of the pay due his men, if he fail to

inform himself of the regulation methods of providing them with food, clothing, arms, equipments, etc., or to turn this information to practical account, his men will suffer, for, as in military life, it is expected that every one should know his duty and do it; there is no provision by which the men of a command can be cared for when its own commander fails to do so.

Medical officers are in a great measure relieved from duties of this kind. The number who have to care for soldiers of the hospital corps is very small. They are the officers in charge of hospitals and of hospital corps companies. Regimental medical officers have with them on field service only a hospital steward and a mounted orderly, and these men are attached to some company of the regiment for rations and are borne on the rolls and returns of the field hospital or ambulance company for muster, pay and clothing. Regimental medical officers have been relieved from cares of this kind that they may be able to devote all their attention to the keeping of accurate medical records of their regiments. In every case of serious sickness, death or discharge for disability every important detail should be entered on the register of patients. Indeed the case of every man who is treated on account of accident or sickness should be entered on this register, which is practically a retained copy of the regulation monthly report of sick and wounded. The calls made by chief surgeons for care in filling out the columns of this report are regarded as red-tape by some medical officers who consider that their duty is the practical one of caring for sick and wounded men, and that if this is done conscientiously it matters little whether or not any written record of the cases be made. They overlook the fact that this monthly report of sick and wounded when filed in the War Department will constitute the only medical evidence on which hereafter claims for pension will be decided. In this lies its importance. The medical records of the early months of the Civil War were very defective and great injustice both to individuals and to the Government was undoubtedly caused thereby. The Medical Department at the present time should profit by the experience of the past and should put as much energy into its methods as will ensure the rendition of accurate reports from every volunteer command.

THE HEALTH OF SANTIAGO DE CUBA.

We learn that during the past ten years there have been two epidemic visitations of yellow fever in Santiago and its neighborhood, with cases scattered in the intervening years, so that the infection of the fever must be considered to be there and ready at any time, under favorable conditions, to cause an outbreak among our unacclimated men when they leave the mountains and enter the city. In November, 1890, after a period of freedom from fever, the disease was introduced into Santiago and its vicinity by workmen

from Spain who had been ashore for some days at Porto Rico while *en route* to Cuba. Yellow fever was then prevailing at Porto Rico and some of the Spanish emigrants became infected. These settled in Santiago and introduced yellow fever among the people employed at the Juragua Iron Works. The disease prevailed at these works for twelve months, attaining its maximum in June, 1891, during which month there were 57 cases, of which 21 were fatal, among the 1300 people in the employ of the Iron Company. During the twelve months the epidemic gave a sum of about 265 cases, of which 100 were fatal. A few cases occurred in the winter of 1892-93 and again in the winter months of 1894; but in July, 1895, something like an epidemic was again lighted up, lasting until November and giving 107 cases, of which 47 were fatal. The disease prevailed at these periods among the population of Santiago. Since then only sporadic cases have occurred.

THE SKIN AFFECTIONS OF TYPHOID FEVER.

In a disease so prevalent and wide-spread as typhoid, necessarily lesions of any and all systems occur, some of which may be regarded as accidental and casual, while others from the comparative frequency with which they exist must be looked upon as in the nature of complications. Indeed, a third class may be added, that of intercurrent affections, those diseases which might with great probability never have occurred had not the resisting power of the economy become so impaired by the ravages of the disease that ready entrance is allowed to the specific organisms of other affections, which in a healthy state of the body could not have obtained a foothold. Of these germs streptococci, staphylococci and pneumococci, play a leading part; they also contribute largely to what might be called the complications proper, while late reports show that the typhoid bacillus itself is amply able to produce some of the most important complications of the disease, as in the cases of OHLMACHER, in which he isolated this germ in two cases of meningitis ("Clinical and Pathologic Features of Two Cases of Typhoid Meningitis," by O. P. OHLMACHER. The *Cleveland Medical Gazette*, May, 1897). As regards the dual role of the pus organisms, especially the streptococci, they now produce an attack of erysipelas, an intercurrent affection; now occur in suppurative parotitis and other abscess formations, complications. It is sometimes difficult to say whether pneumonia acts as an intercurrent disease or as a complication, but the endo- and pericarditis occurring in typhoid and pneumo-typhoid so-called, are complications.

The skin, from its very office of protector and from its exposed situation, is especially liable to disease, and the lowered vitality of the body in typhoid does not tend to diminish this danger; the integrity of the appendages of the skin becomes still more jeopardized

because of correspondingly greater impairment of nutrition. To the student of typhoid, the most important skin lesion, both on account of its frequency and its diagnostic value, is the eruption of the rose-colored, lenticular spots; papular elevations, usually situated upon the abdomen, though they may be found on any part of the trunk and even on the face and extremities, occurring as a rule in suddenly appearing crops which, lasting a few days, gradually disappear, leaving brownish stains; occasionally they become capped by a small vesicle, but even in the malignant cases rarely if ever become pustular; indeed, in the malignant cases they are more likely to be the subjects of hemorrhage, forming the so-called petechiæ. They rarely exceed four millimeters in size and disappear readily on pressure, only quickly to reappear when the pressure is removed.

In cases which perspire considerably, especially those cases in which the coal-tar antipyretics have been given and even sometimes after the bath, miliary vesicles or sudamina are often present, particularly on the chest and abdomen. With the establishment of convalescence these disappear, and where they have been abundant, a branny desquamation not unlike that of measles often follows.

Any one who has seen considerable of hospital practice has doubtless noted the frequency with which steel gray or more often pale blue spots are seen beneath the skin of the abdomen, chest, and particularly the thighs. These peliomata, as they are called, are not confined to typhoid, are usually somewhat irregular in outline, are larger than the rose spots, do not disappear on pressure, often cause the victim to irritate them by scratching, and are undoubtedly due to the presence of pediculi.

During the early stages of the disease, and especially if any of the coal-tars or quinin have been administered, an erythematous rash may appear, first on the chest as a rule, usually extending from there all over the body with the exception of the hands and face. This rash occurs with considerable frequency, rather more so than either urticaria or herpes, neither of which are by any means uncommon. GILMAN THOMPSON, in his report of "Unusual Complications of Enteric Fever" ("Medical and Surgical Report of the Presbyterian Hospital in the City of New York," 1898), speaks of two skin lesions, purpura hemorrhagica and papular eczema. He reports a case of the former at some length after giving a typical history of typhoid infection. "On examination he appeared neither anemic nor emaciated. The temperature was 104; pulse, 90; respiration, normal. The Widal reaction was obtained. The urine was normal. The skin was somewhat hyperemic, and a number of typical enteric spots were present upon the abdomen, lower chest and arms. The spleen was barely palpable, and the liver appeared an inch below the costal margin. No other visceral abnormalities were discoverable.

There was moderate alcoholic tremor. Two days after admission severe epistaxis returned, which the house physician was only partially able to control by plugging and the use of styptics. At this time a number of small hemorrhagic spots appeared, scattered over the back and upon the left forearm. The dejecta were slightly streaked with blood. During the next three days the patient became excessively weak from loss of blood and during the period from the ninth to the twentieth day of the disease, he showed no improvement. The temperature rose to 105.6 and remained steadily high (104.5). The urine became hemorrhagic, showing red blood cells, hemoglobin, leucocytes, hyaline casts and albumin, 35 per cent. by volume. Well-marked Ehrlich reaction was present. Subconjunctival hemorrhage took place in the left eye, and the ecchymoses became abundant over the chest, abdomen and extremities. They were also observed on the buccal mucous membrane. . . . The tongue became dry and fissured, there was bleeding from the gums and the breath was foul. . . . During the fourth week of the disease there was no increase in the purpuric spots, many of which began to fade, but the other symptoms continued with occasional attacks of epistaxis. Slight hemorrhage also occurred from the left ear. . . . During the fifth and sixth weeks slight improvement gradually supervened, the urine became less hemorrhagic, epistaxis ceased, and on the forty-second day of the disease, the morning temperature reached the normal for the first time."

Of other lesions of the skin, not eruptive in character, one of the most common is edema. This may result from a variety of causes, as thrombosis of a vein (especially the femoral), as a sequence of nephritis, but most commonly in the lower extremities, due to the cachexia and emaciation produced by the disease. In the latter instance the edema is most apt to manifest itself when the patient begins to walk around, and indeed almost every case of severe typhoid is more or less subject during convalescence to this annoyance. Even the laity are familiar with the frequency with which alopecia occurs in this disease, and they are likewise imbued with the hope that their hair will "grow in curly." Occasionally permanent baldness results, but the instances are very rare. Of the other appendages of the skin, the nails also suffer from lack of nutrition, and one can often make the diagnosis that a patient has been suffering from some prolonged illness, presumably typhoid, by transverse ridges appearing on the nails several weeks after convalescence has become established.

The skin phenomena occurring as a result of nervous influence brings us toward the end of our subject. The vaso-motor phenomenon known as the *lache cérébrale*, produced by running the nail rapidly over the skin, when a red line with white boundaries is formed, is not peculiar to typhoid but may be present

in any fever. Exposure of the skin of any part of the body which has been or is usually covered, often causes in nervous subjects a pinkish injection of the skin of the exposed parts. This is commonly seen when the attending physician draws down the bed clothes in his examination for spots or enlarged spleen. As a sequel of typhoid, a lesion has often been observed, and in males as well as females, of the *lineæ atrophice*, usually known in obstetric practice as the "silver lines of pregnancy." These whitish streaks, occurring for the most part on the abdomen and hips, are undoubtedly due to neuritis.

Other diseases, intercurrent in character, may occur and produce skin eruptions of their own. Erysipelas may coexist with typhoid or be induced by the lowered vitality produced by the latter, and gangrene may be superinduced as the result of pressure. This gangrene is usually of the moist variety, and may manifest itself in one or both legs, or over the lower part of the spine (as a bed sore), or in the cheek as a gangrenous stomatitis or noma. Indeed, noma follows typhoid more frequently than any other disease, unless it be measles.

PREMATURE OLD AGE. HOW TO AVOID IT.

A long life is variously valued by different individuals, but the great majority will without question accept it as a desirable acquisition. The ones who would theoretically disclaim any desire for length of days would in many cases exhibit the same objections to an early death or even one at any time, as those who honestly admit their preference for life even at the expense of the disagreeable possibilities of old age. The instinct of self-preservation, the clinging to life, is a safeguard of the race and it is to be hoped at least that it may never be a less prominent characteristic of mankind than it is at the present time. Old age is inconvenient, in some respects unattractive, and it is certainly a matter of expense to care for those who are past the productive period of their lives and who have not the excuse for their existence of the equally unproductive infant, that their term of usefulness is still to come. Nevertheless none of us who have a properly constituted disposition would wish matters otherwise than they are or care to lose prematurely, even for a moment, those who have passed the meridian and are now on the downward grade of life, however unproductive or burdensome they may be. There is a credit to their account in our social bank for past services which we can not ignore.

While old age is honorable and its infirmities are to be respected, it is not desirable nor, in a medical point of view, the proper thing for them to appear before their time. Premature old age means that the individuals or their ancestors, it may be back to the third or fourth generation, have sinned against their physical welfare and are reaping the reward. While

the most of us are probably more or less handicapped by heredity, it is well to know how to avoid the evil effects of a bad inheritance and to so train up the mature man in the way he should go that when he is old he will still have as few of the drawbacks of senility as is possible, and above all that he may not acquire these out of due time. This avoidance of premature old age forms the subject of a very readable and instructive article by Dr. HERMANN WEBER in a new publication, the *Zeitschrift für diätetische und physikalische Therapie*, the first issue of which has just appeared, an article which would be well worthy a wider circulation than it is likely to have in a special German medical magazine. It would be impossible to abstract it here fully, but one or two of the points made by the author can be mentioned. It is well known that the chief cause of senile failure is to be sought in the circulation; the nutrition of the brain and nervous system suffer from the incapacity of the heart and the rigidity and narrowing of the vessels through atheromatous and other allied conditions. If the finer vessels of the brain lose to any extent their facility of functioning, their elasticity, then the nerve cells suffer, both those of the cortex and the basal ganglia. To a lesser extent this same is true as regards the minute vessels of the heart itself and of the stomach in their action in bringing on the changes characteristic of senility; the disturbances of the functions of the heart itself are the causes of secondary lesions elsewhere, and the importance of the normal functions of the digestive and the excretory organs needs no extended elucidation. The causes of the early appearance of these vascular changes themselves are the important element of the question, and Dr. WEBER'S views on this point are well worthy of notice. According to him, the chief producers of these vascular degenerations are over-nutrition, inactivity both of mind and body, too much sleep, and not infrequently with these we find alcoholic excess and immoderate use of tobacco. A too engrossing and monotonous occupation and emotional depression of any kind may also have its share. Over-feeding and inactivity are generally recognized causes of physical degeneracy, but it has not been so common to attribute to over-sleeping the importance here given it. His view that for most people over the age of fifty, six or seven hours of sleep is an ample allowance may not be in accord with the preconceptions of many, but it has a certain reasonableness. The fact that in all probability there is a more sluggish cerebral circulation and more opportunity for stasis and obstruction is in its favor. Wakefulness has been reckoned as an indication of senility, but according to this theory it is a conservative symptom and encouraging rather than otherwise. As Dr. WEBER says, it is difficult to lay down rules in a matter in which there are so many and so wide individual differences, and there are many con-

ditions in which abundant sleep is beneficial; yet, for the majority of healthy and especially of elderly individuals, temperance in sleep is as important as that in other restoratives and sedatives.

Another important matter, but one that has less apparent novelty, is the need of mental and bodily activity for warding off the symptoms of premature senility. The instances of extreme longevity are, it is true, to a large extent those who have led a simple quiet life, apparently without startling vicissitudes or excessive bodily or mental exertion. But with these we have abundant examples of active intellectual work carried on in extreme old age, and on the other hand we have every day instances of rapid failure after the cessation of regular accustomed employment. While the bodily powers lessen to some extent with age and require some modification of the activities, any sudden interruption or diminution of them may be disastrous. The recommendation that every man should have some hobby or side issue of interest is not a bad one, and may maintain the zest of life when the regular occupations are laid aside.

A happy and hopeful disposition, it goes without saying, is a wonderful aid in warding off and tempering the discomforts of old age. The use of alcohol in moderation is commonly thought to be beneficial in the aged, and St. PAUL's recommendation of a little wine for the "often infirmities" is frequently repeated by the laity and endorsed by the physician. Dr. WEBER does not endorse this view; wine, in his opinion, is not *die Milch der Greise*, and is not effective in staying off the weaknesses and defects of advancing years.

With all our much discussed degeneracy of modern times, man is now a longer-lived animal than were his forefathers, though the evidence of this is perhaps more apparent in actuaries' tables than in striking individual cases. What we need now, as at all times, is more popular enlightenment in regard to the important hygienic question of how to meet the inevitable downward stage of life, to mitigate its necessary disadvantages and to avoid those that can be spared us. We ought all to know how to grow old becomingly and comfortably; with this knowledge, practically applied, the extension of life will be in every way more desirable and enduring.

DESPONDENT OUTLOOK FOR SPAIN AND OTHER LATIN PEOPLES OF EUROPE.

Dr. GUIDO BACCELLI of Rome, who was president of the Eleventh International Medical Congress, and who has been called the Italian Virchow, has made known certain pessimistic views of the Spanish trouble. He thinks Americans are more to be dreaded by the Latin nations than the Chinese. The yellow races, he thinks, no longer menace Europe, but there is actual menace from the United States, "where the expanding, absorbing Anglo-Saxon or cosmopol-

itan energy must grow and spread and ultimately overwhelm that part of European civilization which it does not renew. War with Spain is the beginning. Afterward it will be a mere question of the "survival of the fittest." In other words the humanitarian instincts and voice of the northern races must be listened to and taken into the account by the more heartless and tyrannous people of the south of Europe,—and in the name of sweet charity is it not about time that a new leaf should be turned? Americans are not anxious for territorial aggrandizement, but it is due from us to those countries that may come to us by conquest, that their kind of government shall cease to be of the Spanish variety. And further, when the Latin peoples are entirely ready for arbitration instead of war as the standard method of settling international troubles, they will find in the United States a hearty friend of peaceful measures. We do not love war, the destructive arts have been cultivated far less than the constructive ones, so that some of our good friends across the water have actually fallen into the belief that any old nation might bite its thumb at us with impunity. As ARTEMUS WARD might have expressed it, "Arbitration is the *best holt* of the alleged decadent Latin peoples of Europe," and the same may be said on behalf of the peoples that are coming strongly to the front.

But there must first be an end of Spanish arrogance, bluster, insufferable assumption, sanitary crimes and unspeakable cruelties. Pending the general adoption of the wholesome principle of arbitration as a means of settlement of international difficulties, we rely on the persuasive cannon of DEWEY, SCHLEY, MILES and SHAFTER to teach the Spaniard his unwelcome lesson.

CORRESPONDENCE.

WAR CORRESPONDENCE.

BY LIEUT.-COL. NICHOLAS SENN, U.S. VOLS.,
CHIEF OF OPERATING STAFF WITH TROOPS IN THE FIELD.

War always has been and always will be a cruel thing. The very object of war is to kill, disable, maim and starve until the result of the contest shall decide the issue by demonstrating the superiority of one army over the other in number, courage or skill of warfare. "The battle is the Lord's," but victory is not always on the side of justice. The Lord teaches, rules and benefits the children of men now, as during the time of the prophets, as often by defeat as victory. The God of battles has ways and means often impossible to comprehend, but they always lead to results beneficial to mankind. The terrors and sufferings of war are the prices paid for defeat as well as victory. The wonderful improvements made in weapons and projectiles during the last quarter of a century have made modern warfare more destructive if not less cruel. It is difficult to foretell the relative number of dead and wounded in the engagements of the future. Reliable information on the subject must come from actual observation on a large scale on the battlefield and not from the results of experiments on the lower animals and the cadaver. Warfare has become a science and an art,

and victory will depend as much on the skill and foresight in strategy of the commanding officers as the endurance and valor of the troops. The long range rifles and the better marksmanship of the average soldier will increase the distance between the fighting lines and give the commanding officers better opportunities for the exercise of their skill in maneuvering the troops. In every respect war will and must assume more scientific aspects for the display of skill. What the improvements will be can only be determined by experience on a large scale. The rapid mobilization of troops, supply of ammunition along the line of battle, flank movements, the quick digging of shallow entrenchments for the protection of the soldiers in line of battle, are some of the important subjects which are engaging the minds of our wide awake military officers and which await a satisfactory solution by as yet an unknown second Napoleon. Let us hope that this important person is now in existence, an American citizen and now engaged in the present war with Spain.

HOSPITAL CORPS.

The humane side of the present methods of warfare is best shown by the organization of an efficient hospital and ambulance corps. The sick and wounded of the great war of the rebellion suffered indescribable pain and agony owing to inadequate provisions for transportation, first aid and nursing by men detailed for this special purpose. Our sick and wounded



Private, hospital corps U.S. Army, field equipment (front view).

Private, hospital corps U.S. Army, field equipment (rear view).

can look forward more hopefully for more prompt and efficient treatment. The Government, through the Surgeon-General and Secretary of War, is making ample preparations for the prompt and efficient treatment of those requiring medical or surgical aid. The prevention of disease by the employment of improved hygienic and sanitary measures will do much in minimizing the number of ignominious deaths in the field and general hospitals and in maintaining the full fighting force. The need of a well organized and well equipped hospital corps became apparent during our late war, but it was many years after the Union was restored before the necessary legislation was effected which brought it into existence. The Hospital Corps in the United States Army was created by an act of Congress approved March 1, 1887.

The law under which the Hospital Corps was established and as revised by March 16, 1895, and March 16, 1896, reads as follows:

(The Military Laws of the United States, 1897.)

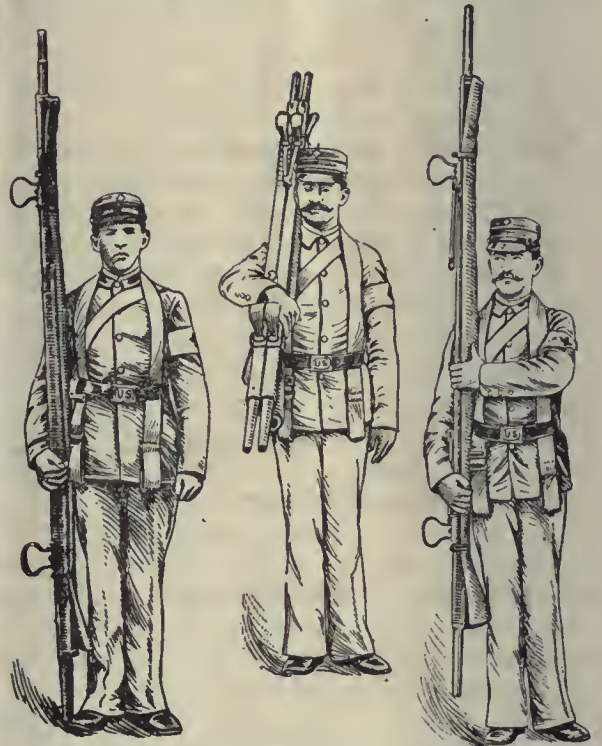
“673. That the Hospital Corps of the United States Army shall consist of hospital stewards, acting hospital stewards and privates; and all necessary hospital services in garrison, camp

or field (including ambulance service) shall be performed by the members thereof, who shall be regularly enlisted in the military service. Said Corps shall be permanently attached to the Medical Department, and shall not be included in the effective strength of the Army nor counted as a part of the enlisted force provided by law.

“674. That the Secretary of War is empowered to appoint as many hospital stewards as, in his judgment, the service may require; but not more than one hospital steward shall be stationed at any port or place without special authority of the Secretary of War. That there shall be no appointments of hospital stewards until the number of hospital stewards shall be reduced below one hundred, and thereafter the number of such officers shall not exceed one hundred.

“675. That the pay of the hospital stewards shall be forty-five dollars per month, with the increase on account of length of service as is now, or may hereafter be allowed, by length of service, as is now or may hereafter be allowed by law, to other enlisted men. They shall have rank with ordnance sergeants and be entitled to all the allowances appertaining to that grade.

“676. That no person shall be appointed a hospital steward unless he shall have passed a satisfactory examination before a board of one or more medical officers as to his qualification for the position, and demonstrated his fitness therefor by service of not less than twelve months as acting hospital steward; and no person shall be designated for such examination except by written authority of the Surgeon-General.



Litter drill.

“677. That the Secretary of War is empowered to enlist or cause to be enlisted, as many privates of the Hospital Corps as the service may require, and to limit or fix the number, and make such regulations for their government as may be necessary; and any enlisted man in the army shall be eligible for transfer to the Hospital Corps as a private. They shall perform duty as wardmasters, cooks, nurses, and attendants in hospital, and as stretcher-bearers, litter-bearers and ambulance attendants in the field, and such other duties as may by proper authority be required of them.

“678. That the pay of privates of the Hospital Corps shall be eighteen dollars per month, with the increase on account of length of service as is now or may be hereafter allowed by law to other enlisted men; they shall be entitled to the same allowances as a corporal of the arm of service with which on duty.

“679. That privates of the Hospital Corps may be detailed as acting hospital stewards by the Secretary of War upon the recommendation of the Surgeon-General whenever the necessities of the service require it; and while so detailed their pay shall be twenty-five dollars per month, with increase as above stated. Acting hospital stewards, when educated in the duties of the position, may be eligible for examination for appointment as hospital stewards as above provided.”

Since the original law providing for a hospital corps was passed many new features have been added which have made this branch of the military service more efficient.

The pay of members of the Hospital Corps is according to grade, as follows per month: Hospital steward, \$45; acting hospital steward, \$25; private, \$18.

To the rates of pay enumerated above, 20 per cent. is added in time of war.

During the present war the commander of an army corps, or of a division, or of a brigade acting independently of a corps, has full control of enlistments for the Hospital Corps within his command, and of the detail of acting hospital stewards and the appointment of hospital stewards. The Hospital Corps force of the present war is made up three per cent. of the privates obtained by special enlistment or transfer from the line, that is, a regiment of 1000 men is entitled to 30 men for the Hospital Corps. The allowance for horses, wheel transportation and tentage is ample, as will be seen from the following order recently issued by the War Department:

Horses and wheel transportation will be furnished by the Quartermaster's Department, and horse equipments by the Ordnance Department.

11.—Commanding Generals of Army Corps are directed to detail, upon the application of Chief Surgeons of Corps, two officers not above the grade of first lieutenant for duty as Acting Assistant Quartermasters with the medical service of each division.

BY COMMAND OF MAJOR GENERAL MILES:

H. C. CORBIN,
Adjutant General.

As usual, many difficulties have presented themselves in the way of securing the necessary material both in quantity and quality, for the Hospital Corps during the present campaign. The commanding officers are always averse to lose the most desirable men of the line. I have reason to believe that at the present time the importance of a good Hospital Corps is appre-



Litter drill.



Ambulance in use.

GENERAL ORDERS. } HEADQUARTERS OF THE ARMY,
No. 76. } ADJUTANT GENERAL'S OFFICE,
WASHINGTON, June 22, 1898.

1.—By direction of the Secretary of War, the following allowance of horses for mounts, wheel transportation, tentage, etc., for the Medical Department of the Army in the field is authorized:

HORSES FOR MOUNTS.

	Hospital stewards.	Acting hospital stewards.	Privates.
To each regiment of infantry	1	3	1
To each artillery battalion (3 light batteries)	1	3	1
To each cavalry regiment	1	3	2
To each corps headquarters	1	3	1
To each division headquarters	1	3	1
To each brigade headquarters	1	3	1
To each division ambulance company	7	3	12
To each corps reserve ambulance company	7	3	12
To each division field hospital	2	2	6
To each corps reserve hospital	2	2	6

ciated more than ever by the commanding officers. The field officers have co-operated with the corps surgeons in the selection of the best men for this special service. The work of organization has progressed slowly, but on the whole in a satisfactory manner. The enormous demand for equipments and the sudden mobilization of troops have contributed much in retarding the organization and instruction of the Hospital Corps. The designation of the Corps as a Hospital Corps does not convey the proper meaning of the manifold purposes for which the men are enlisted and transferred, and has been the means of misleading many a patriotic doctor and medical student now engaged in this branch of military service. Many



Travois.

complaints are heard because instead of doing hospital duty proper the men are made to cook, drive ambulances, chop wood, dig sinks and haul water. There are today too many doctors and medical students in the Hospital Corps. The duties of the Hospital Corps are manifold, and in their proper discharge requires more skilled artisans than medical men. A good Hospital Corps should consist largely of young, bright, intelligent, robust men skilled as carpenters, cooks, blacksmiths, stenographers, photographers, ambulance drivers, tailors, shoemakers and other trades. Doctors and medical students should be in the minority, and ought not to exceed twenty-five per cent. of the non-combatant force. If the legitimate function of

Wheel transportation.—One ambulance to 400 men of the effective force. One 4-horse wagon to 600 men of the effective force. One 4-horse wagon to each brigade.

Tentage.—For each ambulance company: 17 common tents for privates; 2 common tents for noncommissioned officers. For each division field hospital: 15 common tents for privates; 2 common tents for noncommissioned officers; 1 common tent for supplies. Hospital tents on a basis of 6 patients (beds) to each tent. Hand litters, with slings, to be furnished by the Quartermaster's Department: 1 for each company; 2 for each ambulance.

Requisitions for the necessary articles of camp and garrison equipage, tools, etc., will be based on the official allowances for companies of infantry.

Requisitions for the before mentioned supplies will be sent in separately for divisions, with statement whether or not the division organization is complete.

the Hospital Corps were better understood there would be fewer applications for this service on the part of professional men. The general impression prevails that the duties of the members of the Hospital Corps are less onerous than those of the private soldier of the line. It is difficult to conceive how such an idea could have originated. It is also understood that the non-combatant soldier is exposed to less risk of life than his comrade of the line, when the fact is apparent that in addition to the ordinary dangers incident to warfare, he is more exposed to the greatest source of danger—disease. The nursing in the field hospital is done exclusively by the Hospital Corps men, and involves much loss of sleep and constant care and attention. The transportation of sick and wounded is a task requiring good judgment, promptitude and care. A combination of firmness and gentleness, thoughtfulness of action and a determination to perform duty regardless of rest and comfort, is an essential element of success in the work of every Hospital Corps man. The climatic influence, the prevalence of tropical diseases will tax to the utmost the resources of the Hospital Corps during the present war with Spain. That the work will be well and cheerfully done I have no doubt, judging from my observations during the last two months.

The American people expect that the sick and wounded of this war shall receive the best possible attention, and in this they will not be disappointed. The Government, although sometimes necessarily tardy, is willing and anxious to do all in its power to alleviate the horrors of this war, and in this humane intention it will receive the hearty co-operation of the Hospital Corps. The writer has been permanently detached from the Sixth Army Corps now at Chickamauga by a recent order, and is now on his way to Santiago de Cuba on special duty. He goes to the front as Chief of the Operating Staff with the troops in the field. For the purpose of informing my many friends among your readers what I am expected to do, I append a copy of the letter assigning me to my new field of labor.

HEADQUARTERS OF THE ARMY.
WASHINGTON, D. C., June 29, 1898.

Lieutenant-Colonel NICHOLAS SENN, U. S. V., Chief of the Operating Staff.

Sir:—In assigning you as Chief of the Operating Staff, the Major-General Commanding the Army directs me to say that, at the several points to which you may be assigned to duty, you will confer with the Chief Surgeon of the Corps engaged as to the means by which you may consult with and advise the medical officers serving with that army regarding the clinical features of their professional work; that you will recommend such methods, either by lectures or operative demonstration, as may in your judgment be best suited to accomplishing the purpose in hand; that you will take the necessary steps for collecting data upon which the clinical and pathologic records of the field and hospital service may be classified, and from which the future medical and surgical history of this war may be prepared. Your present assignment will be for duty with the Fifth Army Corps, now operating before Santiago de Cuba, and at such future time as the General Commanding may decide, you will be transferred to other points where active military operations are progressing.

Very respectfully,
COL. CHAS. R. GREENLEAF,
Asst. Surg.-Genl. U. S. A., Chief Surgeon, Army in the Field.

I hope I will reach Santiago before surrender and enter it with our victorious troops. My address for the present will be
Fifth Army Corps, Santiago, Cuba.

My next communication will be from the seat of war.

Cerebro-Spinal Meningitis--A Correction.

ELMDALE, KANS., June 28, 1898.

To the Editor:—An oversight in reading the proof of "Cerebro-Spinal Meningitis" allowed sixth line from bottom, first column, page 1499, Vol. xxx, to read "50 per cent." instead of "20 per cent."

Very respectfully,

J. F. SHELEY, M.D.

The Permanent Secretary Explains.

PHILADELPHIA, June 27, 1898.

My Dear Dr. Hamilton:—I have just read your editorial, and feel that it is due to myself to say that at the close of the session on Friday, I was ready to turn over to Mr. Whitford the minutes in full, but was compelled to wait the return of the papers containing the resolutions, etc., which were referred to the Business Committee, and reported upon by them on Thursday, but which were retained by the Secretary of that Committee that he might put them in order. The enclosed copy of a letter from him received by me on Friday morning will explain why they were not ready then for incorporation in the minutes:

Brown-Palace Hotel,

DENVER, COLO., June 10, 1898.

My Dear Dr. Atkinson:—It has been absolutely impossible for me to write up the records of yesterday in my Executive Committee book, and as I am off today I am taking them all with me to New York. They are all safe and will be sent to you when I return, but perhaps not for two weeks or so. If there was anything else referred to the Committee yesterday or today kindly let me have it as soon as possible.

I remain, yours truly,

[Signed] L. DUNCAN BULKLEY,
Sec'y Executive Com. A. M. A.

You see that I am powerless, as it was my duty to give to this Committee all the matters referred to it. Nor did I think for one moment that they would not be at once handed to me when the report was made and acted upon by the Association. May I ask the publication of this reply as prominently as your editorial?

Yours very truly,

W. B. ATKINSON,

Permanent Secretary.

[When the reports on the resolutions were read by Dr. Bulkley, they were then the property of the Association, and he had no more right to carry them away than any other member. There is no "Executive Committee."—Ed.]

Dr. Eichberg.

CINCINNATI, June 29, 1898.

To the Editor:—Please correct statement of your Cincinnati correspondent, in last issue, that "Dr. Joe. Eichberg has resigned from Miami Medical College." He has resigned the office of Secretary, but retains his position of Professor of Practice. Dr. Olive P. Holt has been made Secretary of the College.

Respectfully,

WM. H. TAYLOR, Treas'r M. M. C.

ASSOCIATION NEWS.

American Medical Association.

Official Minutes of the General Sessions of the Forty-ninth Annual Meeting, held in Denver, Colo.,
June 7, 8, 9 and 10, 1898.

(First Gen. Session, continued from p. 1533, Vol. XXX.)

Dr. Bulkley, Secretary of the Business Committee, read a report of that Committee relative to prize essays, the publication of the Association program and the general sessions. The following is the report on the general sessions and Section meetings:

Resolved, That the Sections be directed to hold no meetings during the hours set for the transaction of executive business in the general sessions, and that the general sessions take place at 11 A.M., instead of 10 A.M.

Dr. Dudley S. Reynolds of Louisville—I move that the report of the Business Committee be adopted. Seconded.

Dr. Wm. H. Humiston of Cleveland—I object to adopting the resolution with reference to deferring the meeting of the General Session until 11 o'clock. It will encroach upon the work of the Sections. If the General Session is postponed until 11 o'clock, and then continue until 2 o'clock, which is likely to be the case, we will have practically no time for dinner, and it will interfere materially with the work of the various sections.

Dr. J. B. Hamilton of Chicago—I would respectfully dissent

from that part of the report which states that the program has not been published as a whole. That statement is incorrect, because each Section of the program has been published as received. It is not possible to publish them as a whole, because up to the last minute corrections are made which appear in the finished program. As these corrections were received not more than ten days before this meeting, how is it possible to print the program as a whole, when we only received the final program from the bindery last Friday?

Dr. H. M. McConnell of Pennsylvania.—I move, sir, that we strike out the word *adopt* and insert in its place the word *receive*. Seconded.

Dr. Daniel R. Brower of Chicago.—I wish to state that if we meet in general session at 11 o'clock, it will give the various Sections two hours' work, namely, from 9 until 11. Furthermore the best material of this convention will be in the Sections. (Applause.)

Dr. Leartus Connor of Detroit.—The remarks of the last gentleman meet with my approval. It would meet with my approval if these general meetings were never called until 12 o'clock and be closed at 1. (Applause.) I submit to the gentlemen present whether the presentation of matters this morning is worth our while to travel a thousand miles to listen to. The affairs of this Association should be so conducted that it will pay us to attend the meetings. We are here for business, not to hear about the Rush Monument Fund and a lot of other things of which most of us knew before. During the reading of these reports we simply go to sleep. Some of the members were sleeping around me this morning. We are not here to be put to sleep by bad air, or to be shut up in a sweat-box over matters in which we have no earthly interest. This is the work of committees and for which we appoint them. The benefit of these meetings is to be derived from attending and participating in the work of the Sections. It is only right that we should all attend these general meetings, and take an active part in the transaction of business, and if we are prompt the business can be transacted in a short time, and it will not burden any of us to do it. Those who have the arrangement of the meeting in charge should see to it hereafter that the business of the Association shall be transacted in one hour each day if possible. That is all the time we will need if we are prompt in our work. Let us have more time for Section work where we have the brains of the Association, and where the enjoyment comes and profit follows. In this way we will make the JOURNAL better and our meetings will be meetings of pleasure and of satisfaction to us all. Let us encourage all of our friends to come together and join with us to work in the interest of medical science and not listen to a lot of rot. (Loud applause.)

The motion to receive was put and carried.

On motion the Association adjourned until Wednesday, 11 A.M.

JUNE 8—SECOND GENERAL SESSION.

The Association met at 11 A.M., and was called to order by the Second Vice-President, Dr. J. A. Thompson of Indianapolis.

The minutes of the previous General Session were read by the Permanent Secretary and approved.

Dr. Graham of Denver made some announcements on behalf of the local Committee of Arrangements.

The Fourth Vice-President, Dr. T. J. Happel of Tennessee, now took the Chair.

Dr. Bulkeley stated that the Business Committee was unable to present a report upon the President's Address or upon the Rush Monument Committee, but that such report would be presented tomorrow.

Regarding the resolution in reference to Associations of the United States, the Business Committee simply reported progress and asked that the matter be referred to the Committee for another year.

On motion, the wish of the Committee was granted.

The Business Committee recommends for adoption the following resolution, which was sent to them with the endorsement of over twenty members of the Association in order to save time on the floor. The resolution is not directed to the Committee, otherwise it would be naturally referred to the Committee.

Resolved, That the Sections be directed to hold no meetings during the hours set for the transaction of executive business in General Sessions, and that the General Sessions take place at 11 o'clock instead of 10 after the first day.

Dr. Bulkeley moved that this resolution be adopted. Seconded.

Dr. H. M. McConnell of Pennsylvania.—I think the General Session of the first day should commence at 10 o'clock. That is the day when we have so much to do, and I would therefore move that the General Session on the first day be begun at 10 o'clock, and thereafter at 11. I offer this as an amendment. Seconded.

Dr. Alonzo Garcelon of Lewiston, Maine—I do not rise, Mr. President, to speak to the amendment particularly. I have no objection to that. I wish to say that the business of the General Session can not be properly attended to if we meet at 11 o'clock. There is a vast amount of very important business to be done at every General Session. I have been a member of the Association for a great many years, and I know very well the difficulty there is in getting through with our business, even when we meet at 10 o'clock, unless we hold the Session beyond the ordinary time for adjourning, namely, to 1 o'clock in the afternoon. I trust the good sense of this Association will see to it that its business shall be attended to, and it can be done if the members are prompt, are here in proper time, and give three hours to the General Session each day for the purpose of transacting the business that comes before the Association. You know, Mr. President, we have the Presidential Address; we have other addresses to come before us, and as illustrated yesterday, it is impossible for us to get through with our business satisfactorily and intelligently. (Applause.) (Cries of Question! Question!)

Dr. Dudley S. Reynolds of Louisville, Ky.—I am as much interested in the Section work as anybody in the Association, likewise in the general prosperity of the whole body. If the recommendations of our Business Committee, to whom we commit all the details of our business that my distinguished and venerable friend from Maine referred to are carried out, then we will have no need for three hours every day in General Session. If we adopt the amendment suggested by the gentleman from Pennsylvania, the first day being the most important one, when the largest amount of business is required to be transacted, on that day we will have three hours; that is, meet at 10 o'clock and continue, if necessary, until 1. On subsequent days I am sure that 11 o'clock is quite early enough for the General Session. It will enable the Sections to have two good hours of work in the forenoon; it will, at the same time, spur us up and make us prompt in the discharge of our duties in reference to executive business when we meet in general session. I move the adoption of the resolution as amended. Seconded and carried.

The President—The next item is with reference to a resolution, to be presented by Dr. Dudley S. Reynolds.

The Permanent Secretary read the resolution as follows:

WHEREAS, The AMERICAN MEDICAL ASSOCIATION did at Detroit, 1892, unanimously resolve to demand of all the medical colleges of the United States the adoption and observance of a standard of requirements of all candidates for the degree of doctor of medicine, which should in no manner fall below the minimum standards of the Association of American Medical Colleges, and whereas this demand was sent officially by the Permanent Secretary to the Deans of every medical college in the United States and to every medical journal in the United States.

Now, therefore, the AMERICAN MEDICAL ASSOCIATION gives notice that hereafter no professor or other teacher in, nor any graduate of any medical college in the United States, which shall after January 1, 1899, confer the degree of doctor of medicine or receive such degree on any conditions below the published standard of the Association of American Medical Colleges be allowed to register as either delegate or permanent member of this Association.

Resolved, That the Permanent Secretary shall within thirty days after this meeting send a certified copy of these resolutions to the Dean of each medical college in the United States and to each medical journal in the United States.

The resolution was seconded by Dr. Parke Ritchie of Minnesota. (Referred to the Business Committee.)

The Permanent Secretary said he had received a communication from the Board of Trustees by Dr. French Stone, which was referred to the Business Committee without being read.

14 W. Ohio St., INDIANAPOLIS, IND., June 3, 1898.
To the Business Committee of the AMERICAN MEDICAL ASSOCIATION.

Sirs:—The proposition to adopt a distinctive, attractive and permanent badge to designate members of the AMERICAN MEDICAL ASSOCIATION, which has grown to be one of the most powerful and influential scientific organizations in the world, is hereby respectfully presented for favorable consideration during your next annual meeting at Denver, Col. This proposition has been discussed among members of the Association for many years, and the preponderance of expressed sentiment is that some method of recognition when they meet by chance as well as on social and professional occasions, is a necessity. The newspapers and the medical press have also encouraged the use of some suitable emblem which should be constantly and conspicuously worn, not only for the above purpose, but as a means of professional identity in cases of emergency and acci-

dents that may aid in saving life. It is true that we have many men of our profession holding official position in the organization, and otherwise distinguished, for whom in some particulars medical insignias are of less benefit than to the vast majority of its members of good standing who pay their annual dues and aid in other ways in maintaining the strength and influence of the Association. These men are not only entitled to some method of making known their connection with the organization, but would greatly appreciate the privilege of wearing an emblem that had been approved and adopted as a permanent badge, indicating worthy membership of our National Association. It is also believed that if such an emblem were adopted that other medical men throughout the country would be inclined to become permanent members of the organization, and thus aid in giving it additional financial as well as numerical strength. And we can readily see how the wearing of such means of permanent identification might be of much service in arousing a spirit of fellowship that would be helpful in bringing the members of the Association closer together. "It would serve to fix attention and direct thought to the interest of the Association during the intervals between the annual meetings and would prove suggestive of matters pertaining to its growth and development." To meet this requirement I herewith send you for consideration and adoption what is believed to be an appropriate gold and enameled finished emblem. Please observe that the device is in the form of a circular shield, having for its central feature a spear-pointed cross, opposite to the arms of which are the initial letters of "Members of American Medical Association." The circular shield and spear-pointed cross typify the protective armor of the period in which medicine had its origin. The cruciform center not only typifies the great advancement of the profession during the Christian era, but was also the ideographic sign or symbol of life and of the "Healing Art" in ancient Egypt, Greece, Rome and other nations of the greatest antiquity. The initial letters and enameled National colors (red, white and blue), sufficiently symbolize the Nationality of our Association. For these reasons it is believed that the design represents the origin, history, traditions and province of our profession, as well as National character of our organization in the fullest sense, and that the emblem constantly worn as an ornate coat lapel button (or scarf pin), would serve at all times and upon all occasions throughout the world as a distinctive method of social and professional recognition, thus securing the many advantages resulting from this identity.

In order that this badge proposed for the exclusive use of members of the Association should not be obtained or worn by any one except a member of the Association, I have obtained letters patent for the leading feature of the design which confers the exclusive right to make, use and sell the emblem throughout the United States and Territories thereof, and I desire it to be furnished to members only, through the official representative of the Association.

I further agree that in case this badge is adopted and it is desired by the executive committee that the patent right in it become the exclusive property of the Association to assign and transfer my whole right, title and interest in and to the said design for the badge and in and to the letters patent therefor aforesaid, as well as in and to the tools for manufacturing the aforesaid badge, now in the hands of Irons & Russell, of Providence, Rhode Island, and herewith send the legal papers necessary to such agreement, as well as a written proposition from the aforesaid Irons & Russell to manufacture the insignia, either in enameled rolled plate or solid gold, on unusually reasonable terms that will only confer considerable revenue to the Association.

Hoping that the foregoing proposition will meet with favorable action in securing the adoption of this emblem as a permanent badge by the Association during its present session.

Yours very truly,

RICHARD FRENCH STONE.

Referred to the Business Committee.

Dr. W. W. Keen of Philadelphia offered the following resolution:

Resolved, That a committee of five be appointed by the President, at his leisure, to co-operate with similar committees from other bodies to consider the desirability of formulating plans for the dissemination of knowledge of the value of experimental research in the progress of the science and art of medicine.

Seconded by Dr. Dudley S. Reynolds and referred to the Business Committee.

Dr. William H. Humiston of Cleveland, Ohio, read the report of the special committee on National legislation to the Ohio State Medical Society, May 5, 1898, as follows:

To the President and Members of the Ohio State Medical Society:

GENTLEMEN:—Your committee on National legislation appointed in response to the overture of the New York State Medical Society, has awaited the call of the committee of that society for a meeting in Washington to perfect a National organization, but so far no call has been received. Copies of the resolutions of this society anent the antivivisection bill of Senator Gallinger, still pending, were sent by your chairman to Dr. Bussy, chairman of the District Committee of the District of Columbia, and likewise to Senators Foraker and Hanna. Your committee received a reply from Senator Foraker, and a promise to give your request a favorable consideration, but no reply has so far been received from Senator Hanna. The District Committee, however, caused your resolutions to be printed and placed in the hands of every member of the Senate. Apparently, if we may judge from the circular letter sent out recently by Dr. Howard Kelly of Baltimore, Senator Gallinger is still obstinate in his determination to override the all but unanimous sentiment of the medical profession, and to push the enactment of his mischievous measure into law, but up this time, owing, in no small degree, to the efforts of the Society, he has not yet succeeded in bringing it to a vote, but the antivivisectionists are persistent; they have ample means and time at their disposal; they have able and influential advocates resident in Washington, and the medical profession must also have its men on the ground, acting with full authority delegated to them in order to counteract the effects of the so-called humane organizations to hamper and hopelessly cripple physiologic and biologic investigation in the Government laboratories and in the Medical Schools of the District of Columbia.

It seemed to your Committee, last year, that the New York plan provided for too large a body—a body, which from its very size, would prove too unwieldy for prompt and effective work—but the need of a body which shall authoritatively represent the organized medical profession upon those matters of legislation regarding which the medical profession alone has the requisite training to speak with the proper authority, becomes increasingly evident, and your Committee begs leave to submit the following plan of organization for the consideration of the Society.

1. That the AMERICAN MEDICAL ASSOCIATION be requested to appoint a standing committee of three on National legislation; one member to be a resident of Washington; one, of Baltimore; and one, of Philadelphia. A Committee so located could be called together at Washington on short notice, and appear before the committee of Congress at any time.

2. That each State Society of legally qualified practitioners of medicine be requested to appoint a committee of one on National legislation; such committee to keep himself in communication with the Senators and Representatives from his own State, so that they may be always kept in touch with the medical profession concerning matters of sanitary and medical legislation.

3. That a joint meeting of the Committees of the AMERICAN MEDICAL ASSOCIATION, and of the committeemen of the several States be held in Washington, subject to the call of the Committee of the AMERICAN MEDICAL ASSOCIATION. The purpose of that meeting would be to give opportunity for each State committeeman to personally interview the Representatives and Senators from his own State, and for the committee as a whole, or by sub-committees, to appear before the various Congressional committees to set before them authoritatively the sentiment of the medical profession regarding pending legislation, and to urge the passage of measures upon which the medical profession of the Nation have already agreed, and to which they have already given support by formal action. Meeting thus on the ground and consulting together, the members of such joint committee would, moreover, become better cognizant of matters upon which the medical profession ought to take action, and by embodying such matters in their annual reports to their respective societies, the sentiment of the medical profession as a whole would be promptly and authoritatively declared. We should then begin to act as a unit in matters of National legislation affecting the sanitary interests of the people as a whole.

4. That the necessary expenses of these committeemen be borne by their respective societies.

In conclusion, your committee would recommend further the adoption of the following resolutions:

Resolved, That we again enter our earnest protest against Senate Bill No. 1063, entitled "A Bill for the Further Prevention of Cruelty to Animals in the District of Columbia," for the reason that existing laws amply provide for the prevention and punishment of any real cruelty to animals which may

be proven to occur within the District, and because the physicians and scientists of the District have not so conducted themselves in the past as to warrant the system of irresponsible espionage authorized by the bill, and further, because the paramount interest of the sick and afflicted demands that the medical profession shall have liberty to investigate the nature and treatment of disease, free from cumbersome and vexatious restrictions, such as are provided in the measure in question.

2. That we again urge upon Congress the necessity of thorough inspection, by a medical officer of the United States, of all immigrants and their baggage, before they embark for this country, in order that the importation of contagious and infectious filth diseases may be more effectually prevented.

3. That the Secretary of this Society send a copy of these resolutions to each Senator and Representative in Congress from Ohio, and of the latter resolutions to the chairman of the committee on commerce and on immigration of both House and Senate.

Respectfully submitted.

L. B. TUCKERMAN,
RUFUS B. HALL,
A. M. BLEILE,

Committee.

The report was recommended for adoption by the Business Committee, and unanimously adopted by the State Society.

Referred to the Business Committee.

Dr. H. A. Hare introduced the following resolution:

WHEREAS, In time past circumstances have occurred which have deprived this Association of the presence and co-operation of many members of the profession of high standing who have contributed much to the advance of medicine and surgery.

Resolved, That the AMERICAN MEDICAL ASSOCIATION invite the New York Medical Society, the New York County Medical Society, the New York Academy of Medicine and other societies of good and regular standing to send delegates to this Association who will be received and accredited upon proper credentials from the officers of such societies.

Resolved, That all actions and ordinances of this Association contrary to this resolution in spirit or letter are hereby rescinded.

Referred to the Business Committee.

The Permanent Secretary announced the Committee on Nominations, as follows:

Alabama—H. A. Moody. Arkansas—J. H. Southall. California—H. B. Ellis. Colorado—J. T. Eskridge. Connecticut—T. D. Crothers. District of Columbia—H. L. E. Johnson. Georgia—E. T. Connelly. Illinois—T. J. Pitner. Indiana—J. H. Oliver. Idaho—E. E. Maxey. Iowa—W. D. Middleton. Kansas—James A. Lane. Kentucky—J. N. McCormack. Louisiana—Randell Hunt. Maine—M. C. Wedgewood. Massachusetts—H. O. Marcy. Maryland—J. B. Blake. Michigan—H. O. Walker. Minnesota—A. J. Stone. Missouri—I. N. Love. Montana—C. K. Cole. Nebraska—G. H. Simmons. New Jersey—Alexander McAllister. New Mexico—W. R. Tipton. New York—E. D. Ferguson. North Carolina—J. A. Burroughs. North Dakota—H. Wheeler. Ohio—J. E. Cook. Oregon—J. S. Moore. Pennsylvania—H. M. McConnell. Rhode Island—E. D. Clark. South Carolina—J. L. Dawson. Tennessee—G. C. Savage. Texas—John O. McReynolds. Utah Territory—S. Ewing. Vermont—E. R. Campbell. Virginia—L. B. Edwards. West Virginia—A. L. Huff. Washington—J. B. Eagleson. Wisconsin—W. H. Earles. Wyoming—R. Harvey Reed.

United States Marine-Hospital Service—J. M. Gassaway.

The Army and Navy of the United States—Drs. W. P. Munn and A. L. Gihon.

Alaska, Arizona, Delaware, Florida, Indian Territory, Mississippi, Nevada, New Hampshire, Oklahoma Territory and South Dakota are not represented.

The Permanent Secretary read telegrams from Drs. Nicholas Senn, Donald Maclean and F. H. Wiggin, regretting their inability to be present.

The following communication was read from Dr. Horner relative to the Medical Aid Association:

LIST OF SECRETARIES OF STATE MEDICAL SOCIETIES.

I. R. Wellington, District of Columbia; I. R. Jordan, Alabama; G. A. Archman, Wheeling, W. Va.; W. F. Amos, Portland, Ore.; I. W. Cokenower, Des Moines, Iowa; D. C. Hawley, Burlington, Vt.; W. G. Townsend, Baltimore, Md.; N. E. Wordin, Bridgeport, Conn.; Ignatius Donnelly, St. Paul, Minn.; F. W. Goss, Roxbury, Mass.; P. W. Tomlinson, Wilmington, Del.; C. D. Smith, Portland, Me.; W. C. Riddell, Helena, Mont.; F. T. Rogers, Providence, R. I.; Steele Bailey, Stanford, Ky.; C. R. Atchison, Nashville, Tenn.; G. H. Simmons, Lincoln, Neb.; T. Hubbard, Toledo, Ohio; W. F.

Cheney, San Francisco, Cal.; F. H. Coe, Seattle, Wash.; H. A. West, Galveston, Texas.

The above list of Secretaries of twenty-one States of the Union is made in accord with the resolutions unanimously adopted and endorsed by the Medical Society of Pennsylvania at the meeting of the AMERICAN MEDICAL ASSOCIATION in Philadelphia, viz:

Your committee would respectfully recommend that the Association which will assemble at Denver, Colo., will appoint a sub-committee and nominate a President of an American Medical Aid Association, Secretary, Treasurer and Corresponding Secretary, and will invite Fellows of the AMERICAN MEDICAL ASSOCIATION to contribute a sum of two dollars per annum to raise a sum to be used for the relief of disabled physicians and the widows and orphans of said Fellows, members of the American Medical Aid Association, when application is made for such relief. Respectfully submitted by Chairman of Committee.

FREDERICK HORNER, M.D.

May 13, 1898.

P. A. Surgeon U. S. Navy (Retired).

Dr. L. J. Lautenbach of Philadelphia offered the following resolution:

WHEREAS, Errors in Public School Text-books treating of Physiology, Hygiene, Chemistry and other subjects allied to medicine are prone to cause not only misapprehension and doubt but may occasion serious damage to the life, health and welfare of the community, and it having been proven that such errors exist in greater or less number in such works, therefore be it

Resolved, That the President of the AMERICAN MEDICAL ASSOCIATION appoint a committee of five who shall be empowered to examine all such works and finding such errors communicate with the authors and publishers of the same with the view to their elimination and report their results to the society annually.

Referred to the Business Committee.

Dr. Marcy of Boston, offered the following:

Resolved, That the Secretary hereby request the various State medical societies to so change the date of their annual meeting so as not to conflict with the date of the annual meeting of the AMERICAN MEDICAL ASSOCIATION.

Seconded and carried.

Dr. W. H. Sanders of Mobile, Ala., offered resolutions in regard to the public health, which were referred to the Business Committee.¹

At the conclusion of the resolutions, Dr. Sanders said: Mr. President, I move the adoption of these resolutions as an expression of the opinion of this body upon the matters which the resolutions bear. Seconded and carried.

Dr. William Bailey of Louisville, Ky.—I have a short preamble and resolution which I desire to read and ask their reference to the Business Committee.

WHEREAS, The business of the Association has increased so greatly that it is difficult to have it all performed in a satisfactory manner under the existing arrangements;

WHEREAS, New lines of operation have been opened which it is desirable to follow;

WHEREAS, It is believed that with an active Secretary, who could devote his whole time to the work, very material advance could be made in extending the operations and increasing the usefulness of the Association, with a great increase in its membership; therefore, be it

Resolved, That a General Secretary be appointed by the Business Committee at a salary not exceeding \$3000 per year, who, under the direction of the Business Committee, shall forward the interests of the Association in every way possible.

Resolved, That the present Permanent Secretary be retained with the title of Honorary Secretary, with the present salary.

Resolved, That the Business Committee be directed to consider the matter and report to the Association in regard to the feasibility of the plan proposed.

Referred to the Business Committee.

Dr. George M. Gould of Philadelphia, offered resolutions as follows, which were referred to the Business Committee:

WHEREAS, The establishment, organization and filling of public medical libraries is a means of vast and increasing importance both for the preservation of medical literature and the progress of medical science; and

WHEREAS, There are at present but very few such libraries in the United States, and of these, the great majority are in a sad state of imperfection and inefficiency; and

WHEREAS, Most valuable literature is wasted because of the non-existence or imperfection of such libraries; it is therefore

Resolved, That the AMERICAN MEDICAL ASSOCIATION unanimously approve of any ethical and legitimate methods of encouraging the organization, perfection and support of public med-

¹ These resolutions have not been received by the JOURNAL.

ical libraries in all the cities, towns and villages of the United States, and earnestly urges the members of the Association to aid in the formation and organization of such libraries; also

Resolved, That the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION be sent gratis to the membership libraries of the Association of Medical Librarians, or to other libraries that may be recommended by the Executive Committee of said Association.

Dr. H. A. Hare of Philadelphia—Mr. President, I rise to a point of order.

The President—Please state your point of order.

Dr. Hare—In your decision concerning an important resolution which I offered a few minutes ago, the resolution was referred to the Business Committee. As far as I can learn, sir, that reference is incorrect.

The President—Do you appeal from the decision of the Chair?

Dr. Hare—I do, sir.

The President—Dr. Hare of Philadelphia, appeals from the decision of the Chair in regard to the reference of his motion or resolution. The question before the Association is, gentlemen, shall the decision of the Chair be sustained? Those who favor sustaining the Chair in reference to the resolution offered by Dr. Hare in regard to the New York State Medical Society will signify by saying aye; contrary minded, no.

[The Chair was sustained in his ruling.]

Dr. H. M. McConnell of Pennsylvania—I move you, sir, that Dr. Hare's resolution be taken from the Business Committee. Seconded. (When the Chair put the motion of Dr. McConnell the ayes were so feeble that a division was called for. The result was that 104 were in favor of taking the resolution from the Business Committee, and 116 against.)

The Permanent Secretary read the following resolution, offered by Dr. Albert L. Gihon:

Resolved, That the Permanent Secretary as soon as possible after adjournment be requested to communicate with the Secretaries of State and Territorial medical societies to nominate their representative members on the Rush Monument Committee, and to report as soon as possible in order that the names may be announced in the JOURNAL of the ASSOCIATION. Referred to Business Committee.

The President—The next thing in order is the disposition of amendments to the Constitution and By-Laws. The first one to take action on is that offered by Dr. W. L. Wills, and I will ask the Secretary to read it.

The Permanent Secretary read the following: Article IV.—Officers. Amend to read: "Each officer shall hold his appointment for one year, and until another is elected to succeed him."

Dr. W. L. Wills of Los Angeles, Cal.—Mr. President, I wish to offer an amendment to the amendment to make the matter more easily and clearly understood, so as not to interfere with the tenures of office of members of the Judicial Council or of the Board of Trustees, whose term of office is provided for in another place in the Constitution. I would like to insert these words: "Each officer, except members of the Judicial Council and Board of Trustees, shall hold his appointment for one year, and until another is elected to succeed him." Seconded.

Dr. L. Duncan Bulkley of New York—May I ask whether this amendment to the amendment affects the members of the Business Committee.

Dr. Wills—There is no intention of interfering with the tenure of office of any permanent committee.

Dr. William T. Bishop: Mr. President, no matter what the object intended to be accomplished may be, there is one thing in regard to the written letter, namely, that it only means what is written, and not what is understood. The offerer of this amendment does not understand what he wants himself nor does he understand, it seems to me, his own amendment which he made to his previous amendment. I would suggest, to make it definite and to prevent any confusion, that the names of the President, Vice-Presidents, Secretary and Treasurer be included. Let the members understand what we are voting for. They are the officers it is intended to hit. I am opposed to the amendment unless it is expressed in that way.

The President—Are you ready for the question of the amendment to the amendment? Your vote will carry with it the suggestion offered by the gentleman from Pennsylvania, who

Dr. Daniel R. Brower of Chicago—The Business Committee excepts the Judicial Council, the Board of Trustees and the Business Committee.

has just appointed a Prize Committee. What becomes of it?

The President—That will depend upon what action is taken.

Dr. E. D. Ferguson of Troy, N. Y.—Hardly any of us know what we wish to do in regard to this matter, and I therefore move that the whole question be laid upon the table. Seconded and carried.

The President—The next item is the amendment offered by Dr. H. B. Ellis of California, which I will ask the Secretary to read.

The Permanent Secretary then read the following:

Article IX.—Conditions for Further Representation. "Any State or local medical society, or other organized institution, whose rule, regulations and Code of Ethics agree in principle with those of this Association, may be entitled to representation on the advice or agreement of the Judicial Council."

Dr. Dudley S. Reynolds—I move the adoption of the amendment. Seconded.

Dr. X. C. Scott of Cleveland, Ohio—This is a very serious question for the Convention to consider. In the event of our meeting in large cities, it will be possible to form enough medical societies where they can send enough delegates to control the legislation of this body. Mr. President, this question has come up year after year, and each year it has been voted down. Therefore, Mr. President, I move that this amendment be laid upon the table. Seconded and carried.

The following amendment was read and adopted:

"That the name of Section on Dental and Oral Surgery be changed to that of Section on Stomatology."

The Permanent Secretary read the following amendment offered by Dr. L. Duncan Bulkley:

"That all new business shall be introduced not later than the third day of the session."

Dr. X. C. Scott—I move its adoption. Seconded.

Dr. W. T. Bishop—I move as an amendment that the following words be inserted, "unless there is objection." This will accomplish the same thing and will keep us from being tied up. Seconded.

The motion as amended was put and carried.

Dr. J. H. Musser of Philadelphia then read the Oration in Medicine.

On motion, the Association adjourned until 11 A.M. Thursday.

JUNE 9—THIRD GENERAL SESSION.

The Association met at 11 A. M., and was called to order by the Fourth Vice-President, Dr. Happel of Tennessee.

The Permanent Secretary read the minutes of the previous general sessions, at the conclusion of which Dr. A. L. Gihon said: I certainly object to the statement in the minutes that I offered the resolution which the Secretary says I did. The resolution offered by me concerned another matter which he has not read. The resolution I offered was to this effect, that the Secretary communicate with the secretaries of the State and Territorial societies with respect to nominating representative members for the Rush Monument Committee, and that those names be published in the JOURNAL of the Association.

The President—I believe Dr. Lane, of Kansas, offered a resolution making Dr. Munn of the army, and Dr. Gihon of the navy, members of the Nominating Committee. The Secretary will make these corrections.

The President—The next matter to come before the Association is the report of the Board of Trustees, which will be read by Dr. Garcelon of Maine.

Dr. Garcelon then read the report as follows:

REPORT OF THE BOARD OF TRUSTEES.

MEMBERS OF AMERICAN MEDICAL ASSOCIATION: In submitting the present report at the 49th annual meeting of the AMERICAN MEDICAL ASSOCIATION, and the 15th year since the change from a yearly publication of the Transactions of the Association to the establishment of a weekly Journal, entitled "THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION," the Trustees take pleasure in congratulating you upon the success which has attended the Association in whatever light examined. Organized originally especially for the purpose of elevating the standard of medical education, it has steadily kept that object in view, and we have great pleasure in noting that a large number of our leading medical institutions have not only lengthened the curriculum of their instructions, but have demanded higher qualifications of those preparing to enter the ranks of the profession. The importance of a liberal education is becoming more and more noticeable, and we trust that the day is not far distant when every young man who seeks to qualify himself for the most important position that the needs of human society demand, will not only be able to acquire a satisfactory preliminary education, but to pass such an examination as only a first-class college course may require. Aside from this, there can probably be no better method desired in a country of so vast an extent as this to cultivate friendly social relations and that *esprit du corps* which ought to exist between the members of every liberal profession, and we shall be sorry to see the day when these annual gatherings come to be looked upon with indifference.

In 1883, when the experiment of publishing a weekly medical journal as the organ of the Association was suggested, there was quite a large minority of our members who were decidedly opposed to such a change. They thought the annual volume of the Transactions was all that could be profitable, and besides we were feeble in membership, and without funds to purchase material, or meet the current expense of rent, typesetting, proof work, stitching and other necessary machinery or material, saying nothing of paper and type, without which nothing could be accomplished. Aside from this, where was the enterprise to be started? The members east of the Alleghenies thought they occupied the citadel of medical lore, and that as Washington was the seat of government it would, and by all means it should, be the point in that vicinity. On the other hand it was urged as the Association was of a national character, a more central point should be selected, and all things considered, either Chicago or St. Louis should be selected and the fact that Chicago took the lead in point of population and was likely to do so for a period of years at least, that city was selected for the purpose.

The first number of Vol. 1 was issued July 1, 1883, and 3,500 copies of that date were struck off, being largely in excess of the membership of the Association, hoping by sending copies to physicians outside of membership, many might be induced to become members, or at least subscribers for the JOURNAL. At that time the membership of the Association, including both delegates and permanent members, did not exceed 1,500. For the five succeeding years the increase of membership was not large, there being during the year 1887 only an increase of 261. Since that time, that is, during the past decade, the increase of membership, as well as of the general circulation of the JOURNAL has rapidly increased:

The circulation for the year 1897 was:

January 2	7,600	July 3	8,600
January 9	7,700	July 10	9,000
January 16	7,800	July 17	8,900
January 23	8,500	July 24	8,950
January 30	8,500	July 31	9,000
February 6	8,500	August 7	9,000
February 13	8,000	August 14	9,100
February 20	8,500	August 21	9,025
February 27	8,700	August 28	9,050
March 6	8,700	September 4	9,000
March 13	8,700	September 11	9,000
March 20	8,700	September 18	10,050
March 27	8,600	September 25	10,100
April 3	8,400	October 2	10,200
April 10	9,500	October 9	10,200
April 17	8,500	October 16	10,200
April 24	8,750	October 23	10,000
May 1	8,750	October 30	10,000
May 8	8,600	November 6	10,000
May 15	8,600	November 13	10,000
May 22	8,500	November 20	10,000
May 29	8,600	November 27	10,500
June 5	8,500	December 4	10,700
June 12	9,000	December 11	10,700
June 19	8,300	December 18	11,000
June 26	8,400	December 25	11,000
	220,900		253,275

First six months of 1897 weekly average was 8,496; second six months of 1897 weekly average was 9,741; total weekly average for year was 9,118½.

The growth since last autumn has been remarkable, thus: The regular weekly issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION from October, 1897, to May, 1898 inclusive, a period of eight months, was as follows:

WEEKLY EDITION.		WEEKLY EDITION.	
October 2	10,200	February 5	10,000
October 9	10,200	February 12	9,800
October 16	10,200	February 19	10,400
October 23	10,000	February 26	9,850
October 30	10,000		40,050
	50,600	March 5	11,000
November 6	10,000	March 12	10,200
November 13	10,000	March 19	10,500
November 20	10,000	March 26	10,950
November 27	10,500		42,650
	40,500	April 2	11,000
December 4	10,700	April 9	11,000
December 11	10,700	April 16	10,800
December 18	11,000	April 23	10,500
December 25	11,000	April 30	10,500
	43,400		53,800

January 1	9,600	May 7	10,500
January 8	9,700	May 14	10,425
January 15	9,700	May 21	10,500
January 22	9,700	May 28	10,475
January 29	9,700		
	48,400		41,900
	182,900		178,400

Grand total, 361,300; weekly average, 10,323.

The appearance and general character of the JOURNAL is highly satisfactory, but we are by no means content without showing continual advancement. We have carefully examined other weekly medical journals published in this country and have compiled the following instructive table:

FIVE WEEKLY MEDICAL JOURNALS—SIX MONTHS' ISSUE.
(Comparative statement of matter published.)

July to December, 1897.	Original articles.	Separate titles.	Illustrations.	No. pages.		Composition—ems.
				Read- ing.	Adv.	
Boston Med and Surg. Jour	185	820	72	692	872	1,209,088
New York Medical News	137	1,139	116	838	480	3,097,717
New York Medical Journal	167	1,076	173	888	1,096	2,903,816
New York Medical Record	187	1,433	100	932	1,096	3,644,849
Journal American Med. Association.	280	1,510	226	1,272	692	5,813,594

This table shows conclusively that the members receive more for their money in amount of reading matter than in any other journal, and we may without fear of unfavorable result compare our JOURNAL in point of literary and scientific qualities to any regular weekly published in any part of the world.

Viewed as a newspaper, it now undertakes to publish everything in current news that will interest the physician, assist him in his daily work and defend him against outside malice. The legitimate expenses of such a journal must necessarily be large, and as its pages increase they will annually become larger. The rule of the ASSOCIATION whereby all proprietary articles must publish their formula, containing the name and amount of each ingredient every issue, causes a loss to the JOURNAL of from \$8,000 to \$10,000 annually, a loss which other journals are not compelled to sustain. That the JOURNAL has succeeded and continues to succeed in spite of this immense limitation of advertising, is complimentary to the ability, tact and foresight of the editor, who, under the direction of this Board, made the JOURNAL more and more successful each year.

The financial statement is as follows: Report of the JOURNAL for the fiscal year ended Dec. 31, 1897.

RECEIPTS.	
Cash on hand Jan. 1, 1897	\$ 1,694.82
Dec. 31, Advertising	18,627.61
Dec. 31, Subscriptions	4,889.68
Dec. 31, Reprints	917.15
Dec. 31, Collections through bank	1,374.34
Dec. 31, Requisitions on Treasurer	20,000.00
Dec. 31, Cash sales	146.47
	\$47,140.07
DIABURSEMENTS.	
Dec. 31, Pay Roll	\$18,574.37
Dec. 31, Postage	3,030.60
Dec. 31, Editorial accounts	4,965.74
Dec. 31, Commissions	763.68
Dec. 31, Office salaries	7,880.76
Dec. 31, Paper	9,636.15
Dec. 31, Ink	279.95
Dec. 31, Telephone	175.00
Dec. 31, Benzine and oil	22.70
Dec. 31, Advance news	188.76
Dec. 31, Gas	58.46
Dec. 31, Type	119.50
Dec. 31, Bindery supplies	51.00
Dec. 31, Letter files	11.10
Dec. 31, Stationery	34.25
Dec. 31, Rent	1,500.00
Dec. 31, Electric power	408.26
Dec. 31, Binding	271.55
Dec. 31, Membership transfers	437.50
Dec. 31, Copyright on Journal	20.50
Dec. 31, Repairs to machinery	53.50
Dec. 31, Electrotypes	365.58
Dec. 31, Benzine cans	3.00
Dec. 31, Office fixtures	17.50
Dec. 31, Express	2.00
Dec. 31, Cartage	142.00
Dec. 31, Mimeograph supplies	4.00
Dec. 31, Reporting	509.56
Dec. 31, Press rollers	78.36
Dec. 31, Cutter knife	28.00
Dec. 31, Check returned	119.69
Dec. 31, Folder Supplies	9.85
Dec. 31, Back numbers of Journal	8.60
Dec. 31, Toilet supplies	15.00
Dec. 31, Grinding cutter knives	21.60
Dec. 31, Medical society lists	4.00
Dec. 31, Telegrams	8.49

Dec. 31, Agents' traveling expenses.....	109.30
Dec. 31, Subscription rebates.....	13.96
Dec. 31, Advertising.....	31.00
Dec. 31, Wipers.....	11.25
Dec. 31, Check perforator.....	10.00
Dec. 31, Postal deposit.....	5.00
Dec. 31, Insurance.....	85.00
Dec. 31, Taxes.....	165.98
Dec. 31, Moving machinery.....	37.60
Dec. 31, Miscellaneous expense.....	292.60

Total expenses (vouchers deposited with Treasurer) . \$45,637.67
 Check returned (bank voucher) . 7.50
 Balance on hand Dec. 31 . 1,494.90

\$47,140.07

The following is an inventory of the JOURNAL property.

Mechanical Department.—Three Miehle cylinder presses, 1 Crocker Wheeler 10 H. P. motor, 1 pony Gordon press, 1 Sheridan auto, cutting machine, 2 folding machines, 4 imposing stones, 1 stitching machine, 100 make-up galleys, 14 case racks, 2 banks (make-up tables), 1 sort cabinet, 1 type cabinet, 3 type racks, 2 kitchen tables, 4 bindery tables, 11 high chairs, 9 kitchen chairs, 1 high back oak chair, 4 fonts "body type" about 4,000 lbs., 5 pr. new chases, 1 proof press, 90 fonts job type, 200 mailing galleys, 1 pr. large scales, 1 walnut desk, 150 lbs. leads, 1 oak wash stand.

Office Department.—Two roll top desks, 2 flat top desks, 1 letter filing cabinet, 1 oak book case, 2 "Victor" safes, 6 revolving office chairs, 1 typewriter desk, 1 wire rack for exchanges, 1 P. H. box case, 1 12-ft. walnut table, 1 dictionary stand, 11 oak chairs, 2 Munson typewriters (one poor).

GENERAL FINANCIAL STATEMENT.

The report of the Association Treasurer shows the total receipts for the year ending Dec. 31, 1897, to have been \$64,522.78 and the expenditures \$25,637.67, and the balance \$14,092.72. The balance on hand was so satisfactory in amount that the Board directed an additional \$10,000 to be placed to the credit of the investment fund created by the Association in 1896 for the purpose of providing a permanent building for the home of the JOURNAL. This fund now amounts to \$13,000.00, and if the Association continues to be economical, we shall very soon reach the amount required to erect a safe and convenient building adapted for the purposes of the JOURNAL for many years to come. The Trustees were very materially aided in the accomplishment of this very desirable result by the generous action of the Philadelphia profession, who by their local Committee of Arrangements returned the \$1000 appropriated for places of meeting of the General Sessions and the Sections.

INCORPORATION.

In accordance with the recommendation of this Board, approved by the Association at its last session, the Board of Trustees has become an incorporated body, and now have a definite standing as a legal incorporation.

In conclusion, the Board respectfully recommend that each member of the Association make renewed effort to help along the growing membership, by encouraging subscriptions, and membership applications, in order that by increased circulation and support we may still further extend the good influences of the Association for the advancement of useful knowledge, and the general welfare of the profession.

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| A. GARCELON, | } Board of Trustees. |
| J. M. MATHEWS, | |
| I. N. LOVE, | |
| G. C. SAVAGE, | |
| JAMES T. PRIESTLEY, | |
| JOSEPH EASTMAN, | |

Dr. Dudley S. Reynolds of Louisville—I move that the report of the Board of Trustees be received, printed in the JOURNAL, and a vote of thanks extended to Dr. Garcelon for having presented it. Seconded and carried.

The President—Dr. Gihon desires to make a one-minute report, and we will now listen to him.

Dr. A. L. Gihon—I will read from my seat. I shall not occupy more than two or three minutes of your time. I am requested by the donors on part of the Rush Monument Committee to make the following statement; I have received from Dr. Haggard of Tennessee, on account, \$130; from Dr. Wingate of Wisconsin, \$78 on account; from Dr. Humiston of Ohio, \$336.25, the balance will be given at Columbus; from Dr. Cole of California \$110; from Dr. Cantrell of Texas, \$36.50; from Dr. Hare of Pennsylvania, \$186.50, in addition to the \$2000; from Dr. Wordin of Maine, \$100 on account. I have nearly \$12,000 in my hands toward the Rush Monument Fund. With all respect to my friend, Dr. Connor of Detroit, this is not rot, but fructifying seed, which has borne good fruit. (Applause.)

The President—The next item will be the report of the Committee on Public Health, which will be read by the Chairman, Dr. U. O. B. Wingate of Milwaukee, Wis.

Dr. Wingate, as Chairman, then read the following report:

REPORT OF SPECIAL COMMITTEE ON DEPARTMENT OF PUBLIC HEALTH.

Mr. President and Members of the Association—In 1891 the following resolution was adopted:

"Resolved, That the President of this Association appoint a Committee of five to memorialize Congress, at its next session, on the subject of creating a cabinet officer to be known as a medical secretary of public health." This Committee was appointed and has been in existence ever since. Its personnel has been changed from time to time. In the argument set forth preliminary to the formation of this Committee it was claimed that "there is no other profession that excels us in positive efficiency to sustain public order, comfort and happiness. We possess vast capacity for the direction of society and promotion of human happiness. There is nothing in the body or mind of man that is not the purview of medical practice. We are laboring unceasingly to assuage all illness of individuals and communities. At this time the profession is manifesting, in a higher spirit than ever before, the purpose of suppressing contagious and infectious diseases. This work was begun by Jenner a century ago, and the awful scourge of small-pox has been stamped out wherever vaccination is compulsory. We have now assumed the task of suppressing all the terrible diseases that desolate the world. There are infectious and epidemic diseases that move about the world almost periodically, which we need not particularize. They are often the products of equal and wretchedness of peoples, and are spread far and wide about the lines of commerce. These invisible foes of human health infect the air, water, and the very food we eat. From the grosser foes of human health, cold, heat and tempest, men have power to defend themselves, but in regard to these invisible agents of suffering and death for want of higher knowledge they are largely helpless. In their despair they turn to medical science for help, unwilling to trust in the brute law of the survival of the fittest.

"Governments, in a certain way, have always done something to aid medical men in their endeavors to stay pestilence and save the afflicted, but never adequately. They have generally refused to make the medical profession a permanent integral part in the administration of the State, that is, in the making and execution of sanitary laws."

This argument goes on and defines what laws are necessary for the full employment of our beneficent profession, and affirms that all the measures for public relief on these important subjects should be under the guidance of medical men. It sets forth that the medical profession holds itself ready, not only to diminish the fearful destruction of life now going on, but ultimately to destroy the contagia that cause it. It refers to the latest addition to the cabinet of the President, that of secretary of agriculture, and sets forth that a secretary of public health will be of the greatest importance to the welfare of the nation, and finally the "unification of all things relating to public hygiene in the States through the aid of the State boards of health will give a solidity and usefulness to the practice of medicine never hitherto attained."

In 1892 this Committee made its first report under the chairmanship of the late and lamented Dr. C. G. Commegey. A "petition to the extent of eight thousand copies was printed in pamphlet form and issued within the covers of the JOURNAL of the Association; a large number were sent out at the request of State boards of health and others; a sufficient number placed in the hands of members of Congress. Copies were also sent to all medical schools of the Union, and a large number of favorable responses were received from physicians in the States, east, west, north and south; from some of our eminent schools of learning, and from State boards of health everywhere.

"The petition, with the Bill formed to carry out its purpose, was presented in the first week of the session of Congress, in the Senate by the Hon. John Sherman, and in the House by the Hon. John A. Caldwell, both of whom warmly expressed their belief that the measure is one of great public importance and that they would do all they could to secure its adoption."

The chairman of the Committee went to Washington and was invited to meet the committees of both Houses for a conference on the subject. The report states that the chairman believes, "that in the House committee a favorable impression was made, but in the Senate committee I found the chairman quite unfavorable to it, because, and he gave no other reason to me, the present Congress would do nothing to

increase departmental expenditures." The chairman made a long and full argument before these committees, but the Bill did not pass.

In 1893, the Committee reported again, and in the report the following appears: "The members of the House committee seem disposed to favor such a department, the chairman of it saying that he thought the health of the people was certainly of as much consideration as that of cattle, which was so expensively investigated by the agricultural department. But the first session of the Fifty-second Congress adjourned and no report had been made by either House. In the meanwhile the development of cholera in Europe, and the menace of its transportation to our shores lead to a renewed activity and grant of power to the quarantine office that made it impossible to secure any further action of Congress on the proposition to establish a department of public health. Your Committee entertains most favorable opinions in regard to the activity and intelligence which is displayed by the Marine-Hospital Service for the preservation of our seaports from epidemics of foreign origin, and for its regulations to prevent their transportation from State to State along our commercial lines, but it does not seem reasonable that all the benign measures of preventive medicine should be administered by a single organization, whose function relates to so limited a field in comparison with one which relates to the demography and hygiene of cities, towns and agricultural regions of the country at large, and the supervision of which would be far more intelligent and effective by a medical secretary of state than by the secretary of the treasury."

"The difficulties attending the introduction of Bills into Congress are very serious. After the first reading they are referred to committees, where the delays are great. To be successful it requires a constant watchfulness of their progress, and members of a committee grow weary of pleas for a favorable report."

The following resolutions in addition to the report were presented: "Resolved, That this Association will continue its efforts to secure the creation of a department and secretary of public health at Washington, D. C. Resolved, That the President of the Association appoint ten members, representing different regions of the United States, who shall prepare as early as possible an appeal to his Excellency Grover Cleveland, to lay before Congress in his next annual message a recommendation that a department and a medical secretary of public health is a measure that is calculated to promote in a large way the public welfare. Resolved, That this petition shall be presented, as far as may be possible, by the Committee in person."

The report and these resolutions were adopted and permission was granted that the Committee increase their numbers as they might deem necessary.

In 1894, the Committee made a further report in which they state: "In the course of our efforts to secure the passage of our original Bill, which has hitherto, both at the annual session at Detroit and in Milwaukee, been laid before you, and which was introduced into the Fifty-second Congress, in both Houses, in December, 1891, we found that a strong opposition was made to its favorable report from the committees in the Senate and House of Representatives by the chief of the Marine-Hospital Service, because it seemed to him to encroach upon the function of his office as director of quarantine affairs, and that it would greatly embarrass his work. This was not intended at all by your Committee; therefore, as our Bill appeared to lie dormant in the hands of the Congressional committees, and as the dread apprehension of the entrance of Asiatic cholera through our commercial intercourse had so aroused Congress to the necessity of strengthening the quarantine service, making it apparently unnecessary to extend legislation in the direction of public health at that time, we were advised by friends in Congress to cease further efforts until the second session. At the opening of the second session, in December, 1892, it was found that one of our important friends in the House committee was ill, in fact was unable to take his seat at any time during the session. Your Committee then determined to wait the opening of the Fifty-third Congress, in December, 1893, for a renewal of our activity. In the meantime the great Pan-American Medical Congress met in Washington in September, 1893, and we took advantage of the assembly of that body of eminent medical men to bring before it the importance of the creation of a department of public health in all governments under the direction of a secretary appointed from the medical profession, who should be on a parity in the cabinet of the President with the secretaries of other departments. Our proposition was referred to the committee on State medicine and, after a most thorough discussion by eminent practitioners of different States, was adopted with but one dissenting voice.

Your Committee next, after due consultation, concluded that in order to avert the opposition of the Marine-Hospital Service, it would be wise to reconstruct our Bill so as to leave out any reference to the supervision by the secretary of public health of the quarantine service, merely referring to it as an available source of information for the general purposes of public health, on the same plan as that furnished by Surgeons-General of the Army, Navy, the State Boards of Health, and all municipalities, hospitals and asylums throughout the country. Therefore, we redrafted our petition and Bill in regard to the establishment of the public health department and the secretary of public health, and they have been introduced into the present Congress, in the Senate by the Hon. Mr. Gray of Delaware, in the House by the Hon. Mr. Goodnight of Kentucky, and have been referred to proper committees."

The report also contains the following: "Our success has been greatly compromised by the action of the New York Academy of Medicine in their endeavor to frustrate our movement by the preparation of Bills to obtain action of Congress, to extend in various ways the existing quarantine laws, and to keep the profession under the autonomy of the secretary of the treasury or the secretary of the interior, and their plan has been urgently pressed upon the attention of the State and medical societies, and State boards of health throughout the Union."

The report closes with the following: "It is not probable that any bill can pass at this session of Congress, but the Association should at this time direct that a renewed effort should be made so as to be ready to make the most powerful effort possible to secure the passage of our Bill at the next session. Such consolidated effort can only be made effective by an organized effort in every congressional district in the Union. In conclusion we beg to offer the following resolutions: Resolved, That the AMERICAN MEDICAL ASSOCIATION renews its appeal to the Congress of the United States to adopt the Bill now in its possession for the creation of a department and secretary of public health; Resolved, That the committee proceed as soon as possible to secure sub-committees in each congressional district of the country to obtain favorable action on the part of their senators and representatives for this measure; Resolved, That a committee be appointed to endeavor to secure the friendly co operation of the New York Academy of Medicine; Resolved, That a sum not exceeding \$400 be appropriated to defray the necessary expenses of the committee in carrying on their work."

In 1895 the Committee reported again, under the chairmanship of the late and lamented Dr. Jerome Cochran, in which he states: "Our facilities for doing the important work entrusted to us have been strictly limited by want of funds, the Association having failed to adopt the resolution offered last year for an appropriation not to exceed \$400 to defray the necessary expenses of the Committee, so that such expense as we have incurred have been paid out of our own pockets." He further states, "That in December some members of the Committee visited Washington for the purpose of ascertaining just what could be done toward pushing our enterprise to a successful result. We found a good many members of Congress who promised us their co operation whenever a favorable time could be found for the consideration of our Bill, but all agreed that it would be impossible to accomplish anything during the continuance of the Fifty-third Congress." In conclusion he adds: "To this end we had prepared a resolution recommending an appropriation, but as this object has been accomplished by the action of the Association on the recommendation of the Section on State Medicine it is not necessary to offer this resolution." The report was received.

In 1896, another report of the Committee was made by Dr. Cochran, in which he states that "The Bill which was prepared for presentation to Congress was extremely crude and indefinite in its provision and gave this proposed high official very little important work to do. It was indeed found to be so defective that last year the effort to have it enacted into a law was abandoned. In the meantime the Marine-Hospital Service, which in 1890 had already been invested with some important health functions, was by the act of 1893 converted into a National Health Department with very large and far-reaching powers and abundant means. It is not called a department of public health, but is a department of public health in fact. Since 1893, until the effort was abandoned last year, our Committee has been engaged in the hopeless and unwise enterprise of endeavoring to induce Congress to establish another department of public health, a very weak and inconsiderable department by the side of a very powerful department. Such an effort could not succeed. Such an effort did not deserve to succeed." In conclusion, he says, "In arranging any scheme of national public health supervision it would seem desirable

that nothing should be done to discredit and weaken the various State boards of health, but that contrariwise the efforts should be to strengthen the State organizations and to foster and facilitate their further evolution. If this principle is conceded it is at once made evident that the national department of public health should act in and through the State boards of health, in co-operation and harmony with them and not outside of them and independent of them. If the national department acts within the States, independently of the State boards, then the State boards become comparatively useless institutions and will fall into disfavor. Some of the State boards are still weak institutions and any rivalry between them and the national department in State work will doom them to speedy destruction. In this direction it would seem that additional legislation is needed, and the simplest plan to reach the desired reconciliation shall embrace two provisions. First that the national department should act within the States by and in co-operation with the State boards. Second, that the head of the national department should call annually to meet in the city of Washington an advisory council to be composed of one representative from every State board of health. This would bring about mutual understanding and co-operation and reciprocity of action and would virtually constitute a great school of public hygiene. Such a scheme as this would probably command the approval and support of the national conference of State boards of health, which conference is quite as deeply interested in movements of this character as is the AMERICAN MEDICAL ASSOCIATION. At the conclusion of the whole argument we recommend that we be authorized to invite the co-operation of the conference of State boards of health and the American Public Health Association in our favor to have the proposed Bill enacted into a law."

"On motion, duly seconded, the report was accepted, the plan outlined adopted, the Committee continued and enlarged by the appointment of a member from each State."

In 1897, your present chairman reported that it was found impossible to get either the Fifty-fourth Congress or the special session thereof to take any action on such a measure; that he had appointed additional members of the Committee as provided for at the last meeting and that a Bill had been drafted, which was presented. The Committee recommended the continuance of the Committee with powers to have the aforesaid Bill amended to meet requirements, but not to change the general purpose thereof, and to introduce the same into Congress at its discretion. Since that time, your Committee desires to report, that it has been actively engaged in this work.

As soon as the Fifty-fifth Congress convened work was begun to prepare a Bill, or to amend the Bill submitted at the last meeting of the Association, that would meet the requirements and be most likely to pass Congress, and that would receive the support of the greatest number of the medical profession, and also one that would meet with the least opposition. This was found to be a gigantic undertaking. The chairman of your Committee went to Washington and consulted with the best men in Congress who would give him a hearing on the subject, and it was found that the great majority of members of Congress were totally ignorant of the subject and many of them were not inclined to give it the time that was necessary to become familiar with it. Others, however, required time to study it. It was found, however, that it was out of the question to find a member of Congress who would introduce a measure, even, creating a cabinet officer. The President, members of the cabinet and of Congress were opposed to creating any more cabinet offices. It was argued that there were too many cabinet offices now, and if the way was opened by considering our request other organizations would ask for the same, and it was absolutely decided by Congress and the President that this proposition could not be entertained. There was also equal opposition by Congress to creating any independent commission, and the only thing that would receive recognition was a commission or bureau to be under the supervision of some other department. The Bill was drafted and redrafted many times before we could get it in such shape as to receive the support of certain leading members of Congress. The main idea, however, of having a single medical head, to be located in Washington, and for him to have the aid of counsel from members of State health organizations from each State and Territory, as outlined in the report of Dr. Cochran two years ago and adopted by the Association, was steadfastly adhered to throughout by the chairman of your Committee, and the same was incorporated in the Bill that was finally decided upon. This idea was also endorsed by the American Public Health Association at its last annual meeting held in Philadelphia, and it is almost unanimously approved by those who have given the most attention to the question. Your chairman

believes that this feature of the Bill is by far the most vital portion of National Health Legislation that we can ask for. Before the Bill was introduced a conference was held between the chairman of your Committee and the Supervising Surgeon-General of the Marine-Hospital Service, with a view of attempting to bring about some compromise in the provisions of the Bill that would avert the opposition of that Service, but such was found impossible, and that Service would only favor the Bill which is known as the Caffery Bill, which only relates to quarantine, leaving out all attention to internal sanitation, which your Committee believes to be of far more importance than quarantine, and gives to that Service autocratic powers to control not only maritime quarantine but to go into any State or Territory and take full charge, without any voice from the local authorities either in making rules or regulations or the enforcement of such rules and regulations as that Service may see fit to adopt. This Bill, which is practically the only opponent now existing in Congress against our measure, gives autocratic power to one man, namely, the Supervising Surgeon-General of the Marine-Hospital Service, to have absolute control over all quarantine, both maritime and interstate. Your Committee found a very decided objection to this measure in Congress; on the other hand, it had some very strong supporters, the supporters believing that the Marine-Hospital Service furnishes the best foundation upon which to build a national health department.

Our Bill was introduced into the Senate by the Hon. John C. Spooner of Wisconsin, and referred to the committee on "Public Health and National Quarantine," and into the House by Hon. Theobald Otjen of Wisconsin, and referred to the committee on "Interstate and Foreign Commerce." The Senate committee refused absolutely to hear your Committee, or to give them any opportunity to be heard on the question. They had decided, with one dissenting vote, to recommend the Caffery Bill, which places the quarantine power into the hands of the Marine-Hospital Service, and all other Bills, several of which were before them, were laid aside. The House committee, however, gave the chairman of your Committee a hearing, and he was ably supported at that hearing by Dr. H. B. Horlbeck, the health officer of the city of Charleston, S. C., and Dr. A. H. Doty, quarantine officer of the port of New York. There was a division in this committee and it is doubtful how it will report to the House. In the Senate, however, it is intended that our Bill shall be offered at a proper time as a substitute for the Caffery Bill, and it is believed by Mr. Spooner, who has it in charge, and he is generally recognized as one of the ablest senators in Congress, that it stands a fair chance of passage. It is also believed that the Caffery Bill will not pass either the House or the Senate. During this time your chairman has visited Washington five times, and has been ably supported there from time to time by Dr. C. O. Probst of Ohio, Dr. Horlbeck of Charleston, Dr. Doty of New York and Dr. H. L. E. Johnson of Washington, as well as Dr. Porter, State health officer of Florida, and to whom he desires at this time to return grateful acknowledgement. He has also attended the quarantine convention held at Mobile, Ala., where the question of national legislation was discussed, and argued the question before that convention, and also went before the New York Board of Trade and Transportation, and succeeded in getting that body to support our measure.

Your chairman is pleased to report that he believes that never before has any Bill of this nature, that has been introduced into Congress, received the extensive support that the present Bill has and is receiving. It has the support of the New York Academy of Medicine, the New York Board of Trade and Transportation, the New York Chamber of Commerce and several other large business organizations in the country who are vitally interested in quarantine matters. It has received a great deal of attention from the newspapers of the country and as a general rule has been favored by them. It has, however, received some very bitter opposition by some few medical journals of the country and one sanitary journal, namely, the *Sanitarian*. This publication has been exceedingly bitter and the vials of wrath of its editor have been frequently replenished and poured out profusely, much, undoubtedly to his satisfaction, and greatly to the amusement of those who know his peculiarities. Practically there are but two Bills relating to Public Health before Congress at the present time, our own Bill and the one known as the Caffery Bill, which favors the Marine-Hospital Service, and provides that that Service shall be the health department of the country. The New York Board of Trade and Transportation, a very large and influential business organization, took a great deal of pains to learn the views entertained throughout the country concerning the matter. They addressed personal letters to nearly one thousand professional men, sanitarians and men engaged in trans-

portation and commercial pursuits. These letters contained questions relative to quarantine and solicited the opinion of these men as to the best sanitary legislation that could be asked for. "Hundreds of valuable replies were received to these inquiries and only thirteen of them endorsed the proposition to enlarge the powers of the Marine-Hospital Service. All of these thirteen letters contained the one chief argument that the Marine-Hospital Service was a good nucleus to build a National Health Bureau upon."

"On the other hand, a very large majority of the replies expressed the opinion that the National Government can never hope to create a successful national health organization based upon the Marine-Hospital Service as a nucleus, because in many States the bitter hostility to the Marine-Hospital Service, engendered by its own acts, is so formidable as to preclude any possibility of harmony between it and such State and local authorities. The opinion was that to give the Marine-Hospital Service still more arbitrary powers as proposed in the Caffery Bill, without the obligation to consult or in any way regard the local authorities, would only widen the breach, intensify the bitterness and render resort to force necessary to carry out the Marine-Hospital Service regulations." In a letter addressed to the Hon. Jacob H. Gallinger, U. S. Senator, by the President of the New York Board of Trade and Transportation he states, "The consensus of testimony before our committee was overwhelmingly in opposition to the letter and spirit of the Caffery Bill. It stamped the Bill as narrow and wholly inadequate to meet the very pressing needs of the country. The Caffery Bill exaggerates the importance of quarantine, and makes no other provision for public health protection, while advanced sanitary science pronounces quarantine to be barbarous and obsolete. The practically uniform opinion was that the country is now ready for a law which will make quarantine of constantly decreasing importance as local sanitary administration shall be stimulated and perfected. And it was very clearly shown that any law that will successfully meet the situation and needs of the country must of necessity have due regard for the wishes and views of the people, must foster and encourage good will, a spirit of harmony and co operation between States, and the national authorities and local authorities for the common well being. The Caffery Bill is the antipode of this view. It is obnoxious in its spirit, and would be more so in its enforcement, to the great mass of the American people in all the States. The Spooner Bill (which is our Bill), on the other hand, is in full accord with the most enlightened modern views of health protection. It does not abolish quarantine, but in time would bring about conditions which would make quarantine almost unnecessary. It recognizes several departments of the National Government, and every State and Territory as interested and important factors in the scheme of health protection, and gives to each a voice in the framing of health regulations, and this is done by means of organization so simple as to be immediately moved to action in emergencies. It removes friction and hostilities and promotes harmony and co-operation, which are essential to the success of any National health law. It violates no principle of national or local policy. Our Committee went over all this ground with the greatest deliberation, and although their views upon taking up the question had a decided leaning toward the proposition to give the Marine-Hospital Service the absolute and arbitrary power it asks for, they finally and unanimously reached the opinion that the passage of the Caffery Bill would be a serious injury to the people of the United States by delaying and hindering the broader, better and more certain solution of the problem which the Spooner Bill will afford."

The Bill was about to be acted upon in the Senate at the time of the declaration of war with Spain. Since then all matters of this kind have been laid aside, as is well known, and probably no action will be taken upon this matter during the present Congress. I am pleased to report that Senator Spooner, who has this Bill in charge in the Senate, and also Mr. Otjen of the House, are enthusiastic supporters of this measure. They are both strong men and will do everything in their power to have this Bill pass Congress at some future session, if not at this. I also have to state that the money appropriated by the Association has been all used and more besides, and that the Committee is sadly in need of funds to carry out this work. It is absolutely necessary that some one should be in Washington from time to time when this measure comes up for action or comes up for any hearing, as in the future, in all probability, these Bills will be re-referred to the Committee and future hearings be had. In order to have a Bill pass Congress it must be watched from stage to stage, and some one must be there to look after it and to furnish members of Congress who have it in charge with such evidence and other material as they may from time to time require. I herewith submit a copy of the

Bill as now perfected and before Congress, and most respectfully offer the following resolutions and move their adoption:

Resolved, That the Committee on Department of Public Health be continued; that the Bill as now perfected and before Congress, and which is submitted with this report, be and hereby is approved, and that the Committee be authorized to use their best endeavors to have it passed by the Congress of the United States, at such time as in their judgment it seems proper and wise.

Resolved, That the members of this Association do all in their power, by urging upon their representative members of Congress to have this Bill passed.

Resolved, That this Association appropriate the sum of one thousand dollars, or so much thereof as may be necessary, for the use of the Committee in the endeavor to have this measure passed by Congress.

Respectfully submitted,

U. O. B. WINGATE, M.D., Chairman of Committee.

Dr. Harris of New York—I move that the report be accepted and the resolutions contained therein be referred to the Business Committee, Seconded.

Dr. Bulkley of New York—I desire to say that we have no meeting of the Business Committee tomorrow, and I would suggest that the motion be so changed as to refer these resolutions to the Business Committee with power to act.

Dr. Harris—I accept the suggestion.

Dr. J. N. McCormack of Bowling Green, Ky.—I would like to move to amend the original motion by adopting the resolutions as presented by the Committee instead of referring them to the Business Committee, because they have been well formulated by the Committee, and I think we are ready to adopt them.

I therefore move that the report be received, the resolutions as read adopted, and the Committee continued. Seconded.

Dr. I. N. Love of St. Louis, Mo.—I would move that the motion be so changed as to strike out the words which give the Business Committee power to act, and report back to the Association next year. Seconded.

Dr. John B. Hamilton of Chicago—Is that motion debatable? The President—Yes, sir.

Dr. Hamilton—Such action will simply defer this matter for one year. This Association then will be powerless to make any recommendation to Congress in regard to legislative matters for another twelve months. This Committee has been seven years in preparing this Bill and the resolutions. They are the outcome of the growth of public sentiment in respect to this question. Why then should we refer this report with the resolutions to a committee who have really no business with the subject? The Business Committee did not consider it. The Business Committee is not capable of considering so important a matter in a short time which has required this Committee years of thought and study. The State Medicine Section, a Section organized by the Health Officers in general of the States of this Union, comprises a body of men who are capable of thoroughly considering this question and they have done so. Why then should the report be postponed for another year without action when seven years have already been devoted to it. (Applause.)

The President—I will read the final resolution in regard to this report, and then it will probably solve the trouble. (Read the resolution.)

Dr. D. W. Graham of Chicago—I rise to a point of order.

The President—Please state it.

Dr. Graham—According to the Constitution and By-Laws of this Association, all appropriations of money must be referred to the Board of Trustees.

The President—The point is well made.

The President—Dr. Love moves to strike out the words "to act."

Dr. Love—I will withdraw my motion. In discussing this matter, I desire to draw the attention of the members to the fact that this Committee has been continued from year to year at the expense of the Association. The appropriation of money is contemplated in the consideration of this matter, and it does seem to me that it should be referred to the Board of Trustees who handle the money and are financially responsible. That point should be kept in mind, and I only make the point in discussing the resolution as presented by Dr. Harris.

Dr. W. T. Bishop of Pennsylvania—As this is clearly in conflict with the regulations of the Association, I move that that part of the report referring to the appropriation of \$1000 be omitted. I think the Secretary of the Business Committee is entirely off in his assumption and presumption in claiming entirely too much for that Committee. I do not think the Association, when it created this Committee, intended to turn over its whole business to a body of a dozen or two men. It was intended that this Committee should consider new resolu-

tions, and not that reports of Committees like this shall be referred to it. I raise this point against it and the motions are out of order. (Applause.)

Dr. D. W. Graham of Chicago—Mr. President, I again raise the point of order, that all appropriations of money must be referred to the Board of Trustees. I therefore move, as an amendment, that the report with the resolutions be adopted, except the provision calling for an appropriation of \$1000, and that this amount or so much thereof, as may be necessary, be referred to the Board of Trustees with power to act. Seconded.

The President put the motion as amended by Dr. Graham, which was carried.

The President—We will now listen to the report of the Committee on Nominations.

The report was read by the Chairman, Dr. H. O. Walker of Detroit, as follows:

DENVER, COLO., June 8, 1898.

Mr. President and Gentlemen of the Association.

The Committee on Nominations beg leave to present the following report:

OFFICERS.

President—Dr. Joseph M. Mathews, Louisville, Ky.

First Vice-President—Dr. W. W. Keen, Philadelphia, Pa.

Second Vice-President—Dr. J. W. Graham, Denver, Colo.

Third Vice-President—Dr. H. A. West, Galveston, Texas.

Fourth Vice-President—Dr. J. E. Minney, Topeka, Kan.

Treasurer—Dr. Henry P. Newman, Chicago, Ill.

Librarian—Dr. George W. Webster, Chicago, Ill.

TRUSTEES.

Dr. Alonzo Garcelon, Lewiston, Maine.

Dr. T. J. Happel, Trenton, Tenn.

Dr. I. N. Love, St. Louis, Mo.

To fill vacancy Dr. H. L. E. Johnson, Washington, D. C.

MEMBERS OF THE JUDICIAL COUNCIL.

Dr. S. Bailey, Mt. Ayr, Iowa.

Dr. D. R. Brower, Chicago, Ill.

Dr. N. S. Davis, Chicago, Ill.

Dr. H. D. Didama, Syracuse, N. Y.

Dr. D. Mason, Spokane Falls, Wash.

Dr. F. T. Rogers, Providence, R. I.

Dr. Milo B. Ward, Kansas City, Mo.

To fill vacancy, Dr. W. S. Jones, New Jersey.

ANNUAL ORATIONS.

Medicine—Dr. J. C. Wilson, Philadelphia, Pa.

Surgery—Dr. Floyd W. McRae, Atlanta, Ga.

State Medicine—Dr. Daniel R. Brower, Chicago, Ill.

Next place of meeting, Columbus, Ohio. Time, first Tuesday in June, 1899.

Chairman of Committee of Arrangements, Dr. Starling Loving, Columbus, Ohio. Assistant Secretary, Dr. E. W. Woodruff, Columbus, Ohio.

The following communication was received from the Board of Trustees:

The Board of Trustees hereby recommend that hereafter the local Committee shall provide free of expense to the Association, first, a hall for the general sessions; second, halls for Sections; third, rooms for committees; fourth, room for post-office and force thereof; fifth, room for registration and force thereof, and the Committee shall have the proceeds of the exhibition hall, and that hereafter this arrangement shall be agreed to by the representative of the local Committee before agreeing to a place of meeting for the Association meeting.

This communication was adopted unanimously by the Committee before selecting a place of meeting.

[Signed] H. O. WALKER, *Chairman.*

E. D. FERGUSON, *Secretary.*

Dr. X. C. Scott—I move that the report be adopted. Seconded and carried.

The President—We will now listen to a report from the Business Committee.

The Secretary of the Business Committee made the following report:

REPORT OF THE BUSINESS COMMITTEE. JUNE 9, 1898.

Your Committee would report that it has had fourteen matters referred to it by the Association, which were all fully considered by sub-committees and the Committee at large, in a very full meeting lasting several hours, and upon the matters would report as follows:

1. *President's address.*—While the Committee is fully in sympathy with the recommendations of the President as to the admission of members to the Association under the conditions mentioned, under the existing laws of the Association the Committee does not feel competent to recommend its adoption. Adopted.

2. *Report on the Rush Monument Committee's Report.*—The Business Committee commends the Committee for its efficient work in a noble cause, and expresses the hope that it may soon fully accomplish the purpose for which it was appointed.

The Business Committee approves of the nomination of H. D. Holton, M.D., of Vermont, for the office of treasurer, and recommends his election. Adopted.

3. *Rush Monument Committee.*—The Business Committee desires to report that Dr. Gihon, the Chairman, has been misinformed as to the payment of traveling expenses of the Business Committees. They receive no pay and do not ask any, and we recommend that the traveling expenses of the Rush Monument Committee be not paid. We do recommend that expenses of postage and stationery and other absolutely necessary expenses be paid.

The Business Committee recommend the acceptance of Dr. Gihon's resolution, and that the Permanent Secretary be instructed to communicate with the State and Territorial Medical Societies, asking them to nominate representative members of the Rush Monument Committee. Adopted.

4. *Treasurer's report.*—The Committee would report that so far as they can learn the report is entirely satisfactory, and the Committee would congratulate the Association on the most excellent state of its finances. As the Treasurer's accounts are under the control of the Trustees and his accounts audited by them, the Committee did not attempt any investigation or examination of vouchers. Adopted.

5. *Dr. Reynolds' resolution in regard to the Association of Medical Colleges.*—The representative to the Southern Association of Medical Colleges, representing fourteen Colleges, appeared before the Committee and assented to the action. The Committee, therefore, recommends the adoption of the resolution of Dr. Reynolds. Adopted.

6. *Dr. Lautenbach's resolution in regard to school books.*—After discussion the Committee adopted the following resolution: 1. That whereas the AMERICAN MEDICAL ASSOCIATION sustains no such relationship to publishing houses or boards of education as would enable it to bring such text-books under the supervision of any Committee of the Association, and therefore it is powerless to create a Committee that could do this work as contemplated by the resolution mentioned. And, 2, That the work contemplated by the resolution would involve much time and labor and the selection of men peculiarly fitted to perform the task in a credible and satisfactory manner, whose services could not be secured without adequate compensation, for which there is no provision. Your Committee, therefore, declare the purpose of this resolution to be both without the province of the AMERICAN MEDICAL ASSOCIATION and unpractical.

Association voted to concur.

7. *Dr. Hare's resolution of amity.*—While the Business Committee is in full sympathy with and endorses the idea conveyed in the proposed resolution, it feels that it involves questions which do not properly come within the province of the Committee to decide, but belong to the Association at large. It would, therefore, refer back the resolutions to the Association, with the accompanying proof that identical resolutions were passed by a very large majority at the Baltimore meeting, but before the vote could be announced the matter was laid over for a year, as involving a change in the Constitution. Although notice was then given that it would be brought up the following year, as an amendment to the Constitution and By-laws, such notice was for some reason omitted from the printed program, and so the matter was not brought up.

Affidavit of Mr. Wm. Whitford, official stenographic reporter: "A resolution identical with that offered by Dr. Hare this morning, June 8, was passed at the Baltimore meeting. Before the vote could be announced the matter was laid over for a year, as involving a change in the Constitution."

WHEREAS, In times past circumstances have occurred which have deprived the Association of the presence and co-operation of many members of the profession of high standing, who have contributed much to the advance of medicine and surgery; therefore, be it

Resolved, That this Association invites the New York State Medical Society, the New York County Medical Society, the New York Academy of Medicine and other societies of good and regular standing to send delegates to this Association, who will be received and accredited upon proper credentials from the officers of such societies; and,

Resolved, That all acts or ordinances contrary in spirit or letter are hereby rescinded.

The President—Can the Secretary inform us whether the minutes of the Association will show any of these facts?

The Secretary—I have not the minutes of the previous meetings of the Association with me.

Dr. H. A. Hare of Philadelphia—Mr. President, I have been asked why I offered the resolutions, and—

The President—As soon as a motion is made to receive the report, the Association will hear you, Dr. Hare.

Dr. Hare—I move, Mr. President, that the report of the Business Committee on the resolutions offered by me be received, as this has to be done before the Association votes on it. Seconded.

Dr. W. P. Munn of Denver—I rise to a point of order.

The President—Please state your point of order.

Dr. Munn—Any resolution or resolutions involving questions of ethics, according to our Constitution, must be referred to the Judicial Council. It was an error in the first place to have referred these resolutions to the Business Committee, and they should now be referred to the Judicial Council.

The motion of Dr. Hare was put and carried.

The President—The Association will do Dr. Hare the courtesy of listening to his explanation in regard to this matter,

Dr. Hare—Mr. President, I have been asked why I offered those resolutions yesterday, and with the permission of the Association I would like to explain the reasons therefor. It is unknown to many members of the Association that at the present time there exists in New York State two sets of medical bodies, two State medical societies, two county medical societies, one of the State and one of the county medical societies have a right in this Association by the rules of this body, and they possess that right at the present time by inheritance or heredity. The other county society, a much younger organization, but nevertheless a much more powerful one, both in numbers and in the large amount of scientific work which is contributed each year, has not been admitted to this Association. It is a fact that these two organizations have not adopted in their constitution and by-laws a rigid code of ethics to govern the entire body and which brings each individual member under the care of their censors. Each member in these societies is supposed to do what he believes is right, and not what he believes is wrong. This association, the Society of the County of New York, numbers about thirteen hundred members, while the New York County Association numbers about nine hundred members. It is with the object of admitting, under certain restrictions, the thirteen hundred members of the County Society to our meetings that my resolution was offered. I would not counsel for one moment that that those who consult with irregular practitioners should be admitted to this body with equal rights with ourselves. I desire that every man who comes from the New York County Society or the New York State Medical Society shall sign our code of ethics (applause), and, sir, in the resolutions you will notice that the Judicial Council is empowered to state what society shall come in, so there is no danger of this Association being snowed under by irregular societies or by irregular practitioners. It is simply my wish that the members of this prominent and scientific society, men who are prominent because of their scientific ability, who may not agree on minor points regarding the code of ethics, should have the privileges of the AMERICAN MEDICAL ASSOCIATION.

We have heard a great deal within the last few days about a united country and a united profession. Only a night or two ago the Toastmaster at the joint dinner proposed the toast, "Is There a North? Is There a South?" And our honored President, whom we have elected today, rose to his feet and in the words which all Kentuckians say so well told us there was no North and there was no South; that the different sections of this country were welded together. Is this AMERICAN MEDICAL ASSOCIATION, composed of scientific and enlightened men, going to keep up its petty quarrels because of the societies I have mentioned? There is no North, there is no South, and there is but one AMERICAN MEDICAL ASSOCIATION; there is but one medical profession in America, and there is no irregular medical profession in this country. It is for these reasons that I offered the resolutions yesterday.

I now move, Mr. President, the previous question, and I ask that the roll be called and the ayes and nays be recorded on the previous question and the original resolution, and I would remind the convention that only delegates can vote.

Dr. X. C. Scott of Cleveland, Ohio—I desire, gentlemen, to reply to the speech of Dr. Hare and set forth the facts, as well as the true history of this matter.

The President—In a spirit of fairness, in order to have this matter settled (and I understood Dr. Hare to say that he

wanted the matter settled), I extended him the courtesy of the floor, and now he moves the previous question. Is this letting the matter come before the Association in the proper way? I would not have heard Dr. Hare on this question did I not expect a fair and full statement of the other side of the case, because the point of order raised by Dr. Munn was well taken. I will ask Dr. Hare whether he insists upon the previous question.

Dr. Hare—In view of what you have said, Mr. President, I desire temporarily to withdraw my motion until Dr. Scott has been heard.

Dr. E. D. Ferguson of Troy, N. Y.—A word or two on this subject, Mr. President. The point is this: Dr. Hare has succeeded in presenting one side of the case. I am from the State of New York. I am Secretary of the New York State Medical Association, and before this question is closed I would like an opportunity to say a few words after Dr. Scott has spoken.

Dr. Scott—There is a history connected with this question. The New York State Medical Society is not a young society. It was formerly a constituent of this body; it sent its delegates to this body. But in 1881 it passed a resolution to consult with whom they pleased and decided that it would have no code. In 1882, at our meeting in St. Paul, its delegates presented themselves, but were refused admission by the Judicial Council. The matter then remained quiet until 1891, when some members of the New York State Medical Society came back and were admitted to membership on proper qualifications. And finally this matter was raised in Washington in 1891. In 1892 it was decided by the Judicial Council that they could not be admitted, but, upon the representations of the members of the New York State Medical Society who were present at the Detroit meeting, a committee was appointed by this Association to confer with a committee from the New York State Medical Society to see whether this matter could not be brought about. Now, what was the result of that commission we sent out? We were simply informed that a union could be brought about only by acceding to the terms of the former, and this action was reported at Milwaukee. This Association then passed a resolution to the effect that it would never consider this question in any other light. This matter does not come from the New York State Medical Society asking for admission upon proper qualifications, but from gentlemen entirely outside of that Society. I think it is time for us to consider a request when they present it, and any other plan would result in stultifying and making ourselves the laughing-stock of all communities. (Applause.)

Dr. I. N. Love of St. Louis—I desire simply to present this thought. I have studied the question carefully from the various standpoints, and I am satisfied that this Association desires to keep Dr. Scott in the Judicial Council. I am glad he is there, because he is the watch dog of this body. If I interpret the resolutions of Dr. Hare rightly, they permit many able and scientific men of the profession in New York County to enter this Association. They were in the minority, and they could do nothing, as their hands were tied. These resolutions of Dr. Hare permit them to enter this Association on the same terms individually as we do. Dr. Scott has made the point that members of the State and county societies have presented no request, and that it has been done by outside parties. How can they, in the name of heaven, when they can not get in here? (Laughter.) I think, Mr. Chairman, if the point is made that these gentlemen can individually join the Association by signing its rules and regulations and code of ethics the same as the rest of us do as individuals, I certainly would favor the suggestion of Dr. Hare.

Dr. C. Lester Hall of Kansas City, Mo.—I would like to ask if this is a delegated body?

The President—Yes, sir.

Dr. E. D. Ferguson—I will endeavor to be brief in my remarks, for Dr. Scott has practically covered the field. He has been accurate with the exception of two or three dates which are immaterial as to the essential question under discussion. I wish to state, however, a few things familiar to many of the delegates on the floor, but unfortunately are not familiar to a majority of the delegates and to the majority of the profession throughout the country. This is a very tender and very serious question. We of the New York State Medical Association, entitled to representation here, regret as much as Dr. Hare or any member of the profession in this country that all of the members of the medical profession in the State of New York are not entitled to representation in this body. But, Mr. Chairman, it is their own fault. They deliberately—and I will not go into a detailed history at this time—cut themselves off from this Association, and they were told by such action they were cutting themselves off. They said, "we do not care; the AMERICAN MEDICAL ASSOCIATION is only

a junketing affair and we are the scientific medical association of the State of New York; we do not want anything to do with them; they will come to us bye and bye." The AMERICAN MEDICAL ASSOCIATION, Mr. Chairman, was not as large an organization then as it is today. This was fifteen years ago. But the AMERICAN MEDICAL ASSOCIATION has grown, and it is now desirable for these men to come into the Association and participate in the transactions of this body and to read papers. As the Secretary of the New York State Medical Association since its organization, I have been cognizant of the wishes of men to do this thing, and I have been repeatedly asked if there was not some way by which these men would be entitled to the privileges of this floor. They have not as a body given at any time any sign that they wished to come back into full fellowship with this Association. The AMERICAN MEDICAL ASSOCIATION, under the Presidency of Dr. Marcy, appointed a committee to meet with a committee from the New York State Medical Society and a committee from the New York State Medical Association to see if this matter could not be arranged. The New York State Medical Society said it had no occasion to appoint any committee; yet in the face of all these facts the New York State Medical Society, the elder organization not the younger, one of the pioneer bodies, in fact the pioneer body in the organization of the AMERICAN MEDICAL ASSOCIATION, for Dr. N. S. Davis was then a member of the New York State Medical Society, in spite of these facts, they have rejected, in every possible way they could do officially, efforts to reinstate themselves in the AMERICAN MEDICAL ASSOCIATION. Now, we have here resolutions inviting these bodies to send delegates. These gentlemen are said to come here pure and holy because they can subscribe to our Code of Ethics. If they can do this the door is open for them, for they can join their local organizations in New York and come here as delegates. (Applause.) No worthy man will be refused membership in the organization who is entitled to representation here. We are not here fighting for our existence and against bodies entitled to representation in this Association. We feel that every member of the AMERICAN MEDICAL ASSOCIATION should stand by us, because at the expense of a good deal of time and labor and a great deal of trouble and mental affliction, we have stood by what we believed to be the cardinal principles of the organization of the AMERICAN MEDICAL ASSOCIATION. (Applause.)

Mr. Chairman, now, they say, these men can come here and be received as delegates. Delegates from what? Delegates from a body which has spat contumely upon us and has never withdrawn it. Are we to ask and beg the New York State Medical Society to come back into the fold of the AMERICAN MEDICAL ASSOCIATION? (Cries of "No! No!") Was there anything in any part of the Code of Ethics that put them out? No. It was their own voluntary act. It is absurd that an organization like this should ask men to become fellows who have by every official act they have committed said they wanted no fellowship with us. (Applause.)

Dr. W. P. Munn of Denver—Mr. Chairman and members of the Association, Colorado desires to take a little time outside of its entertainment to say a few words upon these resolutions. The resolutions offered by Dr. Hobart A. Hare of Philadelphia are the inoculated scalpel by which it is proposed to introduce the sepsis of commercialism into the AMERICAN MEDICAL ASSOCIATION. (Cheers and cries of "Good! Good!") (Here Dr. Hare interrupted the speaker and was informed by the President that Dr. Munn had the floor.)

Dr. Munn (resuming)—I had nothing to say while Dr. Hare held the floor. Dr. Hare is a delegate to this body from Pennsylvania. It is eight years now since I left my home in that State to come to Colorado. I know from many visits among the practitioners of Pennsylvania that today I can voice the sentiments of the profession there more accurately, more faithfully, more truthfully than Dr. Hare can before you today. (Applause.) These are the resolutions of Dr. Hare and they could not carry for one moment before the State Medical Society of Pennsylvania. There are members of the State Medical Society of Pennsylvania here and if I am wrong let the majority of them correct me. In this Western country we have had all we could do to uphold the Code of Ethics of the AMERICAN MEDICAL ASSOCIATION, but we have done it. We have had all we could do to keep out the dead rot of commercialism, and are we going to be trodden down by this derelict, dead, rotten society of New York which is continually sending—(Cries of "No!" mingled with hisses, the final words of the sentence being inaudible.)

Dr. Jackson of Philadelphia—I came here as a delegate from Philadelphia. I sincerely hope that this question will be decided once and for all. Let us understand what the question is. The question is, Shall the AMERICAN MEDICAL ASSOCIATION be a representative body, representative of the local

organizations of the profession throughout the country, or shall it consist of individual members attracted to the meeting who represent themselves? This is the question we have to decide, and I hope it will be decided now once and for all.

Dr. Hare—I simply wish to say, Mr. President, that I had no intention of making erroneous statements, if I did make them. In withdrawing my previous question temporarily, I did so as a matter of courtesy. I tried in my remarks to use no language which would be offensive to either side of the question; but I regret, sir, that language has since been used which I think is offensive. I want to say to this Association, that I am the last man in my State to do what has been referred to by Dr. Munn. We have in New York State a large body of practitioners who want to come back to this Association. Let them come to us; let them sign the Code of Ethics, and the thing which has been referred to with strong adjectives will have the life sapped out of it.

Dr. W. T. Bishop of Harrisburg, Pa.—Mr. President; I rise to a point of order.

The President—Please state it.

Dr. Bishop—If the resolution introduced by Dr. Hare is passed it will contravene the organic law of our Association. If we desire to admit these men, we must change the organic law so that we can admit them. But do not let us admit them and override the law. The organic law of this Association provides that of the several State and several county societies, there shall be but one State and one county society in each State and in each county. Now, then, because it does contravene the law the resolution is out of order, and there is no necessity of introducing these personal reflections. There is no necessity of introducing misstatements. I make the point of order, then, that this matter is in contravention to the organic law of the Association, and the whole matter is out of order.

(The Chair sustained the point of order amid laughter and applause.)

8. *Dr. Keen's resolution for the dissemination of scientific knowledge.*—After discussion this was recommended as follows: Your Committee, to whom was referred the resolution of Dr. Keen, relative to the appointment of a co-operative committee of five who should consider the desirability of formulating plans concerning experimental research, would respectfully report that inasmuch as the province of such committee is but to consider the desirability of formulating plans for such a purpose, we would, therefore, endorse the resolution and recommend the appointment of such a committee. Adopted.

9. *Dr. Gould's resolution as to medical libraries.*—After discussion these were recommended for adoption by the Association. Adopted.

10. The invitation from the Mayor of Chicago and others to hold the next meeting of the Association in that city, was referred to the Nominating Committee.

11. *Dr. Bailey's resolution in regard to the appointment of a new general secretary.*—After a full discussion it was decided that it was infeasible to attempt to put it in operation this year, and the following report of the same was sent to the Association: "While the Committee fully agree as to the desirability of having much more active secretary work done for the Association, and believe that the plan proposed would greatly increase the scope and usefulness of the Association, it is not prepared at the moment to recommend the adoption of the resolution. It is a matter of such very great importance that further consideration of the details involved is necessary, and as it may possibly involve a change in the Constitution and By-Laws, your Committee has decided to recommend that the matter lie over for one year, and hereby gives notice that it proposes such changes, if any are necessary, in the Constitution and By-Laws at the next annual meeting of the Association."

Dr. William Bailey of Louisville—This resolution came to me as representing the majority of the Business Committee. It was the wish of the Committee that I present this resolution in the interests of the Association from the floor. I wish to state before the Association that I was not actuated by any antagonism to our worthy Secretary, Dr. Atkinson. This is all I desire to say.

Dr. I. N. Love—Inasmuch as this pertains to the expenditure of money, I move that it be referred to the Board of Trustees. Carried.

Report as amended was accepted.

12. *Dr. Stone's communication in regard to a permanent badge for membership in the Association.*—Dr. Stone appeared before the Committee exhibiting the badges and a drawing of them, and explaining the desirability of the same. After discussion the following was adopted: "The Committee report in regard to the proposal of Dr. Stone in regard to a permanent

badge or button for members of the AMERICAN MEDICAL ASSOCIATION, that in their opinion such a badge, or any badge, for permanent use, would neither add to the dignity of the individual members nor increase the efficiency of the Association and would, therefore, recommend that Dr. Stone's proposal be not accepted."

Dr. D. S. Reynolds—I move to amend the report of the Business Committee to this effect:

Resolved, That the proposed official button presented by Dr. French Stone of Indiana be and it is hereby accepted and adopted as the permanent badge of the Association. Seconded.

Dr. L. Connor—I think the Code of Ethics prohibits dealing in patent instruments.

Dr. I. N. Love—It is desirable that we should have a permanent button that we can wear the year round. This button, as I understand it, is from the best men of Indiana and Kentucky and has been carefully considered by them. It is a beautiful and attractive button, and I think would settle the question favorably and it would then be available for all of us. It would go with our credentials, and I therefore would like to see it adopted.

The President—The point of order made by Dr. Connor is not well taken.

Dr. G. C. Savages—I do not think any action this Association can take would give more dignity or would tend to increase the membership more largely than the amendment offered by Dr. Reynolds. As a member of the Association, I would feel proud to wear this button.

The amendment of Dr. Reynolds was adopted.

13. *The communication from the Ohio State Medical Association in regard to a special committee on National Legislation.*—After discussion the Committee adopted the following recommendation to the Association: "The Committee would report that it does not see its way clear to the efficient working of such a Committee on National Legislation without considerable expenditure of the funds of the Association, and does not therefore recommend the appointment of such a Committee." The Association concurred in the report.

14. *Dr. Horner's plan for a Medical Relief Association.*—The Committee would report that the same matter was referred to them last year, and that they reported as follows: "The recommendation and resolutions were referred back to Dr. Horner as impracticable at the present time, but with the approval of the Committee as to the general plan." After further extended consideration of the subject your Committee do not see their way clear to recommending the adoption of the plan. Adopted.

Dr. Gihon moved that this action be reconsidered. Carried.

Dr. Gihon then moved that the matter be laid on the table. Carried.

Dr. Sanders asked what disposition had been made of the resolutions offered by him at a previous session. He said that it was desirable that the report be made early. He would like to have the voice of the Committee expressed as early as possible.

On motion of Dr. D. S. Reynolds, the resolutions were referred to the Business Committee with power to act.

Dr. J. B. Murphy of Chicago then delivered the Oration on Surgery. He selected for his subject, "Surgery of the Lung."

On motion, Dr. Murphy was extended a vote of thanks for his able and instructive address, after which the Association adjourned until 11 A.M. Friday.

(To be concluded.)

BOOK NOTICES.

Clinical Lectures on Diseases of the Heart and Aorta. By GEORGE WILLIAM BALFOUR, M.D., LL.D., F.R.C.P., F.R.S. Third Edition, pp. 479, 8vo, cloth. Edinburgh: Adam & Charles Black, 1898; A. C. McClurg & Co., Chicago.

Mr. Balfour has been so long and favorably known in this country as an author on diseases of circulation, especially for his observation and treatment of aneurysm and cardiac diseases that he needs no introduction in America. We may say, however, that this volume, the first edition of which was issued in 1875, has been entirely revised and rewritten and considerable new matter has been incorporated and there is no question but the new edition will be as favorably received as its predecessors.

International Clinics. A Quarterly of Clinical Lectures. Edited by JUDSON DALAND, M.D., Philadelphia; J. MITCHELL BRUCE, M.D., F.R.C.P. London; DAVID W. FINLAY, M.D., F.R.

C. P. Scotland, pp. 355. Philadelphia: J. B. Lippincott Company, 1898.

The records of cases can never become stale or useless even though the remarks made upon them at the time may become obsolete by the changes of time; for that reason the case records embodied in these series will always be useful and instructive and may be referred to years after the date of their publication.

For the practitioner who desires to keep pace with the existing practices of the times in all branches and be in touch with the current fads and improvements of medicine and surgery, he can accomplish his purpose in no better way than by the careful perusal of the volumes of this series.

Outlines of Practical Hygiene. By C. GILMAN CURRIER, M.D. Third Edition, revised and enlarged, 8vo, cloth, pp. 482. New York: E. B. Treat & Co., 1898.

This revised and enlarged edition incorporates the essentials of sanitary science of practical hygiene. It is largely used as a text book. This work is extremely well written and of great value to the sanitarian, civil engineer and practicing physician.

Report on Bubonic Plague. Being a report based upon observation on 939 cases of Bubonic Plague, treated at the Municipal Hospital for infectious diseases at Arthur Road, Bombay, from September 24, 1896, to February 28, 1897, by KHAN BAHADUR N. H. CHOSKY, Extra Assistant Health Officer Bombay Municipality, Bombay, printed at the "Times of India" Steam Press, 1897.

This contains the most complete report of the cases during the late Bubonic epidemic at Bombay that has appeared. Fifty-four autopsies were made of the cases, 47 by the members of the Austrian Plague Commission and the remainder by the hospital staff. Nearly one-half of the bound volume is occupied by clinical charts.

We referred to this in our editorial on p. 29 of the current volume.

Illustrated Skin Diseases. An Atlas and Text with special reference to Modern Diagnosis and the most Approved Methods of Treatment, by WILLIAM S. GOTTHEIL, M.D.

This work, three portfolios of which have been issued, will be issued in quarter portfolios, each containing 24 quarto papers, a text with numerous formulæ and four plates of cases from life, by a new photographic process.

The illustrations are accurate and numerous, and the plates are extremely life-like. We shall look for the succeeding portfolios with interest, and in the meantime compliment the author and the publisher on the splendid series so far presented.

The Purification of Public Water Supplies. By JOHN W. HILL, Consulting Engineer, etc., etc., 8vo., cl., pp. 304. New York: D. Van Nostrand Co., 1898.

This work is a continuation of a series of lectures and papers on the quality of public water supplies which the author has read before several scientific societies and in universities during the past five years, and presents briefly:

1. The facts and causes of pollution of sources of public water supplies.
2. The effect of this pollution on the typhoid fever rates of our larger cities.
3. Illustrates by few examples how typhoid rates have been reduced by the introduction of water from purer natural sources and by filtration of polluted water.

Data are given on the methods of construction and operation of sand filters with the cost of filter construction. In these days when health officers and sanitarians generally are deeply impressed with the importance and necessity of vigorous attack on the water pollution and the prevention of diseases arising from bad water, this work will be found of great value. The book is thorough and complete and may be depended upon by Health Officers generally and others interested, as presenting the latest established views on the subject.

MISCELLANY.

Boasting of No Use.—We observe with a great deal of pain, almost amounting to sorrow, that our great and good friend, the *Medical Record*, one of Wm. Wood and Company's publications, is inclined to amuse itself by the publication of incomplete and incorrect reports of the last annual meeting in advance of the other medical journals, and particularly in advance of the report by the *JOURNAL*. The *JOURNAL* in printing the reports of the Transactions of the ASSOCIATION must have them officially correct, consequently it can not take them from any person but the proper officers of the ASSOCIATION. If the example of the *Record* were followed, it would be quite easy to fill the *JOURNAL* with pages of half-edited and incorrect matter, largely taken from the lay press at the place of meeting. Reference to this subject was made necessary by the Paracelsian bombast of the *Record*, whose Spanish-like tendency to mislead its unfortunate constituents is matter for sincere regret.

THE RECENT MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

It is so well known that the *Medical Record* is always ahead of its contemporaries in printing the medical news of the day and reports of important meetings throughout the world, that it seems almost superfluous to remind our readers again of its pre-eminence in this respect. The report of the Denver meeting of the AMERICAN MEDICAL ASSOCIATION was given to our subscribers complete two weeks ago. Some other journals are still stringing it along in their columns, and it is almost pathetic to read the apology of the official journal of the Association in its issue of June 25th, for its neglect promptly to print the proceedings, even of the general sessions.—*Medical Record*, July 2.

Bacterial Pathogenesis of Biliary Lithiasis.—The *Presse Méd.* of May 21 contains a study of this subject describing experimental lithiasis produced by biliary infections, and the microbes found in human calculi. They are always the bacillus coli or Eberth's bacillus, the calculi result from a catarrhal and desquamating angiocholecystitis which they set up. The conditions that favor the ascension of the bacilli into the biliary passages are mechanical or due to alterations in the secretions, or both. These factors may be inherited, imparting a predisposition to infection, possibly favored by some congenital special disposition of the biliary passages.

Liver Abscess Due to Ascaris Lumbricoides.—Another case is reported from the Greifswald clinic, making the nineteenth on record. When the abscess was evacuated a lively worm was found in the contents. The extreme tension of the abscess seems to prove that the worm could not have entered it secondarily, as the contents would have been forced out through any hole large enough to admit it. As it primarily found its way into the liver it probably carried infectious germs with it which set up the abscess.—*Deutsche Med. Woch.*, May 19.

Cancer of the Thoracic Duct.—Troisier has observed three cases in which a cancer of the uterus, stomach or suprarenal was accompanied by inflammatory proliferation and cancerous vegetation nearly the whole length of the thoracic duct. Only one other case is on record (Weigert's). A left supraclavicular adenopathy was present in each case, to which he has already called attention as valuable in the diagnosis of cancers of the abdomen. The occlusion of the thoracic duct was not accompanied by any retention of chyle in the intestinal lymphatics, showing that the lymph must be carried over some collateral route.—*Presse Méd.*, May 21.

Official Advice for the Soldiers in Cuba.—Before embarking for Cuba, Lieut.-Col. Benjamin F. Pope, Chief Surgeon of the Fifth Army Corps, General Shafter commanding, issued a memorandum of instructions to the troops, with the view of protecting them from insanitary influences during the service before them in the Island of Cuba:

The Chief Surgeon issues the following memorandum of instructions to the soldiers of this command for the preserva-

tion of their health in the tropics: The body adapts itself readily to changes of climate. You do not require any special preparation for the climate of Cuba. You should meet the heat in the same way that you do in the summer season in the North. Avoid, therefore, the use of medicines that are recommended to protect the body against the action of climate. The danger in the tropics does not come from the direct action of the climate. The danger is due to the presence in some districts of the warm country of the microbes of certain diseases. There are no medicines that will protect us from these diseases. The chief measures for their prevention will be instituted by your commanding officer. Do not take quinin regularly when your health is good. Do not take purgatives when the bowels are regular. Drink boiled water when you can not get natural spring water. Stagnant surface water is especially dangerous. If possible drink water only at meal time. The fruits of the country are wholesome when eaten in season. Avoid unripe and unsound fruits. Peel all fruits before eating. Use as little alcoholic beverages as possible. The clothing should be light and loose. When wet from rain or sweat remove it for drying, and rub the body briskly with a towel. Bathe in running streams, once a day if possible. Keep the body clean. If exposed to draughts when perspiring freely put on some extra covers. Sleep with dry clothes. The health of the Command will depend, to a great extent, upon the strict observance of orders not to communicate with suspected people or places. All sickness should be reported at once to a medical officer.

Beware of the Manchinea Tree.—The following circular, prepared by Dr. J. T. Rothrock, Commissioner of Forestry, Department of Agriculture of the Commonwealth of Pennsylvania, has been published and distributed by direction of Hon. Daniel H. Hastings, Governor of the Commonwealth:



Branch and fruit of Manchinea tree.

SOLDIERS!

BEWARE OF THE MANCHINEAL TREE!!

It grows along the sea shore in Cuba, and the West India Islands generally.

It is from forty to fifty feet high, has oval, pointed, toothed, shining leaves, which are from three to four inches long.

When the fresh leaves are pulled off a drop of milky juice comes from the leaf stem.

The fruit is a yellowish green, fragrant, and somewhat resembles an apple in shape.

If bitten into it makes the mouth very sore for a time and may produce serious results.

After handling any part of the tree—root, leaves or fruit—rubbing the eyes may cause them to become seriously inflamed.

Mucous membranes (such as the red margin of the lips or eyes, or anus) are particularly subject to its poisonous effect.

It is said by many of the natives to cause poisonous effects even if the tree is not touched, but by simply being in its neighborhood.

Many persons are alleged to have been injured from being under the tree during a shower, when the drops of water fell upon them from the tree.

Some persons are more sensitive to the effect of this poison than others. In fact there are a few who are not affected by it at all, just as is the case with our poison oak or poison ivy, the chief difference being that the manchineal affects the mucous membranes, above alluded to, more than the skin proper, whereas the poison ivy affects the skin much more frequently than it does the mucous membranes.

Many persons of experience in the tropics assert that it is unwise to camp near this tree.

If poisoned by the manchineal, and beyond reach of your surgeon's help, the best thing to do is to wash the part affected freely with salt water.

It is sometimes called by the natives manzanilla (pronounced mau za-ne-ya).

Local Anesthesia in Operation.—In the *Annals of Surgery* for May, Lilienthal of New York reports observations made on the effect of cocain, eucaïn and nitrous oxid in the performance of operations rarely done without ether or chloroform narcosis, during the last three years. He considers eucaïn the best local anesthetic. Compared with cocain, solutions of greater strength are required, but eucaïn is far less poisonous and stronger solutions may be safely employed. He generally uses from 6 to 10 per cent. solutions and in over fifty cases has not noted a single instance of toxic symptoms. He finds that injection of five grains of the hydrochlorate in one sitting is usually sufficient for an operation of considerable magnitude, e. g., herniotomy, but he has used as much as nine grains. He finds the benumbing power of eucaïn is quite as certain as of cocain and has never seen prostration with cardiac failure which often follows cocain in smaller doses. Eucaïn has a very persistent effect and on the mucous membranes does not act quite so effectively as cocain on mere contact. On this account, in operations on tissues covered by mucous membrane, he usually applies a little cocain solution first and then injects the eucaïn. If the operation is to be a severe one, or prolonged, he gives the patient a small dose of morphin a quarter of an hour before, for the effect on the mind. He usually promises the patient to employ general narcosis if the patient finds that he is unable to bear the pain, but in no case has it been necessary so to do. While the skin is perfectly anesthetized, the tissues beneath it are not and section of muscle causes a dull pain not hard to bear, but section of tendon is not felt. In some operations the absence of the unconsciousness accompanying general narcosis makes the work easier, as in herniotomy where the rupture is small and easily reducible. The patient under local anesthetics can bring down the hernia by coughing or voluntary straining, while in general narcosis the surgeon would be obliged to wait for vomiting or some other reflex strain. Again, in tendon suture, voluntary motion supplies at once the physiologic test as to whether the ends have been correctly adjusted. He believes that in such operations as castration, colotomy, herniotomy by the Bassini and similar methods, cholecystotomy, drainage of empyema of the thorax, etc., local anesthetics should be first choice.

European Appetite for Drink.—Henry W. Fisher in the *New York Sunday Magazine*, June 12, states that each Dane, in the average, swallows twenty-seven quarts of strong liquor yearly. But the Swedes are contented with five quarts of alcohol, twelve quarts of beer and 0.4 quarts of wine each, every year. Each German, taking them all in all and without reference to the different races, consumes 117 quarts of beer, nearly six quarts of wine and a little over thirteen quarts of alcohol, or strong liquors, every year. But the French, at least, are a "sober people." Frenchmen drink but little beer,

only twenty-three quarts in the rural districts and but eleven quarts in Paris for each person per annum. But they each swallow 105 quarts of wine yearly. In the matter of strong liquors, they require twelve and three-fourths quarts each per annum, that is, they think they do and live up to that erroneous conviction. Austria-Hungary is generally rated as a wine-drinking country, but is better than its reputation in one respect at least. The Austrians and Hungarians each drink twenty two quarts of wine a year; to this they add forty-four quarts of beer and the same quantity of strong liquors as the Frenchman. England's consumption of liquors allows 145 quarts of beer, 1.8 quarts of wine and 8.5 quarts of liquor to each man per annum. The Belgians are tremendous beer drinkers. One hundred and seventy quarts is the average quantity consumed in Leopold's kingdom; but even then they are only boys compared with the festive Bavarian. The Bavarians each swallow on an average 237 quarts of beer every year. In Munich each man, woman and child consumes 570 quarts of beer per annum. The Frankforters wash down their Frankfurters with 430 quarts of beer each a year. The citizens of Nuremberg come next with 322 quarts, the Berliners follow with 160 quarts, the Viennese with 145 quarts, the men, women and children of Moscow with twenty-eight quarts.

Societies.

The following recent meetings are noted:

- California.*—Fresno County Medical Society, Fresno, June 7.
- Connecticut.*—Waterbury Medical Association, Waterbury, June 6.
- Delaware.*—State Medical Society, Wilmington, June 14.
- Florida.*—Duval County Medical Association, Jacksonville, June 7.
- Illinois.*—Rock River Valley Medical Association, Sterling, June 9; Vermilion County Medical Association, Danville, June 14.
- Iowa.*—Des Moines Valley Medical Association, Ottumwa, June 23; Iowa Central Medical Society, Marshalltown, June 15; Polk County Medical Society, Des Moines, June 7.
- Massachusetts.*—State Medical Society, Boston.
- Michigan.*—Calhoun County Medical Association, Marshall, June 7; Saginaw County Medical Association, Saginaw, June 10.
- Minnesota.*—Hennepin County Medical Society, Minneapolis, June 6.
- New Hampshire.*—Dover Medical Society, Dover, June 1; Manchester Medical Association, June 9.
- New Jersey.*—New Jersey Surgical Society, Newark, June 7; Warren County Medical Society, Belvidere, June 7.
- New Mexico.*—New Mexico Medical Society, Las Vegas, June 4.
- New York.*—Erie County Medical Society, Buffalo, June 14; Hornellsville Medical and Surgical Association, June 7; Syracuse Academy of Medicine, June 14.
- Pennsylvania.*—Easton Medical Society, June 9; Lebanon County Medical Society, Lebanon, June 14.
- Texas.*—Kaufman County Medical Society, Kaufman, June 6.
- Wisconsin.*—Kenosha County Medical Society, Kenosha, June 3; Rock County Medical Society, Janesville, June 3.

Philadelphia.

WAR REVENUE TAX.—It was rather strange that charitable institutions such as hospitals should be made to pay a part of the cost of war with Spain, but they are affected in the clause of the bill relating to inheritances and legacies, which provides that a tax of \$5 on the \$100 be applied to all legacies, exceeding the sum of \$10,000. Philadelphia has always been known far and wide for its generosity toward its charitable institutions, but if the predictions of Provost Harrison of the University of Pennsylvania come true, some of that revenue may be diverted to other channels. In a recent interview he expressed himself as follows: "Hereafter we will have to pay 10 per cent. on our larger legacies, \$10,000 on every \$100,000 bequest we receive, for the State already taxes us 5 per cent. in addition. For example, a bequest we have recently received from Mrs. John Field, of \$50,000, would have been reduced \$5000 if this new law had been operative when the bequest was

received. Such a heavy tax will have the effect of driving away large bequests. It will have a very deterrent influence upon people disposed to leave in their wills large sums for charitable purposes and it is a most unwise measure." How its baneful influence will be felt can be shown by reference to legacies left to two hospitals of this city. For instance, the Pennsylvania Hospital, one of the oldest charitable institutions in the United States, since 1894 has received bequests to the amount of \$110,000 and under the regulation of the new war measure over \$10,000 would have to be paid back into the lap of the United States. Should it not be disappointed there will be at least \$300,000 left to that institution during the current year. The hospital of the University of Pennsylvania will also have some of its revenue cut off. It is shown by proper reports that this hospital since 1893 has received bequests aggregating \$172,682.67, and in two years would have been forced to pay \$11,000 to the government to support this war. It does seem that at least the charitable institutions might have been left untaxed.

NORDAU OR LOMBRISO MIGHT STUDY A PENNSYLVANIA PROFESSOR.—Those physicians of Philadelphia and the people at large who are acquainted with the recent acts of Prof. George H. Stephens are astounded with the awful impulse which prompted him to destroy by fire the idol of Lafayette College, Pardee Hall. Educated for the ministry by the subscription of a church, it was thought that his course in Princeton College would render to the world and to them a man of great attainments. According to report, however, he forgot his benefactors and accepted a position at Lafayette College as Adjunct Professor of Moral Philosophy. After a residence there of about three years it is reported that his place was declared vacant, and he is quoted as saying that some insane impulse carried him onward to take revenge upon that institution, beginning first by acts of vandalism, such as damaging the chapel organ, hiding the hymn books and finally culminating in the graver crime of burning Pardee Hall.

IMPORTANT FACTOR IN A TRIAL.—Peter E. Smith, a member of the Select Council, stands charged by Walter N. Stevenson, a member of the Common Council, with offering a bribe to the latter member, to control his influence in voting against the celebrated "Loan Bill," with which readers of the JOURNAL are already familiar. Smith, however, seems to have been born under a lucky star, for although the case has been called a number of times it has as often been continued. When the day came for the trial Smith's family physician, Dr. William Stiles, gave it as his opinion that the former's physical condition would not permit him to be tried at this time, as he was suffering from gout, heart and kidney trouble. Judge Penny-packer granted a continuance.

DEATHS IN PHILADELPHIA.—For the week ending June 25 there have been reported to the Board of Health 387 deaths. Of these 152 have been in children under 5 years of age. This is a decrease of 112 over the previous week and 41 less than for the same period of last year. The causes of death were: Consumption, 34; cholera infantum, 34; inflammation of brain, 25; inflammation of stomach and bowels, 20; heart disease, 20; inflammation of lungs, 18; old age, 14; marasmus, 13; nephritis, 14; convulsions, 11. In addition, for the same period, there were 63 cases of diphtheria, 23 of scarlet fever and 91 of typhoid fever, from all of which there were 20 deaths.

HOT DAY.—June 25 was marked as one of the hot days in Philadelphia. At 5 A.M. the temperature was as low as 68 degrees, but at 8 A.M. had risen to 75 degrees, the humidity at that time being 78 degrees, making the air stifling. Later in the day the mercury gradually rose until the temperature was 94 degrees about 4 P.M. The excessive heat and humidity combined produced twelve prostrations during the twenty-four hours.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from June 25 to July 1, 1898.

Acting Asst. Surgeon Eugene H. Hartnett, U. S. A., ordered from Washington, D. C., to duty in U. S. general hospital, Ft. Monroe, Va.
Acting Asst. Surgeon Henry S. Greenleaf, U. S. A., ordered to report in person to the Major General commanding the Army for duty.
Acting Asst. Surgeon S. Melville Waterhouse, U. S. A., at general hospital, Ft. Myer, Va., ordered to accompany artillery battalion from Washington Bks., D. C., to San Francisco, Cal.
Acting Asst. Surgeon Thomas A. Smith, U. S. A., is relieved from duty on U. S. hospital ship "Relief," New York City, N. Y., and ordered to Ft. Slocum, N. Y., for duty.
First Lieut. Franklin M. Kemp, Asst. Surgeon, to San Francisco, Cal., for duty with expedition to the Philippine Islands.
Acting Asst. Surgeon J. W. Donnelly, U. S. A.; Acting Asst. Surgeon Stephen M. Long, U. S. A., and Acting Asst. Surgeon D. T. Lainé, U. S. A., ordered from Washington, D. C., to Tampa, Fla.
Acting Asst. Surgeon R. Fleming Jones, U. S. A., is relieved from duty at Ft. Bliss, Texas, and ordered to Tampa, Fla.
Capt. Charles E. B. Flagg, Asst. Surgeon, is ordered from Columbus Bks., Ohio, to Ft. McPherson, Ga., for duty in the general hospital.
Major W. Fitzhugh Carter, Surgeon, U. S. A., is ordered from Nashville, Tenn., to Tampa, Fla., for duty with Fourth Army Corps.
Acting Asst. Surgeon Edwin P. Hayward, U. S. A., is ordered from Kansas City, Mo., to Letter general hospital, Chickamauga, Ga.
Acting Asst. Surgeon C. F. de Wey, U. S. A., ordered from Louisville, Ky., to San Francisco, Cal., for duty with Philippine expedition.

CHANGE OF ADDRESS.

Angus, D. A., from 1228 to 1240 Milwaukee Av., Chicago.
Beckman, O. H., from Tyrvis, Finland, to Astoria, Ore.
Bell, J. W., from 1600 Fourth Av. to 2301 S. Bryant, Minneapolis, Minn.
Bellamy, R., from New York, N. Y., to Ocean House, Newport, R. I.
Berry B., from 3400 Morgan to 3142 Loust St., St. Louis, Mo.
Christofferson, A. L., from Lind Center to Oshkosh, Wis.
Clayton, C. F., from 4800 N. Clark to 600 W. 59th St., Chicago.
Cole, F. M., from Ida Grove to Hull, Mich.
Cutter, J. B., from Challes, Idaho, to California Hotel, San Francisco.
Edwards, Mrs. C., from Detroit to Cass City, Mich.
Fisher, G. C., from Ann Arbor, Mich., to 2601 Calumet Av. Chicago.
Hinsdale, G., from Philadelphia, Pa., to Bethlehem, N. H.
Howard, W. E., from Kasber to Ohio, Ill.
Hughes, J. D., from Sonneberg to Cöburg, Germany.
Johnson, T. T., from Starbuck to Walla Walla, Wash.
Latta, M. J., from Equitable Bldg. to Good Blk., Des Moines, Iowa.
Love, L. F., from 600 S. 45th St. to 4107 Chester Av., Philadelphia, Pa.
McCassidy, J. H., from 126 S. Ludlow to 5th and Wilkinson Sts., Dayton, Ohio.
Malone, L. A., from 119 N. New Jersey St. to 6 Stewart Pl., Indianapolis.
Mason, W. S., from Philadelphia to Williamstown, Pa.
Miles, W., from Chicago to Littleton, Ill.
Moore, J. W., from 1 W. 72d to 45 W. 71st St., New York, N. Y.
Nichols, C. L., from 1923 Wirt St. to Karback Blk., Omaha, Neb.
Noyes, A. A., from 1205 20 Avenue N. to 1910 Hawthorn Av., Minneapolis.
O'Leary, A. P., from Ann Arbor, Mich., to The Dalles, Ore.
Pampel, B. L., from Wymore to Douglas Co. Hospt., Omaha, Neb.
Riesman, D., from 801 N. 6th to 326 S. 16th St., Philadelphia, Pa.
Rogers, A. S., from Ann Arbor to Vassar, Mich.
Rogers, W. W., from Jones Prairie to Carlton, Texas.
Schick, G., from Chicago to "The Southern Hotel," Chicago.
Sheffield, H. B., from 691 Prospect Av. to 331 E. 50th St., New York.
Shoemaker, S. S., from Reiffsburg, Ind., to Eureka Springs, Ark.
Taylor, P. K., from 211 W. 139th St. New York, to Klingston, R. I.
Toan, J. W., from Portland to Otsego, Mich.
Van der Veen, C., from Ann Arbor to 143 Fountain St., Grand Rapids.
Van Duyen, A. C., from 52 Cottage Grove Av. to 2950 Indiana Av., Chicago.
Wildor, H. R., from Swanton to 25 N. Union St., Burlington, Vt.
Wisman, L. J., from Ann Arbor to Frontier, Mich.
Woodward, J. H., from New York, N. Y., to Burlington, Vt.
Wyland, G. V., from Lyndon Ill., to Marcellus, Mich.

LETTERS RECEIVED.

Alma Sanitarium Co., Alma, Mich.; Allport, Frank, Chicago; Andrews, C. F., Bison, Tenn.
Bausch & Lomb Optical Co., Rochester, N. Y.; Becker, B. A., New Vienna, Iowa; Bell, F. A., Dallas, Texas; Blackburn, R. S., Breeds, Ill.; Brown, A. P., Elberfeld, Ind.; Bryan, Geo. J., Syracuse, N. Y.; Carl, I. D., Boston, Mass.; Carter, Geo. G., New London, Mo.; Carroll, C. T., Jr., Marvin, Tenn.; Case, I. S., Dexter, Mo.; Cook, G. F., Oxford, Ohio; Corr, B. M., Cedar Springs, Mich.; Cohn, E., St. Jacob, Ill.
Doston, B. R., Blakely, Ga.
Elliott, H. G., New York, N. Y.; Evans, E. E., Sumner, Mo.
Farbenfabriken of Elberfeld Co., New York, N. Y.
Gardner, S. M., Iowa City, Iowa.
Hargrove, P. M., Kidder, Mo.; Hawkes, W. H., New York, N. Y.; Haywood, Geo. M., Rochester, N. Y.; Hektoen, L., Chicago; Henley, S., Ann Arbor, Mich.; Hooper, E. W., La Harpe, Kas.; Hudson, A. S., Boston, Mass.; Hummel Advertising Agency, A. C., New York, N. Y.
Jelks, J. T., Hot Springs, Ark.; Jonas, A. F., Omaha, Neb.
Karger, S., Berlin, Germany; Kempson & Co., J. F., New York, N. Y.; Knight, E., Hellen, Cragmore, N. Y.
Le Fevre, Egbert, New York, N. Y.; Lehn & Fink, New York, N. Y.
Malsbury, J. O., Peru, Ind.; Mansfield, C. D., Lexington, Ky.; Marden, J. K., Ann Arbor, Mich.; Marks, A. A., New York, N. Y.; Merrick, M. B., Passaic, N. J.; Marrs, W. H., Louisville, Ky.; Mariani & Co., New York, N. Y.; Meserve, A. K. P., Portland, Me.; Mattison, J. B., Brooklyn, N. Y.; Morgan, R. G., Indianapolis, Ind.
Nelson, D. G., Chattanooga, Tenn.; Newman, A. L., Paterson, N. J.; Norwood, F. H., Carrington, Mo.
Phelps, R. M., Rochester, Minn.; Powell, E. H., Omaha, Neb.; Purdon, C., Coldwater, Kas.
Richardson, B., London, England; Robertson, Jno., Cincinnati, Ohio; Robinson, J. L., Monroe, Iowa; Rockwood, E. W., Iowa City, Iowa; Russell, L. B., Hoopeston, Ill.
Savage, G. C., Nashville, Tenn.; Scholtes, F. W., Reade's Landing, Minn.; Senn, N. (2), Washington, D. C.; Smith, F. C., Rowan, Iowa; Stauffer, W. H., St. Louis, Mo.; Stearns, F. & Co., Detroit, Mich.
Taylor, M. B., Trion, Tenn.; Troy Chemical Co., Troy, N. Y.
Walker, F. E., Bigelow, Minn.; Warren, W. M., Detroit, Mich.; Waterhouse Pharmacy Co., St. Louis, Mo.; Watts, Andrew J., Seymour, Mo.; Whitacre, H. J., Cincinnati, Ohio; Woodruff, E. W., Columbia, Ohio.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, JULY 16, 1898.

No. 3.

ORIGINAL ARTICLES.

THE DIFFERENTIATION OF THE CARDIAC INCOMPETENCY OF INTRINSIC HEART DISEASE AND OF CHRONIC NEPHRITIS.

Presented to the Section on the Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY FRANK BILLINGS, M.D.
CHICAGO, ILL.

The recognition of an incompetent heart is usually not difficult. The dyspnea of exertion, the sense of post-sternal weight and constriction of the chest, the cough of exertion, and upon assuming the recumbent position, the enlarged liver with tenderness and often with pain or a feeling of weight in the epigastrium, the indigestion of portal congestion, the usually scant urine, the edema of the feet, or all of the above named conditions much aggravated until constant dyspnea with orthopnea, general anasarca, excessive physical weakness, marked palor, or palor and cyanosis give unmistakable evidence of cardiac weakness. The local signs of valvular disease may be absent or present. Signs of cardiac enlargement with dilatation of the chambers of the heart are present and may usually be recognized.

These phenomena are usually present in varying degrees of severity, in an incompetent heart. When due to intrinsic heart disease a valvular lesion or some other cause of dilatation of the heart and weakness of the heart muscle is present the chronic nephritis, cardio-vascular changes occur, and especially in the form classed as diffuse interstitial nephritis. In the latter stages especially of chronic nephritis the heart may become so dilated that it becomes incompetent, and the symptoms and signs enumerated appear. The urinary findings, the symptoms of uremia and other characteristic signs may plainly indicate the primary nephritis. In many cases, however, the differentiation can not be easily made, and in a few examples the diagnosis may remain in doubt until the side light of the dead house clears up the darkness. It is with these doubtful cases that this brief paper has to deal.

The following case will serve as a text and more clearly illustrate the subject.

Mr. W. McF.; aged 50; American; lawyer; married. Came to me on Sept. 12, 1894, and presented the following history:

Father died at 76 years; mother living, aged 72 years, and in good health. One brother died of acute pneumonitis. The father suffered from a tremulousness of the right arm, and the patient has had from birth a tremulousness of the right upper extremity, which is intensified by the presence of strangers, or by an attempt on the part of the patient to suppress it. The intentional trembling extends to the left arm also, during excitement or other emotion.

The patient has never had a venereal disease. He has never been addicted to the use of alcoholic beverages or tobacco in any form. He has always been well; has always had much to

do in his profession, and has worried and fretted much about his affairs. He has always eaten heartily of all kinds of food. He has not taken physical exercise as a recreation.

For a month he has noticed shortness of breath after exercise, and an unusual throbbing of the heart after exercise, after a hearty meal and when excited. The strength has been noticeably less, and recently the ankles have been swollen in the evening. The tremulousness of the hands has become worse. Vision is less acute. The mind becomes easily tired. He dreads the presence of strangers, and fears to go into court with his cases. He has headache, with a sense of pressure about the head and the nucha.

Examination.—Height, six feet two inches; weight 250 pounds; face pale and eyes puffy; tongue large, pale and covered with a white fur. Muscles flabby; upper extremities tremulous, and this was increased by the excitement attendant upon the examination. Abdomen large, prominent and flaccid. Liver area apparently normal; spleen not palpable. Lungs normal, with a few moist rales over posterior dependent portions. Heart area difficult to ascertain because of overlying lung. Apex beat not palpable. Heart sounds pure but weak. No endocardial murmur. Heart action irregular; intermittent pulse, 96 per minute. No accentuation of second sound over pulmonary or aortic valves. Radial pulse, soft, moderate in size, compressible and intermittent. Moderate edema of both legs. A single specimen of urine showed, sp. gr. 1025. acid reaction, brownish color, small amount of albumin, no sugar, no bile. A few hyaline and granular casts were found in the deposit of the centrifuge.

He was kept quiet at his home upon a simple diet excluding meats. A more extended examination revealed diminution of the urine of twenty-four hours, with a relatively low specific gravity; lessened total solids, and one-half the normal urea. Albumin was constantly present with granular and hyaline casts. The heart presented the physical findings enumerated. The sphygmograph gave a poor and unsatisfactory tracing, because of the difficulty of applying the instrument to a wrist which was in a constant intentional tremor, and also because the heavy muscles and tendons covered the radial artery so fully that the pressure necessary to secure a result gave a tracing of no value. *Streyningæ sulphas*, infusion digitalis and hydrogogue cathartics were used from the beginning. At first there was apparent improvement. The incompetent heart beat more regularly and forcibly, and the symptoms referable to a weak heart disappeared or became better. The urine increased in amount, but the total solids and the urea remained deficient, the specific gravity low, and the albumin and casts were always present. He resumed his work in spite of protests to the contrary during January. From the beginning of the return to work he gradually relapsed into the condition which he first presented. During February, March and April he became gradually worse, and by the beginning of May he was practically water-logged. There was general anasarca, orthopnea, cyanosis, cough, a weak wavering pulse, feeble heart action without perceptible murmurs, accentuation of the aortic second sound, diminished bulk of urine, containing much albumin and many hyaline granular and epithelial casts, with less than one-half the normal amount of urea. There was sleeplessness but no headache, no nausea

and no disturbance of vision, with normal fundus. The general appearance was that of a chronic Bright's disease, with the pallor, puffy face and heavy expression so characteristic of the disease. On April 20 he complained of pain in the left side of the neck, and within twenty-four hours the left jugular vein, extending from the angle of the jaw to the clavicle, was felt as a cord-like body, which was tender to the touch. This was diagnosed a thrombus, and the diagnosis was verified by an extension of the thrombus into the left axillary and brachial veins. This complication was attended with much edema of the left upper extremity, which continued for about two weeks. Absorption of the thrombus seemed to occur and the circulation was fully restored within a month. During the time enumerated the patient was kept quiet in bed as much of the time as he would submit to. The diet was exclusively vegetable, with some milk. The medication consisted of strychninæ sulph. gr. 1/30, every four to six hours. Digitalis in infusion or tincture, off and on, Basham's mixture of iron in ʒss. every six hours, and hydrogogue cathartics, elaterin,—gr. 1/20 to gr. 1/10, every six hours, or the salines in doses sufficient to produce free, watery stools several times each day.

From the time of the absorption of the thrombus of the left external jugular, axillary and brachial veins the patient commenced to improve, and by June 15 he was entirely free from dropsy, the heart stronger, beat almost regularly, and the patient felt able to go about. The urine still contained albumin and many hyaline and granular casts, and a deficient amount of total solids and urea.

He was placed upon a diet for nephritis, excluding dark meats, and the iron and strychnia were continued. He spent the summer at the sea-shore. Upon his return home in September, 1895, his weight was 220 pounds; his color was good, and he felt perfectly well. An examination showed a steady heart action, with a good strong and soft pulse of 84 per minute. The heart presented no abnormal signs. The urine of twenty-four hours was as follows: quantity 56 ozs., sp. gr. 1022; reaction, acid; color, amber; urea 2 per cent. or 537 grains in twenty-four hours. No bile, no sugar, no albumin and no casts.

He was cautioned not to eat much meat, and to not fatigue himself by work.

He returned to his professional work, which was very exacting. He walked, for recreation and exercise, five or more miles per day. During 1896 he remained well. I saw him several times and examined the urine every month. Unusual professional care worried him much during the winter of 1896-7. In March, 1897, he again complained of the dyspnea of exertion, and the heart was not quite regular. There was a trace of albumin, but no casts in the urine at this time. Rest, with strychnia, gave him relief. He was out of Chicago for a vacation during July and August. Sept. 24, 1898, he again complained of dyspnea upon exertion and of palpitation of the heart. Weariness after mental or physical exertion and the old symptom of fear of people returned.

Examination showed some edema of feet and legs, a weak, irregular heart, and for the first time a systolic murmur at the mitral area, not transmitted, with accentuation of both the aortic and pulmonary second sounds. The urine contained a trace of albumin and a few hyaline casts, and a normal percentage of urea.

He was again placed at rest and submitted to the bed with better grace than during the preceding attack. In spite of physical and mental rest, heart tonics, free stools daily and a simple diet he became gradually worse. On December 25 he was suddenly seized with aphasia and slight loss of power in the right leg and arm. Within two hours he could talk incoherently but never regained the power of free expression by speech or writing.

The dropsy gradually increased and the heart weakness more pronounced. The heart murmur remained constant, and there was evidence of dilation of both ventricles of the heart. The urine was, as a rule, scant, from 20 to 40 ounces per twenty-four hours, with lessened solids including urea, but not much albumin and but few casts. In this attack the symptoms pointed chiefly to the heart as the chief offending organ. At no time in this attack did the urine present evidence of more than chronic venous congestion of the kidneys. He died suddenly on March 14, 1898.

The clinical course, the physical signs and urinary findings in this case in the first attack pointed more to nephritis as the primary disease. The thrombosis of the left jugular and other veins, the absence of retinal changes, the primary edema of the left, the absence of the nervous phenomena of uremia, and finally the apparent recovery and status of good health for about eighteen months negated nephritis. On the other hand, the last named phenomena, the relapse of the disease, the physical findings of the heart and the condition of the urine in the last attack pointed to an intrinsic disease of the heart, as a cause of the insufficiency of that organ.

The difficulty of the recognition of the primary cause of the incompetent heart is the intimate relation which exists between the cardio-vascular system and the kidneys. In all inflammatory diseases of the kidney there are cardio-vascular changes, which are most marked in the so-called granular kidney. These fibroid changes of the arteries and hypertrophy of the heart, when most marked are easily recognized by the physical signs and the characteristic urinary findings. In these cases, too, there is not, as a rule, a tendency to that form of heart incompetency which leads to dropsy. The arteries, palpable and invisible, partake of the fibroid change, and cerebral or other hemorrhage is more likely to occur than dropsy. Headaches, nausea, vomiting, cyclical diarrhea, retinal changes, mental excitement or hebetude of mind, coma or epileptoid convulsions are the rule in the later stages of the disease. In chronic tubal nephritis, on the other hand, while cardio-vascular changes are less marked, dropsy may occur with all the phenomena of an incompetent heart. The pallor of the patient, the puffy, waxy face, the retinal changes, the headache, nausea and vomiting, the cyclical diarrhea, the epigastric pain and pressure or sense of weight, the scant urine containing much albumin, with hyaline, granular, epithelial and fatty casts, with microscopic quantities of blood at times; and frequently all the signs of a dilated heart, with endocardial murmurs and a weak, rapid and sometimes intermittent or irregular pulse are not unusual phenomena.

The incompetent heart of an arterio-sclerosis which involves the coronary arteries alone or of the arteries of the heart and kidneys or of the general arterial system, may present phenomena so nearly like the clinical findings of one or both of the inflammatory condition of the kidneys mentioned that the

differentiation becomes difficult. There may be the thickened artery, the sustained full pulse, the hypertrophied or dilated heart, the retinal changes, vomiting, diarrhea, nervous phenomena, headache, albuminous urine with deficient urea, and the presence of casts of all varieties.

An incompetent heart from valvular disease, presenting first of all the physical findings, characteristic murmurs, dyspnea of exertion, cyanosis, dropsy, beginning in the lower extremities, enlarged liver, portal congestion with consequent indigestion, tendency to thrombosis or embolism, a concentrated albuminous and often bloody urine with hyaline and granular casts, is easily recognized when classical, but may present symptoms and clinical findings which make differentiation from primary kidney disease very difficult. In other words, kidney disease with cardio-vascular changes and an intrinsic heart disease with broken compensation and resulting venous congestion of the kidney, often present common symptoms and signs, which may indicate coincident primary involvement, or a primary disease of the one with resulting disease or disturbance of function of the other. Those phenomena common to both I have already enumerated. There are special phenomena, however, sometimes present, which although sometimes common to the two are more often the result of a primary heart or kidney lesion alone, and these signs or conditions are of some aid in differential diagnosis.

If the urine, even though scant, shows a relatively low specific gravity, with diminished total solids, lessened urea, much albumin and casts of all varieties.

If the arterial fibrosis is marked and the pulse full and sustained, or without arterial thickening if the pulse is sustained.

If the dropsical effusion is poor in albumin.

If the dropsical effusion contain urea in considerable amount.

If there is a tendency to inflammation of serous surfaces, pericarditis and pleuritis especially.

If there is a tendency to persistent morning nausea and vomiting of stringy mucus.

If there is tendency to periodic diarrhea.

If there is much headache, especially severe frontal and occipital pain.

If there is a tendency at one time to unrest and mental excitement or at another to somnolence or to coma.

If cerebral hemorrhage occur.

If the dyspnea of exertion becomes of the Cheyne-Stokes type. If severe epigastric pain occur.

If the eye ground shows the changes common in albuminuria, and if the patient present a pale, waxy puffy face and heavy expression, and a general anemia, the diagnosis is in favor of nephritis.

If there is a history of antecedent disease in which endocarditis may have occurred.

If the heart shows physical signs of valvular disease with characteristic murmurs.

If there is an irregular heart action persistent in character.

If the pulse is weak and not sustained with or without arterial fibrosis.

If the dyspnea of exertion is attended with cyanosis.

If there is a normal amount of red cells and hemoglobin or only a moderate degree of anemia.

If the dropsical effusion begins in the lower extremities, appearing during the day.

If the dropsical effusion is relatively rich in albumin.

If the dropsical effusion contains relatively little or no urea.

If there is a much enlargement of the liver and tenderness of the left lobe.

If the urine is scant, of high specific gravity, with much lateritious deposit, little or no albumin, a high percentage of urea, although the total urea of twenty-four hours is deficient; a few casts only, chiefly hyaline or finely granular.

If there is little or no headache, no eye ground changes, and if venous thrombosis or embolism occur the diagnosis is in favor of intrinsic heart disease.

100 State Street.

DISCUSSION.

Dr. COLE of California—I am much interested in the paper read by Dr. Billings. It is very difficult to decide whether the primary condition is one pertaining to the kidneys or to the heart; this is more especially true in advanced diseases. And I am glad to know that there are others that have this difficulty in making a differential diagnosis.

I am much pleased with the finest points in the differential diagnosis which Dr. Billings has made.

Dr. WEST of Galveston, Texas—It appears to me that this is one of the most interesting and practical subjects. It is a difficult question to determine whether the primary disease is one of the kidneys or of the heart. Diseases of these organs occur so concurrently. One point in the differential diagnosis and which assists in determining which is the primary disease, is the therapeutic test. If renal symptoms due to congestion of the kidney, such as albuminuria and other evidences of disturbed renal circulation appear, the patient should be placed upon proper treatment which tend more especially to remove the results of disturbed cardiac action and disturbances of the circulation; this consists in placing the patient in a horizontal position and giving him heart tonics, such as digitalis, strychnin, etc., and stimulate the emunctories, especially the bowels and skin; under that treatment in many instances the differential diagnosis will clear up. The urine becomes more abundant, there is a lower specific gravity, the casts disappear and the differential diagnosis can be made with perfect ease. In my experience, if these cases are allowed to progress for a long time, it is then impossible to make a differential diagnosis.

Dr. BOND of Indiana—This is an interesting subject. Dr. Billings brought out clearly all the prominent points. In one case the patient had kidney disease and still further arterio-sclerosis. One common factor in both diseases is arterio-sclerosis. I doubt if it is possible to have either disease without arterio-sclerosis; this is a common observation in these cases even before albumin or casts appear in the urine or a heart murmur is observed, showing deficient waste. Some years ago, 100 cases of this kind were observed where there was a deficiency of urea found in cases not suspected of having heart or Bright's disease. I think the first evidence of this disease which is constant is a deficiency in the nitrogenous waste. Instead of twenty-five grams of urea excreted in twenty-four hours, a man was found to be passing ten or fifteen grams; he was afterward found to be passing casts and there were symptoms of arterio-sclerosis; the albumin came on especially after exercise. One year afterward the heart was found to be affected.

Dr. BROWN of Illinois—I think it is very important that we should separate the two great forms of Bright's disease, the interstitial from the chronic. There is no disease in which we so often make mistakes in the early diagnosis as in interstitial

nephritis. For five or ten years there may be no albumin, no dropsy, no casts or anything to account for the polyuria which exists, and it is very difficult to find the cause. The diagnosis is made, not upon the symptoms directed to the kidneys themselves, but upon the symptoms that are referred to other organs than the kidneys—upon the subjective symptoms.

Dr. BRIDGE of California—What Dr. Bond has said is largely true. It is a matter of no great moment in these cases to settle the question whether the lesion is one of the kidneys or of the heart, because sooner or later lesions in both will occur in the same patient. Dr. Billings has set forth, as well as could be set forth, the means of making a differentiation. An important thing brought out in the paper was that there were two kinds of lesions and the fact that they result from similar causes. There is some poison in the blood containing effete matter, which lowers the vitality of the vessels of the kidneys, whereby these various lesions occur. In his case he had afterward a thrombus in the veins due to some injury to the lining of the vein, followed by certain changes in the blood, then atheroma which caused changes in the heart, producing dilatation and finally murmurs. What is this change? What metamorphosis is there in the lining of the vessels of the heart and kidney which make it predisposed to take on these changes?

As to the diagnostic value of casts, I feel sure that if the Doctor should use the centrifuge carefully, he would find casts in everybody's urine. It is no question of the presence of casts, but their number.

Dr. DAVIS of Chicago—The most difficult problem presented to us is to find which is the primary disease, that of the heart or of the kidney; especially is this true when the kidney and heart trouble appear to come on simultaneously. In certain cases the phenomena present enable us to make a diagnosis as to which is the primary lesion. On the other hand, as already has been stated, we find cases in which there are evidences of cirrhosis of the kidney with cardiac lesions, due to atheromatous condition of the vessels generally. Here symptoms come on which are important in that they show us which lesion predominates, whether the renal or the cardiac. These cases require the closest scrutiny and treatment.

Dr. BRIDGE—There were two points brought out in the paper of Dr. Billings, one, heredity, or the family tendency to the disease; second, the occurrence of some persistent disease which could lead to either heart or kidney disease. Frequently Bright's disease is a family disease. Also, the persistence of any disease which could lead to endocardial or myocardial disease would lead to heart disease as against Bright's disease.

The point raised in regard to the thrombus is a good one. Whether it occurs in the blood vessel of the body or the brain it indicates a tendency to heart disease. The non-existence of hypertrophy and valvular lesions in any case would point away from the heart and toward the kidney. In Dr. Billings' case might it not have been that the earlier disease was a diffuse nephritis in a patient with a weak heart which manifested symptoms of this weak heart? Afterwards the patient regained health, and then suffered from cardiac disease which ended his life. I believe that cases of chronic diffuse nephritis recover under appropriate treatment and the evidences of kidney lesion, previously present, will entirely disappear. Perhaps it may recur again or produce changes which will produce manifestations later on in the life of the individual.

I am glad that I have heard the paper; the differentiation between lesions of the heart and the kidney is of considerable importance as bearing on both prognosis and on treatment.

Dr. WEST of Galveston, Texas—I wish to speak of another class of cases of interstitial nephritis in which there is a low specific gravity, with an entire absence of renal symptoms or disturbances of circulation. There are no symptoms at all except a slight albuminuria. By the careful use of the centri-

fuge no casts are found. I examined a man for life insurance, in whom there were no symptoms pointing to kidney disease; there was an albuminuria present. No casts were found after careful examination in several instances. One might suppose it to be a case of temporary albuminuria. I could not possibly recommend the man in spite of the fact that he gave no symptoms at all.

Dr. BABCOCK of Illinois—I should like to emphasize a single point in the differentiation between primary cardiac and primary renal cases; it relates to pulse tension. In these cases of primary renal disease there is an increase in the blood pressure which will have existed for a greater or less length of time, and if the pulse be carefully studied both by the sphygmograph and by careful auscultation of the aortic second sound much valuable information will be derived. In the case reported it was distinctly said that the primary examination of the heart showed an accentuation of the aortic and pulmonic second sounds. It seems to me that that statement was important. At the postmortem it was shown that the heart had been diseased for a long time, although the patient suffered from renal changes, as has been stated; perhaps there was a chronic diffuse nephritis which was recovered from; still the heart was the organ primarily at fault.

I have under observation a man aged 65 years who has an enlarged heart, who has renal changes, whose urine shows evidences of chronic interstitial nephritis. The arteries are also sclerosed. It has been a difficult matter for me to determine which organ was the one demanding treatment. The accentuation of the aortic second sound, the pulse tension and the fact that the heart endures exercise, also that the amount of urine responds pretty well, *i. e.*, the amount of the urine increases but the solids of the urine do not, these findings make me sure that in this man's case the heart is not the organ primarily affected. The heart is secondarily enlarged in response to the abnormal pulse tension which has existed for years. The treatment in such cases, to be successful, must be directed to the general condition largely, although if the heart is disproportionately weak, then this organ demands close attention and the greatest care.

Dr. ANDERS of Philadelphia—The subject of Dr. Billings' interesting paper is a large one and I simply would like to refer to one or two aspects of the same. The differential diagnosis, as drawn by the author of the paper, readily permits a differentiation of chronic parenchymatous nephritis and organic disease of the heart. Closely with the relationship between the heart and kidney disease stands another condition, namely, arterio-sclerosis. I should like to emphasize the fact that in cases of so-called interstitial nephritis in which lesions of the heart are associated they are from one common cause. One primary fundamental cause is general arterio-sclerosis. Now, the troubles with the kidneys are secondary to the arterio-sclerosis; the same is true of the cardiac condition. In either case compensation ruptures and the left ventricle begins to weaken. In the case reported by Dr. Billings this occurred; the left ventricle was already weakened and so the phenomena reported appeared secondarily. This exists in cases in which primary condition of arterio-sclerosis is followed by rupture of compensation. Few are seen for the first time until after compensation has ruptured; here the presence of organic murmurs can be differentiated from murmurs due to primary valvular disease.

Dr. BILLINGS—I chose this subject because it was very interesting to me, partly because of the difficulty in the diagnosis of these cases, as already has been stated in the paper. It is quite important that a differentiation should be made. A man with an incompetent heart due to intrinsic heart disease, in some cases with a water-logged condition, may be given a hope of prolongation of life. In kidney disease do not forget that when the disease of the kidney pro-

gresses to such a stage that the heart becomes incompetent and the cardio-vascular changes are sufficient to produce this water-logged condition, the patient can not long exist. It is true that therapeutic tests may be of value, but the therapeutic test is like the dead-house test. A man with kidney disease with changes in the heart and blood vessels, who is in a water-logged condition, does not have perfectly normal urine, as can be proven. If a nephritis occurs and continues long enough to have cardiac changes, incompetent heart, bronchitis, general anasarca, etc., he may have hemorrhages in the brain and elsewhere. There has been a condition mentioned in which arterio sclerosis, hypertrophy of the heart and sclerosis of the blood vessels, and other evidences of Bright's disease occurred and yet no Bright's disease. I have tried to write my findings of the case, and also stated in my conclusions that in kidney disease the arterial sclerosis was marked and the pulse full and sustained. I am gratified that the paper has received the amount of discussion it has.

DIABETIC GANGRENE.

Presented to the Section on the Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The following cases of gangrene associated with diabetes which have been observed by me during the last few years, inspired me to look through the rather meager literature of the subject with care.

J. G., 62 years old, was a ruddy and hearty Englishman, who was habitually careless and negligent of himself and his health. In July, 1892, I found that he was a diabetic. As he promptly improved, gaining in strength and flesh, he did not persevere with the prescribed treatment. He was not seen a second time until September. The last joint of the middle finger of his left hand was then purplish red, swollen and painful. The skin on the ball of the finger was hard, slightly wrinkled and almost black. Pain was constant but not intense. The rest of the finger looked normal except at the first joint a red line of demarcation was discernable. This finger had not been scratched or injured. The gangrene was evidently spontaneous. His urine contained 1.3 per cent of sugar and had a sp. gr. of 1032. A week later he voided 2 quarts of urine, a quart less than before. It contained only a trace of sugar. Sensibility was entirely wanting in the last phalanx of the affected finger except at the sharply defined line of demarcation. The last phalanx was blue-black and perfectly mummified. Pain gradually disappeared. By the 24th of September the quantity of urine voided was normal, having a specific gravity of 1028 and containing no sugar. Sugar did not reappear until the end of October, when it occurred in 1.3 per cent. The urine had a specific gravity of 1031. For several days prior to this examination he used farinaceous food freely. When he again adhered to a moderately rigid diabetic diet, sugar disappeared from his urine. The last phalanx gradually underwent spontaneous amputation and separated completely from the healthy tissue the first of November. The stump healed nicely. I saw him occasionally during the next three months. He gained in flesh, strength and vigor. There was no return of glycosuria, although in January he suffered from a mild eczema of prepuce and crotum. This man had tortuous temporal arteries and nodulation of the left radial. A sphygmographic tracing showed below round-topped waves produced by atheromatous arteries. When his finger was first found to be gangrenous amputation was advised, but he refused to submit to it, and when he learned later that spontaneous amputation might take place, was still more unwilling to have the knife used.

B. J. B., 62 years old, a lawyer of prominence in one of the smaller cities of Michigan, consulted me in November, 1894. He first learned that he had glycosuria in 1892, when he was examined for life insurance. He was a large eater, moderate drinker, and eminently sedentary in habits. Ten years before he weighed 200 pounds; when he was first seen by me he weighed 177. For two years he had not varied more than two or three pounds from this weight. He felt in good health, except that for some months there had been an ulcer on a callous

spot on the ball of his right great toe. An offensive slough of small dimensions had separated from it. When I saw it healing had begun. There was a shallow ulcer in the center of a yellowish callous. Almost no pus came from it. It caused no pain and was only tender when the raw flesh was touched. The toe appeared healthy. A sample of his urine had a specific gravity of 1040 and contained 2.5 per cent. of sugar. His arteries were hard but not nodulated. His heart was not hypertrophic.

I did not see this patient again until September, 1895. The ulcer under his toe never healed entirely. Several times it seemed almost well but became worse again. Alongside of the callus on which the ulcer was located was a superficial blister filled with bloody serum. He had recently had a similar blister on the sole of the foot. Both had come without recognizable cause. His urine contained a trifle less sugar. His general health was good; he weighed 180 pounds.

The next visit I received from him was in June, 1896. The ulcer remained unhealed. It was sometimes scabbed over and at others was covered by a small amount of pus. Its diameter varied from one-third to one-half of an inch. A sample of his urine contained 3 per cent. of sugar. In October of the same year, this patient was seen again. He thought his toe was well until about the first of September, when he was much worried by business cares and lost flesh, the ulcer opened again, and in a symmetrical place upon the left big toe a large blister formed. When the latter was opened and the dead overlying skin removed, a considerable excavation with raised edges and suppurating surface was disclosed. I did not see him again for a year, until last October. Both ulcers were about the same. The whole of the left big toe was purplish and slightly swollen. It was moderately tender and painful. In other ways he felt well. A sample of his urine had a specific gravity of 1033 and contained 2 per cent. of sugar.

This patient was seen by me at such long intervals that he can not be said to have had systematic treatment. Moreover, he was not abstemious as regards food, drink or tobacco. He kept the affected toes as clean as possible, and applied successively a great variety of antiseptic ointments and powders. He had persistent glycosuria, but of very moderate grade of severity. He rarely made more urine than was normal, and the diabetic state caused no appreciable loss of flesh or ability for mental work. This case is interesting because of the character and chronicity of the ulcers, and finally, because of the symmetrical distribution of the ulcers upon both feet. When last seen by me, I feared the whole of the left great toe was about to become gangrenous.

Katherine E., 58 years old, born in Ireland, was first seen by me in July, 1895. For five months her right foot pained her. I found the toes and, to a less extent, the distal third of her foot reddened and painful. The pain ceased almost completely whenever she remained on the bed or lounge. There had been slight suppuration about one toe nail, and a superficial ulcer on one toe joint. Both these lesions had disappeared before I examined her foot. She had lost flesh during several months. She had never been stout, but was decidedly thin when she came to me. Her appetite was poor. She experienced no thirst. Her bowels were constipated. As far as she had observed her urine was normal. A week later the foot was less swollen and painful, but the toe next to the little one was numb, purplish red and looked as if about to become gangrenous. A sample of her urine had a specific gravity of 1028, and contained 1.5 per cent. of sugar. Before the end of August the last two phalanges of this toe were mummified. A line of demarcation developed at the second joint. On the toe next to the big one a moist slough formed over a space a quarter of an inch in diameter. She was making from three to four pints of urine daily. The glycosuria rapidly diminished and by the first of September ceased. Her foot remained about the same, causing varying degrees of pain. Slowly the mummified toe separated from the healthy tissue. The middle of December it was attached only by a few shreds of tissue, which separated with a little traction. The ulcer on the other toe was slowly improving. The stump of the amputated toe soon healed perfectly. A trace of sugar was discoverable in her urine at this time. In January the ulcer on the second toe grew worse, although there was no glycosuria. By the first of February it had opened into the joint. Toward the end of the month I picked from the opening a small piece of dead bone. After this the wound slowly healed. In March, the following month, a gangrenous slough formed on the ball of the great toe of the same foot. The whole foot from the instep to the toes was a dull purplish red. The toes were slightly swollen. The capillary circulation was extremely slow in the skin of the foot. Pain was not constant or considerable. Her urine contained a trace of sugar. During the summer she was comfortable, able to work and rarely troubled with pain in her

foot. In October her left foot (not the one first affected) became painful. The second toe was purplish red. From one edge of the nail it bled slightly. A red streak stretched up to the instep from the base of this toe. Her urine contained about 1 per cent. of sugar. The foot became diffusely red and more painful, the second toe lost sensibility, one edge sloughed away, the remainder slowly mummified. A month later this toe began to separate from the sound flesh and the one next to it also became gangrenous and dried up. The foot improved and was only occasionally painful. She kept her leg in a horizontal position almost continuously. Two months later both toes came away, having undergone spontaneous amputation, one at the first joint the other at the second. This woman also refused amputation by the knife.

In this case the disappearance of sugar from the urine, while the mummified toes were separating from the healthy tissue and its reappearance just before and when gangrene began afresh, was noticeable. The superficial arteries of this patient were tortuous and hard, but not noticeably atheromatous. Nor were there changes in the heart which would suggest the possibility of extensive atheroma. Undoubtedly, however, atheroma existed in all three of these cases and was the prime cause of gangrene.

The first and third cases typify well the milder forms of spontaneous gangrene in diabetics. The successive invasion of different toes in the last case is noteworthy. The diminution and even disappearance of glycosuria in both cases, while mummification existed and spontaneous amputation of the phalanges was progressing, is interesting. A similar marked diminution or disappearance of glycosuria I have observed in several cases when tubercular disease of the lungs was active. Both cases were upon diabetic treatment, which consisted mainly in a regulation of diet, the use of arsenical preparations and at times opiates.

The second case at first was one of *mal perforant*, which is an occasional complication of diabetes. Kirmisson (*Arch. gén. de Méd.*, 1885) has reported seven cases of it associated with diabetes; Duvernoy (*Arch. gén. de Méd.*, Paris, 1891, 603), four; Gascuel (Thesis, Paris, 1886), fourteen; and Williamson, four ("Diabetes Mellitus," R. T. Williamson, published by Y. J. Pentland, London, 1898). Gascuel found in ninety-one cases of *mal perforant* that it was associated fourteen times with diabetes. The association is evidently no more an accidental one than the association of diabetes and gangrene proper. That there is a more frequent association of gangrene and diabetes than chance would cause, was first pointed out by Marchel in 1852. Diabetic gangrene occurs much oftener in the legs and feet than elsewhere. Marchel makes note of thirty-five cases with the lesion below the knees, seven in the lungs and three in the hands, out of a total of 133. In the remaining cases the lesions were very widely scattered. Hunt records three out of five cases of gangrene of the feet. In the cases which I find reported still more recently there is about the same proportional distribution of the lesion.

Sturgis (*Bos. Med. and Surg. Jour.*, 1891, 261, cxxiv) has described an interesting case of gangrene of the lip in a diabetic of 64. Sloughing occurred, but the wound finally healed. For three years the secretion of saliva had almost ceased in this patient's mouth, a condition which caused him great distress. During the period of inflammatory reaction after gangrene had occurred on his lip, saliva formed once more in his mouth. In this case Sturgis calls attention to the great diminution of sugar in the urine after sloughing had occurred. Those cases of gangrene occurring in the course of diabetes which are associated with or superimposed upon inflammation,

are undoubtedly chiefly due to the low vitality of tissues in diabetics, and the consequent ease with which putrefaction takes place in them. The frequency of gangrene of the lungs in diabetics, who also have tubercular or other disease of the lungs, can be accounted for in this way. The cause of spontaneous gangrene, which is not preceded by visible wounds or infection, is of more interest. Neuritis and atheroma have both been assigned as causes of the spontaneous gangrene of diabetes. Both lesions frequently accompany diabetes. Godlee (*Med. Chi. and Trans.*, lxxvi, 37) admits two varieties of spontaneous diabetic gangrene, the one due to neuritis, the other to atheroma. He recommends amputation at the knee, or above, in all of the latter variety, and operation close to the point of necrosis in the former. Davies Pryce (*Brain*, 1893, 63) points to the almost constant coincidence of neuritis and atheroma in diabetes. Heidenhain's review of this subject is the most thorough of any in recent years (*Deut. Med. Woch.*, 1891, xvii, 1097, 1111, 1123, 1144, 1163). He believes that diabetic gangrene is in most, if not in all, cases due to arterio-sclerosis. His statistics are quite convincing. According to him, spontaneous gangrene in diabetics is pathologically identical with senile gangrene. Heidenhain also calls attention to the very frequent occurrence, even in early adult life, of arterio-sclerosis in diabetics. The cases which I have found reported are all in that period of life when this arterial lesion is to be expected. The only cases in earlier years of life are one, a girl of 19, in whom gangrene developed after an operation for cataract, and one of gangrene of the lungs in a child 8 months old (E. Wegli, *Arch. für Kinderheilkunde*, B. xix). In many of the cases of diabetic gangrene on record no mention is made of the condition of the arteries. In all in which mention is made of the state of the arteries, arterio-sclerosis existed, with one exception, which was a case described by Rosenblath (*Arch. für Path. Anat.*, Berlin, 1888, cxiv, 202-210). Very numerous areas of circumscribed necrosis occurred upon the skin and mucous membranes of this patient. No vascular lesions were discernible at autopsy. Hebb (*Westminster Hosp. Rep.*, lx, 1895, 113) describes another noteworthy case, which shows that every time gangrene occurs in diabetics, it is not due to either neuritis or arterio-sclerosis in the affected limb. Gangrene of the right arm developed with the symptoms usually caused by embolism. At the autopsy it was found to be due to an embolus consisting of a vegetation which had broken from an atheromatous ulcer in the arch of the aorta. Arteritis was general, but beginning, not advanced.

Williamson thinks that perforating ulcer of the foot in diabetes is due to neuritis. He bases his belief on clinical, not postmortem evidences. Mild neuritis is extremely common in diabetes and occasionally a severe form of lesion is demonstrable. In case two, just described above, frequently indiscribable, uneasy and uncomfortable, but not painful sensations are felt in the legs. He had no knee jerk. There may be evidences of mild neuritis. Most frequently neuritis and arterio-sclerosis occur together.

Hunt says that areas of gangrene in diabetics are mapped out by a less defined line of demarkation than in cases of senile gangrene. The literature of the subject does not corroborate this statement, nor do my own observations.

Surgeons have been disinclined to operate upon

diabetics because of their susceptibility to infection. Recent experience has shown, however, that amputations can be performed upon them with good success, provided only sufficient care is taken to prevent infection. Heidenhain (*Deut. Med. Wochen.*, 1891, xvii) recommends that if gangrene is confined to the toes the physician wait until a line of demarkation develops, and if there is no evidence of general infection, that the dead tissue be allowed to separate spontaneously. If, however, the sole or dorsum of the foot is involved, the leg should be amputated at the knee or above it. This is a rule which my reading convinces me is correct. I, however, think that amputation of the toe, after a line of demarkation has become well established, is preferable to the tedium and pain of spontaneous amputation. The greatest pains should be taken to gently remove the sloughing tissues, and by the free use of antiseptics to limit putrefaction.

It goes without saying that the diabetes should receive as much attention as the gangrene. Treatment appropriate to it should be carefully carried out.

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THE DIFFERENTIAL DIAGNOSIS BETWEEN DENGUE AND YELLOW FEVER, WITH SOME ACCOUNT OF THE EPI- DEMIC OF 1897 IN TEXAS.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The diagnosis of disease is universally and justly regarded as the foundation stone upon which rests the entire superstructure of practical medicine. The question concerns the health, life or death of the individual affected, his family and friends, the public in so far as he may be a useful and influential member of society, and the physician as affording a basis for his prognosis and treatment. But there are occasions when far more momentous interests are involved in the correct diagnosis of prevailing diseases: a complete paralysis of commerce, the wheels of industry arrested, enforced idleness with consequent poverty and suffering of thousands, enormous depreciation in property values of every kind, universal fear and panic, and the possibility of wide-spread death and desolation. To the physician himself an error in diagnosis ordinarily involves results which are comparatively inconsequential; on the other hand, there are times when such an error means public denunciation and disapprobation. A correct diagnosis, even

when opposed to commercial interests, may involve him in losses of reputation and business which may last for a lifetime.

This was the state of affairs in Texas during the summer and autumn of 1897. So long as yellow fever was supposed to prevail east of the Mississippi only, and that dengue was the epidemic disease in Texas, peace reigned; but when the trouble came to our own doors by the announcement of yellow fever in Galveston and Houston, there came the contest over the question of diagnosis, with visits of local experts from city to city, the gradual passing of the epidemic with no record of deaths from yellow fever, and the popular conviction of a stupendous error committed by those who believed in the presence of that disease. The majority, both of physicians and laymen in the State are firm in the conviction that dengue was the disease which was prevalent in Texas during the past summer; a minority believe that yellow fever also prevailed, but that owing to its mild form, indisposition to spread, exceptionally small mortality and resemblance to dengue was usually unrecognized. Confusion has arisen in the minds of many. They ask themselves, "Are the land-marks all swept away? Have the authorities led us astray? Has a new disease, *anomalous dengue*, made its appearance? Is there no such thing as dengue? Is the so called dengue a mild form of yellow fever? Does the latter arise de novo?"

The important issues dependent upon a knowledge and recognition of the truth upon these points render it not only pertinent but imperative upon the part of those who are familiar with the facts to study them in concert. Now that the obscuring mists due to commercialism, prejudice and passion, have for the most part passed away, we approach the subject from a scientific standpoint. It is with this end in view and in no spirit of dogmatism or self-assertion that I introduce the subject for consideration.

The following hypotheses have been assumed in relation to the recent epidemic:

1. The disease was dengue only. There was no yellow fever in Galveston, Houston, or the State of Texas in 1897.

2. There were anomalous cases of dengue, presenting all the symptoms of yellow fever, but proven not to be that disease, by the indisposition to spread from numerous foci and the low mortality rate.

3. During the progress of an intense epidemic of dengue throughout the State, in Galveston, Houston, and possibly other places, yellow fever made its appearance, and in consequence of its mild form and resemblance to the prevalent disease was generally unrecognized.

4. An imputed hypothesis that the epidemic of 1897 in Texas was yellow fever only.

5. A few cases terminating fatally, and others attended by marked jaundice and albuminuria were denominated acute infectious jaundice (Weil's disease).

In order to obtain definite information upon the subject, the following circular of inquiry was distributed to a limited extent. I regret very much that replies could not have been obtained from every infected place in the State, so as to have made the report an exhaustive one. The subjoined tabular statement, will, I trust, afford sufficient data upon which to base some definite conclusions. Following is the circular of inquiry:

"It is my intention to prepare a paper upon the 'Differential Diagnosis between Dengue and Yellow Fever, with some Account of the Epidemic in Texas in 1897,' to be read at the forthcoming meeting of the State Medical Association at Houston, and at the Denver meeting of the AMERICAN MEDICAL ASSOCIATION. If dengue prevailed in your community during the last season you would oblige me very much by furnishing me with information upon the following points:

"1. Date of outbreak; rapidity of spread; probable proportion of population affected; duration of epidemic; any evidence as to its origin.

"2. Any unusual meteorologic influences, as excessive heat or precipitation; local hygienic conditions.

"3. Symptomatology: *a.* The eruption: The character of, and present in what proportion of cases. *b.* Glandular enlargements: What glands usually involved, and in what proportion of cases. *c.* Hemorrhages: In what proportion of cases and from what sources. *d.* Nausea and vomiting: Severity and comparative frequency of; dysenteric symptoms noted. *e.* Albuminuria: In how many instances examined for, proportion of cases found, large or small amount; any other characteristics of urine noted, daily quantity, color, casts, blood, epithelial cells; any uræmic symptoms or other evidence of acute nephritis.

"4. Ratio of pulse to temperature.

"5. Jaundice, if noted, character of, and occurring in how many cases.

"6. Mortality, postmortem findings, if any.

"7. Did you have any reason to suspect the presence of yellow fever? If so, upon what evidence?

"8. Any difference in the severity as the epidemic progressed?

"As I am sending out but a limited number of these circulars, and the subject is of extreme interest and importance, a prompt and complete reply is requested."

Subjoined is a tabular statement of replies:

Data obtained from other localities are as follows: Gainesville, Cook County, on the extreme north central border, reporter Dr. J. E. Gilcreest, no epidemic, only a few sporadic cases of mild type, symptoms not noted. Terrell, Kaufman County, near N. E. border; Dr. W. H. Monday reports no cases. Dr. J. T. Wilson, Sherman, Grayson County, north central border, no dengue. Dr. J. M. Neil, Bonham, Fannin County, in same district as above, no epidemic; saw but one case, which was contracted at Paris. Dr. T. J. Bell reports from Tyler, Smith County, East Central Texas, very mild epidemic, commencing 15th of October, spreading slowly and affecting a small number, no evidence as to origin, no rash in most cases; no hemorrhages, glandular involvement, dysenteric symptoms or jaundice noted; no deaths.

Dr. J. H. Barham, Nacogdoches, east central; no epidemic, saw three cases only; one contracted dengue in Houston, two here, all in different families, no spread, eruptions in two, absent in one, nausea and vomiting in all; no tests for albumin; jaundice in all, well marked in one, moderate in one, slight in the other; suspected yellow fever in case from Houston; all recovered.

Summarizing results obtained from the foregoing twenty observers in eighteen places, we find as follows:

The epidemic of dengue of 1897 prevailed chiefly in southern central Texas within a radius of 200 miles from Houston, but extending and prevalent to a lim-

ited extent 300 miles to the extreme northern border. San Antonio, Houston and Galveston, followed by Schulenberg and Navasota, appear to have been most intensely infected, the proportion of population in these places affected varying from 75 to 90 per cent. Belton, Palestine and Huntsville followed closely with a percentage of 60-65. In the extreme northern and eastern portions of the State, as in Gainesville, Sherman, Bonham, Terrell and Tyler, there were but a few sporadic cases. At Dallas and Paris a very mild epidemic, affecting not more than 6 per cent. of the population. San Antonio, Galveston and Houston seem to have been the centers of infection, as appears from the following statement. Palestine, a railroad center about 150 miles north of Houston and 200 miles northeast of San Antonio, with double daily train service. Dr. Link states the probable origin was from these two cities.

Dr. Tabor reports from Bryan, which is about 100 miles from Houston with direct rail connection, that both the first and second cases were persons who had been exposed in Houston.

Dr. Thomason reports from Huntsville, about seventy miles north of Houston, with direct train service with the latter place and Galveston, that the first case was a young lady from Galveston, and that other foci of infection were soon developed by parties from Houston and Galveston. Austin's first case was a hotel clerk recently returned from San Antonio.

Dr. Lee reports from Galveston that his first case, seen July 29, was from San Antonio.

The first two cases seen by the writer, August 11, were in the persons of young men who had returned to Galveston from the Interstate Drill at San Antonio. Schulenberg is about equidistant from Houston and San Antonio, and may have been infected from either. Navasota is only about seventy miles from Houston. The intensity of the disease at San Antonio, the presence there of militia companies, not only from numerous points in the State, but of States east of the Mississippi, the coincidence in time (latter part of July) of the return of the militia to their homes with the outbreak of the disease, and the positive identification of the first cases in several places in persons who had returned from the encampment, is evidence going to prove that San Antonio was the initial point of infection in the State. As to the origin of the disease in the latter city I have no means of tracing it, but can only say that ample opportunity for conveyance of dengue was afforded by the collection there from July 19 to 26 of troops and visitors from points east of the Mississippi where the disease had made its appearance.

Further confirmation is also afforded by the facts above cited that dengue is an infectious, a portable and contagious disease, *i. e.*, the specific micro-organism which produces it may escape from the body of an infected individual and be transmitted by persons and things to other persons, thus speedily multiplying foci of infection and accounting for the rapidity of its dissemination. The fact previously observed that the progress of the disease is arrested by the advent of cold weather or frost, has also been confirmed by the consensus of statements herein presented. As to the effects of meteorologic and hygienic conditions, the majority of observers describe the weather as excessively hot and dry. The mean daily temperature in Galveston was nearly 8 degrees hotter during the month of October, 1897, than in the pre-

vious three years, and the continuance of unusual hot weather in November and December was the subject of general comment. Local sanitary conditions do not appear to have played any important part in the propagation of the disease. Dr. Paschal, however, calls attention to the excessively insanitary condition of San Antonio at the time of the outbreak, and Dr. Tabor ascribes the comparative immunity in Bryan (only 100 cases out of a population of 4000) to the extraordinary precaution to better the sanitary condition of the town. In regard to the symptomatology, I have not attempted to obtain information as to the complete clinical history of the cases under consideration, but rather to determine the distinctive value of those symptoms which have heretofore been regarded as of great importance in the differentiation between dengue and yellow fever, viz., the presence of an eruption, hemorrhages, nausea and vomiting, evidence of an acute nephritis, as albuminuria, scantiness, presence of casts, uremia, divergent pulse and temperature, jaundice and mortality.

There is almost perfect unanimity upon the part of observers as to the presence of an eruption, the proportion with this symptom varying from 25 to 90 per cent.; 75 per cent. would be a fair average. It is variously described as miliary, scarlatiniform, rubeoloid, erythematous, reddish papules, macular dermatitis, urticarial, desquamative, as localized upon the face and neck, upon the face and upper part of the body, with profuse perspiration, irregular as to time of appearance, coming on the second or fourth day, or end of the fever, hyperemia appearing on the first day. Dr. Peeples notes the fact that, while frequently absent in adults, an eruption was almost invariably present in children.

The consensus of opinion is that glandular involvement occurred to a very limited extent in this epidemic; the majority of observers not noting this symptom at all, but one observer mentioning enlargement of the cervical glands and tonsils in 25 per cent. of the cases; another the connection between enlargement of these glands and the rash; another observed swelling of parotids, sublingual, inguinal and suboccipital, especially in children; one observer noted enlargement of the submaxillary glands in 20 per cent. of his cases.

Hemorrhages.—With but three exceptions every observer noted the occurrence of hemorrhages. The nose, throat, gums, stomach, intestines, uterus and kidneys were the chief sources mentioned. The percentage in which this symptom was present varied from 1 to 10 per cent. Three or four observed black vomit.

Nausea and vomiting were notable symptoms and occurred in a large proportion of cases, varying from 80 to 90 per cent.; with but few exceptions it was described as severe, excessive, incessant, almost universal, etc.

Condition of the urine.—Unfortunately, observations pertaining to the urine were made so infrequently and imperfectly as to render them of but little value. Most of the observers made no examination at all, a few examined for albumin only in the worst cases. Dr. Wilkinson of Galveston, out of 500 cases, says he tested for albumin in many and found it absent; sp. grav. was generally high. Dr. Lee, Galveston, states he examined for albumin in 50 cases out of 490. Eight of these had previous kidney trouble; of the remaining 42, 20 showed slight

albuminuria on the third and fourth days; and in 6 albumin was present in large amounts. Dr. J. M. Coble, Dallas, examined the urine in 25 per cent. of his cases and found slight albuminuria in 10 per cent. of them.

Drs. Wilson and Harris of Navasota only made urinary examinations toward end of the epidemic, in about fifty cases; in forty of these albumin was found in good quantity. The urine was diminished in quality and high colored; casts and blood cells found in three cases and uræmic symptoms in four. Dr. Taylor Hudson, Belton, tested the urine only in a few suspicious cases and found albumin in several; the urine was usually dark and diminished; uræmic symptoms pronounced in several. Dr. D. L. Peeples, Navasota, found albumin from slight trace to abundance, in some cases with almost total suppression, color varying from a deep straw to color of blood. Dr. R. R. Walker, Paris, found albumin in 25 per cent. of his cases. Dr. W. W. Walker, Schulenberg, only tested for albumin in worst cases; found it in ten, in some in large amounts. The remainder of reporters failed to note condition of the urine.

If, however, dengue was the only disease prevalent, albuminuria is not the rare symptom in that disease as heretofore has been the opinion.

Ratio of pulse to temperature.—Ten out of sixteen observers mention that the pulse was abnormally slow in proportion to the pyrexia; three state the ratio normal and three made no note of the symptom.

Jaundice.—Four reporters mention this symptom as present in about 7 per cent.; one, Dr. Wilkinson, Galveston, mentions jaundice as being of frequent occurrence and of severe grade after October 1. One notes it as generally present of mild grade; another states it was mild in 10 per cent. and severe in 2 to 5 per cent.; one found it more or less present and seven failed to note icterus at all.

Mortality.—There is almost perfect unanimity as to want of mortality in the recent epidemic, the few deaths occurring were usually ascribed to some complication. As regards progressive severity a majority state there was no marked difference; a few assert aggravation in the beginning and in the midst of the epidemic. Dr. Wilkinson notes mildness in August, increased severity in September, progressing to violence in October. Only two or three out of the twenty suspected the presence of yellow fever. As to the early symptoms: The onset was usually sudden, attended by slight rigors or chilly sensations with more or less severe headache and pains in the back, limbs and joints. As regards the paroxysm there is a remarkable discrepancy in the statements of Drs. Lee and Wilkinson, each of whom treated about five hundred cases. Dr. W. (I quote his exact language) states: "The fever in all my observations contained but one single paroxysm; there was no secondary fever from first to last; it departed by lysis, after three or four days duration and never returned, except in cases of relapse several weeks later." Dr. Lee, on the contrary, says: "In a large proportion of the above mentioned cases two paroxysms were noticeable, the first coming on usually without positive chill or chilliness; temperature usually high in the beginning became, after slight remission, high again toward the end of the attack."

It is difficult to reconcile such contradictions. The probabilities are that there is no invariable rule in regard to the paroxysm. In ten cases at the Sealy

hospital, where careful thermometric observations were made, there was one paroxysm only in seven; in one there was an exacerbation in the afternoon of the day following that, when the temperature reached normal; in one the fever was of remittent type, rising at midday for three successive days; in one there was a slight return of fever on the evening of the first day after the temperature reached normal.

Before proceeding to make any deductions from the foregoing, it will be instructive to present a brief review as to the statements of authorities upon the differential diagnosis of the two diseases under consideration. An authority upon this subject I understand to be one who has had the opportunity of studying them at the bedside. I shall not attempt any complete bibliography, but the following I think will show what has been the accepted teaching:

H. D. Schmidt on dengue, *Pepper's System of Med.* Ed. 1885, page 884-885, says the temperature steadily rises in yellow fever, it is remittent in dengue; pulse in yellow fever falls on third day, while the temperature continues to rise, in dengue on the contrary the pulse rises with the temperature. In the condition of the stomach also dengue considerably differs from yellow fever, for while in the latter disease this organ is almost always irritable, and vomiting frequently present, it is but rarely affected in dengue. The urine in yellow fever very frequently contains albumin as soon as the third day, in dengue almost never. Finally the absence of jaundice and the appearance of the eruption on the fourth or fifth day removes all doubt about the nature of the disease.

Sternberg on yellow fever, *American System of Med.*, Vol. 1, page 290: "If a diagnosis has not been made before, the symptoms which characterize the second period of the disease should serve to differentiate it from all forms of malarial fevers. The cool and usually moist skin, the abnormally slow soft pulse, the gastric distress, and pain on pressure in the epigastrium, the yellow tinge of the conjunctiva, and the albuminous urine in a patient whose temperature is normal or subnormal, following a febrile paroxysm as represented in charts, certainly furnish a clinical picture which should be recognized." Speaking of dengue, page 291-92, he says: "It also is characterized by a febrile stage of comparatively short duration, but the characteristic symptoms of yellow fever are absent. Albuminous urine, stage of depression, hemorrhages, etc."

Matas, *Keating's Cyclopedic*, Vol. 1, page 894, quotes Holliday who makes a comparison of the symptoms of the two diseases after a careful analytical study of the opinions of over sixty physicians who had a long experience of both diseases in New Orleans and other parts of Louisiana as follows:

YELLOW FEVER.	DENGUE.
Temperature rising regularly.	Temperature rising irregularly.
Tongue white center, red edges pointed.	Tongue broad white indented edges, rarely red.
Stomach irritable, vomiting frequent.	Vomiting rare.
Conjunctiva congested, jaundice appearing early.	Conjunctiva rarely red, jaundice never observed.
Secretions all suffering, urine scanty, often albuminous, suppression frequent.	Secretions natural, urine usually normal, sometimes exceptionally traces of albumin.
Hemorrhages frequent and alarming, black vomit an urgent symptom.	Hemorrhages slight, black vomit very rare.

In regard to the condition of the urine in dengue,

Matas observes (see foot note, page 889, Keating) "that in tropical pyrexia it is always a matter of great importance, both from the diagnostic and prognostic standpoint." The earliest observers of dengue satisfy themselves with noting simply the color, quantity and reaction, and these are usually most diversely described. Other observers are, however, much more satisfactory. Thus Morgan noticed a specific gravity 1004 to 1040, acid, *non-albuminous*; Chipperfield, acid, sp. grav. av. 1010, *non-albuminous*. Goodeve detected an occasional trace of albumin in four cases in the Indian epidemic of 1853, while Charles and Martialis *never detected* it in the epidemic of 1872. In China at Amoy, Muller and Manson *failed to find albumin*. Albuminuria was detected *only once* in the epidemic of Martinique in 1860, and twice in Cochin China by French observers in 1875 (Mahe). Albuminuria was observed exceptionally by Holliday and his co-laborers (loc. cit.) in Louisiana. Enough has been said to prove that albuminous urine is an exceptional occurrence in dengue, which differentiates it markedly in this respect from yellow fever."

Eugene Foster, *Ref. Handbook Med. Sciences*, Vol. 2, page 397, gives the following summary of the points of similarity and dissimilarity in dengue and yellow fever.

"In time of appearance, and generally in geographical distribution they seem related to one another. Dengue has, however, prevailed in Asia and Egypt, where yellow fever is unknown. Both diseases are arrested by severe frosts. Both dengue and yellow fever are diseases characterized by one febrile paroxysm." In order to show contrast, the symptoms will be arranged in parallel columns:

YELLOW FEVER.	DENGUE.
The fever rises steadily.	The fever rises regularly until the acme is reached, when a short stadium of a few hours occurs, followed by a remission, when a second rise of temperature takes place, but not reaching the former height.
The pulse becomes slower, while the temperature rises.	The pulse increases in frequency with the rise of temperature.
Fever lasts seventy-two hours.	Fever lasts five to eight days.
Vomiting frequent.	Vomiting rare.
Eruption rare.	Eruption common.
Jaundice almost invariably present.	Jaundice extremely rare.
Urine scanty, frequently albuminous and often suppressed.	Urine generally high colored, normal in quantity, free from albumin and never suppressed.
Hemorrhages frequent, alarming and often fatal.	Tendency to hemorrhages from nose, gums, bowels, lungs and womb, with occasional black vomit, but hemorrhages, as a rule, insignificant.
Often fatal.	Proverbially non-fatal.
One attack protects from another.	One attack not protective against another.
Not protective against dengue.	Not protective against yellow fever.

Quoting Sternberg again from his article in *Buck's Reference Handbook*, Vol. VIII, page 60, speaking of the diagnosis of yellow fever, says: "Of the three prominent features making up the clinical tableau of yellow fever, viz., a yellow skin, highly albuminous urine and black vomit, only one is a constant character which can serve in establishing the diagnosis in mild cases; this is the presence of albumin in the urine. At some period in the disease, even in the

mildest cases there will be a distinct trace of albumin in the urine as shown by the usual tests, and this will be usually sufficiently abundant to leave no doubt in the mind of the observer as to the nature of the precipitate. The value of this test in the differential diagnosis is indisputable. It is true that a trace of albumin is sometimes found in the urine of severe cases of fevers of malarial origin, but in cases of yellow fever of equal severity as compared with these, the precipitate would, as a rule, be very abundant on the third or fourth day of sickness, forming a deposit to the extent of one-fourth to one-half of the contents of the test tube, or even more. At the same time a microscopic examination would show the presence in the urine of numerous granular casts from the tubuli uriniferi. These are found also, although in a smaller number, in the urine of the milder cases during the second stage of the disease."

"The second stage of the disease is commonly, however, well marked in non-fatal cases, and is its most characteristic feature, the remarkably slow and soft pulse, the evident prostration of the vital powers, although the patient may be comfortable, and even cheerful and desirous of getting up and taking food, the yellow tinge of conjunctivæ and skin (not always present), the tenderness on pressure in the epigastric region, and often a feeling of weight and distress, attended with intense thirst and vomiting of a transparent acid fluid, or of the characteristic black vomit, the tendency to passive hemorrhages from the mucous surface of the mouth or nose, oozing of dark blood from the gums or lips, or sides of the red and fissured tongue; the scanty urinary secretion, and the presence of albumin, usually in considerable amount, constitutes an unmistakable ensemble of symptoms."

It appears from the above quotations that the symptoms which have heretofore been relied upon to differentiate between yellow fever and dengue are the occurrence in the former of albuminuria, the characteristic facies (inclusive of jaundice), the divergent pulse and temperature, excessive irritability of the stomach, and increased disposition to hemorrhages. The absence of such symptoms in the main, the presence of an eruption in a large proportion of cases, and a want of mortality are characteristic of dengue. In the epidemic herein described we have an apparently inextricable confusion. A wide spread epidemic of fever presenting the symptomatology of yellow fever in many instances, but with the eruption of dengue and practically with no mortality. One of two deductions is irresistible, either the two diseases approximate more intimately in their symptomatology than has heretofore been taught or yellow fever of remarkably mild type has been associated to a greater or less degree with dengue; granting the reliability of the testimony herein presented both conclusions are warrantable. I shall not attempt here to solve this problem so far as the epidemic of the interior is concerned, but will present the evidence which is convincing to my mind that the latter proposition is true as to the coast cities of Galveston and Houston. Before doing so however, let me refer briefly to certain facts in regard to the epidemic east of the Mississippi taken chiefly from the report of the Louisiana State Board of Health, dated Dec. 6, 1897. The first death from yellow fever was reported by Dr. J. M. Holloway of Louisville, Ky., about August 18, the patient having gone to that city from New Orleans via Ocean Springs where the disease was supposed to have been

contracted. Subsequently to which, four official investigations were made as to the nature of the epidemic at Ocean Springs resulting as follows:

1. The visit of Dr. S. R. Oliphant, president of the Louisiana Board of Health August 22, 1897, who reports finding an epidemic had been prevailing the previous six weeks, that 400 cases had occurred in the practice of two physicians, without a single resultant death, and that it was considered to be dengue of mild type.

2. On August 23 a commission of experts from the New Orleans Board, from the Mississippi State Board and others sign a report which concludes as follows: "After a careful inspection and examination of the aforesaid cases, we are positive in our opinion that the disease is dengue, and that in no case is there or has there been any symptoms which would lead to even a suspicion of a more serious disease."

3. On August 27, we have a report of another commission, to which the name of the health officer of Alabama is added, stating: "In reply to your request we have again investigated the fever at Ocean Springs, which is abating and absolutely without fatality. The conclusion arrived at was *that it is not yellow fever.*"

4. On September 6, we have the following statement: "The patient died Sunday night, and early Monday morning the expected autopsy was performed by the bacteriologist of the board in the presence of the medical gentlemen assembled. Unmistakable evidences of yellow fever having been revealed, we arrived at a unanimous verdict."

According to Dr. Oliphant the grand total of cases in New Orleans did not reach 2000, nor the deaths 300, a mortality of 15 per cent. based upon reported cases which would doubtless be much smaller if founded upon the actual number. Another significant fact noted by Dr. Oliphant in the epidemic, which verifies the history of previous ones in New Orleans and elsewhere, is that yellow fever does not burst forth suddenly, but gathers volume and force after smoldering for a time, e.g. it was introduced into Edwards, Miss., August 8, but gained no headway until the middle of September. Confirmatory as to the remarkable mildness of the last epidemic¹ Dr. L. Sexton writes from New Orleans September 20, "*Our present death rate is lower than in any epidemic of yellow fever,* if the present death rate prevails throughout this visitation we will have to send around a subscription list for our undertakers."

What bearing have these facts upon conditions as they existed in Texas? In my opinion they are convincing when taken in connection with the clinical history of certain cases that the epidemic upon the Texas Gulf Coast was similar to that in Louisiana, Mississippi and Alabama, the results being modified by the late introduction of yellow fever infection and by the presence of unfavorable conditions for its dissemination. It should be remembered that the declaration of quarantine by Galveston was made on September 10, nearly a month after the recognition of yellow fever at Ocean Springs, that the latter place is directly upon a common route of travel between eastern and Texas points, and that a month subsequently the diagnosis of yellow fever in Galveston and Houston was made by Dr. Guiteras. Under such circumstances it is not surprising that yellow fever infection should have been introduced into Texas; nor should it be a matter of wonderment that it should not have

¹ American Medico-Surg. Bulletin, Oct. 10, 1897, page 908.

Observer and location.	Date of outbreak; proportion of population affected; duration; origin.	Meteorologic and hygienic conditions.	Symptomatology.
Dr. C. H. Wilkinson, Galveston, Southern coast. Pop. about 50,000; treated 500 cases. "History of dengue epidemic in Galveston in 1897."	July 15; commenced in light form; suddenly, August 15, becoming more virulent and spreading rapidly; 50 per cent. of population affected.	Weather excessively hot and dry. Sanitary condition said to be good.	Eruption military, coming within 48 hours, appearing especially upon face and upper part of the body, profuse perspiration. Fever of one paroxysm lasting 3 to 4 days, declining by lysis. Glandular involvement not noted. Hemorrhages frequent, especially from the nose, also from stomach and bowels. Nausea and vomiting noted, especially after Oct. 1. Many specimens of urine examined; high specific gravity; albumin absent.
Dr. Geo. H. Lee, Galveston, has notes on 490 cases. From article "Dengue or yellow fever." Reprint from N. O. Med. and Surgical Journal.	First case observed July 29, from San Antonio. Subsided latter part of November. Probably spreading from San Antonio.	Not noted.	Eruption occurred in two stages, first day hyperemia; in 80 per cent. a mild macular dermatitis coming on second to fourth day, ending in slight exfoliation. Affection of glands noted in but few cases. Hemorrhages in about 10 per cent., from nose, gums, throat, uterus, bowels and stomach one case, kidneys three cases. Albumin examined for in about 50 cases, 8 of which had previous kidney trouble; 20 out of the 42 had albumin on third and fourth day; in 6 in large amounts. Other characteristics and uremic symptoms not noted.
Dr. J. M. Coble, Dallas, D. Co., about 200 m. n. of Houston, R. R. center; pop. about 50,000.	Date of first case September 22; spread rapidly to various parts of the city, affecting c. 6 per cent. of the pop. Arrested by cold weather November 1.	Weather continued warm until Nov. 1. Local hygienic conditions poor in some sections.	Eruption noted as slight in about 4 per cent. Submaxillary glands enlarged in about 20 per cent. Hemorrhages not noted, neither dysenteric symptoms; urine examined in 25 per cent. and slight albuminuria found in 10 per cent. of these; slight nausea in a number.
Dr. Frank Paschal, San Antonio, Bexar Co., S. W. Tex.; c. 150 miles from coast; elevation c. 1000 ft.; pop. c. 5000.	Outbreak began Aug. 1; spread rapidly, soon affecting 75 per cent. of the pop. Lasted until about Oct. 20. Possibly introduced by attendants upon the interstate drill July 19-23.	Weather excessively hot and dry. Sanitary condition very bad; no sewerage; San Antonio River polluted, stinking.	Eruption present in possibly 90 per cent., coming on at end of the fever, erythematous. Hemorrhages and glandular involvement not noted. Nausea and vomiting frequent and severe; present in 33 1/2 per cent. No dysenteric symptoms noted. Albumin not examined for. No uremic symptom noted.
Dr. W. L. Peeples, Navasota, Grimes County, about 70 miles north of Houston. Population, 5000.	Outbreak about September 1, attacking negroes only until middle of the month, when it spread to all classes and ages, affecting probably 50 per cent. of the population.	Nothing noted.	Attack sudden, high fever, low pulse, severe epigastric pains, excruciating pains in back, head and extremities, the latter less severe. Nausea and vomiting incessant. Eruptions frequently absent in adults, almost invariably present in children. Glandular enlargements frequent in the neck and surrounding regions; hemorrhages quite frequent from gums, stomach, nose, bowels, uterine appendages and kidneys. No dysenteric symptoms in reality. Albumin, from slight trace to abundance in urine, with almost total suppression (readily yielding to proper diuretic treatment), varying from a deep straw to blood color, no casts and frequent uremic symptoms. Prognosis always favorable (comparatively speaking). Albuminuria does not deter prompt recovery, according to my experience.
Dr. R. R. Walker, Paris, Lamar Co., near N. E. border. Pop. c. 10,000.	Epidemic slight; began in July and continued until frost.	Nothing unusual noted.	Eruption present in but a small percentage, reddish papules appearing first upon face and exposed surfaces. Glandular involvement and hemorrhages not noted. No symptoms of dysentery. Albumin present in 25 per cent. of the cases; nausea and vomiting in 50 per cent.
Dr. Geo. R. Taber, Bryan, Brazos Co., c. 100 miles N.W. from Houston; population c. 4000.	First case reported Oct. 10, a Polander, having been exposed a week previously in Houston. The second case, a German, also from Houston. A week later a dozen cases and in the next thirty days about 100. The disease disappeared upon the advent of cold weather.	Weather dry, not excessively hot; hygienic conditions good.	Eruption present in 50 per cent., scarlatinaform and urticarial glands involved in two cases only, cervical. Hemorrhages, percentage small, in one case resembled black vomit; coagulated blood in stools in this case. Nausea and vomiting severe in most cases, with excruciating headache. Albumin was examined for in only two cases and not found.
Dr. Taylor Hudson, Belton, Bell Co., c. 150 miles N.E. from Houston and San Antonio; population 5000.	Began about September 1, spread to all parts of the town in twenty days, affecting 60 per cent. of the population. No evidence as to origin.	Nothing unusual as to weather; hygienic conditions of the town good.	Eruption not described, present in 50 per cent.; glands not often involved; hemorrhages noted occasionally from the nose and uterus; nausea and vomiting in 80 per cent., and in 20 per cent. severe; dysenteric symptoms rare; albumin only tested for in a few suspicious cases and found in several; urine diminished, dark color, no blood noted; uremic symptoms pronounced in several cases.
Drs. Wilson, Harris and Young, Navasota, Grimes Co., c. 70 miles N.W. from Houston; population c. 5000.	Epidemic began about September 15, affecting about 75 per cent. of population; rapid spread; declined about December 15; no evidence as to origin.	Weather dry, no unusual heat; local hygienic conditions good.	Only a few examinations for albumin made, none found; no uremic symptoms noted. Eruption present in about 25 per cent., resembling that of scarlatina and measles, at times confined to face and neck. Cervical glands and tonsils enlarged, as a rule, in cases with rash. Hemorrhages from nose, uterus, bowels, gums and kidneys occurred frequently. Nausea and vomiting in about 80 per cent., often obstinate and severe. Albuminuria examined only toward close of epidemic in about 50 cases, present in 40 in good quantity; diminished quantity and high colored urine, casts and blood cells in 3 cases; uremic symptoms in 4.
Dr. Thos. G. Dnnan, Victoria, Victoria Co., c. 125 miles S.W. from Galveston and Houston, near coast; population c. 2500.	Epidemic began about September 15, affecting about 33 1/2 per cent. of population in town and smaller proportion in the country. No evidence as to origin.	Weather dry and hot, but not unusually so; haziness of atmosphere was noted similar to that of 1867.	Eruption in part of cases erythematous. Glandular involvement not noted. Heard of one case of black vomit; nausea marked and almost universal; dysenteric symptoms not noted; no urinary symptoms noted.
Dr. E. W. Link, Palestine, Anderson Co., c. 150 miles north of Houston; railroad center.	Epidemic commenced about middle of September; spread rapidly, affecting about two-thirds of the population. Probable origin San Antonio and Houston.	Weather hot and dry; local hygienic conditions bad.	Measly eruptions generally present; enlarged glands not noted; hemorrhages in a few cases from nose and bowels; nausea and vomiting not noted often; dysenteric symptoms in a few cases; albuminuria and other urinary symptoms not examined for.
Dr. W. W. Walker, Schulenberg, Fayette County, about midway between San Antonio and Houston. Population about 1500.	First case August 19, 90 per cent. of population attacked, declined about Oct. 10 for want of material, then spread to the country and continued until Dec. 10.	Weather dry, little wind, temperature reaching 102 degrees in shade. Local hygiene good.	Eruption present in 90 per cent., irregular as to time of appearance and character. Glandular involvement noted in about 4 per cent., especially in children, parotid, sublingual, inguinal, suboccipital. Suppuration in two cases. Hemorrhages occurred in about 4 per cent. from the nose, gums, rectum, in one generally from mucous membranes, in two so severe as to require repeated injections of ergotin. In three cases black vomit. Stomach, nausea and vomiting almost universal. Severe dysenteric symptoms in a few cases. Albumin tested for only in worst cases and found in about ten, in some in large amounts.
Dr. J. W. Thomason, Huntville, Walker County, about 70 miles north of Houston. Population about 2500.	Sept. 21, first case a young lady from Galveston, it was several weeks before other cases occurred in the same house though it was full of young ladies. Other foci of infection were developed by parties from Houston and Galveston, rapid spread after above date. About two-thirds of the population affected. Duration of epidemic about three months.	Weather excessively hot and dry, no other form of sickness prevailing.	Eruption present in 2/3 of cases; erythematous, military, scarlatinaform and rubeloid. Glandular enlargements not noted. Hemorrhages, out of 180 cases three had bleeding from stomach, in one the case from Galveston resembling black vomit. Nausea and vomiting present in nearly every case, distressing in many. Mild dysenteric symptoms noted in about 7 per cent. Abdominal pains in region of appendix noted frequently.

Ratio of pulse to temperature.	Jaundice.	Mortality.	Progressive severity.	Remarks.
Pulse rate comparatively slow and regular, many cases not above 84 or 100 with temperature 108.	Began to be observed in a large proportion of the cases after Oct. 1. In most cases confined to conjunctivæ, in others upon face and coming on early in the fever.	Does not believe there was a case of yellow fever in Galveston. The Wade case was the most auspicious. Diagnosis, <i>acute infectious jaundice</i> . Death certificate signed uremia.	Distinctly noted; mild in the beginning, latter part of July and August. More severe in September and still more virulent in October.	Conclusion. The Wade case was not yellow fever because of survival beyond usual duration, intense nausea and protracted retching instead of easy vomiting; calm indifference to surroundings, lack of postmortem evidence of fatty degen. of kidneys or liver and of hemorrhages.
Want of correlation between pulse and temp. occurred so frequently as to be almost the rule, <i>e. g.</i> , temp. 102.3, pulse 66; temp. 108, pulse 80. This condition noted in some from beginning and in others after second paroxysm.	Jaundice of mild grade was the rule from first to last, not of the skin, for this was noticeable slightly in a very few, but a slight yellowness of the conjunctivæ.	Practically no mortality; one death in which dengue occurred as a complication of a previously existing interstitial nephritis. Does not believe there was any yellow fever in Galveston during the past season.	Not specially noted.	Temp. usually high in beginning, came (after slight remission) high again toward end of attack. Duration on average, 4 days; in mild cases 3, in 50% 5. Conjunctivæ usually mildly injected. Also hyperemia of face and neck. Neuralgic symptoms marked in 90% of cases in head, back and limbs.
Not noted.	Marked and noted in 30 per cent.	No deaths. Suspected yellow fever at first owing to jaundice, nausea and vomiting and temperature.	No difference in severity as epidemic progressed.	
Abnormally slow.	Not noted.	No mortality. Yellow fever not suspected.	Increased.	
Generally abnormally slow in proportion to height of temperature, <i>e. g.</i> , pulse 45, temperature 100; pulse 80, temperature, 105.5.	More or less present.	No mortality. Recognized analogous symptoms, but did not suspect yellow fever.	Very little difference in severity as the epidemic progressed.	Continued during January, 1898. Noticed several sequelæ, one of them falling of the hair during second and third months after recovery.
Normal.	None noted.	None.	But little difference.	
Pulse about 120, with temperature 108-105	None noted.	No deaths. Not suspected.	No increase in severity as epidemic progressed.	Small number of cases ascribed to extraordinary sanitary precautions and strict quarantine.
About normal.	Mild in 10 per cent., severe in 2.5 per cent.	One death from uremic complications; case seen in consultation; no autopsy. No.	No difference.	
In 50 per cent. cases abnormally slow pulse in proportion to temperature.	Jaundice in 75 per cent. more or less marked.	No deaths. Suspected from symptoms, but lack of mortality precluded such an opinion.	No marked difference as epidemic progressed.	More severe with old people; children suffered comparatively little.
Not noted.	Found in a few cases.	No mortality in the absence of complications. The case of suspected death from yellow fever turned out otherwise. No.	Decrease in severity as epidemic progressed.	
Not noted.	Noted in a few cases where nausea was marked and hard to control.	Two deaths, one with uremic symptoms and one from bowel complications. Is not sure they died from dengue; occurred in the practice of Dr. Evans. No.	Not noted.	
Abnormal slowness of pulse in proportion to temperature noted in several cases with temperature over 100, pulse would range from 50-60 and 65.	Observed in 4 per cent., to a slighter degree in about 7 per cent.	Lost but one case, which was complicated by acute rheumatism and mal-assimilation. Only one other death from dengue, but a number of old persons have died during following winter from failure to recuperate. Symptoms of some cases so nearly approached those of yellow fever, unable to discriminate.	Epidemic increased in severity for about six weeks or until it subsided for want of material.	Dr. Walker is familiar with both yellow fever and dengue.
Pulse slow in proportion to height of temperature. In one case pulse 72, temperature 102½. In another, pulse 90-96, temperature 103-104.	Jaundice noted in about 7 per cent. Gastro-duodenal catarrh to some extent in most cases.	No mortality. No.	Worst cases in beginning and middle of the epidemic.	

Observer and Location.	Date of outbreak; proportion of population affected; duration, origin.	Meteorologic and hygienic influences.	Symptomatology.	Remarks.
Dr. Robert T. Morris, Houston, Harris Co., fifty miles from coast, railroad center; population about 60,000.	About September 1; mild at first, rapidly spreading in three weeks, affecting a large proportion of the population.	Not noted.	Paroxysm—Single. Temperature—Rises regularly. Duration—Three to five days. Tongue—White center, red pointed. Conjunctivæ—Injected. Stomach—Irritable and nausea. Vomit—Frequent. Neuralgic signs—pain in head, back and stomach. Eruption—Erythema noticeable. Jaundice—Frequent, especially in conjunctivæ. Secretions—Deficient. Urine—Diminished, albuminous. Hemorrhage—Frequent and alarming, black vomit. Mortality—About thirty deaths. Pulse—Divergent pulse and temperature frequent.	In the January, 1898 number of the S. W. Med. Record Dr. Morris discusses the nature of the epidemic in Houston; from this article the following is a condensed statement. He shows: 1, how infection may have occurred by refugees from Ocean Springs before quarantine was declared; 2, that the cardinal symptoms of yellow fever were present in many cases, viz., the characteristic fever, divergent pulse and temperature, jaundice, scanty suppressed and albuminous urine, black vomit in three cases; a connecting link was noted between anomalous cases in several instances. An increase in the mortality rate of 20 over that of the preceding year was noted; 11 deaths ascribed to senility, 5 from dengue, 11 from enteritis and gastritis, 10 from fever, 1 from meningitis and 5 from kidney diseases.

been generally recognized when we take into consideration that it came in the guise of dengue, was introduced late in the season, into localities where the conditions were unfavorable for its spread, and that according to all testimony, it was the mildest epidemic of yellow fever ever known in the history of the country.

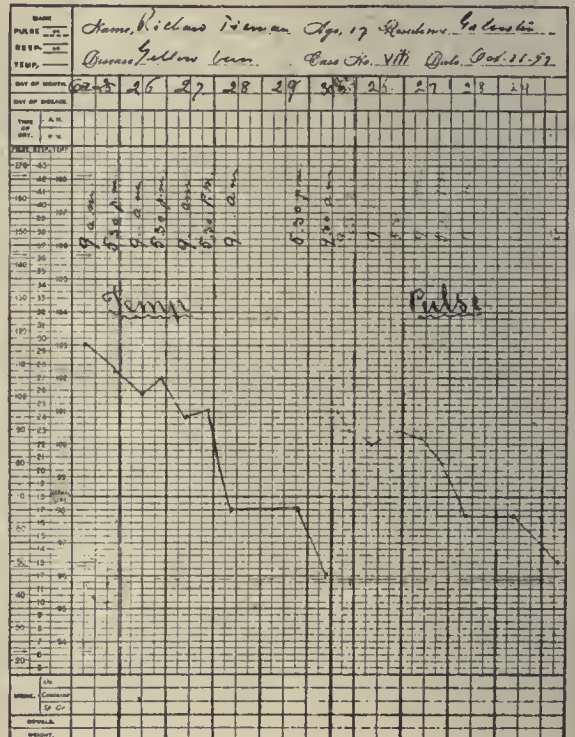
Admitting that there is greater similarity in the symptomatology of the two diseases than has heretofore been acknowledged, the question arises, how can they be differentiated? In my opinion chiefly by the symptom complex of an acute nephritis in yellow fever and its absence in dengue. In the latter, simple parenchymatous changes may occur in the kidneys and be manifested by an evanescent and mild albuminuria. While in the former in a series of cases many will afford incontestible evidence of the occurrence of a severe nephritis, viz., scanty urine, of high color and specific gravity, intense and persistent albuminuria, hematuria, casts, decided tendency to suppression and the accompanying uremia.

The following are brief clinical histories of the three cases, reported by Dr. R. T. Morris occurring in Houston² and one from Galveston reported by the writer.

Case 1.—Oct. 23, N. J., aged 28, was called late in the evening; found patient suffering with anorexia, pain all over body, but especially marked below knees; constipated but urinating freely; temperature 103; severe frontal headache; no albumin in urine. Prescribed castor oil, and being called out of the city, did not see patient till three days later, when he was found to be very low; pulse hardly perceptible, not over fifty-four to the minute; retching but no vomiting; urine heavily loaded with albumin; total amount voided in twenty-four hours three pints; patient muttering to himself, but on speaking loud to him could be aroused, and would give intelligent answer, although a few minutes after conversation ceased he would drop back to unconsciousness; at 6 P.M. vomiting of a coffee-ground-like substance set in, not more than a tablespoonful every hour till next morning, when, of a sudden, without any effort whatever, a gush of same kind of vomit was ejected, amounting to at least a pint and a half. Inside of fifteen minutes after this vomit patient expired, and after ten minutes his corpse was of a decidedly yellow tinge, and dependent portions discolored like after severe bruising.

Case 2.—September 19, called to see I. R. F., male, aged 22, found what I believed to be incipient dengue; reported improved by the 21st; on the 22d recalled in haste; on arrival found patient comatose, pulse 56, temperature 103.5 degrees; on arousing he told me, and the statement was confirmed by his mother, that all urine he had passed since the day before (in all 28 hours) was in a vessel under the bed. By ocular inspection was found to be very dark and muddy, smell strongly ammoniacal, examined at office, albumin in great quantity, nearly solidifying in test tube. Returned at once to patient; found him again in comatose condition and having voided a small quantity of urine which had strongly colored the linen. Prescribed tincture digitalis, ergot, spirits juniper and liquor ammoniæ acetatis. Recovery uneventful but exceedingly slow; yellow tinge in eye appeared as late as 26th, disappearing after forty eight hours.

Case 3.—R. T. Jr., native of Galveston, aged 16, of robust constitution and previous perfect health, was taken sick suddenly October 24 in the afternoon, with a slight chill followed by high fever, with intense headache, pains in the back, limbs and joints. At my first visit on the 25th, as soon as the room was entered a peculiar nauseating odor was perceived, the eyes were watery and red with a yellowish tinge, the skin was decidedly yellow, the gums were softened and disposed slightly to bleed, anorexia was marked, tongue coated and red at its tip and edges, excessive nausea and disposition to vomit everything swallowed, bowels had moved from a purgative. The patient was nervous and indisposed to sleep. The course of the fever is typical and is exhibited in the accompanying chart. It should be noted that when a normal temperature was reached on the 28th, the fifth day of the fever, that the pulse dropped to 64, and that on the 30th when the temperature was subnormal the pulse was 50. The stomach continued to be irritable, there was epigastric tenderness. On the night of the 29th blood was vomited in small quantity; the urine was scanty, of high color and specific gravity. A heavy precipitate of albumin was found on the 29th, also granular casts. Daily examinations showed albuminuria during the following eight days, after which it gradually subsided as the urine became paler and more abundant. The albuminuria was more intense during the stage of depression. After a tedious convalescence recovery ensued. My diagnosis of a severe attack of yellow fever was confirmed by Drs. McLaughlin and Magruder, both of whom have had experience with this disease.



It is useless to add any comments or summarize any S. W. Med. Record, January, 1898, p. 415.

other cases with similar histories. What other diagnosis could have been made than that of yellow fever. *Anomalous dengue* was one of the names suggested during the recent epidemic; if this is dengue, then the identity of that disease and yellow fever is established. When pressed for a diagnosis in certain of these cases, some of the Galveston experts denominated them Weil's disease, or acute infectious jaundice, which is manifestly such a far fetched conclusion that words would be wasted in its refutation.

One of the arguments which has been repeatedly used against the existence of yellow fever in Texas during the past season, was the want of mortality. Upon this point let me quote Dr. Morris again:³ "From Oct. 1, 1897 to Nov. 18, the death rate in Houston was 33½ per cent. greater than in the corresponding period of 1896." The causes given in death certificates are as follows: senility 11 (four of whom were not over 60); dengue 5; enteritis and gastritis 11; fever 10; meningitis 1; kidney disease 5. The record of Galveston does not show any increase of deaths during the months of August, September and October over the previous three years. There were five deaths however preceded by symptoms of yellow fever; it is a significant circumstance that in four of these uremia was given in the certificate as causes of death. In the other, congestion of the lungs was mentioned as the primary, and bilious fever as the remote cause.

Those who deny the existence of yellow fever in Texas during the past season rely chiefly upon the apparent indisposition of the disease to spread from numerous foci. In other words, they contend that the presence of the infection necessarily involves its dissemination. No extended argument is requisite to demonstrate the fallacy of such conclusions. The pathogenic micro-organism of yellow fever is a facultative parasite, but its ordinary mode of life is saprophytic. It grows and develops outside of the body when the conditions are favorable for its reproduction. The seed may fall by the wayside, or upon a rock, or among thorns and wither away, or upon good ground and spring up and bear a hundred fold. The fact that the soil of Texas was an unfavorable one for the multiplication of the yellow fever germ last season is an adequate explanation of the history of the recent epidemic. It is not contended that the hygienic condition in these cities was perfect, but that the combination of circumstances was antagonistic to the extensive dispersion of the infection. Instead of being a blot upon the sanitary escutcheon of Houston and Galveston, it is another demonstration of the fact which has previously been observed, that yellow fever may be brought to these places without necessarily involving an extensive epidemic or serious mortality. Two important lessons should be emphasized; 1, the urgency of promptly recognizing the early cases and calling them by their proper name, for by this means only may subsequent disaster in many instances be averted; 2, we should put our houses in order, in other words adopt every possible method of domiciliary and municipal cleanliness. Napoleon is said to have remarked that "Providence was on the side with the strongest artillery." When yellow fever is around Providence is on the side of the town with the best system of sewers. Again, it has been demonstrated that yellow fever may masquerade in the garb of dengue and that the latter is a portable disease; leaving out of the case the probable association with yel-

low fever, it became a serious question whether dengue should not be considered a quarantinable disease. The suffering and expense incident to an extensive epidemic like the one of last season would certainly appear to justify measures of prevention.

DISCUSSION.

Dr. KINYOUN of the U. S. Marine-Hospital Service—I have had some experience with yellow fever and dengue. Dr. West's paper is a very able one and he has gone into the points in differential diagnosis very thoroughly. I recall the history of the epidemic of dengue which occurred last year, April 12. The crucial test was made. In certain cities, not purposely but as a matter of convenience, persons were employed as disinfectors who had had dengue previously; none of these had the fever. Catarrhal jaundice, dengue and mild yellow fever are unfortunately closely allied. And when we take this fact into consideration in the epidemic of last year it will be known that many cases of dengue were reported which were not dengue at all but mild cases of yellow fever.

Dr. BREWER of Texas—Jaundice occurs in about 50 per cent. of the cases. There were 600 cases and there were no deaths attributable to dengue fever. There was great excitement in the whole country but when it was found that there were no deaths following this epidemic, the excitement abated.

H. A. WEST of Galveston, Texas—I regret, Mr. Chairman, that this subject has not been discussed more fully, as the situation in Texas, imperfectly sketched in the paper, was of the most interesting a medical man is ever called upon to encounter. I would like very much to have heard the opinion of those whose experience has been wider than mine, especially as the narrated facts appear to controvert the generally accepted views as to the differential diagnosis of the fevers under consideration. The diagnosis of yellow fever in Galveston and Houston made by Dr. Guiteras was fought to a finish by the public prints, the people at large and by the majority of the physicians. It was iterated and reiterated that "yellow fever kills," "there is no such thing as mild yellow fever" and woe betide the man who had the temerity to raise his voice against the verity of this assumption. The actual mortality was hidden by certificates giving as the causes of death "senility, dengue, uremia, bilious fever, etc." The argument was sophistically presented by some as in the title of a paper upon the subject, "Dengue or Yellow Fever," that is to say it must be one thing or the other and leaving out of view entirely the probability of the concurrent prevalence of the two diseases. I have presented the facts, which are conclusive to my mind, that such was the case, also that yellow fever is not always and necessarily attended by a terrible mortality (this is one of the most instructive lessons of the recent epidemic, not only as to Texas, but in the regions east of the Mississippi); that it may not rapidly spread from numerous foci; that the symptomatology of yellow fever and dengue approaches more intimately than has hitherto been taught; and that in the light of the facts I have presented, the differential diagnosis of these fevers will have to be rewritten.

RARE CASES OF ARHYTHMIA.

Presented in the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Arhythmia is a symptom that is common to many diseases and conditions, but the scope of the present article is limited principally to the clinical features of certain forms of the disorder not hitherto described, that have fallen under my observation. The examples that I shall adduce are too few to establish tenable hypotheses, either in their etiologic or clinico-pathologic bearings, yet they present points of rare clinical interest.

The first case occurred in the person of a physician, aged 40 years, who had been an abuser of tobacco for a protracted period, having habitually smoked from eight to twelve cigars daily. The family history gave undubitable evidence of a gouty tendency, and the

³ S. W. Med. Record, January, pp. 413-414.

patient himself had suffered from acute articular rheumatism on two different occasions. A careful physical examination permitted the positive exclusion of organic valvular diseases, and the probable elimination of other structural affections of the heart. Nor were any of the usual causative morbid conditions that usually precede or are found associated with arhythmia present, except the tobacco-habit.

The functional disturbance of the heart first assumed the form of true palpitation—*i.e.*, the patient perceived the rapid cardiac pulsations, at the same time experiencing considerable mental anxiety and slight anginous pains. A little later a curious, and so far as I know, peculiar form of arhythmia manifested itself. For example, on auscultation four sounds could be distinguished during cardiac rhythm, and it seemed clear that both the first and second sounds of the heart were reduplicated. The fact that the first sound was doubled was confirmed by the pulse, which was felt during the auscultation of the heart; the pulse-wave appeared to strike the palpating finger at the wrist synchronously with the second (feebler) element of the systole, while the impulse at the apex coincided with the first (stronger) element of the first sound. The pulse showed the modified double beat (*pulsus bisferiens*) when moderate pressure was made upon the radial. The *pulsus bisferiens* has been most frequently met with in combined aortic incompetency and aortic stenosis. The case here recorded is the only one (apart from a double aortic lesion) in my experience in which this form of pulse was typically shown. It is doubtless dependent upon double ventricular contraction. Elevation of both arms, so as to increase the force of the blood stream in the direction of the left ventricle, increased somewhat the irregularity, and accentuated the distinctive arhythmic features above described.

Broadbent¹ points out, also that "The *pulsus bisferiens* can not uncommonly be induced by an effort, which throws additional work upon the heart; for instance, in one case it was not present while the patient lay quietly in bed, but was brought out when he held up both his hands."

Cardiac action, in my case, was accelerated, the radial pulse ranging from 100 to 108 per minute. In a general way, the heart sounds resembled those of the well known canter rhythm, in which there is an interpolated sound, due in a majority of cases to the splitting up of the second sound, but in the instance under consideration, a second interpolated sound was heard, following immediately upon the impulse, and it was ascribed, as before stated, to a double systole. To clearly show that the double second sound was a genuine reduplication in this case, I would direct especial attention to the following points: first, it was most distinctly heard at the base; secondly, the two elements of the duplicated sound were separated by an exceedingly brief interval, and finally, that both strongly resembled the normal second sound.

True reduplication of the second sound, which depends upon "a disturbance of the relation which normally exists between the pulmonary and aortic pressures," results from a great variety of causes. It is a well-established fact that in conditions in which the pulmonary tension is unduly high (mitral stenosis, etc.,) doubling of the second sound is common. Arthur G. Phear² states that it may be met with in

cases of anemia and debility, conditions that were not present in my cases. Phear has made an analysis of twenty-five cases of which detailed notes were available, with the following results: "a, mitral murmurs were present in ten cases, in five of which the murmur was presystolic only, in four systolic only, and in one double; b, in twelve cases, exclusive of the ten with mitral murmurs, anemia or debility was present, the individuals in many instances being convalescent from some acute febrile disease; c, two cases of acute lobar pneumonia, and d, in one case there was hypertrophy of the heart, with high tension pulse, and 'bruit de galop' audible at the apex."³

I have carefully excluded so-called simulated reduplication, which is audible at the apex only, while at the base a single second sound is heard. Simulated reduplication, a rare condition, can not for lack of time and space be further considered here. A sphygmogram could not be conveniently obtained.

The patient was strongly advised to discontinue the smoking habit, and at his next visit, one month later, the peculiar form of arhythmia, to which the term "double reduplication" of the cardiac sounds might be appropriately applied, had practically disappeared. Since then mild attacks of palpitation at long intervals, particularly as is usual on assuming recumbent posture at night and an occasional intermissions have been experienced.

A second instance of so-called "double reduplication" was observed in a female, under my charge in the Medico-Chirurgical Hospital, aged 43, single, suffering from exophthalmic goiter in the advanced stage. The latter affection followed prolonged physical and mental strain. All of the characteristic symptoms had apparently developed in their usual sequence, *i.e.*, tachycardia, muscular tremor, exophthalmos, and lastly, thyroidean enlargement. The cardiac impulse at the time of my first examination was greatly exaggerated; percussion dulness increased slightly, both to the right and the left, and auscultation rendered audible a blowing murmur over the base of the heart, while the valvular sounds were accentuated.

There was probably slight cardiac dilatation (secondary to functional hypertrophy) present, a common incident in this disease. The case immediately prior to admission (February 28) had, as stated before, reached an advanced period, with constant and markedly irregular action of the heart (*delirium cordis*). Twenty-four hours before death a gallop rhythm was clearly distinguishable on auscultation, while twelve hours previous to death, or at my last examination of the case, both the first and second sounds were apparently reduplicated. In this instance, also, the pulse was felt at the same time that auscultation was practiced. The *pulsus bisferiens* was not present. The reduplication in this instance, as is usual, was most clearly heard when the stethoscope was placed partly over the left and partly over the right ventricle near to the apex-beat. It was obviously caused by asynchronous contraction of the two ventricles.

A third case of arhythmia, while manifesting distinctly peculiar and rare features, was associated, as commonly occurs, with marked obesity. M. W., aged 58 years, widow, childless, weight 280 pounds, complexion ruddy, consulted me August 10, 1896, on account of inordinate dyspnea on slight exertion, and gastric disturbance. The family history was negative, except-

¹ Heart Diseases; With Special Reference to Prognosis and Treatment, p. 148.

² Lancet, January 9, 1897.

³ Loc. cit.

ing the presence of positive evidence of a slight gouty taint. The patient had begun to take on flesh in a slow and gradual manner twenty years previously, though actual lipomatosis had not existed for more than ten years.

Condition at the time of examination.—The pulse was found to be wholly irregular, both in volume and rhythm, and increased in frequency to an average rate of 96 while the patient was at rest. On auscultating the heart while the pulse was felt at the wrist, it was noted that systole occasionally failed to send a pulse-wave to the radial that the palpating finger could detect. Upon careful and repeated physical examination, which although far from satisfactory in its practical results on account of the enormous deposits of fat, valvular affections of the heart were not demonstrable. On the other hand, apart from the arrhythmia noted before, nothing but the evidences of marked obesity and a feeble, muffled cardiac first sound were present.

As stated above, the condition at the time I first examined the case took the form of "combined arrhythmia," *i. e.*, irregularity in both volume and rhythm. Shortly after, a typical "pulsus alternans" was occasionally noted. Recently, while the patient was suffering from an attack of influenza, I observed the "pulsus alternans" along with a modification of the rhythm that suggested an analogy to the Cheyne-Stokes type of breathing. For example, after a comparatively short pause, or an intermittence, both the pulse and heart beat would begin at a slow rate and gradually increase in frequency for from eight to ten beats, at which moment the heart action would be quite rapid, to be followed by a second, abrupt pause, and so on.

There was present at the time the signs of a dry form of bronchitis (cough and sibilant râles on auscultation), with slow, asthmatic breathing superadded. The periods of exacerbation or increasing acceleration of the cardiac contractions coincided, in the main, with the latter part of the inspiratory element of the respirations, while the pause following was synchronous with expiration. The remarkable influence of the respiratory function upon the cardiac action was further shown by the fact that during the held breath the heart rhythm at times became almost regular, at others it merely manifested decided improvement. I had previously witnessed occasional intermittence and the "pulsus alternans" in *morbis adiposis*, but not the peculiar form of pulse or cyclical increase in the rate noted in this instance. Kisch⁴ contends that the "twin pulse" and obesity are conditions frequently found in association.

In the not infrequent irregularity of the cardiac action met with in the obese, an affection of which this case is a well marked example, I am inclined to believe that the condition is in great part dependent upon mechanical interference with the movements of the heart. That this embarrassment, however, is not wholly attributable to the depositions of fat, but partly to the respirations acting upon a heart already enfeebled by the toxins of influenza, is shown by the effect of a suspension of the latter function in the case reported above. Nothnagel⁵ has emphasized the fact that in meningitis the pulse may vary from minute to minute, the slow pulse, as in my own case, may

suddenly increase greatly in rapidity, and again become retarded. Baumgarten⁶ holds that these sudden oscillations are dependent solely upon central irritation. In the case reported here, however, the rise and fall of the pulse occurred almost synchronously with the respiratory acts, the variations or cycles occurred, therefore, from ten to twelve times in a minute. Again, it is a not infrequent matter of observation to find the presence of murmurs and various forms of arrhythmia whose existence is totally dependent upon the influence of the respirations. In this connection, I may state that I have observed cases in which apical systolic murmurs were audible only during the latter part of inspiration and the beginning of expiration. In one of these the murmur could be maintained for a considerable period during held inspiration. In another case, an occasional intermittence was also noted on inspiration. Neither of these two cases presented any evidences of organic or structural changes of either the heart or lungs; they both occurred, however, in neurasthenic subjects. The significance of the forms of arrhythmia that I have described can not be positively stated, but they are probably grave in cases in which the cause or causes are not readily removable, as for example in the case of exophthalmic goiter reported above that proved speedily fatal.

In conclusion, I desire to restate in sequence some of the most interesting points embodied in this paper.

1. The presence of reduplication of both first and second sounds (double reduplication) in the first two cases, one of tobacco poisoning, the other exophthalmic goiter.

2. The occurrence of a typical *pulsus bisferiens* in case one, dependent upon the toxic effect of tobacco, in the absence of combined aortic regurgitation and stenosis.

3. The presence of a cyclical increase in the rapidity of the movements of the heart, followed regularly by a brief pause; and the striking effect mechanically of the respiratory function upon this peculiar variety of arrhythmia.

4. The temporary production of apical systolic murmurs during the inspiratory element of the respiration.

5. That all of the cases developed in subjects in whom previously existing valvular lesions of the heart, so far as determined, were absent.

THE PRESENT STATUS OF VACCINE AND VACCINATION.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

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It will not be attempted in this article to go into a historical résumé of vaccination, but it may be profitable to discuss briefly the relation existing between smallpox and vaccinia. Since the beginning of this century, numerous experiments have been made to determine whether they are distinct diseases with interchangeable immunity, or whether vaccinia is an attenuated smallpox obtained by its passage through an animal of greater resistance. Gassner in 1801, Sunderland in 1828, Thiele in 1836, Ceely about the

⁴ Berliner Klinische Wochenschrift, Berlin, March 18, 1895.

⁵ Deutsche Archiv für Klinische Medizin in 1876, quoted by T. A. Clayton, University Medical Magazine, January, 1898.

⁶ Transactions of the Association of American Physicians, Vol. III, 1888.

same time, Babcock in 1840; and later experimenters such as Voight, Fischer, Haccius, Eternod, Copeman and Klein have all been able in one or more cases to produce vaccine by passing variolous material through cattle. Probably King of Madras, 1891 or 1892, has reported the most striking results, in which more than 400,000 persons were vaccinated with lymph thus produced, without reverting in any particular to its origin—smallpox. Frequently the first remove will not sufficiently attenuate the lymph, so that its inoculation in the human may produce symptoms similar to variola, as is instanced in Martin's cases, 1836; Reiter's, 1839; and Chauveau's in 1864. This may be corrected, however, by making a number of removes through animals before attempting to vaccinate the human subject. These observers, therefore, believe that the two diseases have a common origin. The most prominent modern objectors to this theory are Chauveau and Cruikshank. Chauveau, as President of the Lyons Conference, reported in 1864, that the two diseases were entirely distinct, though vaccination produced immunity from smallpox, and vice versa, by direct antagonism; in 1891 he reaffirmed his previous position, stating that "Vaccine virus never gives variola to man, nor does the virus of variola ever produce vaccinia in the ox or horse. The two viruses can not, therefore, be reduced to a single virus." Cruikshank, who with the pertinacity of an Englishman for preconceived notions, after referring to the numerous results obtained by other investigators, calmly says that they are mistaken; and that virus obtained from the variolation of cattle was not vaccine at all, but modified variola, though he is careful to give no test by which we can distinguish between the two diseases.

Copeman in 1896, after a careful review of the evidence on both sides, sums up as follows in speaking of inoculating calves with smallpox virus: "The final results, however, after greater or less number of removes from calf to calf, has been invariably the same, namely, the production of a local vesicle, indistinguishable by any means at our command such as the appearance and course thereof, or the protective power of the lymph derived therefrom, from true vaccinia."

VACCINATION FROM THE STANDPOINT OF BACTERIOLOGY.

Having determined that vaccinia is only an attenuated smallpox, it follows that the active principle must be the same in both. Numerous investigations by eminent authorities have failed to this time to prove anything definite, as to its identity. Chauveau in 1865 reported the following results of his investigations; he found vaccine lymph to be composed of a fluid part in which there were white corpuscles, and a number of granules many times smaller than the leucocytes. These constituents were separated by diffusion, and it was shown that in inoculation it was the granule alone that communicated vaccinia. But little advance has been made from this position today. Copeman in 1891 reported a series of experiments which appeared to prove that the active principle was in the solid constituents of the lymph. After filtration the liquid had no potency while the remaining solid matter produced normal vaccine vesicles. This I verified in 1895 with material filtered by Dr. Kinyoun, the animals vaccinated with the fluid after filtration showing absolutely negative results. This would seem to show the particulate nature of the virus.

Martin in 1891 (reported by Ernst in 1893), obtained a bacillus from the lymph of a vaccine vesicle, which he believed to be the infectious agent. He claimed that the ninth generation on blood serum produced a typical vesicle in the calf. He says, however, "These cultures were not pure, but contained quite a variety of bacteria; in every instance blood serum was liquified." He states that what he considers the specific agent varies in form, according to the various conditions of its nutritive environments, and consequent rate of its development. The most constant form is a short, fine bacillus, with rounded or nearly square ends. According to his own testimony, he had not isolated a specific organism.

In 1891 or 1892, Copeman, with Kent and Klein, though working independently, claimed to have found a bacillus described as follows: $1\ \mu$ in length and one-half as thick, heavily stained at ends, almost unstained in the middle, possibly spores. Found also in tissues in groups of from two or three to ten. This organism cultivated by special methods was inoculated into a calf, which on the fourth day produced a vesicle indistinguishable from that produced by vaccine. In 1896, Copeman reports still further results with this organism, describing a more or less imperfect method of cultivation. Pure culture obtained after one month's growth produced typical vesicles in a calf, which protected it from subsequent vaccination or variolation. Children were also vaccinated successfully with material taken from a calf vaccinated with this culture. I have not been able to find any further report from Copeman, but it is said that after further investigation he has abandoned this bacillus as the cause of vaccinia or smallpox.

Since Laveran's discovery as to the malarial organism, investigators have been tempted to make special examination of the blood, thinking that probably the parasite might be of an animal nature. Guarnieri and Pfeiffer have called attention to organisms in the lymph which they believed to be of the nature of a parasitic protozoon and the probable active vaccinia principle. These results seemed to warrant further investigations; and Dr. Walter Reed, U. S. A., in 1897, in an exhaustive research covering a period of five months, made a report in which he confirmed the results of Pfeiffer, in that small ameboid granular bodies in the blood of children and monkeys who had never been vaccinated, though not in such large numbers. Dr. Kinyoun's researches at the laboratory of the U. S. Marine-Hospital Service about the same time would seem to warrant similar conclusions. He found them also in animals not vaccinated. These researches would suggest that these bodies are in the normal blood and are probably increased in large numbers as the result of inflammation, and it is certainly not proven that they are the active principle of vaccinia.

As to what are termed by Copeman "extraneous bacteria," the literature on this branch of the subject is so profuse that it will only be possible to make a summary. Probably the most complete research along this line has been made by Cruikshank extending over some years. He has found in the various stocks of lymph, staphylococcus pyogenes aureus, staphylococcus pyogenes albus together with a large number of saprophytic bacteria. The streptococcus has been reported by Copeman and Whitlow. Dr. Reed examined the points from six vaccine farms and found staphylococcus albus and aureus in all the

plates. I, myself, in examining lymph at various times from several sources have almost invariably found the staphylococcus albus and aureus and frequently the streptococcus; and in one instance, finding that the vaccinations on heifers seemed to produce excessive discharge and tissue necrosis at the point of inoculation, I took cultures and found the predominant bacterium to be the streptococcus. This is simply one illustration of the importance of bacteriology to the production of vaccine lymph. Weaver, instructor of bacteriology of Rush Medical College, obtained points from four producers as sold in Chicago and in the cultures from all found pathogenic organisms. Fütterer examined seventy-five ivory points from different sources and found staphylococcus aureus in fifty-five, staphylococcus albus in about the same number and the streptococcus of erysipelas and phlegmon in ten. I have also found in numerous cultures from vaccine a short motile bacillus with rounded ends, resembling the pseudo-diphtheria in grouping, growing on ordinary media, but in bouillon producing a pellicle which falls to the bottom in flakes. This bacillus is poly-morphous, taking different forms so frequently in its cultivation as to make it difficult to prevent contamination: as most frequently found the staining is bi-polar. This organism has been noted by Dr. Carrol. I am inclined to think that it is the bacillus reported by Martin, the contamination reported by Ernst being probably the changing forms of this organism. It is pathogenic to white mice. The press of other work has precluded a further investigation, but I expect to continue it in the near future.

The finding of extraneous organisms in the lymph is so general and in such large numbers as to suggest the possibility of numerous accidents accompanying or produced by vaccination; and in fact, we all know that intensely sore arms are so frequently the result of vaccination that the laity and, in fact, some physicians suppose that there is no protection without this local necrosis and its attendant symptoms. We now know that the most of this inflammation is due to *extraneous pathogenic organisms* and is not the legitimate result of vaccination. In addition to this unnecessary local condition, numerous instances of systemic poisoning are reported which evidently are not necessary to vaccinia. Thus Fox reports cases of more or less pronounced dermatitis, also mentions the "lamentable occurrence of septicemia and pyemia," as well as the rarer complication of tetanus. Further on he says: "Erysipelas is from its frequency and gravity the most important disease in this group." And again remarks that "more or less profound ulceration and even gangrene is not a very rare sequel to vaccination." Probably the most common affection of this group is contagious impetigo. This is a benign affair, but none the less a source of grave anxiety and consternation to parents.

During the Civil War vaccination with septic lymph or crusts resulted in hospital gangrene, tetanus, pyemia, septicemia, etc.

That syphilis may be produced no one will deny when humanized lymph is used. Dr. Arning detected the bacillus lepræ in the lymph and crust of a vaccinated tubercular leper. Dr. Fox reports three cases of lupus in vaccination scars. Professor Toussant vaccinated a tuberculous calf with lymph from a healthy infant. The lymph from the pustule in the calf was inoculated into four rabbits, a pig, a cat and a pigeon;

two rabbits killed two months later displayed local glandular and pulmonary tuberculosis, a third killed on the 218th day and the fourth on the 246th day were tuberculous. I am aware of conflicting reports; yet when such results have been obtained by competent observers we can not close our eyes to the danger of tuberculosis resulting from tuberculous lymph.

We might continue indefinitely multiplying examples of accidents reported from the use of infected lymph, but this is unnecessary, as any thinking man must see that bacteria of all kinds are liable to grow in an open wound, and that the bacteria produced in the lymph must be carried in the lymph and be inoculated with it in the human subject. Experimenters recognizing the strong position taken by the anti-vaccinationists in reference to these facts, have been trying for years to produce a lymph devoid of bacteria, or failing in this, to effect the destruction of the pathogenic bacteria before using it for vaccination purposes. The former condition being impossible, efforts have mainly been directed to the destruction of these organisms without injury to the lymph.

Carsten and Coert, in 1875, found that sufficient heat to kill the bacteria also destroyed the lymph. Attempts at filtration were then tried, resulting as I previously mentioned, in the destruction of the lymph. Copeman, in 1891, published the results of some investigations looking to the use of glycerin as a germicide, since Mueller, Straus and Chambon and Ménard had been using it for some time as a lymph preservative. He made a still further report in 1893. Here he states: "Lymph which originally gave only mediocre results, after fifteen days in glycerin produced a passible pustule; after forty, fifty or sixty days a typical one. The improvement seemed due to the gradual extinction of parasitic microbes under the influence of glycerin and time." After reading this report in 1894, I began the preparation of the glycerinated lymph, and, while my results were not so flattering as those of Copeman with glycerin as a preservative, there can be no doubt that it brings about gradually the destruction of the germs. The hay bacillus and the unidentified bacillus formerly mentioned by me being the only ones to survive any considerable time; and I am moreover of the opinion that the germs originally pathogenic are attenuated by the action of the glycerin, even though they may grow when planted on artificial media. This point, however, requires further investigation.

In October, 1894, Dr. Ralph Walsh of the National Vaccine Establishment, Washington, D. C., read a paper before the American Public Health Association, Montreal, in which after discussing Copeman's results, he says: "The admixture of glycerin with vaccine lymph will destroy all extraneous bacteria without injury to its peculiar active principle," and further, "the admixture of glycerin with vaccine lymph not only destroys extraneous bacteria but prolongs the activity of the lymph." In May, 1896, Dr. Sternberg, Surgeon-General United States Army, read a paper at Atlanta, Ga., in which the following conclusions were arrived at:

"Various bacteria are commonly found in the lymph from vaccine vesicles obtained either from bovine animals or from man. Among these are the well-known pus cocci and these micrococci are probably largely responsible for the erysipelatous inflammation and other unpleasant complications which frequently result from vaccination with such lymph."

Again, "lymph preserved in glycerin after a time becomes sterile so far as the presence of bacteria are concerned without losing its specific virulence."

In October, 1896, Dr. George H. Weaver of Rush Medical College read an article describing the bacteriologic contamination of vaccine lymph and the preservative action of glycerin. His conclusions are as follow:

"1. Vaccine lymph always contains bacteria, often of pathogenic forms.

"2. Pure vaccine lymph, after keeping in a fluid state or dried on ivory points as now prepared, is unfit for use and often dangerous.

"3. Vaccine lymph diluted with pure glycerin and distilled water becomes sterile in about two weeks and should not be used sooner."

In 1897 a committee consisting of Richard Thorne Thorne and Copeman, appointed by the Local Government Board of London to visit the cities of Europe and examine methods of preparing, storing and using vaccine lymph, reported in an exhaustive paper of over thirty pages the methods in Paris, Dresden, Berlin, Geneva, Brussels and Cologne. I can only give several extracts as follows:

"In only one of the places visited, namely, Paris, did we find that vaccination was carried out under official sanction with crude calf lymph, and even there the process was limited to vaccination direct from calf to arm; all lymph stored for distribution being glycerinated calf lymph."

Again, "The use of glycerinated calf lymph has become general throughout the German Empire."

Again, "Lymph obtained from these various sources and used from seven to thirty days after collection gives an insertion success of from 92 to 100 per cent."

These gentlemen are emphatic in their endorsement of this form of vaccine and recommend its adoption by the English Government, since in England at the present time arm-to-arm vaccinations are still largely in vogue. They also suggest, "That the Board's Animal Vaccine Station should be reorganized, both as regards construction and administration. Notably, will it be requisite that it should include a properly equipped laboratory under the direct supervision of a bacteriologic expert."

Now, assuming that the foregoing conclusions are correct, and that they are correct can not be successfully contradicted, we are allowed no other alternative than to condemn the use of vaccine crusts, quills, points, etc., or any other form of virus which has not been subjected to the purifying effects of glycerin or some similar agent. And now, a few words as to the methods of vaccination: On the Continent, a number of insertions are recommended, a small amount of the fluid is dropped on the skin in from three to five places and a sharp pointed lancet thrust once through the epidermis at each point desired to be inoculated. This puncture should be in an oblique direction and should extend only through the skin. In Paris, the lancet is charged with the lymph before the insertion. The theory for the number of insertions seems to be, that the vaccination more nearly approaches the point of saturation from multiple vesicles than from a single vesicle. This method is also recommended in this country by Dr. Hardaway of St. Louis, who suggests not less than five insertions one-half inch apart. Dr. Hewett of Minnesota modifies this by using a clean needle and making five pricks just deep enough to

start the blood and about one inch apart. "Then with the same needle charged with the virus, gently prick it into each wound carefully." His opinion is that at least four perfect vesicles are necessary to protection.

The general method in this country is to use the single scarification about the insertion of the deltoid and carefully rub in the virus. I am inclined to prefer the insertion method when using glycerinated lymph, since it is difficult to get the lymph to "dry," and many practitioners object to the time necessary for scarification to become "sealed up;" and there can be no doubt that careless manipulation is more liable to result in contamination in this than the insertion method.

It should be scarcely necessary for me to mention the necessity for cleanliness in the operation of vaccination, yet I am sure that many physicians are negligent in this respect, and it is more than probable that many of the bad results blamed on the lymph are due to faulty technic or slovenly methods of inoculation. It is probably this fact that suggested subcutaneous inoculation to Dr. Sternberg when he writes as follows:

"Immunity may be induced by the subcutaneous inoculation of vaccine virus without the development of a vaccine vesicle; and it is probable that the subcutaneous injection of lymph preserved in glycerin would give protection without any of the septic complications so common as a result of vaccination by the usual method."

The same fact was also noticed by Dr. Kinyoun in an article published in 1896, in which he says: "Subcutaneous inoculations are followed by slight inflammatory reaction, being less when the virus is well diluted. There is a slight engorgement of the vessels and occasionally a slight exudation at the point of inoculation, which disappears in a short time. There is no lesion accompanying subcutaneous inoculation." This question suggests room for future experimentation in the hope that it may eliminate so many distressing complications of vaccination which annoy the patient and are a source of anxiety to the physician.

THE MEDICAL LAW OF NEW JERSEY.

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To comprehend the causes which led to the enactment of the present medical law of New Jersey, and the establishment of the State Board of Medical Examiners, it is necessary to review briefly the history of medical legislation in New Jersey and its effects upon the profession of the State.

The Medical Society of New Jersey was organized in 1766, on a voluntary basis, without incorporation or charter. In 1772, the Society secured from the Colonial Assembly the passage of

"An Act to Regulate the Practice of Physic and Surgery within the Colony of New Jersey," which provided . . . "that no person whatsoever shall practice as a Physician or Surgeon, within the Colony of New Jersey, before he shall have first been examined in Physic or Surgery, approved of, and admitted by any two of the Judges of the Supreme Court, for the time being, taking to their Assistance for such Examination such proper Person or Persons, as they in their Discretion shall think fit, for which service the said Judges of the Supreme Court as aforesaid, shall be Entitled to a Fee of twenty shillings, to be paid by the Person applying. . . ."

The law also provided that a "Testimonial of Examination and Admission" to practice should be given to each success-

ful candidate; . . . that the penalty for violating the law should be "five Pounds"; . . . that the act should not apply "to any Person bearing His Majesty's Commission and employed in his Service as a Physician or Surgeon," or . . . "to hinder any Person or Persons from bleeding or drawing teeth," or . . . "to skilful Physicians or Surgeons from neighboring Colonies," but . . . "that every Physician or Surgeon or Mountebank Doctor who shall come into, or travel through this Colony, and erect any Stage or Stages for the sale of Drugs or Medicines of any Kind, shall for every such Offense forfeit and pay the sum of Twenty pounds, Proclamation money."

In 1784, this law was re-enacted by the State of New Jersey: its examining provisions were retained, and it remained in force until 1816. In that year, the Medical Society of New Jersey was re-incorporated (the first incorporation having been made in 1790); the act of re-incorporation authorized the Society to appoint a Board of Censors from its membership, to examine and license all applicants to practice medicine and surgery in this State, and this authority was possessed exclusively by the Society until 1851. In that year, the system of censorship was bitterly complained of by medical colleges in New York and Philadelphia as inimical to public and professional interests; the cry of monopoly was raised; the law was attacked and subsequently amended to permit the graduates of the College of Physicians and Surgeons of New York, the University of the City of New York, the University of Pennsylvania, the Jefferson Medical College and the Medical Department of Pennsylvania College, to obtain licenses from the Medical Society of New Jersey, without examination, upon the presentation of their diplomas to the President of the Society. In 1854, the friends of indiscriminate license secured the passage of an Act admitting the graduates of any legally incorporated medical college to practice medicine and surgery in New Jersey, upon filing a copy of their diplomas with the clerk of the county in which they intended to practice. This law practically abrogated the examining and licensing power of the State Medical Society and, in 1866, the Society voluntarily surrendered to the State the empty privilege of censorship.

From 1772 to 1851, a period of seventy-nine years, the Medical Society of New Jersey stood as the authorized guardian of the portals of the medical profession of the State; from 1854 to 1880, a period of thirty-six years, the only legal requirement for license to practice was the registration of a medical diploma. During the latter period, physicians multiplied rapidly: the doctor was despoiled of much of his former dignity; bogus medical colleges flourished, and quacks abounded in every part of this State. The need of restrictive measures, governing the practice of medicine, became evident and, in 1880, an Act was passed by the Legislature making the filing of a fraudulent medical diploma a misdemeanor. This law, however, was not sufficient to shut out the possessors of such diplomas from active practice, or to stop the work of bogus medical colleges. Both the profession and the laity recognized the necessity of a reconstruction of the medical law on the basis of State supervision over the requirements admitting applicants to practice medicine. To meet this need, the State Board of Medical Examiners was instituted in 1890, and during the first year of its organization more than three hundred irregular practitioners were driven from the State. The next step in medical progress was the enactment of a law in 1892, regulating the practice of midwifery, which provided for the examining and licensing of

midwives by the State Board of Medical Examiners, and their registration in the office of the clerk of the county in which they practice. In 1894, the medical practice act was revised, under the provisions of which the present State Board of Medical Examiners is now operating.

The present medical law of New Jersey provides for a State Board of Medical Examiners, consisting of nine members appointed by the Governor and confirmed by the Senate, and containing five regular physicians, three homeopathic, and one eclectic physician. Examinations are held in the following branches of medicine and surgery: "(Sec. 1) materia medica and therapeutics, (Sec. 2) obstetrics and gynecology, (Sec. 3) practice of medicine, including diseases of the skin, nose and throat, (Sec. 4) surgery, including diseases of the eye, ear and genito-urinary organs, (Sec. 5) anatomy, (Sec. 6) physiology, (Sec. 7) chemistry, (Sec. 8) histology, pathology and bacteriology, (Sec. 9) hygiene and medical jurisprudence," exclusive of the materia medica and therapeutics of homeopathy and eclecticism, in which the graduates of those systems are examined by their respective representatives on the Board. The composition of the Board has proved harmonious and the methods of examination equitable, during the eight years of the Board's existence.

The academic requirements of the medical law are those of a common school education, which the State Superintendent of Public Instruction has defined to consist of, "Orthography, arithmetic, English grammar and composition, geography, history of the United States, algebra and physics, or what this Board may consider their equivalent."

In no instance is an applicant permitted to come before the Board for examination unless the requirements above named have been fully met.

The medical requirements of the law call for, "A diploma conferring the degree of doctor of medicine from some legally incorporated medical college (which in the opinion of said board was in good standing at time of issuing said diploma) in the United States, or a diploma or license conferring the full right to practice all the branches of medicine and surgery in some foreign country, and have also studied medicine four years, including three courses of lectures in different years in some legally-incorporated American or foreign medical college or colleges prior to the granting of said diploma or foreign license; provided, however, that two courses of medical lectures, both of which shall be either begun or completed within the same calendar year, shall not be considered to satisfy the above requirements."

These requirements are also strictly insisted upon in the case of every applicant for examination.

A total average of 75 per cent., or 675 points is necessary "to license a candidate (he or she having otherwise complied with the law) providing that in no one section shall the percentage be less than 50, in which case, however, the candidate may be granted a second examination immediately upon that Section. A candidate having less than 50 points in more than one Section shall be rejected, regardless of the total average."

The examination papers, together with applications for examination are deposited in the State Library at Trenton, after examinations.

At the present time, this Board endorses the certificates of examination and license issued by the Med-

ical Council of Pennsylvania and the Board of Regents of New York, together with the applications of those physicians who are now, or have been members of State Examining and Licensing Boards of other States. It is the desire of this Board to extend the privilege of endorsement to the licentiates of any State Board whose academic and medical requirements are substantially the same as those of this Board. Reciprocity of State medical license is due to the profession. The subjecting of medical practitioners of long standing to a technical examination is unnecessary and unjust. Reciprocity, however, can not be successfully carried out until a uniform minimum standard of academic and medical requirements is adopted by the different State Examining Boards.

This Board has the power to refuse to grant, or to revoke, a medical license for cause. The revoking power has not, as yet, been exercised except in the case of midwives. Neither is it likely to be exercised unless physicians have been previously convicted of criminal abortion or crimes involving moral turpitude.

The law regards as practitioners of medicine those persons who use a medical title, with or without license, or without the use of such title, engage in the customary duties of a medical practitioner, and it is framed to include the practice of mind-healing, faith-cure and similar systems.

Violation of a medical law constitutes a misdemeanor, punishable by fine or imprisonment, or both, and it is mandatory upon the district attorney to prosecute such cases when duly brought to his attention.

The act does not apply to surgeons of the United State Army, Navy, or Marine-Hospital Corps, while so commissioned; to internes of charitable or municipal hospitals, or registered dentists, or to legally qualified physicians of other States called in consultation, provided that such physicians do not open offices or places for the practice of their profession.

The medical law of New Jersey is an admitted necessity and has become popular with the profession throughout the State. It has elevated the standards of the profession by its academic and medical requirements, by its unceasing opposition to illegal practitioners, and by its supervision over practitioners of midwifery. It meets the demand of the people that the license of the State should guarantee that its possessor is qualified to conserve the public health. By its early demand that its medical diploma should only be given after four years of medical study, it has contributed to the extension of the curriculum of medical colleges, and to the organization of other State boards. It has proved itself a factor of incalculable benefit to both the profession and the public.

GONORRHEA IN THE MALE.

BY J. O. MALSURRY, M.D.

PERU, IND.

Gonorrhea is an acute, specific, infectious, systemic disease, with a local manifestation and systemic reaction. I am well aware that this statement is in variance with the almost universal statement of authors, but not so completely so with the clinician and more especially with the patient or victim. The victim of this disease, if allowed to tell his story, will give a history in the mild cases, which are but slightly infectious, of an aching in the limbs and back, just at the time of agglutination of the meatus, which, by the

way, is a sign that precedes by some twenty-four hours the tingling or itching in the end of the penis, or the pearly drop, so often spoken of. This acute symptom or aching will subside, usually, with the appearance of the discharge, when the local symptom (discharge) becomes the marked one, in fact the only manifest symptom. This is a point to be noted, since in the severe infectious cases, if the discharge be free at the time of severe or pronounced systemic reaction, it will all but cease during such severity, to be re-established when the severe symptoms have subsided.

This symptom (discharge) has been bombarded from time immemorial, with all sorts of topical applications and injections, and more recently with the bichlorid douche, all of which have had their so-called or supposed cures. It is universally admitted that in no other local inflammatory condition have efforts proven so uniformly unsuccessful. Some would explain this fact with the reasoning that the micro-organisms have already developed, penetrated the epithelial layers and formed colonies in the lymph spaces and connective tissue layers of the mucous membrane so effectually, before local treatment is begun, that no remedy will reach the deeper-seated organisms short of entire destruction of the mucous membrane.

The fact of the matter is that the symptom (discharge) is being treated under the guise of removing the cause, *i. e.*, destroying the micro-organisms, which is the sole and local cause of the discharge or disease. Suppose this to be the case; an ounce of pus would be a conservative estimate of the quantity of discharge thrown off in twenty-four hours; this, according to the local idea, must be formed within and of the penis by the micro-organisms. Now, if such were the case, the average victim would run out of penis long before the admitted time (some twelve to twenty days) for the discharge to even lessen in quantity. This discharge is a product of the body, either local or general, and certainly not local in the sense of tissue or cell destruction, for the reasons pointed out above. It must, therefore, be a product of the body in general, and gathered up and thrown off through the agency of the blood vessels or lymphatics, or be a product, *per se*, of the blood or lymph, or both, and is kicked out by nature through this particular door (urethra) through which the disturber entered, be that the gonococcus of Neisser or what not. The adherents of the local theory of this disease would account for the pus in that it is an ordinary product of a local suppurative inflammation, which is made up of leucocytes which escape from the local blood vessels in consequence of changes wrought in their coats by the local inflammatory process, including debris from broken-down epithelium, etc. This is a very fine theory, and would be more acceptable had these same adherents furnished an infallible local remedy, or shown that the phenomena following a poisonous snake bite to be a local inflammation.

In the more severe cases we have, in addition to the above symptoms, at about the end of the third week, more pronounced systemic symptoms; oftentimes a chill followed by fever and elevated pulse which, by the way, runs a little high throughout the entire acute attack, even though the temperature be all but normal; which fact shows an element of sepsis. There is a loss of appetite, coated tongue, foul breath and a feeling of lassitude together with the local symptoms,

in the posterior urethra, of pain and tenesmus, supplemented by frequent urination and oftentimes great distress during voidance of urine. The excretion of pus here will not be so abundant and that from the posterior urethra, back of the cut off muscle or external sphincter, will be thrown into the bladder and passed off with the urine. Here we have systemic symptoms almost as pronounced as in diphtheria or scarlet fever, with local treatment as ineffectual as in the above diseases. And yet, we are taught that we are dealing with a local disease, as the old writers taught diphtheria to be; but which is now universally recognized to be a systemic affection, with all but, if not quite, a specific (antoxin) for its cure.

We have yet another type of gonorrhoeal infection, which might very properly be termed gonorrhoeal septicemia. This condition is peculiar to the third or fourth week of the infection and but rarely, if ever, occurs at the acute onset of the disease. This sepsis is announced, as most septic troubles, by a pronounced chill followed by fever; 103 to 105 degrees F., and in fatal cases 108 degrees F. has been recorded. This temperature is of an intermittent character, dropping to about normal and rising to the high point once in twenty-four hours. This peculiar temperature points to a multiplication of the specific element up to the point of an explosion, or ovulation, if you please, the temperature rising and falling with the above phenomena.

Now, whether all of these conditions and shades of the same disease are due to one and the same cause or specific element, no one is able to answer positively. Some attribute it to a mixed infection, while others think it due to a susceptible system. As for myself, I am sure that we are called upon to meet these different shades of the same disease, the same as we are in diphtheria, scarlet fever, typhoid fever, etc., let the cause be what it may. It is very generally admitted that paralysis is sometimes a sequel of diphtheria, and nephritis of scarlet fever. This, to be sure, is in consequence of the systemic character of the diseases. A species of rheumatism is admitted to be a sequel of gonorrhoea. Then is it not reasonable to suppose, from this fact alone, that gonorrhoea is a systemic disease in the same sense as diphtheria and scarlet fever? When we point out the distinction between infection and inflammation, we have an explanation of the chronic cases of gonorrhoea. Infection is a condition in which foreign media of irritation have gained access to the body either mechanically or by means of their products disturb its functions. These media are capable of being transmitted to other individuals; in most, if not in all cases, the invading irritant is of bacterial origin. The organisms, unless arrested, are prone to multiply, to spread into new territory and to transmit their toxic products to the general circulation. This, in my opinion, is exactly what occurs in gonorrhoea infection. The clinical evidence is all conclusive of this fact; and if we were in need of further proof, we have only to look into the therapy applied to this disease for the past centuries and up to the present time. The local territory invaded or irritated by the organisms and their toxins becomes a center to which leucocytes in large numbers rapidly migrate, and in this way the process known as seroplastic infiltration is established. By this infiltration, a limiting wall is formed around the infected space. The formation of the limiting wall gives rise to heat, redness, pain and swelling; the phenomena of inflammation. In this

view of the facts, inflammation is not really the disease, but effort to limit the disease. This wall confines the infective process to narrow limits and may protect the general system against the further infection after the initial poison has run its course; that is to say, nature has generated an antitoxin which overcomes the offending element (toxin) and the disease, so far as the general system is concerned, is at an end. We have now to consider the functional conditions of the different organs, as the liver, spleen, etc., especially where there has been severe systemic infection, while the pathologic changes will apply more especially to the urethral canal and appendages.

This brings us to so-called chronic gonorrhoea or gleet, and the above explains the phenomena of the same, which is in reality only the resultant damage done the local tissue furnishing a lurking place for the remaining micro-organisms, but at the same time they are fenced off from the general system by the plastic exudate as a result of the inflammation, as has been described, but are ever ready for a new field.

Treatment in the acute stage of this disease must be largely expectant, since we have no specific to be given internally or applied locally, which will cure the disease. Our efforts then, in the present light of the etiology and treatment of this disease, will be confined largely to prophylaxis, keeping the phenomena of the disease in the middle of the road, so to speak, and preventing complications until the race is finished, or at least slowed up sufficiently to begin the repair of damages.

To strike a direct blow at the phenomena of this disease with the idea of destroying it *per se*, has proven to be a failure with the past and present therapy, as is proven by clinical facts, notwithstanding the comparatively recent developments in the etiology of this disease and therapy applied with special reference to this etiology. Even though good results have been reported, the tide is beginning to ebb and we have only to wait for another swell.

During, then, the acute stage, which will usually be from twelve to twenty days, we can not do better than to keep the parts thoroughly cleansed, the patient quiet as possible, a glass of Hunyadi water each morning, and a hot hip bath including the genitals twice or thrice daily, remaining in the water from twenty to thirty minutes. This is to be continued until the discharge becomes lessened and at the same time thinner; at which time balsam copaiba and oil of cubeb should be given as freely as the stomach will admit of, and at the same time an astringent injection should be used, preferably perhaps of an antiseptic character, as nitrate of silver, bichlorid of mercury, etc. I prefer, however, for this subacute stage, an injection of acetate of zinc, from two to sixteen grains to the ounce of water, or one dram of subnitrate of bismuth to one ounce of equal parts of water and glycerin. The injection to be repeated, at first following each urination and finally to be used each evening for a week or ten days after the complete disappearance of the discharge. This treatment applies to cases where the local symptoms are confined to the anterior urethra. The involvement of the posterior urethra is suggestive of a new infection of the general system, since it invariably occurs at about the end of the third week, the universally recognized time for the acute infection to begin to subside; and too, the symptoms (systemic) are the same as at the acute infection, only more marked. I am led to believe that these marked

symptoms and severity of attack are due, at least in a measure, for the want of a free exit for the pus, and in consequence more of its elements are retained in the blood to be thrown off through other channels. The same phenomena, in a slighter degree, occur when a strong astringent injection is used in the acute stage of the disease, which inhibits the discharge. It is a notable fact, also, that the period of decline here corresponds very closely to that of the initial infection; showing a probable repetition.

This extension or new infection, as the case may be, is important not only on account of the painful symptoms to which it will usually give rise, but also on account of the fact that, by greatly increasing the extent of the local inflammation, it renders complete recovery much more uncertain and remote, and by its proximity to other important organs greatly enhances the probability of a further extension of the inflammation to the bladder, seminal vesicles and testicles. And too, the more local surface involved increases the local inflammation and in consequence the plastic exudate, which is slow to be absorbed, and hence the great danger of permanent pathologic conditions. In severe cases of this character, absolute rest in bed must be enforced. As a diuretic for such cases, secure the daily consumption of from two to five quarts of plain water, and to this may be added boric acid or salol in doses of five to ten grains of each, four or five times daily. For the pain and tenesmus, rectal suppositories of morphia and belladonna will be found efficient. After the acute symptoms have subsided, copaiba and cubebbs will be indicated until all acute inflammation has completely disappeared; then, if there yet remain any pus formation in this region, which will be ascertained by an examination of the urine, a deep injection of a solution of nitrate of silver, 1 to 8000, will be indicated.

A catheter is to be introduced just through the external sphincter and two or three ounces of the solution thrown in slowly, with any suitable syringe, which will pass into the bladder after medicating the posterior urethra. The solution is to be retained for a few minutes, then passed out through the urethra, which will medicate the entire urethral tract. For chronic cases of the posterior urethra, the same procedure may be carried out, gradually increasing the strength of the solution. In stubborn cases of this character, of which there are many, the use of sounds will lend assistance in breaking up adhesions and causing absorption of the plastic exudate.

Where the posterior urethra alone is involved, which is usually the case in these especially stubborn cases, suppositories introduced, of an astringent or even caustic character, will often give good results. Instillation of a few drops of a solution of nitrate of silver of from one to five grains to the ounce of water, just following the complete stretching of the posterior urethra with the sounds, will often prove effectual. I am ready to admit that in these chronic cases as well as the subacute, local medication alone is effective. Not because the remedies used destroy the specific element *per se*, but from their local effect in stimulating the tissue to a healthy action and thus bringing about the normal vitality, which, after all, is probably the prime factor in eradicating disease. Since it is always an astringent that yields good results in these cases, it would be natural to surmise that owing to the relaxed and softened condition of the coats of the local blood vessels, there is an escape

of serum, which, through its dissolving or softening effect will not allow the epithelium to reproduce. The astringent supplies this deficiency, puts on a splint so to speak, checks this exudation and at the same time assists in restoring the coats of the vessels. In this way, then, the epithelium is reproduced, which shuts off the lurking place of the specific element, which must then move on, rather than be destroyed by the topical applications. For this reason I am not an advocate of strong, or weak for that matter, antiseptic remedies, further than their astringency. For the same reason we are not confined to any one remedy, but the principles of astringency, which may be obtained from many and various remedies, which fact probably accounts for the great number of remedies employed in the treatment of this disease, by as many different clinicians, all apparently with good results when applied in the proper manner, and more especially, at the *proper time*, which, as I believe, is never during the acute stage of the disease, for the reasons pointed out above. The action of the copaiba and cubebbs is astringency and is of no avail during the immediate acute stage, but on the other hand will increase constitutional symptoms when used at this acute stage for the same reason pointed out as to the astringent injection at this period, that of inhibiting the discharge and causing the elements of the same to tarry longer in the system and finally be cast off through other channels.

The great value in these two remedies lies in their mode of application, *through the urine*, thereby avoiding all instrumental irritation, which is no small factor, especially where the posterior urethra is involved. If the case is chronic and of long standing, which is equivalent to extensive exudate, these remedies must be displaced by astringents which will penetrate deeper, and just here is where we get the good effect from the use of the sound preceding the injection or instillation; the tissue is rendered more susceptible to the remedy, hence a weaker solution may be used with better effect than a stronger one and with less pain, which is no small item to the patient, and many times financially to the physician.

It matters not in what portion of the urethral canal the disease may be located, all mechanical obstacles must first be removed or no form of medication will be successful. If located in the membranous or prostatic portion, gradual dilatation with sounds will give the best results. When there are strictures of the pendulous portion, division is perhaps the best method of removing them.

In gonorrhoeal septicemia treatment which applies to sepsis in general seems to offer the best results, such as limiting the absorption of the toxins, if such can be the case. It is probable, however, that in gonorrhoeal septicemia there is but one time of absorption and that is at the onset, after which there is a septic element in the blood which multiplies and explodes, as has been described. The object here, then, will be to use a remedy or remedies which will destroy the septic element or its power to multiply, and to bolster up the blood so as to give it the best possible resistance to the invading septic element. For the first part, quinin at a single dose of 20 to 30 grains is given some five or eight hours preceding the chill; this is to be repeated as often as the chill repeats. For the second part, tincture of the chlorid of iron, solution of chlorid of arsenic, and bichlorid

of mercury seem to meet the requirements better than any other combination.

A word as to the irrigation method, with bichlorid solution or any other supposed abortifacient, of aborting or treating gonorrhoea. I have given the bichlorid method careful trial in six consecutive cases and in each and every case there developed about the end of the third week posterior symptoms, and I have good reason to believe that this posterior extension or new infection, if you please, was due, at least in part, to the irrigating solution; since of six other cases treated about the same time, after the method pointed out above, there was only one case in which extension to the posterior urethra took place, and this was probably due to inordinate exercise—that of cycling. This irrigation brings about congestion and in consequence weakened epithelium, which is probably further softened by the too free use of water and rendered less resistant; and at the same time the infectious element is carried back from the anterior urethra and extension or new infection, as the case may be, takes place, which otherwise would probably not have occurred.

One case in particular had been a victim of this disease three times preceding this last attack, each preceding time the local symptoms confined to the anterior urethra, and each time making a complete recovery in from four to six weeks, with the plan of treatment above described in such cases. In view of his last experience, it is safe to say that there is one person who will never again submit to this irrigation method of treatment. The discharge was not so abundant in these cases; in fact, at times it would all but disappear, but at the same time the constitutional symptoms became more marked, the patient feeling and looking badly, with an elevated pulse and temperature.

ASSOCIATION NEWS.

American Medical Association.

Official Minutes of the General Sessions of the Forty-ninth Annual Meeting, held in Denver, Colo., June 7, 8, 9 and 10, 1898.

(Concluded from page 95.)

JUNE 10—FOURTH GENERAL SESSION.

The Association was called to order at 11 A.M. by the Fourth Vice-President, Dr. Happel.

The Secretary read the minutes of the previous general Session, at the conclusion of which Dr. I. N. Love of St. Louis, said: The minutes that have been read apply to a very important part of our work, and very little is said about the report of the Business Committee of yesterday. In the report of the Business Committee of yesterday there were fourteen different matters, if I remember rightly, that were considered, and most of them were quite important. We know that when these minutes are accepted and printed they are the action of the Association, and it seems to me, Mr. Chairman, there were several items concerning which the minutes are not clear. They are not distinct, not definite. I have forgotten the exact wording of the resolution offered by Dr. Bailey, which pertained to the appointment of a General Secretary, but the motion I offered in regard to it was that, inasmuch as the resolution involved the appropriation of money, it be referred to the Board of Trustees, which is the disbursing organization of the Association.

Secretary Atkinson—I have no motion in writing pertaining to that report.

Dr. Love—I move, Mr. President, that the minutes be corrected so as to read, "Resolved. That inasmuch as the resolution of Dr. Bailey pertained to the disbursement of money, that it be referred to the Board of Trustees for consideration, and report back to this Association one year hence."

I am surprised that the Secretary did not take down the

substance of the motion made by me at a preceding General Session. Seconded by Dr. Ferguson.

Dr. H. D. Didama—I would like to ask whether there was any record made of such a motion by the stenographer. We suppose that the auricular appendages of the stenographer are sufficiently acute to catch all of these things, and I would like to know if the stenographer has any record of it.

(Secretary Atkinson accidentally missed a line or two relative to the action taken on Dr. Bailey's resolution in reading the minutes, and while the stenographer was searching his shorthand notes, Dr. Atkinson discovered his omission, and then read the substance of Dr. Love's motion.)

The President—It is my recollection that the motion made by Dr. Love was that, inasmuch as the resolution involved the appropriation of money, it was referred to the Board of Trustees. The Chair can not state, however, whether it was in the form of a well defined motion or not. This matter brings us to the point that if the stenographer represents the JOURNAL or the Association in his work, and is paid by the JOURNAL, he should furnish every morning a typewritten copy of the minutes, *verbatim et literalim*, to the Association. The members have a perfect right to correct the minutes. If the minutes are thought by the majority of members present to be incorrect, not as full as they ought to be—if they are not a true exponent of the will of the Association, they should be corrected.

After Dr. Atkinson had read his minutes pertaining to the motion of Dr. Love, Dr. Love said: I wish to say a few words, Mr. Chairman, from the business standpoint of this Association. Important resolutions and important actions taken by this body have for years not appeared in the official minutes. We have had from year to year just such evidences of secretarial inefficiency—absolutely—and I say now, without fear of contradiction, that the action on the resolution or motion offered by me was not read by Dr. Atkinson. He overlooked it. No man should attempt to read the minutes of an important Association like this from illy prepared notes. And, Mr. Chairman, in all kindness I will say, that I am surprised at the fact that in the reading of the report of the Business Committee and the action taken upon the particular section under consideration, we have very imperfect records. Dr. Atkinson has read from his notes that which he did not read in the beginning.

Dr. Atkinson—I was under the impression that I read the paragraph mentioned by Dr. Love, but it seems I did not do so. I wish to say in this connection that if the Secretary of the Business Committee had not carried off the resolutions that were introduced at the previous session, these mistakes would not have occurred.

Dr. H. D. Didama of Syracuse—I would like to inquire if it is the practice of the Business Committee, after reading their report, to carry it off? It seems to me it should have been handed to the Secretary. Our Secretary, Dr. Atkinson, has been placed at a great disadvantage in the matter of his minutes, owing to the fact that the Secretary of the Business Committee has carried off the reports which should be in his possession.

Dr. I. N. Love—In all kindness I desire to say, that I gave up the Loop trip simply for the reason that I felt that this was the most important meeting of the Association, inasmuch as action has to be taken upon the minutes as to the report of the Business Committee of yesterday. Time and again important reports have been made during the closing moments of the Association and hastily imperfect minutes of important records have been presented and allowed to go by carelessly and indefinitely. To show you, gentlemen, that I am not springing any new thought, I will say that at the Baltimore meeting, and at numerous other meetings, there have been severe criticisms passed upon the Secretary. Dr. William Osler made a statement at Baltimore, as representing the local Committee of Arrangements there, which severely reflected upon the Secretary of this Association. Unfortunately, he made the criticism in a very severe manner. But I understand that important resolutions presented at previous meetings of the Association have been left out of the printed records. One important resolution, an amendment to the Constitution, which affected the position of the Permanent Secretary, was left out of the minutes by the Secretary. I wish to say, in all kindness, that the office of Secretary is not a sentimental office. The office of Secretary is the business end of the Association, and I would advise the Secretary hereafter to see to it that the stenographer, paid by the Association, shall take a record of every point made regarding reports.

Dr. J. W. Graham, of Denver—Every one knows that it is a very difficult thing for a secretary who is not a shorthand writer to take notes of all business that is transacted in the general sessions of an Association like this. I do not think we

should expect our Secretary to do it. No man can do it. In this age we have specialists for this kind of work, and it seems to me that the stenographer should have his report prepared at all times, ready to be read. It seems to me that the stenographer can clear up these matters by reading his notes, and that we should look to him for a full report instead of to the Secretary.

(The stenographer told the Chair that he was ready at any time to read his shorthand notes when called upon to do so.)

Dr. Atkinson—There would be no trouble in keeping the minutes of the Association, if the members wrote out their resolutions and handed them to me. (Applause.) My friend, Dr. Love, refers to an omission at the Baltimore meeting, and I will say that it was caused by the neglect of the person who offered the amendment to present it to me in writing, and I notified the editor of the JOURNAL of this fact when I sent my minutes to him to be printed in the JOURNAL. I wish to say in defense of myself that I have always been in the habit of keeping in regular order every motion or resolution that was offered and handed to me in writing. When it comes to making a stenographic report of the amendments introduced on the floor, it is another thing, and I hope from this time forward the President will demand, before any action is taken upon any resolution or motion, that it shall be presented in writing to the Secretary. (Applause.)

Dr. Love—I make the point, Mr. Chairman, that the Secretary has been in the service of the Association for twenty-five years, and that it is his duty, at all times, to assist the Chair. I do not believe a single motion pertaining to any one of the Sections contained in the report of the Business Committee was called for in writing. I agree with the Secretary that every resolution pertaining to anything should be put in writing. It is the duty of the Secretary to offer suggestions to the Chair, because we are here for executive work. Those gentlemen who have lent their sympathies this morning with the Secretary have very little knowledge of the records of the past. I am not alone in making this statement. I am willing to be criticised, if necessary, but those who know me know that I would rather remove my right hand than to be unjust to any man. (Applause.)

(No action was taken on Dr. Love's motion.)

The President—The minutes are a little indefinite in regard to the action taken by the Business Committee on the suggestions contained in the President's address, and I will ask the stenographer to read his shorthand notes on that point.

The stenographer then read part of his notes of the report of the Business Committee on the President's address, as follows:

"While your Committee is duly in sympathy with the recommendation of the President as to the admission of members to the Association under the conditions mentioned, still under the existing laws of the Association it does not feel competent to recommend its adoption."

The President—The minutes are now clear on that point.

Dr. W. L. Wills of California, offered the following amendment to the Constitution:

Article IV—Officers. Amend to read: "The following officers, President, four Vice-presidents, Treasurer, Librarian, Secretary, Assistant Secretary and Chairman of the Committee of Arrangements shall be nominated by a special committee of one member from each State represented at the meeting, and shall be elected annually by the vote of a joint ticket, and shall hold office until their successors are elected." (Lies over for one year.)

Dr. T. J. Happel of Trenton, Tenn., offered the following:

Resolved, That an exact time be fixed at future meetings of the Association by the Committee of Arrangements for the different General Addresses to be delivered before the American Medical Association, and that when that hour arrives all business must be laid aside until the Addresses have been finished.

Seconded by Dr. Love and carried.

Dr. C. Lester Hall of Kansas City, Mo., offered the following:

Resolved, That it shall be the duty of the Permanent Secretary to furnish the incoming Secretaries of Sections with a list of the names of those attending the various Sections each year. Seconded.

The Secretary—In moving the adoption of this motion I would like to make a remark. I would say, Mr. Chairman, that for a number of years I have sent a note to the Secretary of each Section asking him to keep a registration book for the purpose of containing the names of those who attended the Section, and this year I have had two Sections that have agreed to do this and have promised to turn over to me the registration book. I shall, in accordance with this resolution, if adopted, do as I have done before, write a note to the Secre-

tary of each Section asking that he keep a registration book.

Dr. Love, speaking to the resolution offered by Dr. Hall—I would suggest that every member of the Association when he registers place the name of the Section which he will attend and in which he will vote for Section officers. It seems to me if a record of the registration is kept by the Secretary of the General Sessions it would very easily enable him to furnish, as requested by the resolution, a complete list to the incoming Secretaries of all registered members in each Section. We all know that secretarial duties are burdensome; that they require experience and special adaptation. The Secretaries of the Sections are oftentimes selected hastily, with a view, possibly, to their prominence as practitioners and workers, knowing little about their secretarial positions. While it is difficult to secure efficient secretarial work from the different Sections, it seems to me it would be the easiest thing in the world for the Permanent Secretary to furnish the information asked for in the resolution that has been read. That is all he needs to do.

The resolution as offered was adopted.

The following are the officers of the various Sections for the ensuing year:

State Medicine—Arthur R. Reynolds, Chicago, president; W. P. Munn, Denver, secretary.

Stomatology—George V. I. Brown, Milwaukee, president; Eugene S. Talbot, Chicago, secretary.

Cutaneous Medicine and Surgery—W. T. Corlett, Cleveland, president; J. M. Blaine, Denver, secretary.

Diseases of Children—Henry E. Tuley, Louisville, president; J. L. Booker, St. Louis, secretary.

Surgery and Anatomy—W. J. Mayo, Rochester, Minn., president; M. L. Harris, Chicago, secretary.

Physiology and Dietetics—J. Weir, Jr., Owensboro, Ky., president; Lee Kahn, Leadville, secretary.

Obstetrics and Diseases of Women—A. H. Cordier, Kansas City, president; W. D. Haggard, Jr., Nashville, secretary.

Practice of Medicine—Frank Billings, Chicago, president; Carroll A. Edson, Denver, secretary.

Ophthalmology—Casey A. Wood, Chicago, president; A. H. Williams, Boston, secretary.

Materia Medica, Pharmacy and Jurisprudence—T. H. Stucky, Louisville, president; Leon L. Solomon, Louisville, secretary.

Laryngology and Otology—P. R. Holmes, Cincinnati, president; Emanuel Mayer, New York, secretary.

Dr. X. C. Scott of Cleveland, Ohio, read the following report of the Judicial Council.

REPORT OF THE JUDICIAL COUNCIL.

Your Council reports on matters referred to it, as follows:

They have ordered their Secretary to send all documents pertaining to the standing of the Santa Clara County Medical Society and Santa Clara County Medical Association, of Santa Clara County, California, to the State Medical Society of the State of California for adjudication and to report their finding to this Association.

The Secretary of the Council has been instructed to forward to the State Medical Society of Colorado, the charges and protest preferred by H. Angus Sims against H. W. Kirby and H. V. Towaner of Cripple Creek, Colo., for investigation and adjudication.

In regard to the matter of appeal of W. F. Barclay of Pittsburg, Pa., the Secretary of your Council has been instructed to inquire of the State Medical Society of Pennsylvania why they have made no answer to the communication which was sent by your Council to said State Medical Society of Pennsylvania immediately after the annual meeting of 1897.

Your Council requests and insists that all communications, documents or papers received by the Permanent Secretary, pertaining to business or matters before or to be before the Council, shall be forwarded by him, upon their receipt, to the Secretary of the Judicial Council, and that such communications, documents or papers shall not be delivered or forwarded to any other member of the Judicial Council.

H. D. DIDAMA, President.

X. C. SCOTT, Secretary.

On motion the report was adopted.

Dr. I. N. Love—The Board of Trustees have presented the following recommendation: That the following Committee on Transportation be appointed to correspond with railroads as to rates, and make the best possible arrangements for the Columbus meeting. The Committee recommends Dr. H. L. E. Johnson of Washington, D. C.; Dr. I. N. Love of St. Louis, Mo.; Dr. Charles A. L. Reed, of Cincinnati, Ohio; Dr. X. C. Scott of Cleveland, Ohio; Dr. Starling Loving of Columbus, Ohio; and Dr. E. D. Ferguson of Troy, N. Y.

On motion, the recommendation of the Board of Trustees was adopted.

Dr. Mayer extended an invitation to the Association to visit Cripple Creek, and to become the guests of the medical society of that district.

On motion of Dr. Love, the invitation was accepted with thanks and the keenest appreciation.

Dr. X. C. Scott offered the following resolution, which was adopted:

Resolved, That the Permanent Secretary be required to bring the minutes of the Association of previous years so that they may be referred to if necessary.

Dr. I. N. Love offered the following:

Resolved, That the Permanent Secretary be required to have the stenographic report of the proceedings transcribed and ready for consideration and correction, if need be, each day before being adopted.

Seconded and carried.

The following resolution was offered and carried:

Resolved, That the Secretary be instructed to furnish a copy of the Constitution and By-Laws and Code of Ethics to the proper authorities who have the preparation of the program, with instructions to print the same in the regular official program each year hereafter.

Dr. Henry O. Marcy of Boston, offered the following resolution: As we are near the close of the session I rise to a question of privilege. We have all enjoyed the hospitalities of Denver in an exceptional way. For twenty-three years I have been a constant attendant upon the meetings of the Association; we have profited by the hospitalities and by the assistance of the various local committees in each of the different cities where we have held our meetings. Wherever we have met one city has tried to rival another, until we have been led to think that there was no end to hospitality. I am quite sure I voice the universal expression of opinion of the Association when I say that I have not heard anything else save that of *éclat* concerning the manner in which the profession and citizens of Denver have so royally received and magnificently entertained us. We have each and all of us had a rare opportunity of witnessing and of personally enjoying and profiting by the hospitalities of the entire city. First of all, we have to thank the Chairman of the local Committee of Arrangements Dr. J. W. Graham, who has been such an efficient chieftain, and to him personally would I ask that this Association extend its thanks. Then the various associations and corporations of the city have each vied with the other in doing everything possible to contribute to our comfort, pleasure and convenience. We also wish to express our thanks to the railroads for reduced rates, the public press for reports of the proceedings of our sessions, and the various associations, including the ladies, who have done so much to contribute to our comfort and happiness. We wish to return thanks to the citizens of Denver for the hospitality which we have received at their hands, and for the extraordinarily agreeable way in which they have made our visit pleasant, and for the delightful reminiscences which will ever come back in memory of the hours we have spent here during the last week.

Dr. Henry P. Newman of Chicago—In rising to second the resolutions offered by Dr. Marcy, I feel that every member of the Association will heartily second what he has said. Having come in contact with the Committee of Arrangements in a business way, which many of you have not, I wish personally to testify to the efficient work of all of the different departments, and I feel that we owe the local Committee of Arrangements our heartfelt thanks, who have contributed so much to the success of the meeting held in this city.

Dr. I. N. Love of St. Louis, Mo.—As a member of the Board of Trustees, I know I voice the sentiments of the entire Board when I endorse and emphasize all that has been said so eloquently and sweetly by Dr. Marcy. At the same time I wish to particularly emphasize our appreciation of and for the gentle, graceful and efficient manner in which the Chairman of the Committee of Arrangements, Dr. Graham, has conducted the work. It is rare, indeed, that a man is possessed of such executive ability as he has displayed, the ability to select the right man and the right set of men to do the work as well as it has been done here. I appreciate from an editorial standpoint the fact that the Chairman of the local Committee of Arrangement has demonstrated that he is superb in the use of the scissors in being able to clip from the great mass of the profession the right men in the right way, and place them with his paste at the right place, and this particular man has never been absent from his post—never. (Applause.)

Dr. J. W. Graham of Denver—I ask you to include in your vote of thanks the entire profession of Denver, and I wish to say that I do not think there is a better body of men on earth to co-operate with in such work.

The resolutions of thanks were then unanimously adopted by a rising vote.

Dr. X. C. Scott of Cleveland, Ohio, offered the following:

Resolved, That we extend a vote of thanks to the various traffic associations and railroads which have granted the concessions asked for by this Association.

Seconded and unanimously carried.

Dr. I. N. Love—I wish to offer the following:

Resolved, That a special vote of thanks be given to the Union Pacific, Texas and Gulf, Denver and Rio Grande Railways, etc., for the most extraordinarily liberal courtesies they have extended to this Association:

Seconded and unanimously carried.

The President (Dr. T. J. Happel)—The Chair would state that the idea of presiding over the General Sessions of the Association before arriving here had not entered his head; that it has been done on the spur of the moment, and if there have been any errors in the rulings of the Chair they are errors of the head and not of the heart. Everything was done with an effort to promote and expedite the business of the AMERICAN MEDICAL ASSOCIATION. I think the members will bear me out in the statement that the business that was transacted in the Association yesterday was for the purpose, if possible, of settling a matter, and that whatever rulings the Chair made they were not made for the purpose of wounding the feelings of anyone connected with the matter. I tried to do equal justice to all parties connected with the transaction. (Applause.) The Chair desires to extend to the Association his thanks for the order which was observed during the administration of the affairs of the Association, and to state he has never been in any organization which has behaved in a more orderly, respectful and respectable manner. (Loud applause.)

Dr. Happel then presented Dr. Mathews in the following words: As Vice-President of the AMERICAN MEDICAL ASSOCIATION, and of the administration which is just passing out, I take great pleasure in presenting to you the incoming President for the year 1898-9, Dr. Joseph M. Mathews of the city of Louisville, Ky.

Dr. Mathews was very warmly received. He spoke as follows:

Mr. President and Gentlemen of the Convention—Words fail me in trying to attempt to thank this Association for the honor they have conferred upon me. For nearly twenty years I have been trying in a humble way to serve this body. I have sat at the feet of the great men of this profession, and in accepting this distinguished honor from this great body, when I reflect back upon the days when this Chair was occupied by that venerable man, Dr. N. S. Davis, and my illustrious predecessor, Dr. Sternberg, I must say that I feel great diffidence in attempting to fill this Chair. Yesterday, as I looked over this great body and reflected that during the twenty years that I have been identified with the Association hundreds that I knew then are now dead and gone, it made my heart sad. One of the most pleasant things connected with the membership of this great body is that we make friends, lasting friends, friends that will serve us always, and in the interim between our sessions our hearts go back to our meetings, because we feel the warmth of their influence and know that their hearts went out to us, and it is my hope that not a single member will drop out of our number between now and the next meeting. It is sad to think that each year some one of our many friends has been taken away, and so the Convention goes on forever. I believe the time is near at hand when it will be recognized that if a man in the medical profession of the United States is not a member of the AMERICAN MEDICAL ASSOCIATION he is not a reputable doctor. (Applause.) I believe that each year will add to our ranks many noble men, and I want to ask the indulgence of the Association always for the younger men, that they may be cared for; that they may be taken into the embrace of the Association; that they may be made to feel at home always. By so doing we make better men of them; we make better doctors of them, and let us see to it that the membership be added to from the younger ranks of the profession. (Applause.) Gentlemen, during this year and the coming year I shall try to do my duty. I hope some one will offer a resolution thanking the presiding officer (Dr. Happel) for the efficient manner in which he has conducted the deliberations of this body. We are deeply obligated to him. Please, gentlemen, accept my hearty and sincere thanks for the distinguished honor that you have conferred upon me. (Loud applause.)

Dr. I. N. Love—I move you, sir, that a special vote of thanks be given to Dr. T. J. Happel of Tennessee, for the superb and skillful manner in which he has conducted the deliberations of this Association, and for the thoughtful care with which he has looked at every detail of the business management of our sessions. The efficient manner in which he has presided ought to be an example to every one who follows in the Chair. (Applause.) We also wish to thank Dr. J. L. Thompson of Indi-

anapolis, for his grace and skill as a presiding officer, and especially to thank Dr. Jayne, the local Assistant Secretary.

Seconded and unanimously carried.

Dr. J. W. Graham of Denver—I want to add a little more emphasis to the vote of thanks extended to Dr. W. A. Jayne of this city, the Assistant Secretary. It is rare to find a man who has filled the office so capably and so acceptably as he has done. He has been my right arm throughout the year, and has made it possible to make the meeting a great success. (Applause.)

There being no further business to transact, on motion, the Association adjourned to meet in Columbus, Ohio, the first Tuesday in June, 1899.

SOCIETY PROCEEDINGS.

Chicago Medical Society.

The annual meeting of the Society was held in the new Society rooms of the Stewart Building, Wednesday evening, June 29, 1898, with the President, Dr. FERNAND HENROTIN, in the Chair.

The Secretary read the minutes of the previous meeting, which were approved.

The Chairman of the Membership Committee, Dr. J. H. Stowell, reported favorably upon the following applications, and they were elected: Drs. D. H. R. Patton, J. E. Woodbridge, W. E. T. Michelet, C. C. Hunt, F. E. Bigelow, S. A. Mathews, F. A. Goetz, J. F. H. Lugg, A. C. Broell, Josephine A. Jackson, Emil Amberg and Walter L. Vercoe.

The next thing in order was the report of the Secretary, which was read by Dr. ARTHUR R. EDWARDS.

The report stated that from 1888 to 1897 there had been 615 additions to the Society, and that during the past year there had been an increase in membership of 234. Of this number two failed to qualify; three were suspended for non-payment of dues; eleven died and ten resigned. The Society had now a membership of 902, including those elected at this meeting.

The average attendance for the thirty-nine meetings during the year was 110.

On motion of Dr. Harris the report was accepted.

The Treasurer's report was read by Dr. S. C. Plummer, showing a healthy condition of the Treasury.

On motion this report was received and referred to the Auditing Committee.

Dr. ARCHIBALD CHURCH made a verbal report as editor of the Society, stating that the character of the papers that had passed through his hands during the year as compared with those of previous years was very much superior. Not only had there been a large increase in the amount of work done by the Society, but the individual character and tone of the papers from a scientific standpoint had been distinctly elevated as compared with previous years. Nearly all of the papers had been published in the *Chicago Medical Recorder*, and many of them simultaneously in other medical journals.

On motion of Dr. Ridlon, the report of the editor was accepted.

Dr. J. H. STOWELL, Chairman of the Membership Committee, stated that during the past year the work of the Committee had devolved upon Dr. Newman and himself, owing to the long sickness and finally the death of Dr. Paoli. The Committee had endeavored during this time to do its work conscientiously and faithfully. It had corresponded in a great many cases in regard to applicants to find out their standing, and while the Committee did not expect they had kept every man out that ought to be kept out, still it had tried to do so.

Dr. E. J. DOERING reported, on behalf of the Publication Committee, that for the ensuing year the *Chicago Medical Recorder*, the official organ of the Society, would not be able to offer any prizes on account of the increased expense of publishing the proceedings of the Society, this expense during the past year amounting to about \$1000.

The Committee awarded Dr. M. HERZOG a prize of \$100 for his paper on "Superfetation in the Human Race." And also a prize of \$100 to Dr. ARTHUR D. BEVAN for his contribution on "Surgery of the Gall-Bladder."

Dr. GRAHAM, a member of the Library Committee, said the Committee had held several meetings and conferences with the authorities of the Newberry Library during the year. The medical department consisted of 30,303 bound volumes, 25,000 pamphlets, and there were continually on file 450 different medical periodicals. The library was now more complete than it had ever been, and the authorities promised to make further additions in the near future, especially in the nature of reference books. The library, however, lacked odd volumes or

numbers of important periodicals. The trustees of the library would pay more attention to increasing its usefulness if the members of the profession in the city and surrounding country took more interest in it. The Committee and library authorities believe that much good could be accomplished by members of the profession corresponding direct with the Newberry Library. Their communications would receive prompt attention, and abstracts of medical journal articles would be furnished physicians at a small remuneration. The Committee recommends that a notice or announcement of this be published in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

On motion, the report was accepted.

The Necrologist, Dr. HERMAN PETERSON, reported the deaths of ten members during the year. On motion the report was accepted and placed on file.

President HENROTIN then delivered his address, in which he spoke of the establishment of permanent quarters for the Society, believing that no mistake had been made by inaugurating this movement, and in order to do this it was necessary to secure funds. The manner of securing these funds was outlined. He directed attention to the renewed interest taken in the work of the Society, the improvement in its quality, and the proper dissemination of the material brought before it.

The Society proceeded to the election of officers, with the following result: President, Arthur Dean Bevan; first vice-president, J. C. Hoag; second vice-president, Henry B. Favill; secretary, Arthur R. Edwards; treasurer, S. C. Plummer; necrologist, Herman Peterson. Board of Trustees: Drs. James B. Herrick, Frank Billings, and F. Henrotin, for three years; Drs. N. S. Davis, Jr., S. C. Stanton and Wm. H. Wilder, for two years; and Drs. John Ridlon, Sanger Brown, and Harold N. Moyer, for one year. Judiciary Committee: L. L. McArthur for one year; Harold N. Moyer for two years; F. Henrotin for three years. Membership Committee: J. H. Stowell for three years; Henry P. Newman for two years, and James B. Herrick for one year. Publication Committee: E. J. Doering for three years; Henry T. Byford for two years and Frank Billings for one year. Auditing Committee: D. W. Graham for three years; N. S. Davis, Jr., for two years, and Hugh T. Patrick for one year.

The revised Constitution and By Laws, after more or less discussion of certain sections, were adopted.

Dr. SANGER BROWN gave notice that he would amend Article 7, after Section 3, at the next meeting, so as to read that "Any member in good standing may become a life member upon the payment \$100, and shall thereafter be exempt from the payment of annual dues." In addition to this and following it in another paragraph he desires the change made that "Any life member who has been a member of the Society for ten years may be elected to Fellowship upon submitting to the Society satisfactory evidence of fitness for such distinction."

Dr. D. W. GRAHAM also gave notice of an amendment to be offered by him at a subsequent meeting.

Secretary Edwards was voted an honorarium of \$250, and the Treasurer an honorarium of \$200.

The editor of the Society will not accept an honorarium of \$200 during the coming year, but asked that the money go towards furthering the interests of the Society.

Dr. SANGER BROWN spoke of the great importance of having the medical library located in the heart of the city, saying that if it was located down town many of the members could spend an hour or two hours a day with profit in consulting medical literature, and urged that a committee be appointed by the president to agitate this matter.

Dr. TRUMAN W. MILLER stated that the trustees had taken this matter up.

Dr. D. W. GRAHAM thought it was a mistake to abolish the Library Committee, saying that the committee had had the subject under consideration for a year, getting facts and information and had possible plans in view. The information the committee had received was that the Crerar Library would be glad to have a medical department. The other two factors to be considered were the moving of the medical department of the Newberry Library to the Crerar Library. In order to do this it would be necessary first to obtain the consent of Dr. Senn and second the consent of the trustees of the Newberry Library, and undoubtedly this could be obtained.

President HENROTIN thought the Board of Trustees as a body would have more influence in effecting such a change than a committee of three.

The President then appointed Drs. Doering and Miller to escort the newly elected president to the Chair.

Dr. BEVAN was very warmly received. He thanked the Society for the distinguished honor conferred upon him and said he would pledge himself to take a very active interest in the work during the coming year, and he would endeavor as

far as possible to carry out the very broad scheme that had been inaugurated by his distinguished predecessor.

The Society then adjourned until the second Wednesday in September.

Chicago Ophthalmological and Otological Society.

Discussion on Dr. Hotz's Case.

Dr. WÜRDEMANN—This morning I removed an eye I had been nursing for four weeks, not believing that it contained a foreign body. I first saw the case a day and a half after the accident, when I found an ulcerated wound of the cornea, prolapse of the iris and evident infection. The prolapse was cut off and the infection treated. The history of the case seemed to show that the foreign body was a large one, and I did not believe it to be in the eye. Three weeks after, a skiagraph was made which showed the foreign body to be present. This morning I tried to remove the foreign body after incising the cornea, but I was unable to do so with the magnet and had to remove the eye. The foreign body was found in the eye, covered with firm exudate. In six cases I have removed pieces of steel with the magnet from the iris and the lens, but have never removed a piece from the vitreous. I believe it possible to do so only immediately after the accident.

Dr. PINCKARD—I take it Dr. Hotz reported this case particularly because the foreign body was removed through the wound entrance. The only successful case I ever saw where a foreign body was removed from behind the lens was one in which a piece of steel was removed through the wound entrance. In almost every case which I have seen, the eye was blind within a year afterward. This particular case was a piece about eight millimeters long and four thick, a piece of chisel that went straight through the center of the cornea. The case was sent at once, so that I saw it inside of an hour after the injury. The first time the magnet was introduced I got the click; the second time the steel came to the lips of the wound, and the third time I got it out. This was about four years ago, and the patient's vision in that eye is now about one-tenth. I have seen several cases where the eye has been saved, but there was no vision.

Dr. GRADLE—Among eight cases I have had two instances of success in removing steel from the eye. One was removed on the fourth day and could be seen distinctly with the ophthalmoscope. It was removed through an incision in the sclera. Two months later the vision was $20/30$. The second case was seen six months after the accident on account of failing vision. The foreign body was easily seen with the ophthalmoscope. Extraction with the magnet was easy and there was no reaction. Eight months later the vision was $20/70$.

Dr. WILDER—The results reported are brilliant, but such results encourage this operation altogether too much. Many cases of detachment of the retina, resulting from unsuccessful removal of foreign bodies, would not do nearly as much harm if left alone. If all cases of operation by the magnet were reported after the lapse of several years, we should find that the number of successes would be very small, certainly not sufficient to justify doing the operation as often as it is done. A positive indication for this operation is when the steel can be seen lying in the iris or lens, or in the vitreous. If the eye is quiet and the steel is firmly adherent, I see no occasion for an attempt at its removal, as nature will soon cover it with an exudate. To operate when the steel can not be localized, and only on the supposition that the foreign body is in the eye, seems to me injudicious.

Dr. TILLEY—Early in the history of this Society I exhibited two cases with steel visible in the retina. In both cases the eyes were quiet and there was some limitation of vision, but not much. I had one case in which the patient persisted that there could be no steel in the eye. I finally persuaded him to have the eye removed and there was found a piece of a cold chisel a little more than three quarters of an inch long.

Dr. MONTGOMERY—The only case of successful removal of steel which I have had was one in which I introduced the magnet through a new opening. The case came to me within an hour after the injury. The bit of steel could be seen with the ophthalmoscope. I made a section through the sclerotic and removed the steel without difficulty.

Dr. HAIGHT—I recently had a case where a piece of steel had remained in the eye for sixteen years. The eye was blind, but owing to the severe pain of the inflammation I removed the steel. The patient refused to have the eye enucleated.

Dr. FISHER—In my experience it has been very rare to retain serviceable vision after removing a piece of metal from the interior of the eye. This should not condemn the magnet, for when we have a piece of iron or steel in the interior of the eye

conservative surgery demands the removal of the metal or of the eye.

In regard to Dr. Tilley's case, I saw the first one at the time and also some eighteen months after he discharged it. A piece of metal was shining in the choroid, the media was clear and the vision was about one-half when he left Dr. Tilley. At the time I saw him the eye was in a very serious condition; the lens was opaque and there was a mild cyclitis. He refused enucleation. At the time Dr. Tilley discharged him, this might have been called one of the most hopeful cases of foreign body in the eye, yet the subsequent history shows how dangerous the leaving of such a substance is.

Dr. HOTZ—It seems to me that Dr. Wilder's position can not be sustained by clinical facts, if he says that the magnet does more harm to the eye than the foreign body, and that nature will cover the foreign body with an exudate to make it innocuous. I think it is a well known fact that nature does not do anything of that sort, as a rule, and that the foreign bodies in the posterior part of the eye, in the majority of instances, will destroy the usefulness of the eye and prove a source of danger to the other eye. The object of the magnet extraction of the foreign body from the eye, in the first place, is to save that eyeball for the patient, even if no sight is to be saved; for the blind eye, even with a detached retina, is certainly better for that patient than a glass eye; and, therefore, even if it were true that the disturbance by the magnet in the vitreous leads to detachment of the retina, that should not debar us from doing the operation, if we have a good prospect of preventing deleterious inflammations, cyclitis, etc., that the foreign bodies are apt to set up. To remove the foreign body, as the Doctor says, when it is located in the iris and lens, and in the vitreous only if it can be located with precision, is another remark which surprised me, because it is just in the iris and the lens that foreign bodies may remain a good while, and in the lens particularly, without doing any particular harm, except clouding up the lens, but not endangering the future of the eye.

I am far from encouraging the promiscuous operations, if I may so say, and I have taken opportunity in the past to discourage the use of the magnet for removing a piece of steel in the eye when an extensive cyclitis has taken place which in all probability will destroy the eye, whether the foreign body is retained in it or whether it is extracted. I advise the operation in the early stage, as soon as possible after the accident, especially before any inflammation has set in, and I do the operation, as I have said, in the first place, for the purpose of removing the cause of deleterious inflammation, to preserve the eye, no matter whether or not in that eye the sight will be restored. In the case I have reported, where the foreign body was lodged in the ciliary portion of the choroid, I think it would have been very risky, and on my part reckless, to leave the foreign body in its position, because in that vicinity it was bound to set up inflammation sooner or later that would lead to the destruction of that eye and probably jeopardize the other eye.

OPERATION AND AFTER TREATMENT OF CATARACT. PREPARATION OF THE PATIENT.

Dr. GRADLE—In order to minimize the danger of cataract operation, we should aim first to have the patient in the best possible state of health; secondly, to guard against avoidable infection. On the first subject I can state nothing but self-evident truths. If the patient has passed through any disease likely to interfere with his resisting power for the time being, it is to his interest to defer the operation. Cataract is not an operation of emergency, but one for which the time can be selected. If, therefore, he is in a condition at the time which may in any way endanger the success, delay is advisable. Thus the persistence of a severe cough, or any form of intestinal disturbance likely to prevent the quietude of the patient should cause us to delay. Whether in diabetes, so frequently a cause of cataract, we should delay the operation until we get the effect of an antidiabetic remedy, is perhaps an open question. The results of operating during diabetes have not been unfavorable on the whole, but it seems to me wiser to diminish any possible source of trouble by reducing the excess of sugar, for clinical observation has shown that diabetic patients are very liable to pyogenic infections.

Of more importance is the second division of our subject, namely, the combatting of any avoidable source of infection. The most important topic to which I can refer is purulent inflammation of the tear sac. Unless it is absolutely unavoidable, we should never perform a major operation on the eye while the tear sac secretes fluid. If there is no time for the cure of the condition, we must resort either to extirpation, or at least to temporary exclusion by completely closing the puncta with the cautery and assuring ourselves that they are absolutely closed.

In case of conjunctival disease, the operation should also be deferred until an absolute or relative cure is obtained and no further secretion exists. Blepharitis, too, should receive attention before an operation is attempted. At the time of the operation we should sterilize the skin and lashes by scrubbing with soap and water and any efficient antiseptic, so as to obtain as sterile a neighborhood as the general surgeon would demand. It is a different question, however, regarding the conjunctiva. Observations have shown that the conjunctiva, even when normal, has harbored germs, sometimes virulent germs. The observations by Gelpé have made it likely that the more normal the conjunctiva, the less is the probability of existence of pathogenic germs. This would indeed agree with clinical observations as to the danger of the operation. It has, however, been shown conclusively by Randolph, and by some continental oculists, that it is impossible to sterilize the conjunctival surface either by flooding with sterile fluids or with efficient antiseptics. The latter, especially corrosive sublimate, are not merely useless, but absolutely undesirable on account of the irritation to which they give rise. By reason of the secretion which they produce I would consider them a menace instead of a benefit. We must hence take our chances at present as regards infection from the conjunctival surface and simply avoid the possible infection from impure skin, soiled lashes, or infected instruments.

THE INCISION.

Dr. MONTGOMERY.—A proper knife is of the utmost importance. I prefer a knife whose breadth is at least two and one-half millimeters.

As to the incision itself, I began first with the Graefe modified linear, and used that for a number of years. Then I changed to one almost entirely in the cornea, but for the past eight or ten years I have made my incision just back of the limbus, including about one-third of the circumference, and terminating with the conjunctival flap. I use this incision whether for simple or combined extraction. It is essentially what is known as the old flap. My experience has been that we are not more apt to get a prolapse with this than with other forms of incision; and its great advantage is that we are more certain of a rapid healing of the wound, and it is the flap I consider of importance as coapting the cut edges.

IRIDECTOMY.

Dr. HÖTZ.—As a safe advice to beginners I should say, by all means operate with iridectomy, because that operation is applicable in all cases, because the delivery of the cataract is easier, and the removal of the cortical remains can be more thoroughly done after the iridectomy than through the intact pupil. I know it has been said that those who perform an iridectomy must give good and sufficient reason for justifying the mutilating of the eye. That is true; we should avoid mutilation if without it we can accomplish our object with safety and without taking any risks. Now, are there any advantages in the simple operation? The cosmetic advantage of the central round pupil counts for little. The eye is hidden by the thick glasses; it takes a close inspection to see whether the pupil of that eye is mutilated or not. I have never in my life heard a cataract patient complain of mutilation, or about any annoyance that could be referred to the iridectomy. The vision in the eyes operated upon with the iridectomy comes up to the same standard as in eyes with the simple operation. We have all varieties of vision in one class as well as in the other. That is about all there is to say about the advantages of leaving the pupil intact. But, on the other hand, we have always to fear prolapse of the iris, which happens to all operators; no matter how experienced an operator is he can not foretell in a given case whether it will happen or not; and if it does occur, the immediate excision of the prolapsed will change the condition of the eye to that as if the iridectomy had been done at once; or if the prolapsed iris be not removed, it will set up troublesome inflammation of the eye and lead to unpleasant results. I feel much safer and easier at mind about the operated eye, when iridectomy has been done than when it has not been done, and therefore, as a rule, I adhere to the operation with the iridectomy.

For a while I have been a sort of an eclectic. After having made the incision, I let myself be guided by the behavior of the iris. If it remained quiet in the eye and did not prolapse at once, or if after the removal of the cataract the iris promptly slipped back into the eye, I abstained from iridectomy relying upon the sphincter muscle to hold the iris back in the eye if the wound should open again and the aqueous humor escape. That seemed to work in a number of cases very nicely, but sooner or later I had some bad results. In spite of all the good behavior the iris showed during the operation, on the next day in opening I found the iris protruding, and while

in some cases the excision of the prolapsed iris quieted the eye, in two instances it did not arrest the cyclitis, and the eye was lost; in one case it even necessitated the subsequent enucleation of the eyeball.

CAPSULOTOMY AND EXPRESSION.

Dr. BEARD.—In regard to the cystotome, I use a modification of the old Graefe instrument, the modification consisting in a change in the angle of the point and the rounding of the angular heel. The shank is straight and not malleable, and consequently the point rotates in a line with the handle. The introduction of the instrument should be done with the greatest care. Having pushed the cystotome, heel foremost, into the incision, passed it down flatwise between the iris and cornea until you reach the point where you desire to make the cystotomy, then turn the point toward the capsule, and make your incision quite extensive, the so-called peripheral cystotomy.

In the expression I use two spoons, one a flat one for depressing the lip of the wound, the other for coaxing out the nucleus. One must be careful not to press too long on the cornea and cause the lens to pop out suddenly, as the vitreous may follow. For the soft portions of the cortex left behind, manipulation with the spoon is often sufficient. If not, they may be removed with the handle of the spatula.

DRESSINGS.

Dr. WOOD.—(See Report of the AMERICAN MEDICAL ASSOCIATION for 1897.)

SECONDARY OPERATIONS.

Dr. WÜRDEMANN.—I find it necessary to do a capsulotomy in about six out of ten cases. The operation is done through the cornea by means of two needles, except where the capsule is very thick, when I use scissors. I have found it usually necessary to make but one capsulotomy. The needles should be sharp-cutting needles, those of Knapp preferred. A secondary operation is sometimes necessary for removal of cysts of the iris. These are preferably incised and compressed rather than cauterized.

C. P. PINCKARD, Secretary.

SELECTIONS.

Uncommon Form of Idiosyncrasy Contra Asparagus.—Among the curiosities of medical literature are the storis, many of them well authenticated, of the peculiar susceptibility of some unfortunate individuals to certain odors and emanations. Among the substances which have been known to produce attacks of spasmodic asthma are roses, musk, tea, ipecacuanha, the odor of a cat, fried fish, the dust of oats, malt, rice, feathers, wool and that caused in the demolition of old houses. Dr. Eugene Deschamps has added asparagus to this long list. He has published a full clinical report of a victualer, over forty years of age, who suffers from severe spasmodic attacks of coughing whenever he attempts to prepare raw asparagus for the cook. He is arthritic and nervous. Twenty years ago he became a cook and remained so for a long time, but was temperate, and hence suffered little general ill health, except from slight anemia. From the first, however, he found that while trimming asparagus in the kitchen violent sneezing, coryza and running in the eyes set in. Within half an hour dyspnea followed, with cough and expectoration. All these symptoms used to vanish within an hour or two. Hence he managed to continue at work and rose to be chef in large hotels. But whenever he assisted the undercooks in dressing asparagus the fits returned worse than before. He now owns a restaurant. Last spring he helped his own cooks on a busy evening and plucked a few stalks of asparagus. The fits of asthma came on at once with unusual violence and he was ill for several days. There was free expectoration and much coryza troubled the patient for some time. Dr. Deschamps gave iodids and bromids, with morphin in infusions of senega, cocain and borax lozenges and inhalations of steaming solutions of marsh-mallow and poppy. Neither fever nor albuminuria was observed. The increase of intolerance of asparagus is remarkable, as the patient is better off in every respect than he was twenty years since, prosperous, contented and strong. He can peel onions, carrots, turnips and other roots with perfect com-

port, but after plucking a considerable amount of salsify, mild sneezing and coryza set in, but without dyspnea. He has all along been able to eat asparagus freely, as the meal is never followed by any of the troublesome symptoms. Dr. Deschamps dwells on hay asthma, and states that he has seen a marked case of ipecacuanha asthma, a disorder, as has been said, noted by other observers.—*British Medical Journal*.

The Doctrine of Leprosy and Its Treatment.—Dr. E. Baelz of Tokyo (*Berliner Klin. Woch.*, 1897, Nos. 46 and 47), in regard to the transmissibility of leprosy, admits the possibility of contagion, but thinks that there must be a very intimate and long-continued intercourse; he lays special emphasis upon the fact that the disposition to leprosy is very sporadic. He does not think that the proofs offered by Blaschke, for the inoculation of Eastern Prussia by Russia, are sufficient; he combats the opinion that there is an immunity of Europeans, produced by former saturation, and now on the wane. The cause of the small degree of contagiousness is to be found in the fact that the greatest number of lepers are free from ulcerous processes, that therefore the bacilli are under the protecting cutaneous cover; there are, moreover, reasons for assuming that most bacilli degenerate in the ulcers. In regard to the spreading of leprosy in the body, the author assumes that there is first a latent focus somewhere, that it breaks into the vascular system and that then the germs are carried abroad. The author, among the various symptoms of leprosy, calls particular attention to a peculiar wax-like glitter of the skin. He considers the thickening of the nerve stems as one of the most important symptoms; in this respect, the nervus auricularis magnus, which may swell to the thickness of a lead pencil, is especially remarkable. The tendon reflexes were frequently found, by the author, strikingly exaggerated. As a diagnostic help the behavior of the leprosy maculae to anilin rubbing-in may be of advantage; if a body is rubbed with a powder of fuchsin, methyl-violet, then covered closely with absorbent cotton, and if pilocarpin is injected into the patient, then the sound perspiring skin was colored, but not the leprosy non-perspiring places. The author can not admit that leprosy is independent of climate. Thus he found, in Japan, that fever and general symptoms were often absent; pain on pressure over the nerves was only observed in very rare cases; just as rare were diseased mucous membranes of the mouth, of the nose and of the rim of the larynx and skin ulcers. Also, the author can not admit a peculiar vulnerability of the leprosy parts and that leprosy as such leads to cachexia. Leprosy arises, according to the author, usually not through ulcerous processes, but through a simple resorption of tissues. In regard to therapy he mentions favorable results obtained by him by a combination of: 1. Local treatment with salve of salicylic acid, applied in a peculiar manner; 2. of very large doses of oleum gynecardiae; 3. of strong baths inflaming the skin. The salicylic acid is used as 20 per cent. salicylic acid—lanolin—vaselin, at the diseased places which have previously been rubbed with pumice stone. The gynecardiae oil is administered in doses of 15 grams a day. The bathing treatment consists in the use of the hot springs of Kusatsu, which are distinguished by a very strong content of free mineral acids. In a full bath of 200 liters there are 440 grams of free mineral acid, 230 grams of sulphurated earths, 45 grams of sulphatic iron. Add to this a temperature of 45-53 C. Of these baths the patient takes three a day and then five for the period of a whole month or longer.

PRAGTICAL NOTES.

Rheumatic Origin of Chorea.—Moncorvo considers chorea the cerebro-medullary manifestation of rheumatic infection developed in a hysteric or neurasthenic organism. He has found antipyrin, exalgin, asaprol and analgen, derivatives of the aromatic series known to affect rheumatic infection favorably, very effective in permanently curing a large number of cases of chorea. His last eight cases were cured in eighteen to forty-five days with 3 to 8 grams of analgen in twenty-four hours.—*Bulletin de l'Acad. de Méd.*, May 17.

Electuary for Gouty Rheumatism.—(G. Baccelli). Sodium salicylate, 30 grams; sodium nitrate and potassium iodid, ññ 20 grams; colchicum oxymel, 100 grams; rob of lappa, 300 grams. F. s. a. A tablespoon morning and night in half a glass of alkaline water. Continue for forty days.

An Objective Tone-Measure is suggested by Panse, by determining the amplitude at the moment when the sound of the tuning-fork becomes inaudible. Personal tests with a number of forks of different makes resulted in almost identical figures.—*Munch. med. Woch.*, May 17.

Serotherapy in Rheumatic Iritis.—Boucheron has found Marmorek's antistreptococcus serum remarkably effective in fifty cases of rheumatic iritis. He considers it a valuable tonic for the nervous system besides its specific action. Small doses are best: half to one cubic centimeter a day. Fresh, acute cases are most rapidly affected.—*French Congress of Ophthalmology*.

Syphilitic Lesions in the Stomach are more frequent than generally supposed. They simulate clinically simple ulcer and exulceration, the secretions keeping up the morbid processes, from possibly a slight erosion, but they can be cured without surgical intervention, hence every case of ulceration should be investigated for syphilitic antecedents.—*Gaz. Méd. de Paris*, May 21.

Collodium in the Treatment of Pruritus Analis and Hemorrhoids.—According to Samways, painting the anus with collodium will cure the pruritus completely in twelve to fourteen hours, and also tend to reduce the size of external hemorrhoids if applied on a tampon. The one disadvantage is a sharp burning sensation for a moment, which can be obviated by painting with cocain beforehand.—*Memorabilien*, May 7.

Traumatic Hepatoptosis has been rarely observed. It may occasion chronic peritonitis from compression or disturbances in the alimentary canal: meteorism, colic, fever from intestinal intoxication, etc., or even lesions in remote organs from the habitual coprostasis, such as cerebral hemorrhage. Hepatorrhaphy is indicated in recent cases, but if of long standing, palliative treatment is all that promises relief.—*Gazz. degli Osp. e delle Clin.*, May 22.

Nitrate of Silver in Acute Lobar Pneumonia.—Eight cases have been reported recently in Italy, all treated and promptly cured with five to fifteen centigrams of nitrate of silver in ten pills a day, decreasing to two-thirds the amount after the fever subsided, which occurred almost at once. The crisis appeared the second day, with complete recovery in five to twenty-five days.—*Gazetta degli Osp. e delle Clin.*, May 22.

Stimulation of the Lactal Secretion by Abdominal Massage is urgently recommended by M. Schein, who has found it very effective in several cases of absent or defective secretion. The blood is to be coaxed away from the uterus to the breasts, and the manipulations proceed on the assumption of important anastomoses between the genital organs and the mammae.—*Wien. klin. Woch.*, No. 18.

Menthol, Camphoroxol and Naphthoxol are obtained by adding to a 3 per cent. oxygenated water, 1 per cent. menthol or camphor, or 2 per cent. naphthol. Camphoroxol requires 32 per cent. alcohol to dissolve it; the two others require 38 per cent. The three, undiluted, destroy the spores of malignant anthrax in three hours. Wagner recommends them highly after using them on 200 surgical cases in a 10 per cent. solution. The wounds healed rapidly and healthy granulations were hastened. The deodorizing properties of the oxols with their own pleasant odor, are special points in their favor.—*Therap. Woch.*, 1897, 48.

Orthoform in Gynecology.—Blondel has cured a number of cases of endometritis with laminaria soaked a week in ether saturated with orthoform. Fifty other cases were treated successfully with intra-uterine drainage with antiseptic gauze dipped in glycerin, holding orthoform in suspension, which

allowed them to pursue their usual occupations. The orthoform prevents any pain, and also renders the curettement of the uterus painless, if applied on gauze an hour before.—*Bull. de l'Acad. de Méd.*

Ratings for Damages.—In negligence suits for the benefit of the widow and next of kin, a different method of assessing the damages prevails in England from that which is usual in this country. An illustration of the difference is furnished by a case tried on February 15, before Lord Chief Justice Russell and a jury. It was an action by the widow of a sailor to recover damages for the death of her husband, who was a seaman upon a steamship belonging to the defendants, and was washed overboard in consequence of the improper manner in which a portion of the cargo was stowed on deck. Instead of awarding a lump sum, representing the injury sustained by all the family, as would be done in New York State, the jury assessed the damages at £200 for the widow and £100, £100, £60 and £40 for the four children respectively.—*N. Y. Sun.*

Intestinal Occlusion Due to Lumbricoids.—Dr. E. H. Bartley reports a case of intestinal obstruction due to lumbricoid worms, simulating appendicitis. On opening the abdomen a ball of intertwined lumbricoids was found in the ileum, resting against the ileocecal valve and completely occluding the opening. An attempt to force the worms through was without success. As the appendix was swollen, edematous and intensely congested, it was thought best to remove it. The ileum was then opened by a small incision and about forty worms removed with forceps. The incision was sutured and the abdominal cavity cleansed and completely closed. All went well for forty-eight hours; then sharp pain was complained of in the left leg, which became very cold; gangrene set in and seven days after the first operation an imperfect line of demarcation formed about four inches above the malleoli. Amputation was performed at the knee-joint and the child made a slow but perfect recovery.—*Archives of Pediatrics*, April.

Remarkable Success of Static Electricity in the treatment of tuberculosis is announced by N. M. Wassilieff, who reports a number of cases, cured for four years, which he considers a sufficient length of time to establish the merits of his new treatment. The patient sits on an insulated stool with rounded corners, connected with one of the conductors of the machine by a metal tube. The electrode is held at a distance of one to two centimeters from his mouth, the metal part connected with the floor or earth by means of a metal chain. The patient feels a slight movement in the air, and he inhales this electrified air for five or six minutes. At first he feels a dryness in lips and neck, followed by a sensation of warmth in mouth and throat, and occasionally a slight transient dizziness. If there is much debility, sparks also are induced over the chest, with a metal ball on a rubber handle, or with the finger. These electric air inhalations are supplemented by an abundant, strengthening diet and pure air, if possible the patient continuing his usual occupations. No secondary effects were observed in any case, even with advanced heart disease. The report in the *Klin. Therap. Woch.* of May 31 contains several typical observations of severe forms of the disease, with bacilli in the sputa, terminating in complete recovery to date. The shorter the duration of the disease, irrespective of the severity of the lesions, the more rapid the cure. He also reports thirty cases of non-tuberculous affections of the respiratory organs promptly cured with this treatment, catarrhal, chronic bronchitis, etc.

Antiseptic and Therapeutic Values of Chinolol.—According to the London *Lancet* for April 30, chinolol has been widely employed as a powerful and convenient antiseptic, and it is said to possess very distinct advantages over other antiseptic compounds previously in use. It is a yellow powder of definite chemical composition, soluble in water, and containing a quinolin group

in combination with potassium and the sulphate radical. Its antiseptic, disinfectant, and deodorant properties have been determined with very satisfactory results by Dr. Klein. It is important next to turn its properties in practice, and on this important question Professor Hobday, of the Royal Veterinary College, has contributed an interesting and instructive paper to the March number of the *Journal of Comparative Pathology and Therapeutics*. His experiments related to dogs, cats, and donkeys. The internal administration of chinolol to human subjects has been tried by Dr. Cipriani, whose results were recorded in that journal about five months ago. In this communication the treatment of tuberculosis with chinolol administered by the mouth or injected locally was followed by a rapid and apparently permanent improvement. The summary of Professor Hobday's results is as follows: 1. Chinolol acts well as an antiseptic, disinfectant, and deodorant when used in certain proportions. 2. Its action is better marked when used as a lotion than when used as a powder. 3. The powder is not suitable for use on fresh wounds unless diluted in some way or other. 4. For the disinfection of instruments care must be taken not to make the solution too concentrated. With instruments care must be taken, Professor Hobday finds, that the solution should be of the definite strength, as otherwise the instruments lose their edge and the handles become discolored and rough to the touch.

The Value of Green Vegetables and Levorotatory Sugars in the diet of diabetics is announced by Professor De Renzi, based on an "infinity of researches and observations," possibly the most important contribution to the cure of diabetes mellitus since Munson's articles in the *JOURNAL* (xxvii, pp. 872, 922 and 1072). He confirms Külz's statement that diabetics assimilate levulose easily and that the levorotatory sugars in general are much more easily burned in the organism than the dextrorotatories, and advocates green vegetables for food, as they contain a kind of starch which is transformed, not into dextrose, but into levorotatory sugar in the organism, and neutralizes the effects of meat and fat ingested. The sugar and acetone vanish from the urine, if green vegetables are eaten exclusively for a day or so, and prevent their appearance if combined with a mixed diet. He has even found that a diet of green vegetables will prevent glycosuria in dogs after removal of the pancreas, and cure it if it has already appeared. The vegetables may be boiled or eaten in salads; cabbage, chicory and endives were the most frequently used in his tests, but all are effective: lettuce, asparagus, spinach, cauliflower, etc., although he warns that green peas and beans must be very fresh and the daily amount not exceed one-fourth kilogram. In the severest "carnivorous" cases he restricts the diet to the green vegetables alone for two days, but then, and in "amyliovorous" diabetes, allows a mixed regimen, including 100 grams green vegetables, 300 grams meat, 5 eggs and 500 grams red wine a day. No sweetening substance is permissible except levulose; saccharin, etc., are "foreign substances" and injurious. On account of the levorotatory sugar in fruit, this is also to be recommended in moderation. He has established the following daily limits for grave cases: Almonds, filberts, oranges, 500 grams net; mandarins, 4 to 8; pears and apples, one-fourth kilogram; plums, strawberries, 500 grams gross; peaches, apricots, 100 grams net; cherries, 200 grams gross. He ranks milk among the last substances to be allowed, although dishes cooked with milk are allowable in the first mixed diet. Diabetic patients, he adds, should take considerable active exercise. After ingesting a certain amount of carbohydrates they should take a walk, not a gentle stroll, but "with energy." Medication is worthless. Electricity exaggerates the decomposition of nuclein and causes sugar to appear in the urine. Mineral waters, massage, gymnastics are more useful, but the vegetable diet is the main thing, and it should be continued indefinitely and at least twice a year the patient should restrict himself almost exclusively to green vegetables alone for a few days.—*Gazzetta degli Osp. e delle Clin.*, June 5, 1898.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

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Foreign Postage	1.75
Single Copies	10 Cents.

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SATURDAY, JULY 16, 1898.

STUDIES OF THE GANGLION CELLS AND THE
CHANGES THAT OCCUR IN THEM IN GEN-
ERAL DISEASES AND OTHER
CONDITIONS.

During the past few years observations have shown the marked superiority of the NISSL method of staining ganglion cells. Many claims have been made regarding the significance of the changes brought out by the new stain, but it has not yet been made possible to correctly interpret the variety of the changes revealed.

Dr. JAMES EWING¹ recently read a paper before the New York Pathological Society, in which he sets forth the results obtained by him in a systematic examination of the ganglion cells of the central nervous system in a series of cases representing a variety of conditions.

After having tested a large number of fixing agents recommended for the preservation of the structure of the ganglion cells, EWING finds no agent is probably superior to alcohol, in the strength of 95 per cent. or absolute, as originally recommended by NISSL. He finds the following simple procedure as good as any: Stain the sections for one or two minutes in a 1 per cent. aqueous solution of methylene blue, gently heated; wash in water; decolorize in absolute alcohol; clear in oil of cajuput, and mount in Canada balsam.

EWING concludes that the so-called chromatic substance in the human ganglion cells is invariably arranged in a network with nodular thickenings. In Purkinje's cells the chromatic threads are much thicker than in the cells of the spinal cord and cere-

¹ Studies from the Department of Pathology of College of Physicians and Surgeons, N. Y., Vol. 7, 2, 1898.

bral cortex. There is a cytoplasm with acido-philic tendencies, in which it is thought there may occur important changes, the evidences of which, however, are not yet demonstrable by the present methods. Of the radiating rows of oxyphile granules, described by HELD in connection with the axis cylinder processes, EWING found only indistinct traces. In the thinnest specimens that could be secured this area appears granular, but the granules are usually distributed irregularly. The reticular part of the cell body is surrounded by a rim of finely granular oxyphilic cytoplasm, which has a very distinct and abrupt line of demarkation. This is best demonstrated in freshly teased specimens. In all probability the substance of the axis cylinder process fills in the meshes of the reticulum of the cell body, and if this be true then the oxyphilic cytoplasm furnishes the material which undergoes pigmentation and other degenerative changes, and then the essential lesions that lead to loss of function of the nerve cells are to be sought for, not in the chromatic reticulum, but in the cytoplasm. This conclusion has already been reached by HELD and by APATHY, working with an entirely different technical method.

As regards the postmortem changes, EWING found that the earliest ones consisted in a diffusion of the chromatin throughout the nucleus; in certain cases the nucleus was shriveled and irregular. The chromatic reticulum of the cell body may undergo a granular splitting up, so that the cell becomes uniformly granular; vacuolation is also a constant and sometimes prominent feature. Similar changes may affect the dendrites. No uniform sequence can be given for the occurrence of the postmortem changes.

EWING then examined ganglion cells from cases of pneumonia, typhoid fever, and a number of other infectious diseases; also from auto-intoxications such as uremia, eclampsia, diabetic coma, sunstroke, from cases of acute poisoning by alcohol, morphin, carbolic acid and hydrochloric acid, and in a number of miscellaneous instances, including disturbances of the cerebral circulation, such as thrombosis and hemorrhage.

From these observations it is learned that virulent toxins may not cause any changes in the nerve cells demonstrable by NISSL's method, that the chromatic reticulum is comparatively resistant to the action of many bacterial poisons. In some cases of rapid septicemia, experimentally produced in the rabbit, bacilli were found in the interior of the ganglion cells, which nevertheless showed only slight evidences of degeneration. It is thought that any changes that may occur are not so much due to the direct action of the circulating toxins, as to the loss of function in the cell processes or to loss of blood supply in minute foci. The intermediate lesions may be referred to local circulatory disturbances, such as edema, capillary hemorrhages, thrombosis, obstructions to the lymph cir-

ulation, and lesions in the nerve trunks. In those cases in which there had been extreme dyspnea and cardiac weakness before death the medullary nuclei, especially the tenth and the "nucleus ambiguus," suffered more than others, and these and related observations would seem to point to the possible influence of over-action and fatigue in determining the lesions in the ganglion cells. In such diseases as hydrophobia extreme and wide-spread lesions affecting all parts of the cells occurred. Chemical poisoning may abolish nervous function without many demonstrable changes in the nerve cells. When the action of the poison is prolonged at least twelve hours, however, changes may be produced in the chromophilic substance, as would indeed be expected from the experimental study of the effect of various poisons upon animals.

In the acute lesions it concerns a process of chromatolysis, which may be of the same character in various groups of cases, although distinct stages may present different appearances. When the lesions are ascribable to local anemia the changes consist of a uniform granular appearance of the chromatic substance, which may be fine or coarse, depending upon the stage of the process, all ending in the same complete loss of nodal thickenings with more or less preservation of the reticulum.

Among the changes in the nucleus those of the nucleolus are to be mentioned. The nuclear network may be granular and irregular or entirely absent. Vacuoles and granules may occur in the cytoplasm.

EWING found that there was no specific features in the appearance of the cells in the fatal cases of alcoholism, tetanus, and thrombosis of the basilar artery; the principal occurrence was chromatolysis. This process may occur without distinct change in the nucleus. EWING believes that further degeneration frequently occurs after chromatolysis is complete, because there may be entire absence of changes in the nucleus in the cells with preservation of the reticulum of the cell body, with functional activity, as can be demonstrated in over-heated rabbits. EWING has repeated the experiment of GOLDSCHIEDER and FLATAU of subjecting rabbits to high temperatures, and he has found that the chromatophilic bodies of the anterior horn cells may be largely obliterated, and yet the rabbits may be running actively about the laboratory.

He concludes, first, that the chromatic substance of the nerve cell is more susceptible to the influence of disturbed circulation than to the action of virulent bacterial toxins.

Second, that LEVI's observation is of great significance, if this can be verified, namely, that during hibernation chromophilic bodies disappear.

Third, that the relation of the chromatic substance to the activity of the cell still remains a matter of conjecture.

Fourth, that in the premature, and even in the full-

term infant, chromophilic bodies have been found to be absent or but imperfectly developed.

Fifth, that chromophilic substance of the ganglion cells probably represents a state of physiologic nutrition, which may vary between the full development of such bodies to their complete absence as in the motor cells of hibernating animals.

Sixth, that while the chromatic substance of the ganglion cells may be much diminished without real degeneration of necessity being present, yet it is certain that acute degeneration of the ganglion cells is usually evidenced by various forms of solution of the chromatic substance.

It seems we are still far from a systematized knowledge of the real pathologic histology of the ganglion cells. The impression is gained from EWING's study that until it becomes possible to demonstrate the delicate morphologic or chemic changes in the cytoplasm and the intermediate substance of the cell, the key to this branch of pathology will not be grasped.

OUR INSPECTION OF SPANISH HOSPITALS IN CUBA.

While making a brief inspection of the general hospitals in the Province of Santiago, Cuba, we were so much impressed with the excellence of the management, the fine discipline and the care manifested in the details of treatment that we can not refrain from publicly testifying to the efficiency of our medical brethren in the service of Spain. Our inspection was made through the medium of certain reports and returns which, instead of being in the hands of *Excmo. Sr. Inspector de Sanidad Militar de la Isla de Cuba, Habana*, to whom they were forwarded in accordance with Army Regulations, are now by the fortune of war, on file in the War Department of the United States, Washington, D. C. From these we learn that the general hospital at Holguin, the Military Headquarters of the Province, is one of considerable size, having a capacity of probably 1500 beds, for there are fifteen ward prescription books, 12 medical, 1 surgical and 1 for *Senores Oficiales* or commissioned officers, and some of these wards as shown by the series of prescriptions have as many as 112 beds. The average daily occupancy of the hospital during the month of December 1897, was 700 patients. All the reports and papers examined were intended to be rendered on printed forms, but it is manifestly an understood thing in the Spanish medical service that the absence of blanks does not constitute a valid excuse for failure to make reports, as several of the complicated forms were ruled by hand. All were written with the utmost care to insure legibility, with the exception of the signatures of the medical officers, which are generally illegible although written with care and with elaborate flourishes above, beneath or around, as an integral part of each. These intricate pen-traced additions to the sign manual were

no doubt intended to give dignity and individuality, but to the practical common sense of the average American they are schoolboyish in the extreme. All are free from blots or erasures, and are clean, if we except the ward prescription books, which bear evidence in finger markings and other excusable soils of having been carried from bed to bed and thence to the dispensary. All the forms are printed in single sheets, those used during the month being stitched together in a printed or hand-lettered cover to constitute the report for that period.

The *libreta*, or prescription book, of each ward shows the quantity of each medicine prescribed for each patient at the morning and evening visits, and the entries of each visit are closed and certified to by the signature of the chief of the clinic. These entries are of interest as throwing light on the character of the cases and the treatment adopted by the officers in charge of the various wards. An extensive materia medica is employed, over three hundred different preparations having been prescribed during the month. Quinin in various forms, antipyrin, jaborandi and limonada vegetal occur with great frequency. Sulphate of quinin is usually written *sulfo. qq^a*. *Leche de vaca*, or cow's milk, appears in prescription as a medicament. The summing up of the quantities prescribed daily in the wards acts as a check on the pharmacist who renders a report at the end of the month of the quantities, and cost of each article sent out of the dispensary. The cost of the medicines used in all the wards during the month of February 1898, amounted to \$2,998.35. Wine of quinia was the costliest item, 977 kilos costing \$655.95. Among others we may cite wine of quinia and iron 197 kilos, \$109.88; disulphate of quinia 8529 grams, \$290.83; valerianate of quinia 1308 grams, \$46.04; limonada vegetal 790 kilos, \$28.48; acetate of lead 40 grams, 1 cent.

The next paper examined was a report of the official remedies compounded in the pharmacy, thus accounting for the constituents employed, as of sugar transformed into syrups and of alcohol into tinctures, etc., all of which have afterward to be taken up and accounted for. One would think this a satisfactory system of responsibility and accountability without a report showing the quantities of remedial substances, simple and compound, consumed on each day of the month. Nevertheless, such a report is rendered as corroborative of the totals for the month when verified by the daily prescriptions.

The next report examined was one, forwarded in triplicate, of articles purchased for the subsistence of the patients during the month of November 1897. It gives the name and address of the person from whom each purchase was made and the items, with certificates as to the current market price. The expenditures for the month amounted to \$24,819.52. Some of the items and prices may be of interest: 7700 kilos of fresh beef at 87 cents per kilo, the heaviest item in

the bill, \$6,699.00; 1600 kilos of chicken at \$1.25; 228 kilos of coffee at \$1.10; 4125 kilos of milk at 43 cents; 5470 eggs at 10 cents each; 3750 liters vino tinto at 25 cents, and 513 liters vino generoso at \$1.65. Another report in duplicate gives, classified by regiments, the name, company and rank of each patient, with date of entry into and discharge from the hospital, to show the claim of the hospital for subsistence and for an allowance for tobacco at the rate of 40 cents per man per month.

We examined also some annual reports from the General Hospital at Gibara, which is a seaport on the northern coast, about 20 miles from Holguin, all of which showed the same precision in matters of detail. This hospital is much smaller than the other, as its average number of occupied beds was only 100. Lastly, from the General Hospital at Puerto Padre, we found a series of reports purely medical giving all the cases under disease headings for the year 1897. Puerto Padre is on the north coast west of Gibara, and about 40 miles northeast of Holguin. These reports give all the items of information called for by our United States Regulations; name, rank, company, corps, age, nativity, occupation, dates of entry into service, of the beginning of the sickness, of admission into hospital, of discharge from hospital, cured, dead or invalided to Spain, and the number of days stay in hospital under treatment. Thus, under the heading of *Paludismo*, there are recorded 1726 cases, of which only 1 proved fatal; of *Fiebre amarilla* 64 cases, 26 fatal. The latter disease began in August, and was in full progress on Dec. 31, 1897, when the report closed. On the sheets for typhoid fever, pneumonia, tuberculosis, smallpox, venereal disease and syphilis, there is only the remark *Ninguno*, equivalent to "no case admitted during the year."

Whatever may be our views of Spain from our present inimical standpoint, we must confess that the glimpse we have obtained of Spanish medical methods as practiced in the hitherto obscure outposts of Holguin, Gibara and Puerto Padre, has given us a high opinion of the Medical Department of the Spanish Army.

THE NEWS FROM THE FRONT.

No formal report has been received at the office of the Surgeon-General of the Army from Chief Surgeon POPE of the 5th Army Corps at Santiago, Cuba, but some idea of the work accomplished by the medical department of that corps may be gathered from the Associated Press and other dispatches from the front. The health of the troops on the voyage from Tampa, Florida, was excellent, only 1 per cent. having been sick. After landing at the Juragua wharf and getting into position on Cuban soil the first excitement in medical circles was occasioned by the dash of the dismounted Rough Riders and Regular Cavalry, June 24 at La Guasima, in which Major FRENCH, surgeon

of the former, was reported as having distinguished himself by bringing in a wounded man from between the lines. The hospital corps detachment did its duty handsomely, collecting the wounded at the first aid stations whence they were moved by litter to the landing. Most of them were immediately transferred to the *Olivette*, which had acted as a field hospital for the corps during its voyage. All necessary operations and dressings were completed before 3 A.M. of the 25th. The main saloon was converted into an operating room, where the work was done by electric light.

After this several days were passed in making the needful arrangements for the attack on El Caney and the hill of San Juan, which took place on June 30 and was continued on Friday and Saturday, July 1 and 2. Here the losses were at first estimated at 400, but later despatches from General SHAFTER stated that an underestimate had been made and that they would probably mount up to 1000; and still later press despatches indicated about 1800 as the number, a very heavy loss considering the small number engaged. Concerning Friday's fight it was said that the greatest care and attention were bestowed upon the wounded men. The hospital of the 2nd division was established on the field as was also that of General WHEELER'S Cavalry Division, Major VALERY HAVARD, Chief Surgeon. The hospital of the 1st division was a short distance west of General SHAFTER'S headquarters. The ambulance companies proved very efficient and no wounded men remained on the field after dark. The cases were so numerous that the hospital canvas was insufficient to shelter them. Those coming in later had to be placed on the ground under palm trees in close proximity to the tents. Surgeons and nurses worked unceasingly for forty-eight hours to attend to them and prepare them for transportation to the landing. Medical officers from the fleet assisted the over-worked surgeons of the corps in their labors. Many of the wounded found their way to the base hospital, for one despatch says: The provisional hospital at Siboney received a large number of men who all night long loitered along the road from the front as best they could. Wagons conveyed many, but others preferred walking, and throughout the night the road was filled with the wounded who moved slowly along the path leading to the sea coast.

Attention has been called to two points, first, the small number of cases requiring amputation, and second, the small number of deaths among so many wounded men, and this latter notwithstanding the references made to the ghastly wounds caused by the brass jacketed Mauser bullet. Among the deaths was that of Acting-Assistant Surgeon DANFORTH of Milwaukee, Wis., who was attached to the 9th cavalry. Dr. DANFORTH is said to have been picked off by sharpshooters while attending to wounded men on the road to the rear. Several members of the hospital corps were wounded also in this way.

The division hospitals were amply supplied with field dressings and supplies, but on account of the unexpectedly large number of wounded the stock of hospital shirts, drawers, blankets, etc., ran short. Ordinarily in going into a fight soldiers throw away all their impedimenta or stack them in rear of their line of battle, so that blankets and knapsacks or blanket rolls containing spare shirts, drawers, etc., can be picked up anywhere, and as a matter of fact are picked up by the hospital corps men to be brought to the hospital with the wounded to eke out the hospital supplies; but as Dr. POPE had to telegraph his shortage of these we must suppose that clothing rolls thus thrown away by our troops in the recent battle must have been considered as treasure trove by our Cuban allies. Outside of these things the field hospitals lacked nothing, although we find two or three telegrams from Miss BARTON suggesting the amount of suffering assuaged by her efforts at the base hospital at Siboney. In one some elation is manifested at being under the direct fire of the Spanish sharpshooters, but it is not stated that this reckless exposure really took place during the truce. The work of the Red Cross has been mainly that of providing supplies from the *Texas* to the starving Cubans.

Ultimately as the operations were performed and the wounds dressed the wounded men were shipped off through the surf to the transports, the first of which, the *Iroquois*, arrived at Key West, Florida, July 5, with 320 sick and wounded. These, with the patients already there, fill all the accommodations at that place so that future arrivals will be landed at Tampa, where the hospital train is on duty. Meanwhile the Hospital Steamer *Relief* arrived at the front with ample supplies and a reinforcement of about thirty medical officers, among them Prof. NICHOLAS SENN. This handsome vessel has cot accommodation for 350 patients in the wards, and in case of necessity the hurricane deck may also be utilized for ward purposes. Full descriptions of the outfit of this ship have been given in most of the daily papers, including her baths, electric fans, search light and Roentgen ray apparatus, disinfecting chambers, refrigerating rooms, stills and carbonating machine.

CUMBERING THE RECORD.

The *Index Medicus* is a valuable publication that has as a special type and example of American medical journalism done credit to our country. It has also, in its complete bibliography of medical literature, introduced at least the knowledge of the existence of such a literature in this country into various quarters where it had been hitherto consciously or unconsciously ignored, and if at the present time there still exist those who consider American medicine still in its infantile swaddling clothes, we can, with the exercise of all needed charity, attribute such opinion to abnormal mental idiosyncrasy rendering them blind to facts,

to a wilfully maintained provincialism and prejudice. When all the world has to come to America to keep track of what is being done in medical publication, any wholesale disparagement of American medical progress comes with ill grace.

There is, however, a point of view from which there is perhaps some reason for criticism of American medical literature. No other country has such a multitude of medical serials, good and indifferent; and some of them, it is to be feared, falling under the category that is commonly sandwiched in between these two. It is not necessary to say what ones these are, and the reader may, if he so inclines, apply the suppressed adjective to any of the irregular publications that comes to mind. It is clearly impossible that all of these multitudinous publications can be kept at a high scientific standard, and equally so that their reason for existence can be the local demand for a high grade medical publication. Some few of them, and those often not the best, are financial successes, sources of income to their publishers, but this is sometimes the result of catering to a low taste in medical reading, filling up their pages with recipes and answers to correspondents whose ignorance indicates the type of their constituents, or they perhaps are trade journals issued in connection with some drug or medical supply house which with its facilities for advertising finds way to make them remunerative. A large number of the minor medical journals must of necessity make little more than their expenses, and this is sometimes considered as done by the addition of the subscription cost of their more valuable exchanges to the sum of the receipts. They are advertisements for their editors and sources of additions to their libraries, and while most of them are eminently respectable if not otherwise remarkable in their editorial conduct, their multiplicity and the stamp of provincial mediocrity set by a few of their number, and in a measure, upon the whole, has worked to the disadvantage of the reputation of American medical journalism. This is probably less true at the present time than in times past, and it may be said that when these serials really serve a useful purpose they do so by keeping up interest in medical matters by serving as the organs of local societies, and that they really are an indication of medical progress rather than of any unfavorable tendencies in the profession. This is certainly true to a large extent, but it does not do away with the fact that the same amount of energy, intellect and financial outlay, combined on a smaller number of publications, would have better results. It would certainly in that case do us more credit, for while there are European medical journals of no greater merits, they are not so numerous as a class, and are not accepted as setting the type of the medical literature as those in this country have been too often by foreign observers. The Chauvinistic European judges all by the worst and weakest, and in this he is very apt to be followed

by his imitators and admirers on this side of the Atlantic. The real merits of our minor medical publications are likely to be ignored for the single reason of their multiplicity.

The greatest evils, however, that we can attribute to this proliferation of medical journalism, are to be looked for in the overloading of our medical bibliography thus produced. It is clearly impossible for each and every local medical journal to keep itself filled with really valuable original articles, and were it so it would be hardly desirable. Many of them are ephemeral publications; their files are not to be found complete in any medical library, except it may be that of the Surgeon-General's office, and valuable matter contained in them would be practically lost to the world, at least so far as the possibility of original reference is concerned. This is in fact too much the case, and the remedy is not apparent under existing conditions.

Another evil which these so numerous medical journals favor, and one that also needlessly cumbers up our medical literature, is the custom that many reputable and prominent medical writers have of utilizing them for the republication in duplicate, triplicate or even quadruplicate of their articles. It gives their views and discoveries a wider public, it is true, but it would be better if this were attained by a more extensive circulation of a lesser number of journals. As it is, it is confusing to anyone engaged in medical research, and all the more so if, as is sometimes the case, the articles while practically the same are published in slightly modified form and with changes in the title. The *Index Medicus* is sometimes therefore on embarrassing guide in looking up the literature of a subject by reason of this undue cumbering of the record.

It is not to be understood from the above that any wholesale condemnation of the over-numerous medical journals of this country is intended. The fact that there are so many of them, however, weakens their influence collectively and individually, and the standing of American medical journalism suffers in the estimation of some whose judgment may not always be correct but yet has its effect. There are also some, it must be admitted, that are not exactly creditable representatives of their class and by the too common synecdochal method of certain critics they are considered as typical of the whole. In addition to this we have by reason of their existence the occasional practical loss to the world of valuable contributions and still more often the needless overloading of medical bibliography with titles duplicate or otherwise that will be forever practically inaccessible for original reference to the mass of scientific workers in medicine.

According to the *Index Catalogue* and the *Index Medicus* our country leads the world in medical bibliography. It is unfortunate that it also embarrasses it to so great an extent.

FURLOUGH THE CONVALESCENTS.

During the later years of the Civil War, it was found that our convalescent sick and wounded recovered faster when sent home on furlough, than when retained in hospital or convalescent camp.

Not only was the ever present element of home sickness eliminated by this practice, but the overburdened Medical Department was relieved of much care.

It is hoped that this practice may be renewed in case of our gallant Volunteers in this War.

CORRESPONDENCE.

What is to be Expected from the Surgical Treatment of Tubercular Lungs?

CHICAGO, July, 1898.

To the Editor:—In consequence of the surprising declaration of Dr. Murphy, that tuberculosis of the lungs can be cured by injections of nitrogen gas into the pleural cavity, the question arises, what may we expect of this measure, setting aside all the difficulties arising by impossible diagnosis of adhesions, which would in some cases make the injections inefficient. We will only consider cases in which the method would effect a total compression of the diseased lung. What will be the consequence of such a state, so far as known by pathologic observation?

1. It may be remarked that we know such cases, in which a healthy or emphysematous lung is compressed by rupture of some air cells, mostly in the place of a circumscribed adhesion of the pulmonary surface to the costal pleura. In general such traumatic pneumothorax heals without any difficulty.

2. If a tuberculous lung is collapsed by pneumothorax, occasioned by a rupture of its surface, mostly by infection of the pleural cavity by the contents of the ruptured parts, a pneumothorax is the consequence. But in many instances, this resulting pleuritic effusion may be very slight or totally deficient. The rupture heals and we have a simple pneumothorax, not very different from the artificial process proposed by the bold operator. These forms of pneumothorax can subsist very long in tuberculous patients. Is it observed anywhere, that under these circumstances the tuberculosis of the collapsed lung is healed or at least reduced? This question can only be answered by observation. So far as I can remember, I have never seen any signs of reduction of a simple or suppurative tuberculosis under such compression. The peribronchial knots, which are lying superficial, are protruding over the surface of the compressed parts and will not be reduced by exclusion of the air in the adjacent air cells. On the other hand, ulcerations of the bronchi or tubercular deposits in the walls of a cavity in the apex or elsewhere in the lungs, will not be under different conditions than they are in a respiring organ. Bronchi with cartilaginous walls and cavities with fibrous surroundings can not collapse, and will receive the same or a somewhat smaller quantity of air in respiration. The air included in these cavities may become somewhat richer in carbonic acid and poorer in oxygen, but this does not seem to be a healing factor, because quite the same composition of air will arise in every badly ventilated apex of the lungs. The proposition of Hanau is generally accepted, that the apex of the lung becomes the prominent seat of tubercular infiltration by insufficient ventilation, there being a normal condition and in a much higher degree in such persons with abdominal respiration. Every physician treating tubercular patients institutes regular gymnastics in such cases to promote deep inspirations and prolonged expirations under higher

pressure. If a change of respiration takes place in such cavities with solid walls in consequence of an artificial pneumothorax, it will endanger these parts and prevent healing of the tubercular process contained in them.

The artificial pneumothorax may influence the course of tuberculous processes favorably only in one respect by lessening the expectoration retained in cavities or bronchi. It may be that in this way also the spreading of tuberculosis into the inferior parts of the lung may be impeded, certainly for a short time and not definitely. Dr. Murphy is to be credited that coughing patients can sleep undisturbed by cough after the institution of the artificial pneumothorax, but it is questionable whether tubercle bacilli will die in the retained sputum and pus. At any rate, the surgeon would not consider such a retention of pathogenic organisms as helpful. On the contrary, we always search to eliminate such organisms and dying or dead cellular material. That tubercle bacilli and cocci will not die in such masses of pus, mucous matters and polynuclear leucocytes is shown by the vegetation of these organisms in the caseous tuberculous infiltrations. The destruction of these organisms is effected by certain forms of leucocytes, named macrophages by Metchnikoff, and we are glad if we can promote their appearance in the sputum, because their presence denotes the first sign of beginning salutary reaction of the body. I demonstrate this often to my pupils in the tuberculin treatment. This salutary change is directly hindered by the artificial pneumothorax, promoting not only atelectasis of the air cells, but effecting also anemia. The elastic tissue of the lungs absolutely closes all small vessels, if it retracts by the pressure of the injected nitrogen gas.

All clinical experience demonstrates that anemic condition of the tissues, and particularly in the lungs, is favorable to the development of tuberculous processes, if such germs are present. So Traube has shown that stenosis of the pulmonary artery is followed mostly by tuberculous lung affections. The same is the case in deformities of the chest, impeding the movements of the chest wall, as in lordosis and scoliosis of the spine. The process always commences on the side where the thorax is contracted. The flat chest, so often present in hereditary forms of tuberculosis, promotes the development of the disease in the apices of the lungs and hinders the process of healing. The same effect is produced by a weak heart, so often accompanying this malformation of the chest. Congenital aplasia of the aorta promotes anemia (Virchow) and later frequently leads to tuberculosis.

We observe quite the contrary in a state of increased blood pressure, as in well compensated cases of valvular destruction of the left side of the heart. After the first observation of Traube, who considered this condition as favorable in tuberculosis, I have during the past thirty years observed many cases of involvement of lung tuberculosis under this condition, but I know also, that if the compensation is destroyed, as it occurs often in advanced age, the old repressed tuberculous process can break out again, mostly in the form of tubercular pleuritis, the lungs being saved more as the pleura by the direct flow of the blood to them through the pulmonary artery, whereas the weakened left heart ceases to impart enough pressure to the arteries of the body. This fact, the limitation of tuberculous development under the effect of higher venous pressure, has been practically demonstrated in the treatment of tubercular knee-joints, by Bier, a pupil of Esmarch. This treatment, by the way, will only be effectual if the stagnation of blood is very limited, because higher degrees of venous stagnation impede the emigration of leucocytes (Cohnheim).

If one were to try to produce the most favorable condition of circulation in tuberculosis, by physical means, one should institute artificial destruction of one aortic valve, which I have first shown in dogs to be a very harmless operation, but I would not counsel its performance in men.

In Dr. Murphy's experiments with tuberculous individuals the higher blood pressure in the not operated lung can be favorable, but the effect will only be temporary, and dangers will not be excluded, such as ruptures and bleedings from the single respiring lung, which then has to sustain a higher pressure of circulation and respiration.

From all this I must conclude that the proposed treatment of tuberculosis of the lungs by an artificial pneumothorax can not be supported in any way by our present knowledge, but we may quietly expect farther communications from the side of the bold surgeon.

The question of partial or total extirpation of one lung, also developed in the short thesee of Dr. Murphy, is one of the gravest problems of modern surgery and we must be very well satisfied that Dr. Murphy, as it seems, has vanquished many difficulties. But we must say, also, that the indications for these operations will only arise if the progressive tuberculous process has entirely subsided. Large cavities filled with non-tuberculous pus or extensive fibrosis with numerous small cavities would give good opportunities for such operations. Certainly it would be a very great progress in our science, if the surgical art would give us the opportunity of inspecting the diseased lung in the same safe manner as we can now do the organs of the abdomen.

EDWIN KLEBS, M.D.

Melancholy in a Leper.

NEW YORK, June 6, 1898.

To the Editor:—Some time ago you published a letter of Dr. Hansen, in which he took occasion to assert that there is no such thing as *melancholy of a leper*. He said, with Norwegian urbanity, that the melancholy in question was an invention of Dr. Ashmead. Will you kindly publish, for the enlargement of the knowledge of this gentleman in matters of leprosy, the following case, reported by Professor Meschedes, Königsberg, Prussia. It is really too bad that Dr. Hansen, probably on the strength of his bacillary discovery, should have come to the conviction that in matters of leprosy, when he speaks the universe ought to listen with entire submission.

The gentleman from Norway preserved through the Conference of Berlin an attitude which is entirely in accord with such a conviction.

ALBERT S. ASHMEAD, M.D.

From a Report of Dr. Schlessinger of Vienna, Section of Neurology, International Medical Congress, Moscow, August 19 to 26, 1897.

Professor Meschedes: "I consider that leprosy exerts a direct influence on the development of dementia, the cerebral phenomena resulting possibly from some irritating lesions of the nervous system brought on by their toxins. I base this theory on a case of psychosis with which I have recently met in a leper. The patient, a man of 28 showed the first symptoms of leprosy in 1891. In December, 1896, without any obvious cause, he was suddenly attacked with symptoms of acute dementia which necessitated his admission into my wards. He was discharged in four and one-half months, having recovered from his mental affection, and was transferred to the medical wards to receive treatment for the leprosy itself. After a short initial period of melancholia, during which the patient refused to take food, hallucinations of all the sense organs suddenly developed, with excitement, oppression, intense motor discharges and delirious ideas of a religious nature. After a few remissions and an attack of megalomania, the mental phenomena gradually improved and finally disappeared entirely.

"We may note as constituting the peculiarities of this case, sudden explosive onset of the mental trouble and also the existence during the initial period, of evident symptoms of cerebral and cutaneous congestion. The skin of the face was particularly red and swollen, and the cutaneous sensation evidently constituted the main starting point of the hallucina-

tions. The patient fancied that he was being tortured; he felt a sensation of heat which he himself estimated to have been fourteen times higher than the normal body heat; there also existed a state of sexual excitement of unusual intensity and a disturbance of the muscular sense, which gave him the impression that his whole body was being lifted. The congested state of the skin subsided on parallel lines with the retrogression of the psychic disorders. The last hallucinations of the period of decline also manifested themselves in the sphere of cutaneous sensations; the patient had the impression that snakes were creeping round his legs.

"The predominance of tactile hallucinations, pleads, in my opinion, in favor of the hypothesis of a *direct action* of the leprosy bacilli on the nervous system.

"I may add that one of the patient's brothers had also suffered from dementia. No other member of the family had ever exhibited any psychic disorders, so that there can be no question in the case of an hereditary psychopathia, properly so-called, but a simple family predisposition to mental trouble. The question might also be asked whether the attack of dementia was not due in the case of the brother, to some *latent leprosy infection*."

Removal of Foreign Body from Trachea.

DENVER, COLO., June 26, 1898.

To the Editor:—As I am under obligations to some of the members of the AMERICAN MEDICAL ASSOCIATION to report to them the progress and final results of the following case, I would like very much, with your permission, to use THE JOURNAL as a medium through which to reach those who became interested in the case during their attendance at the AMERICAN MEDICAL ASSOCIATION here in Denver.

History of case.—I was called May 8, 1898, to see George S., aged 12 years, and found him with temperature of 103 degrees, rapid breathing and a hacking cough, with occasional paroxysms of severe coughing, which would leave him almost exhausted. The mother informed me that he had swallowed a pin on May 25, 1898, and that he had coughed very hard ever since that date. By physical examination the presence of a pin in the left bronchus was diagnosed by the entire absence of aspiration sounds over the entire left lung and the sibilant sound heard near the bifurcation over the left bronchial tube. I decided that in place of swallowing the pin he had sucked it into the trachea and from there into the left bronchus, and advised an operation for its removal, but it was June 13 before I could get permission, on which date I performed inferior tracheotomy and found the point of the pin at the bifurcation and the head in the left bronchial tube. The pin was seized and removed by a long forceps. The head of the pin was covered with a thick muco-purulent matter which formed a plug that completely obstructed the bronchial tube. On removing the plug a free discharge of pus followed from the left lung. After the patient's head had been lowered for quite a while to facilitate the flow of pus, the wound was cleaned and dressed. Expectoration was rather free for the first two or three days. Temperature gradually subsided, and by the ninth day it was normal; cough and expectoration very slight. On the fourteenth day the patient was discharged cured.

In behalf of the X-ray, I will say that it was tested three times in this case and each time failed to locate the pin.

A. J. HORN, M.D.

The Philippine Islands.

FORT WAYNE, IND., July 10, 1898.

To the Editor:—The prospect that the Philippine Islands may come under American rule suggests a matter of interest to the medical profession. The population of the islands is large and the country is very slightly explored. It will become necessary to send from the United States a num-

ber of men who will aid the administration there and who must combine scientific attainments and a habit of accurate observation with an occupation that will recommend them to the favor of the inhabitants of the group.

It is obvious that the medical profession alone can furnish such agents. Missionaries would come into collision with the religious prejudices of the people and traders would not possess the requisite training to study the ethnology, natural history, geology, economics and diseases of the Philippines. An immense store of invaluable information would be collected by men working in a scientific spirit and located in the numerous provinces and districts of the islands, and they would more than pay the expense of stationing them by making a census and reporting on the habits and resources of the people.

An excellent plan would be to divide the islands into sanitary districts, with a medical officer over each. He would have medical charge of the district, and also would be required to report on the matters mentioned above, and on all others of interest to the government of the United States. The medical officers would soon be self-supporting, and would be found useful in representing the administration in their districts. There are lawyers holding most of the offices of the government and the medical profession is systematically ignored. But this is a favorable opportunity to secure recognition for the culture and administrative ability of American physicians. They would go to these lands not to plunder or oppress but on a merciful mission, and the whole world would be enlightened by the reports they could furnish, while the United States would be honored by the work they would do. This would be a new departure in colonial administration and its success would be sure to make other nations imitate it.

I hope that the practical members of the profession and the influence of the JOURNAL may be enlisted in support of this suggestion. I am very respectfully yours,

W. P. WHERY, M.D.

Picric Acid as First Aid in Treatment of Burns.

GRANITE CITY, ILL., June 28, 1898.

To the Editor:—The treatment of burns is as yet unsatisfactory, the death rate about the same and many remedies are lauded, but picric acid in solution has given me excellent results; therefore I wish to record several cases treated by this procedure.

Shock and septicemia are the most dreaded results from the more severe cases, but all this can be eradicated by the persistent use of a weak solution of picric acid.

During the past three years several cases have come under my care and all have been treated alike, much to my satisfaction. While I do not wish to be original in this sense I wish to recommend a good thing.

T. B. K., chemist, age 23 years, in opening a can of gasoline the escaping gases exploded, burning him frightfully about the body, face and extremities. He was carried to a building and when I saw him was suffering untold agonies. I immediately had prepared a saturated solution of picric acid and bathed the whole body in it, covering the body with cotton and bandages. After a few minutes he said the pain was all gone and fell into a sleep. Several others who got burned at the same time expressed themselves as relieved as soon as the solution was applied.

I generally make up a pint of solution at a time and dilute as wanted.

Picric acid 4 dr.
 Alcohol 4 oz.
 Water distil 8 oz.

Picric acid for burns of the first or second degree is the simplest, quickest and most satisfactory treatment in my hands. It deadens pain and allays suppuration, healing spontaneously, the only objection being its staining qualities.

I generally soak absorbent cotton and lay it smoothly on the wound, cover this with rubber tissue and leave it on for two days or until a new skin forms.

I also apply an ointment occasionally, composed of ichthyol and vaselin, which softens the hardened epidermis.

While I do not propose to bring out anything new in this modern treatment I hope at least it may be more often tried by those who have discarded the old fashioned methods so long employed on suffering humanity.

F. E. TULLEY, M.D.

Plagiarism.

MUNCIE, IND., June 23, 1898.

To the Editor:—In Vol. xxx, No. 24, page 1401 of the JOURNAL, under "Original" appears an article by Gilbert I. Cullen of Cincinnati, Ohio, which has the appearance of being original, and no doubt the writer wishes to convey that idea among the readers of the JOURNAL, as no credit is given any one for the thoughts or language used.

It is the boldest piece of plagiarism I have noticed for years. It is apparently taken in its entirety from the "Encyclopedia Britannica." The Werner Edition, 1895, contains every thought and nearly every sentence exactly as it appears in Cullen's article. The only difference is, that the encyclopedia contains a little more.

A man who will copy from an encyclopedia and publish the article in a scientific journal of medicine and surgery as an original article, should be exposed, and dishonor heaped upon his head. It is an imposition upon the readers of the JOURNAL and also upon the editor and publishers, as it tends to lower the high standing and dignity of the JOURNAL.

Respectfully, F. E. HILL.

Etiology of Cerebro-Spinal Meningitis.

PARIS, ILL., June 27, 1898.

To the Editor:—I have been very much interested in recent reports and papers on cerebro-spinal meningitis, which I believe is caused by mold. Four of my cases were attacked after eating crackers that had molded and been warmed over by a grocer, and all have been in damp houses during damp weather. A great many cases occur in armies and among those who live in Alaska, where victuals are liable to be moldy. I notice that the straw used by the Third Illinois Infantry was damp.

Respectfully, W. H. TEN BROECK, M.D.

Precocious Pregnancy.

INDIANAPOLIS, July 7, 1898.

To the Editor:—In reference to an article on page 42 of the JOURNAL for July 2, taken from the Lancet of April 23, I wish to say that I delivered a girl about June 1, at the age of 12 years and 10 months. The boy baby weighed seven and one-half pounds and is now doing nicely. The labor was normal in every respect; no forceps, no laceration, and an uneventful puerperium. This girl had menstruated several times before impregnation. She was not over-developed, and really not fully developed, there being little hair in the axillary or pubic regions. She is nursing her babe, though her breasts are small.

Sincerely,
 WILMER CHRISTIAN, M.D.

P. S. I understand there was a girl 12 years of age delivered at the Women's Hospital, six years ago.

DES MOINES, IOWA, July 4, 1898.

To the Editor:—On Jan. 20, 1889, I was called to attend a case of confinement. On my arrival I found a girl 12 years and 10 months old in labor. After a rather tedious but uneventful labor I delivered her with forceps of a twelve-pound boy. The infant lived but a short time. The mother

had a normal puerperium. The mother of the girl was only 31 years of age at that time and had a daughter nearly four years older than the one confined. I am familiar with another case in which the mother was less than 13 years and 6 months old. I confined a girl in 1893, who stated to me that she had never menstruated and was less than 14 years old. This was afterward verified by her mother. She had no hair on the pubes, no enlargement of breasts or other signs of puberty.

Very truly,
L. DRAKELY ROOD, M.D.

BOOK NOTICES.

Abdominal Surgery. By J. GREIG SMITH, M.A., F.R.S.E. Sixth Edition. Edited by James Swain, M.S., M.D., etc. Two Volumes, 8vo, cloth. Pp. 1171. Philadelphia: P. Blakiston, Son & Co. 1897. [E. H. Colegrove & Co., Chicago Agents.] Price \$10.00.

"Less than a year had elapsed," says the writer, "from the publication of the fifth edition of this work when it became necessary to issue a sixth." The editor was actively engaged in the preparation of the fifth by abstracting literature, and the author recognized his assistance by requesting him to edit the sixth edition, but he had scarcely finished the first 100 pages when the death of the distinguished author occurred.

Little change had been necessary to make in the text except such as the progress of surgery has made necessary. The chapter on Hysteropexy has been rewritten.

It is altogether unnecessary for us to commend to our readers this masterly work. It is sufficient to say that the present edition is unsurpassed.

The first volume contains six sections, viz.: 1, Diagnosis of Abdominal Tumors; 2, Abdominal Operations Considered Generally; 3, Operations on the Ovaries, the Fallopian Tubes and the Broad Ligaments; 4, Operations on the Non-Gravid Uterus; 5, Operations on the Gravid Uterus and for Ectopic Gestation; 6, Operations on the Stomach.

The second volume contains eight sections, viz.: 7, Operations on the Intestines; 8, Operations on the Kidneys and the Ureters; 9, Abdominal Operations on the Urinary Bladder; 10, Operations on the Liver, the Gall-bladder and the Biliary Ducts; 11, Operations on the Spleen; 12, Operations on the Pancreas; 13, Unclassified Operations for Growths and Cysts in Omentum, Mesentery, Peritoneum and Parietes; 14, Operations for Abdominal Injuries; 15, Operations for Peritonitis and its Effects.

Text-Book of Physiology. Edited by E. A. SCHAEFER, LL.D., F.R.S., etc. Volume I. Pp. 1036. Edingburgh and London: Young J. Pentland. New York: Macmillan Company. 1898. [From A. C. McClurg & Company, Chicago.]

This work is intended to be exhaustive and to furnish in an accessible form the substance of the literature of the world bearing upon the subject, so as to render it largely unnecessary for the student of physiology of the higher class to consult original papers in foreign languages.

The first volume deals mainly with the chemic constitution and the chemic processes of the animal body and with those physical and chemic phenomena which are connected with the production and elaboration of the secretions and other fluids of the body. The work is thorough and well finished.

The contributors to this volume are: J. S. Edkins, M.D.; Arthur Gamgee, M.D.; W. H. Gaskell, M.D., LL.D.; Francis Gotch, B. Sc.; Albert Gray, M.D.; J. Berry Haycraft, D. Sc., M.D.; W. D. Halliburton, M.D., F.R.S.; Leonard Hill, M.D.; F. Gowland Hopkins, B. Sc., M.D.; J. N. Langley, M.D., LL.D., F.R.S.; B. Moore, M.A.; D. Noel Paton, M.D.; M. S. Pembrey, M.D.; E. Waymouth Reid, M.B.; W. H. R. Rivers, M.D.; J. Burdon Sanderson, M.D., D.C.L., F.R.S.; E. A. Schaefer, LL.D., F.R.S.; C. S. Sherrington, M.D., F.R.S.; E. H. Starling, M.D.

Uric Acid as a Factor in the Causation of Disease.—A Contribution to the Pathology of High Blood Pressure, Headache, Epilepsy, Mental Depression, Paroxysmal Hemoglobinuria and Anemia, Bright's Disease, Gout, Rheumatism and other Disorders. By ALEXANDER HAIG, M.A., M.D. Oxon., F.R.C.P. Fourth Edition with 65 Illustrations, pp. 698. Philadelphia: P. Blakiston, Son & Company. 1898. [E. H. Colegrove, Chicago Agent.] Price \$3.00.

This work first appeared in 1892, the second edition in 1894, the third edition in 1896 and the fourth English edition in 1897.

To those who believe that all ills in the human body, with a few exceptions, are due to uric acid, and "to be alkaline is to be happy," Alexander Haig appears as an enviable apostle and his book as the light of the world. We take pleasure in welcoming this new edition as embodying all the evil that can be said of uric acid and a thorough scientific demonstration of its baleful effects on the human body. To those not familiar with the work the book will be a revelation, not only on account of the undisputed facts which the author produces, but for the forceful manner in which they are arranged. That the work has passed to its fourth edition is plain evidence, if any were needed, as to the popularity of the work.

The Genesis and Dissolution of the Faculty of Speech. A Clinical and Psychological Study of Aphasia. By JOSEPH COLLINS, M.D. Pp. 432. New York: The Macmillan Company. 1897.

This work was awarded the Alvarenga Prize of the College of Physicians of Philadelphia, 1897.

It is an exhaustive monograph on the subject of aphasia and contains chapters on the history, general analysis and conception of aphasia, describes the different varieties under the head of motor aphasia, sensory aphasia, subcortical sensory aphasia, total aphasia and chapters on the diagnosis, etiology, morbid anatomy, treatment and medico-legal aspects.

This monograph will long stand as one of the most valuable contributions yet made on this subject.

A Manual of Hygiene and Sanitation. By SENECA EGBERT, A.M., M.D. Illustrated with 63 Engravings. Pp. 368. Philadelphia and New York: Lea Bros. Company. 1898.

This is a fair epitome of the existing state of the hygiene of the day with the exception of the chapter on quarantine, which, being taken from an unfair and misleading chapter on the subject in Rohé's Text-Book on Hygiene, is to that extent inadequate.

Transactions of the Section of Laryngology and Otology of the American Medical Association at the Forty-eighth Annual Meeting held in Philadelphia, June 1-4, 1897. Pp. 363. Chicago: American Medical Association Press. 1898.

This volume consists of reprints on extra paper of the papers read in the Section on Laryngology and Otology at the Philadelphia meeting of the ASSOCIATION. The volume is handsomely printed and it is needless to say that the illustrations present a better appearance than they do in the current number of the JOURNAL on account of the difference in the paper.

These Section books are becoming more and more popular each year, as they preserve in convenient form the special papers of the Section, without other matter.

The Johns Hopkins Hospital Reports. Report in Gynecology. 4to. Pp. 136. Baltimore: The Johns Hopkins Press. 1898.

The contents of this volume are: 1. A Critical Review of 1700 Cases of Abdominal Sections from the Standpoint of Intraperitoneal Drainage, by J. D. Clark, M.D. 2. The Etiology and Structure of True Vaginal Cysts, by James Ernest Stokes, M.D.

These high class observations are of great value to the medical profession and highly creditable to the authors. The possessor of a series of these reports, seven volumes of which have been issued, is to be envied as having at his hand a large share of all that is best in American experimental medicine and surgery.

Illustrated Skin Diseases. An Atlas and Text with special reference to Modern Diagnosis and the most Approved Methods of Treatment, by WILLIAM S. GOTTHEIL, M.D. New York: E. B. Treat & Co.

This work, three portfolios of which have been issued, will be issued in quarter portfolios, each containing 24 quarto papers, a text with numerous formulæ and four plates of cases from life, by a new photographic process.

The illustrations are accurate and numerous, and the plates are extremely life-like. We shall look for the succeeding portfolios with interest, and in the mean time compliment the author and the publisher on the splendid series so far presented.

Proceedings of the Dedication of the Hunt Memorial Building by the Hartford Medical Society, Feb. 1, 1898.

This volume, which is handsomely illustrated, contains pictures of Dr. and Mrs. Hunt; the building and its interior rooms; a poem by Mayer; the history and purposes of the building by Dr. Melancthon Storrs; the address on the occasion of the acceptance of the building by Dr. G. W. Russell; and the dedicatory address by Daniel C. Gilman, President of the Johns Hopkins University.

The volume concludes with the plans and description of the interior of the building and the list of members of the Society.

Yellow Fever, Clinical Notes, by JUST TOUATRE, M.D., translated from the French by CHARLES CHASSAIGNAC, M.D. Pp. 206. New Orleans: *New Orleans Medical and Surgical Journal*, 1898.

This work while translated from the French was not published in France, but Dr. Touatre who is a New Orleans physician wrote it in his mother tongue, being more familiar with that language than with the English, and his colleague, the accomplished editor of the *New Orleans Medical and Surgical Journal* has translated it.

It is a work giving results of thirty-three years of study, and observation of nine epidemics and it will be seen on inspection to be the work of a master.

A Country Doctor, by THOMAS HALL SHASTED, M.D., 1898, published by the author.

This book was originally published in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and two hundred and fifty copies have been printed, privately, for the author's friends. The sweet and simple story is charmingly told and the illustrations do not detract from the beauty of its English. Thousands of our readers enjoyed it when it was printed in the *JOURNAL*, and we refer those of our new readers who are not fortunate enough to possess a copy of the book, to the *JOURNAL* of Feb. 27, 1897.

Twenty-fourth Annual Report of the Secretary of the State Board of Health of the State of Michigan. Cloth. Pp. 723. Illustrated. Lansing. 1897.

This report covers the year ending June 30, 1896, is well printed and on good paper. A copious index adds very much to the usefulness of the volume, which is replete with data usually treated in such reports.

Proceedings and Addresses at a Sanitary Convention held at Detroit, Mich., Dec. 9 and 10, 1897. Paper. Pp. 160. Illustrated. Lansing. 1898.

This volume is a supplement to the report of the Michigan State Board of Health for 1898 and contains, among others, the following papers: "Germs; What They Are and how They Produce Disease;" "Isolation and Disinfection of Persons and Things;" "The Needs for and Value of Public Health Work;" "Popular Education in Sanitary Science;" "Diphtheria and Scarlet Fever, their Restriction and Prevention;" "Streets and Alleys and their Relation to the Public Health;" "Typhoid Fever and the Water-Supply of Detroit;" "Bicycling—from Social, Business and Healthful Standpoints;" "The Restriction and Prevention of Tuberculosis."

Transactions of the Vermont State Medical Society. 1897. Cloth. Pp. 224. Published by the Society, Burlington, Vt., 1898.

This volume contains the transactions of the annual meeting at St. Albans, Vt., Oct. 14 and 15, 1897, comprising the following papers: "Tumors of the Breast;" "Carcinoma of the Female Breast;" "Modern Management of Diphtheria and Croup Cases;" "Electrotherapeutics;" "Higher Medical Education;" "Osteitis Deformans;" "Paranoia;" "Significance of Post-climacteric Hemorrhages;" "Infantile Scorbutus;" "Uterine Curette in the Country;" "Cancer of Uterus;" also the medical laws of Vermont, etc. The volume is a credit to the society.

PUBLIC HEALTH.

Health in Michigan.—The State Board of Health reports, for June, the five most prevalent diseases as rheumatism, neuralgia, bronchitis, tonsillitis, influenza. Compared with the preceding month, diarrhea, remittent fever and measles increased in prevalence, and pneumonia, influenza and pleuritis decreased.

Sterilized Lymph.—We are so used to the phrases "arm-to-arm vaccination" and "lymph direct from the calf," and to the preference shown to "fresh over stored lymph," that to most persons in England it would be a revelation to learn that no lymph is used in Germany until it has been kept four months under observation. Taken with the strictest antiseptic precautions, mixed with definite proportions of glycerin and sterilized water, the instruments and vessels being all absolutely aseptic, it is stored in sealed tubes and kept at fixed temperature until under the inhibiting influence of the glycerin, the extraneous microbes swarming in ordinary recent lymph have died out, the specific micrococci being unaffected and multiplying in the absence of other forms. This process of elimination of the foreign microbes and pure culture of the specific organisms occupies three or four months, and no lymph is sent out containing more than one or two harmless bacteria or torulæ in the cubic centimeter, most of the samples being absolutely free.—*Practitioner.*

Acute Primary Diphtheria.—The *Lancet*, April 30, comments upon the paper on membranous stomatitis of Dr. Jurist that appeared in this *JOURNAL*, March 19, and adduces a similar case reported in a French journal by Dr. Thiercelin. This latter case was regarded as one of true primary diphtheria of the mouth. The patient was an adult female who complained of pain on opening the mouth and had anorexia and a little fever. The lower surface of the tongue, which was not swollen, and the floor of the mouth were covered with a whitish-gray membrane. There were membranes on the cheeks, gums and lower lip. The disease did not extend beyond the pillars of the fauces. The submaxillary lymphatic glands were swollen, mastication was impossible, and intense fetor and salivation were present. Diphtheria bacilli were found in abundance in the membrane. M. Sevestre and M. Gaston have reported a series of cases of membranous stomatitis which constitute a special form, denominated by them "stomatitis impetiginosa." It attacked debilitated children, especially those recovering from measles or whooping-cough. A whitish adherent membrane similar to diphtheritic exudation formed. The tongue was rarely attacked. In nearly all cases the disease was associated with impetigo of the face. The staphylococcus pyogenes aureus was found in every case.

Actinomycosis of the Lungs.—Before the Berlin Medical Society, Dr. Karowski said the disease appeared in two forms. One of these, the catarrhal form, was due to the germs establishing themselves on the surface of the bronchial mucous membrane, the result being a chronic catarrh of the bronchi with actinomyces present in the sputum. The other form, the

destructive one, was of a much more serious character and presented three distinct stages, in the first of which the germs entered into the deeper strata of the bronchi, producing there a destructive peribronchitis. At first the illness is not attended by any well-marked symptoms and it may often be taken for tuberculous phthisis, but the absence of tubercle bacilli and the appearance of actinomycosis fungi in the sputum may establish the diagnosis. Moreover, the area of dulness on percussion is not at the apex of the lung, as in tuberculosis, but is below the clavicle. In the second stage the fungi have come from the lungs to the pleura, producing there a hemorrhagic exudation. A swelling of the thoracic wall as in empyema is very characteristic. The purulent accumulation may discharge itself either through the skin or through the diaphragm. In the third stage there are metastatic formations in different parts of the body, together with symptoms of general septicemia. These cases are hopeless. Dr. Karowski then showed a patient who had been sent to him for an alleged sarcoma of the pleura. There was well-marked dulness of the right side and by puncture the presence of actinomycosis was ascertained. An incision was made in the fifth intercostal space, a portion of the sixth rib was resected, the affected skin and muscles were freely removed, and the resulting large cavity was cauterized with Paquein's thermocautery and dressed with iodoform gauze. The patient was profoundly collapsed after the operation, but eventually recovered. At the present time, three months after the operation, he still has a fistula, but actinomycosis fungi are no longer found in the discharge; the cough is only very slight and the patient has increased in weight five kilos (eleven pounds). Cases of pulmonary actinomycosis which have been successfully operated on are very rare, but would certainly become more frequent if an early diagnosis were possible.—London *Lancet*, April 23.

The Care for Revaccination in England.—Dr. Bond of Gloucester, England, has prepared for the Jenner Society a minute of the paramount needs of his fellow citizens for the stamping out of epidemics of smallpox. It is his belief that the experience of every recent English epidemic of that disease in his country, shows conclusively that if we wish to protect the community against these increasingly frequent scourges, we must take as much trouble to promote revaccination as we have hitherto taken to promote infancy vaccination. So long as the public are led to believe, as they have hitherto, that vaccination in infancy is the only thing about which the State need take any care, so long will the epidemics of so called "vaccinated" adolescents and adults, and of unvaccinated or badly vaccinated children be the approbrium of our country. There is only one way of effecting this, and that is by requiring, so far as is practicable, every child who enters a school to be efficiently vaccinated, and that before it leaves school it shall be equally efficiently revaccinated. It is to the revaccination of her adolescent population that Germany owes the remarkable immunity from epidemics of smallpox which she has for the last twenty years enjoyed, rather than to her compulsory vaccination in early childhood. For it is the adolescents and adults whose early protection in infancy has become attenuated by age who are most exposed to the risks of smallpox. If we could secure their protection by revaccination at the end of the school age, as well as that of the children at the commencement of it, we need not trouble ourselves much about the infants. We have been misled in this respect by false inferences from the experience of Jenner and the early vaccinators. When infants were the chief sufferers, because the adult population was in a large degree protected by having had the disease, the discovery of a means by which these unfortunate little victims could be almost absolutely protected naturally led to an undue estimate of the value of infant vaccination, especially as its effects were assumed to be more lasting than they really are. But we have now to deal with altogether changed conditions. Where infant

vaccination is fairly well maintained, as it has been in Middlebrough, it is the adults who have not been revaccinated who are now the chief source of danger, a danger which can only be avoided by investing every young person with the same degree of protection which we have for the last half century conferred upon the greater portion of our infant population. These observations are germane to the position of our badly protected communities. The occurrence of a case of smallpox in one of our Southern camps of the army of invasion into Cuba, teaches us that we are ourselves "traveling on thin ice." It is all very well to regard the regular forces as practically immune against smallpox, but there is a host of camp followers, attendants, etc., over whom there is little official control, and in it is a mass of inflammable material only awaiting the horrid variolous spark to light up an epidemic. The medical authorities at Washington would do well to declare what steps have been taken by them to protect the army and navy against smallpox.

NECROLOGY.

T. E. MURRELL, M.D., Professor of Ophthalmology in the Barnes Medical College of St. Louis, Mo., died June 26, at Denver, Colo., aged 48 years. Dr. Murrell was a graduate of the University of Maryland in 1873, and after two years of hospital work settled in Little Rock, Ark., where he established an excellent ophthalmic and aural practice, and won an enviable position in the profession. He was an active, scientific worker, contributing much to the Section on Ophthalmology of the AMERICAN MEDICAL ASSOCIATION. In 1890 he was elected Secretary of the Section, and three years later a Vice-President of the ASSOCIATION. In 1894 he accepted the chair of Ophthalmology in the Barnes Medical College, and removed to St. Louis. Two years later, he was compelled by failing health, to relinquish his work in that city, and since that time has resided at various points in the western States and Territories. His death was due to pulmonary hemorrhage.

WILLIAM HOWARD BAILEY, M.D., a man of much ability in many lines, died at his home in Albany, N. Y., June 24. He was born in Bethlehem, N. Y., December 28, 1825, his father being Dr. Solomon Bailey. After an academic education he was finally in 1853 graduated from the Albany Medical College and began practice in Utica, N. Y., but after a year or so removed to Albany, where he continued to reside until his death. He was most widely known for his activity in the New York State Medical Society, having been elected its President in 1881, after a service of ten years as its Secretary. Although a municipal reformer and sanitarian, with a membership in many societies his career became somewhat uneventful after 1887, when he retired to private practice.

JOSEPH M. TURNER, M.D., Transylvania, Ky., 1841, of Brooklyn, N. Y., died at the home of his son, the Rev. H. B. Turner, in Washington, Conn., July 2, aged 82 years. In 1844 he removed to Brooklyn, N. Y., where he practiced continuously for near fifty years. Three sons by first marriage, one a Brooklyn physician, and another son, a daughter and a widow, are his survivors.

WILLIAM H. PARKS, M.D., died at the home of his son in Reading, Mass., June 21, aged 75 years. He was an alumnus of the Castleton Medical College, class of 1847, and practiced for some years in Great Barrington, Mass.

DAVID B. NELSON, M.D., Harvard 1849, of Laconia, N. H., died there July 5, aged 75 years. He was a war veteran, a widely known citizen, and leaves a widow, a son and two daughters.

LOUIS E. LIVINGOOD, M.D., who was lost from the French line steamer *La Bourgogne*, in a collision sixty miles south of Sable Island, Halifax, N. S., was a member of the staff of the Johns Hopkins University. He was thirty-two years old, a native of Reading, Pa., and a graduate of Princeton and the University of Pennsylvania Medical School. He was appointed to a fellowship in the Johns Hopkins University in 1895, and

last spring was made an associate professor in pathology. He was on his way to study at the University of Strashurg.

A. L. MICHAELS, M.D., Kansas City, Mo., died June 29, from inflammation of the membranes of the brain complicated with pneumonia. Born in Illinois in 1854, he was graduated from the normal school at Valparaiso, Ind., in 1872, and was Professor of Natural Sciences in that institution for two years. He then studied medicine at Louisville, Ky., and later took a post-graduate course at Starling Medical College. In 1894 he was appointed Professor of Electro-Therapeutics in the College of Physicians and Surgeons, Kansas City, Kans., which position he held at the time of his death.

WILLIAM H. DECAMP, M.D., Grand Rapids, Mich., died July 4. He was born in Auburn, N. Y., in 1825 and during the Civil War was commissioned surgeon of the First Michigan Regiment of engineers and mechanics, serving three years. In the Grand Rapids Medical Society as well as in the State Medical Society, he has filled the position of President.

A. E. FARNHAM, M.D., Pittsfield, Me., July 2, aged 42 years.—Aretus C. Haynes, M.D., Kansas City, Mo., June 29, aged 55 years.—H. C. Himoe, M.D. Albuquerque, N. M., July 3.—Peter Hooper, M.D., Philadelphia, Pa., July 1.—Edward D. McDaniel, M.D., Coy, Ala., died in Denver, Col., June 27, aged 76 years.—Samuel McNair, M.D., Kalamazoo, died at Elhurn, Ill., June 30, aged 75 years.—H. R. Nichols, M.D., Osage, Iowa, June 23.—W. C. Glines, M.D., Norwalk, Conn., June 27, aged 73 years.—N. C. Cowgill, M.D., Logansport, Ind., June 26.—T. Archibald Taylor, M.D., Washington, D. C., June 30.

DEATHS ABROAD.—Cornelius Herz, M.D., according to the press despatches from London died at Bournemouth, Eng., July 6. He was born in Besancon, France, September 3, 1845. His father was a German Jew, while his mother was French. His parents removed to England when he was quite young, but after a short time the family came to New York city. He was graduated from the College of the City of New York with the class of '64, and afterward received the degree of M.S., from his alma mater. After an apprenticeship in the hospitals of that city he was sent to Heidelberg to study medicine. He continued his studies at Munich and Vienna, and finally at Paris. He was poor and unknown, but brilliant, versatile and audacious, just the man to succeed in the French capital, and so, by giving lessons in English and French and writing for the French newspapers, he was able to go on with his studies and receive his medical diploma. In 1870 he became Assistant Surgeon-General to General Chanzy's Army of the Loire and for his services received the Cross of the Legion of Honor. The Franco-Prussian war over he returned to America and married in New York Bianca Saroni a cousin of the poet Heine. The couple having soon settled in California he appeared as a member of the San Francisco Board of Health. It was there also that he started on his career as an electrician, and founded the electrical works which are still the pride of the city. In 1877 he went with his family to Paris and started on a brilliant career. He overthrew the gas monopoly, and provided the main thoroughfares with electric light. He founded the leading electric journal of the world, *La Lumière Electrique*. He established the telephone system of France, organized the first electric exhibition that was ever held, and finally became associated with the Rothschilds in putting into practice the theory of the transmission of force by electricity. At the same time he rapidly became a great social and political figure in the Republic. He was successively raised from the rank of Knight of the Legion of Honor to that of Commander, and, finally, when he was only 40 years of age, to that of Grand Officer. And such men as Chanzy, Gambetta, Ferry and De Freycinet were his sponsors at each promotion. He just missed receiving the Grand Cross of the Order of SS. Maurice and Lazarus of Italy. Crippe signed his brevet shortly before he fell, and

Rudini, who succeeded him, canceled the letters patent, which are still in the archives of Consulta. For years his income was large, and his entertainments were princely, while his charming manners and magnetic personality made him a great social favorite. When in 1892 the Panama bubble burst, Dr. Herz went under, and was charged with being implicated in the scandal. When the exposures were first made he fled to London, but was arrested under extradition proceedings on a warrant from the French Government charging him with fraud and embezzlement. As he was confined to bed, he was unable to appear in court. The case was kept open, and he was continued under arrest in his bed from 1893 to 1896. By special act of Parliament the magistrate was permitted to attend his bedside and take testimony. The magistrate promptly declared that the charges were utterly invalid and scarcely deserving of notice, and Herz was released May 2, 1896. Meanwhile the French Government had instituted numerous proceedings against him and confiscated all his property. As he claimed that this was persecution and that he had been injured in name and health, he demanded of the State Department as an American citizen that it prefer a claim for \$5,000,000 against the French Government. The matter is still under advisement. Nordau is said to have called attention to many stigmata of degeneracy in Herz's person but the profession scarcely claims Herz, as at no time did he more than practice medicine as a minor specialty. He frequently expressed a contempt for its emoluments.—Leandro Urrecha, M.D., Madrid, a distinguished obstetrician.—Dr. Gustav, member of the Imperial Council and of the Chamber of Deputies of Austria, aged 59 years.—Johannes Alexander Garten, *privat-docent* of surgery in Leipsic.—Prof. Frederic Jacob Trier, Copenhagen.—Dr. Dezaneau, Angers.—Dr. Neudoerfer, *privat-docent* of surgery in Vienna.—Prof. T. Eimer, Tubingen.—F. A. De Zenker, professor of pathologic anatomy at Erlangen; "noted for his discovery of trichinosis in man."—Carl v. Rokitsansky, professor of gynecology at Graz, aged 51 years.—K. E. With, professor of internal medicine at Copenhagen.—Dr. Fr. Kretschy, lecturer on internal medicine in the University of Vienna, aged 50 years.

SOCIETY NEWS.

New Jersey State Medical Association.—At the annual meeting held in Asbury Park, June 28, 29 and 30, the following officers were elected: President, C. R. F. Fisher, Bound Brook; first vice-president, L. M. Halsey, Williamstown; second vice-president, William Pierson, Orange; third vice-president, J. D. McGill; corresponding secretary, E. L. B. Godfrey, Camden; recording secretary, W. J. Chandler, South Orange; treasurer, Archibald Mercer, Newark. We will publish a report next week.

Canadian Medical Association.—The thirty-first annual meeting will be held in Laval University, Quebec, August 17, 18 and 19, 1898. There will be the usual fare and a third rate, on the certificate plan. Arrangements made so that members' families may take side-trips at a trifling cost. J. M. Beausoliel, president; F. N. G. Starr, gen. secretary, 471 College street, Toronto.

International Association of Railway Surgeons.—The eleventh annual meeting was held in Toronto, Canada, July 6, 7 and 8, 1898, under the Presidency of Dr. George Ross of Richmond, Va. The following officers were elected for the ensuing year: President, Dr. Bruce L. Riordan of Toronto; treasurer, Dr. E. R. Lewis of Kansas City, Mo.; secretary, Dr. Louis J. Mitchell of Chicago. The vice-presidents of the Association are Drs. R. E. L. Kincaid of Bonham, Texas, James G. Hunt of Utica, New York; James L. Foxam, Huron, South Dakota; W. Gunn of Clinton, Ontario; Hugh H. McKnight of Hartford, Conn.; C. F. Leslie of Clyde, Kansas; Hugh M. Taylor of Richmond, Virginia.

The place of next meeting was left to the Executive Board to decide between White Sulphur Springs, Virginia, and Richmond, Virginia.

MISCELLANY.

Dr. Grandy is Made Surgeon.—Dr. Luther B. Grandy, a most prominent and popular physician of Atlanta, was recently appointed by Governor Atkinson surgeon of the Third Regiment, Georgia Volunteers. Dr. Grandy will rank as major, and will have under him two assistants, each of whom will hold the rank of captain.—*Atlanta Constitution*.

Hospital Ship for Manila.—At the suggestion of Mrs. Greenleaf, wife of the surgeon-in-chief of hospitals in the field, the Red Cross League has undertaken to start the collection of \$300,000 for the purchase of a hospital ship for the troops at Manila. The plan is to raise this sum by popular subscription in all the States west of the Rocky Mountains and then present the ship to the government.—*Times-Herald*, Chicago.

Kindness to the Wounded War Horse.—With a view to avoid extreme suffering among wounded horses or mules on the field of battle, it has been ordered by the Major-General commanding the Army that a veterinary surgeon, or some other person detailed by the commanding officer, will accompany troops in an engagement, whose duty it will be to put an end to the agonies of all horses or mules that in his judgment are suffering to a degree requiring such action on his part.

Examination of Physicians to Fill Vacancies in Volunteer Regiments.—The Secretary of War has adopted the recommendation of the Surgeon-General that when a physician has been appointed by the governor of a State to fill a vacancy in one of the regiments mustered into the United States service, the physician appointed should be examined by a board of three physicians appointed by the governor and without expense to the United States. The certificate of this board that the candidate has passed a satisfactory physical and professional examination be accepted by the War Department as evidence of his fitness for the place to which he has been appointed.

The Physical Examination of Recruits.—Comments on the fine physique and splendid development of the men in the Volunteer Army have been of frequent occurrence in our newspapers owing to the strict examination to which the men were subjected prior to muster into the service. We referred to this subject in our editorial of May 7, showing how large a percentage of men who considered themselves fit to be soldiers were rejected by the recruiting officers of the regular army. It now appears that quite a number of volunteers with serious defects were passed at the examinations a few weeks ago, owing probably to the hastiness and feverishness of the mustering-in procedures. In the recent transfer of men from the line to the hospital corps to fill up the latter an examination into the physical condition of the candidates was required by regulation and in conducting these examinations the medical officers representing the hospital corps rejected so many and for manifest causes that the attention of chief surgeons of corps and divisions was invited to the subject with the view of eliminating from the ranks all men unfit for service on account of disqualifications existing prior to enlistment. This will increase the percentage of rejected recruits still further and will no doubt lead to greater care and strictness on the part of medical men on duty at recruiting stations and mustering camps.

Analysis of Water Supplies for Army Camps.—From Washington, D. C., we learn that if, in the establishment of camps of organization and instruction or other comparatively permanent camps, it is deemed necessary to have a sanitary analysis of the water supply made in the laboratory of the Surgeon-General's Office. Chief surgeons are authorized to forward samples by express to Deputy Surgeon-General Smart, Army Medical Museum, Washington, D. C., and are required to send a communication to the Surgeon-General, giving an account of the source and the sanitary surroundings of the water. Not less

than half a gallon should be sent as a sample. Care should be taken that the containing vessel is perfectly clean. Any vessel which requires chemicals to clean it should not be used. It should be cleaned by filling several times and washing with water from the source which is to be sampled. Wickered glass demijohns, otherwise unprotected or clear glass bottles, boxed with packing, should be used in preference to stoneware jugs or other vessels of opaque material. Care is suggested also that the corks used be new and clean, for a cork tainted with any oxidizable substance, particularly alcoholic or saccharine liquids, destroys the value of the water sample for the purpose of analysis.

Red Cross Literature.—The war is bringing forth a crop of booklets decorated with the Red Cross of the Geneva Convention. Two such have come to our notice during the past week. The first is a "Stretcher Drill" by Surgeon-Major J. J. de Zouche Marshall, of the 3d V. B. East Surrey Regt., published by permission of Her Majesty's Stationary Office. This is an excellent little manual of its kind, but there is no room for it in this country notwithstanding the recent expansion of our military forces, as the "Drill Regulations for the Hospital Corps," published by the U. S. Government for the use of the troops, answers all our purposes. It is to be observed that the latter suffers in no way by comparison with the new English production. We discarded the fixed sling several years ago and our regulation litter weighs only a little over sixteen pounds while that carried by the British Red Cross soldier weighs thirty-two pounds. The second is "Antiseptic Methods as Applied in Active Military Field Operations," translated from the French of E. Forgue, Surgeon French Army, by Professor Louis Bazet, President San Francisco Polyclinic, and published for the use of Sanitary Corps of the National Guard, State of California by direction of Colonel Wm. E. Hopkins, Surgeon-General. It insists on asepsis in the field at the first dressing and ambulance stations by the free use of boiled water.

Army Health Reports of Troops in the Field.—On inquiry at the office of the Surgeon-General of the Army we find that satisfactory reports for the week ending June 25, have been received from the Corps encamped at Chickamauga, Ga. From the 1st Army Corps the Chief Surgeon, Lieutenant-Colonel Huidekoper, reported that the three division hospitals have been completed, with cots for 150 patients in each, and are doing effective service, although they do not yet have their complement of Hospital Corps men as attendants. The reserve ambulance company has been filled up; and the reserve field hospital started in connection with it has been used as a receiving station and a training school for men transferred to the hospital corps from the line. The general health is excellent, less than 1 per cent. absolutely sick, and less than 3 per cent. when all the trifling cases excused from duty and held in quarters are included. Reports from Lieutenant-Colonel Hoff, Chief Surgeon of the 3d Army Corps, show a small sick list in most of the regiments, although many men have been taken upon this list on account of vaccinia in its ordinary progress. Three of the regiments have relatively a large number on sick report. These are the 1st and 2d Arkansas and the 1st Mississippi Infantry. The diseases are chiefly malarial, and their prevalence is referred to the exposures incident to a change to an elevated location in the case of men who came from malarial districts. Lieutenant-Colonel L. M. Maus, Chief Surgeon of the 7th Army Corps, Major General Fitzhugh Lee, commanding, reported that during the week ending June 25, the camps of the Corps at Jacksonville, Florida, were in excellent condition. The grounds are policed regularly, and ditches have been dug to carry off surface water. The sinks have been provided with half barrels, and tubs containing saw-dust are used as urinals. The water-supply is abundant and of excellent quality, from artesian wells. The bathing facilities are superior; shower

baths have been constructed under temporary frame shelters for all the regiments. No trouble has been experienced in this command about rations or cooking; Hunt and Buzzacott ovens have been provided for all the battalions. The health of the men continues good. Occasional cases of disease occur, such as diarrhea, colic and debility from relaxing climatic influences. Lieutenant-Colonel A. C. Girard, Chief Surgeon 2d Army Corps at Camp Alger, Virginia, reported that the deficiencies of supplies is gradually being remedied. The non-effectives have constituted 6 per cent. of the strength, chiefly due to vaccination. The prevalence of measles is abating. The water-supply is good and is becoming plentiful on account of the sinking of deep wells. The efficiency of the division hospitals is improving, and the ambulance companies are being filled up by transfer from the line; the hostility to these transfers on the part of volunteer officers and men is passing away.

Camp Notes From the Army Corps.—From the 2d Army Corps, Camp Alger, Virginia, it is reported that during the week ending July 2, the non efficiency from sickness constituted three per cent. of the strength. Typhoid fever seems to be on the increase, and is believed to be due to the use of well waters on the farms in the neighborhood of the camp. The deep wells of the regiments give a pure supply. Deputy Surgeon General Smart has been directed to make a careful inspection into the sanitary condition of the camp, giving special attention to the water-supply and to the etiology of cases of typhoid fever occurring in the command. Colonel A. C. Girard, Chief Surgeon, has issued an order for the daily instruction of volunteer medical officers, but it can not be carried out systematically, as Major John L. Philips is the only regular medical officer with him, and both are worked to their full capacity in organizing, equipping and attending to sanitary matters. According to Lieutenant-Colonel Maus, Chief Surgeon 7th Army Corps, the water supply of that Corps at Jacksonville, Fla., is from a system of artesian wells. It is pure, healthful and abundant, and although saturated with hydrogen sulphid when freshly drawn this speedily escapes after exposure to the air. Colonel Maus considers it as good as any that could be obtained anywhere, and does not think it necessary to send any of it to the Surgeon-General's office for analysis. Some difficulty has arisen about the disposal of excreta. It appears that the city authorities of Jacksonville objected to the pit system used in the Camp, whereupon the Chief Surgeon recommended that if it could not be disposed of by a crematory, it should be hauled to a convenient place on the main sewer where a suitable manhole is provided with a hopper and allowed to escape to the river with the city sewage.

A Temperance Order from Army Headquarters.—Major-General Miles, commanding the Army, has issued general orders under date July 2, 1898, enjoining commanding officers to restrict or prohibit the use of wines and beer in their camps, and urging example as well as precept upon all officers in the interest of health and efficiency. The orders read as follows:

The Army is engaged in active service under climatic conditions which it has not before experienced.

In order that it may perform its most difficult and laborious duties with the least practicable loss from sickness, the utmost care consistent with prompt and efficient service must be exercised by all, especially by officers.

The history of other armies has demonstrated that in a hot climate abstinence from the use of intoxicating drink is essential to continued health and efficiency.

Commanding officers of all grades and officers of the medical staff will carefully note the effect of the use of such light beverages—wines and beer—as are permitted to be sold at the post and camp exchanges, and the commanders of all independent commands are enjoined to restrict, or to entirely prohibit, the sale of such beverages, if the welfare of the troops or the interests of the service require such action.

In this most important hour of the Nation's history it is due

the Government from all those in its service that they should not only render the most earnest efforts for its honor and welfare, but that their full physical and intellectual force should be given to their public duties, uncontaminated by any indulgences that shall dim, enfeeble, weaken or impair their faculties and strength in any particular.

Officers of every grade, by example as well as by authority, will contribute to the enforcement of the order.

Organization of Ambulance Companies.—As showing the system of organization of ambulance companies for duty in connection with field hospitals in the army as a whole, the following regulations published from headquarters of the Seventh Army Corps, Gen. Fitzhugh Lee, at Jacksonville, Fla., on the recommendation of Lieutenant-Colonel Maus, Chief Surgeon of the Corps, may be cited: The personnel of each division ambulance company of this corps will consist of three medical officers, seven hospital stewards, three acting hospital stewards and 104 privates, which will be under the command of the ranking medical officer assigned to duty with it, who will be held responsible for its discipline, instruction and management. He will make requisitions on the chief surgeon of the corps for the necessary pouches, drill regulations and blanks. He will also submit requisitions for the necessary litters, camp equipment and ordnance supplies without delay to the chief quartermaster and ordnance officer of the division. Rations for the division ambulance companies will be drawn as ordered for line organizations. The division ambulance companies will be given daily instructions in marching, litter drill, loading and unloading litters, improvisation of litters, method of removing wounded without litters, placing patients on horseback, the use of the travois, two-horse litters, the preparation and use of ordinary wagons and other vehicles for the transportation of the sick and wounded, ambulance drill, inspection and muster of the detachment, tent drill, packing, packing hospital and orderly pouches, and the clothing roll. Regular daily instructions will be given in first aid to the wounded and medical emergencies. Directions as to the scope of first aid and medical emergency instruction, will be submitted by the chief surgeon of the corps. An ambulance will report daily after surgeon's call at each regiment to remove to the division hospital all cases designated by the regimental surgeon for hospital treatment. Men who become injured or are taken ill after surgeon's call, and requiring hospital treatment, will be reported to the surgeon in charge of the division hospital, who will have them removed as soon as possible. Medical officers assigned to duty with each regiment will attend surgeon's call and those men undergoing treatment in quarters, render emergency aid when needed, prescribe for those not on sick report requiring medicine for slight ailments and look after the sanitary condition of the regiment. They will be furnished pocket cases, first aid packages, bandages, tourniquets and all medical supplies needed for the thorough performance of their duties; also one orderly and one hospital corps pouch. All assignments of medical officers, hospital stewards, acting hospital stewards and privates detailed for duty with the corps and division hospitals, litter-bearer and ambulance companies and regiments will be made by the chief surgeon of the corps. Departures from the assignments of medical officers and members of the hospital corps as set forth above will be temporarily made by the chief surgeon from time to time to meet the exigencies of the camp or battlefield.

Assignments, etc., of Medical Officers.—To the 1st Corps, General J. R. Brooke at Chickamauga, Ga.; Major Calvin H. English and John P. Dodge, Brigade Surgeons and the following Acting Assistant Surgeons: Gerry S. Drever from Chicago, Illinois, George K. Sims from Richmond, Virginia; Wm. H. Haskin from New York City; David Baker from Fort Thomas, Kentucky; H. A. Glatzmayer from the General Hospital at Fort Myer, Virginia, and Charles S. Stern from Hartford, Connecticut. To the 2d Corps, General William H. Graham, Camp

Alger, Virginia: Major Joseph K. Weaver, Brigade Surgeon. To the 3d Corps, General James F. Wads, Chickamauga, Georgia: Majors Frank Bruso and Charles M. Drake, Brigade Surgeons. To the 4th Corps, General J. J. Coppinger at Tampa, Florida: Majors Schuyler C. Graves and Samuel T. Armstrong, Brigade Surgeons; Lieutenant Carl R. Darnall, Assistant Surgeon, U. S. A., whose orders to join General Shafter's Corps have been revoked and the following Acting Assistant Surgeons: J. W. Donnelly, Stephen M. Long, D. T. Laine, R. Fleming Jones and Robert Boyd. To the 5th Corps, General W. R. Shafter at Santiago, Cuba: Lieutenant Colonel Nicholas Senn as Chief Surgeon of the Operating Staff and Acting Assistant Surgeon Harry S. Greenleaf. To the 7th Corps, General Fitzhugh Lee at Jacksonville, Florida; Majors George B. Bunn, George R. Fowler and John R. McDill, Brigade Surgeons. To the 8th Corps, General Wesley Merritt, Philippine Expedition: Major Samuel O. L. Potter, Brigade Surgeon. To the General Hospital at Fort McPherson, Atlanta, Georgia: Majors Willis Z. McDonald, Brigade Surgeon. To the General Hospital at Fort Monroe, Virginia: Major Donald Maclean, Brigade Surgeon and Acting Assistant Surgeon Eugene H. Hartnett. To the Leiter Hospital at Chickamauga Park: Acting Assistant Surgeon Henry R. Carter, Jr., from New Orleans, Louisiana. To the General Hospital at Key West, Florida: Acting Assistant Surgeons Charles Boyd from Macon, Georgia, and Robert C. Eve from Augusta, Georgia. *Resigned.*—Major Otis H. Marion, 6th Mass., Infantry Volunteers. *Nominations.*—Charles P. Pollard of Alabama as Assistant Surgeon of the 5th Regiment Volunteer Infantry; George E. Lyon of Missouri as Surgeon of the 3d Regiment of Volunteer Engineers and Julius R. Shnelke of Wyoming, and John H. Gibbon of Pennsylvania as Assistant Surgeons of the same regiment; Walter D. Webb and Charles I. Proben of New York as Assistant Surgeons of the 1st Regiment of Volunteer Engineers. *Nominations confirmed.*—Wm. W. Purnell of the District of Columbia and Joseph L. Bell of Illinois to be Assistant Surgeons of the 8th Regiment of Volunteer Infantry, and Julius A. Schnelke of Wyoming to be Assistant Surgeon of the 3d Regiment Volunteer Engineers.

The Field Medical Service of the Second Army Corps.—Lieut.-Col. A. C. Girard, chief surgeon, Second Army Corps, Camp Alger, Virginia, explains the contemplated work of the Medical Department as follows:

The Medical Department in camp.—The largest unit of hospital administration is to be the division hospital; if a brigade is separated permanently it will be a brigade hospital; if a regiment is separated permanently it will be a regimental hospital. The regiment in camp is entitled to one medical officer, one hospital steward, one orderly and one orderly for each medical officer, to carry the pouch, when on duty. The orderlies are detailed from the hospital company at the division hospital and for greater convenience should be assigned to the regiment for rations. The other medical officers and hospital stewards of the regiment do duty with the regiment unless detailed by the division commander, on the recommendation of the chief surgeon of the division, with the field hospital. The usual duties of regimental medical officers are: Attending sick call and sanitary duties. The senior medical officer will prepare the morning report of sick for the adjutant of the regiment and send a copy of it to the brigade surgeon.

For the purpose of caring for the sick in quarters with the regiment the government provides medical chests Nos. 1 and 2, one orderly pouch for each medical officer, one hospital corps pouch for the orderly, one surgeon's field case for each medical officer, one field desk, two litters and two lanterns. As these supplies have not all been received, owing to failure of contractors, improvisation had to be resorted to. The troops which have left for Cuba, however, have been equipped with the regulation supply, with the exception of the surgeons' field cases, which have not been received. Sufficient field cases (surgeons') have been obtained from well-equipped regiments in this camp and the departing troops have been supplied with at least one for each regiment. This method will be continued until a sufficient supply of field cases is received. They are scarcely necessary in war time and have been principally devised for duty with small commands in Indian warfare. In actual war major operations are not performed by regimen-

tal surgeons but by the operating staff of division or brigade hospitals, and for minor operations the instrument case in the orderly pouch is sufficient. The sick of a regiment which can not be treated in quarters or with the means furnished to its medical department are sent to the division hospital.

Hospital service.—The hospital service for a command in the field is performed for the highest military unit by the division. A division hospital is established on the basis of 200 beds, the supplies for it or for its lesser units are provided for in the field supply table; tentage, transportation, ambulances and other equipments are obtained from the quartermaster department. The hospital is in charge of a medical officer detailed for the purpose, preferably a brigade surgeon or senior regimental officer of the command, who has for his staff an executive officer and a recording officer. The wards usually consist of twenty-four beds in four tents, each of which is under the charge of one or more medical officers, according to the gravity of the cases. The quartermasters and ordnance equipment will, under General Orders 76, War Department, be under charge of the two line officers detailed for the purpose.

The ambulance company.—The *personnel* of the division hospital, aside from the officers enumerated above, consists of as many hospital stewards as may be needed, detailed by the division commander to the division hospital from regimental hospital stewards. Privates of the hospital corps are either enlisted for that duty or transferred from regiments, the ratio of 2 per cent. of the command being the basis. These men are formed into a hospital company consisting of 196 men, under the command of a medical officer with three subordinate medical officers. The company is divided into three sections composed, as far as practicable, of men transferred from regiments forming the brigade. Each section is divided into three sub-sections composed of men transferred from respective regiments, in order that if a division hospital is in active service or changing station, or is divided into brigade or regimental hospitals, the men coming from each brigade or regiment will accompany their own organization. Each section will be further subdivided in conformity with its duties; one-half will be for duty in the division hospital, the other half will man the ambulance company, act as watchmen, accompany the regiment on the march, etc.

This establishment will be under the control of the chief surgeon of the division, who will receive his orders from the division commander in matters of military control and administration.

Medical service on the march.—When a command starts out on the march, each regiment will be supplied with three ambulances and its proportion of the hospital corps, from the ambulance service. The medical officers allowed by law will march with the regiment as mentioned above. The medical officers detailed by the division commander in division hospitals will march with the division hospital, if the hospital is to be moved; if not moved they will remain on duty with it. If any part of the command is permanently detached the division commander will order the medical officers and hospital stewards in division hospital to accompany the division hospital or its fractions, with its equipment.

Medical service in battle.—As soon as a regiment or command deploys for action, its medical department will wheel out of the way of the fighting force and be under the control of the senior officer present, who will assemble the detachments and ambulances in a place out of immediate reach of the enemy's bullets, preferably indicated by the military commander. Each regiment will be accompanied into action by its senior medical officer for duty, with his orderly and hospital steward, who will keep station with the commander. The division hospital will be located by the commanding General. As soon as practicable without exposing the hospital corps and ambulances to unnecessary crippling, the hospital corps, under command of the senior medical officer present, supplied with its litters, will commence the work of collection and assistance to the wounded, who will be carried to the collecting station and thence to the division hospital, or as a whole or in sections it will be advanced on the battlefield after an engagement.

The field hospital train.—The field hospital train is on a basis of one ambulance to every 400 men and one wagon to every 600 (one third the allowance of wagons is added when four mule wagons are used). This transportation is under the direct control of the line officer detailed for the purpose and will be parked in the vicinity of the division, brigade or regimental hospital as the case may be. The drivers of the ambulances will be privates of the hospital corps from the regiment to which they formerly belonged. The wagon drivers will be civilians.

When starting on the march the ambulances of each regiment will follow in the immediate rear of the regiment with

the detail of the hospital corps, and report to the senior surgeon of the regiment for instructions. The sick of the regiment requiring hospital treatment will be sent in the ambulance to the division hospital.

Dr. Frederick Holme Wiggin has recently been appointed, by the Commissioner of Public Charities of New York City, assistant visiting surgeon to Bellevue Hospital.

New Publications.—The *Medical and Surgical Monitor*, Vol. I, No. 1, June 15, 1898, issued at Indianapolis, and the *St. Louis Medical Gazette*, Vol. I, No. 1, June, 1898, are new monthly publications devoted to medicine and surgery.

Dry Labor.—Brodhead, in his service in the Sloane Maternity Hospital, has found that fully 15 per cent. of the women have labors which are strictly dry, "the accident" occurring nearly twice as often in multiparæ as in primiparæ. In the latter class the dry labor is usually more painful. He considers the dangers from this condition as dangerous to the child, *i. e.*, asphyxia and meningeal hemorrhage; dangers to the mother, *i. e.*, laceration of the soft parts, pressure necrosis, hemorrhage, sepsis, slower convalescence and possible rupture of the uterus. —*Med. Record*, May 14.

New Diagnostic Sign of Measles.—The value of Koplik's diagnostic sign (*vide* JOURNAL, vol. xxx, p. 1063) is confirmed by Libman in the *Medical Record* of June 11. His observations extend over fifty cases and in every case Koplik's sign was evident. He believes that "the mouths of children applying for admission to hospitals should regularly be examined for the measles spots." In addition to these fifty cases, the spots were observed in a number of dispensary patients, and in every case where the spots were evident, measles eruption was present or appeared within a few days.

Hemorrhoids.—Sims (*Maryland Med. Jour.*, May 7) advocates a new operative treatment applicable to the majority of cases of both internal and external hemorrhoids; also to other benign neoplasms of that region. With the patient in either the lithotomy or Sim's position, he introduces a speculum, divulges the sphincters as widely as possible by the instrument and with the thumbs stretches them until completely paralyzed. The piles now presenting themselves are everted as much as possible and the anal region irrigated with a 1 to 2000 bichlorid solution. On pulling out the tumors by forceps, the mucous membrane is cut through with a sharp scalpel around the base of the pile, and a silk ligature tied tightly in the groove made by the incision, including only the blood vessels and connective tissue. "The pile is then cut off close to the ligature, leaving only enough to hold it, and the cut edges of the mucosa are brought together over the stump with continued sutures of catgut." With external piles the same method may be used.

Large Doses of Carbolic Acid Given with Impunity.—Dr. Andrew H. Smith of New York says that in following out certain suggestions contained in an article in the *Lancet*, regarding the free administration of pure carbolic acid in scarlatina, he has been astounded at the enormous doses of carbolic acid that may be safely given to a person provided the acid used is pure. He also asserts that the occurrence of smoky urine, or "carbouluria," is no cause for alarm, as it does not imply any diseased condition of the kidney, and is not accompanied or followed by albuminuria. He has given patients the enormous daily dose of two and one-half drams of pure carbolic acid, diluted with water, and has kept this up for two or three weeks at a time without observing any deleterious effects from it. Of course, the urine of these patients was either smoky when voided, or became very dark after exposure to the air from oxidation of some of its constituents. These experiments, it need hardly be added, were not conducted for the purpose of satisfying an idle curiosity regarding what the human organism was capable of enduring, but with a view to a utilization of this, or some other similar antiseptic, in the internal treat-

ment of various infectious diseases.—*Philadelphia Medical Journal*, April 23.

New Light on Malaria.—R. Koch, who has just returned to Germany, devoted much of his two years in South Africa to a study of tropical malaria, which he considers resembles in many respects the Texas fever of animals and is, like that, conveyed by an intermediate agent, the tick in one and the mosquito in the other, but he has proved that the contagion is transmitted in the eggs of each, as well as by the insect itself. His most important achievement is his discovery of the exact temperature curve of tropical malarial fever. The temperature first rises and remains at this height for about half the length of the attack; then falls somewhat, returning abruptly to its former height, where it remains for the other half of the attack, which lasts about thirty-six hours in all, then rapidly falling to normal. The usual blind administration of quinin at regular intervals is absolutely useless. Quinin does not kill the plasmodium; it merely checks its development. We know now the exact moment when to administer it to produce the desired effect, which is the stage in the development of the plasmodium that precedes sporulation. *Quinin at the right moment cures tropical malaria even in its worst forms.* Koch confirmed this assumption in every case except two moribund. Draining swamps, planting eucalyptus, sanatoria, etc., are ineffectual prophylactic measures. The only effective measures are to keep mosquitoes away and out of residences (there is an island off the coast which is free from mosquitoes, and malaria is unknown there), and send scientific physicians to administer quinin at the proper moment. He adds that ten to fourteen days must elapse after infection before the plasmodia accumulate sufficiently to produce an attack. He considers the quotidian form the manifestation of two superposed tertian forms. He found four varieties of tropical malarial fever; two very rare; the third is the kind experienced in temperate countries, which occurs in 10 per cent. of the cases there, and the fourth, or very severe kind, in 90 per cent. He is convinced that the problem of artificial immunity will be solved in time, reasoning from the natural inherited immunity of the coast negroes and the acquired immunity of the negroes who, coming from the mosquitoless mountains down to the coast, pass through a severe attack and are immune afterward, like animals who have passed through an attack of Texas fever in youth when it is usually mild.—*Deut. Med. Woch.*, June 16.

Blood Examinations.—Heiman, in the *New York Medical Journal* of May 7, writes concerning "Current Methods of Blood Examinations." He points out that malarial organs must be distinguished from nucleated red cells, degenerated red corpuscles, plaques, precipitation of dye and fungi developed in the aqueous solution of methylene blue. The point of practical importance when staining is to be sure of finding the characteristic brown pigment of the malarial organism. He considers malarial disease endemic in New York and vicinity, especially on the river fronts. The specimen is stained with eosin-alcohol solution for five minutes, then washed well in water, dried with filter-paper, counterstained with concentrated aqueous methylene blue solution for two minutes, again washed in water, dried with filter-paper and mounted in balsam, when the specimen is ready for examination with an immersion-lens. He finds the plasmodia, as a rule, in the cells stained light bluish, their various forms depending on the stage of the disease. They have a characteristic small, brown, granular pigment in the sterile form and are clumped up in the center or periphery in the spore form.

Surgery of the Stomach.—In the *New York Medical Journal* of May 7, Keen of Philadelphia, gives a somewhat detailed review of the various operations now performed on the stomach. He considers that surgery of this organ has been rendered possible: 1. By the discovery of antiseptics. 2. By experiments

on animals. He says: "Had vivisection contributed nothing else to the progress of surgery, its services in the surgery of the stomach alone would be sufficient to justify it." He considers that gastrolysis has a somewhat restricted but still important field in gastric surgery, and that three indications exist for the operation of gastrotomy: 1. For the purpose of removing foreign bodies; 2, in cases of stricture of the esophagus, and 3, for exploration, each of which indication he considers in detail. He says: "That gastrotomy for malignant diseases does not save life is self-evident, but in preventing the patient from slowly starving to death, and in satisfying both hunger and thirst it is a most humane operation," and as it has relatively little danger, it can be commended even in desperate cases.

Sea Water for an Artificial Serum is warmly advocated by Quin-ton, who states that a dog injected with more than his own weight of sea water showed no signs of any abnormal phenomena. He has succeeded in keeping white corpuscles alive twenty-eight hours in sea water, three times the length of life of the same corpuscles in the ordinary artificial serum. Sea water must not be injected pure, or concentrated, but isotonic with the organic fluids. The experiments of others that tend to opposite conclusions are unreliable, as the isotonicity was not borne in mind and the osmotic pressure was rendered unequal, thus producing mechanical disturbances incorrectly ascribed to intoxication.—*Semaine Méd.*, May 25.

Movable Kidneys.—Lichty reports twelve cases in the *Philadelphia Medical Journal* of May 14. Ten of these were of a decidedly nervous type; two of these had no nervous symptoms, one had sarcoma and the other disease of the kidneys causing displacement. He believes that it is associated in all cases where there is a decided loss of weight; especially when it occurs with the symptoms of movable kidneys, put the patient on a line of treatment which will restore his normal weight. He considers rest treatment very satisfactory for this, also exercises to strengthen the abdominal muscles. His conclusions are that movable kidneys may be easily overlooked, and unless due to some disease in the organ itself, it is consequent to faulty nutrition and always accompanied by some nervous symptoms; that the treatment of such must be directed toward the correction of the faulty nutrition, the use of a supporting bandage being advised, if this does not bring about disappearance of the symptoms. If the bandage brings about a disappearance of the symptoms and it later seems necessary to wear it continually, the patient should have a choice between this and a surgical operation. If the symptoms do not disappear after the normal weight is gained, or after a thorough trial of the bandage, the kidney should be fixed permanently by operation. If motility is due to disease in the organ itself, it should be removed early if allowable.

Liability of Charitable Hospitals for Negligence of Nurses.—A "private pay patient" was admitted to a charitable hospital to have a slight operation performed by her own private physician, who was also a visiting surgeon on the hospital staff. After the operation was successfully performed she was carried to her room, while still under the influence of the anesthetic, and placed in a bed from which a hot, uncovered water bag had not been removed by the nurse in attendance. To recover damages for the injuries sustained by her right leg thus being severely burned, she sued the hospital. But Judge Cohen of the supreme court of New York holds, *Ward vs. St. Vincent's Hospital*, March, 1898, that she had no cause of action against the institution, though he suggests that she doubtless had a good one against the nurse who was the wrongdoer. As he reads the cases, a public charitable hospital, which is doing no business for profit, but uses the money received from such pay patients as it has toward the support of the institution, which must still to a greater or less extent rely upon contributions of charitably disposed individuals, is liable only for negligence in the

original selection of its servants and, having fulfilled that duty, it is not liable for the subsequent act of such servants, however careless or negligent, unless previous knowledge of unfitness has been brought home to the corporation. Indeed, the judge thinks it may be doubted whether its liability extends beyond the selection of a competent head of the school of nurses connected with it. That the patient is a pay one, he does not consider changes the rule of liability, partly as it has been held in another class of cases that a charitable institution does not waive its exemptions because it charges some patients who are able to pay.

Skill and Care Required of Dentists.—Two distinct acts of malpractice were charged in the case of *McCracken vs. Smathers*, one in originally filling a tooth upon a live nerve, without proper packing, and the other in improperly and unnecessarily boring through the jaw bone after the party suing for damages had returned for treatment. Whether this malpractice, found by the jury, arose from the want of ordinary knowledge or skill, or the want of reasonable care on the part of the defendant, the supreme court of North Carolina says, March 15, 1898, is immaterial, as both are impliedly guaranteed by one offering his services to the public. The degree of care and skill required, it holds, is that possessed and exercised by the ordinary members of the profession. It need not be the highest skill and knowledge known to the profession, but it must be such as is ordinarily possessed by the average of the profession. It can not be measured simply by the profession in the neighborhood, as this standard of measurement would be entirely too variable and uncertain. "Neighborhood" might be construed into a very limited area. It might contain but few dentists, in sparsely settled sections perhaps only one or two. Both might be men of very inferior qualifications, and to say that they might set themselves up as the standard of a learned profession, and prove the standing of each by the ability of the other, continues the court, would be equally unjust to the profession and to its patients. The words "the neighborhood," as used in this connection, it further suggests, are essentially different from the phrases, "the same general neighborhood" or "the same general locality," which are found in some decisions from other States. But the supreme court expresses itself as satisfied with the instructions given the jury to the effect that the defendant would not be liable if he had exercised ordinary skill and care, and that, if he failed in either of these particulars, he would be responsible for the damages resulting from his own acts alone. Judgment for plaintiff affirmed.

Hypertrophic Pulmonary Osteo-Arthropathy.—In the *New York Medical Journal* of May 14 Hasbrouck reports a case of the above, previously there being but five cases in this country on record. The patient was a male, colored, aged 55 years, a laboring man, and in April, 1896, a small swelling appeared just beneath the right lower jaw, grew slowly, then later enlarged rapidly and in March, 1897, involved the entire tongue and all the glands of the right side of the neck. Respiration, deglutition and articulation were exceedingly difficult and the tongue could not be protruded beyond the lips, as the tumor mass pressed it well over to the left side of the mouth. Later the enlargement affected the hands, feet and ankles until it was impossible for him to close his fists. The knee- and elbow-joints did not take part in this enlargement, but the distal extremities of the ulna and radius of both arms did, as was shown by skiagraph, also the carpal bones. From the skiagraph the enlargement seemed to be purely periosteal in formation, but unfortunately this could not be verified by postmortem. In reviewing the cases he finds that in all but one case there has been some chest lesion, and in this one exception he believes a pulmonary disease was associated. The patient died from general sarcomatous infiltration, and the writer concludes that the disease is secondary to sarcoma, that

in accordance with evidence from previous cases, it is due to some obstructive pulmonary lesion, this being substantiated by postmortem findings, where a hardened mass firmly binding the aorta, the esophagus and trachea into one solid body, in addition to the sarcoma of the mouth and the several sarcomatous areas in the right lung. He also believes that had the primary condition been less malignant, giving the secondary more time, a much more typical condition of the feet and legs would have developed, as they were just beginning to share in the enlargement a few weeks before death.

First Qualified Woman Physician in Europe.—The first qualified woman physician in Europe, as far as is known, was a young Athenian woman named Agnodice. In the year 300 B.C., she disguised herself as a man and began to attend the medical schools at Athens, which it was against the law for a woman to do. She afterward practiced among the women of Athens with extraordinary success. Her secret becoming known, she was prosecuted for studying and practicing medicine illegally. The Athenian women, however, raised so furious an agitation in consequence that the case was dropped and the law repealed. Coming to later times, we find several women who obtained the degree of doctor of medicine and practiced in Europe before 1492, especially in the Moorish universities of Spain. Trotula of Rugiero, in the eleventh century, had a European reputation and practiced in Salerno. At the beginning of the fourteenth century Dorothea Bocchi not only received the degree of doctor but was professor of medicine in the University of Bologna. Since then two other women have been professors of medical subjects in the same university, Anna Mangolini (anatomy) and Dr. Maria delle Donne (obstetric medicine), the latter being appointed in 1799. In the year 1311 an edict was issued in France forbidding surgeons and female surgeons from practicing until they had passed a satisfactory examination before the proper authorities. These female surgeons are again referred to in an edict in 1352.

Allows no Insurance for Septic Poisoning.—In an action brought to recover on a policy of accident and life insurance the evidence tended to show that the insured, while suffering from some serious derangement of his system, which manifested itself, among other ways, by severe toothache, had two of his teeth extracted by a dentist; that there was a diseased condition of the membrane surrounding some of the teeth, and a general foul condition of the mouth; that the teeth were extracted in the usual way, but it caused a rupture of the upper maxillary artery, or a branch of it, from which a violent hemorrhage ensued, and to stop that the dentist plugged the cavities with cotton; that thereafter blood poisoning ensued from the absorption into the system of some chemic poison supposed to have been caused by the propagation of disease germs in the cotton, the seat of the affection being where the teeth were extracted, which blood poisoning progressed to a fatal determination. Under these circumstances, the supreme court of Wisconsin reversed a judgment rendered against the insurance company. It holds, March 22, 1898, *Kasten vs. Interstate Casualty Company*, that, under a policy insuring a person against bodily injury sustained by external, violent and accidental means, with a provision for payment to a beneficiary or beneficiaries in case of death from such injuries within ninety days therefrom, independently of all other causes, and with a condition that the liability of the insurer shall not extend to injuries, fatal or otherwise, resulting wholly or in part from poison or anything accidentally or otherwise taken, administered, absorbed or inhaled, a death under such circumstances as above stated is within the condition set forth and creates no liability against the insurance company.

Fracture of the Lower Extremities.—Warbasse (*Annals of Surgery* for May) reports observations on the treatment of fractures of the lower extremity during two years, in the Methodist

Episcopal Hospital of Brooklyn. This fractures include 111 of the femur, 34 of the patella, 19 of the bones of the foot and 286 of the bones of the leg. Of the 111 cases of fracture of the femur, 81 were discharged cured, 7 improving and 2 with soft unions; and of 70 cases of complete fracture of the shaft or neck in which the exact measurements were kept, there was no shortening in 36 cases, less than one-fourth of an inch in 20 cases, from one-fourth to one-half inch in 8 cases, from one-half to three-fourths inch in three cases, from three-fourths to one inch in two cases and two inch shortening in one case. Both femora were broken in three cases and there were two cases of separation of the lower epiphysis. In the majority of cases the treatment applied was the traction apparatus of Buck. In 20 of the cases of fracture of the patella in which the joint was opened by incision over the patella, solid bony union was secured in all, the bone being united by silver wire sutures in twelve cases, by silkworm gut in five, by kangaroo tendon in one and by chromicized gut in one case. In three cases where the patella was encircled by a subcutaneous suture, good fibrous union was secured. In 27 operations in which the knee-joint was opened and the bone fragment sutured, there was no septic joint disturbance. Primary healing occurred in all cases and it was demonstrated in all of the recent transverse fractures that bony approximation would have been absolutely impossible without operation because of the intervention of blood clot and torn periosteum. During the latter part of the decade drainage was used less than in the early part and the cases did equally well without it. Lately a method of uniting the bones by chromicized sutures passed through the bone, suturing over these the periosteum with interrupted chromicized gut sutures, then closing the joint capsule by a continuous suture of fine gut, suturing the subcutaneous fascia in the same manner and finally closing the skin with a suture of silk, gave great satisfaction. Of the 286 cases of fracture of the tibia and fibula, 136 were of the shafts of both bones of unspecified location, 28 of the shaft of the tibia and 21 of the shaft of the fibula of unspecified location, 8 of the upper thirds of both bones, 15 of the middle and 26 of the lower thirds, 4 of the upper third of the tibia, one of the middle and 13 of the lower third, 3 of the upper third of the fibula, one of the middle and 30 of the lower third. Of these, 180 were simple fractures, 90 compound fractures, of which number 56 were compound comminuted and 5 simple comminuted. In the 19 cases of fracture of the bones of the foot, 10 were fractures of the tarsal, 5 of the metatarsal and 4 of the phalanges.

Colleges.

The Medical Department of the University of Vermont graduated a class of sixty-nine at the annual commencement, June 30.—The graduating class of Bowdoin Medical School, Brunswick, Me., at the annual commencement, June 22, numbered thirty-three.

Hospitals.

The new Finley Hospital was opened at Dubuque, Iowa, June 24.—Henry M. Flagler has offered to the Red Cross all the necessary land and \$5000 with which to build a hospital for the wounded just north of the Royal Palm Hotel, Miami, Fla. He also offers the use of a new pier, upon which the hospital may be built, or it may be placed on adjacent land.

Philadelphia.

SPECIALIST IN TROUBLE.—Miss Ella Moore, who has an office at 1228 Brown Street, recently treated a patient for a tumor, and on the patient's death the deputy coroner held a postmortem and found that cancer was the primary cause. The woman, who claimed to be a specialist, was placed under arrest, and at the trial testified that she was in the employ of a firm on Walnut Street who prepared a salve which was said to be a specific for tumors. It is further reported that the specialist who gave the treatment subsequently called in a physician, obtained

money and then disappeared. The woman died in terrible agony. As the specialist's sign read "Doctor Ella Moore, Specialist," her case will be thoroughly investigated by the Philadelphia County Medical Society.

UNIVERSITY OF PENNSYLVANIA ADVANCES.—Physiologic chemistry some day will be one of the most important branches in the curriculum of all medical colleges. Yale College deserves great credit for having already established this department and inviting the younger men to take hold of the work with great assiduity. Correlated with this branch of medicine stands physiology and therapeutics, and the University of Pennsylvania has not been slow in finding this out, and hereafter students who graduate from that university will have some idea of the physiology of digestion, of electric appliances and of physiologic chemistry, for this department will be devoted to that work. Since extensive college buildings for dental students have been erected, the room formerly occupied by them as an operating-room or clinic will be partly devoted toward instructing students in experimental physiology. In the new department Dr. H. C. Wood will have his private laboratory for this study, and more elaborate experiments can be made than has formerly been the case. Dr. John P. Arnold, a graduate of the university, class of '93, will have full charge of the laboratory for experimental physiology. When these laboratories are completed they will be an improvement of which any college may feel proud.

ETIOLOGY OF THERMIC FEVER.—The past week has been one marked by most depressing weather, there being hardly wind enough to turn a weather-vane. Indeed, the heat has never ceased and the humidity at times has almost gone to the saturation point. June 25 was the hottest day up to that period, registering 94 degrees at 4 p.m., with the humidity at 98 degrees, and ending with twelve prostrations. Four days later the morning started off sultry and really seemed much hotter than the thermometer indicated, 88 degrees, but the humidity had risen to 90 degrees, resulting in nine prostrations for the day. The mercury rose higher on July 1, registering 97 degrees, the humidity being 70, and causing sixteen prostrations. July 3, according to the weather report, was the hottest day for that period in twenty-eight years, the mercury rising to the century mark, and that on top of an elevated building, the Philadelphia postoffice. The humidity was 70 degrees. So far there have been reported seventeen prostrations, four of which resulted fatally. The heat, the humidity and the velocity of the wind seem to be most important factors.

MORTALITY STATISTICS.—For the week ending July 2 there have been 555 deaths. Of these, 284 were children under five years of age. The number of deaths during the week is an increase of 168 over last week and 64 over the corresponding period of last year. The principal causes of deaths were: Cholera infantum, 114 deaths; marasmus, 23; heart disease, 27; consumption, 47; inflammation of lungs, 27; inflammation of stomach and bowels, 26; nephritis, 19; old age, 16; convulsions, 16; sunstroke, 4; uremia, 5; cancer, 12. The infectious diseases this week were: Diphtheria, 56 cases; scarlet fever, 26 cases; typhoid fever, 10 deaths in 51 cases. Last week the record was: Diphtheria, 9 deaths in 49 cases; scarlet fever, 2 deaths in 40 cases; typhoid fever, 7 deaths in 79 cases.

APPOINTMENT OF HEALTH OFFICER.—Some time ago the Health Officer of Philadelphia, Dr. Benjamin Lee, addressed a letter of inquiry to city solicitor John L. Kinsey, in which he desired the information as to whether or not the appointments made by him should also be ratified by council. Solicitor Kinsey replied that since the Board of Health had been a part of the Department of Public Safety of the Municipal Bureau, the appointments connected with the Board of Health would therefore come under the provisions of the act made applicable to the other various departments, and therefore, appointments

made by the Health Officer would also have to be confirmed by select council.

INUNCTION.—Some time ago Messrs. Edwin Chesterman and George M. Streeter filed suit against Isaac B. Seeley restraining him from using that firm's name in business. In the court of common pleas, Judge Pennypacker recently handed down the following decree: "That the said I. B. Seeley is hereby enjoined from the use of the words 'Only Seeley' established since 1859, and impersonators,' and that all postal matter relating to the truss business addressed to Seeley's Truss Establishment with any address other than 1027 Walnut Street, or I. B. Seeley & Co., and also all letters or orders from customers of the old firm of I. B. Seeley & Co. are to be delivered to the plaintiff."

ROBERT BOYD, M.D., has recently been appointed assistant surgeon in the United States Army. Dr. Boyd will doubtless make a valuable addition to the corps of physicians already there, on account of his knowledge of the diseases of Cuba, he having at one time resided there. Dr. Boyd will report for duty at Tampa, Fla.

Louisville.

DEGREES.—Two Louisville physicians have been honored in the past month by having been the recipients of the degree of LL.D. Dr. Jos. B. Marvin had the degree conferred by Georgetown College, this State, and Dr. Joseph M. Mathews, President-elect of the A.M.A., by the Waynesburg College of Pennsylvania.

DR. LOUIS FRANK has removed his office from corner of Second and Chestnut, where he has been associated with Dr. T. H. Stucky, to 231 W. Chestnut Street.

HOSPITAL.—The annual commencement of the Louisville Training School for Nurses was held in the lecture-room of the Louisville Medical College on the evening of June 15, there being seven graduates.

WASH FITHIAN, M.D., one of the most prominent physicians of Paris, Ky., was stricken with apoplexy in his office June 28. His condition is not considered very grave.

ALUMNI.—The annual meeting of the Alumni Associations of the Louisville College of Dentistry and of the Hospital College of Medicine were held in the college buildings on June 28 and 29. Interesting clinics were held, papers read and a banquet held at Fountain Ferry Park.

COMMENCEMENT.—The annual commencement exercises of the Kentucky School of Medicine were held in Macauley's Theater on June 29, there being 140 graduates. Degrees were conferred by Dr. R. Lin Cave, president of the Kentucky University and Mr. James P. Helm, president of the Board of Regents of the Kentucky School of Medicine. An address was made by Dr. James S. Sweeny, Sr., president of the Board of Trustees of the Kentucky University and by Dr. George R. White, valedictorian of the class. Dr. Geo. T. Harris and Dr. Sidney J. Meyers received the first honors for the fourth and third years respectively.

HOSPITAL COLLEGE OF MEDICINE.—The annual commencement exercises of the Hospital College of Medicine and the Louisville College of Dentistry were held at Macauley's Theater on June 30. There were 130 graduates. The annual address was made by Dr. C. A. L. Reed of Cincinnati, there being no address from a member of the class, this being the custom at this school for some years. A portrait of Dr. J. A. Larrabee, who was president of the faculty, was placed in the center of the stage draped in mourning. Lewis S. McMurtry has been elected president of the faculty, vice Dr. Larrabee deceased, and has had added to his chair of gynecology and abdominal surgery that of obstetrics taught by Dr. Larrabee. This is a well-merited honor as Dr. McMurtry has a wide reputation as a skillful surgeon. Thos. H. Stucky was elected vice-president and H. H. Grant treasurer. The chair of pediatrics was added to the chair of chemistry now held by P. F. Barbour.

HEALTH OFFICER.—The monthly report of Health Officer Allen contains some interesting statements: Notices served, 459; nuisances abated 1897; sheep and cattle condemned and killed 21; scarlet fever placarded 7, and diphtheria 1; specimens of milk examined 52, number found below the standard 5; births

reported 79, marriages reported 10. A large number of physicians are receiving the badges issued by ordinance giving them right of way over streets when making professional calls; recommendation is made that water-plugs be placed at certain places in the city, that filthy gutters may be flushed and cleaned; pasters to be used by embalmers to show they are legally licensed are ready for distribution; there were 236 deaths during the month of June against 300 last June; of these 117 were males and 119 females; cholera infantum caused 17 of the deaths and consumption 18, cerebral meningitis 12, and organic heart disease 10.

DUNCAN EVE, M.D., Nashville, chairman of the Committee of Arrangements of the Mississippi Valley Medical Association was in the city one day last week to confer with the secretary and a number of the local committee for the Louisville meeting relative to the meeting of the Association in Nashville in October next.

Societies.

The following recent meetings are noted:

Alabama.—Calhoun County Medical Society, Anniston, July 5.

Illinois.—Chicago Medical Society, June 29; Tri-County Medical Society, Paxton, July 6.

Indiana.—Grant County Medical Society, Marion, June 16; Lawrence County Medical Society, Mitchell, June 23.

Iowa.—Central Iowa Medical Association, Webster City, June 21; Des Moines Valley Medical Society, Ottumwa, June 23; Dubuque Medical Society, June 23; Sioux Valley Medical Association, Sheldon, June 23; Eastern Iowa District Medical Association, Burlington, June 30; Austin Flint Medical Association, Iowa Falls, July 12 and 13; Scott County Medical Association, Davenport, June 30.

Maryland.—Tri-State Medical Society, Cumberland, June 23.

New Jersey.—State Medical Society, Asbury Park, June 29 and 30.

New York.—Broome County Medical Society, Binghamton, July 5; Erie County Medical Society, Buffalo, June 14; Syracuse Academy of Medicine, June 21.

Ohio.—Columbus Academy of Medicine, June 20; Lucas County Medical Society, Toledo, June 17; Tri-County Medical Society, Ashtabula, July 5.

Pennsylvania.—Northumberland County Medical Association, Milton, June 30; Tioga County Medical Society, Lawrenceville.

South Dakota.—South Dakota Medical Society, Sioux Falls, June 15 and 16.

Texas.—North Texas Medical Association, Fort Worth, June 21 and 22.

West Virginia.—Mason County Medical Society, Point Pleasant, June 30.

Wisconsin.—Central Wisconsin Medical Society, Janesville, June 23; Northwestern Wisconsin Medical Association, Stevens Point, July 12.

Yellow Fever.—As we go to press with the last form, we read in the press dispatches of the outbreak of yellow fever among the troops. This need occasion no alarm, as no more efficient hygienic corps exists than may be found in the Army. The disinfection of all baggage of all persons entering our lines from Santiago, whether refugees or prisoners, may have to be carried out.

THE PUBLIC SERVICE.

Movements of Medical Officers.—To report to General Brooke at Chickamauga Park, Georgia, Acting Assistant Surgeon Humphrey Bate, Jr., from Castalian Springs, Tennessee. To the 4th Corps, General Coppinger, at Tampa, Florida: Acting Assistant Surgeons E. H. Morton and Samuel W. Kelley. To the General Hospital at Key West, Florida: Acting Assistant Surgeon T. A. Clayton. To the General Hospital at Fort Monroe, Virginia: Acting Assistant Surgeons Baer Street from Sheridan's Point and Otway W. Rush from Madisonville, New York. To the Hospital Ship *Relief*: Major A. E. Bradley, Brigade Surgeon. To the 5th Army Corps, General Shafter, at Santiago, Cuba: Acting Assistant Surgeons Stanley Warren, Charles C. Marbury, Jas. VeV. Mackall, A. A. Snyder, Jesse Ramsburgh, Henry L. Brown, Jas. T. Corwin, John R. Hicks, Rufus D. Boes, John D. Thomas, Edward J. Meyer,

Charles Brewer, Joseph L. Sanford, John W. Wright, H. C. Cline, Russel W. Chidsey, J. H. Feuss, J. S. White and Ezequiel de la Callé.

Resigned: Major Arthur L. Osborn, Surgeon 6th Ohio Volunteer Infantry.

Nominations, most of which were confirmed on the closing day of the session: To be chief surgeon with the rank of Lieutenant-Colonel, P. F. Harvey, Major and Surgeon U. S. Army. To be chief surgeons of division with the rank of Major: Nelson H. Henry, Assistant Surgeon-General of New York; Victor C. Vaughan, Surgeon 33rd Michigan Volunteers; Charles M. Robertson, Surgeon 50th Iowa Volunteers. To be chief surgeons of brigade with the rank of Major, Royce Day Fry of Ohio; Elmer E. Heg of Washington; Charles R. Parke, Surgeon 13th Pennsylvania Volunteers; Jabez N. Jackson, 3rd Missouri Volunteers; Wallace Heff of Ohio; Geo. F. Shiels of California; Wm. S. Bryant, Assistant Surgeon 1st Massachusetts Heavy Artillery; Wm. F. Deniedeman, Assistant Surgeon 22nd Kansas Volunteers; Francis C. Ford of Texas and Lawrence C. Carr of Ohio.

CHANGE OF ADDRESS.

Bozinch, M. F., from 291 N. Carpenter St. to 162 W. Chicago Ave., Chicago, Ill.

Bulette, W. W., from 149 Santa Fe St. to Central Block, Pueblo, Colo.

Childs, C. F., from Decatur to Irontale, Ill.

Furay, C. E., from 2409 N St., South Omaha, to 2237 Seward St., Omaha, Neb.

Franklin, G. W., from Jefferson, Iowa, to Good Samaritan Hospital, Portland, Ore.

Flsk, F. F., from Waterloo, Iowa, to Cedar City, Utah.

Hoff, F., from 510 Walnut St. to 200 Grand Ave East, Des Moines, Iowa.

Hawes, E. E., from 818 Broadway to 164 Washington Ave., Boston, Mass.

Heath, C. L., from Treeville, Tenn., to Lindsay, Ky.

Kerr, A. W., from Keene, Texas, to Woodburn, Iowa.

Lambert, F. E., from Iowa City to Alburnet, Iowa.

Murphy, J. A., from Cincinnati, Ohio, to Wequetonang, Mich.

McNicholl, T. A., from Sea Cliff, L. I., to 140 E. 39th St., New York, N. Y.

Monroe, J., from Markesan, Wis., to Blackfoot, Idaho.

Morton, G., from Rialto Bldg to 14 E. 11th St., Kansas City, Mo.

Moe, A. J., from 353 Western Ave., Chicago, Ill., to La Crosse, Wis.

Nichols, C. B., from Denver, Colo., to Fort Wingate, N. M.

Perry, J. G., from New York, N. Y., to Ridgefield, Conn.

Purcell, E. C., from Denver to Elyria, Colo.

Roberts, N. G., from Denver to Littleton, Colo.

Smith, C. B., from Decatur to Lorington, Ill.

Smalt, A. E., from Stillwater to Willow River, Minn.

Whittaker, J. T., from Cincinnati, Ohio, to Lakewood, N. Y.

Wood, L. H., from 1005 Boulevard to 2405 Boulevard F., Denver, Colo.

Whitfield, B. W., from Galloway to Demopolis, Ala.

York, F. A., from Galveston, Texas, to Denver, Colo.

LETTERS RECEIVED.

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Christofferson, A. L., Oshkosh, Wis.; Combemale, F., Lille, France; Craig, C. S., Hamlin, N. Y.; Couser, T. C., Sunbury, Pa.; Coyle, John A., Lancaster, Pa.; Colorado Sanitarium, Boulder, Colo.

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The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, JULY 23, 1898.

No. 4.

ANNUAL ORATION.

SURGERY OF THE LUNG.

The Oration in Surgery Delivered at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Col., June 7-10, 1898.

BY J. B. MURPHY, M.D.
CHICAGO, ILL.

Mr. President and Members of the American Medical Association:—Permit me to express my appreciation of the great honor conferred on me when elected to deliver the Annual Address on Surgery to this distinguished body of scientists. Custom has ordained that the address in the specialties of medicine at our annual convocation should be confined to a review of the advancements of the science and art of this branch in general in the preceding year. I take the liberty of deviating a little from this precedent to review the efforts and achievements made in a special and, until the last two decades, neglected field of surgery. I believe I am justified in this digression, as at the last, our semi-centennial convention, my predecessor enumerated and so emphasized the achievements of surgery for the last half century that I fear the consideration of a year's progress would be of small interest.

I have therefore chosen for my subject today the surgery of the lung. An analysis of the accomplishments in this special line of work is of great interest, the advancements having been made by individual and unsupported efforts. The profession at large has never entered into this field with the enthusiasm, persistency and energy with which it has invaded other fields, as the peritoneum, the genito-urinary, the osseous and nervous systems. Indeed, if we were to take from the list of original investigators and operators in this field thirty names, it would be practically a blank; the work has been of a desultory character. The surgery of the lung has had its epochs of advancement. In no field of medicine has the intermittence in surgical effort been so conspicuous as in that of the lung. We find that Hippocrates, in the fourth century, B. C., recognized that pneumonic abscesses opened into the bronchus and slowly recovered in that way. He repeatedly opened them through the chest wall and resected the rib to obtain a better field. He advised thoracotomy and pneumotomy as the proper treatment for this class of cases.¹ These operations were then lost sight of and did not come to light again until 1584, when Schenk² recommended them. Oblivion was its fate again until Willis in 1664 drew attention to it. Bligney in 1670 reported a case of phthisis which was cured by accidental puncture of the chest with a sword; the opening allowed the pus to escape from the lung. Purmann in 1692 advised incision of the chest wall

in hemorrhage, empyema and pulmonary cavities, and for removal of all kinds of effusions. Baglini in 1696 opened the chest. Baglivus in 1710 treated wounds of the lung by free incision of pleura and advised the same treatment for phthisical cavities. Berry of Dublin, in 1726, suggested the drainage of pulmonary cavities, and cited cases of recovery following pulmonary incision. Sharpe in 1769 dwelt on the difficulties of separating pleuritic adhesions and advised cutting into the cavity with the lance and inserting tubular drainage.³ Pouteau and David in 1783 advised incision to pleura and trocar to depth of pus.⁴ Faye in 1797 operated for abscess of the lung which was adherent, and advised puncture, irrigation and tampon; for such cases Jaymes and Richerand in 1813 advised incision.⁵ H. Callisen in 1815 advised puncture and exploration of the chest by paracentesis, and if pus were detected, incision of the pleura; then digital palpation for fluctuation in the lung with immediate incision.⁶ Zang in 1818 reported fifteen incisions of the chest wall, seven for empyema and eight for abscess. Nasse in 1824 incised a pulmonary cavity.⁷ Krimer in 1830 wished to perform this operation, but the medical consultant would not consent. Brichatan in 1830 opened a cavity with a caustic paste and also one with the scalpel, in which he cut into the lung a distance of eight lines and then dilated with forceps. The latter patient lived nine months. Postmortem showed the cavity obliterated.⁸ To the above list of investigators may be added the names of Brichet, 1831; McLeod, 1836; Clausen, 1839; Hastings, Herf and Collins, 1844. Then came a long period of quiescence until we find the subject again receiving attention as a modern advancement in 1873 by Mosler and Pepper.⁹ Neisler, 1873, drained a tubercular cavity of the lung. The work of F. Mosler is conspicuous as he, though a medical man, advocated in repeated theses surgical interference in diseases of the chest. His efforts were ably supported by Koch and Bull, and the experiments of Gluck, Block, Hans Schmid, D. Biondi, and by the cases of Rugge, Christian Fenger, E. W. Andrews, Kroenlein, Omboni, Roswell Park, B. Pitts, Fabricant and others.

It would be impracticable for me to enumerate here the names of men who have labored so zealously in the interest of surgery of the lung, as they will be given due credit under the special headings to which their investigations contributed. Let us consider, first, the anatomy; second, the physiology; third, the experimental research, and fourth, the course and results in clinical cases. The last two we will take up under the headings of separate opera-

¹ Treatise of Operation in Surgery, London, 1769, p. 128.

² Mém. Surg., la Thèse Pulmonaire, Paris, 1783.

³ Jour. Gen. Med., Vol. xlv.

⁴ Callisen's System of Surgery, Ed. iv, Vol. 1, 1815, p. 418.

⁵ Harris' Arch. für Med. Erf., Band II, Seite 117.

⁶ Jour. Comp. des Sc. Méd., No. 36, p. 144, 1830.

⁷ Deut. Med. Woch., 1882.

¹ Ed. Littré, Vol. vii, p. 61.

² Wm. Koch, History of Lung Surgery.

tions or pathologic conditions, while the first two, the anatomy and physiology, will be treated of here.

Anatomy.—The lungs are almost entirely situated within the bony cavity of the chest, the exception being the small projection of the apices above the level of the first rib. A straight line drawn, however, from the upper surface of the first rib behind to the upper surface of the clavicle in front, would pass above the apices. A straight line drawn in any position from the margin of the ribs and costal cartilages or sternum across the chest cavity below would not touch the lung. The chest has two diaphragms, the first closing a small kidney-shaped orifice, made up by the combined arches of the first ribs, the sternum in front and the spine behind. The large vessels of the neck, the trachea, esophagus and nerves pass through this orifice. This diaphragm rises and falls with each respiratory act, from one-half to one and

The space embraced within the chest is filled in behind, first, by the anterior curvature of the heads and necks of the ribs and the bodies of the dorsal vertebræ; the spinal column extending far forward helps to make up the mediastinal septum, which divides the chest into two irregular flattened cones. The distance from the sternum to the spine is about two-thirds of the depth of the thickest portion of the cone, which is from the most prominent posterior part of the arc of the rib directly forward (as shown in Figs. 5 and 6 from Fowler and Godlee).

The hilum of the lung resting anterior to the spine is therefore about midway between the anterior and posterior margins of the chest cavity as outlined by the ribs. The anomalies of the ribs and the shape of the chest change the respective relations between portions of the lung and chest wall, and must be consid-

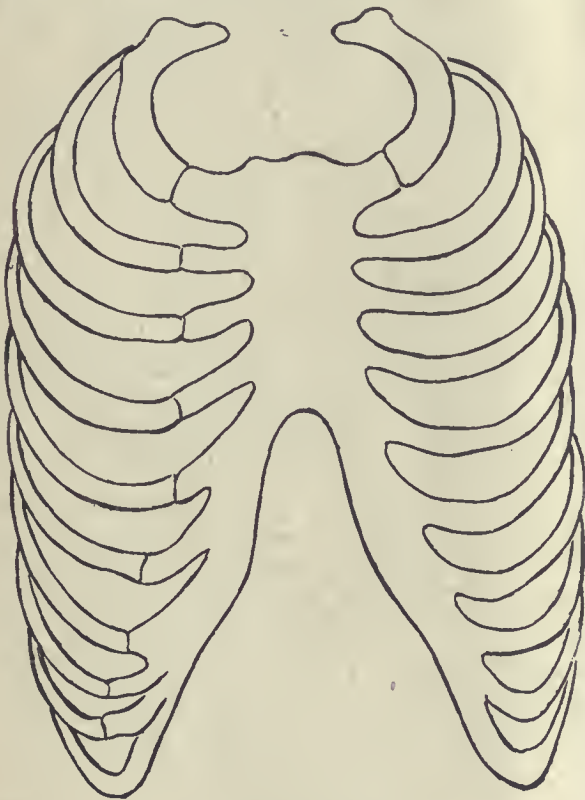


Fig. 1.—Normal healthy subject.

one-half inches in extent, depending upon the respiratory effort and the condition of the respiratory organs, moving most in health and least, if at all, in apical disease. The chest, from its upper diaphragm, in its normal shape represents a continuous conical expansion to the lower margin of the ribs. (See Fig. 1.) The dress in females converts it into a balloon shape; the same is true of emphysema; the most expanded portion of the chest, under these circumstances, is about the lower margin of the fifth rib; it then contracts to the costal margin of the twelfth rib. (See Fig. 2.) For many years it was the prevalent opinion that the lung filled the greater portion of the chest. The modern anatomist has demonstrated on frozen specimens that only a small portion of this cavity is occupied by the lung. The radiographs which I have had made show that the position of the diaphragm in the frozen specimen and cadaver is misleading. (See Figs. 3 and 4.)

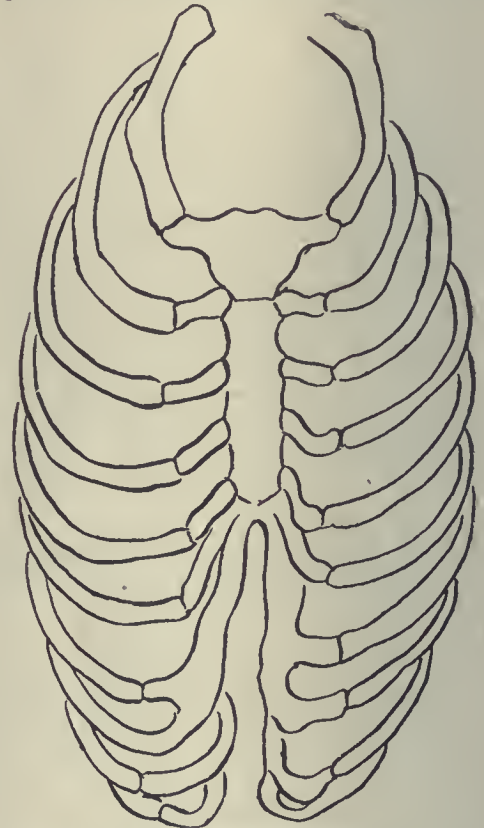


Fig. 2.—Deformed, by tight lacing.

ered in the surgery of the individual case. When a seventh cervical rib is present it extends far above the level of the apex of the lung and may compress it, but it is not so likely to interfere with the lung as with the roots of the brachial plexus. An additional dorsal rib is usually accompanied by an elongation of the pleural cavity at that point, but the lung does not fill the pleura to its margin. A bifurcation of the ribs anteriorly has no particular influence upon the chest. The seventh is usually the last true rib; the eighth, however, is occasionally joined to the sternum. The width of the intercostal spaces is of importance; it is greatest in the second and third and tenth and eleventh, and is widest just at the tip of the bony end; it can be increased to its greatest degree when the spine is erect, but is not necessarily increased on inspiration. A division of the pectoral and intercostal muscles allows of a great increase in the separation of the ribs; this is most marked in the young.

The space in children attained in this manner usually suffices for operation without costal resection.

The sternum is not perpendicular; it deviates from this about 25 degrees. Its angle ranges in the respiratory act between the 160th and the 170th degrees. (Fowler and Godlee.)

The diaphragm forms the lower elastic, irregularly convex boundary of the chest. It is a very large-sized muscle with firm attachments to the entire circumference of the lower margin of the chest. It is in constant movement in health, and is the most powerful individual respiratory muscle. It is the piston of respiration; the chest wall is the cylinder. See

abdominal pressure. The arch and length of the diaphragm are changed by the shape of the chest; it is shorter and higher arched in the hollow-shaped chest of females and emphysemata. In the balloon-shaped chest the diaphragm has the least action; this shape is considered a predisposing cause to phthisis. The degree of the vaulting of the diaphragm into the chest in life has been overestimated by anatomists from the examination made by them on the cadaver and frozen specimens; a study of my radiographs, a few of which

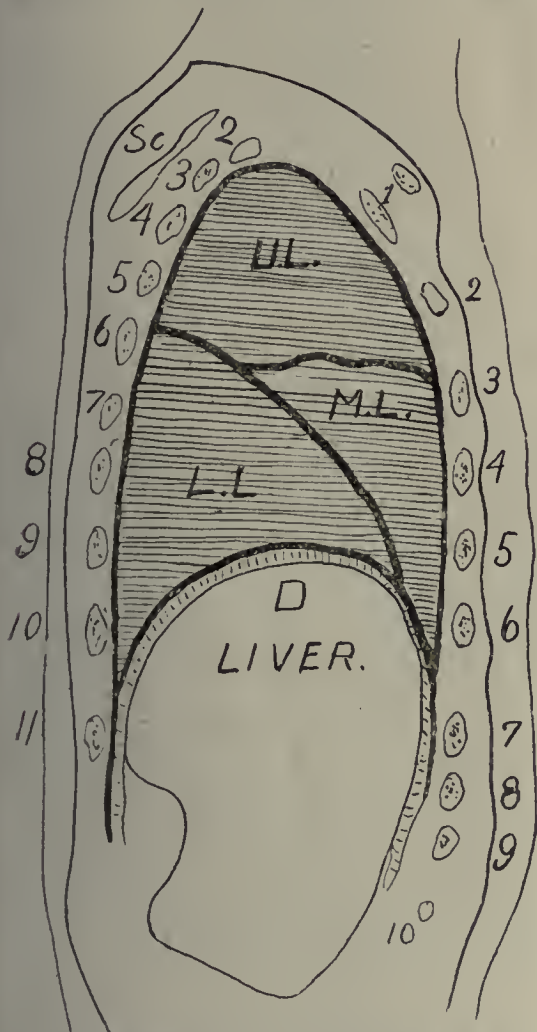


Fig. 3. Sagittal section (right) after Rüdinger. Cl, clavicle; Sc, scapula; D, diaphragm; U.L., upper lobe of lung; M.L., middle lobe of lung; L.L., lower lobe of lung. The pleura is indicated by heavy lines.

Figs. 7 and 8. Its vaulting within the chest cavity is of the utmost import to the physician and surgeon. It is divided into two almost equal parts; the central and front part, corresponding to the position of the heart, is the highest and is practically stationary. It is on a level with the fourth interspace on the right side, with the sixth rib in the axillary line and with the eighth rib in the scapular line and the body of the ninth dorsal vertebra. On the left side at the points mentioned it is five-eighths of an inch lower. In health it varies from the third to the sixth interspaces in its vaulting. (See Figs. 7 and 8.) The origin of the central (spinal) portion is fixed, and its vaulting is changed by the contraction and relaxation of the diaphragmatic muscle assisted by the intra-

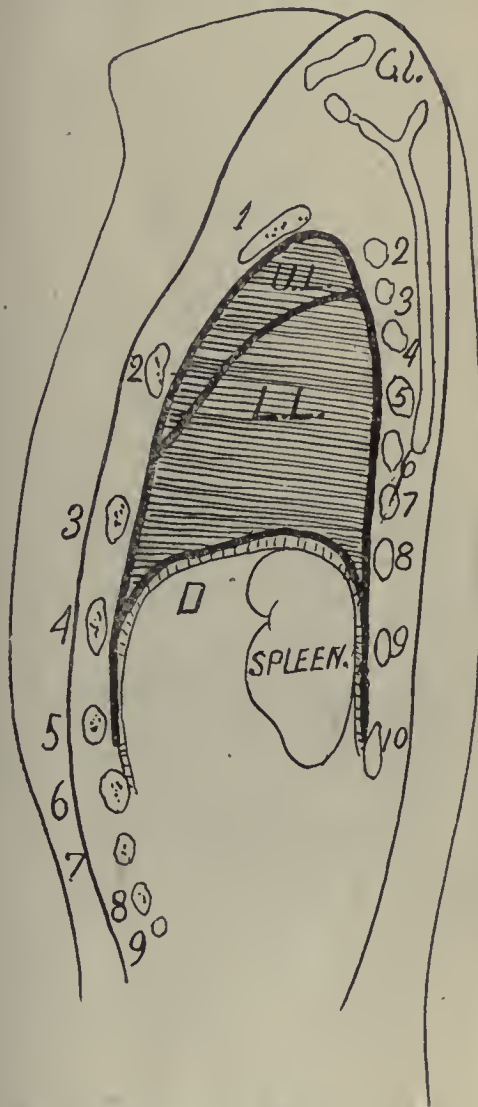


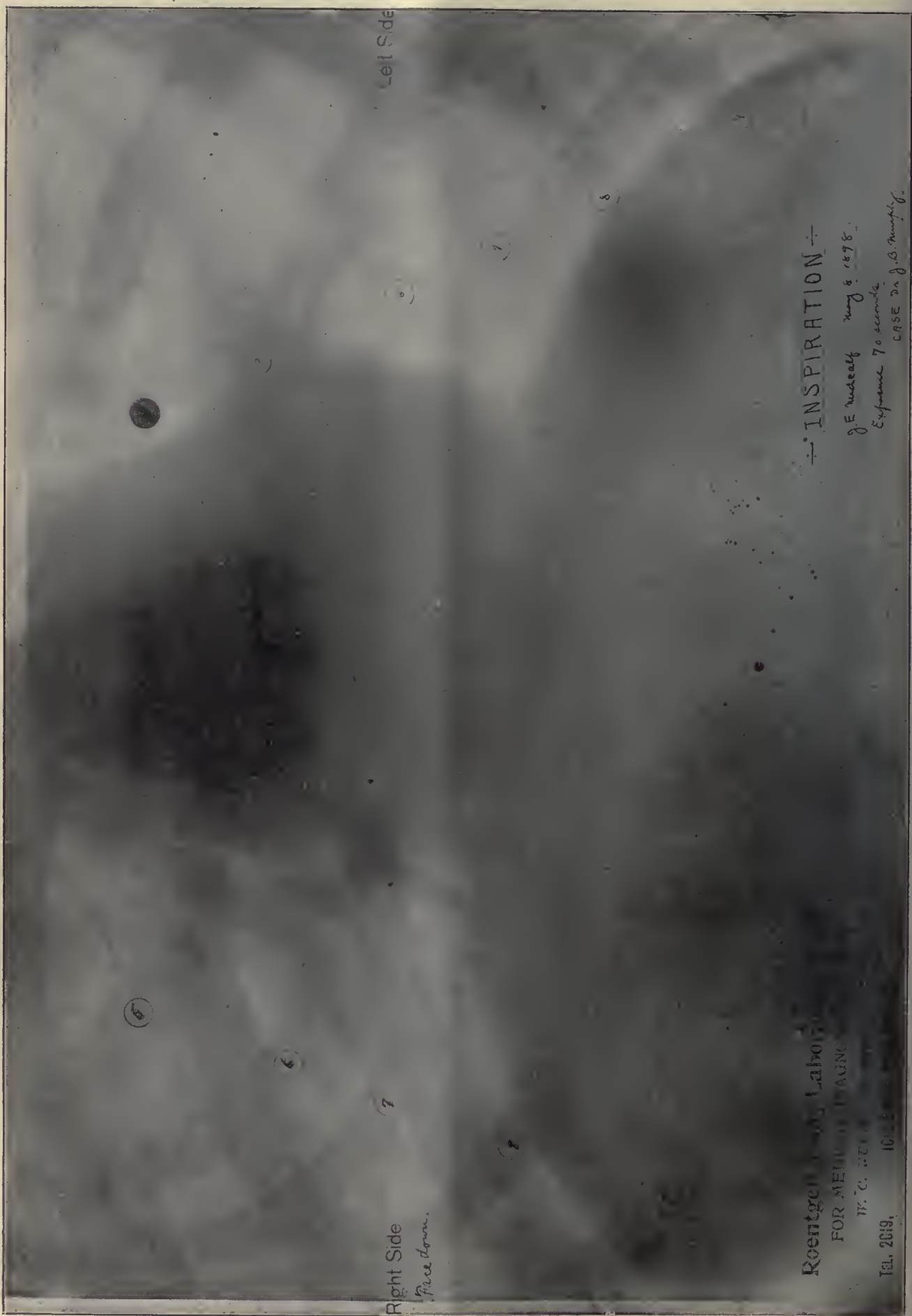
Fig. 4. Sagittal section (left) after Rüdinger. Cl, clavicle; Sc, scapula; D, diaphragm; U.L., upper lobe of lung; L.L., lower lobe of lung. The pleura is indicated by heavy lines.

are here reproduced, will show that the diaphragm in forced expiration elevates to a level with the lower margin of the fifth rib in the extreme and usually only to the sixth rib. In forced inspiration it is an inch to an inch and a half lower.

It will be seen in radiograph No. 1, which was taken in full inspiration, held for seventy seconds during the entire exposure, that the diaphragm on the right side comes to a level with the middle of the seventh rib at its cartilaginous junction; on the left side that it is about three-eighths of an inch lower and passes to the margin of the ribs with a lesser vault.

Radiograph No. 2 shows that in complete expiration, held for forty seconds during the entire exposure in the same healthy individual, the highest

RADIOGRAPH No. 1.



Left Side

Right Side
Face down.

INSPIRATION

J. E. McArdle May 6 1898.
 Exposure 70 seconds
 CASE Dr. J. B. Murphy.

Röntgen Ray Laboratory
 FOR MEDICAL DIAGNOSIS
 W. C. C. C. C.
 TEL. 2019, 1000

portion of the diaphragm came to the upper margin of the sixth rib on the right side and was about one-fourth inch lower on the left. This shows the degree of movement of the diaphragm in the respiratory act.

Radiograph No. 3, from a male adult, exposure forty-five seconds, shows in complete retained inspiration that the diaphragm on the right side comes to the middle of the sixth interspace, and on the left side it extends about three-eighths inch higher. Radiograph No. 4, from same person as No. 3, shows the position of the diaphragm during complete exposure of forty-five seconds in extreme expiration; the diaphragm on the right side comes to a level with the lower margin of the fifth rib, and on the left side it extends about one-third of an inch lower.

Radiograph No. 5, Miss K., emaciated female, shows the diaphragm on the right side as taken during normal respiratory movements, face down; it extends to the lower margin of the fifth rib; the outline is not discernible on the left side. Radiograph No. 6, back

the rib cartilages about one-half inch from the sternum. At the sixth space it subdivides into the superior epigastric and musculo-phrenic; it gives off small intercostal branches in its course. An anomaly of this artery, an early subdivision at the second or third space, may occur and a large branch extend outward and downward in the direction of the nipple. This branch would be interfered with in most operations through the anterior wall of the chest. In operations on and accidents to the anterior chest wall the location of the internal mammary artery should be distinctly borne in mind, as fatal hemorrhage has occurred from incisions, or injuries to this artery. The intercostal veins empty into the azygos and superior intercostal veins. The azygos veins are large and flat and have scarcely a plus pressure. In separating the adhesions of a diseased apex on the mediastinal side the azygos must be given great consideration, as it is easily torn and has a double danger, hemorrhage and air embolus; the azygos completely collapsed in the

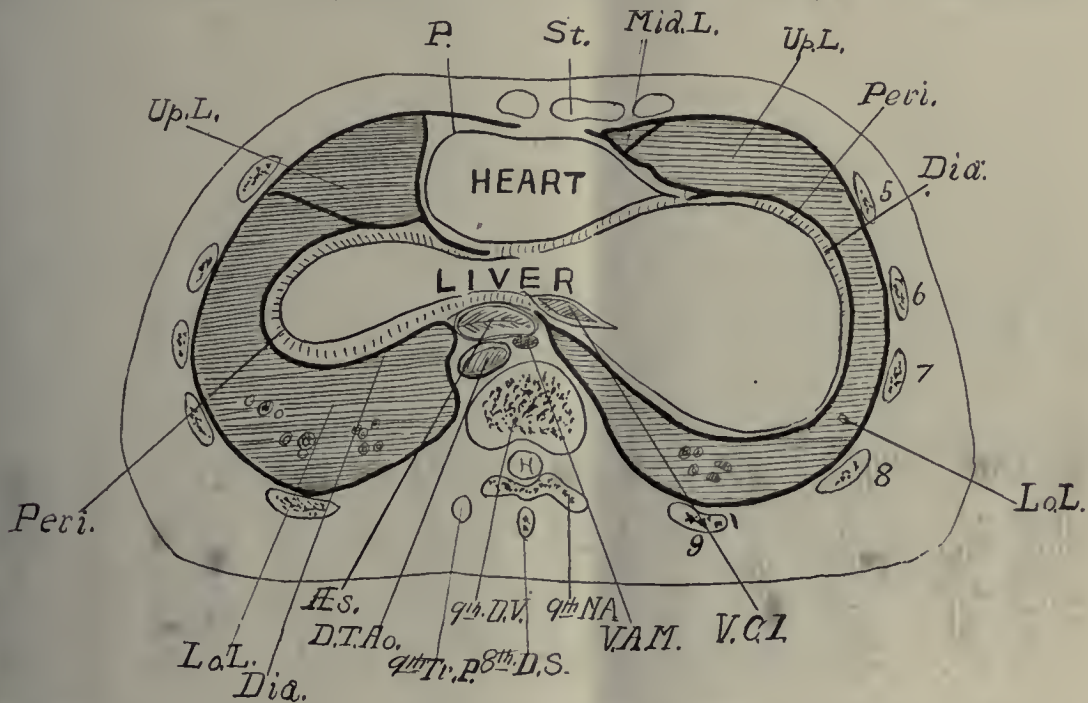


Fig. 5.—Through ninth dorsal vertebra. 9th D.V., ninth dorsal vertebra; 9th N.A., ninth natural arch; 9th Tr. P., ninth transverse process; 8th D.S., eighth dorsal spine; St., sternum; 5, 6, 7, 8, 9, ribs and cartilages; D.T.Ao., descending thoracic aorta; V.C.I., vena cava inferior; V.A.M., vena azygos major; Æs., oesophagus; Dia., diaphragm; P., pericardium; Up.L., upper lobes of lungs; Lo.L., lower lobes of lungs; Mid.L., middle lobe of right lung. The pleura is indicated by heavy line.

down; Miss K., the same individual as radiograph No. 5, shows the diaphragm on the right side as taken during normal respiration; it extends to a level with the upper margin of the fifth rib in front and on a level with the middle of the tenth rib behind; the diaphragm on the left side is one-fourth inch lower. Radiograph No. 7, Miss K., showed the same result. The results in an additional number of radiographs not here reproduced have been practically the same.

The chest wall is supplied with blood by the intercostal arteries; the first branch is given off from the subclavian and the others from the posterior surface of the aorta. They are close to the pleura behind and separated from it with the accompanying veins in front by the intercostal muscles. In addition the chest wall receives a blood supply from the internal mammary artery, which runs down behind the sternoclavicular articulation, along the posterior surface of

dog with each inspiratory act. (See Fig. 9, azygos vein and internal mammary artery.)

Lymphatics.—The lymphatics of the chest wall connect with the intercostal glands situated at the costo-vertebral junction. The efferent vessels from these glands empty into the thoracic duct, their lower branches into the receptaculum chyli. In front they run forward with the internal mammary artery and vein, where they have additional glands (sternal). The substernal glands also receive lymphatics from the anterior abdominal wall, diaphragm and liver. This anatomic feature explains the secondary mediastinal infections and tumors which occur from diseased foci at and below the diaphragm.

The mediastinum is best studied with the classification of Quain: the superior mediastinum, is that above a line drawn on a level with the upper border of the pericardium from the lower portion of the fourth dorsal vertebra behind to the junction of the

RADIOGRAPH No. 2.



Left Side

— EXPIRATION —
Left side of chest
expansion & movement
of diaphragm

manubrium with the body of the sternum in front. It contains the trachea, esophagus, thoracic duct, the arch of the aorta, the innominate, left common carotid and subclavian arteries, innominate veins and the upper part of the superior vena cava, the phrenic and pneumostriic nerves, the left recurrent and cardiac nerves, the cardiac lymphatics and the remains of the thymus gland. The anterior mediastinum is the narrow upper half; the two pleuræ come in contact in this position, and occasionally have a communicating foramen. This opening is more common in the dog and is very detrimental to experiments. It is less frequently found in the guinea pig and rabbit. In monunguals (single hoofed animals) it is always present. When a foramen does not exist in the dog the mediastinum not infrequently ruptures at this point, when one side of the chest is opened, and allows both lungs to collapse. The septum is thinnest behind the second portion of the sternum, and the pleuræ diverge above and below from that point. (See fig. 9.) This space contains only a few glands and areolar tissue.

tion it was difficult to separate the auricle from the pleura. Injury to the mediastinal contents is one of the greatest dangers in the operative technique of pneumectomy.

The pleura is a mesoblastic product like the peritoneum and meninges, or according to Waldeyer and His a hypoblastic product. It is composed of a thin fibrous layer covered with endothelia. It reacts rapidly to irritants, but is not so active in its reproduction as the peritoneum. It is a closed sac completely lining the chest wall and enveloping the lung except at its hilum and is divided into parietal and visceral laminae. The pleura pulmonaris envelops and is firmly attached to the lung; it has depressions lining its fissures. The pleura costalis is attached to the ribs by a layer of connective tissue. In health it is practically impossible to separate the pleura from its attachment to the rib without opening its cavity. In disease it is often very much thickened and can be readily pulled off without the danger of pneumothorax. The pleura mediastinalis is attached to all of

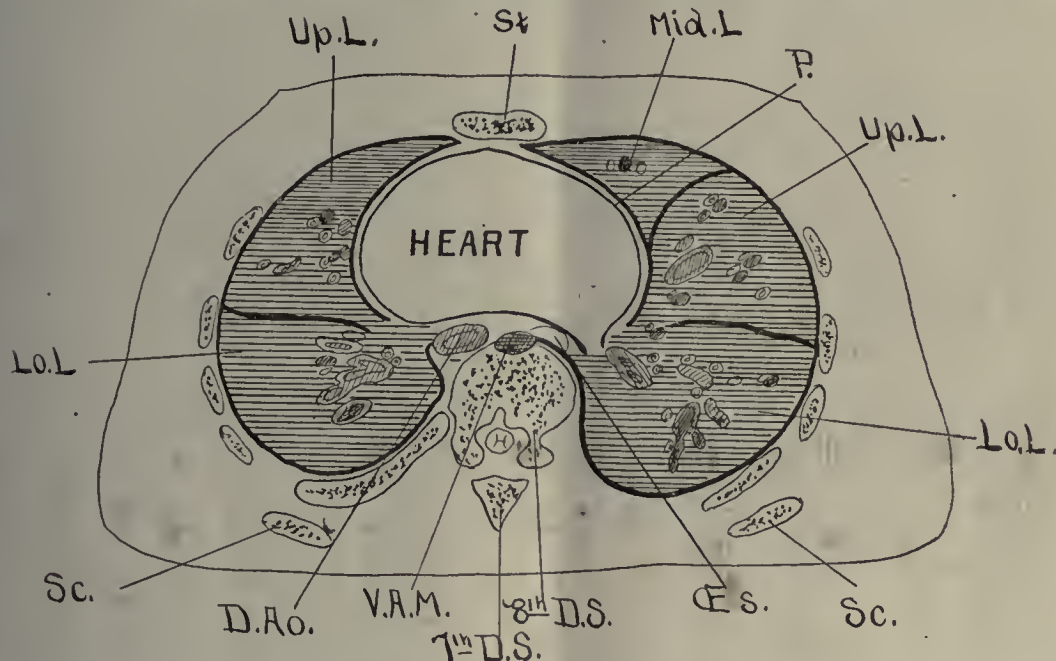


Fig. 6. Through eighth dorsal vertebra. 8th D.V., eighth dorsal vertebra; 7th D.S., seventh dorsal spine; Sc., scapula; St., sternum; D.Ao., descending thoracic aorta; V.A.M., vena azygos major; Es., esophagus; P., pericardium; Up.L., upper lobe of lungs; Lo.L., lower lobe of lungs; Mid.L., middle lobe of right lung. The pleura is indicated by heavy lines.

The middle mediastinum is the enlarged central portion which contains the pericardium and its contents, the phrenic nerves and accompanying vessels, the arch of the azygos veins and the roots of the lungs with their bronchial glands. The posterior mediastinum is situated between the pericardium, the diaphragm and roots of the lungs in front, and the spine behind. It contains between its pleural layers the descending thoracic aorta, the esophagus, the azygos veins, the thoracic duct and the posterior mediastinal glands. We must be mindful that the lower half of the superior vena cava is in the middle mediastinal space close to the trunk of the pulmonary artery and vein on the right side and must not be included in the ligature nor torn in separating the adhesions at the hilum of the lung. The right auricle is also endangered in this position and has been injured in experimental pneumectomy on animals. While separating an adherent diseased lung in a cadaver I tore directly into the auricle; after recognizing the condi-

tion the important structures of the mediastinum, the esophagus, trachea, pericardium, vagus nerves, innominate artery, superior vena cava, phrenic, etc. These attachments are practically the same on both sides. The pleura is intimately attached to these structures and can not be removed without a careful dissection. In separating a lung adherent in the mediastinum great care must be taken to keep on the pulmonary side of the adherent pleura, as there is danger of rupturing important mediastinal structures; further, the two pleuræ may be adherent and in separating them the other pleural cavity might be opened. This would most likely occur between the esophagus and the aorta, in front of the seventh, eighth or ninth vertebral bodies, or on a level with the third interspace in front. (C. Jannesco.) (See Figs. 10 and 11, showing extent of pleura. See Fig. 9, showing approximation of the pleuræ at the seventh, eighth and ninth vertebræ.)

When the pleura is deflected from the mediastinum

RADIOGRAPH No. 3.



above, at the apex, it is attached to the innominate vein or the scalenus anticus muscle and further out to the subclavian artery and brachial plexus. The upper curve is flattened or concave in the center; it extends to a level with the neck of the first rib, but it is about three-fourths of an inch above the inner end of the clavicle. The attachment to the innominate vein and subclavian arteries are important factors in pneumectomy for apical disease, as adhesions are almost certain to exist. Visceral and parietal adhe-

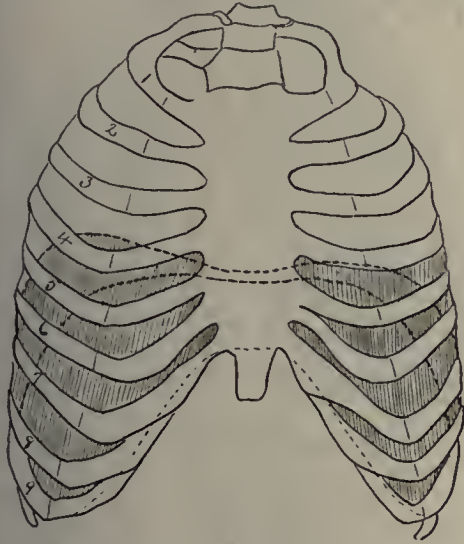


Fig. 7.

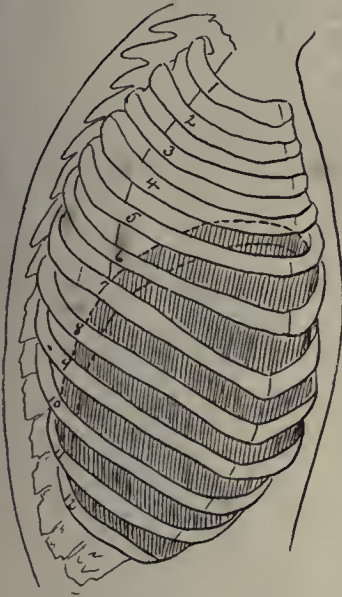


Fig. 8.

Figs. 7 and 8. Highly arched diaphragm from front and side. The upper dotted line represents it when relaxed (expiration) and lower line when contracted (inspiration).

sions of the pleura at this point occasionally produce a paralysis of the abductor muscles of the vocal cord on that side and the symptoms of laryngeal paralysis.¹⁰

The lower limits of the pleura are somewhat variable: on the right side in front it is attached to the sixth costal cartilage, the sixth space or the seventh rib and cartilage. From here it passes outward and downward to the eighth, ninth, tenth and eleventh ribs in an undulating and irregular manner and to the head of the twelfth rib and its vertebra. It often

extends an inch to an inch and a half below the twelfth rib, and even below the costal arch along the margin. This occurs most frequently upon the left side, as on this side it is as a rule five-eighths of an inch lower all around than on the right. (See Figs. 10, 11.) The pleura diaphragmatis is deflected from these attachments and completely covers the diaphragm except at the mediastinum; it is thin and firmly attached. The sternal attachment of the pleura varies; it recedes gradually from the center at the lower margin of the fifth space on the right side; it recedes more abruptly from the fourth rib on the left side, exposing the pericardium in the fifth interspace immediately to the left of the sternum. The pericardium may be opened in this position without interfering with the pleura. The anterior attachment of the right pleura often extends to the left of the median line and even to the left margin of the sternum. In normal condition the visceral and parietal pleurae are in close contact; effusion, hemorrhage and pneumothorax may change the positions.

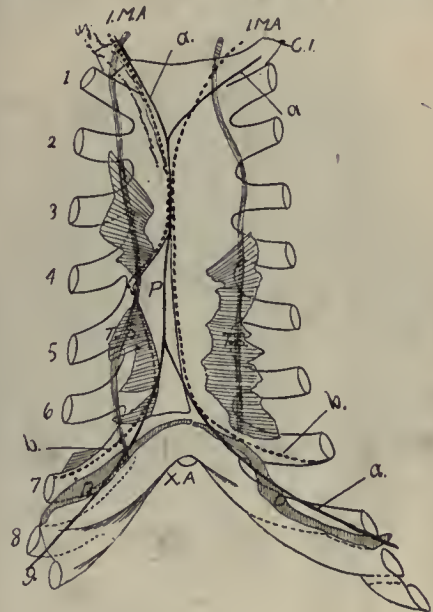


Fig. 9.—X.A., xiphoid appendix; Cl., clavicle; T.S., triangularis sterni; I.M.A., internal mammary artery; D., diaphragm; P., pericardium; a, line indicating usual position of pleura; b, dotted line indicating unusual position of pleura.

The lungs.—The lung is an irregular, pyramidal semi-cone, concave in its center or hilum formed to the mediastinal contents; concave on its under surface for its adaptation to the diaphragm; it is convex and undulating in its entire outer surface. It does not extend to the limitations of the pleural cavity in many positions, particularly at its lower margin. The lower margin of the right lung starts at the cartilage of the sixth rib; it passes obliquely outward and downward to the seventh interspace in the mammary line and then almost vertically backward to the end of the eleventh rib. On the left side it is about three-eighths of an inch lower than on the right except in the incisuræ cardiaca, where the pericardium is exposed. It can be seen in comparing this margin with the lower boundaries of the pleura that the latter extends from one to one and one-half inches below the border of the lung. Sappy claims that the lung extends as far as the border of the tenth rib behind and only to the fifth rib in front on the right and to the sixth on the left side. The general impression regarding the thickness and shape of the lower lobe

¹⁰ Fowler and Godlee.

is erroneous, as it is believed to extend almost inward from the margin described, while in reality the under surface is represented by an irregular conical excavation (formed by the diaphragm) extending from its base one inch to the inner side of the lower boundary of the lung all the way around up to a level with the fifth rib in the center near the hilum of the lung. (See Fig. 12.) The degree of elevation of this cone is changed in pathologic conditions. In intrapleural effusions it may be depressed to a level with the eighth interspace. (See Figs. 10, 11.) With subphrenic pathologic products it may be elevated to the third interspace; in explorations with the needle the diaphragm may be punctured and the location of the exudate miscalculated, as the following case illustrates:

J. C., male, age 44, butcher; had suffered from dysentery for three weeks; was attacked with severe pain in the right side near the costal arch; this was rapidly followed by chills and fever, temperature reaching 105.3 degrees. Patient rapidly assumed a typhoid condition, low muttering delirium, dry tongue, tremor, etc. When the author saw him in consultation the dulness extended to the nipple in front and an inch above the angle of the scapula behind; there was a slight

the lung opposite the middle of the sixth costal cartilage, and usually passes below the nipple. (See Figs. 13, 14.) The middle fissure originates about the middle of the great fissure beneath the junction of the fourth interspace with the middle axillary line and

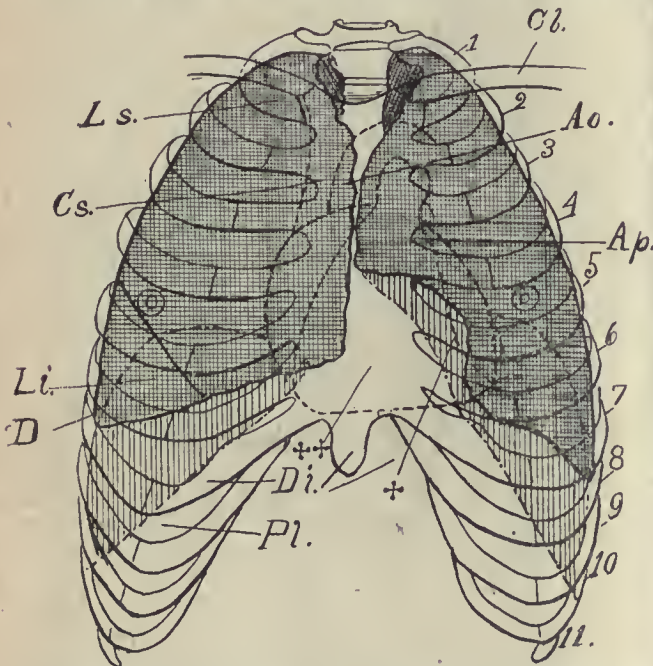


Fig. 10.—Front of chest, showing relation of lungs and pleura to chest wall. 1 to 11, ribs; Cl., clavicle; D., diaphragm; Di., insertions of diaphragm; Ao., aorta; Ap., pulmonary artery; X, incisura cardiaca; X X, pericardium in contact with chest wall; Ls., upper lobe of lung; Lm., middle lobe of right lung; Li., lower lobe of lung.

deviation with change of position, there was bulging of the intercostal spaces, and the line of dulness extended two inches below the costal arch. The diagnosis of hepatic abscess with subphrenic and intrapleural rupture was made. An exploratory puncture in the seventh interspace, scapular line, first, on withdrawing the piston gave a clear fluid; the needle was introduced an inch further and the syringe filled with pus; diagnosis was changed to subphrenic, hepatic abscess. Operation proved the correctness of the latter diagnosis. The fluid first withdrawn was the secretion from the inflamed diaphragmatic pleura.

The apex of the lung is blunt and shows a depression where it is adapted to the subclavian artery, from which it is separated only by the pleura. The right lung is divided into three lobes by two fissures, the left into two lobes by one fissure. The great fissure in the right lobe separates the lower from the upper and middle lobes, and extends from beneath the second dorsal spine at first longitudinally outward and then obliquely downward to the lower border of

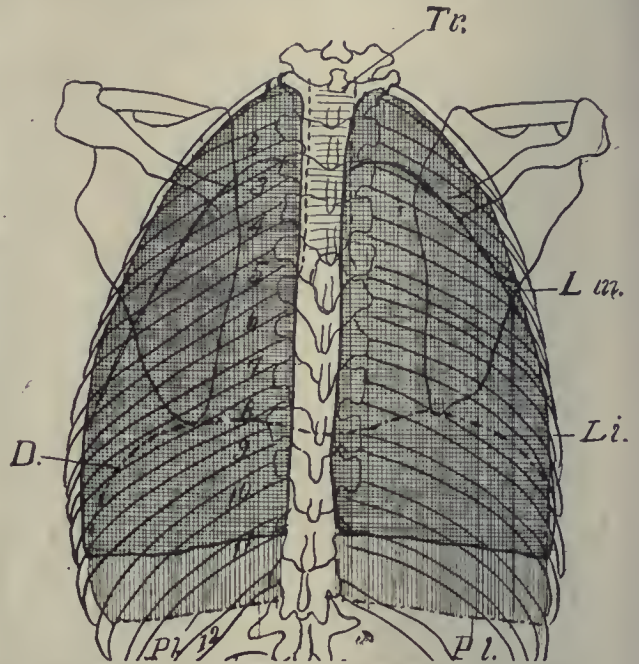


Fig. 11. Back view of chest, showing relation of lungs and pleura. 1 to 11, ribs; Tr., trachea; D., diaphragm; Pl., Pleura; Lm., middle lobe of right lung; Li., lower lobe of lung.

passes almost horizontally forward following the line of the fourth rib to the fourth costal cartilage. It separates the upper from the middle lobe. These fissures extend almost to the hilum of the lung. (See Fig. 15.) In disease the pleura lining the fissure becomes adherent, obliterating the fissures; not infrequently these fissures are the seat of circumscribed serous and purulent pleuritic effusions and are mis-

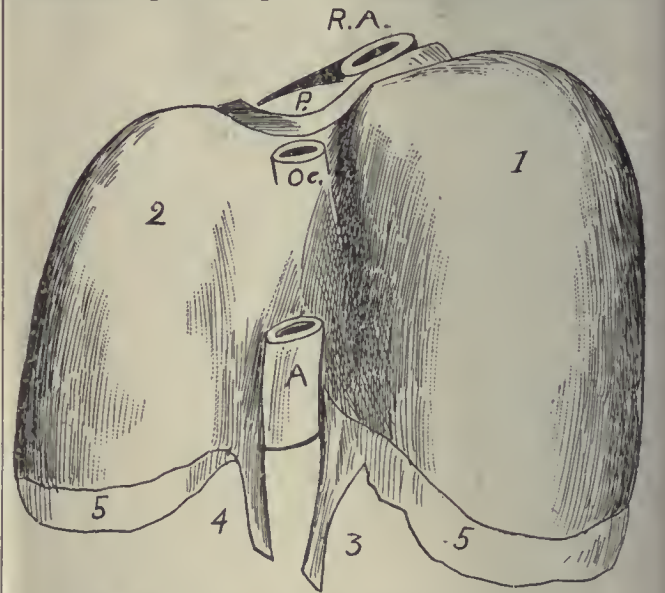


Fig. 12.—The diaphragm seen from behind. 1, right side of tendon; 2, left side of tendon; 3, right crus; 4, left crus; 5, origin from ribs; A, aorta; Oe., esophagus; P., pericardium; R.A., right auricle.

taken for cysts and abscesses of the lung. The fissure in the left lung corresponds to the great fissure of the right except that it passes a little higher in front at the cardiac margin of the lung. (See Figs. 16, 17.)

The pleura covering the lung is thin and firmly adherent. Anomalies as to the number of lobes and fissures are not uncommon, although the absence or non-development of a lobe is very rare; the most frequent anomaly is the absence of a fissure. Accessory lobes in the right lung have been recorded. In the dog as many as six have been found.

The right is the larger lung. An irregular notch in the left lung exposes the pericardium and gives the area of precordial dullness, which is irregularly triangular in shape; its first point of the base is at the middle line of the sternum opposite the fourth costal cartilage; the apex of the triangle is at the point of the apex beat, and the second point of the base is at the junction of the ensiform cartilage and the body of the sternum. The hilum or root of the lung is situated in a depression at about the middle of the lung between its apex and its lower margin about equi-

divisions of pulmonary veins and the pulmonary artery. The root of the right lies behind the superior vena cava and part of the right auricle. The vena azygos arches over it to enter the superior vena cava. The root of the left lung passes below the arch of the aorta and in front of the descending aorta, appearing to come out of the hook formed by the aorta. It is situated a little nearer the anterior wall of the chest than the right. The phrenic nerves pass in front of the roots on both sides and the pneumogastric behind. The bronchi are in the same relative position, posterior to the large vessels; they can therefore be ligated in front separately from the bronchus in pneumectomy. The vena azygos must not be included in the ligature and must be carefully separated from the adhesions to the lung, so that the root of the lung can be brought well forward for ligature.

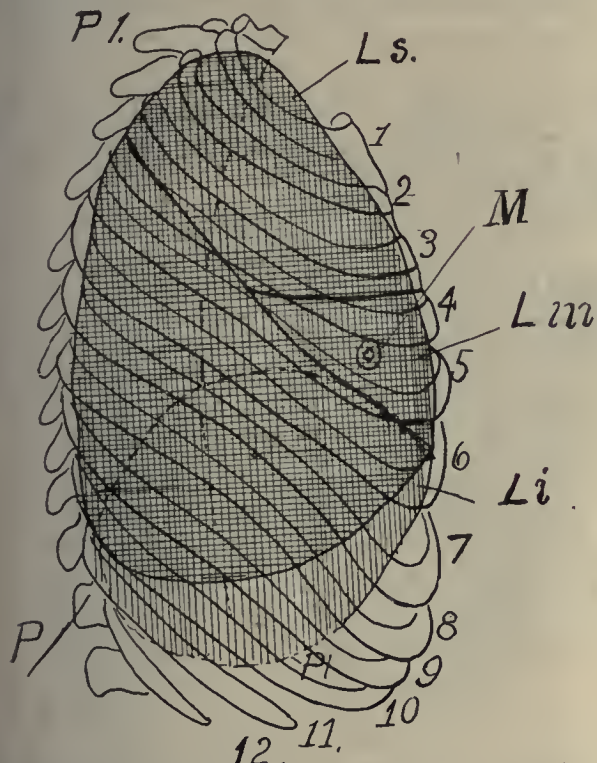


Fig. 13.—Right side of chest. P1., spinus process of first thoracic vertebra; P12., spinus process of twelfth thoracic vertebra; 1 to 12, ribs; M., nipple; Ls., upper lobe of lung; Lm., middle lobe of lung; Li., lower lobe of lung; P1., pleura.

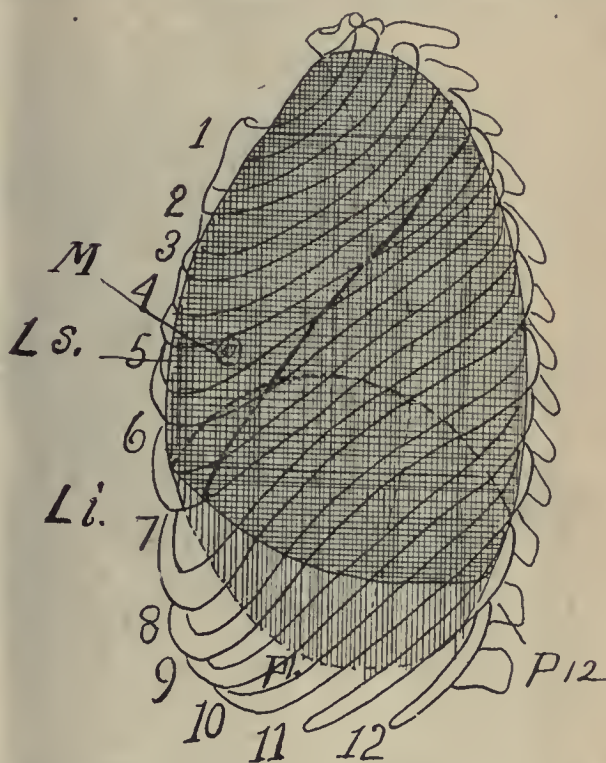


Fig. 14.—Left side of chest. P1., spinus process of first thoracic vertebra; P12., spinus process of twelfth thoracic vertebra; 1 to 12, ribs; M., nipple; Ls., upper lobe of lung; Li., lower lobe of lung.

distant from its anterior and posterior borders; it is occasionally nearer the anterior. The root is composed of the bronchus and its subdivisions, the large blood vessels, nerves, lymphatics and glands, surrounded by areolar tissue and reflections of the pleura; the root is on a line with the fifth, sixth and seventh dorsal vertebrae and almost directly behind the fourth costal cartilage and third interspace, on a line with the longitudinal fissure. The order of arrangement in the root (see Fig. 18), on the right side from above downward is, first, the pulmonary artery and its subdivisions; a little below that level and just behind is the eparterial bronchus; lower is the main bronchus behind and the pulmonary vein in front and a few smaller branches below; the left auricle presses in close to the bronchus behind and the right auricle a little lower in front. The order of arrangement in the root on the left side from above is, pulmonary artery and subdivisions, the bronchus and sub-

The trachea and bronchi.—The trachea which has from fifteen to twenty cartilaginous rings measures four to four and one-half inches in length and three-fourths to one inch in diameter; it is situated in the central portion of the mediastinum; the arch of the aorta passes across it in front just above its bifurcation. (See Fig. 19.) It divides into two bronchi, the right and left, on a line with the fifth dorsal vertebra, which lead to the corresponding lungs. The right bronchus is about one inch in length; it is shorter and wider than the left, and in direction is more continuous with the line of the trachea (Aeby); in size the transverse section of the tubes is in proportion of 100 to 78. The right is composed of six to eight cartilaginous rings, while the left, which is two inches in length, has nine to twelve cartilaginous rings. The rings are thin and cover about two-thirds of the circle of the bronchus, the remainder behind is membranous, resembling the trachea in this par-

ticular. The right bronchus gives off a branch to the upper lobe about an inch from the margin of the trachea. The external covering of the larger divisions of the bronchi is made up of connective tissue and a few muscle fibers. The connective tissue is greater behind, as it takes the place of the cartilage in that portion of the circle. This covering can not be peeled off the bronchus without laceration, rendering it impossible to make a "cuff" when the bronchus is amputated, as we do in amputation of the appendix. The mucosa is a thin, delicate membrane made up of lymphoid cells and ciliated epithelia. The submucosa which secures the mucosa to the cartilage is thin and friable and easily destroyed with pressure. It can not be peeled from the inner surface of the bronchus, nor can it be invaginated for the purpose of producing occlusion of the bronchus after pneumectomy. The histology of its method of closure will be described in the experiments.

process of combustion; they believed the action took place in the lungs, but admitted that it might be in other organs of the body. It was later shown that the quantity of oxygen consumed is generally much less in cold-blooded than in warm-blooded animals. Most insects are marked exceptions to this rule, as they have a metabolism equal to that of the larger mammals. The respiratory exchange in warm-blooded animals is influenced by age, size of body, external temperature, muscular activity, rest, digestion, hunger and hibernation. Cold increases and heat lessens the respiratory exchange. It is the reverse of what has been observed in cold-blooded animals. It was illustrated by Levoisier and Seguin, who showed that a man at rest at a temperature of 32.5 degrees absorbed in an hour 34.49 grams of oxygen, but at a temperature of 15, 38.31 grams of oxygen. Exercise increases the absorption of oxygen. (See Schaefer's Physiology, London, 1898). The hyperpnea following exercise is

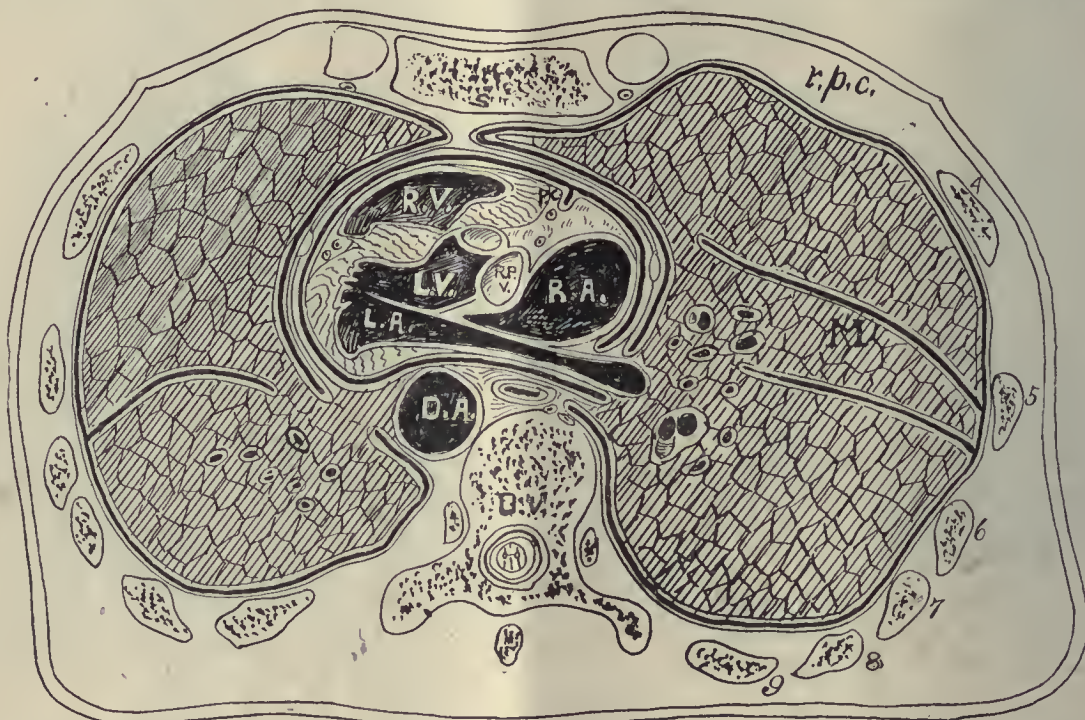


Fig. 15.—Horizontal section of the thorax of a man, aged 57, at the level of the nipple, as seen from above. N., nipple; M., middle lobe of right lung; R.A., right auricle; R.V., right ventricle; L.A., left auricle; L.V., left ventricle; R.P.V., right posterior valve of aortic orifice; r.p.c., right pleural cavity.

PHYSIOLOGY OF RESPIRATION.

Respiration is essentially the intake of oxygen and the output of carbon dioxide by living cells. There are but two acts in the process, the external, the exchange of gases in and out of the blood; and the internal, the exchange from the blood to the cells. Mayow in 1668 discovered the real function of respiration, and declared that it was the absorption of nitro-aerial gases (oxygen)¹¹. He also showed its similarity to combustion. Hale showed in 1726 that "noxious vapors were exhaled,"¹² and Black¹³ showed these gases to consist of a "fixed air," carbon dioxide. Priestley, 1772, demonstrated that plants restored the property of supporting animal life to air which had been vitiated by animal respiration or by combustion. Lavoisier and Laplace, 1777, taught that animal heat was the result of the oxidation of the tissues and was a

not due to excess of carbon dioxide in the blood as the result of increased metabolism, as the blood contains more oxygen and less carbon dioxide than during rest.¹⁴ It is probably due to some product of muscular activity which is absorbed by the blood and carried to the medulla, there to stimulate the respiratory center. Tartaric acid injected into the blood increases respiration; sodium hydrate (n: 1 sol.) diminishes respiration.¹⁵

A man at work absorbs 91.2 grams of oxygen an hour, while at rest he absorbs 38.3 grams an hour at a temperature of 15 degrees C.¹⁶ The carbon dioxide eliminated by a man at rest, asleep, is 161.6 c.c. per hour. During a walk at three miles an hour, it is 851.2 c.c. an hour.¹⁷ The percentage of carbon dioxide in the air exhaled is not changed, but the volume of air is increased.

¹¹ Phil. Trans., London, 1666, p. 424; Ibid, 1670, pp. 2011-2035.

¹² Statical Essays, 2d edition, 1731, Vol. 1, p. 236.

¹³ Lectures on Chemistry., Edinburgh, 1803.

¹⁴ Mathieu et Urbain: Arch. de Physiol.

¹⁵ Lehmann: Arch. f. d. ges. Phys., Bd. xlii, p. 284.

¹⁶ Levoisier: Loc. Cit.

¹⁷ Smith: Phil. Trans., Vol. cxlix, Pt. 2, p. 681.

Influence of food.—The ingestion of a meal upon respiratory exchange causes a marked intake of oxygen and output of carbon dioxid, due to the chemical changes which take place in food during digestion and absorption, and the increase of muscular and glandular activity of the alimentary tract. Smaller animals have a greater respiratory exchange than larger ones, other things being equal.

Influence of day and night.—There is a marked difference in the quantity of carbon dioxid produced between day and night. The increased exchange reaches its maximum from 11 A.M. to 1 P.M., and its minimum from 8 to 9 P.M.¹⁸ The respiratory exchange is greater in the young than in the aged per kilogram under the same conditions.¹⁹ Amphibia respire through the skin and mucosa of the alimentary tract, and in some this respiration is greater than that of the lungs. Cutaneous and alimentary respiration in mammals has been a field for considerable controversy, but it is the consensus of opinion that respiration takes place through the skin and alimentary canal. (See Cruikshank, Experiments on the insensible perspiration of the human body, showing its relation to respiration, 1871).²⁰

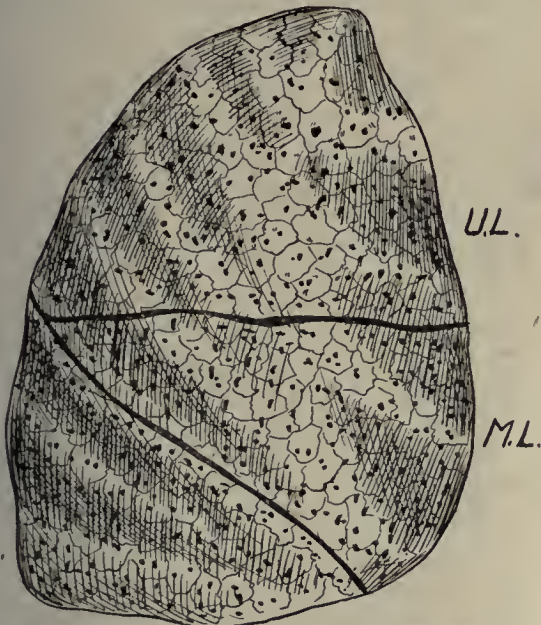


Fig. 16.—Outer aspect of right lung. U.L., upper lobe; M.L., middle lobe of lung; L.L., lower lobe of lung.

The respiration of fetal life, or exchange of carbon dioxid and oxygen, is very much less than in adults, about the proportion of 1 to 100.²¹ The respiration of the embryo in the egg of fowls and snakes takes place through the shell. If the egg is kept in a warm atmosphere of hydrogen for more than twenty-four hours the embryo ceases to live. The development of the embryo is neither hastened nor delayed if the egg is kept in an atmosphere of oxygen.²² This is in consonance with the exchange of oxygen in pulmonary respiration.

The amount of respiratory exchange in animals under normal conditions is not augmented by an increase of oxygen in the inspired air, but under pathologic conditions where the respiration is interfered

with and where the blood is abnormally venous, an increase of oxygen in the air inspired produces an increased exchange of gases.²³ This is a physiologic indication for the clinical use of oxygen in certain pathologic conditions of the respiratory apparatus, as pneumonia, compression of the lung, etc., and is also a positive indication for the administration of oxygen by inhalation after all operations which diminish the respiratory area of exchange.

The inhalation of air with a diminished quantity of oxygen produces marked symptoms, as observed in mountain climbing and balloon ascension. They are due to anoxemia, as was shown by Jourdanet.²⁴ The effect produced by air vitiated by repeated respiration is due to the deficiency of oxygen and the presence of carbon dioxid. The hyperpnea is due to the excess of carbon dioxid and not to the deficiency of oxygen. When the carbon dioxid exceeds

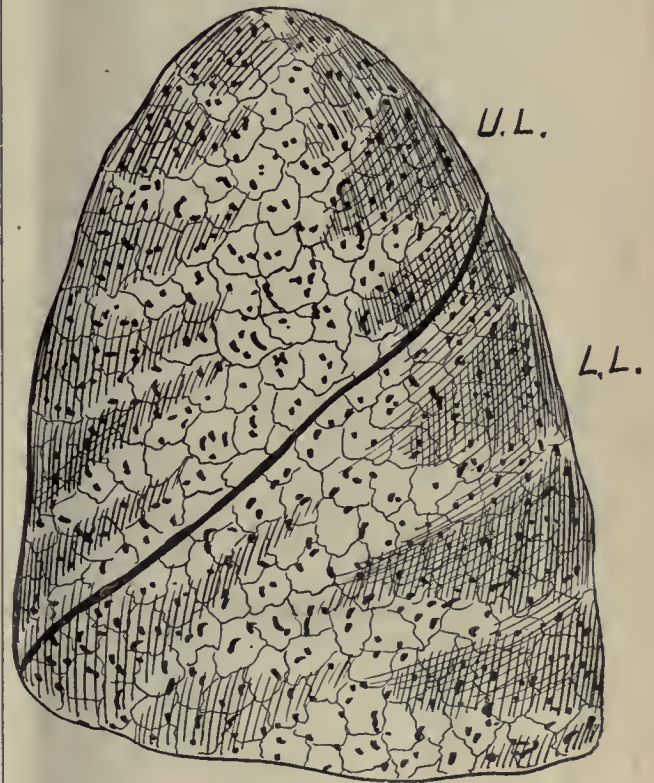


Fig. 17.—Outer aspect of left lung. U.L., upper lobe of lung; L.L., lower lobe of lung.

3 per cent. the hyperpnea is appreciable; at 10 per cent. it is marked; the frontal headache is due to the excess of carbon dioxid. When the oxygen is diminished to 12 per cent. the hyperpnea is appreciable and is excessive at 6 per cent.²⁵ Warm-blooded animals confined in a limited quantity of air die from want of oxygen and the blood is venous. The lack of oxygen produces its effect before the accumulation of carbon dioxid is sufficient to produce poisoning. Death takes place when the oxygen is reduced to 3 per cent. and the carbon dioxid increased to only 15 per cent. The fatal amount of carbon dioxid is 25 per cent.

The respiratory exchange in children and animals immediately after birth is very much less than later in life; this explains the fact that at this time they may be restored by artificial respiration a much longer time

¹⁸ Vierordt: Phys. Carlsruhe, 1845. Wagner's Handwörterbuch, Bd. II u. III, p. 883.
¹⁹ Ann. of Chem. and Pharm., 1843. Bd. xlv, p. 214.
²⁰ Aubert and Lange: Arch. f. die ges. Phys., 1872, Bd. vi, p. 589.
²¹ Zuntz: Arch. f. ges. Phys., 1877, Bd. xiv, p. 605.
²² Pott: Arch. f. ges. Phys., 1883, Bd. xxxi, p. 268.

²³ Levoisier et Seguin: Hist. Acad. roy. d. Sc., Paris, 1789, p. 566.
²⁴ Jourdanet: Paul Bert's Work.
²⁵ Haldane and Smith: Jour. of Path. and Bact., 1892, Vol. I, p. 875.

after respiration has ceased than could be accomplished later in life. The increase of respiration during exercise does not seem to be due to an increase of carbon dioxide or lack of oxygen in the blood, but to the accumulation in the blood of some product of muscular activity. If the exertion be continued its effect ceases, the pulse becomes slow, the respiration less frequent, and the man is said to have his second wind, after which the same degree of exertion may be continued with comparative comfort for a long time.

The quantity of air exchanged in each respiratory act is a matter of great importance from a medical as well as a surgical standpoint. What is the minimum tidal exchange which is consistent with life in man



Fig. 18.—From Morris' Anatomy.

and what is the minimum of healthy lung tissue that will permit of that exchange? The tidal air in each respiratory act, in rest, is 114 to 196 c.cm., and 262 to 360 c.cm. during exercise.²⁶ The complementary air (the deepest inspiration) is 1722 to 1804 c.cm. (Hutchinson). The reserve air which can be expelled after an ordinary expiration is 1148 to 1804 c.cm. The residual air (mean) which remains in the lung after a forced expiration is 672 c.cm.²⁷ The vital capacity, quantity of air exchanged between the extremes of inhalation and exhalation, is 3558 c.cm. (mean for 1923 men).

A comparison of these figures shows what a great reserve respiratory power we have, and explains with what ease respiration may be carried on with a large proportion of the respiratory tract functionless. Our extreme capacity is 3558 c.cm.; in an ordinary exchange it is from 114 c.cm. at rest, to 360 c.cm. in exercise, therefore the extreme capacity is equal to at least ten times the quantity of ordinary exchange. Pathologically we recognize that with one lung entirely disabled by pleuritic effusion and the capacity of the other lung greatly diminished by displacement of the mediastinal septum, the respiratory exchange is still ample to sustain life. These physiologic and pathologic facts prove that with our surgical technic sufficiently advanced an entire lung may be removed, as the body can dispense with it.

The respiratory metabolism does not appear to be affected by the frequency of respiration except, as Pfüger has shown, to the extent of the increased demand made by the simple action of the respiratory muscles. The mean carbon dioxide elimination at seven respirations per minute in fifteen minutes is 7.836 grams, while in the same individual at sixty respirations per minute it is 7.868 grams. The conclusion therefore is, that the respiratory activity is determined by the needs of the tissues and not by the amount of oxygen carried to the blood. The temperature of the inspired air in man is raised to that of the body before it reaches the smaller bronchi. The volume of expired air is 1/50 less than the inspired. The volume of oxygen in arterial blood in the dog was found to be 22 per cent. The volume of carbon dioxide in the blood varies greatly but is usually only about 1/5 or 30 volumes per cent. of what it is capable of holding when shaken in pure carbon dioxide, which is 150 volumes per cent. The proportion of oxygen in venous blood as compared with arterial blood is 5.43 per cent. in venous to 20.75 per cent. in arterial; carbon dioxide 61.8 per cent. in venous; 47.33 per cent. in arterial. The blood will not absorb an excess quantity of oxygen, no matter how great its excess in the air inhaled. The union is a loose chemic combination between the oxygen and certain constituents of the blood, principally the erythrocytes.²⁸ The hemoglobin in these erythrocytes is the absorbing element.²⁹ Nitrogen is merely held in solution. Carbon dioxide is held in chemic combination with the pigment of the red cells and the alkalies of the serum; and is also loosely dissolved in the blood. The proportion of loose to firm is as 2 to 3.5 (Prior). The alkalies of the blood are the most important constituents for holding in solution the carbon dioxide. The blood corpuscles contain about one-third of the total carbon dioxide held in the blood. The red cells contain 10 volumes and the white 2.5 volumes in 100 volumes of blood.³⁰

Causes of exchange of gases.—At a temperature of 0 and a pressure of 760 mm.: The air inspired contains 20.96 volumes per cent. oxygen; the air expired contains 16.00 volumes per cent. oxygen; the air inspired contains 0.03 volumes per cent. carbon dioxide; the air expired contains 4.00 volumes per cent. carbon dioxide; the air inspired and expired contains about the same volume per cent. of nitrogen, 79.01.

Experiments have not accurately demonstrated the cause of the exchange of gases in the lung. It is the

²⁶ Hutchinson: Thorax, Todd's Cyc. of Anat. and Phys., Vol. iv, 1067.

²⁷ H. Davy: Researches Concerning Nitrous Oxid, London, 1800, p. 899

²⁸ Liebig: Ann. d. Chem. u. Pharm., 1851, Bd. lxxix, s. 112.

²⁹ Pfüger: Arch. f. d. ges. Phys., Bonn, 1868, Bd. i, s. 73.

³⁰ Setchelow: Cent. f. med. Wissenschaft., Berlin, 1877.

accepted provisional theory that the exchange of gases between the blood and the air in the lungs is effected by physical and chemic means, the most important of which is diffusion.³¹ The surface through which this diffusion takes place is 90 square meters, and through this there are diffused 300 c.c. of carbon dioxide and about the same quantity of oxygen per minute in ordinary respiration. The velocity of diffusion is proportionate to the density of the gas; therefore the velocity of carbon dioxide is about twenty times greater than that of oxygen (Zuntz). The question which concerns the surgeon in this relation is how much of the 90 square meters of this surface can be dis-

produce the free ingress and egress of air to the functioning portion and thus does not cause sufficient respiratory exchange.

The internal respiratory exchange, the exchange of gases from blood to tissue, is due to the action of the cells themselves, the tissues having great affinity for oxygen, which they even store up for future oxidation. They are constantly producing carbon dioxide, this can only continue for a limited period of time in the absence of oxygen. The various tensions of gases in the different fluids of the body bear an important relation to their exchange.

(To be continued.)

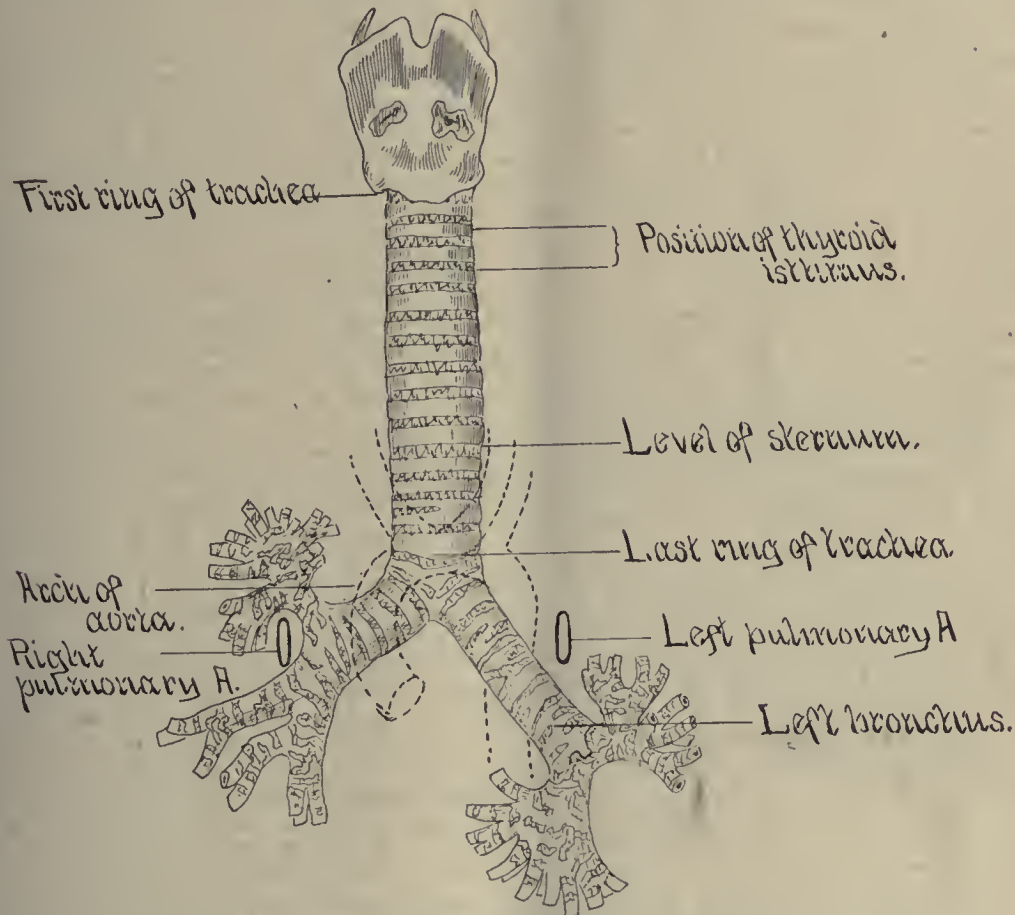


Fig. 19.—From Morris' Anatomy, showing relation of arch of aorta to trachea and bronchi.

persed with suddenly and how much can be dispensed with slowly, the former by amputation or compression of the lung and the latter by disease processes? Clinical experience shows that one lung may be suddenly rendered entirely functionless without materially embarrassing respiration, as in pneumothorax and in hemothorax, and as I have demonstrated experimentally and therapeutically by nitrogen gas injections into the pleura. We find pathologically that one entire lung and a considerable part of the other may be rendered functionless by diseased conditions before the apnea becomes marked and distressing. The difficulty in respiration in the latter stages of tuberculosis is due to two causes: 1, to the diminution of the pulmonary tissue capable of performing its function; and 2, the principal one, to the restriction of the respiratory motions of the chest produced by the adhesions and the consolidation and cicatrization of the diseased portion of the lung. This defective motion does not

DIABETES MELLITUS AT THE MASSACHUSETTS GENERAL HOSPITAL FROM 1824 TO 1898. A STUDY OF THE MEDICAL RECORDS.

Presented to the Section on Practice of Medicine, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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The examination of the records of the cases of saccharine diabetes treated in the wards of the Massachusetts General Hospital during the past seventy-four years was begun for the purpose of seeking evidence with regard to the pancreatic origin of this disease. (See *Yale Medical Journal*, 1898, iv, 275.) Since several hundred volumes were to be searched it seemed desirable to obtain at the same time information upon other points which might contribute to the

³¹ Text-book of Physiol., E. A. Schaefer, London, 1898.

statistics of diabetes. Facts of interest in diagnosis and treatment were elicited as the study progressed and this paper is offered rather as a historical sketch of the progress of a disease drawn from the original records than as an attempt to advance in any way our knowledge of the subject. Since diabetes mellitus was first sharply differentiated from diabetes insipidus early in the present century, the hospital records may be considered to be nearly as old as is our knowledge of the disease in question.

During these seventy-four years the total number of cases of diabetes mellitus treated in the medical wards was 172, but of these, 9 were readmitted, making 181 separate entries. The following table shows the variation in the number of such patients during successive periods of years and their proportion to the total number of cases treated during the same periods.

Period.	Total number of patients.	Number of cases of diabetes.	Per cent.
From 1824 to 1840	5,828	7	.13
From 1840 to 1855	4,138	15	.26
From 1855 to 1870	3,660	24	.27
From 1870 to 1885	11,690	39	.33
From 1885 to 1898	16,085	86	.53

It appears from this table that within the past thirteen years as many cases of diabetes were admitted to the hospital as in the previous sixty-one years and the per cent. in the past thirteen years in proportion to the total number of hospital entries has increased fourfold over that of the first fifteen years. This fact is not due to any recent increase in the number of beds open to this class of patients, nor, presumably to any considerable excess in the frequency of this disease in the region from which the hospital receives its patients. Whatever may be its cause this occurrence is to be regarded as evidence of the wholesome tendency of diabetics to place themselves under careful medical supervision for such length of time as shall permit suitable observations to determine the severity and controllability of the disease, that the future conduct of the patient may accordingly be regulated.

Of the 172 cases, 127 (or disregarding fractions, 74 per cent.) were males and 45 (or 26 per cent.) were females. The oldest patient was 73 years of age and the youngest 5 years, the average age of 161 patients being 33.4 years. The average age among 40 female patients was 39.1 years, being higher than that in 121 males in whom it was 31.4 years. The following table represents the time of life at which the disease began.

Age.	Number of cases.	Per cent.
From 0 to 10 years	3	1.8
From 10 to 20 years	15	8.8
From 20 to 30 years	41	24.1
From 30 to 40 years	43	25.3
From 40 to 50 years	29	17.1
From 50 to 60 years	28	16.5
From 60 to 70 years	11	6.4

Diabetes thus is shown to be a disease predominantly affecting the middle third of life, though sparing neither the child of five nor the senior of seventy-three.

But one of the patients was a negro, a further illustration of the rarity of diabetes in this race, although Tyson (*Practice of Medicine*, 1896, 751) has met with several instances. Ninety-seven of the patients lived in the United States, and 83 claimed this country as

their birthplace. Thirty-nine of the patients were born in Ireland, 11 in the British Provinces, 9 in England, 4 in Scotland, 7 in Germany, 2 in Sweden and 1 in Denmark. Forty-three of the patients were mechanics, 23 servants, 17 laborers and 13 farmers. Of merchants there were 5, and of clerks 7. There were 5 mariners and 4 teamsters. Although four of the patients were students there were but two professions represented, a clergyman and an artist being included among the entries. There were single or a few representatives of several other occupations, and conspicuous for its absence was that of liquor dealer.

In 42 cases the question of an inherited tendency to the disease was raised and this factor was stated to have been present in 10 patients and absent in 32. In one case the father died of possible diabetes and this disease was the cause of the death of a brother and his daughter. The brother of one diabetic patient fell upon the ice, striking his head and died of diabetes four days later. In three of the cases the symptoms of diabetes came on within a few weeks after severe injury.

One of these patients while working in a mill in July so strained his back by lifting a heavy weight that he was unable to accomplish much afterward on account of supposed weakness of the spine. In August the appetite became increased and in December he entered the hospital for treatment of diabetes. The second was buried in a sand bank three months before entrance and was taken out unconscious. Six weeks later thirst made its appearance as the first symptom indicative of the onset of the diabetes. The third fell fourteen feet and struck on the back of the head. He was unable to work for a fortnight. Very soon afterward he began to have great thirst, hunger, and frequent micturition of large quantities of urine. The disease began in a female patient one month after very hard work in caring for a sick sister. The possibility of contagion was entertained in the case of a servant whose mistress was suffering from a severe variety of diabetes.

Post-mortem examinations were made in 15 of the 47 fatal cases. As is usual in this disease no characteristic lesions were found. The liver generally was normal in appearance although sometimes enlarged and in one instance it was rather small. The kidneys as a rule were normal, were enlarged in one instance, congested and with fat drops in the cortex in another, enlarged and hemorrhagic in a third, enlarged and infiltrated with round cells in a fourth. The stomach was large in two cases and Brunner's glands were found "developed" in a case under the care of Henry I. Bowditch in 1848. The condition of the pancreas was not mentioned in seven of the cases. This gland was stated to be normal in five and small in three instances. In one of the three its tissues were not remarkable, in another there was a moderate infiltration of fat tissue around the head of the gland, and in the third the weight was recorded as an ounce and a half, the section showing a coarsely granular surface.

No attempt has been made to note the relative frequency and the severity of the various symptoms. Particular attention has been paid, however, to the records of the condition of the urine, since they furnish a valuable commentary of the progress of our knowledge concerning the methods of studying this secretion.

In the earliest volumes of the records especial importance was attached to the measurements of the

quantity of urine passed as compared with the quantity of liquids ingested, since formerly it was the belief that patients excreted more urine than they drank liquid. As an illustration the following table is copied from the record of a case.

TREATED IN 1861.

Date.	Water drank—Pints.	Urine voided —Pints.	Specific gravity.
April 28.	7½	23	1030
April 29.	4½	9+	1030
April 30.	4	11	1034
May 1.	3	8	1038
May 2.	4	9	?
May 3.	4	10	1027
May 4.	4½	10	1025
May 5.	About 4½	5	1025
May 6.	About 6	10	1027
May 7.	About 7½	11	1025
May 8.	Out of house.	6	1025
May 9.	Out of house, 5.	9	1030
May 10.	Not known.	6	1030
May 11.	Not recorded, patient went frequently to stool.	..	..
May 12.	6½	10	1038
May 13.	4½	10	1027
May 14.	7	11	1025
May 15.	7	10	1024
May 16.	6½	10	..
May 17.	6, bread out.	10	1027
May 18.	7	10	1030
May 19.	8	10	1030
May 20.	7	12	1030
May 21.	8½	14	1031
May 22.	8	18	1031
May 23.	7½	14	1033
May 24.	10	17	1031
May 25.	7, bread renewed.	16	..
May 26.	5½	16	1031
May 27.	14	15	1031
May 28.	..	16	1033
May 29.	8	16	1034
May 30.	..	10	1032
May 31.	6½	10	1032
June 1.	7½	12	1030
June 2.	6½	9	1031
June 3.	7	12	1030
June 4.	7½	9	1030
June 5.	..	11	1030
June 6.	6½	12	1025
June 7.	7½	12	1026
June 8.	..	10	1023
June 9.	9	14	1022
June 10.	..	18	1022
June 11.	11	18	1020
June 12.	11	18	1020
June 13.	Out of the house.	..	1021

vard Medical School and of the Massachusetts General Hospital, seriously asserted that "it is perfectly well known that a person passes more urine than he drinks fluids." Such a view is based probably upon a mis-interpretation of the physiologic teaching that more fluid is eliminated from the body in respiration and in secretion from the various glands than is taken in as liquid. In this connection it is interesting to note that a metabolism experiment in diabetes was made at the hospital in 1845. For it is then recorded that "in the last twenty-four hours ingesta were, solid 30 oz., liquid 54 oz. Total 84 oz. Egesta were, solid 8 oz., liquid 26 oz. Total 34 oz. Difference 50 oz."

The largest quantity of urine stated to have been voided in twenty-four hours was 576 ounces. The record of this patient is, "June 26, 1861, urinated thirty-six times; voided thirty-six pints. . . . It contained 3 per cent. of sugar, corresponding to 227 grains in one pint." Only six of 166 patients passed over 300 ounces in one day. The highest sp. gravity recorded is 1054, although repeatedly it was found above 1045. The highest percentage of sugar mentioned was 12.5 per cent. In many instances there was present between 9 and 10 per cent. of sugar.

The finding of sugar in the urine was determined in the first instance until 1851 by means of the taste. The physician in charge sometimes called upon the house physician to apply this test, although a positive statement to this effect is found only in 1844 and again in 1845. It is probable, however, that the patient was occasionally called upon to use this method, for in 1831 the statement appears, "on tasting, as directed to do by the physician . . . it was found sweet." This patient is credited also with the ability to make quantitative determinations in this way, for "he observed, however, that if he relapsed at any time, even in a very slight degree from a rigid animal diet, the urine was increased correspondingly in sweetness and quantity." In another instance it is stated that the urine is "less sweet after eggs." In general the patient at the time of entrance was able to make such positive statements as made apparent the condition of the urine. One "reports urine sometimes natural, at others sweet." It had the "sweetest taste," or was "sweetest to the taste." The urine had a "saccharine smell and taste," or presented a "sugary appearance on the shirt," or the "urine upon cloth leaves sticky and sparkling deposit." The intelligence of the lower animals sometimes aided in the diagnosis, for of one patient's urine it is stated that "flies gathered upon places moistened by it." Such everyday methods of diagnosis are still in use, for it is but recently that an office patient stated of her diabetic mother that her "clothes would rattle like starch, so sugary was the water, like brine on the floor."

These rude methods of testing the saccharine condition of the urine were supplemented in 1827 by evaporating the specimen. It is recorded "urine yesterday sixteen ounces, . . . seven ounces this morning, . . . sixteen being boiled about two remains (*sic*), resembling molasses, of saccharine smell and taste." In the following year, "urine seven pints, natural appearance, without sediment, not giving syrup on evaporation." It is stated also that eight ounces of urine yielded one ounce of syrup, and at the end of the record of the autopsy of a fatal case it appears that specimens of the saccharin matter and of the nitrate of urea prepared from the urine on dif-

It is noted, for instance, in Vol. i, that a patient with diabetes simplex from Dec. 2 to Dec. 11, 1821, ingested forty-five pints and seven gills, but excreted forty-five pints and four gills. The first patient who is recorded to have had diabetes mellitus entered the hospital in 1824, and during the first three days of his stay is credited with drinking twenty and one-half pints of fluid, and is charged with passing twenty-five pints of urine.

This doctrine of an excess of outgo of urine over income of fluids appears in 1847 in Watson's Practice of Physic (3d American Edition, p. 869) as a statement that the "quantity of urine secreted and voided is sometimes enormous, far more than could be supplied by the quantity of fluid taken as a drink."

Twenty years later, Harley in his work on diabetes says (p. 50), "diabetic patients generally pass more liquid than they take, about one-fifth or one-fourth more."

Lauder Brunton in 1879 (Reynold's System of Medicine, 1879, p. 387) opposes this view in the following words: "It has been said that the quantity of urine excreted by the patients is greater than that of their beverages, but this can hardly be the case, and the observations which seem to support this view have probably been made for too short a time, the apparent excess being most likely derived from water lodged in the system."

The difficulty of eradicating this erroneous idea is indicated by the fact that a recent graduate of the Har-

ferent days by Dr. Chas. T. Jackson will be found in the cabinet of the Soc. for Medical Improvement, Nos. 566 and 567.

In 1833 we learn that "one quart of urine boiled to the consistency of thick molasses weighed two and one-half ounces. On the 12th the same quantity boiled as before weighed three ounces." This method was still in vogue in 1842 for "two ounces carefully evaporated gave about a drachm of clear extract of the color and consistency of treacle," and four years later the evaporating method still was employed.

In 1841 Trommer's test was made known (*Annal. der Chemie und Pharmacie*, 1841, xxxix, 360) and in 1842 the hospital records state that the "urine was unaffected by heat, nitric acid or aqua potassa." In this year the fermentation test also was first employed.

In 1846 the following letter from Dr. John Bacon, Jr., is entered in the records, and shows the results of his investigations for the purpose of determining the nature of the sugar to be found in diabetic urine. It seems worthy of reproduction as an illustration of the scientific methods employed even fifty years ago in the investigation of disease.

BOSTON, May 12, 1846.

DR. J. B. S. JACKSON.

Dear Sir:—The microscopic examination which I have made at your request, of the sugar from diabetic urine has afforded some results worthy of mention. The specimens of saccharine urine placed in my hands were from two diabetic patients now in the hospital. My first attempt was to obtain the sugar in a crystallized state by the evaporation of successive portions of the urine on slips of glass, both spontaneously and by the aid of a gentle heat. But the results obtained in this way were unsatisfactory from the difficulty with which this variety of sugar crystallizes, and the following process was substituted. The urine was evaporated over a salt water bath, to the consistency of a thick syrup, and drops of this, spread very thinly on slips of glass, were left to spontaneous evaporation. In the course of a few days the liquid disappeared, leaving on the glass little hemispherical grains of a white color (none of them as large as the head of a pin), either isolated or collected into mammillated crusts. With the urine of the male patient, Pettigrew, two or three days were sufficient for this purpose; that of the female patient, Gould, which appeared to contain less sugar in proportion to the other constituents, required more than a week's exposure.

The objects thus procured were prepared for the microscope by covering them with Canada balsam. Being now examined with moderate powers, each little grain resolved itself into a compact group of fibers radiating from a central point, many of their ends projected beyond the mass, but exhibited no distinct crystalline faces. This radiated structure, with a fine silky lustre, becomes distinctly visible to the naked eye in the larger grains, when they are covered with the balsam. The aid of the polarizing attachment to the microscope was now called in to decide the question as to the crystalline structure of the grains, when the rich and varied colors exhibited in the polarized light left no doubt of their really being groups of radiating acicular crystals. Among these masses of sugar there were noticed a few groups of more distinct crystal, not arranged like them in a stellate manner, and presenting entirely different appearances in polarized light. These are doubtless some of the saline constituents of the urine. As diabetic sugar is classed with that variety, to which from its abundance in the juice of ripe grapes the name of grape sugar is given, it became of interest to compare the appearance of the two under the microscope. Grape sugar is present in large quantity in honey, and is the variety formed from starch or from cane sugar by long continued boiling with dilute sulphuric acid. This variety is entirely distinct in its character from the common or cane sugar. A portion was prepared from honey and dissolved in alcohol, the solution, evaporated to a syrup and prepared for the microscope in the same manner as the diabetic urine, crystallized in groups of radiating fibers like the diabetic sugar, and presented similar appearances under the microscope, both with and without the polarizing attachment. An alcoholic solution of the diabetic sugar was also prepared, which crystallized in the same manner; a similar solution of cane sugar afforded no radiated groups,

but distinct prismatic crystals which gave fine colored rings in polarized light. Under the microscope the urine of both patients (before evaporation) is seen to contain great numbers of colorless globules, often connected in chains or groups of half a dozen or more. I made a cursory examination for urea, by evaporating an ounce of the urine from each patient to one quarter and adding an equal volume of nitric acid. Pearly crystalline plates of nitrate of urea soon made their appearance in both, showing urea to be present in considerable amount, but the quantity of urine operated upon was too small to allow of a correct determination of the amount.

Yours respectfully, JOHN BACON, JR.

Although Moore's test had been made known in 1844, the first mention of its use in the hospital was in 1851, when the following record appears "glucose strongly marked on the addition of heat and liquor potassæ."

In 1852 Dr. Bacon determined, by what means it is not stated, that the per cent. of sugar in a given urine was 4 per cent. and two years later the fermentation method was employed for ascertaining the percentage.

The breath of diabetic patients first attracted attention in 1835, when a man entered the hospital with a note from his physician stating that it had a "peculiar sour smell." The observation made of this patient while in the hospital was of "a curious smell in breath which he has had since entrance." In three cases the breath is stated to have the odor of new milk. In 1846 it is noted of one of these "odor of breath considered by some of aromatic sweetness." Other expressions are in 1846 "odor of boiled milk;" in 1848 "ward distinctly tainted with sweet peculiar to diabetes," "fruity odor;" in 1869 "sweet chloroform-like smell in neighborhood of patient's bed."

That the acetone odor of the breath then was attracting general attention is apparent in 1847 from the statement made in *Watson's Practice* (op. cit. p. 868) that "according to Dr. Prout the scent somewhat resembles that of sweet hay, but to my nose it is more like the smell of certain apples or rather of an apple chamber." He attributes the peculiar odor to the sugar. In 1866 in *Harley on Diabetes* (op. cit.) there is no mention of acetone or of diacetic acid, although Petters (*Prager Vierteljahrsch.* 1857, iv) several years before had attributed the coma of diabetes to the former agent.

Acetone was sought for in the breath of 19 cases, and in the urine of 24 cases. Its presence was indicated by the odor in 16 of the former, and by chemical tests in 14 of the latter series. It is interesting to note in connection with the result of recent investigations on the increase of acetone in consequence of a change to an absolute proteid diet, that the records state in 1894 that the "acetone smell has been more since disappearance of sugar than at any other time." Ten days later, however, without any change in diet there had been no return of sugar and no smell to the breath.

The ferric chlorid reaction, which, when positive, is considered generally to be evidence of the presence of diacetic acid, was sought for in 22 cases and found in 13. Albuminuria was present in the urine in 67 cases and was absent in 60 cases. Casts were found in 36 cases.

In four instances only is there a record of the examination of the feces. In 1844 a patient reported that his "food frequently passes away in lumps undigested" and fat is reported as absent in the stools of three patients.

In six cases there was tinnitus aurium and two patients had sciatica. Sexual power is noted as absent

in 9 cases and present in 4. The catamenia were present in 11 cases and absent in 9. Jaundice is mentioned to have occurred in five cases, and three of these patients died in the hospital, one of pneumonia and one of atrophied pancreas. Syphilis is stated to have existed in one case. Diabetes and myxedema coexisted in one patient and in another diabetic there was a tumor of the thyroid body. Three of the patients suffered from gangrene of the toe, a fourth had a gangrenous slough of the tissues of the leg, and a fifth died with a carbuncular-like inflammation of the thigh. Three of the patients had abscesses, one being of the hip, another of the wrist, both cases ending fatally. The third abscess was of the jaw, but the patient grew better. In one case there was a round ulcer of the toe, which improved under treatment.

The records afford some evidence concerning the duration of the disease, which in one case is stated to have existed for twelve years, while three patients had suffered but two weeks. Of the latter, one died, one was relieved and one unrelieved. The average duration was one year and a half.

The length of the illness in the fatal cases is indicated in the following table:

DURATION.	NUMBER OF CASES.
From 0 to 1 year	27
From 1 to 2 years	7
From 2 to 3 years	3
From 3 to 4 years	1
From 4 to 5 years	0
From 5 to 6 years	1
From 6 to 7 years	1
Unknown	7
	47

These cases, necessarily those of grave diabetes, thus ended fatally in nearly three-fourths of the number in which this point could be determined within one year after the disease made itself manifest, and within two years in nearly seven-eighths of the entire series. That diabetes may prove fatal at the end of a longer period of time, from 6 to 7 years as in one instance, is attributable to the well known fact that cases of mild diabetes may become suddenly severe, and that the symptoms of this disease may for a while disappear to return at a later period. An illustration of the latter condition, one which may be called recurrent diabetes, is to be found in the record of a patient who was in the hospital in 1862. In March, 1861, he suffered from cough with abundant yellow expectoration. In the latter part of the month the thirst increased and became excessive; the patient drank freely and passed large quantities of pale urine. The appetite failed and there was progressive debility. At the end of four months the quantity of urine became normal. The patient remained apparently well until the following February, when excessive thirst, polyuria and debility returned, and it was observed that the urine left a sticky and sparkling deposit on cloth. Another instance of recurrence is noted in 1866. Two years previous to the entrance of this patient he observed that an abnormally large quantity of urine was being passed in the twenty-four hours and that the thirst was excessive. These and other symptoms continued for three months and then disappeared without treatment. At the end of eighteen months, however, they returned, accompanied by general weakness and faintness. It is recorded that the house physician tasted the urine of this patient.

Of the 172 patients 47 or 27 per cent. died. The mortality among the 127 male patients was 39 or 30.7 per cent.; of the 45 female patients 8 died, a mortality of 17.7 per cent. The death rate among the males

thus proved nearly twice as high as among the females. The following table illustrates the variation in the rate of mortality during successive periods of years.

Period.	No. of cases.	No. of deaths.	Percentage of deaths.
From 1824 to 1840	7	1	14
From 1840 to 1855	16	7	44
From 1855 to 1870	24	5	20
From 1870 to 1885	39	11	28
From 1885 to 1898	86	23	27
	—	—	—
From 1824 to 1898	172	47	27

It has previously been remarked that from 1824 to 1885 there were treated 86 cases, the same number of cases as in the period from 1885 to 1898. It is certainly noteworthy that in each of these intervals there was an average of 27 per cent. of fatal cases, which again was the average mortality rate of the cases treated throughout the entire period from 1824 to 1898. It might be thought from the inspection of this table that the method of treatment was superior from 1824 to 1840 and from 1855 to 1870 and that in the intervening years it was inferior. The information on this point later given affords no justification for such an inference.

Although it appears from the study of the records that most cases of grave diabetes die within a year or two of the onset of the disease and that 27 per cent. of all cases are fatal, some evidence has been obtained with regard to the prognosis in the individual case. Heredity appears to have less importance than is usually assigned to it. Of ten cases in which heredity may have been of etiologic significance three died, while of thirty-two cases in which heredity had no influence eight died. Thus the percentage of deaths was merely a trifle higher in those cases in which an inherited tendency to diabetes may have played a part than in those in which no such influence existed.

The time of life at which the patient suffers from the disease appears to be of greater prognostic importance, as may be inferred from the following table:

Age.	No. of Cases.	Deaths.	Per cent.
From 0 to 10 years	3	1	33
From 10 to 20 years	15	3	20
From 20 to 30 years	41	14	34
From 30 to 40 years	43	13	30
From 40 to 50 years	29	4	14
From 50 to 60 years	28	5	18
From 60 to 70 years	11	5	45
	—	—	—
	170	45	

Thus about one-third of the patients suffering from diabetes during the first ten years of life and between the ages of 20 and 40 years die, and nearly one-half of the cases between 60 and 70 years prove fatal. The number of cases of diabetes in young children, however, is so small as not to be of much value in generalizing. The high rate of mortality after the age of 60 is due, possibly, only indirectly to the diabetes, the patients perhaps being unable to resist the effects of other disease, even if mild, in the presence of so grave an affection.

Thirty-eight of the 47 fatal cases died comatose, the coma lasting one day in 10 cases, two days in 14 and three days in 5 patients. In the remaining 9 cases the duration of the coma was not to be determined. The frequency of the coma in relation to the age of the patient is indicated in the following table:

Age.	No. of cases.	Deaths from coma.	Per cent.
From 0 to 10 years.	8	1	33
From 10 to 20 years.	15	3	20
From 20 to 30 years.	41	12	29
From 30 to 40 years.	43	9	21
From 40 to 50 years.	29	3	10
From 50 to 60 years.	28	4	14
From 60 to 70 years.	11	3	27

The suddenness of its onset in certain instances is apparent from the record of a patient in 1828 who was able to leave the hospital for a few hours, at the end of which he became comatose and died. In 1846 another patient absented himself from the hospital without leave and became intoxicated; two days later he was comatose and died at the end of another two days. On the other hand, a third patient while in the hospital became intoxicated, had no coma and lived.

It is to be observed that of twenty fatal cases of diabetes there was present chronic nephritis in six, pulmonary tuberculosis and carbuncle or gangrene each in three, myocarditis in two and pneumonia, pleurisy, cerebral thrombosis, alveolar abscess and atrophied pancreas each in one. A patient with diabetes suffered at the same time from acute catarrhal cholangitis, acute rheumatism and chronic bronchitis.

The study of the records of these cases affords some evidence relating to the prognostic value of the presence of acetone and diacetic acid. Although the odor of acetone was present in the breath of 12 out of 14 fatal cases, that is, in more than 85 per cent., and in the urine of 6 out of 9 fatal cases, namely 66 per cent., in which the records show that attention was directed to this point, it was present also in the breath of 4 out of 5 non-fatal cases, 80 per cent., and in the urine of 8 out of 15 non-fatal cases, 53 per cent. It is evident from this comparison that the presence of an acetone odor in the breath or in the urine throws but little light upon the severity or mildness of the disease.

The ferric chlorid reaction was present in 6 out of 8 fatal cases and in one-half of the 14 non-fatal cases in which it was sought for. This evidence, so far as it goes, therefore, is in support of the view that this reaction has a somewhat serious significance.

It is interesting to note that in the earliest days of the hospital the improvement of the patient's condition was based upon an increase in weight.

It is to be remembered that John Rollo (Notes of a Diabetic Case, 1897) first ascertained that an animal diet not only decreased the quantity of urine, but also diminished the amount of sugar. The diet, therefore, from 1824 to 1840 was based evidently upon this discovery and the first diabetic patient in the hospital was fed on "animal food and bread in small quantities. Only one potato (*sic*) at dinner." Later molasses, beer and apples were excluded from his diet. In 1827 a patient's fare consisted of two eggs, at a meal, meat, milk, butter and salt. Such a diet, however, was not exclusive, for mention is made that vegetable food and sugar were not to be taken, but rice and milk porridge were allowed. Toast water and broth were permitted, and crackers were given instead of bread. Thirst was quenched with chamomile tea or balm tea, and lemons also served for this purpose.

The unlimited use of liquids was not permitted, for one patient was allowed only a "teacup of liquid at meals." Another was given, "balm tea as little as will suffice," and it is stated of a third that he "thinks he has not drank all his allowance."

The first treatment the first patient received was a warm bath, and as the quantity of urine appeared to be less after the bath had been taken it was ordered to be repeated every other day. Warm salt baths also were used.

The advantages of exercise were appreciated at an early period, for one patient in 1831 was advised to ride horseback, and another was recommended to take as much exercise as his strength would permit.

Alcohol was given as early as 1828, when the physician in charge ordered, "let her take some brandy and water, taking one teaspoonful of brandy in hot or cold water, repeating it once in 3 or 4 hours if the effects are grateful." There is nothing in the record to show that its action was displeasing to the patient. The recent investigations of von Noorden ("Die Zuckerkrankheit und Ihre Behandlung," 1895, 146), show that this treatment has a sound scientific basis since one gram of alcohol is the equivalent of seven calories, while the same quantity of proteids and carbohydrates is equivalent only to four calories.

This patient was treated also with opium and "by error took following in A. M.

R Infus. Sennæ Comp., ʒiij."

On the next day he "was uncomfortable in head with some depression of spirits." During this patient's stay in the hospital he was ordered powdered rhubarb and the infusion of rhubarb and magnesia; a trial was made also of uva ursi and of the sodium and potassium tartrate.

During the first fifteen years the treatment in general consisted of opium, either alone or with camphor and aloes. Cathartics were used liberally, and frequent mention is made of rhubarb, aloes, colocynth, senna, calomel, magnesium sulphate, castor oil and croton oil. Enemata were employed freely, some of them being especially designated "active." One patient who complained of nausea promptly received a dose of ipecac.

Among other drugs in use during this period were quinin and dilute nitric acid, the decoction of sumac and powdered guaiac.

Blisters and cupping often were used, and one patient "thinks opium and blisters have been followed by the greatest improvement." More severe counter-irritation was ordered sometimes, as appears from the record, "apply caustic issue on each side of the spine." In one case this application proved to be directly injurious.

During the period of high mortality, that is from 1840 to 1855, the following dietary is ordered: "Lean meat, with a small quantity of stale, dry or toasted bread, avoiding all fatty, farinaceous and saccharine articles. For drink, cold water and weak tea." The use of liquids continued to be restricted, although slippery elm tea now came into use. Alcohol was not given regularly, and blisters no longer were applied. Leeches appeared to serve in the place of the latter and of issues for it is recorded, "Leach (*sic*) bites now ulcerated."

Opium continued to be given, but not so largely as previous to 1840. Cathartics were prescribed with freedom, and the liberal use of calomel is suggested by the frequent records of spongy gums and myrrh mouth washes. Iron now was used in the form of the tincture of the chlorid or the carbonate. Other remedies employed were argentic nitrate, ammonium hydrosulphuret, ammonium carbonate, conium, hyoscyamus and valerian, aromatic sulphuric acid and

creosote. During this period the use of yeast was tried by McGregor (Watson's Practice, p. 872), who stated that it made the patients feel as if they were "on the eve of being blown up." A patient in the hospital was ordered to "take yeast 3ss. in milk *ter die*." This quantity was increased to an ounce daily and then was resumed and omitted at intervals during a month, the yeast being taken five-sixths of the time. The effect was not that mentioned by Watson, but a sense of constant nausea was the chief resulting complaint.

From 1855 to 1870 especial attention was paid to the selection of a suitable bread, and bran bread, stale bread, brown dyspepsia bread, toasted dyspepsia bread, ship biscuit and toasted ship bread were ordered. Butter, cabbage, cheese and greens were allowed, but shellfish and liver were excluded. Liquids at times were restricted, and cocoa was given somewhat frequently. Alcohol was ordered occasionally, and one patient, notwithstanding milk punch was prescribed *p. r. n.*, remained in the hospital but a single day, at the end of which he was discharged unrelieved. Opium was but little used, counter-irritants were discontinued and there was but little variety in the use of drugs. One patient received a half pint of iron rust water at dinner. To another in 1866 was given a half ounce of cod liver oil three times daily. As "she likes it and don't have enough," the dose was increased to three ounces three times daily. This maximum dose was reduced in consequence of the production of loose movements of the bowels.

From 1870 to 1885 gluten bread was used, but was discovered to contain 33 per cent. of starch. Patients were advised "to drink as little water as possible," but as much as four quarts of skim-milk were given daily. Opium and codeia were used frequently, but alcohol, blisters, baths and exercise were not advised as a part of the routine treatment. On the contrary, a large number of drugs were employed, including Fowler's solution, bromid of arsenic, antimony, bismuth, phosphate of zinc, phosphorus, bromid of potassium, iodid of potassium, sulphid of calcium, salicylate of sodium, hydrochloric acid, lactic acid, gallic acid, pilocarpin, chloral, ergot, pepsin, Wilbur's oil and Shaw's pill. One patient received what was called the glycerin treatment, instituted by Schultzen (Naunyn, "Der Diabetes Mellitus," 1898, 405). On the day after his admission he was given thirty-three ounces of glycerin and died comatose on the same day. The coma was accompanied by spasms, to relieve which ether was given, but the house physician apparently feared that the death might be attributed to the effects of the ether.

In the period since 1885, Soya bean bread has been added to the dietary, and fats are used with freedom. The use of water is frequently, by no means always, restricted, and the use of skim-milk gradually has lessened. Alcohol, baths and exercise, are not made matters of routine. Opium and codeia are more often used than before, and trials have been made with potassium citrate, lithium carbonate, jambul, salol, salicin, antipyrin and urethan. Saccharin occasionally is used. Up to this period comatose patients had been treated solely with stimulants and diuretics, and brandy, nitroglycerin and oxygen were given frequently at the onset of coma. The use of solutions of sodium chlorid or sodium bicarbonate in enema, subcutaneous injection or by transfusion was begun and eight

patients were thus treated. Although these patients died, as had those otherwise treated, it appears from the records that in certain instances life was somewhat prolonged. The patient's mind usually became clearer after the administration of the saline, and one person was aroused to such a degree that he is recorded to have said, "Oh! doctor, I'm glad you did that; I have not felt so well for a long time."

The practical outcome of this examination of the records of cases of diabetes treated at the Massachusetts General Hospital during the past seventy-four years can be stated in a very few words. The average mortality of saccharin diabetes has not changed materially, for it was the same in the past thirteen years as in the previous sixty-one years. The dietetic restrictions have undergone no essential alteration in this time. Opium is the only drug which has been persistently used in the treatment throughout this entire period.

DISCUSSION.

Dr. WEST—I have been much interested in the résumé of the large number of cases referred to by the reader of the paper. There were several points that struck me during the reading of the paper which I do not wish to discuss so much as to make inquiry about. First in regard to race. I notice the doctor said that no cases occurred among the negro race (Dr. Joslin: one case reported.) The small proportion might be due to the small proportion of negroes in that country. So far as my observation goes, living as I do in a country where there is a large proportion of these people, I never saw a case of diabetes in the negro race.

I would like to inquire too about the statistics in regard to the occurrence of diabetes among the Hebrew race.

The cases of diabetes that I have had in my practice have occurred in persons who were fleshy.

In regard to diabetes occurring as a complication of gout I have found in my experience gout and diabetes frequently associated.

Another point that I would like to inquire about is the rapidity of the fatal results in the cases of the young. Diabetes pursues a rapid course in the young persons, more than in the older. I noticed that albuminuria was found in about 60 per cent. of cases and yet the autopsy failed to show any kidney lesion. That seems to me remarkable. I should like to inquire also in what proportion of the cases was diabetes of cerebral origin.

Dr. TYSON—There is only one point I can treat which relates to the question of diabetes occurring in negroes. About three years ago I gave a clinical lecture and I made the statement that I had never seen a case of diabetes in a negro. There happened to be present a negro physician who had a large practice among negroes, and in the course of a few days I had three negroes referred to me with this trouble. I think, therefore, it is not unlikely that diabetes is more common in the negro race than it is supposed to be. My experience at that particular time satisfied me as to that fact. I have been interested in diabetes occurring in young children. Many cases occur in young children, but I can not find an explanation why. Diabetes is much more common among the Hebrew race than among Christians. It is also a much more common disease in males than in women.

Dr. BOND—I would suggest that the Hebrew race probably have this disease more than any other people on account of their love of high living. It is a well known fact that they eat largely of such foods that are irritating more than any other class of people. They are given to parties, they congregate together and have frequent and irregular meals. I believe it is from that fact that they have this disease more than any other people.

Dr. STOCKTON of Buffalo—I rise to call attention to the historic value of the paper. I think this paper is a very useful illustration of the principle expounded this morning in the general address in medicine by Dr. Musser.

Dr. JOSLIN—In reading my paper much was necessarily omitted on account of lack of time. The printed article will contain answers to the preceding questions.

THE USE OF IRON AND OPIUM IN BRIGHT'S DISEASE.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY JAMES TYSON, M.D.

PHILADELPHIA, PA.

For some time I have been rather anxious for an opportunity to relieve myself on the subject of the administration of iron in the treatment of Bright's disease, the more especially as I feel somewhat responsible for the present, as I regard it vicious practice of indiscriminate prescription of this drug in the disease referred to: for I am one of those who in times past have taught that iron is a remedy indicated in almost every case of Bright's disease. Thus on page 138 of my book on Bright's Disease published 17 years ago, I say, "It may be laid down as a rule to which there are few exceptions, that the *continuous* use of some one of the preparations of iron is indicated," the word continuous being underscored in the original. Again on page 186, in speaking of the treatment of chronic interstitial nephritis, I say of drugs, "Iron is perhaps the most important and indispensable and may be given in the shape of the acetate or the well known Basham's mixture." I have learned since writing the above that there is a good deal of mischief done by iron in Bright's disease, and I am not sure that it would not have been better for many patients if the gallons of Basham's mixture which have been prescribed since Dickinson first suggested it over 25 years ago, had been poured into the street gutter rather than into the stomachs of the patients it was intended to benefit. It is an interesting fact confirming the statement already made that scarcely a patient ever comes to me in consultation or is sent from another physician who has not been taking Basham's mixture, and it is further confirmation that in a very large number of these cases it is given under the impression that it has some specific effect toward curing Bright's disease. It is needless to say that it was never suggested for any directly curative purpose, but simply as a remedy for the anemia which is so conspicuous a symptom in many cases and for this purpose it still is and always will be useful.

But not every case of Bright's disease is anemic, and as iron has no specific curative effect it is clearly not indicated in non-anemic cases. Nay more, it is often harmful. It is harmful by locking up secretion and checking elimination already restricted by the diminished functional activity of the kidney. The direct results of this are seen in headache and head-throbbing, associated with constipation and coated tongue to which the patients themselves often call attention and which appear much earlier in these cases than in persons who have integral kidneys. In such cases Basham's mixture or iron in any form may even precipitate uremic symptoms.

While anemia as determined by the appearance of the patient and more accurately by a blood count and hemoglobin measurement is the only indication for the use of iron, it is possible also to indicate in a general way the class of cases in which iron may or may not be useful. Thus it may be laid down as a rule to which there is almost no exception that iron is not indicated, and should not be prescribed in cases of acute Bright's disease. Iron is at best a remedy of slow operation so far as good effect is concerned, while

it is rapid in producing its harmful influence whatever that may be. In acute Bright's disease there is not generally anemia and where there is, it is of secondary importance to more urgent symptoms. It is trespassing on nature therefore and embarrassing other more urgent treatment to give iron in acute nephritis. On the other hand, after the acute symptoms have passed away and convalescence sets in iron is often very useful.

A second class of cases in which iron is contraindicated and is more frequently harmful, is chronic interstitial nephritis. The association in this condition of more general total destruction of tubular epithelium with restricted elimination goes to show that it is not unlikely that in parenchymatous nephritis acute and chronic the renal cells are capable of a certain degree of function even though they be cloudy and swollen. At any rate it is in chronic interstitial nephritis that iron is more promptly and dangerously harmful than in any other form of Bright's disease. It does happen that in advanced stages of this affection there is sometimes extreme anemia and it would seem that under these circumstances it might be used. And under such circumstances if at all it may. But even in this, representing as it does, the last stages of the disease, in which a dilated heart is staggering under a load it can barely carry and in which a last straw may either cause it to stop beating or furnish the spark to ignite a fatal uremia the drug is of questionable value.

The form of Bright's disease in which iron is best borne is chronic parenchymatous nephritis. And as this is apt to be associated with more or less anemia it becomes a most valuable remedy in overcoming this symptom. Even here the doses given are usually needlessly large. I hold that wherever iron appears in the stools for whatever cause administered this unabsorbed portion is useless, and as it is this which acting as an astringent causes constipation it is not only wasted but harmful. My practice is to determine the proper dose by an examination of the stools and if these are decidedly blackened, I hold that I am giving too much. On the other hand a slight coloration may be permitted as indicating that a sufficient dose has been attained.

A further explanation of the general use of Basham's mixture is the very common impression that this preparation of iron is diuretic. I am inclined to believe that this is an error, or at any rate it is no more diuretic than the bulk of water which constitutes its menstruum. That some diuretic action may be expected from this source is rendered reasonable by the fact that Basham's mixture and in fact any preparation of iron is commonly freely diluted. The ingestion and absorption of so large a bulk of water may be reasonably expected, by the increased intra-vascular pressure which it excites, to produce increased secretion of urine.

As to the second of the drugs mentioned in the title of my paper, I believe the dangers of its use are more generally appreciated, and yet I am confident that many a life is sacrificed by the injudicious use of opium. I believe, therefore, that a word of warning can not be out of place. That we should endeavor to understand the conditions contraindicating the use of opium in Bright's disease is the more important, because there are certain states in which opium has been held to be of signal advantage, namely, in the treatment of uremic convulsions. I regard the evidence in favor of the efficiency of hypodermic

injections of morphin in certain cases of uremic convulsions as altogether too conclusive to admit of denial, yet I am certain that death has not infrequently been precipitated by it, and when I tell you I have seen a fatal uremia induced by a couple of teaspoonsful of paregoric, I trust I convey to you an adequate idea of the dangers of this drug.

First, perhaps, it is desirable to know the conditions in which opium is positively contraindicated. First and foremost is chronic interstitial nephritis. I regard the use of morphin in this form of Bright's disease as harmful in the extreme, and the hypodermic injection of morphin in such cases should be positively forbidden. It is this form of disease in which I have known so many cases launched upon a last sleep whence they have never awakened. I do not think it possible to be too emphatic on this subject, and I desire to raise my voice against it in the strongest terms. The beginning of the evil result is a diminution and finally a suppression of urine, followed by coma and death. It is especially in old persons in whom chronic interstitial nephritis is unsuspected in which this accident occurs. Hence too, the importance of examining the urine of old persons before administering opium.

After chronic interstitial nephritis come cases of so-called surgical kidney or suppurating kidney due to stone in the bladder, tuberculosis of the kidney and the like. The danger in these cases depends a good deal on the degree of kidney substance destroyed. It is well known that operation alone in some of these cases becomes the exciting cause of graver changes which terminate in uremia, as seen in the well-known case of the Emperor Napoleon III., while I am confident the use of opium has precipitated many more. Fortunately, the modern practice of surgeons in repudiating almost entirely the use of opium after operations, has served to diminish largely the number of accidents from this cause, while another saving clause exists in the fact that while the kidney is often extensively destroyed, in many cases there remain considerable areas in which the kidney substance is sound. This is in marked contrast to the state of affairs in chronic interstitial nephritis, where the invasion is uniform.

Finally, the more extensive the destruction of the kidney, whatever the form of the disease, the greater the danger from the use of opium. Therefore, chronicity becomes in a general way a measure of the danger risked. I say, in a measure, because the progress in different cases varies so much that duration is not always a measure of the destruction of the kidney. On this account, chronicity has its limitations as a sign of danger when we have not chronic interstitial nephritis. On the other hand, it becomes more important to insist on great caution in the use of opium in every case of renal disease. In chronic cases of the more doubtful kind, the way may be felt by means of very small doses gradually increased, where opium is indicated for any cause.

A corollary following from the last rule brings us to those cases in which the use of opium is least harmful and in many conditions most happy in its influences. These are cases of acute nephritis and of puerperal nephritis, and the condition in which it is often useful is the uremic convulsion in such cases. The use of opium in the treatment of uremic convulsions in acute Bright's disease is intimately associated with the name of Alfred Loomis, and his original position has been

much misrepresented. It was only in acute Bright's disease, as Dr. Loomis himself has told me, that he recommended hypodermic injections of morphin, while others claiming to follow him have advised it for convulsions in all stages. I believe Dr. Loomis' original position is justified and that we may still use with signal advantage this mode of treatment. The only risk lies in cases in which the diagnosis is doubtful, and the treatment should not be applied without careful investigation—indeed, dispensed with except in cases of absolute certainty.

The treatment of puerperal convulsions by the hypodermic injection of morphin is justified on the ground that most of these patients represent cases of acute nephritis. But here even more than in the cases just described, great caution should be used, for not every case of puerperal convulsions is a case of acute Bright's disease, and now and then it happens that death is precipitated because such a case happens to be a chronic one and falls in the category of those in which the use of opium is dangerous.

It will appear from what has been said that diagnosis is the safety gauge by which danger is to be averted. First of all, we should be certain that cases of other disease requiring the use of morphin are not complicated with chronic Bright's disease. Cases in which I have known accident to happen have been simple diarrhea calling for the use of opium and violently painful conditions, such as angina pectoris. In no symptom of Bright's disease itself can opium be of use except in convulsions, and for this symptom only in cases of acute nephritis whether originating from the ordinary causes or pregnancy, and so rarely in chronic parenchymatous nephritis that it may be practically ignored. Finally, under no circumstances in chronic interstitial nephritis should opium be used.

In conclusion, I beg to be understood that I do not repudiate altogether iron and opium in Bright's disease, but desire to limit them to a rational and safe use.

DISCUSSION.

Dr. H. A. WEST of Galveston, Texas—I wish to speak of one point brought out by the writer, that acute Bright's disease is not attended by anemia and therefore that iron is contraindicated in this disease. I believe that many cases of acute Bright's disease are attended by anemia and therefore are much benefited by iron; it is absolutely beneficial when anemia exists.

Another point I wish to make mention of is in regard to the use of opium in the treatment of certain forms of uremic convulsions. My experience has been to find that a hypodermic of morphin is the only means of controlling effectually the convulsions which accompany such diseases as diphtheria. Chloroform, hydrate of chloral, bromids, etc., fail to control severe uremic convulsions, especially of the puerperal kind, but they are controlled by heroic doses of morphin and atropin. It has been my experience to see many such cases. There are cases of uremic convulsions, not of chronic Bright's disease, where lives can be saved by heroic administration of morphin.

Dr. STOCKTON of Buffalo—Dr. Tyson has brought out many points for discussion. In the first place I will express my views as to the use of opium in Bright's disease. I am glad he has stated just what he has. There are instances in which the hypodermic injection of morphin will save lives when no other remedy is available. As to the use of iron I do not altogether agree with him. I think with the gentleman that last spoke, that if anemia is present iron is beneficial. I do not think that Dr. Tyson will deny that statement. Anemia occurs rapidly and should be combated. Another point relates to the amount of the iron to be given to combat the anemia. In my experience, if we depend upon a small amount of iron there is not nearly so much absorbed as there would be if a larger amount was used.

Dr. BROWN of Cincinnati, Ohio—Every particular form of

Bright's disease is one in which there is some danger in using iron and opium.

Dr. VAN HORN of Illinois—I am much pleased with the paper. In puerperal convulsions, I think if the gentlemen will use the lancet the condition will be relieved quickly and surely and they will have no occasion to use morphia or the bromids.

Dr. TYSON—Some of the speakers have not exactly appreciated the position I take. I do not deny that anemia does occur in acute Bright's disease. The point I take is that when anemia occurs early in Bright's disease, it is a secondary symptom. The more urgent symptoms are those which require treatment. Relief should be first directed to the scanty or suppressed urine and to the dropsy. I admit that anemia supervenes rapidly in acute Bright's disease, and here we should use iron, but only after the dangers are gone. The question naturally arises in acute Bright's disease where the acute form ends and the other begins.

In regard to uremic convulsions, I accept the statement that this is a form of convulsion that a hypodermic of morphia will often benefit. The same is true also of the convulsions occurring in parenchymatous nephritis. I admit, too, that after other measures have been used, and there is a necessity of doing something more, then opium may be permitted. But I am certain that convulsions have been precipitated by the use of that drug, especially when it is associated with atropin, as both drugs co-operate to produce suppression of urine. I agree with Dr. Van Horn in regard to the use of the lancet.

Chronic interstitial nephritis happens to be the form of disease in which these two drugs are contraindicated, simply because in this form there is restricted elimination; the danger is from further restriction. Destruction of the cells is more extensive in this form than in parenchymatous nephritis.

THE COURSE AND MANAGEMENT OF COMPLICATING MYOCARDITIS.

Presented to the Section on Practice of Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY LOUIS FAUGÈRES BISHOP, A.M., M.D.
NEW YORK.

In the course of the practice of medicine, as diseases and conditions are unconsciously classified, ideas gradually develop themselves that are not easy to formulate into the language of exact scientific observation. One of these impressions has been that in the debility following severe diseases, there is some more definite underlying condition than is usually formulated. The explanation alone of an exhausted and deteriorated nervous system is not sufficient. The attention is drawn to the heart muscle, and clinical observation, confirmed by the pathologic observations of others, has led to the belief that complicating myocarditis is an important factor in the course and progress of many conditions. The signs of disease of the heart muscle should therefore be studied with care. In acute diseases and wasting diseases, whatever may be their nature, there come times when it seems evident that the heart has participated in the debility and degeneration that is visible in the other tissues of the body. So we find in the milder cases a condition of simple weakness of contraction, in the more severe, signs more suggestive of myocarditis, namely irregularity in force and rhythm. When after an acute disease, or in the course of a chronic affection these signs are noted it becomes important to interpret their meaning and study their indications.

Our conception of the condition under consideration is an inflammatory state of the myocardium following acute diseases, occurring in the course of chronic wasting disease, or beginning as an extension of inflammation from an endocarditis, or a pericarditis. It is not proposed to consider conditions secondary to diseases of the coronary arteries or excessive hypertrophy. Our subject does not demand an extended reference to pathology. A form may occa-

sionally originate in an acute interstitial myocarditis, but more frequently it is a parenchymatous degeneration. Dr. Osler remarks that it is probably the effect of a toxic agent, and that there is no definite relation between it and high temperature.

Every one is familiar with the appearance of the heart muscle in a patient dead from an acute prolonged illness. It differs in appearance from the heart of a person who has been killed by accident while in good health. In the former the muscle is pale and grayish looking, while in the latter it is firm and of healthy color. Probably in many diseases there is this low grade of inflammation that is not more than a slight degeneration.

It is not easy to be sure that a true myocarditis underlies any particular symptoms, but there are some that are of more importance than others. These are relative feebleness of impulse, especially under the stimulus of slight exercise, disturbances of rhythm and undue rapidity, following the resumption of standing position by a person most of the time recumbent. Such signs with dyspnea and prostration complete the picture of complicating myocarditis. Cardiac murmurs may, or may not, be present.

It has seemed to me that arrhythmia in patients who had not previously shown this symptom is specially suggestive.

Dr. Jacobi says in his book on "Therapeutics of Infancy and Childhood," "We are beginning to become more and more aware of the frequency of affections of the heart muscle. Myocarditis in a chronic, sub-acute and acute form is of very frequent occurrence. In or after every case of typhoid fever, scarlatina, diphtheria or smallpox, we must prepare to be overtaken by some cardiac disease, either interstitial myocarditis or parenchymatous degeneration. Rest in bed or on a lounge (the former is better), will act as a preventive. It ought to be continued for weeks in almost every case. Like paralysis, subsequent upon infectious diseases, which develop after weeks, heart disease may occur from the same cause, partly as a subsequence of actual primary alterations, partly from nervous exhaustion. So long as the pulse becomes more rapid on exertion, or on getting out of bed, absolute rest is the best remedy and safeguard. In these cases, it is not always possible to distinguish between functional debility and actual disease."

Dr. Jacobi again remarks in the course of his book, "Though myocarditis, both acute and chronic, is by no means so frequent in the child as in the adult, it is nevertheless not infrequent. It is indeed remarkable to observe how often it is not diagnosed, or how little its occurrence is appreciated."

Myocarditis must always be feared when there are signs of impaired heart action, especially feebleness and irregularity of force and rhythm, that the underlying condition is disease of the heart muscle. These cases are too often carelessly diagnosed as general debility, or as instances of disturbed cardiac innervation. It is important that the real condition should be recognized because the treatment may otherwise be prejudicial. Stimulants directed to the heart itself are certainly philosophically contra-indicated. We might whip a lazy horse, or we might improve the behavior of a nervous horse by discipline, but a sick horse should always be rested and fed. So in the case of a heart that is feeble and behaving badly on account of myocarditis following a severe disease, muscle stimulants should be avoided.

Especially is the care of the heart muscle important in those cases of acute infectious diseases in which a valve lesion has unfortunately been developed by complicating endocarditis. In severe endocarditis myocarditis also probably exists, so that there is a double call upon the forces, as the heart must not only regain its normal power, but also learn to do greater work to make up for the lesion in the valve. Particularly is it important for these patients to follow a long and strict regimen, avoiding indiscretions of diet, sudden exertions and dissipation of all kinds.

The treatment of degeneration of the heart fiber when that is far advanced is a difficult problem. Indeed, when on account of the evidence of well-marked symptoms we can say definitely that such a process is going on, it is often too late to accomplish a great deal. The hopeful cases, and those which it is especially desired to call to the attention at this time, are those of complicating myocarditis, met with as an accompaniment of acute diseases, and to urge the care of this condition during the course of the disease, and during convalescence, so that ultimately the heart may regain its true tone. Instances of weak heart following acute disease are not wanting in any one's experience.

One of the dangers to the person suffering from myocarditis is the possible result of sudden over-exertion, causing an acute dilatation of the heart from which recovery is not easy. The proper regulation of the muscular activity of the patient is therefore of the utmost importance. Exercise undertaken to improve the general bodily nutrition, and that of the heart muscle in particular, should be light, slow and systematic. Next to exercise comes diet. Food should be concentrated so that the nourishment is administered in small volume, leading to an easy performance of the functions of the stomach without the tendency to distension, such as may mechanically embarrass the function of the heart and lungs. With the principle of small volume of food, much latitude as to variety may be permitted. The use of alcohol, without its abuse, in cardiac cases is very difficult. Probably a small quantity with meals is not harmful. But any excess is always followed by injury. The use of tea and coffee is a good deal a matter of experience with particular patients, but the extreme frequency of cardiac symptoms produced in persons with normal hearts by tea, and the fact that both tea and coffee are recognized as cardiac stimulants, should make us take the stand with our patients that these being cardiac drugs should be controlled by their physician. The use of tobacco is better discontinued. Often enough patients with defective hearts recognize themselves the discomfort, or rather the lack of satisfaction, in the use of tobacco and spontaneously abandon it. But others have become habituated to its use so that the effects are not obvious, still these can be taught that the effect of tobacco will finally prejudice their future.

As the heart can not be treated directly, we must rely much upon the possible auxiliaries to the cardiac propulsive effort. It is unlikely that the heart alone, even in health, would be able under every circumstance to carry on the circulation. To imitate in inanimate material, a system of tubes and valves, such as the circulatory system of the human body, would be impossible, but if such a structure were possible it would not operate. The slightest defect would cause serious interruption of the current. In

the circulation in the animal body there is provision made for enlargement of vessels here and contraction there so that the size of the tubes are always as required for the blood current. A demand for a larger amount of blood determines an enlarged blood vessel. Of course the heart supplies the main impulse to the blood, but the resiliency of the blood vessels, and their contraction and expansion under many varying conditions, must be important factors in the circulation. Taking advantage of this in cases of insufficient systole, much can be done to assist the circulation. This is notably accomplished by judicious exercise, stimulating baths and massage. Nor is the benefit of pleasant diversion in improving the nervous tone to be neglected.

Thus we see that in the course of many acute infectious diseases the heart muscle becomes affected by changes of an inflammatory or degenerative nature. Usually this is a part of a general condition affecting all the muscles of the body. But the heart muscle is of so much more importance, and the course and progress of the myocarditis bears such a vital relation to the well being of the patient it names the condition. The picture presented by the convalescent from an acute disease, who has escaped with a healthy heart, is very different from the one who has suffered from degeneration of the heart muscle. The former regains health and strength rapidly; the pulse becomes strong, the color returns, and the patient is soon in good health again. The patient with complicating myocarditis lingers along in a condition of semi-invalidism. The disease from which he originally suffered has entirely disappeared. There is apparently no reason that he should not recover strength and health, but the heart for a long time remains weak, unless its state be recognized and particular measures be employed to restore its integrity. This chronic complicating myocarditis explains symptoms so often witnessed after diphtheria, grippe, scarlet fever, and other diseases characterized by a violent infection.

30 West Thirty-sixth Street.

THE CAUSES OF THE INCONSTANCY OF MITRAL REGURGITANT MURMURS.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY J. N. HALL, M.D.

DENVER.

Inconstancy is much more frequently a characteristic of regurgitant murmurs at the auriculo-ventricular orifices of the heart than of any other cardiac murmurs. We propose to study the reasons for this inconstancy, particularly as affecting the mitral valve, although much that we say applies equally well to the tricuspid. We shall first look briefly into the character and mode of production of the other murmurs. At the arterial orifices we may have direct murmurs from anemia, or infinitely less often, from obstruction in some form; and regurgitant ones from *a*, damage to the leaflets of the valves, or *b*, stretching of the ring supporting them. All of these are practically constant excepting the direct ones of anemic origin, which disappear under the use of iron in many cases.

Presystolic murmurs originate from narrowing of the auriculo-ventricular orifices, and are, practically, constant, excepting that weakening of the auricular wall may lower the force of the blood current to such

an extent as to render the vibrations inaudible. This phenomenon probably occurs in most cases of this nature after interruption of compensation. Leaving out of consideration the anemic murmurs, the murmurs we have just considered depend commonly upon conditions of the valve segments or the orifices brought about by endocarditis or atheromatous processes, and not subject to rapid changes either from medication or changes in blood pressure. As regards regurgitant murmurs at the auriculo-ventricular orifices the matter stands very differently, chiefly owing to the different mechanical conditions entering into the problem. Mitral systolic murmurs are frequently hemic in character, and these are subject to frequent variation from changes in the condition of the blood, as are hemic murmurs elsewhere. It is especially common to see them disappear under the use of iron. I believe that very soft, slightly musical systolic murmurs at the apex in children are most frequently hemic in nature. We should note that it is probable that certain apical murmurs in severe anemia are really regurgitant in nature, and yet disappear under treatment, for the weakness of the myocardium from insufficient nourishment in such cases may give rise to temporary insufficiency, the weakened papillary muscle failing to draw the valve-segments accurately together. We should mention here those murmurs heard in certain phases of respiration only, and yet synchronous with the apex-beat, only to dismiss them, since they do not come properly within the scope of this paper, not originating within the heart.

The fact that the heart is hinged upon the great vessels at its base, and therefore may be more easily displaced from the chest wall at its apical portion than at its basis by changes in posture, intervention of the lung, effusions or tumors, constitutes a further reason for the inconstancy of certain mitral murmurs because the source of the abnormal sound is easily pushed back from the chest wall by the causes mentioned. Although the vibrations still exist, they may not reach the chest wall under these circumstances.

The transmissibility of a murmur is so obviously dependent upon the force of the blood current that a change in its area of transmission is to be expected with change in power of the heart muscle. Cammann formerly stated that the existence of mitral leakage was established only by hearing the systolic murmurs transmitted to the back. This is obviously incorrect, for cases are common in which, during established compensation, the murmur is to be heard in the back, while it disappears with failure of this process, even to reappear after a temporary restoration of heart-power. Although the disappearance of the murmur from lessening of the force of the blood current is perhaps more strikingly seen in connection with mitral stenosis than with mitral leakage, the basic murmurs are less liable to such change than either of these. An apical systolic murmur occasionally replaces suddenly the presystolic murmurs of stenosis, owing to rupture of the stenotic valve. We need only mention this rare phenomenon.

Above all the causes thus far mentioned, however, is the peculiar structure of the auriculo-ventricular orifices, to which we must look for the explanation of the inconstancy of many systolic murmurs. The relatively large size of the ring, its comparatively easy dilatability, the presence of papillary muscles assisting in the closure of the orifice, and above all the

attachment of these papillary muscles to the easily dilatable ventricular walls, offer abundant opportunities for leakage at the orifice and the consequent development of abnormal sounds. We should not, therefore, be surprised at the comparative frequency of occurrence of the murmurs in question. Although the valve-segments be perfect, we may readily see that leakage may occur, *a*, from dilatation of the ring to such an extent that the valves can no longer cover the opening; *b*, from stretching of the papillary muscles or loss of their contractile power, as from degeneration of their muscular tissue, so that the valve-segments are pushed too far into the auricle to meet accurately; *c*, from contraction of these muscles and of their chordæ tendineæ from endocarditic changes, so that the valves are unable to meet together; *d*, from a retraction into the ventricle of the leaflets of the valve from dilatation of the cavity, this serving to increase the distance between the point of origin of the muscle and the normal meeting place of the leaflets of the valve. Thus, although ring, leaflets and papillary muscles be normal, leakage occurs.

As all the conditions herein specified are subject to change, in some cases, as for example the last one quoted, to very rapid change, we need not be surprised at the great variations to be found in the physical signs in such cases. Drugs have vastly more influence in producing such changes than, for instance, at the aortic orifice, where the mechanical problem of closing the opening is much simpler. Thus an improvement in the tonicity and contractile power of the myocardium from the administration of digitalis may cause a leakage to disappear, as I have repeatedly observed, by its effect in abolishing the dilatation of the left ventricle, thus bringing the walls of the cavity, where are attached the papillary muscles, near enough to the normal position to permit of efficient closure of the valve segments.

Roy and Adami believe that strophanthus acts particularly upon the papillary muscle. In leakage due to fault of this structure, an increase in the contractile power from the drug mentioned may possibly cause the murmur to disappear. The yielding of the ring is greater under conditions of increased blood pressure, but a murmur present from this cause alone is likely to be fairly constant because of the lack of elasticity in the structures composing the ring, and to consequent inability to regain its previous condition.

We know that the advance of a stenotic process at the mitral orifice lessens the gravity of a concomitant regurgitation by diminishing the size of the orifice. It is probably possible that a regurgitant murmur may disappear for a time by such a process. The most constant murmurs are probably those originating from insufficiency due to endocarditic defect in the leaflets, or to shortening of the chordæ tendineæ by the same process. Such murmurs are probably constant excepting as they fail from great lowering of the blood tension, although they may fail of transmission to the surface because of the intervention of effusions, or otherwise.

Chloroform Treatment of Yellow Fever.—The National Academy of Medicine at Rio Janeiro is much interested in a new treatment for yellow fever proposed by Dr. Erico Coelho, which he has used with great success in his private and hospital practice. It consists merely in the inhalation of chloroform for hours during the early stages of the disease.—*O Brazil Médico*, May 8.

TUBERCULOSIS AND ITS TREATMENT BY THE LATER METHODS.

SUBJECT ILLUSTRATED BY TWELVE CLINICAL CASES.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY A. G. DEARDOFF, M.D.
SAN FRANCISCO, CAL.

I wish to add my experience in the use of one of the later remedies in arresting, and in the earlier stages, of curing tuberculosis. There are many new remedies used in tubercular troubles which prolong life and frequently cure that only a few years ago were unknown in the treatment of this dread disease which, as all medical men know, causes more death and distress in the human family than any other one trouble. I condemn none of these new remedies, but to the best of my ability, have investigated several, and the one that appeals to my better judgment is Dr. Paul Paquin's Anti-tubercular Serum and Anti-streptococcus Serum. The use of this serum in my own practice has convinced me that it is good. Revolutions come in medicine as in other things. A remedy will have a wide notoriety for a time by advertising, etc., but unless it has merit, it is soon thrown aside. To see a remedy grow continually in favor as this serum has, is a good proof of its reliability.

Jenner, many years ago, by his investigations, gave to mankind a virus that stopped the ravages of smallpox, and the terror of this disease is gone and it is almost totally eradicated from the earth and kept in absolute subjection.

Diphtheria is now controlled, and many cases cured by the anti-toxin serum. Many cities now have depots with this serum under the management of their boards of health. It undoubtedly has saved many lives, and physicians feel that they have a reliable remedy for this great enemy of childhood.

On the same line of reasoning we have the anti-tubercular serum, made from the blood of the horse, for tubercular troubles. Instead of this serum losing ground as many other treatments have done, it seems to be gradually gaining in popularity. By the use of the microscope the investigations of so many along the line of tubercular diseases, it is to be hoped that before long we will have on this same line of reasoning a remedy we can absolutely rely on, as we do now on the smallpox virus and the antitoxin for diphtheria. I have reason to believe such a time is approaching, and this would relieve the human family of another of its destroyers and greatest enemies.

While the cases I report are not numerous, my experience with these and others proves to me that there is something in this treatment well worth investigating. I must insist, however, that if a physician uses this serum on a patient, it shall be used regularly and continuously and be under the supervision of the physician. For using it a week or a month, then tiring of it, will simply bring reproach on the remedy and no permanent good to the patient. Intestinal antiseptics such as guaiacol, sulpho-carb. zinc, creosote, sat. sol. sod. borate, or any other good intestinal antiseptic should be used internally. Borolyptol, lysterin and other antiseptics sprayed into the mouth and fauces as the physician thinks necessary. Good food, fresh air, all these favorable conditions must be recognized and used in connection with the serum. Some will say, tuberculosis will improve under this

treatment without the serum; perhaps improve, but not cure.

When a case comes to us with night sweats, hectic fever, temperature 101 to 103 evenings, pulse 100 to 120, patient fast losing flesh, no appetite, profuse expectoration or a dry, irritable cough, and on auscultation and percussion undoubted signs of tubercular disease, and all these symptoms confirmed by the microscope, we know what these conditions mean.

When we begin with this serum and in one week the night sweats are lessened or entirely gone, better sleep, appetite improving, and in one or two months a gain of five, eight or fifteen pounds, we then know some great change has been wrought in the system. I have had many such results in relieving cases. The microscope was used in every case by a competent bacteriologist to confirm the diagnosis made by the physical examination.

Case 1.—First stage.—In March, 1897, I began treating young C., aged 11 years. His mother had died of phthisis one month before. He had been ill for three months. Mornings, had profuse expectoration full of tubercular germs, as shown by the microscope. Hectic flush, loss of appetite, and fever at night. I treated him forty days, and had the satisfaction of seeing him restored to health, with a gain of eight pounds in weight and a growth of almost an inch in height in four months. A complete cessation of cough, and on auscultation and percussion, no abnormal sounds could be heard. Have examined him every month since, and he seems perfectly well. Nearly a year has passed and no return of symptoms. No medicine was used in this case except an occasional dose of mild hydrarg. chlorid as a hepatic stimulant.

Case 2.—First Stage.—Mrs. P., aged about 40, in May of 1897 applied to me for relief from a severe cough with slight expectoration. Tubercular deposit in apex of right lung; microscope confirmed diagnosis, but few bacilli observed. I treated her for three months daily with the serum, effecting a complete cessation of cough. Muscular weariness and cachexia of tuberculosis gone. She rested one month from treatment, then I gave her another month's treatment of the serum. I used no medicine in this case but the serum, excepting an occasional dose of mild hydrarg chlorid. Up to date she is well and carrying on her business (typewriting in a large office where there are many people and very bad air). Her mother died of tuberculosis.

Case 3.—First stage.—Mrs. H., age 29 years, began treatment in June, 1897. Mother and father died of tuberculosis. Had been sick six months. Appetite poor and tubercular cachexia marked. Was a very large woman, five feet, eleven and one-half inches in height. Normal weight 200 pounds. When she began treatment weighed 160 pounds. Microscopes confirmed diagnosis of tubercular disease. A deposit was located in apex of both lungs. I treated her daily for one month. A change for the better could be noticed in two weeks. The second month I treated her every other day. I then sent her to San Diego for two months, expecting her to return for two months' more treatment. She returned, but was so well that I considered it unnecessary to pursue treatment further. Her weight after four months was 200 pounds, cough gone, lungs cleared up, and on auscultation and percussion no abnormal sounds could be heard. A peculiar circumstance in connection with this case was a complete cessation of a profuse uterine catarrh, which she had had for several years.

Case 4.—First stage.—Miss D., aged 26 years, applied for examination in December, 1897. For six months had felt tired, languid, and could not endure her clerical work, so had to give up her position. Middle lobe of right lung showed a small tubercular deposit. Expectoration very scant, appetite poor. Tuberculosis in family; aunts and uncles died with it; and it is supposed she contracted it from them, as they died at her home with tuberculosis several years before. A brother, of whom I will speak later on, has the disease. A peculiar feature of this case was a dry, scaly dandruff condition of the skin over the shoulders and back. It made no difference what care she took of herself in bathing and applications, this condition persisted. After using the serum treatment for two months the skin became healthy and has continued so. All symptoms of tuberculosis gone and she is now in good health.

Case 1.—Second stage.—Mrs. G., aged 37 years, applied to me for treatment in December, 1896. Mother and one sister died of tuberculosis. Was sick for six months before applying

for treatment. Normal weight 125 pounds. When beginning treatment weighed 115 pounds. Hectic fever, night sweats, loss of appetite, and a burning sensation beneath left clavicle. The diseased spot was in the upper lobe of the left lung. I found one small cavity. Moderate expectoration of mornings. I treated her three months daily with serum and she improved rapidly. At the end of four months had gained in weight to 135 pounds, more than she had ever weighed in her life. I used but little medicine, only correctives. At the end of this time cough had disappeared. This case used the serum per rectum two months after I stopped using it with the hypodermic. I have examined her in the last three months and find her perfectly well.

Case 2.—Second stage.—Mr. W., age 24 years, a young German. Father and brother died of tuberculosis. He had been ill about six months. Frequent cough, profuse expectoration, sleepless nights, loss of appetite, night sweats and hectic fever, pulse 95 to 110, temperature from 1 to 2 degrees above normal in evenings, weight 145 pounds. Normal weight 170 pounds. Tubercular deposit located in upper lobe of right lung. Small cavity. Microscope confirmed diagnosis. Was treated two months daily with serum. After two weeks temperature and pulse normal. Gained fifteen pounds during the first three weeks. Expectoration gradually declined until at the end of six weeks it had almost ceased. No one could have changed faster from a fast decline back to health than did this man. He left the city after the second month's treatment feeling as well as he ever did, and had regained his normal weight.

Case 3.—Second stage.—I class this patient in the second stage, having been affected for about five years with a general systemic tubercular poison, and for eight months marked throat trouble, indicating laryngeal phthisis. Mr. D., age 24 years, brother of Miss D. of whom I have already spoken, applied to me for treatment in November, 1897. Weight 130 pounds. For several years had been feeling badly. Had no cough, but had catarrhal secretions from fauces which caused an occasional clearing of the throat. A depressed feeling of lassitude, skin dry and scaly, hair poorly nourished, and marked tubercular cachexia. At times would have fever for one, two and three weeks, then better again. This fever was supposed to be malaria. Had taken most all kinds of tonics, had been to springs, and was away from home every summer to the mountains. Examination of lungs proved negative. The secretion from the throat being examined by the microscope showed large quantities of tubercular bacilli. His whole system was perfectly saturated with tuberculosis. I treated him daily for three months and he improved rapidly. Tubercular cachexia cleared up and skin changed to a red glow of health. I also used an antiseptic spray for the throat several times a day. Made applications of argent. nit., tincture of iodine and glycerin in the throat. This patient is now using the serum at home every other day under my direction. I see him weekly and he is doing well.

Case 1.—Third stage.—Mr. S., aged 29 years, applied to me for examination in September, 1895. He was taken ill in June of 1895 with what he considered at that time malaria. Had a cough several months previous. He was a cigarette smoker, and a "speedy" young man in every sense of the word. His mother had died of tuberculosis several years before. His lungs broke down rapidly, and when he applied to me for treatment in September, he was in the third stage of tuberculosis. One quite large cavity in the upper lobe of right lung. Infiltrated spots throughout different portions of the lungs. A terrific cough and profuse expectoration. Had had three hemorrhages before coming to me. Three to five night sweats every night. He returned home taking tonics with him. He returned to me about the first of November, 1895, very much emaciated with loss of appetite and profuse night sweats. I placed him under the care of a professional nurse for one month; with all these symptoms three or four months at the longest, under ordinary treatment, would surely have been as long as he could have lived. I put him on tonics, antiseptic sprays for lungs, and at once began injections of anti-tubercular serum. I had not used it five days before the night sweats had almost ceased; slept better; appetite better; and after a few weeks the infiltrated spots in the lungs were fast clearing up. His fever ran lower, pulse lower, and he was fast improving. When he first applied to me for treatment his temperature was 103 evenings, pulse 125 to 130; and at the end of the month he was so much better that he dispensed with the nurse and began going out to theaters and various places of amusement, entirely against my wishes; still he took his serum regularly, and both of us were very sanguine of permanent results. He began his excesses in the old way of "wine and women," but still improved. He was very well when he left me after four months treatment. He was able to attend to his work;

very little cough, and had no hemorrhage while I treated him. After he went home he continued these excesses. About two months of this kind of life, and the neglect of the serum, he suddenly had a severe hemorrhage, then gradually went down. He went to the mountains. The serum treatment was entirely neglected, and he lived almost a year after this hemorrhage. This man was on the road to recovery and we might say deliberately suicided. The wonderful change wrought in him by the serum gave me to understand that I had access to a remedy that I could hold out some hope to the tuberculous patient; for it had undoubtedly turned a patient most dead with tuberculosis back to health and normal strength, and by his own recklessness he had fallen again to its ravages. This was the first case I treated with anti-tubercular serum.

Case 2.—Third stage.—In the spring of 1896, Mrs. B., of Chicago, aged 42 years, applied to me for treatment for a continued cough. She informed me that she had had trouble for three or four years, and her physician had sent her to California, for he did not think she would live long in Chicago climate. Mother and father both died with tuberculosis. Microscope showed large quantities of tubercular bacilli. She had two hemorrhages, one before, and one soon after I began her treatment. Small cavity in central part of upper lobe of right lung. I treated her six weeks. She then went to St. Louis and continued the treatment for three or four months. She spent the winter of '96 and '97 among the pines of North Carolina and returned to California in the fall of '97. She was perfectly well and all expectoration had ceased. In this case I combined tonics and cod-liver oil with the serum treatment.

Case 3.—Third stage.—Mrs. C., aged 36 years, in November, 1896, applied to me for treatment; bad cough and had not been well for nearly a year. Had a severe hemorrhage just before beginning the treatment. Was bedfast. Pulse 120 to 130, temperature 103 every afternoon. No night sweats, but loss of appetite and very much emaciated. Mother, two sisters and brother died of tuberculosis. Her normal weight was 125 pounds. Weight when she began treatment 105 pounds. I had trouble the first two weeks in giving her the serum. It had quite a severe reaction on her but in three weeks she began to improve. The fifth and sixth weeks she gained one half pound each day. Then she slowly gained until her weight was 123 pounds. I treated her until February 1897, when she returned home and used the serum per rectum, but it did not have as good effect on her as by hypodermic, causing her severe nervousness and prostration. In May 1897 she returned to me and used it one month, and she improved rapidly. Again returning to her home, used the serum hypodermically. She returned to the city and I treated her during August and September of 1897. On account of some pus in the sputum at this time I used the anti-streptococcus serum for a few weeks, which had a decided effect on clearing up the expectoration. She is using the serum now, changing occasionally to antistreptococcus serum. She is in good health, but not entirely well. Expectoration is almost gone. This case would have done better had she been under my observation all the time, but on account of her family it was impossible for her to remain with me continuously. In this case I used proto-nuclein, cod-liver oil, and strychn., at times, as a nerve stimulant. She is now using carnegene, the red and white marrow of beef, instead of cod-liver oil, and is gradually improving. This case is still under my treatment with the serum. The microscope was used about eight months after beginning treatment and the slides compared, showed a large decrease in the tubercular bacilli.

Case 4.—Third stage.—Mrs. L., aged 57 years, applied to me for treatment in the fall of 1897. Family history shows tuberculosis. Father, mother, and all her brothers and sisters died of tuberculosis. Had been affected for twenty-five years. Microscope showed quantities of tubercular bacilli. Percussion and auscultation showed right lung almost gone. Cavities in left lung, profuse expectoration, occasional night sweats, bad dyspepsia, temperature ranging from 99½ to 102 evenings, pulse averaged about 80, tuberculous ulceration of bowels causing more or less diarrhea. For some years was obliged to eliminate many things from her diet, such as tomatoes, lemons, peaches, and all fruits of an acid nature. I used a mixed treatment in her case of anti-tubercular serum and anti-streptococcus, it lessened her cough. In two months her appetite was improved, she could eat anything she desired and no bad results from it. After three months treatment she went away from the city and was using the serum per rectum. I have not heard from her since she left San Francisco. I could not expect any permanent improvement in such a case as this, though she was much relieved. I gave her intestinal antiseptics and proto-nuclein, and also iodoform capsules internally in connection with the serum.

Case 5.—Third stage.—December 2, 1897, I was called to

see Miss B., age 26 years. She had been treated by tonics, creosote and the same old treatment with which we are all familiar. She had been ill for six months. This patient was almost dead. The microscope showed tubercular bacilli in abundance. Her pulse 150, temperature $104\frac{1}{2}$, examination of lungs showed upper lobes of both badly affected from apex down. Severe night sweats, and almost an absence of digestion with such ferment in her bowels that she suffered severely with them. Her whole system was saturated with tuberculosis. So bad was this case that I thought she would die before two weeks, and considered it useless to treat the case as others had given her up. On the earnest solicitations of her relatives I began treating her; using anti-tubercular serum, and at the end of four days had the amount of serum per dose up to twenty drops, which is double the amount for that time in ordinary cases. She then began to feel better. I placed her on intestinal antiseptics. Her digestion improved and the night sweats ceased entirely. At the end of the first month she was able to take a ride every day, if the weather would permit. During the second month she had a relapse on account of a small abscess forming and breaking in the right lung. She again improved. At the end of three months she took the measles; this was serious for her, but she came through all right. At the end of four months she went to the country, and is using the antitubercular serum per rectum. She is still living and feeling well, but not improving. Her pulse came down to 80 and 90 from 130 to 150, temperature normal of mornings, and 100 to $100\frac{1}{2}$ evenings, and at times normal of evenings. Digestion good, appetite good. I had a decided effect in this case in assisting the serum treatment by the use of sat. sol. of borat. sod. one ounce each day per rectum, a tablespoonful three times a day internally. I think this a fine addition in the treatment of tubercular diseases.

I have selected these twelve cases for report, as they are about average cases with me. To recapitulate:

Five cases—third stage.—One dead; one benefited some; one greatly benefited; one well; one living six months after being given up to die at any time.

Three cases—second stage.—One greatly improved; one well over one year; one improving fast.

Four cases—first stage.—Four well.

I advise tonics, cod-liver oil, antiseptics sprayed in the throat and lungs of boro-lyptol, listerin, etc. I advise two or three times a week an enema or normal solution of sod. chlorid per rectum and flush the colon. This acts as a disinfectant, and the absorption of a portion of this solution in the circulation is very beneficial to the patient. Then I wish to impress the good of using sat. solut. of borat. sod., tablespoonful internally three times a day, and about an ounce injected each day in the rectum. When pus exists in the sputum, I advise the use of anti-streptococcus, alternating with the anti-tubercular serum, and the effect is at once marked.

My success has been so great in many other cases and I feel that I can almost insure a case in the first, or incipient stage, where the cavities are small, that many will improve, and at times recover even in the second stage, and occasionally in the third stage.

MODERN METHODS IN THE TREATMENT OF TUBERCULOSIS.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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If we believe that for every ill that affects humanity there is somewhere a remedy, it would seem that even through the operation of blind chance there was a fair opportunity for lighting upon the means of curing tuberculosis. For in all parts of the medical world there is put into practice a most miscellaneous assortment of experiments. The power of suggestion is being demonstrated by the claims made in behalf

of nearly all these essays. The need is so terrible, the boon to humanity would be so enormous, that one must look with kindly sympathy upon the man who desires to succeed.

The fact that success in this matter means so much to humanity demands from us most careful scrutiny that no really valuable idea shall be lost on the most critical examination, that no delusion shall be permitted to prevail. Should my remarks, therefore assume somewhat the shape of criticism, it is with no unsympathetic or pessimistic spirit, but with the earnest desire to favor the truth.

First, we will consider the climatological aspect of the question. When we inhale the pure breezes of Colorado we do not wonder at the enthusiasm that prevails among the residents as to its salubrity. We recognize at once that this is founded upon reason, not upon commercial scheming. We have sent our patients to the Denver region for years, and can readily recall notable instances of its restoration or even curative effects. But that all cases are not thus benefited is sadly attested by the monuments in yonder populous city of the dead. We trust that the physicians of Denver, who have such exceptional opportunities for the study of the question, will give us clean and definite instructions as to what cases should be sent here, and where to send the others.

At present we have some valuable but scanty data upon which to base our advice. Incipient cases do well here, as they do in most places; the best results are obtained in these instances in which the diagnosis is inferential rather than positive. But hemorrhagic cases ascend to this altitude with peril. They fare badly here as well as at the seashore; so that their destination is problematic. Beside the conditions of the case, there lies behind this a consideration as to the personality of each patient. The effects of climate are not now believed to reside in the power of any atmosphere to starve or to poison the microorganisms. That climate is best for each person, that most conduces to his physical health, that allows him to live the most wholesome life as an animal, usually, in the open air, with sunshine, and free ventilation.

Broadly speaking, mankind is divisible into two classes. Types of both may be found in the same family. If one feels strong and vigorous in the pure, cool thin air of the hills, to the hills he should go; but if he feels bad here, and experiences a sense of comfort, of exhilaration, of renewed vitality when he smells the damp air of the salt meadows, he will there have the best chance for cure. Beyond this, and the injunction to keep as far as possible from other cases of tuberculosis, there is little of certainty in the choice of a climate. As to the effects of any atmosphere upon cases of tubercular, streptococcus, staphylococcus and mixed infection, upon primary microbic affections and these engrafted upon previous inflammatory processes, we have as yet but a feeble light. The hope of securing more has brought many of us to Denver.

Of the various forms of serum therapy, I shall say but little, as the program is filled with numerous papers by those who are better qualified to speak. Be they successes or failures each marks an approximation to the truth, if it be but by clearing the way for further experiment. They are commendable in that they are based upon a study of the phenomena of the disease and of the conditions noted in the biology of the

micro-organisms present. Surely if success be obtainable, it is in this direction.

In this connection I will present some facts worth considering. Tuberculosis is separated from the large majority of microbio affections in that it is not self-limited or self-protective. Tuberculosis is also distinguished from the majority of such affections in that we do not find leucocytosis attending it. Can we correlate these two facts, and infer that the failure of self-immunization is due to the fact that nature has here failed to combat this disease by a multiplication of her defenders, the leucocytes? If, so, we may find value in that singular discovery of Vaughan, that nucleic acid increases the number and activity of the white blood corpuscles. This hypothesis, pregnant with possibilities that may change the science of therapeutics and vitally modify the history of the human race, is all the more worthy of commendation in that it brings us back to the truest basis of therapy, the study of the physiologic conditions aberrant in disease and utilizable in its treatment. The finality of therapeutics must be the comprehension, restoration and maintenance of a normal physiologic state.

But vastly important as are the germicidal elements, and the value of climate as a means of reinforcing the vitality to the point of rendering it victorious, they are by no means our only weapons. The armamentaria with which we relieve the various symptoms of tuberculosis require no mention on my part; but I wish to speak of two agents that have served me well. Many years ago I heard Samuel H. Dickson say that when we learn to control the digestive disorders of consumption we would cure that disease. I need not more than refer to the difficulty of feeding these patients, the anorexia, dyspepsia, constipation and diarrhea, malassimilation, etc., marking their history. But all these disappear under the use of calcium sulfocarbolate, and with them from one to three degrees of the fever, and in all, from 30 to 60 per cent. of the sum total of the symptoms and phenomena is removed by this single expedient. These results have followed so uniformly that I feel warranted in suggesting a trial of this salt. I have given it daily in doses of 2 and 6 grains for nearly two years without any discernible objectionable effects.

The other agent is iodoform. In some consumptives there appears to be a tolerance of this drug, as they have taken from 10 to 20 grains daily for months without any symptom of iodism, while this unpleasant condition has followed the use of four grains daily in non-tuberculous individuals. Whether its effects be germicidal, absorbent or simply those of a pulmonary and analgesic, or of all three combined, the use of this remedy has given me better results than any other pulmonary germicide.

THE PSYCHOLOGY OF HABITUAL CONSTIPATION.

Presented to the Section on the Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Among the great phenomena of nature one of the most interesting is that of the rhythmic action of her forces in obedience to ever constant laws. The cycle of darkness and light that measures a day; of recurring

seasons that calendar a year; of ocean's tidal ebb and flow that mark her throbbing pulse: all these are but so many demonstrations of a universal law of rhythm. In our bodies similar laws of periodicity are essential to organic health or even to life itself. Restful sleep must follow wakeful toil in just proportion and at proper intervals. Respiration and circulation are dependent upon ever constant, regulated muscular impulses. The processes of digestion, assimilation and excretion obey this same law of rhythm. So long as these periodic forces are undisturbed in their rhythm by careless, or vicious habits of the individual, or by accidental and pathologic changes beyond his control, healthy, organic functions are assured.

Mental control of rhythmic functions.—The control of these rhythmic forces is for the most part, outside of and beyond our conscious mental appreciation. They act with automatic precision whether we wake or sleep, little influenced by our wills, our desires or our reasoning faculties. They are said to be controlled by the great sympathetic nervous system which connects the various organs of the body in their functions, with ganglionic and cerebro-spinal centers. This is not true in a literal sense; for this wonderful system is itself only a mechanism; an intricate co-ordination of communicating lines, sensitized for the transmission of impressions to and orders from a central governing intelligence. Whether we accept the theory of a dual mind or not, we are forced to the conclusion that this marvelous labyrinth of communicating sympathetic nerves and the organs to which they are distributed, and hence the functions of these organs themselves are dominated by a never sleeping, ever acting intelligent entity.

Since we know these functioning organs and their special nervous systems act for the most part independently of our objection primary consciousness and volition, we are impelled to the belief that they are controlled by a sub-conscious, instinctive faculty of the mind which regulates all the automatic movements of the non-striated muscles; that it presides over the functions of every organ of our bodies, and that it is capable of being reached and directed itself by psychic influences from within and without. To show this psychic relation and control over the peristaltic action of the bowels and the function of defecation, as well also the practicability of relieving habitual constipation, of non-pathologic origin, by psychic methods are the problems set before us in this paper. We are confident, if their solutions are made evident, a flood of light will be thrown upon many other functional derangements and their rational treatment made plain; a treatment too little appreciated and too often flippantly ridiculed and dismissed by thousands of good physicians who have not investigated the worth of suggestive therapeutics.

Peristalsis and defecation.—The essential physical element in the act of defecation is peristalsis. A clear understanding of this function is of vital importance in this discussion. Peristalsis may be defined as a peculiar rhythmic contraction of successive muscular fibers of the intestine. This undulating movement extends through the length of the canal and is called the peristaltic wave. It is less active in the large than in the small intestine. Its function in the upper bowel is, 1, to assist in mixing the food from the stomach with bile and the digestive ferments of the pancreas and intestinal glands; 2, to bring nutrient matter in contact with large absorbing surfaces, and

3, to impel waste material toward the lower bowel. In the large intestine and rectum its function is chiefly that of evacuating their contents. The rectum receives its innervation through the rectal plexus of the sympathetic system. Its communication with the cord and spinal ganglia lies through the sacral plexus. Its communication with cerebral centers lies through the hypogastric and the solar plexus, and reaches the brain through the pneumogastric nerve. Thus the muscular structure of the intestines is connected by two routes with the central nervous system, from which all primal impulses emanate.

The act of defecation is accomplished by the increased peristalsis of the descending colon, sigmoid flexure and rectum upon their fecal contents, assisted by the fixation of the diaphragm and voluntary pressure of the abdominal muscles. We have said the essential physical element in the evacuation of the bowels is peristalsis. Let us bear in mind that normally it is a rhythmic, physical force; that the mechanism, nervous and muscular, by which the phenomena of peristalsis and defecation are accomplished are necessarily dominated by an intelligent, regulating mentality, which sends out these impulses to rhythmic action.

Peristaltic stimuli.—Any agent which promotes peristalsis will favor evacuation of the bowels. This stimulus may be: 1. *Mechanical*, acting on the peripheral termini of the sympathetic nerves, which convey their impressions to the central intelligence, which in turn sends out its motor peristaltic impulses. Such a stimulus is normally excited by the presence of feces in the lower bowel, by foreign substances like seeds, bran of wheat, oats or corn, by ptomaines from bacterial life or protozoa, by massage and physical exercise. 2. *Thermic*, as seen in excessive peristalsis of diarrhea from extremes of atmospheric temperature. Brief applications of hot or cold compress or enema will arouse peristalsis. 3. *Electric*. 4. *Chemical*, by the physiologic action of drugs, the details of which would be out of place here. We may dismiss them all as temporizing expedients, whose effects are fleeting while the habit remains uncured. It is safe to say the bulk of the drug trade centers about aperients, laxatives, cathartics and purgatives, exploited by the commercial enterprise of proprietary medicine men, self-prescribed by the laity or directed by the apothecary or profession, all for the relief of chronic constipation. And so the drugging goes on as it has for ages, while the specific drug is yet undiscovered that will cure the constipated habit. Why? For the simple reason that it is a habit. Habits are psychic affairs and not amenable to the physiologic action of drugs. This leads us to the most important agent of all. 5. *Psychologic*. Every day experience teaches us that the intestinal canal is often profoundly acted upon by mental states. Many nervous people have peristaltic unrest. The excitement of certain emotions, anxiety, fear, anger and the like are soon followed by an action of the bowels, which may even become a diarrhea. Many actors, singers and public speakers are greatly annoyed in this manner as a result of "stage fright." Emotional people sometimes have what is termed "hysterical diarrhea." When a person is in a proper state of susceptibility it is possible to cause defecation by the suggestion that at a given time the *feeling* or desire (peristalsis) for stool will occur. All these are purely mental influences and show conclusively that the mind in its manifold properties

has a faculty which presides over the function of peristalsis and that it is susceptible to both internal and external psychic influences.

Etiology of habitual constipation.—a. "Torpidity of the bowels" (Osler) is usually given as a cause of constipation. This is an explanation which does not explain. It is like the logic used before the laws of gravity were understood, when water was said to flow down hill because of its aqosity. Torpidity simply means sluggish or absent peristalsis. The *why* it is so is the *real* cause. This lies beyond the nerves and muscles of the intestinal canal, which are merely the mechanical appliances of a controlling force in the brain. b. "Sedentary habits, particularly in those persons who eat too much and neglect the calls of nature" (Osler). One habit may induce another, but sedentary habits are not the primary cause of constipated habits. Over-eating, on the contrary, should stimulate peristalsis by reason of more bulky stools. In the neglect of the calls of nature, however, lies the *essential cause* of functional or habitual constipation. (With constipation from pathologic causes this paper does not deal.) Contributing factors there may be, but without this neglect, which has its origin in the mental processes of the individual, and hence is psychic, there would be no habit constipation. What is this "call of nature?" We take it to be the periodic, rhythmic peristaltic impulse which has been directed by that subconscious faculty of the mind which controls the sympathetic system, and is incited to action by various reflex stimuli for the physiologic purpose of defecation. The voluntary co-operation of the individual with these "calls of nature" must be reasonably prompt or the rhythm becomes disturbed, the "calls" less imperative, less regular and in the end functional constipation is the penalty. Nature defeated in her plans becomes inhibitory. The patient must now resort to many artificial expedients to coax the "feeling" back again. Dietetic and hygienic measures, physical exercise and massage, electricity and drugs may be contributing aids, but the essential factor in setting up once more the disturbed rhythmic impulses must necessarily be, the re-establishing of *psychic* control. This fact is overlooked in our textbooks in the treatment of this ailment.

To speak of chronic constipation as a mental and not a physical disorder may at first thought seem rather amusing. Some who have given the subject little consideration, will dismiss the idea as ridiculous. Let them still be joined to their cathartic idols. The overwhelming proof that it is so, is the fact that psycho-therapy is capable of re-establishing the function in a great many individuals without the aid of drugs or accessories. The truth of my proposition that habitual constipation is psychic and not physical in its causation is half way acknowledged (though unconsciously) in the conventional instructions given patients to observe faithfully a regular time for going to stool, and whether the desire is present or not, to persist in going through the motions, with the hope that the "feeling" will eventually return with regularity. Did it ever occur to these practitioners that such a method is very effective mental suggestion? That in their therapeutic wanderings they had finally erected an altar to the unknown God? Him would we declare to you.

Osler says "Much may be done by systematic habits, particularly in the young. The desire to go to stool should always be granted." A careful inquiry

into the habits of constipated people will elicit the fact that they have been negligent in this very essential. Especially is this true of women patients, who are the greater sufferers from constipation. For psychologic reasons they sin grievously against themselves in neglecting a function which can be normal only when its rhythm is heeded. A woman, for trivial considerations, easily defers this call "to a more convenient season." By environment and disposition she is less systematic than a man. A neighborly gossip, a household affair, a feeling of repugnance or downright indolence will often interfere with this important duty. Front door vanity and cosmetic effects are often more important, to her way of thinking, than back door sanitation and rules of health. She is quite apt to look upon defecation as a disagreeable nuisance, to be avoided when possible, to be hurried through with or incompleated when necessity arises. No wonder a function which normally should be a real pleasure, and productive of a sense of comfort and well being, becomes an irregular, straining, pile-producing effort. And so with the established ills of induced constipation the victim resorts to cathartic teas, syrups, powders and pills for a relief which can only be temporary.

We wish to give emphasis to the fact that *habit* is a very large word. That all habits, whatever their tendencies, are of psychic origin. That in habitual constipation, with or without other therapeutic aids, suggestion or psychic influence in some form is the only efficient agent that can re-establish a rhythmic peristaltic habit.

We have shown how peristalsis may be accomplished artificially by the temporizing stimuli of drugs, etc., and they have their proper uses as well as their abuses, but there can be no cure of habit constipation until the initial psychic impulses become once more automatic. The drug has not been found, and, from the nature of the case, never can be found, that will re-establish an intuitive mental impulse. Of necessity drugging will go on as a make-shift in perpetuity, until the profession recognizes the psychology of habits and their only possible cure by psychic means.

REPORT OF A CASE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS WITH RECOVERY FOLLOWING LUMBAR PUNCTURE.

BY PETER BASSOE, M.D.

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In the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for July 2, Dr. J. B. Herrick reports a case of cerebro-spinal meningitis, in the postmortem of which the diplococcus intracellularis meningitis of Weichselbaum was demonstrated in the meningeal exudate. From this fact and from the large number of cases of meningitis observed in Chicago during the last months, the Doctor concludes that we have to deal with a mild epidemic, although the micro-organism had never been demonstrated before, probably because a bacteriologic examination has been made in but very few cases.

The following case further proves the existence of genuine epidemic meningitis in Chicago at the present time:

The patient, a Russian laborer, 45 years old, previously in

good health, was admitted to treatment under Prof. Geo. F. Butler in the Cook County Hospital, June 17, 1898. Five days before admission he had been suddenly taken with vomiting and diarrhea, followed by severe headache, backache and pain in the extremities. An outside physician sent him to the hospital with the diagnosis of trichinosis. When first seen at the hospital he complained of severe headache; mind was very dull; patient constantly stroked his head and neck with his hands and groaned; great tenderness on pressure; pupils contracted and equal, reacted normally; no ocular or other paralysis; pulse regular, full and soft, 48 beats to the minute; temperature 98, respiration 28; no eruption; examination of chest, abdomen and extremities absolutely negative. The night following admission he was in a continuous pain and stupor; very restless; slept a little under the influence of morphin. The pulse remained slow, 52-64, and the temperature on the day following ranged between 100 and 101 degrees. The bowels were moved by cathartics. During the following days the pulse remained slow, while temperature on the 22d reached 103 degrees, with a pulse of 68. Headache and mild delirium continued. No new symptoms were observed, except a slight right-sided, facial paresis. An ophthalmoscopic examination on the 22d showed no change in the fundus; there was a marked cupping of the disc on the right side. The delirium became more marked and continuous; headache and tenderness, with rigidity of the neck, persisted; but under the influence of bromids or morphin the patient slept four to six hours during the night. The pulse increased in frequency; on the 25th it ranged from 100 to 120, temperature 100-102.4 degrees.

The diagnosis of meningitis having been made, and in order to ascertain the kind of micro-organism present, a lumbar puncture was made on the 26th. A fine needle was introduced between the second and third lumbar vertebrae, one-half inch from the median line, the cerebro-spinal fluid escaping drop by drop, each drop being distinctly cloudy; 20 c.c. were withdrawn. No change was noticed in the patient's condition during the removal of the fluid. On centrifugalizing the fluid a whitish sediment was obtained, consisting almost exclusively of pus cells, most of them greatly disintegrated. No micro-organisms were seen in or around the cells. Nine human blood serum tubes were inoculated, and on seven no growth appeared. In 36 hours minute drop-like cultures were observed on the two remaining tubes, which under the microscope were seen to be pure cultures of a diplococcus, with occasional tetrads. It proved to be the diplococcus intracellularis meningitis of Weichselbaum, and did not stain by Gram's method.

On the day of the puncture the patient's temperature ranged between 99.6 and 100.6; pulse 96-100. The night following he rested better than any night previous and seemed rational in the morning. The temperature next day was 97-99.6; pulse 92-100. Since then the headache, tenderness and rigidity of the neck, and restlessness rapidly have disappeared. On the 28th maximum temperature was 99.2; on the 29th, 98.8; on the 30th it reached 101, but has been normal ever since. On the 27th ophthalmoscopic examination revealed a slight optic neuritis on the right side; only one-fourth of the border of the disc could be made out. On the 29th this was more marked and present to a less degree in the left eye. On July 2nd the optic neuritis was greatly lessened, margins of both discs being distinct. June 28th and the two days following there was urinary retention, so that patient had to be catheterized. July 2nd the patient sat up, had a good appetite and no headache. Since then he has been rapidly gaining in strength and seems to have made a complete recovery.

This case adds another to the number recently reported which go to prove that lumbar puncture not only enables us to make, *intra vitam*, a bacteriologic diagnosis of the different varieties of meningitis, but

also that it is the only therapeutic agent which is of more than a palliative value in the treatment of the disease.

SOCIETY PROCEEDINGS.

The Medical Society of the State of New Jersey.

One Hundred and Thirty-second Anniversary at Asbury Park, June 28, 1898.

FIRST DAY.

The session was opened on Tuesday, the 28th, at 3 P.M., with the transaction of much routine business, action upon certain matters relative to the society and reports upon ethics, honorary membership, etc.

In the evening the address of the President, Dr. D. C. ENGLISH, was delivered.

Dr. English congratulated the Society on its one hundred and thirty-second anniversary, extended a welcome to the visiting brethren from sister societies, returned thanks for the distinguished honor conferred on him by a society that was not only ten years older than the nation, but had a record surpassed by none in devotion to the highest interest of the profession and in loyalty to the State and sacred behests of humanity. He referred to some of the official changes in the Society the past year, especially to the death of Dr. J. J. H. Love and his appointment of Dr. William Pierson in his place as Third Vice-President and Dr. W. J. Chandler in his place as Recording Secretary. He announced his subject as

PATRIOTISM IN THE MEDICAL PROFESSION

as exhibited in the past and as it may find fuller expression in time to come. After defining patriotism he spoke of the four wars through which the nation had passed, culminating in making the country, indeed and in truth, "The land of the free and the home of the brave." He then spoke of the fact that the Society was in session while the fifth great war was in progress, which was partly the reason for the choice of his subject, which he characterized as a righteous war, less selfish than any of the others in that it was fought in others' behalf rather than our own; that England and other nations had permitted the shocking atrocities practiced toward the Armenians; that America had taken the lead and is today the nation that stands for justice, righteousness and humanity, offering to sacrifice her resources of men and money as far as needful to relieve the oppressed. He then proceeded to demonstrate that in no class of citizens had patriotism had greater manifestation or been exhibited with as much unselfish devotion as by the medical profession, and it was considered under two heads: patriotism in times of war and in times of peace. He considered under war, chiefly that of the Revolutionary War, and of that only New Jersey's record, giving much interesting historic data concerning the profession and the part played by it in distinguished position both in the army and the chief positions of influence; showing that advance in medicine and the development of a strong sentiment of patriotism dated from the French and English war (1758-66); giving brief sketches of the fourteen early presidents of the Medical Society of New Jersey, who bore an exceedingly conspicuous part during the war; and also the names of sixty-six others who served ably in the army and in Congress and other civic positions; of the fact entered on society records that because its members were so actively engaged no session was held from 1775 to 1781; that these men were men of culture, of decided religious character and great influence in their respective communities. "These patriots not only fought the battles, gained the victories and secured our independence, but were patriots wise enough and true hearted and virtuous enough to see that victories won and independence gained amounted to but little unless the foundations of the government were laid strong and secure, and that patriots who were true to God, to liberty and righteousness were placed in power to build enduringly. We have observed that these patriotic physicians not only fought well and performed their high and holy mission faithfully, but they served as well in official positions." "They were incorruptible office-holders; they were upright judges; they were politicians in the highest sense of the word, who loved country more than party; they used no corruption fund, and the people were not of that kind who sold their birthright for a mess of pottage." Reference was then made to the War of the Rebellion, giving the members who served and their faithfulness, and fitting reference made to Dr. John Blair Gibbs, the first martyr who fell on Cuban soil in the present war, who formerly lived in New Jersey and was educated at Rutgers College.

Dr. English then spoke of patriotism in times of peace, in which it had its highest, noblest and lifelong manifestations, vastly more important, as peace is preferable to war; the public good, the very purpose for which government exists; of the exhibition often amid struggle, self-denial and often self-sacrifice; the saying that "Peace has its victories no less renowned than war," was not poetic fancy but solid statement of veritable truth. He dwelt upon: 1. Scientific observation and research as involving pecuniary sacrifice, sometimes the sacrifice of life and often reproach and opposition "as fine, sickly sentimentalists and cranks, who in their devotion to a few dumb animals are willing that multitudes of human beings shall suffer and die." 2. Its exhibition in the work of the State Medical Society, which has been purely in the interest of the public and in most cases against the pecuniary interest of the profession. 3. In the cause of education. The work done and acknowledged by educators was dwelt upon. The Doctor urged the teaching in schools of the manner of the spread of contagious diseases and methods of prevention, especially why disinfection and isolation are required, and then impressing by the use of diagrams that sanitary measures are effective. 4. In the cause of state medicine, "preventive medicine is the crowning blessing the medical profession has conferred upon humanity and is the embodiment of the highest type of patriotism the world has ever witnessed, for it is virtually in the final attainment of its aim the profession sacrificing itself." He quoted Professor Gross: "The great question of the day is not this or that operation, not ovariectomy, nor lithotomy, nor hip-joint amputation, which have reflected so much glory upon American medicine—but preventive medicine." He dwelt briefly upon the work in this country and then some of its results, especially in New Jersey, giving the ten leading preventable diseases for the ten years, 1888-98, the great saving of life and what it meant to the State. He urged strongly the introduction throughout the State of the medical inspection of schools, both as one of the most effective measures for the prevention of the spread of contagious diseases and of eye troubles, mentioning what has been accomplished in Boston, New York, Philadelphia, Chicago and elsewhere. 5. Professional charity was briefly and appropriately set forth, the abuse of medical charity well characterized and some good suggestions offered. 6. In political life, medical men in Congress and the State legislatures, their influence, opportunities and duties were briefly considered, as well as their influence and duty in election of good men and securing good legislation. The open saloon with its iniquitous treating customs and political influence, and the curse of syphilis were touched upon. In reference to the National Board of Health the Doctor spoke as follows: "Efforts have been made for years to secure a National Board of Health, which would be of incalculable value and blessing to our country. These efforts, however, have thus far been unsuccessful. We will not discuss the reasons why, but only express our belief that fear that it might interfere with the schemes and ambitions of others, and the failure in a former measure that was defective in conception and plan are the two serious (?) obstacles that are allowed to jeopardize the lives of millions of our citizens. The ambition of no man or body of men should be considered, and as to old failures it is not only puerile argument, but no body of men profit more by the mistakes of the past than medical men. In a letter we received from United States Senator Gallinger recently, he says: "My sincere conviction is that it will be a long time before the legislation you call my attention to is secured. It is much more likely that the Marine-Hospital Service will be granted additional powers and that national health affairs will be kept in the hands of those who are now at the head of that bureau." We are at least thankful that the efforts to secure the national board have stimulated Congress to consider the matter more fully than before and make much larger appropriations for health measures, but we desire Congress, the medical profession and the public to realize that these appropriations have been almost entirely for the merchant marine of the United States, for quarantine purposes, the investigation of epidemic diseases in Havana, etc., under the Marine-Hospital Service, and any additional powers granted will not enable that department to do the systematic and thorough work that a national board of health with proper adjustment of relations with State boards of health would be able to accomplish. The government appropriated in 1896-97 about three-quarters of a million dollars for all public health measures, mainly for the support of the numerous hospitals, the twelve national quarantine stations, investigations, etc., under the Marine-Hospital Service, out of nearly three hundred millions total appropriation. Certainly it would seem if 141 millions could be afforded for pensions and scores of millions for river and harbor improvements in the interest of commerce (and possibly in some

cases to advance political fortunes and aspirations), that at least five millions could be spared and would be most wisely appropriated in caring for the lives and health of the citizens of this great Republic, by the establishment of a national board of health, though no such large sum has been asked or suggested. It seems to us that the question is very largely as to whether the great, the vital interests of the United States in matters pertaining to the public health, shall be circumscribed in their scope and field of operation, and shall be committed to men likely to be swayed by political or personal ambitions, who will seek to build up a strong medical aristocracy with autocratic powers that will enable them to enter any State and exercise their supreme authority over State departments; or whether we shall have a public health department established on a purely scientific basis and conducted by scientific men solely for the advancement of the health interests of this great country, in a manner that shall be in consonance with and shall conserve our republican form of government, and shall in its operations embrace the whole country in the advancement of public health by all measures essential to that end. We believe there should be a Commissioner of public health appointed by the President of the United States, and a Medical Congress or Commission, consisting of one able sanitarian from each State and Territory, appointed by the governor; that they should meet in Washington in brief session, say once in four months; said commission to formulate the laws under which the work shall be carried on, and the Commissioner to carry out such regulations as the Congress or Commission shall establish, with such limited powers as emergent exigencies shall require. It is patent, we think, to every disinterested intelligent person who desires the attainment of the highest and best ends that some such method will avoid, as the Marine-Hospital Service will not, all conflict of authority and lack of co-operation between the United States and the respective States and will insure the greatest efficiency.

In closing, Dr. English urged the display of that patriotism which in its enthusiasm obeys the injunction of wisdom: "Prove all things; hold fast that which is good." He emphasized the need of caution in making or accepting hasty statements of half knowledge, giving two points in illustration: 1. Concerning the general practitioner, because the science of medicine has been wonderfully developing and expanding and knowledge is increasing so rapidly, therefore the general practitioner must go. It is not a logical sequence except in some individual cases. Because the specialist is a one-sided man who magnifies his specialty unduly, brings many cases wrongly within the scope of his specialty, or occasionally treats his brother practitioner non-ethically, therefore the specialist is a fraud and a delusion. It is not a logical conclusion as to specialists in general, though it may have its occasional individual application. He then quoted from Prof. J. M. DaCosta, and endorsed the work of legitimate specialists. 2. Concerning the family physician, his lessened influence was alluded to and deprecated as not being the highest interest of home or country. The address closed with earnest words on the dignity of the profession and the cultivation of the ethical spirit as not only conducive to the highest advancement of the profession, but as the loftiest form of patriotism.

The reports of the standing committees being next in order, Dr. H. W. Elmer read abstracts from the reports received from the several county societies. These consisted of brief accounts of the prevailing diseases in the various sections of the State, the condition of the societies, notices of deaths of prominent members, etc.

THE REPORT ON PROGRESS IN STATE MEDICINE AND HYGIENE,

by Dr. HENRY MITCHELL, Secretary of the State Board of Health, said that the distinguishing feature has been the rapid application of laboratory demonstrations for the prevention of the spread of communicable diseases. New teachings are not accepted so readily as a conservative course begins to prevail. It is still true that the value of sanitation has not penetrated the minds of municipal authorities as it should have done. Local health departments give signs of a more promising course than heretofore. There is a public demand for better organized sanitary service. During the last half century smallpox has decreased 96 per cent. in number of deaths; typhus fever 95; enteric fever 60; scarlet fever 81; phthisis is still too high, though it has fallen 46 per cent. Six hundred thousand persons now reach the age of 21 years who, sixty years ago, would have died. In New Jersey the average duration of life is now fifty-nine years. In the last year the deaths from preventable diseases in the State show a large diminution. Great activity has prevailed in every department of hygiene; the bacteria of tuberculosis, it has been found, will float in the air for five hours. Bacteria are expelled from the mouth by loud speaking, etc.,

but not when the voice is low and gentle. Small movements of the air will waft them about; danger is great from moisture from the mouth and nose of persons at operations, as sneezing, etc., and the patient may infect the air by heavy breathing. Having undergone no attenuation, these bacteria are very virulent. Germano has found live bacteria in dried membranes after four months. His conclusions are: The bacilli of diphtheria can withstand drying for a long time; rapidity in drying does not affect the resisting power; these survive better when surrounded by dust, preventing oxidation; completely dried it retains its virulence till its death; air by dust can carry bacilli while in the living state; so with other bacilli. Ventilation of sewers has attracted attention. It has been found that the air of sewers does not carry bacteria in great numbers. On the contrary, it is singularly free from bacterial life. The odors may be disseminated with no bacteria, hence stench nuisances are not necessarily accompanied by the germs of disease. They may be a warning that danger is not far off. Recent discoveries tend to show that sewer gas only detracts from the breathing of pure air. These investigations may hasten the time when the courts will hold that all conditions which impair the purity of the air are injurious to public health and render the individual less resistant to the real danger when it may chance to occur. Flushing of drains with fresh air dilutes the gases and the danger is minimized. A drain without an intercepting trap is like a house without doors or windows and invites the very evils it was intended to prevent.

It has been found that typhoid fever is not spread by sewer gases. In well constructed sewers the sewage passes away freely and without putrefaction and the air is not unhealthful. Sewage does not form a medium in which growth of typhoid bacilli readily takes place. These undergo destruction in a few days, at most in one or two weeks. Hence the conveyance of this germ by sewer air must be exceptional. Thiroloix has found the bacillus of acute articular rheumatism in the blood of five persons. Intravenous injections of this organism invariably produced cardiac and pleuro-pulmonary lesions. He believes the disease may not always be recognized as rheumatic in character because of the absence of articular inflammation. It has been agreed that the incubation period of bubonic plague should be held at ten days, though it is generally admitted that it is from three to four days. The terms "isolation," "surveillance" and "observation" were defined: Isolation consists in absolute separation of the sick from all uninfected persons. The latter two signify supervision without detention and passengers are allowed to go to their homes, where they can remain under medical care as long as deemed necessary.

Popular interest has been aroused concerning the time-honored but not very acceptable method employed by barbers in carrying on their trade, and much has been written by the profession in condemnation of the application of dirty hands, tools, sponges, brushes, soap, etc., to the faces of the patrons of the barber shop, but in only a few shops have steps been taken toward the introduction of aseptic precautions here. Inquiries among the manufacturers of sterilizing apparatus does not show that any suitable, convenient and efficient appliance for the barbers has yet been offered. These rules may be laid down as an outline of the requirements to which the modern barber should conform in shaving: Clean his hands with soap, water and a nail-brush; apply to the beard soap paste, using only the hands; keep the razor in a sterilizing oven; when dull, do not strop it, use another from the sterilizer; use no large cloth spreads and towels only to protect the garments, no sponges, puffs, pads nor magnesia cake; provide a large sterilizing oven in which the temperature can be kept evenly at 230 degrees and in it keep a supply of towels which have been washed and boiled; use metal combs, wash these after using and keep in sterilizer; hair brushes, if used at all, keep thoroughly washed and clean.

He asked attention to the opportunity now offered in Rutgers College to persons who may desire to pursue the occupation of sanitary inspector, to demonstrate their fitness for this work. Certificates of ability are issued when entitled, and we may hope this will lead to the employment of sanitary officers of a superior type, and inefficient persons will be replaced in time by skilful physicians, etc.

Dr. W. H. IZZARD read the report on

PROGRESS IN MEDICINE AND THERAPEUTICS.

He said: The practice of medicine has materially changed in the last twenty-five years. The subject is broad and lapses into the field of all the branches. He desired only to make a few comparisons between the practice of today and that of a quarter of a century ago. Such teachers as Gross, Pancoast, Wallace, Meigs, Dunglison or Mitchell have not faded much by the shadows of the brilliant men of today. Within the time

mentioned, a specialist was a curiosity, looked upon with suspicion, if not pronounced quacks. Now they are numerous and enjoy perfect freedom and affiliation without question; so much so that most every one afflicted with an affection of the eye, nose, throat, lungs, stomach, intestines, especially in the right side, skin, ovaries, special organs of generation, etc., are sent or go themselves to the specialist, and you see what is left for the general practitioner. If this is progress in medicine, then it has been wonderfully marvelous. Men of my years, covering a period of thirty years, and there are quite a number present, are today to admit the superiority, method, *modus operandi* of medicine and therapeutics, also the wonderful increase of remedial agents over those at our command twenty-five years ago. Then the "Materia Medica" recommended for the textbook contained less than 400 pages, large type; now large volumes containing twice the number of pages and in small type; then the "Dispensatory" was a small book; now almost as large as "Webster's Unabridged;" then it was powders, pills (without sugar) and bitter potions; now the pills are covered with sugar, gelatin, and everything else is compressed into tablets and the rest of the materia medica into sweet palatable elixirs; then we depended upon the pulse to determine the grade of fever; now the thermometer; then we depended upon the lance, quinia and veratrum viride to subdue inflammation; now the lance has become rusty and almost totally discarded and new remedies are employed; then morphia and opium were almost solely depended upon to relieve pain and produce sleep; now we have placed in our hands a score of remedies; then we treated and generally cured diphtheria with nitrate of silver and astringent washes locally and quinin and iron internally; now we use thirty-six to forty-eight hours of time to get a bacteriologic analysis or examination made at Princeton or some other place so we may be sure we have got diphtheria, then a few more hours in getting some genuine fresh and only pure antitoxin, and if we are not in possession of a regulation syringe we spend a little more time in finding some doctor to loan us one, and if our patient is yet alive, we treat him according to advanced medical science; then we used to treat and cure our patients with pain and soreness in the abdomen, especially in the right side, by blisters, mustard, stupes or poultices externally and rest and opiates internally; now we use the knife, a solution of bichlorid of mercury, sponges, needles, thread and a \$500 fee, results not mentioned, all marking the most marvelous progress in medicine; then we successfully treated erysipelas by applying collodium over the affected parts to exclude the air, and quinin and iron internally; now I treat them the same except that I use a mucilage of flaxseed (much cheaper and easier of access) and the quinin and iron internally; I do not know what others use; then we treated eczema, especially herpes zoster, with a solution of nitrate of silver 10 grains to the ounce applied locally with a camel's-hair brush and Fowler's solution internally, with quinin and iron; now the internal treatment ought to be the same.

I might go on through the few remaining diseases left to the general practitioner, but I throw out these few aphorisms to show that the teaching, the study, the practice and the success of the older members should not be too much disregarded, and to point out to the younger members the danger to their patients and themselves, especially the danger of too much experimentation and in hastily using the innumerable new remedies brought to our notice by the journals, and advertising mediums of the manufacturers and others who seek to get rich by the endorsement of honest and honorable members of the profession. I believe in progress and I believe today that the medical profession is doing more to alleviate suffering, to lengthen the days of man, to stop the progress of disease, to avert epidemics and to make man's destiny brighter, happier and healthier, than all the other professions or forces of human organization combined. I would like to have alluded to the admirable sanitary laws and organizations compared with a quarter of a century ago, and to the relegation of epidemics to ancient history, but time will not permit.

Dr. CHARLES YOUNG read a "Report on the Progress in Surgery," a résumé of the various matters that had appeared in the journals during the past year.

"Progress in Diseases of the Throat and Nose and in Eye and Ear Diseases," was reported on by title.

Dr. FAYETTE SMITH read a report on certain diseases. Operations for laryngeal cancer had resulted in most excellent results. Adenoïd growths claim much attention and have been found the cause of much trouble, as for instance in cases of inability to talk from infancy; these were found to be the cause and great good was obtained by their removal. In one instance of examination of the pupile of a deaf and dumb institution, 69 per cent. were found to be so afflicted. This is not accidental, there must be a causal relation here. Instances

were mentioned where, by operation, in three months the hearing was improved and a week later talk began, and there was a steady improvement in speech and intellect. It is important that such examinations should be made early to gain all the benefit from the operation. In ozena, diphtheritic antitoxin had been used and it was claimed to be powerfully instrumental in the cure. It demands the continuation of this plan. There is some risk and inconvenience, but it should be demanded. In rhinology there has been little improvement; nasal surgery with its improvements on nature should not be thought of. The best authors insist that milder measures are preferable. Eucain is now established as a safe and satisfactory remedy or anesthetic in the throat and nose. There is no danger as with cocain, especially of inebriety; a 4 per cent. solution should be used for examinations, 10 per cent. for operations. In operations on the eye and ear there is more improvement in the technique than in books or instruments.

Dr. B. MEADE BOLTON read a

REPORT ON PROGRESS IN BACTERIOLOGY.

There appeared to be progress in the study of diphtheria, as there was a continual reduction in the mortality since the use of antitoxin. The serum should be the most potent that can be obtained. Much appears to depend upon the article employed. In tuberculosis the sputum taken early in the morning should be used for a test. The danger from sputum is because it is thrown into the air and thus diffused. All do not agree as to finding the bacilli in butter. Bovine tuberculosis is the same as that of man. Typhoid fever shows no improvement in the tests, etc., save the use of Widal's test. In bubonic plague we now have cures up to 95 per cent.

(To be continued.)

PRACTICAL NOTES.

Potassium Iodid in Actinomycosis has not fulfilled the expectations with which it was greeted. Poncet has found it entirely ineffective in eighteen out of twenty-five cases. Sixty were cured, out of eighty recent simple cases, but the iodid was only supplementary to an operation, which is in fact its chief indication. In visceral manifestations the iodid is only useful in the earliest stages. Simple incision and thermocauterization will often suffice to arrest the affection.—*Semaine Méd.*, May 14.

Subcutaneous Injections of Phenic Acid were found very effective by Skultzecki in two cases of severe erysipelas and one of septic puerperal fever; all recovered promptly and he recommends the treatment as strongly as it has already been lauded for tetanus and anthrax. The erysipelas patients received seventy-two to eighty-four injections, a total of 1 gram .44 to 1 gram .68 phenic acid, in a 2 per cent. solution, 1 c.c. every four hours. The puerperal fever was treated with four centigrams of phenic acid every three hours, the first day, and afterward with three centigrams every four hours, for a week, when the cure was complete.—*Semaine Méd.*, May 25.

To Avoid Vesical Complication.—In both men and women, in the healthy state, the urethra in a certain number of cases contains pathogenic bacteria. This is naturally far more common in women. In cases of surgery about the pelvis or rectum, in which catheterization is likely to be needed, the first indication, next to a sterile catheter, is to begin, before the operation, the administration of remedies to make the urine bland and non-irritating. Where this is a routine practice, bladder complications are of great rarity.—*Int. Journal of Surgery.*

Eight Hundred Children Treated with Physiologic Horse Serum.—Solares reports most gratifying success in anemia, chlorosis, chorea, incontinence of urine, scrofula, adenitis, neurasthenia and during convalescence from all diseases, from the administration of physiologic serum from healthy horses, which he has been practicing at the Children's Hospital at Barcelona since June, 1895. He recommends it as a strengthening, stimulating tonic, effective and harmless. The occasional slight, transient, secondary effects observed were similar to those that follow

injections of antitoxin, and probably are due to the same causes. The nutritive processes are powerfully promoted and the nervous system stimulated, but he ascribes its chief tonic properties to the globulins or spermins in serum which accelerate the intra-organic oxidations.—*Revista de Anat. Pat. y Clin.*, April 1.

Puerperal Septicemia Cured with Injections of Sublimate.—Patient 32 years old; placenta previa, hemorrhage and artificial delivery as seven months. Six previous normal deliveries. She received in six days fifteen injections, a total of 0.12 gram sublimate, supplemented by alcohol, quinin, digitalis, ice internally and externally, and permanent irrigation of the uterus with a 1 per thousand sublimate and 3 per cent. phenol solution. Recovery in two weeks. Montini and Perrego, who report the case in the *Gazz. d. Osp. e d. Clin.*, April 3, recommended the sublimate treatment as simple, safe and effective.

Easy Method of Making a Plaster Cast.—A couple of pieces of thin, coarse flannel are dipped in water and spread on a table. The dry plaster is then sprinkled over one of them until it absorbs the moisture and forms a paste which is then smoothed with the hand and worked into the meshes, adding plaster as long as there is moisture to dampen it. The second piece of flannel is then placed on top of it and the same process repeated, when the cast is ready to apply. If a very stiff cast is required a third piece of flannel can be added in the same way. To make it fit over an uneven surface slits can be cut in the flannels, not facing each other. The cast is extremely light and can be folded, removed and fitted closer without breaking. Turpentine or lime-water can be used instead of common water if preferred.—*Revista de Ciencias Méd. de Barcelona*, Oct. 10, 1897.

Water Treatment of Children's Diarrhea.—To remove the cause as rapidly as possible, Mongour first purges and then has the child drink sterilized water, as much as three to four hundred grams a day, with no medication. Vomiting ceases at once, and recovery is complete by the second or third day. Except for those in a moribund condition, all his cases have been cured: 13 hospital, 12 dispensary and 27 in his private practice. Larger has used for several years Vichy water, 2 to 5 liters a day, to counteract the acidity to which he ascribes the trouble. Water treatment prevents the tissues from drying up, and acts like a tonic in much the same way as artificial serum.—*Bulletin Médical*, 20-24.

Antipyrin in the Treatment of Fat Diabetes is the most effective of all remedies, according to the experience of Professor Lemoine. He gives half a gram each of antipyrin and lithium benzoate in a glass of alkaline water three times a day for a fortnight, in cases showing symptoms of intoxication and hepatic insufficiency with diminished secretion of urine and elimination of urea and the characteristic odor of apples in the breath, which warns of impending coma. When the symptoms of intoxication have passed away, he administers 2 to 3 grams of antipyrin in three doses during the day, always in the alkaline water, and 1 gram of lithium carbonate or benzoate twice a day between meals, keeping up the maximum dose of antipyrin for a week and then reducing to 1.5 gram for another week. The treatment is then suspended for a week and resumed for another fortnight, which usually abolishes the last trace of glycosuria. He confirms the cure by administering half a gram each of lithium carbonate and benzoate in alkaline water twice a day half an hour before breakfast and supper, continued for a fortnight every month. If nervous symptoms predominate, he gives only 1.5 to 2 grams antipyrin a day, supplementing it with a tablespoon of the following in a bowl of milk or any unsweetened beverage, an hour before bedtime: Potassium bromid, 40 grams; sodium phosphate, 10 grams; water, 300 grams.—*Semaine Méd.*, May 25.

Blindness in Spain.—One of the principal impressions pro-

duced on those who attended the recent Hygienic Congress in Spain was the large number of blind persons, not only among the beggars, but in all circles, even at the general sessions of the Congress. Hirschberg states that there is not a single professor of ophthalmology in the country, nor any public institution for affections of the eyes, which are treated in the public hospitals or small private institutions. "Owing to their blind fatalism they allow the affection to reach a stage beyond all cure, with no effort to check it, except possibly praying to Saint Lucia." Camuset remarks that in 300 cases which he examined, there were only three or four that were caused by amaurosis; the rest proceeded from neglect during infancy or from granulous inflammation. Six institutions have been founded, but their founders have retired or died and the institutions have lapsed. Hirschberg observes that he never saw so many shriveled eyeballs anywhere, not even in Egypt. The percentage of the blind is larger in the southern provinces. He mentions a street band of nine blind men and also that the custodian of the watch-tower at Cadiz, famous for its magnificent view, was almost totally blind. His only reply to Hirschberg's questions was, "One must be patient."—*Deutsche Med. Woch.*, June 9.

The Schleich Method of General Anesthesia.—Time and experience are confirming the value of the method of general narcosis proposed by C. L. Schleich of Berlin, at the German Congress of Surgery in 1895, which is based on the logical principle that a narcotic substance inhaled is taken up more readily into the circulation and is then eliminated in the exhaled breath the more rapidly and completely, in proportion as the point at which it boils or vaporizes approaches or coincides with the body temperature of the inhaler. A non-vaporized narcotic, such as chloroform, whose boiling point is at 65 degrees C., is absorbed less readily, requiring a larger amount, is retained in the system more, and the task of eliminating it does not devolve upon the proper organ, the lungs, but upon the other parenchymatous organs, especially the liver, which explains the alterations in these organs after death from chloroform. If, on the other hand, a narcotic with a very low boiling point is administered, such as ether (boiling point at 34 degrees C.) the vaporization is so intense at the temperature of the body that it interferes with the respiration, hinders or prevents the dissociation of the respiratory gases, producing cyanosis, retention of the carbon dioxide, which is under less pressure than the super-vaporized ether, and also stretching and tearing the epithelium of the alveoles, leading to secondary pneumonic infiltration. He therefore proposed a triple combination whose boiling or "vaporizing maximum" is identical with the temperature of the body; petroleum ether or benzine (with an established boiling point at 60 to 65 degrees C.), sulphuric ether and chloroform, varying the amount of each in proportion to the rapidity of elimination desired, to secure a higher or lower boiling point. Formula 1. For brief operations. The boiling point, 38 degrees C., co-incides with the internal temperature of the body: Chloroform, 15 parts; petroleum ether, 5; sulphuric ether, 60. Formula 2. For operations requiring a little more time. Boiling point 40 degrees C.: Chloroform, 15; petroleum ether, 5; sulphuric ether, 50. Formula 3. For major operations. Boiling point 42 degrees C.: Chloroform, 30; petroleum ether, 5; sulphuric ether, 80. It is administered with a mask. The sleep induced is prompt and tranquil, resembling more the hypnotic sleep than ether or chloroform narcosis. There is no cyanosis, salivation nor accumulation of mucus nor consecutive pneumonia. There are no counter indications if the lungs are working normally. It has been said, "he has deprived anesthesia of all its dangers." Meyer and Weidig consider even the small proportion of free ether in his formulæ a slight menace, and prefer a solution with the chloroform and ether in molecular combination, which requires petroleum ether with a little lower boiling point.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2.00
Single Copies	10 Cents.

In requesting change of address, give *old* as well as new location.

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SATURDAY, JULY 23, 1898.

TUBERCULOSIS OF THE MAMMARY GLAND.

Tuberculosis of the mammary gland has heretofore been looked upon as a rare affection. The recent simultaneous reports of four cases of this disease in American medical journals, two by FERGUSON¹ and one by FREIBERG² in this JOURNAL, indicate that the affection may not be as rare as ordinarily supposed. The most extensive of these recent articles upon this subject is that of SCUDDER.³ After making a careful search of the literature he found that there are but eighty instances of tuberculosis of the breast recorded, and twenty-three of these eighty cases lack positive evidence of being tuberculous.

The methods of infection may be enumerated as follows: In primary mammary tuberculosis the bacillus may find its way into the organ through the milk ducts, or through an open wound in the nipple, as in DEMMES'⁴ case or in the skin. Secondary tuberculosis is the most common form. Here the bacillus enters the breast through the blood or through the lymph from foci in some near or distant part of the body. The disease may also arise through extending by contiguity of structure, as from tuberculosis of the rib or sternum, tuberculosis of the pleura, axillary or other neighboring lymphatic glands.

The majority of all the cases were found by SCUDDER to be thirty-five years old or younger. Mammary tuberculosis occurs, therefore, in comparatively young adults; that is to say, during the period of functional

activity of the gland. In about one-half of the cases the women had borne children. Lactation was active during the development of the tubercular disease only a few times. It appears that in the tuberculous puerperal cases there is a greater frequency of suppurative mastitis than in the normal puerperal case, and it would seem that infection with tubercle bacilli would find more favorable soil in a breast once the seat of inflammation. It is an interesting fact to note in passing, that of these eighty cases only six occurred in men.

Among the symptoms, especial mention should be laid upon the fact that in about one-half the cases pain in the breast is mentioned as an early and constant sign. In many cases the patients have sought relief, not so much for the swelling or for the discharging fistulæ that may be present, as for the persistent pain in the breast. In a few cases the nipple was retracted.

The process may show itself in various forms, from a single small nodule or many nodules scattered throughout the breast, to hard irregular masses of varying size, situated in the center or in some segment of the gland. The masses may be movable or fixed. In the majority of the cases the process was slow in its progress, occupying months and years in its course from the time it was first noticed to the time that the disease was examined by a medical man. In SCUDDER'S case the duration of the disease was five years. In nearly all the cases the axillary glands presented different stages of tuberculosis. In a considerable number of cases (twenty-nine) tubercle bacilli have been found either in the tissues or in the pus from the abscess.

As regards the diagnosis it will serve the present purpose to state, that tuberculosis of the breast may be confounded with practically every other disease of this organ which may give rise to swelling. Among these conditions are carcinoma and sarcoma, benign tumors, cysts, syphilitic gumma, and actinomycosis. The comparative ease with which a diagnosis of tuberculosis can be reached by means of bacteriologic examination and inoculation experiments does not necessitate a detailed description of the various other points in the differential diagnosis.

As regards treatment the only thorough method is complete removal of the disease, including the whole breast and all the contents of the axilla. The old method of curetting tuberculous abscesses and chronic fistulæ of the breast is not to be depended upon. Radical excision of all diseased tissues, with a wide margin, should be practiced, because tuberculosis may extend further into the surrounding tissues than can be seen with the naked eye. Constitutional and climatic treatment should not be neglected; and the relation of mammary gland tuberculosis in the mother to tuberculosis in the offspring should always be borne in mind by the practitioner

¹ This Journal, June 11, 1898. ² This Journal, June 25, 1898.

³ American Journal of Medical Sciences, July, 1898.

⁴ Quoted by Scudder, loc. cit.

WHAT ARE THE SYMPTOMS OF NEPHRITIS?

A few years ago, when the microscope first began to clear up the mists which pervaded medicine, and when the excretions of the body received attention due them, many observers were not slow in finding in the sediment of the urine bodies which were denominated casts. Some observers went further than this, and a few years ago it was thought possible to differentiate the different varieties of nephritis by the kind of cast found in the urine, attributing the hyalin cast to the interstitial variety and the granular to the parenchymatous. But even before this time the urine had received attention, and albumin had been demonstrated by chemic methods. Clinical experience had told them of the pallor of the skin, of the hardened arteries and of the edema which was sometimes present.

Combining these facts obtained by clinical experience with the occurrence of albumin and casts in the urine it was thought that to make a diagnosis of nephritis was comparatively easy.

But anemia, high arterial tension and edema may be present in other conditions than nephritis, so they only form concomitant symptoms and the diagnosis hinges upon the amount of urine excreted and the presence of albumin and casts in the urine.

When albumin and casts were found in the urine it was thought that this indicated a pathologic condition of the kidneys, but this teaching is gradually being restricted, while some writers have not only given up the idea of making a differentiation of the varieties of nephritis by the kind of casts found, but claim that both albumin and casts are found, even though nephritis be not present. The combination method of Professor HAINES (*vide* JOURNAL, vol. xxx, p. 234), for example, will detect casts in urine normal to coarser tests. Clearly some one is wrong and it is due the profession to adopt some symptom-complex which will settle the question once for all.

It may be that in order to detect albumin some writers have used tests which are extremely delicate, so much so that the faintest trace may be found, while others rely upon the heat and nitric acid test, which is reliable enough for all practical purposes, and why should it be discarded for others which may throw a cloud about the final diagnosis? If casts are found in the urine in health why should we make a diagnosis of diseased kidney when they are present? Now if different varieties of casts are found in all cases of nephritis how can we say that the one is interstitial and the other parenchymatous?

It looks as though the clinical symptoms as observed by the naked eye are taking precedence over the results obtained by microscopic evidence, and clearly there is a fault somewhere. Why not let us say that if albumin is present by some standard test, it indicates nephritis, or if a certain prevailing variety of cast or some other body is found, it indicates the

variety of nephritis? Evidence should not be very hard to obtain and is the duty of those who can do so to set this matter at rest.

EUTHANASIA FOR CONDEMNED CRIMINALS.

In the various countries at different times, diverse methods of inflicting death upon criminals condemned to die have been in vogue for greater or less periods of time. The cruelties of prolonged torture of barbaric days were succeeded by methods at once more rapid and necessarily less painful. Crucifixion with its hours of agony was supplanted by the headman's axe. The guillotine of France, the very name of which caused a shudder to run through civilized Europe, was decidedly less brutal than the cord. Humanitarians in general and many physicians are opposed to hanging as a way of inflicting capital punishment. If one were sure that the neck would always be broken in the drop, there would be some commendable features connected with it; but the sickening struggles of three, four, even five minutes before the attending medical man pronounces life extinct, can not but make one feel that their sufferings are needless and cruel, no matter what their crime may have been. The gaping interest of curiosity seekers in those States where the execution is public; for the great numbers attending hangings, when they can get in, attest more forcibly than words that they derive some sort of entertainment from the spectacle, tends to degrade such persons to as low a level as the central figure of the scene. The latest substitute for hanging, electrocution, has not proved the unqualified success its promulgators had hoped. Death has but in few instances been instantaneous, and many cases stand before us of much longer periods of time used in the completion of the process than has been the case in hanging by strangulation. This delay in a majority of trials has been due to some defect in the apparatus or the interposition of some non-conductor to the electrical current. To be sure execution by this method is done in a comparatively speaking scientific manner, and is robbed of many of the horrors of the hanging, especially the morbid crowd of bystanders, but nevertheless some other method equally "scientific" should be substituted. The beheading with the axe would hardly suffer in comparison with this twentieth century brutality.

At the recent meeting of the Ohio State Medical Society at Columbus, one of the essayists offered in a serio-comic paper, a substitute for hanging and for electrocution, no less than causing dissolution by means of inhalations of chloroform pushed rapidly beyond safety, as indicated by pulse, respirations and pupils. The only objection the essayist could find to the scheme was that the victims would slip their moorings from this earth with thoughts far too pleasant for their hardened minds. This happy condition of affairs however, depends greatly upon the person giving and

the one receiving the anesthetic. One who has given anesthetics to any extent, knows how difficult the patient is to manage in the first stage. His struggles may become so great that four or five strong men may be needed to hold him on the table. We also know that in some cases, continuous saturation of the mask with chloroform is barely sufficient to keep them under, the chloroform apparently having little more effect than so much water; the very next case may be anesthetized easily and promptly, showing that the fault lies not with the chloroform, but in the individual peculiarity of the patient. It is needless to say that it might be rather difficult at times to encompass death in the former instance. Another point, it is against the law of many States for any one to administer an anesthetic except a regularly qualified physician. What physician would be willing to sacrifice himself to the rôle of public executioner? What would become of the practice of such a parasite? A doctor's profession requires him to save life, not take it. He would become so used to death under anesthesia that fatal results would come where he little wished them. To be sure the law might be amended to create the office of non-professional chloroform-executioner. But until incumbents of such offices received considerable training, the beneficent result of an easy, dreamy death as suggested by the essayist would not be forthcoming, for gradual perfect anesthesia is difficult enough in the most skilled hands. How would it look to have the catalogues of our medical colleges embellished with a heading something like the following: "Special Courses given to those who wish to enter the Public Service as Chloroform Executioner. Not necessary to take a course in Medicine."

The remarks of a member of the laity in regard to chloroform anesthesia would perhaps not be out of place (Mrs. KING in the Nineteenth Century for March). She had taken chloroform twice in England and oftener in India. In the latter country the anesthetic was given gradually with plenty of air under the rules as laid down by the Hyderabad commission, and she had never experienced any but the most pleasant sensations. In England, on the other hand, although she was anesthetized by one of the most skilled chloroformists in London, so little air was allowed her that she experienced all the horrors of impending suffocation, and thinks she would have perished had not her heart and lungs been physically sound.

Though the author of the above mentioned article, read at the State society, was not altogether serious in his remarks, nevertheless his subject excited considerable attention, as it is bound to do among all thoughtful persons both in and out of the profession. Substitutes other than chloroform were offered, but none that practice would be likely to prove always efficient, ever ready, painless. Perhaps one of the

best was that the judge should sentence that the condemned man disappear from the eyes of his fellow men on such a day, and that an officer of the court be a witness of the fact and give evidence to that effect: a little hydrocyanic acid in the food and all is over. The terrible uncertainty of the condemned as to his ultimate fate, and the horror excited in the public mind at the very idea of poisoning would be the main difficulties to this scheme. The subject is one of importance to medical men, and it is to be hoped that it will be followed up at other meetings and something evolved which could receive the sanction of physicians generally, and by legislation prevent in time the needless barbarity of the present in the punishment of capital crime.

THE HYGIENE OF MUSIC.

A witty popular writer makes the suggestion that with the growth of utilitarian ideals, music will gradually come to be looked upon, not as a dignified and civilizing art, but as a sort of minor vice; an amiable but enervating dissipation. While there is probably little chance that our ideals will become so completely utilitarian as he suggests, there is nevertheless something in the idea he advances that is perhaps worthy of consideration. It is certainly a curious fact that one form of sensual indulgence, or perhaps one might say more acceptably, sensuous enjoyment, and that as little utilitarian as any, if not absolutely of no value to the race and its continuance, should be lauded as in every way meritorious, even when excessive, while others of far greater real utility are considered, if at all overdone, as hardly respectable, if not absolutely disreputable. This is not because of its intellectual element, for it has as little of that as any form of sensory gratification; it is of itself free enough from any appeal to the intellect to meet the fullest demands of those critics who consider any excitation of the imagination as incompatible with true art. It appeals solely to the emotional and physical sides of our nature and it is a not unreasonable query whether, in so acting, its effects are always and in every way beneficial or desirable.

So much has been said of the therapeutic and generally salutary effects of music; its better side has been so industriously exploited, that it seems unnatural to most individuals to even suggest that it has in it any element of evil, any pathologic possibilities. It is nevertheless true that it has such, and that they are serious enough to be worthy of careful attention. It is not hard to see how and why this can be so if we consider the theories of the origin of music as given by those whose opinions are best worthy of respect. DARWIN'S idea that it originates in the sexual impulse and is analogous to the love notes of song birds, is in itself suggestive of such possibilities, and the same is true of that of HERBERT SPENCER, who believes that it originated from the emotional cadences

of speech. WEISMANN has argued that music is a secondary effect on the organs of hearing induced by cultivation, and not in the regular order of nature; in other words, that it is abnormal, hence the ready deduction that it may be related to or give rise to various abnormal and undesirable effects. If we accept it, on the other hand, with WALLASCHEK, as satisfying a rhythmic impulse in our constitution, this really only accounts for one element in music, and that may itself have under some circumstances a morbid as well as a normal effect, and leaves all the others that have been built up upon it to be accounted for, with all their possibilities of good or evil. Taking it as we will and assuming whatever physiologic or other origin for music, there is nothing in it more than a gratification of the senses and an incitation of the feelings. It may be of service as an adjunct to intellectual excitation of the higher emotions as in religious music; it may of itself be soothing in certain conditions of morbid excitement, but it may also be the reverse. The modern classic music and the Wagnerian "music of the future," the degenerative tendencies of which have been so vividly depicted by NORDAU, are harder to justify as beneficial than is the simpler and more melodious music that appeals to the uneducated ear. It is hard, in fact, to see anything but a sort of intoxication in the mental state of some of the musical enthusiasts who go wild over WAGNER'S music, if we can interpret their ideas by the language they employ. It suggests at least a perversion of a sense, a morbid unnatural enjoyment.

Music in itself is not intellectual; its faculty is quite compatible with a profound degree of dementia, as is often shown in asylums and such musical prodigies as Blind Tom, but as an adjunct to poetry in song it often becomes so associated with ideas that we make the mistake of thinking it conveys them itself. As a stirrer of the purely unintellectual emotions it has no rival, and in these two ways lie its possibilities of mischief. Poetry itself is like music in that it appeals to the rhythmic impulse, but it also appeals to the intellect, and not merely to the emotions. Its unhygienic possibilities have long been recognized. One of the greatest poets has said that to appreciate poetry, a trace of morbid mentality was essential, and that this was still more the case to originate it. When music and poetry are combined as is commonly the case the appeal to the emotions is even stronger in many instances, and music without words is, from this common association, most often directly suggestive of ideas that may or may not be healthful.

The actual evil effects of music are less easy to trace because they are generally combined with other causes that get the credit of all the evil. One of the most eminent of English gynecologists has, however, protested strongly against the common practice of musical training of girls as especially disastrous in its consequences, and similar testimony might be obtained in

other quarters. Music has been credited with the production of apoplexy and other nervous affections and is a recognized cause of insanity, though probably to a less extent than is really the case. It is easy to see how its excessive cultivation may be disastrous to hysteric and emotional individuals, and still more often to those who have any decided mental taint.

Music certainly adds much to the enjoyment of life, but it is not a virtue in itself and good as it is, it is liable to be overused and abused. Its hygienic requirements have received too little attention and its pathologic possibilities have been largely ignored. It has its uses in therapeutics, but they hardly out-balance the dangers of its overcultivation, which are real enough even with the simpler music of the past. What they will be with the "music of the future" is as yet an unsolved problem.

THE WAR NEWS OF THE WEEK.

Public interest during the week ending July 16 centered in the surrender of Santiago, Cuba, and the outbreak of yellow fever among the troops investing the city. According to some of the dispatches the infection was brought to El Caney and Siboney by the many thousands of Spanish and Cuban refugees from Santiago; but inasmuch as General MILES considered it advisable to destroy all the buildings at Siboney by fire, it seems evident that this place must have been regarded by his medical officers as a focus of infection. Cases of fever were reported from the time of the first landing of the troops, but these were typhoid and malarial cases, with febrile conditions due to great fatigues and exposures alternately to excessive heat and to the chill of sleeping in wet clothes in the trenches. Ultimately, however, certain cases among men of the Quartermaster's Department, who had been most in contact with the refugees, were recognized as veritable cases of yellow fever; and immediate steps were taken to isolate the cases and prevent the extension of the infection to the troops on the line. On the first notice of the outbreak a large force of immune medical men and nurses, who had been held by Surgeon-General STERNBERG in readiness at Tampa, Florida, for a possibility of the kind, was immediately dispatched to General SHAFER'S command. Meanwhile the reports from the front were discouraging. A special cable dispatch from Siboney to the *Washington Star*, July 14, represented Dr. NICHOLAS SENN as of opinion that in two weeks 25 per cent. of the troops would be *hors de combat*, the sanitary conditions being the worst he had ever seen. Dr. GUITÉRAS, also, was represented as being discouraged. "There are two hundred fever cases here," said this Siboney dispatch, "the majority from the trenches where men sleep night after night in water." The El Caney situation was reported as grave. "There are many cases of fever and great mortality among the people, who are dying from exposure and privation." Santiago

was represented in all the dispatches as in a most insanitary condition with many of the Spanish troops suffering from fever. But official dispatches from Colonel GREENLEAF, Chief Surgeon on the Staff of General MILES, do not sustain this exaggerated view of the outbreak. On July 16, his statement was: "Only 23 new cases of yellow fever and 3 deaths reported in the last 24 hours; general type of the disease mild; camp sites moved whenever practicable; have taken vigorous sanitary precautions to check the spread of the disease." And on July 16: "Only 16 new cases and 1 death." This is a very grave condition of affairs, but now that the surrender has taken place the troops are in a position to devote the whole of their energies to their protection from infection. The high grounds back of the city are represented as affording dry and well drained camp sites with pure water supplies from mountain streams and the heat tempered by breezes from the sea. Prompt removal of an infected individual to the hospital and prompt removal of a command from an evidently infected camp will, it is hoped, suppress the disease and enable the regiments in a short time to be embarked in as perfect freedom from infection as from a detention station on our own shores.

To meet the possibilities of the future, however, Surgeon General STERNBERG spent some days in New York making arrangements for further strengthening the immune hospital force and providing it with all necessary supplies. On July 16 the Naval Ambulance Ship *Solace* and the transport *Olivette* arrived from Santiago, the former landing sick and wounded soldiers at the General Hospital, Fortress Monroe, Va., and sick and wounded Spanish prisoners at the Naval Hospital, Norfolk, Va.; while the latter, carrying 250 wounded men, was detained off the Quarantine Station at the port of New York by Dr. DOTY, Health Officer, pending an inspection of the condition of the men and the vessel. In this connection, also, the press reports of the terrible conditions existing on the steamer *Harvard*, which brought 1000 prisoners to Portsmouth, are said to have given rise to the keenest apprehension in the Navy Department; but should it be found that yellow fever exists among these prisoners, there ought to be no difficulty in managing it on the New England coast.

Meantime the camps in this country appear to show a decided increase in the prevalence of typhoid fever. Lieutenant-Colonel SMART was called upon to make a careful inspection into, and report upon, the sanitary condition of Camp Alger, Va., giving special attention to the water supply and to the etiology of cases of typhoid fever occurring in that camp, and to Deputy Surgeon-General WOODHULL was assigned the duty of making a similar investigation at Chickamauga Park, Ga., while Major P. R. EGAN has been endeavoring to determine the conditions conducive to the prevalence of typhoid fever in the Fourth Army

Corps at Tampa, Fla. This activity and earnestness on the part of the Medical Department will tend to restrict the ravages of this indigenous camp disease which, although attracting much public attention, is by no means so prevalent as it was in the camps of the early months of the Civil War, July and August, 1861.

TAXING ANTITOXIN.

There is a seeming tendency on the part of certain internal revenue officers to insist that antitoxin comes under the category of the remedies affected by the stamp tax. It is difficult to see how this conclusion can be drawn from the terms and definitions of the recently passed internal revenue law. It is neither a copyrighted remedy (having been presented free, in accordance with the high ethic instinct of the medical profession, to suffering humanity), nor is it a secret preparation put up by pharmacists to resemble copyrighted preparations. Under no construction of the law can it be brought into the category of the class of preparations which congress intended to tax: that is, preparations prepared according to a secret formula guarded by copyright or otherwise for the benefit of corporations or individuals. It is possible, however, that the revenue officers have confounded the antistreptococcic and antidiphtheritic serums with a British proprietary preparation which may fall within the category of the law, but is a totally different preparation. The discussion in congress on this branch of the revenue law clearly showed the legislative intent so far as the taxation of proprietary preparations was concerned. To tax antitoxin in the way proposed would violate not merely the spirit but actual text of the internal revenue act. It will probably be sufficient to indicate these facts to internal revenue officers to avoid such taxation.

CORRESPONDENCE.

Ether Vapor as a Diagnostic Agent.

PEORIA, ILL., July 11, 1898.

To the Editor:—About a year ago I began experimenting with ether as a means of diagnosis of intestinal perforations, and concluded that it would be much more practical and better than hydrogen gas, as advocated by Professor Senn, since it is always at hand and necessitates no special apparatus, aside from what is already found in the surgeon's possession, and further, no objections can be given to its use on account of noxious properties, unfounded as these objections may be as to the hydrogen gas. The quantity of ether being infinitesimal (5j or less being sufficient to give up the necessary vapor, which is diluted many, many times by the air that carries it) absolute freedom from anesthesia is assured. The method is simple: A small quantity of ether is poured into the bottle accompanying the aspirator of so-called French pattern. A soft rubber catheter, or rectal tube (preferably a long glass douche tube connected by rubber tubing), is joined to one of the pipes of the aspirator bottle. The air-pump is joined to the other pipe, and air forced into the bottle becomes mixed with ether vapor and passes on through the alimentary

canal, the rectal tube being inserted as far as necessary. This mixture, which may be called ether-air, rapidly finds its way through the coils of intestines, giving forth strong rumblings as it progresses onward, causing distension on entering the stomach, from whence it is belched, provided no perforation exists along its pathway. Upon reaching a perforation, however, the ether-air escapes into the peritoneal cavity, tympanites more rapidly develops, and upon dilating the wound entrance down to the peritoneum quickly comes out into the world, being at once recognized by its odor and the hissing sound of escaping gas. Upon opening the abdomen the distension of the intestine from the rectum up can be followed to the point of injury where the same odor and hissing are noted and the wound repaired. Continuing the search till no more ether-air is found escaping from the intestines we may rely upon its efficacy.

Case 1.—Dog, thirty pounds; shot through abdomen. The rectal tube was inserted and ether-air forced in. A rumbling along the colon could be followed to the small intestines when tympanites rapidly developed (dog was stimulated by the ether to renewed but weak struggles, although the first shot fired was too high, piercing the heart, the second shot taking effect antero-posteriorly at the middle of the abdomen). At the wound entrance, skin only being enlarged, ether-air escaped quickly with a hissing noise, proving the existence of perforation. The abdomen was opened and three through and through perforations of the small intestines found and four others with only one portion of the gut pierced, each perforation giving out ether-air as the proximal perforations were closed.

Case 2.—Dog, forty pounds; shot in abdomen. A tube was placed in the stomach and the stomach rapidly dilated and the vapor passed a short distance. Tympanites developed rapidly. The abdomen was opened and perforation quickly found in the duodenum.

It might be urged that the rectal administration of such a powerful anesthetic would be fraught with serious dangers, but the quantity of ether is so very small that the small amount of ether vapor given off from it is insignificant in effects, aside from those decidedly beneficial, stimulating the dying to renewed struggles and soothing the system preparatory to treatment.

Case 3.—Live puppy, three pounds. Ether-air was forced through the rectum and out the mouth continuously for an hour. No effects were produced aside from a sense of fullness and seeming happy satisfaction with the overloaded alimentary canal. This process could have continued for unlimited time, but one hour and no anesthetic effects satisfied us there would be none.

EMERSON M. SUTTON, M.D.

Precocious Pregnancy.

CLEVELAND, OHIO, July 16, 1898.

To the Editor:—The letters in the last number of the JOURNAL, on "Precocious Pregnancy," remind me of a case that I saw a couple of years ago. Through the courtesy of my friends, Dr. and Mrs. Lukens, I learned the personal history of the case. The girl menstruated first at the age of 11 years and three months. She immediately became pregnant and was delivered at full term by a rather tedious delivery, although otherwise normal, of a large, well-developed child. Both mother and child did well. The father, at the birth of the baby, was just 14 years old. Sincerely yours,

N. STONE SCOTT, M.D.

Alcohol Injections in Hodgkin's Disease, Etc.

St. LOUIS, Mo., July 13, 1898.

To the Editor:—The undersigned is preparing a paper on his experience with injection of alcohol in cases of Hodgkin's disease and cancer of the stomach and for the present will only

say that the results thus far have been very encouraging. In due time he will send you a full report for publication.

Respectfully,

A. F. BOCK, M.D.

Reply to Professor Klebs.

CHICAGO, July 19, 1898.

To the Editor:—The following is the reply I wish to make to Professor Klebs' letter beginning: "In consequence of the surprising declaration of Dr. Murphy that tuberculosis of the lungs can be cured, etc."

Professor Klebs has never seen my article, therefore he knows neither my conclusions nor the work on which I base those conclusions, therefore, his letter has no scientific value in connection with my paper. The paper is now appearing in the JOURNAL. I trust that those who have read Professor Klebs' letter will read the paper most carefully.

Very respectfully, J. B. MURPHY, M.D.

BOOK NOTICES.

The Extra Pharmacopeia. Revised in accordance with the "British Pharmacopeia" in 1898. By WILLIAM MARTINDALE, F.L.S., F.C.S. Serotherapy, Organotherapy, Medical References and the Therapeutic Index. By W. WYNN WESCOTT, M.B. Ninth Edition. Price 10s. 6d.

It must be a sad sight to those writers in this country who have always opposed the decimal system to find that British Pharmacopeia now adopts a dual system of weights and measures in all its formulæ except those employed in testing. The British Pharmacopeia states: "The alternative employment in the British Pharmacopeias of 1867 and 1885 of metric weights and measures in the paragraph relating to volumetric analysis is not extended to every official paragraph which makes reference to the usual Imperial weights and measures but the metric system alone is employed in all paragraphs relating to analysis whether the gravimetric or volumetric. During the period of transition from the Imperial to the Metric system a certain amount of confusion is likely to occur."

The editor of this work, Dr. Martindale, says, "To aid the transition, therefore, and to avoid confusion as much as possible we have in a measure followed the commendable precedent of the first official German Pharmacopeia, and of the United States Pharmacopeia of 1883. In either of these with few exceptions parts by weights were employed.

"We have further given in the body of the work the approximate doses of each drug and preparation in terms of the metric system. In further trying to think in the metric system, prescribers may consider the English grain as 65 milligrams (0.065 grams) and 1½ grains as 10 centigrams and 18 minims as approximately 1 cubic centimeter. Following the U. S. Pharmacopeia we have abbreviated the word gram to Gm. and the words cubic centimeter to Cc. The contraction gm. being printed in heavier type and with a capital initial letter, and we recommended it to be written, will distinguish it from gr. the usual contraction for grain. We trust that our readers may soon be able to become familiar with the quantities and doses in terms of the metric system, which it is hoped will ere long supersede the old system. Probably the greatest difficulty will be the introduction of conveniently sized medicine bottles to contain the metric equivalents of the household measures, teaspoonful and tablespoonful."

This work will be found very valuable, especially in regard to the therapeutic uses of the new remedies and the antitoxin.

Transactions of the New York State Medical Association, for the year 1897. Vol. xiv. Cloth. Pp. 646. Published by the Association, New York City.

This volume is edited for the Association by E. D. Ferguson, M.D., and comprises thirty-two papers by leading practitioners; also lists of officers, committees, Fellows, reports of the District Branches, the New York County Medical Association.

tion, necrology and organizations affiliated with the State organization.

Perhaps with the standards of literary and scientific excellence expected from this Association at the start, some of these contributions to the relief of bellicose New Yorkers might have been omitted. Still the controversialists of both sides will have excellent entertainment in the lazy days of vacation. Dr. E. H. Squibb gives his "Brief Comments on the *Materia Medica*, Pharmacy and Therapeutics of the year ending October 1, 1897." Besides the classical address of the President, Dr. Charles Phelps, there are valuable papers by the editor, Drs. Douglas Ayers, Charles E. Lockwood, J. D. Bryant, Parker Syms, Frederick S. Dennis, Ely Van de Werker, A. Palmer Dudley, Ira Van Giesen, George T. Harrison and H. D. Didama. The article on "Medical Expert Testimony," by Dr. H. O. Jewett, is timely, and another by Dr. Samuel W. Smith, on "Acute Catarrh of the Middle Ear as a Sequel of La Grippe," is more than suggestive. Three active members, usually well represented by papers at nearly every meeting, have been removed by death, to-wit, Drs. Wm. T. Lusk, J. Lewis Smith, and W. H. Robb. Of the former, two memorial tributes have been added by Drs. Austin Flint and John Shradly. Much more in praise might be written, but future readers, as well as the affiliated State societies, may expect to be gainers in reprints, journal abstracts and attractively bound volumes. The New York State Medical Association has a just conception of its duties and responsibilities.

Cardiac Failure and Its Treatment, with especial reference to the Use of Baths and Exercise. By ALEXANDER MORISON, M.D., Edinburgh. Pp. 256. London: The Rebman Publishing Company. 1897.

"It is the peculiar merit of those who are responsible for the attention now given to the balneologic and gymnastic treatment of chronic heart disease that they have extended into the domain of active therapeutics, and during the progress of cardiac failure, the roborant influences of that exercise which formerly and in greatest measures found its place in the period of convalescence."

It is well known to every practitioner that many cases of heart disease are apparently conducive to longevity, for they induce less carelessness of diet, regular habits of life and such exercise that the patient lives to a green old age, notwithstanding the existence of his affection. Schott and others have held conclusively that the enfeebled heart may be strengthened in suitable cases by baths and gymnastics and skilfully administered exercise.

This book enters fully into the details of this form of treatment. The illustrations are clear and fully illustrate the work. The pathology of the affection is given from the standpoint of the modern physiologist. We recommend the book as being in every way satisfactory.

Notes on Military Hygiene for Officers of the Line.—A Syllabus of Lectures formerly delivered at the United States Infantry and Cavalry School, by ALFRED A. WOODHULL, LL.D., Lieutenant-Colonel, Medical Department, U. S. Army. New edition, revised and augmented. Pp. 181. New York: John Wiley & Sons. London: Chapman & Hall. 1898.

"These notes," says the author, "represent the essence of the lectures on military hygiene delivered to the class of 1889 at the Infantry and Cavalry School. It was originally prepared for the convenience of the student officers, but it was afterwards thought that it might be acceptable to officers of the line generally. The new edition changes the original edition to correspond with the present army regulations and the progress of sanitary science."

The volunteer officers, particularly of the Medical Department as well as the line, will find very much useful information in this work. Indeed, it will be well nigh indispensable to those for the first time having the responsibility and care of troops.

Atlas and Abstract of the Diseases of the Larynx.—By Dr. L. GRUNWALD of Munich. Authorized translation from the German and edited by Charles P. Grayson, M.D. 107 colored figures on 44 plates. Philadelphia: W. B. Saunders. 1898. Price \$2.50 net.

"This Atlas," says the translator, "exemplifies a happy blending of the didactic and clinical such as is scarcely to be found in any other volume on this subject with which we are acquainted. It is upon the value of the clinical portion of the work that the editor would dwell with particular emphasis."

The beginner will find here a series of pathologic conditions illustrated with a remarkable fidelity to nature, "that it would require him a number of years to duplicate in actual practice, while the veteran, however rich his experience, will note a precision, a *finesse* in diagnosis that can not fail to be instructive, perhaps even inspiring."

Most of the illustrations were prepared by the academic painter, Mr. Keilitz, from sketches or preparations by the author.

The Methodist Episcopal Hospital Reports. Volume i. 1887-1897. By LEWIS STEPHEN PILCHER, M.D., GLENTWORTH REEVE BUTLER, M.D., New York. Published by the Hospital in 1898.

The book is divided into four parts, viz.:

Part I. 1. Historical Notes, by John Storry Breckinridge, M.D. 2. The Building and the Administrative and the Medical Organization of the Hospital, by Eugene Allen Noble. 3. List of the officers and others connected with the Hospital from its organization.

Part II. Surgical Reports. This comprises various surgical essays, by Lewis Stephen Pilcher, M.D., George Ryerson Fowler, M.D., James P. Warbasse, M.D., Thomas Bray Spence, M.D., Charles Henry Goodrich, M. D., Henry Goodwin Webster, M.D., William Nathan Belcher, M.D.

Part III. Medical Reports. By Alexander Ross Matheson, M.D., Glentworth Reeve Butler, M.D., William Nathan Belcher, M.D., Ralph Melville Mead, M.D., Frank Whitfield Shad, M.D., Arthur Henry Bogart, M.D., Charles Richard Butler, M.D., Henry Goodwin Webster, M.D., Raymond Clark, M.D., Henry Pelouse de Forest, M.D.

Part IV. Pediatric Reports. By John Biou Bogart, M.D. The Hospital was opened for the reception of patients, Dec. 15, 1887, and this report is a record of the decade of hospital work. The book is handsomely printed.

Atlas of Legal Medicine. By Dr. E. VAN HOFMANN. Authorized translation from the German, edited by FREDERICK PETERSON, M.D., assisted by ALOYSIUS P. J. KELLY, M.D. Fifty-six plates in colors and 193 illustrations in black. Philadelphia: W. B. Saunders, 1898. Price \$3.50 net.

The illustrations in this work are original, having been prepared from recent cases or from museum specimens. The volume is made up chiefly of photographs and drawings of various lesions and pathologic conditions taken from actual cases such as would take one many years to acquire unaided. The illustrations cover suffocation, criminal malpractice, injuries of the brain, fracture of the skull, poisoning by mineral acids, arsenic, etc. This reference atlas will be found invaluable.

ASSOCIATION NEWS.

Medical Colleges.—The Permanent Secretary has issued the following circular:

PHILADELPHIA, JUNE 30, 1898.

Dear Sir:—At the recent meeting of this ASSOCIATION the following was unanimously adopted:

WHEREAS, the AMERICAN MEDICAL ASSOCIATION did, at Detroit in 1892, unanimously resolve to demand of all the medical colleges of the United States the adoption and observance of a standard of requirements of all candidates for the degree of doctor of medicine which should in no manner fall below the minimum standard of the Association of American Medical Colleges; and

WHEREAS, this demand was sent officially by Permanent Secretary to the deans of every medical college in the United States and to every medical journal in the United States, now therefore the AMERICAN MEDICAL ASSOCIATION gives notice that hereafter no professor or other teacher in, nor any graduate of, any medical college in the United States, which shall after January 1, 1899, confer the degree of doctor of medicine or receive such degree on any conditions below the published standard of the Association of American Medical Colleges, shall be allowed to register as either delegate or permanent member of this ASSOCIATION.

Resolved, that the Permanent Secretary shall within thirty days after this meeting send a certified copy of these resolutions to the dean of each medical college in the United States and to each medical journal in the United States.

Respectfully yours,

WM. B. ATKINSON, Permanent Secretary.

Please acknowledge receipt of these resolutions.

The Columbus Meeting.

COLUMBUS, OHIO, July 13, 1898.

To the Editor:—We have at once entered actively upon the preparation for entertaining our guests, the AMERICAN MEDICAL ASSOCIATION, in 1899, and can assure them we will leave nothing undone which can contribute to their comfort. Our hotels are as anxious as we are that the meeting shall be a grand success. They offer the following rates and accommodations respectively; Great Southern, rates \$2.50 to \$4.00, American plan. Chittenden, \$2.50 to \$4.00, American plan. Neil, \$2.50 to \$3.00, American plan. Park, \$1.50 to \$2.50, American plan. Davidson, \$2.50 per day, American plan. Hotel Goodale, .75 to \$1.00 per day for room, European plan, first-class restaurant attached. Smith's European, \$1.00 to \$1.50 per day per room, European plan, first-class restaurant attached. Normandie, \$1.50 per day, American plan. Norwich, \$1.50 per day, American plan.

In addition to these regular hotels, we have a large number of strictly first-class boarding-houses where many guests can find economical and comfortable accommodations. A careful canvass of the above hotels mentioned, assures us that they can comfortably accommodate 2500 guests, and with our other facilities we will have no trouble in comfortably entertaining all who will come.

STARLING LOVING,

Chairman Committee of Arrangements.

The Denver Meeting—Comments of the Medical Press.

AND the same day it rained—and the next day—and the day after.

The registration amounted to over 1,300, second, we believe, only to the semi-centennial at Philadelphia, which it was hardly expected to excel. The opening general session was marked by lively interest and good fellow feeling. The remarks of Governor Adams, while amusing, were tinged with truth. The address of Surgeon-General Sternberg did not, of course, receive the same consideration as if he had delivered it in person. But as the reader of the paper, Lieut. Woodhull, remarked, the possibility of absence is one of the penalties that must sometimes be paid when high-grade men are chosen for such offices. After the first day the attendance at the general session was not nearly what it might have been to attain the best results for the good of the society. For example, a total vote counted at mid-session on the second day numbered only 216. However, our visitors from the east can hardly be blamed for wishing to see new sights rather than to listen to discussions on topics that may be more or less stale to them. Besides it will all be in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. . . . The final general session was enlivened by a heated discussion over the long mooted question of the admission of the heretical New York societies. The Philadelphians made a gallant stand for the affirmative, but the self-styled conservatives were in the majority against them. As a matter of fact there is a great deal of sanctimonious cant about the Code, and those who preach it most loudly are as a rule the ones that practice it least. The practical details of the Code are almost never observed. For example, is there one physician in a thousand who, when called to supersede another in a given case, assures himself that the former attendant has been paid in full for his services? When we take a bird's-eye view of the Code it appears to us much like a placard asking gentle-

men not to spit upon the floor. In the sections is where the actual work of the Association is accomplished. Here meet the gray-bearded octogenarian and the beardless boyish graduate, the man of brains and the man of skill and the man who has neither—all brought together in the wholesome fraternal occupation of giving and taking information. Here may be found a congenial atmosphere for all sorts of souls—from the village-prayer-meeting-like quiet of dietetics and physiology to the rousing and militant acclaim of surgery. And now why was it that the gynecology and surgery sections attracted more of an audience, perhaps, than all the other sections put together? Is it that we are all becoming specialists, or is it rather that the general practitioner seeks in such sources the secret of that prestige which has not been his? . . . The few resolutions that were introduced in general sessions were, generally speaking, both timely and proper. One of the most noteworthy was that by Dr. Gould, favoring the establishment of medical libraries throughout the country. The seven years of labor for a National cabinet department of public health should be furthered to its goal by the thousand-dollar appropriation for the special committee on this department. Dr. Sanders' resolution for a National public health system, applicable to all parts of the United States, had its special object lesson no doubt, in the yellow fever imbroglios of the past summer.—*Denver Med. Times*.

THE meeting of the American Medical Association held at Denver during last week can not be regarded as other than most successful. The fact that many of the local medical men originally came from the east led to the renewal of many old acquaintanceships, and this, combined with the hospitable welcome extended by the citizens of Denver, increased the feeling among the visitors that they were indeed at home. Then, too, the situation of the "City of the Plains," surrounded as it is by many features of peculiar interest to medical men, served to stimulate the activity of body and mind and to give the proceedings, scientific and social, a zest not to be found at less favorable meeting-places. The railroad and hotel accommodations were unusually good, and thus one of the most common sources of dissatisfaction was avoided, while the good-will of the visitors was obtained at the start by the efficient methods instituted for the registration of members. The meeting-halls were conveniently situated, unusually large and well ventilated, and with few exceptions their acoustic properties were good. The meeting was also very representative of the Association as a whole, for all sections of the country sent delegates to represent their views, with the result that the proceedings really represented the National profession as a whole. This general representative meeting, therefore, far surpassed in importance to the profession some of its predecessors which have had a local color, and emphasizes the fact that the American Medical Association is becoming more powerful for good in the medical affairs of the country. Sectional differences are disappearing, and politics, while active, is gradually decreasing in importance as scientific pursuits become more popular. An innovation of importance was that of asking most of the members in Denver on Monday night to the dinner tendered to the Medical Editors' Association. By this means the whole assembly started with a swing which carried it through the meeting, and friendships were formed which did much toward increasing the good feeling which was so apparent on every hand. The work of the general sections was good, and the papers in many instances were discussed in a manner which showed that their hearers had ideas worth expression and worthy of respectful attention. This was particularly true of the sections on medicine, surgery and gynecology, in which animated and spirited debates were constantly going on. Aside from the general educational effects of the meeting there can be no doubt that it will exercise a good effect by informing many physicians of the exact therapeutic properties of the Colorado climate; for the program prepared for the entertainment of visitors was designed by the railroads and hotels to advance one's views of the possibilities of the consumptive's paradise.—*Med. News, N. Y.*

BUT the features of the Denver meeting that will stand out most strongly in the memory of those who attended it were the entertainments and excursions. These began with the arrival of visiting members, but first rose to full dignity and form in the dinner of the American Academy of Medicine on Saturday evening, when the Governor of the State and the heads of the Colorado State University, of Boulder; the University of Denver, and the Colorado Springs College, and the President of the Woman's Club of Denver, with the fellows of the Academy responded to toasts, and between the toasts the whole company, nearly half ladies, joined in singing college songs. Sun-

day, the entertainments were quieter but none the less enjoyable, Monday evening they blossomed out in the Medical Editors' banquet, with Hare to preside, and Patterson of the *Rocky Mountain News*, Love, Mercy, Keen, N. S. Davis, Jr., J. W. Holland, J. M. Matthews, Hamilton, Wheaton and others to respond to toasts. Tuesday evening the Section dinners were more largely attended than they ever have been before, over 500 members of the Association joining in them, 175 at the joint dinner of the Sections on Surgery, and Obstetrics and Diseases of Women, 83 at the dinner of the Section on Stomatology. Thanks to the efforts of Dr. E. C. Rivers and others who had the matter in charge, the future of the section dinner is assured. Wednesday evening came the great reception given by the Colorado State Medical Society at the Brown Palace Hotel, and Thursday evening the receptions by the Denver and Arapahoe County Medical Society at the residence of its president, Dr. E. P. Hershey, and at the residences of other prominent citizens of Denver. On Friday an opportunity to study climatology was given in an excursion up Clear Creek Canon to Silver Plume, 9200 feet above sea level. Over 1700 doctors and members of their families were handled in seven trains on this narrow gauge railroad, given a lunch at Idaho Springs of full Western quantity and that would rate as of first quality in any Eastern city, and treated to some of the grandest mountain scenery in the world; and everything moved with perfect smoothness; to the complete satisfaction of the guests.—*Phila. Polyclinic*.

AFTER a year of tedious detail work and much anxiety the Denver meeting came, and has gone into the past. Over 1500 physicians from all parts of the United States were in attendance, and over 500 ladies accompanied them. . . . The first of the mountain outings, which came as a relaxation after the heavy scientific work of the week, was the trip over the Loop which gave the doctors and their friends a very startling introduction to mountain scenery. The trip up Clear Creek Canon is one of continuous delight and amazement, and the "Kodak fiend" was kept busy trying to get a snap at all the beautiful views. Impressions, whether good or bad, of Colorado, were carried away that day by the wholesale. Our visitors had already marveled at Denver's hospitality, but the reception given them at a stop-over at Idaho Springs, only added to their incredulity. The people of that town were fairly teeming with hospitality and from the time the guests entered the town until they left, they owned the place, and a visit from Li Hung Chang himself couldn't have aroused more enthusiasm, in the townspeople than did these visitors. . . . One day in the mountains only whetted their appetite for more and the trip to Colorado Springs the following day was just as well patronized. The Colorado Midland and the Denver and Rio Grande carried about 1500 doctors and their friends to the Pike's Peak region, and Colorado Springs people served luncheon to the guests at the Coburn Library; then the guests were taken to the various points of interest and the day was ended by a grand ball at Manitou. Then came a general scattering to Cripple Creek, Glenwood Springs, Salt Lake and other places. The quiet lull that has settled over Denver is the natural consequence of the week of excitement which kept every one busy and active. The profession of Denver and Colorado have enjoyed entertaining the visiting brethren, and they feel well repaid for the energies put forth which has made the meeting the grand success every one pronounces it to be. The only complaint heard is that Denver has set a pace for hospitality and entertaining which will be hard for the other cities who entertain the American Medical Association in the future to keep up with.—*Colo. Med. Jour.*

THE meeting of the American Medical Association in Denver this year was an important event in the affairs of the local profession and the visitors were very handsomely entertained during their sojourn in Colorado. While the number in attendance was far below what was expected, yet the meeting as a whole was considered fairly successful. The arrangements of the local committee were very complete and gave entire satisfaction to their guests. The work of the Association seemed to be well in hand and, except an occasional ripple, everything went along smoothly enough. The question of admitting the wayward New York brethren was revived by Dr. H. A. Hare, on the third day, and but for the fact that the presiding officer ruled the doctor out of order, after a very heated discussion, it is doubtful what the result of a vote would have been. Certainly the house seemed about evenly divided. The most notable paper presented at this session was one by Dr. J. B. Murphy of Chicago, on the "Cure of Consumption by Compression of the Lung." This was indeed a very interesting feature of the meeting and one well calculated to elicit im-

mediate and universal attention. Dr. Murphy's claim that he had and could cure pulmonary tuberculosis by compressing the lung through the introduction of nitrogen into the chest cavity in such quantity as to give the lung tissue complete rest for a few weeks, was a startling proposition and created great enthusiasm. The subject is too new for intelligent discussion at this time, but the doctor is confident in his premises, which, he says, are based on successful experimentation. Should his claims be substantiated, some queer conjectures and deductions must follow in regard to prevailing theories regarding tuberculosis, and especially in regard to the germ theory.—*The Critique* (homeo.).

THE Denver meeting of the American Medical Association was in many respects one of the most enjoyable meetings ever held by that body. The profession and people of Denver did everything to make the meeting the grand success which it proved to be. The dinners, receptions and entertainments were of a very high order and unusually enjoyable, but there is a growing feeling that these entertainments should be curtailed, as they take a great deal of time that might be employed to much better advantage in the work of the Association. The suggestion made in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* that the general sessions be held at night, in lieu of the receptions, strikes us as a good one. . . . The large number who attended the Denver meeting shows what great interest the profession at large feel in the American Medical Association to go in such numbers to such a distance to attend the meeting. It is a very great privilege to be a member of the American Medical Association, and while the Association is growing in strength and numbers every year, it should include in its membership every reputable physician in the United States. By becoming a permanent member one avails himself of all the privileges of the Association and gets one of the very best medical journals, if not the best, published in the United States, all for \$5.00 per annum.—*Atlanta Med. and Surg. Jour.*

THERE are three things which prompt a physician to leave his practice for an extended trip to attend the meetings of the American Medical Association,—interest in the scientific work of the Association, the pleasure of meeting old friends and seeing and hearing prominent men of the profession, and the enjoyment of travel and a visit to new parts of the country. In all these particulars the Denver trip has been eminently successful, and I have yet to hear of anything but praise for the forty-ninth annual meeting. We had all heard of the climate of Colorado, yet we began to hear of it anew as soon as the limits of that State were reached. Everybody praised it, everybody asked how you liked it, and every local man in every speech or public utterance laid stress upon it. . . . Yet there was one thing in greater abundance than the climate, and that was hospitality. Nothing more could have been done for the entertainment of the visitors. Receptions and excursions were almost too abundant. A desire to enjoy them at times interfered with the attendance upon the sessions of the Association, and on Friday, at the closing general meeting, there was but a corporal's guard of those interested in the politics of the A. M. A. It is no easy task to arrange for the entertainment of 2000 people, yet the work of the various committees was admirable. To be sure there will be some among such a large number of guests who fail to appreciate the hospitality, and show by their actions their lack of good breeding. To my knowledge there were few examples, but one was at the reception tendered to the ladies and the visit to the smelter. . . . Some of the visitors failed to appreciate the labors of the committees and objected because the street cars were not free, and two, to my personal knowledge, made a decided kick against paying two dollars and a quarter for a dinner, room and breakfast in a six-dollar-a-day hotel, saying that they had been told the rate was but two dollars. These trivial things must be expected, and but serve to add a sort of spice to the general enjoyment. Speaking of hotels, there are in Denver good hotels and bad ones, and it may be that because my acquaintanceship is limited, I met more people who had the bad ones. There was a good deal of complaint at three or four of the hotels over the accommodation and the table, and some who were paying \$3.00 and \$3.50 per day even went to restaurants to get a square meal. I know I did, and had it not been for the generous banquets on the first two nights, and the hospitable receptions following, I should have left Denver hungry. . . . The program for the different Sections was very full, and had there been in attendance as many as were there represented there would not have been time for each paper, but many of the prominent men whose names appeared were not present. The character

of the work done was of the highest order, and although no strikingly new theory was presented, the discussions were animated and profitable. Dr. J. M. Mathews of Louisville, Ky., was elected President for the ensuing year, and Columbus, O., was selected as the next place of meeting. Apparently such a program was cut and dried for the occasion with all the quickness of the drying powers of Colorado air, for there was no opposition. This is as it should be; politics should have no place in the A. M. A., but nevertheless it usually has an important one.—*Atlanta Med. Weekly.*

THE Denver meeting of the American Medical Association will forever live in the memory of those who were in attendance as the most complete in every detail in recent years. While the Philadelphia meeting may never be surpassed in the magnitude of work accomplished and the number of physicians present, yet in the uniqueness of the manifold attractions aside from the scientific work of the meeting, Denver seemingly has capped the climax. This is largely the result of the peculiar, favorable location and the bountiful spirit of hospitality, for which the Denver and Colorado profession are well-known. The success of the Denver meeting is due primarily to the local committee of arrangements, in Denver, which, under the wise and pushing direction of Dr. Graham, successfully engineered this most gigantic undertaking in a way that will forever redound to the credit of Western medicine, and Denver hospitality in particular. Denver, certainly is the Queen City of the West, and the grand State of Colorado a State of great and unlimited resources. But above all, it is the climate with which this State is blessed which makes it of interest to physicians, for it says to the weary and afflicted of the East, come and rest in the God-given sanitarium, where health will be given you and wealth, too, if in patience and good-will you but pursue the even tenor of your way. The evidences of the good that comes from a change of residence to those afflicted with pulmonary disease is apparent in almost all localities of Colorado. And such cumulative revelations appeal to physicians, and give to them renewed hope for the many cases constantly coming under their observation. The American Medical Association naturally must feel under lasting obligations to their Colorado brethren for the opportunity of meeting in Denver, just for this one impressive fact alone. The main interest of the physicians in attendance, however, was centered in the work of the Association, which was characterized by an abundance of scientific papers and thoroughness of their discussion in the several sections. In the general sessions many important measures were adopted, the chief of which was the determination to bring within the domain of standard recognition certain medical colleges which have, thus far, failed to qualify, and the means adopted was that of barring from membership in the Association members of the faculty of these schools, which fail to conform to the requirements of the Association of American Medical Colleges. The attempt to reconcile the Medical Society of the State of New York with the Association failed once more, and as a result this old sore must continue to suppurate until some wise measure may, in the future, be adopted which will give to the Association the valuable membership, which must come when peace shall be declared between these bodies. . . . Taking it all in all, we hardly expect to see the like of the Denver meeting again. It was unique, superb and scientific, and all who attended were well repaid many times over for the time and money spent in the pursuit of knowledge, experience and a good time. . . *Med. Fortnightly.*

UNDER the lengthened shadows of the Rockies lies the most beautiful and charming city of the Union, Denver, the pride and glory of Colorado and the modern Palmyra of the plains. One does not tire in looking on its magnificent structures, public and private, nor can he repress surprise and admiration, if he would, at the spirit and grit of the citizens, who allow no obstacle to bar the way to a still higher eminence which becomes more pronounced as the years throw into her lap the wealth that still flows from the ores mined in the neighboring hills. As its climate is invigorating, so is the spirit that has reared on the western plain a city that rivals that of "the Chaldees' excellency." Thither went the leading lights of the profession, in the first week of June, from every State in the Union, and there gathered in associations that have for their object the highest interests of the profession as well as those that are related to the welfare of others. The American Medical Association was the chief magnet around which gathered others whose aim and work looks in the same direction, chief of which was the Association of American Medical Colleges. Its aim and work are of no less importance, because primary and fundamental, preliminary to that of the Association

of physicians. The two associations are very closely connected, and each endeavors to contribute to the efficiency of the other. This was shown by an action of the Medical Association when it adopted a course of action which excludes from its membership the professors of any medical college which does not make its entrance requirements and terms of instruction conform to those prescribed for its membership by the Association of American Medical Colleges. The result of this action will be that no professor of a college can become a member of the American Medical Association, nor the college in which one is a professor become a member of the Association of American Medical Colleges, unless the college adopts the requirements made by the Association. This action places the mark of Cain on all wanderers from the path of professional ethics in the beginning and at the end. Now if State medical associations shall take like action, some bodies will get squeezed out. The entertainments provided by the local profession were all that could be desired, and so timed were they that they did not interfere with the legitimate work of the Associations represented.—*Med. Herald.*

THE meeting was large beyond most persons' expectations; it was also exceptionally representative, for those in attendance were for the most part men of mature age, without the large element of recent graduates usually encountered. The social accessories were enjoyable and to a great extent novel. Enthusiasm and good-fellowship prevailed to a degree unsurpassed, so far as we know, at any of the Association's previous meetings. It is safe to say that the fair city of Denver has proved its capability of taking good care of a large number of visitors; it has also shown its willingness to do so. It was thought by a number of persons that at this meeting some way would be found to reconcile the differences existing between the Association and the Medical Society of the State of New York. We lately expressed some reserve on this point, and the result justifies our lack of faith. Nothing has been done to restore the former relations of the two organizations. Nevertheless, a way was pointed out by the President, in his address, whereby individual members of the profession might join the Association without regard to their State affiliations. It would apply, however, only to those who might be willing to subscribe to the Association's Code of Ethics. Still, it would doubtless let in a great many desirable men, and it seems probable that some such plan will be adopted sooner or later. One of the most important achievements of the meeting was the passage of a measure barring from membership, after a certain date, all physicians who are members of a teaching staff of any medical school that does not conform to the requirements of the Association of American Medical Colleges. The result of this will be to force all the medical schools of the country to adopt the four years' course, on pain of being unrepresented in the Association. It has taken many years to accomplish the enactment of such a measure, and the Association is to be congratulated on its adoption at last. The scientific work done in the Section meetings was quite up to the standard, and the meeting may be said to have been eminently satisfactory from this point of view.—*New York Medical Journal.*

WE do not believe that the exhibitors at the American Medical Association are ever treated right. They contribute very much to the interest of the Association; the exhibitors constitute a very important feature of this meeting. We understand that at the Denver meeting not one of them received a ticket for the excursion around the Loop; they were not invited to attend the receptions. The gentlemen attending and in charge of these exhibits are in every sense of the word gentlemen. They, as a rule, are men who have traveled; they are men well educated, at home in good society and we believe that they should receive more recognition and should have more courtesies extended to them than they received at the Denver meeting. We do not mention these facts to find fault with the Committee of Arrangements, but to find fault with the way that they are and have been treated at the meetings of the American Medical Association, and trust that they will be treated differently at the Columbus meeting. The next place of meeting will be Columbus, Ohio. Judging by the members of the Columbus profession present at the Denver meeting, the American Medical Profession will be well taken care of next year. The new code bobs up in a general session and bobs down. It is unfortunate that the medical profession of New York is not in full sympathy with the American Medical Association. Whether the new code is right or wrong, we believe that some concessions on both sides are desirable. We trust that between now and the Columbus meeting something may occur which will bring about the burial of the hatchet.—*Denver Med. Times.*

THE meeting of the American Medical Association at Denver was a decided success in every particular. More than 1500 members were registered as delegates, with fully 500 non-registered doctors in attendance; and nearly 1000 visiting ladies. The section work was good, notably in the surgical and gynecological departments, in the latter fully 300 members being often present. There was practically no friction in either section, the debates being of highly interesting character, without personalities. The two subjects which elicited most interest were the remedy proposed by Dr. John B. Murphy of Chicago, for pulmonary tuberculosis, and the discussion on the relation of pelvic diseases to insanity and other nervous affections, participated in by the neurologists and the gynecologists. . . . The joint discussion by the gynecologists and neurologists showed that there is a tendency for the two to come together; that is, no gynecologist can succeed in curing a large percentage of his cases unless he has a pretty thorough knowledge of neurology or works with a neurologist, and no neurologist can properly treat quite a large proportion of his female patients without recourse to gynecological measures. Dr. Joseph Price of Philadelphia was particularly positive that many cases of insanity, as well as epilepsy and other neuroses depend upon gross pelvic lesions, and can be cured only by their removal; and related scores of cases in support of his position.—*Am. Jour. of Surg. and Gyn.*

THE scientific work of most of the Sections was up to the average, but in several the programs were overcrowded, a number of inconsequential papers being allowed to creep in. A more than usual number of absentees from the list of members whose names were on the program for papers was noted. Men who are unable to meet their engagements should make it a point to have their names removed from the Secretary's list of promised papers before such he included in the final program. One of the small annoyances to the audience is the non-appearance of an author whose name and paper have been published far and wide, and who is perhaps one of the principal attractions of the meeting. . . . It is to be hoped that our next meeting will be more productive of original research. The fact that the time of the scientific Sections is cut short during the morning sessions, to allow of attendance upon the general meetings with their political fuss and fol-de-rol, has raised considerable criticism, and it is desirable that more of the general session work be placed in the hands of the Executive Committee, and thus valuable time saved to the scientific Sections.—*Ophthalmic Record.*

THE American Medical Association will hold its meeting of 1899 in Columbus. Our city has been named to follow in the list—Denver, Philadelphia, Atlanta, Baltimore and all those that have preceded. It certainly is an honor to the city and a compliment to the profession and business men who extended the invitation to the Association to come here. The choice is one of responsibility, both for the Association and for the city. The former has expressed its confidence in our representatives, and it now devolves upon us as Columbus citizens and as members of the medical profession, to see that their promises are more than fulfilled. That this will be done we most firmly believe. It means work—painstaking detail work to accomplish this—but it will be after all work of love, and one we have said we only awaited the opportunity to take up. It shall be our endeavor to prove the wisdom of the choice of Columbus, and to the Association the *Columbus Medical Journal* extends the thanks of our citizens for this opportunity to test the virtues of the Buckeye Capital as a convention city.—*Columbus (Ohio) Med. Jour.*

THE American Medical Association may well feel proud of the welcome accorded it in the West, and of the unstinted hospitality displayed by the people of the various localities visited by its members. It was generally agreed that one of the most remarkable of the striking features of the memorable excursion around "the Loop" was the manner in which the people of Idaho Springs received and entertained upward of two thousand visitors. The whole town turned out, ladies, children and all, and made the occasion one huge lawn party, in which all were individually welcomed and made happy; yet it was done with such an absence of apparent effort that the guests became possessed with the notion that such wholesale entertainment must be a part of the every-day life of that town. It was one link in a chain of many pleasant recollections which the visiting members carried home with them.—*Med. Record, N. Y.*

VIEWED from every possible standpoint, the meeting of the American Medical Association, at Denver, was the most suc-

cessful in its history. The only other meeting with which it could be compared was the semi-centennial, held at Philadelphia, but since that meeting was in the heart of the most populous section of our country, having fully 30,000 doctors within a radius of fifty miles, and since only a semi-centennial can justly be compared with it, it must be left out of consideration, in which case the Denver meeting goes into history as the banner one. . . . There can be no question that the holding of our National convention in the State of Colorado has been of great service to the profession, as well as to the invalid public. Much definite knowledge has been gained by the members which is practical and valuable, and could not have been secured in any other way. . . .—*Med. Mirror.*

DESPITE the Hispano-American war, the meeting at Denver was a success, and the Association began the second half of its century of existence under most auspicious circumstances. The general meetings were well attended, and the Section meetings were also graced by the presence of many members. From a scientific point of view the meeting was a marked success. It is to be regretted that the present war prevented the President of the Association, Dr. Geo. M. Sternberg, Surgeon-General U.S.A., from being present. His address, which was a masterly one, was read for him during his absence. The 1500 members who were present deplored the necessity of this hiatus. The social features of the meeting were on a grand and magnificent scale, and it will be many years before the Denver meeting is forgotten.—*St. Louis Med. and Surg. Jour.*

DENVER has redeemed her pledges, and the meeting of this Association just closed has been one of the most satisfactory in its history. The very atmosphere of Colorado seemed to be imbued with hospitality. The attendance exceeded all expectations, the registration reaching 1600. In the absence of President Sternberg the chair was gracefully filled by First Vice-president Joseph M. Mathews, M.D., of Kentucky. The entertainments provided by the local committee were not only elaborate but pleasing in the extreme, and the memories of Denver's profession and Colorado's beauty spots will ever remain in the minds of the visiting physicians.—*Med. Fortnightly.*

THIS meeting of the Association was a most successful one in many respects. In numbers it was largely attended, 1100 members having registered at an early hour of the first day. The Treasurer's report shows a very healthy condition and the enrollment of 1500 additional members. The papers read were uniformly interesting and progressive. There seems to have been much less of political action. Dr. Keen's address of last year seems to have done some good. The usual bone of contention, the secretaryship, was left at rest for one time. A number of new measures were introduced, one of which was of great importance, especially in connection with medical education.—*Nashville Jour. of Med. and Surg.*

WE predicted last month that this meeting would be one of unusual worth, and now that it is past, we can say it is doubtful if in the history of medicine there has ever been a meeting of more general interest or one more entitled to be justly and unreservedly termed successful. The efforts of the Denver physicians were Herculean, and their success was complete, even to detail. . . . The work of the sections was in many instances far above the average. Several papers in each section might be mentioned as being of especial interest, but our limited space precludes the possibility of giving even a brief abstract of those which merit notice. Inasmuch as they will be published, and as doubtless all of our readers are members of the Association, or, if not, they should be, they will thus get the benefit of at least reading them.—*Chicago Clinic.*

THE Denver meeting will pass into medical history as one of the most pleasant, enjoyable and profitable meetings the Association has yet held. The arrangements were well carried out, and the various sections carried out their programs on schedule time and were well attended. The registration reached twelve hundred on Tuesday, a remarkably large number when it is remembered that many of our members are now in the service of the United States government.—*Ala. Med. and Surg. Age.*

THE meeting of the American Medical Association in Denver was an unqualified success, and the meeting of the Ophthalmological Section was up to its usual standard, although the familiar faces of Knapp, Risley, de Schweinitz and others were much missed. The humorists of the Section, Drs. Thompson of Indianapolis and Savage of Nashville were there, and added their usual welcome flavoring to the proceedings of

the Section. Drs. Black, Rivers and others of Denver did much to make the meeting successful in adding to the comfort of their fellow ophthalmologists and earned their deepest gratitude.—*Ophthalmic Record*.

THE Association convened in Denver on June 7. Considering the location of the meeting, making it necessary for many to travel a long distance, the attendance was quite large and representative of the ablest and most progressive elements in the organization. The Sections were well attended, and the long list of papers presented in each by leading members indicated the depth of interest in the work, and the fact that each branch of medical science is receiving due attention from the Association.—*Medical Standard*.

THE forty-ninth annual meeting of the American Medical Association at Denver, June 7-10, was attended by a representative of the *Lancet* in order to let our readers have an early and complete account of the meeting. From the expression of all who attended, we believe the meeting was as pleasant and profitable as any that has ever been held. The attendance was large, there being over 1500 registered. . . . To dwell on all the notable features of the meeting is impossible. The discussion of appendicitis in the Surgical Section prominently participated in by Drs. Keen and Murphy was probably the feature of the meeting. All the Sections were well attended and profitable, the Section dinners and receptions extremely pleasant and altogether the Denver physicians and the Denver people did all in their power to make the meeting a memorable one.—*Memphis Lancet*.

THE meeting of the American Medical Association at Denver this year has been in every way successful and progressive. With a single exception, referred to elsewhere, there has been no striking discovery made public, but work in all the Sections has been more serious and solid than has before been customary. The growing popularity and power of the Association were made plain by the increased membership. The registration this year has been 1322, this number being next to the largest in the history of the organization.—*British Medical Journal*.

THE Denver meeting will pass into medical history as one of the most pleasant, enjoyable and profitable meetings the Association has yet held; the arrangements were well carried out and the various Sections carried out their programs on schedule time and were well attended.—*N. A. Jour. of Diag. and Practice*.

THE meeting just closed was one of the most interesting and profitable and most largely attended in the history of the Association. . . . No doubt this meeting will remain in the memory as one of the pleasantest in the history of the Association.—*Annals of Gyn. and Ped.*

NEVER in the history of this Association has a more pleasant and profitable meeting been held, than that which closed at Denver June 10.—*Kansas City Med. Index*.

NECROLOGY.

JOHN BOARDMAN, M.D., Buffalo, N. Y., died July 9, aged 70 years. He was graduated from the Medical Department of the University of California in 1853 and, later, was for two years demonstrator of anatomy in the Medical Department of the University of Buffalo, from 1854 to 1858 physician to the Buffalo Orphan Asylum, and attending surgeon to the Buffalo Hospital of the Sisters of Charity from 1856 to 1873. In 1883 he was appointed on the board of managers of the Buffalo State Hospital for the Insane. He served on the board until 1891, when he resigned, owing to ill health.

GEORGE W. BURTON, M.D., Mitchell, Ind., July 13.—William B. Cochran, M.D., Middleburg, Va., aged 89 years.—Andrew J. Hare, M.D., Milwaukee, July 6, aged 60 years. David S. Hayes, M.D., Hollidaysburg, Pa., July 10, aged 65 years.—Charles L. Knowlton, M.D., Northampton, Mass., July 5, aged 74 years.—E. A. Parkinson, M.D., Hart, Mich., July 12.—Frank G. Seaman, M.D., Seneca Falls, N. Y., July 12, aged 35 years.—J. J. Warren, M.D., Sharon, July 1.

WARREN PIERCE, M.D., Plymouth, Mass., died July 10, aged 50 years. July 29, 1862, he enlisted in Company K, Fourteenth Massachusetts Regiment, as a private. He was detailed as hospital steward soon after and served two years in that position, when he was appointed second lieutenant of the Fifty-sixth United States colored infantry, stationed at Fort Lookout, where 5000 Confederate prisoners were confined. In July, 1864, his regiment was attached to the Twenty-fifth Army Corps and ordered to the front at Petersburg. Lieutenant Pierce took part in the operations against Richmond and was the third Federal soldier to enter that city. He was graduated from Harvard Medical School in 1869.

WILLIAM HENRY HODOMAN, M.D., College Physicians and Surgeons, N. Y., 1873, died at Saratoga, N. Y., July 15, aged 46 years. He was health officer of Saratoga Springs from 1878 to 1879.

MISCELLANY.

Prof. Daniel R. Brower of Chicago has been elected as a foreign member of the Moscow Society of Neurology and Mental Science.

A Common Complaint.—“What are you treating me for, doctor?” “Loss of memory. You have owed me a bill of \$10 for two years.”—*Tid-Bits*.

THE Souvenir Volume presented to Professor Durante of Rome on the twenty-fifth anniversary of his professorship, contained 2000 pages in the three volumes, and sixty original communications, including one on the resection of the Gasserian ganglion by Keen and Spiller of Philadelphia, and one by Biunie of Kansas City, on encapsulated epithelioma.

Quarantine Burned.—From the *Register*, Mobile, Ala., we learn that the quarantine plant, located in the lower bay, a mile above Fort Morgan, caught fire July 8, and the main building was destroyed. The amount of insurance on the plant was \$13,240. The plant was built in 1892 and cost about \$60,000. Of the amount required for its erection the State of Alabama appropriated \$50,000.

Wsr Correspondence.—The readers of the JOURNAL will regret that Lieutenant Colonel Senn's correspondence last week was sent to the *Chicago Record*, and the letter of this week was sent to the *Chicago Tribune*. As they appeared in those papers before we could get them in type, we were unable to use them. The manuscript which we received has been sent to the Newberry Library.

Surgical Treatment of Sterility.—Mann (*Annals of Gyn. and Ped.*, July), in discussing this subject, enumerates the causes of this condition as vaginismus, atresia of the vagina, stenosis of the os, lacerations of the cervix, uterine displacements, endometritis and adenomatous disease, cervical catarrh and tumors. He considers the only relief as surgery, modern surgical methods implying practically no danger in this class of operations.

Plastic Operations on the Tubes.—Ries (*Annals of Gyn. and Ped.*, July), believes that the conviction that too many tubes have been removed is gaining ground, and plastic operations on the tubes are being resorted to instead. He considers plastic operations indicated in obstruction of the tubal channel by benignant tumors, extra-uterine pregnancy in certain cases, and “inflammation in cases where there is no pus or other signs of an active stage of the inflammation.” Diagnosis of such occlusion may be difficult.

Hip Joint Amputation.—Noble, in *Annals of Surgery* for June, reports six cases of hip-joint amputation: One injured by crushing high up in the thigh; two from disease of the bone involving the head of the femur and acetabulum; three and made for osteosarcoma in the tibia. Two were done by trans-

fixion, and three by the use of Wyeth's pins. On account of the objection to the latter method, *i. e.*, "that when the pressure is removed, the amount of blood lost from the oozing of small vessels is perhaps greater than in any other means," he believes the transfixion method is the best.

An Editorial Change.—The *Annals of Gynecology and Pediatrics*, for June, announces that hereafter Dr. B. Sherwood-Dunn will be jointly interested in the editing and publishing of that journal. Dr. Dunn was graduated at Bellevue Hospital Medical College, New York, 1884, and from the academic department of the University of France, Paris, in 1887, and the medical department of the same university in 1888. He has also had several years' hospital experience in Paris, and in 1897, in recognition of his work in France, was decorated by the French government with the cross of *Officier d'Académie*.

Operative Wounds of the Thoracic Duct.—Cushing, in *Annals of Surgery* for June, summarizes seven cases collected from the literature and adds to these two from the surgical records of the Johns Hopkins Hospital. If the duct itself is injured, he considers suture the ideal method, but only in cases where the duct is fully exposed and not completely divided. He advises placing a ligature about the duct on the proximal side of the wound, and control the leakage by a gauze tampon. This would act as a safety-valve and allow the chyle to escape if the pressure in the duct became too great. If the leakage should become uncontrollable, the ligature should be tied in an effort to readjust the collateral circulation, trusting for some branch to carry the lymph into the venous circulation.

Lactic Acid in Arthritis Deformans.—Zolotorin, *La Med. mod.*, Vol. ix, in a case of ten years' standing, the last year of which the patient kept her bed, began with ten drops on an empty stomach, no food being allowed for an hour and a half afterward, and gradually increased the dose to forty drops a day. In three weeks the woman could get out of bed and walk a little, the pains being much relieved and the joint circumference slightly diminished. The improvement lasted until no care was required, and ordinary duties could be resumed. No internal medicine other than lactic acid was given, and no external placebo except slight massage.

Fortress Monroe as a Hospital Point.—The present indications are that Fortress Monroe is to be made an important center for the care of the sick and wounded during the present war. A corps of twenty surgeons has already been detailed for duty as a beginning, and the large wooden building, at first proposed, is likely to be superseded by tents with ample conveniences. These are to be located on the moat near the fort hospital building, and the superiority of the place, as demonstrated in the civil war, is again to be corroborated. Yellow fever, although regarded by the citizens of Tampa and other points on the Florida coast as a possible source of anxiety, especially at this season, has not thus far ranked as a menacing objection of any magnitude. Still it is not certain that the infected will be brought to Old Point when farther North so easily minimizes the difficulties. Every confidence in the wisdom of the Executive, however, is freely expressed.

Blastomycosis of the Skin is the name proposed by Buschke for a new affection described by him at the recent German Dermatologic Congress, with microscopic demonstrations of one case. It is a primary disease of the skin, due to pathogenic blastomycetes, clinically resembling carcinoma, but without its hard edges, histologically belonging to the granulation tumors, and anatomically occupying a middle ground between mycosis and infective granulation tumors. Infection of the blood may lead to the formation of internal tumors, but the skin is the chosen site and entering point even for internal manifestations. He considers the existence of primary intestinal blastomycosis also probable. The existence of pathogenic yeast fungi is established, belonging to the saccharomy-

cetes and oidii, but nothing indicates their connection with malignant tumors.—*Munich Med. Woch.*, June 21.

Spanish Cruelties.—Cursees, like chickens, come home to roost. Some enthusiastic Cuban has delved in the old Spanish libraries and from a number of books has photographed the wood cuts made at the time, selecting those which illustrate the cruelty of greed of that nation. They form a collection about as grewsome and hideous as the famous chamber of horrors in Brussels. In one picture the methods employed by Pizarro and Cortez to compel the poor Aztecs to reveal the source of their wealth are shown. The favorite system was to stretch a man on the ground between two posts and then to build a fire near the soles of his feet. Another was to set fierce hounds upon a man. The terrible part of the story is that these practices were not done underhandedly, but openly, by their perpetrators, and the drawings were put in these old books to show how ingenious and efficient the system was.—*New York Mail and Express*.

Melancholia.—Loveland in the *New York Medical Journal* of June 25 presents a contribution on this subject, accompanied by a table showing the results of an examination of the blood in fifty-seven cases. He considers the main feature of the treatment, feeding, sometimes forced feeding with liquid food, and in the fifty-seven cases, concluded from the study of the blood that it was neither deficient in hemoglobin nor hemocytes at the initial or early stage of the disorder; in fact, he found it above the average in these particulars. He says: "That after the loss of appetite, always present, and the frequent entire refusal to take food, and the impaired digestive power associated with such a mental condition, the blood first loses its richness in coloring matter, and later in the corpuscular elements." He considers it a circumstance worthy of note that while many people with thick blood are melancholy, he has never seen any signs of melancholia in profoundly anemic cases.

Albumosuria in Medical Practice.—In the *American Journal of the Medical Sciences* for July, Fitz reports a case of myxedema in which albumosuria continued throughout the progress of the disease, a symptom which, with but a single exception, has hitherto been unrecorded. He says that while transitory albumosuria has proven of but "little practical value except in the diagnosis of acute pneumonia, deep-seated suppuration, including meningitis, and of macerated fetus," greater value is to be attached to persistent albumosuria, and its importance has been especially suggested during late years in the diagnosis of multiple but latent tumors of the trunk, principally multiple bone tumors and in myxedema, and in but few cases of these affections. "Whatever the value of albumosuria may be in diagnosis, its persistent and excessive presence is apparently a sign of grave prognosis, since the cases in which this condition has been found have, almost without exception, proven fatal."

Jaundice in Typhoid Fever.—In the *American Journal of the Medical Sciences* for July, Da Costa presents observations made on this subject in the Pennsylvania Hospital during the past winter. In some of the cases jaundice was associated with parotid swelling, which he considers more than a coincidence. In some it occurred as a late symptom and in one case, which he considers unique, it distinctively preceded the development of typhoid fever, occurring during the latter part of the incubation period. Previous to the five cases reported, he has met with but one instance of jaundice in typhoid fever, although jaundice is not infrequent when there is a complication of malaria. He finds that the symptoms attending jaundice are not constant, but as a rule the symptoms of a severe case of typhoid fever. Delirium is apt to be present, but it was not much aggravated by hepatic conditions, and there were intervals when the mind was clear. High temperature was the rule,

chills not uncommon, and the pulse remained rapid. He believes that jaundice in such cases is usually due to a blood condition, with more or less disorganization of the red corpuscles and often associated with alteration in the liver cells. All the cases reported show the symptom to be a grave one, the fifty-two cases resulting in thirty-three deaths and nineteen recoveries.

Micro-organisms Resembling the Tubercle Bacillus have been isolated by A. Moeller from timothy and other grass and the fresh droppings of the domestic animals. Inoculated into rabbits they produce a miliary tuberculosis, nodules in the omentum, giant cells, cheesy patches in the lungs, deceptively similar to the lesions of genuine tuberculosis. Other animals and a few rabbits were not affected by them. His preliminary communication in the *Deutsche Med. Woch.* of June 16 describes their rapid, dry growth, yellow sediment, and resistance to alcohol. They stain like the tubercle bacillus, which they closely resemble morphologically and in their growth on glycerin agar. On bouillon this micro-organism forms a delicate, transparent, dry, pale yellow skin on the water, extending 2 to 3 cm. up the glass. Shaking the tube breaks off fragments which sink to the bottom. He concludes by detailing the points in which this "timothy bacillus" differs from others in its growth, etc.

The Wounded in this and the Previous War.—Surgeon-General William K. Van Reypen, United States Navy, according to the Washington lay press dispatches "has received a report from the surgeons with the fleet that in the many cases of wounded, some of them serious, not a rise of temperature nor an accumulation of pus has appeared in any case. From a medical standpoint this is said to be a marked advance from the conditions during the Civil War, and is attributed to the introduction of antiseptic treatment of wounds." An old army surgeon in the confidence of the JOURNAL excepts to this statement in part, for he maintains that "in the Civil War the most exemplary cleanliness was enforced in the hospitals, and that the method of irrigation was adopted from the start; further, that there was a rivalry among the ward-masters of the pavilion tents as regards the best appointments and comforts. This was certainly the case in the Western divisions of the army, where private mansions and close quarters were from the first tabooed. Certainly proper drainage was always the aim in the treatment of suppurating wounds." Much talk in reference to "laudable pus" was the vogue, but was generally looked upon as a significant sign of ultimate recovery. In fact, he says: "To some it was an 'unknown god,' ignorantly worshiped." To all of which may not the statement be added that in the matter of antiseptics there are many makeshifts which scarcely baffle the Anglo-Saxon mind. It may be recalled that bromine, when introduced by Surgeon Goldsmith, vanquished the hospital-gangrene occasionally prevalent.

A German Medico-Legal Decision.—The so-called "Seidel case" (a trial for libel), recently terminated at Brunswick, Germany, was a remarkable judicial proceeding, unlike anything met with in the courts in America or England. The Government of Brunswick and certain assistants in the Brunswick General Hospital united in prosecuting the brothers of the late Dr. Seidel, one of the attending surgeons in that institution, for publishing a charge to the effect that he had been impelled to commit suicide by the intrigues and falsehoods of his assistants and by the severity of the Government in suspending the professor from his hospital functions before he had been heard in his own defense. The trial excited great interest in the medical profession in Germany, and many eminent surgeons testified as experts, the weight of opinion being strongly in favor of the correctness of the late Dr. Seidel's conduct and against the manner in which he had been treated by the assistants in the hospital. Their principal grievance against him appears to have been his indifference to antiseptic precautions in surgery, but the expert witnesses declared that the assist-

ants had exaggerated ideas on this subject. The court in the end acquitted the brothers of Dr. Seidel and declared that the accusations against the deceased surgeon were unjust.

The Unsung Heroes.—Dewey and Bagley and Hobson and Schley and Blue and Neville and Shaw, the heroes of Guatanamo, Capron and Shafter, and all the long list of men who have distinguished themselves in this war, officers and men, are deserving of all the generous praise that has been bestowed upon them for the brave deeds they have done and for their unflinching devotion to duty. Their example is of inestimable value for its influence upon their fellow-citizens both in civil and military life. They are a source of inspiration which tends to a higher order of patriotism in all the walks of life and all the duties of the citizen. The patriotic uplift is discoverable to the most distant part of the country, and in the remotest hamlet. It manifests itself in greater love for the flag, greater pride in citizenship, greater fidelity to civic duties. War is a great character-maker. The heroes of the field and of the wave are its exemplars, and under the spell of hero-worship men grow better. All honor to the Deweys and Hobsons and the rest of them. Yet there is one class of heroes whose praises are seldom sung and whose patriotic sacrifices receive but slight recognition in the dispatches from the front. But they are there, exposed in greater or less degree to the fortunes of war, doing their duty without hope of acknowledgment, and performing their daily and nightly tasks with a devotion that knows no flagging, and without the spur and the inspiration of the cavalry charge or the shriek and crash of the flying shells on board the man of war. The surgeon's duties on the field and in the hospital tent preclude the incentive of excitement, and are attended by none of the dramatic action of war. No matter what the conditions, whether for the time in comparative safety or when his scene of operations becomes the center of the hottest fire, as sometimes happens, he stands to his post, offering his own that he may save the life of another. While remembering the heroes of the sabre and the gun, do not forget the heroes of the scalpel and the probe. They are never court-martialed for cowardice. And no wonder. Bravery in the face of danger is no new thing for them. The volunteer surgeon has not learned courage and ceased to be afraid because of any "baptism of fire." He has faced danger before. The faithful and skillful doctor is always in the thickest of the fight in the battle of life. He has learned all there is to be learned of bravery and self-sacrifice in the midst of the deadly epidemic, and in the panic of pestilence and plague he acquired the courage which makes a hero of him now. God bless the doctors! They are the salt of the earth. No class of men see so much of the suffering and misery of life; none do so much to relieve distress without hope of reward in this world. And the doctors at the front—congress passes no resolutions of thanks to them, and presidents and public do not applaud their fidelity to duty. Why, then, are they there? What glory awaits their efforts? Their only reward is the satisfaction of duty done; the approval of their own consciousness that their skill and experience and their limit of endurance have been spent without hesitation in the service of their country and in behalf of their fellow men. Remember the men, give praise and honor to sacrifice and courage and steadfastness in the face of the enemy, and remember the unsung heroes, too.—*Minneapolis Journal*, July 14.

Commercial Greatness of the United States.—The Chief of the Bureau of Vital Statistics of the Treasury Department kindly furnishes us the following:

More than three-quarters of the \$1,200,000,000 worth of our productions which were sent abroad during the fiscal year just ended went to Europe, while only one-half of the \$600,000,000 worth which we imported came from Europe. Nearly one-half of our exports of the year went to the United Kingdom alone, while our imports from the United Kingdom were less than one-fifth of our total importations.

While the full figures of the fiscal year are not yet complete, the reports of the Bureau of Statistics covering the eleven months ending June 1 are sufficient to show who have been the purchasers of the enormous aggregation of domestic pro-

ductions which the United States has distributed to the world in this year of her greatest commerce. Our sales to Europe are more than three times as much as our purchases from that part of the world, the exports to Europe during eleven months of the year being \$901,014,786 and the imports from European countries in the same time \$281,091,002. To the countries of North America we have sold 50 per cent. more than we have purchased from them, our exports to them for the eleven months being \$127,125,929, against \$31,287,488 of imports from them. To Africa we have sold more than double the amount of our purchases, the exports to that part of the world being \$16,097,959 in the eleven months whose record is completed, and the imports \$6,786,017. Here the scale turns against us, for in our commerce with South America, Asia and Oceanica our sales to each of those countries have been far less than our purchases from them. To South America we sold during the eleven months in question only \$30,748,846 worth, while our purchases from that part of the world were \$85,859,245. To Asia our sales were but \$41,561,531 and our purchases therefrom \$85,381,158. To Oceanica our sales were \$19,979,555 and our purchases \$23,365,132. It is gratifying to observe, however, that in our trade with Asia, where all nations of the earth are now striving to extend their commerce, there has been a material gain in our exports during the year, the total being nearly 15 per cent. greater than that of last year.

The figures for the year will show a marked improvement over those of last year, the exports to Europe being more than three times the imports from Europe, while last year they were not quite double the imports; the exports to North American countries will be nearly fifty million dollars in excess of the imports from these countries, while last year the excess of exports was less than twenty million dollars; our imports from South America will be 150 per cent. in excess of our exports to that part of the world, while last year they were more than 200 per cent. greater than the exports.

There is not a country, indeed scarcely a spot, in the civilized portions of the globe which has not been a customer of the United States in the year just ended. From the United Kingdom, whose purchases for the year are nearly six hundred million dollars, down to Paraguay with a total of less than one thousand dollars, the continents, countries and the islands of the earth have purchased of the plenteous supplies which the United States has been able to offer to the world in this greatest year of her commerce. To the United Kingdom the exports for the eleven months were \$501,756,263, against \$452,926,890 in the corresponding months of the preceding year. Germany came next as a purchaser, our total sales to that country being \$143,416,065, against \$116,881,478 last year. The next largest purchaser was France, to which we exported \$87,012,841 in the eleven months of the year, against \$54,575,298 in the corresponding months of the preceding year. Next came British North America with purchases amounting to \$76,160,414, against only \$59,676,594; then Netherlands with \$59,733,226, against \$46,436,034 last year; then Belgium with \$44,006,379, against \$30,469,416 last year; Italy, \$21,849,377, against \$20,205,301 last year; Mexico, \$19,304,687, against \$21,396,395 last year; Japan, \$19,260,415, against \$12,466,433 last year; British Australasia, \$14,213,606, against \$16,197,092 last year; Brazil, \$12,694,163, against \$11,413,345 last year; Denmark, \$11,604,578, against \$9,627,047; British Africa, \$10,953,954, against \$12,216,080; Spain, \$10,193,800, against \$10,208,637, and China, \$9,036,727, against \$10,981,919 last year, while none of the other countries of the world reached the \$10,000,000 line in the eleven months whose record is now complete.

Our purchases abroad, as already indicated, are much less than those of last year, being for the eleven months \$563,770,032, against \$679,557,391, and for the full year likely to be but a trifle in excess of \$600,000,000, against \$764,730,412 last year. This year our total exports will practically double our imports, while last year they were less than 25 per cent. greater than our imports. As above stated, one-half of our importations came from Europe. Our largest purchases during the year were from the United Kingdom, which, as already indicated, was our largest customer, our total purchases in the eleven months from the United Kingdom being \$101,454,480, against \$143,588,675 in the corresponding months of last year. The next largest purchases were from Germany, from which we bought in the eleven months \$61,916,809 worth of goods, against \$98,364,012 last year; Brazil next, from which we bought \$58,203,762, against \$64,695,383 last year; then France, \$49,480,413, against \$60,095,025; British North America, \$28,528,539, against \$34,757,841 last year; and during the eleven months of 1898 we bought \$24,164,842 from British India, \$23,180,892 from Japan, \$19,484,387 from China, \$18,209,368 from Italy, and \$16,142,491 from Mexico.

The following table gives our exports to, and imports from

the grand divisions of the world during the eleven months ending June 1, 1898:

	IMPORTS.	EXPORTS.
Europe	\$281,091,002	\$901,014,786
North America.	81,287,474	127,125,929
South America.	85,859,245	30,748,846
Asia.	85,381,158	41,561,531
Oceanica	23,365,132	19,979,555
Africa	6,786,017	16,097,959

Societies.

The following recent meetings are noted:

Iowa.—Austin Flint Medical Society, Iowa Falls, July 12 and 13; Iowa Union Medical Society, Cedar Rapids July 13; Southwestern Minnesota Medical Society, Sibley, Iowa, July 14.

Kansas.—Academy of Medicine, Topeka, July 11.

Kentucky.—Lexington and Fayette County Medical Society, Lexington, July 11.

Massachusetts.—Franklin District Medical Society, Greenfield, July 12; Hampden District Medical Society, July 19.

Nebraska.—Elkhorn Valley Medical Society, Norfolk, July 12; South Omaha Medical Society, July 9.

New York.—Jefferson County Medical Society, Watertown, July 9. Oneida County Medical Society, Utica, July 12; Ontario County Medical Society, Canandaigua, July 12; Wayne County Medical Society, Lyons, July 12.

Pennsylvania.—Berks County Medical Society, Reading; Lackawana Medical Society, July 12; Lycoming Medical Society, Williamsport, July 8; York County Medical Society, York City, July 7.

Vermont.—Union Medical Society, Bennington, July 13.

Wisconsin.—Brainerd Medical Society, Milwaukee, July 13.

Louisville.

EXAMINATIONS.—Secretary McCormack of the State Board of Health held the examination as provided by the recent law regulating the practice of osteopathy, and but one woman presented herself to stand the test. The annual meeting of the State Board of Pharmacy was held in this city last week for the purpose of examining candidates for the practice of pharmacy in the State. Quite a large class took the examinations.

CATTLE.—Since the convention at St. Louis, some time ago, the attention of the State Board of Health has been directed especially to the prevention of the shipment of cattle through the State without proper examination. There is a Government inspector in the city who is doing specially good work and is guarding against the importation and transportation of diseased cattle. There has been some ground for complaint on the part of Indiana and Illinois because of diseased cattle being shipped through Kentucky, and to guard against this an important meeting of the Health authorities, State and local, was held last week to look into the matter and adopt regulations. The following were present: County Judge Gregory; M. K. Allan, Health Officer; J. N. McCormack, Secretary of State Board of Health; Wm. Bailey of the State Board; and Geo. W. Griffiths, B. W. Smock of the County Board and F. C. Eisenman, State Veterinarian. Under rules adopted Dr. Eisenman will examine all cattle which pass through the State and none will escape that are diseased.

Philadelphia.

SURGEONS OF THE KEYSTONE STATE ARE BEING DISCRIMINATED AGAINST.—There a great many surgeons in the Volunteer Army from Philadelphia and the State at large now at the front. Owing to the laws of certain States the assistant surgeons in the Volunteer Army take the rank and draw the same pay as a captain. In Pennsylvania no such State law prevails, and therefore, assistant surgeons from this State take rank and draw pay as first lieutenants. When it is considered that the Commonwealth of Pennsylvania was one of the first States to furnish its quota of men and gave up its national guard through the ruling of the War Department, it is a source of regret that the medical men are not put upon the same footing as those from other States. It is reported that Governor Hastings has made a test case of and has submitted the facts to the War Department for its decision regarding the matter.

A GLORIOUS FOURTH.—The following casualties are reported

by the different hospitals of the city for July 4: Howard Hospital: Burns 2, contusions 4, gunshot wounds 1. Episcopal Hospital: Burns of the hands, face and neck 11, gunshot wound of finger 1, lacerated wound of finger 1. St. Joseph's Hospital: Burns 3, lacerated wound of finger 1, laceration of hand 1. Presbyterian Hospital: Burns of hands and face 10, lacerated wound of finger 1, dislocation of shoulder from discharge of gun 1. German Hospital: Burns of hands, face and neck 11, gunshot wound of finger 1, lacerated wound of finger 1. Jefferson Hospital: Burns 2, gunshot wound of forearm 1, gunshot wound of hand 1. Medico-chirurgical Hospital: Burns 4, contusions 2. Polyclinic Hospital: Burns 5, lacerated wounds 5, fracture of humerus 1.

HOW THE MORTALITY OF CITIES IS INCREASED.—No better exemplification of the increase in the death rate of cities is needed than to study the enormous increase in the number of cases of cholera infantum as observed during the summer months. For instance, in Philadelphia there have been 720 deaths, of which 185 were caused by cholera infantum alone. During this same period 27 deaths from sunstroke occurred, so that, taking into consideration the different agents which give rise to the increased death rate, we must assign it first to the intense heat which has prevailed, together with rapid fermentation which set up these digestive disturbances. If it were possible to place a medical inspector in each home during the season of intensely hot weather, who could give proper advice regarding the judicious use of sterilized and proper foods, the death rate of any city could be improved. The average person, however, will go on from day to day and give the child uncooked milk, candy, sour potatoes, or probably decayed fruit, and if the child happens to be teething nothing else is needed to bring on an attack of cholera infantum and consequent death. It is hard to convince the average ignorant mother of the dangers attendant upon the administration of improper foods, for the doctor will readily detect that the attention of the patient is lost before he gets through explaining technical terms which she can not comprehend. So the death rate of cities will continue to be high for some time to come. The principal causes of death were: Cholera infantum 185 deaths, tuberculosis 41, inflammation of stomach and bowels 38, marasmus 32, Bright's disease 22, old age 28, heart disease 25, sunstroke 27, cancer 20, apoplexy 17, paralysis 16, dysentery 4, diarrhea 2, convulsions 4. Of the total number it shows an increase of 214 over last year for the same period; 393 were in children under 5 years of age.

INFECTIOUS FEVERS.—This week: diphtheria 11 deaths, 49 cases; scarlet fever 2 deaths, 17 cases; typhoid fever 13 deaths, 51 cases. Last week: diphtheria 10 deaths, 56 cases; scarlet fever no deaths, 26 cases; typhoid fever 10 deaths, 58 cases.

HOT WEATHER EFFECTS.—July 4 the temperature at 5 A. M. was 76 degrees, 8 A. M. 83 degrees, 12 M. 93 degrees and 2:30 P. M. 99 degrees. The humidity was excessive and finally culminated in a hail storm. So intense was the heat that forty-one prostrations were reported, of which seven proved fatal. Children suffered most and the effects are shown by the increased number of deaths from cholera infantum.

PERSONAL.—Dr. Albert E. Roussel of Philadelphia, who holds an important position in the faculty of the Medico-Chirurgical College, sailed last week for Europe, where he will remain for several months. While away he will attend clinics at Vienna, Berlin, London and Paris.

MEDICAL BOARD.—The next meeting of the Medical Board of Pennsylvania will be held in Philadelphia, December 12.

THE PUBLIC SERVICE.

Assignments, etc., of Medical Officers.—To the 1st Army Corps, Major General Brooke, at Chickamauga Park, Ga.: Acting Asst. Surgeon Sidney J. Myers, from Louisville, Ky. To the 2d Army Corps, Major General Graham, at Camp Alger, Va.: Majors Edward Martin and M. C. Wyeth, brigade surgeons, and the following acting assistant surgeons, all from Washington, D. C.: Chas. L. Baker, Howard H. Bailly, Wm. P. Cornell, George L. Hicks, Chas. G. Eicher and John A. McKenna. To the 3d Army Corps, Major General Wade, at Chickamauga Park, Ga.: Major Louis Brechemin, U. S. A., Major R. Emmett Griffin, chief surgeon, and Major Chas. E. Ruth, brigade surgeon. To the 4th Army Corps, Major General Coppinger, at Tampa, Fla.: Lieut. Bailey K. Ashford, U. S. A., from Ft. St. Philip, La., and the following acting assistant surgeons: Julius A. Escobar, Richard Wilson, Frank W. Jay, John S. Donaldson, Eugene T. Hancock and Wm. E. West. To the 5th Army Corps, Major General Shafter, at Santiago, Cuba, from Tampa or via Tampa, Fla.: Major John G. Davis, Surgeon 7th Regiment Volunteer Infantry and the following acting assistant surgeons: Maynard G. Burgess, Roger P. Ames, Wm. B. Winn, Eduardo C. Poey, D. T. Latné, S. M. Gonzalez, all from Tampa, Fla.; J. Stebbins King from Decatur, Ill.; Chas. T.

Newkirk from Washington, D. C.; J. A. Dunwoody from Cripple Creek, Colo.; Allen P. Ebert from Atlanta, Ga., and Chas. L. Le Rœux from Pass Christian, Miss. To the 7th Army Corps, Major General Fitzhugh Lee, at Jacksonville, Fla.: Lieut. James S. Wilson, U. S. A. To the 8th Army Corps, Major General Merritt, Philippines: Major Geo. F. Shiels, brigade surgeon, while Capt. Thomas U. Raymond, U. S. A., has been relieved from duty with the expeditionary force reporting to the commander of the Dept. of California. To the general hospital, Ft. Monroe, Va.: Major Lewis Schooler, chief surgeon from one of the divisions of the 3d Army Corps, and the following acting assistant surgeons: Robert E. Bell, Carl H. Andersen and E. W. Pinkham, all from Washington, D. C.; S. Melville Waterhouse from Ft. Myer, Va.; John S. Fogg from Biddeford, Maine; A. W. Williams from Gainesville, Ga., and Berwick Bruce Lanier from Baltimore, Md. To the general hospital, Ft. Myer, Va.: Acting Asst. Surgeon Joseph J. Curry from Boston, Mass. To the general hospital, Key West, Fla.: Acting Asst. Surgeon Geo. R. Plummer from Washington, D. C. To the Leiter general hospital, Chickamauga Park, Ga.: Acting Asst. Surgeons Joseph C. De Vries and Dudley W. Welch from Washington, D. C.

Major H. H. Arthur, chief surgeon, has been ordered to New York City for the purpose of outfitting a hospital ship.

Resigned.—Lieut. Thos. L. Jenkins, Asst. Surgeon, 8th Massachusetts Infantry, on account of disability.

CHANGE OF ADDRESS.

Allen, C. J., from Peshoro, N. H., to East Barnard, Vt.
Bower, A. L., from 253 S.W. Temple to Progress Bldg., Salt Lake City, Utah.
Benson, J. A., from 103 State St. to 833 Washington Blvd., Chicago.
Bailey, J., from Denver to Florence, Colo.
Brewster, B. H., from Euclid to Hooker, Pa.
Cosgrove, T. M., from Auburndale to 3327 Monroe St., Toledo, Ohio.
Carpenter, J. W., from Cincinnati, Ohio, to Omens, Mich.
Davidson, S. S., from New Castle to Wampun, Pa.
Dicken, H. W., from Ann Arbor to Romeo, Mich.
Fanner, J. C., from 2022 Portland Ave. to 1315 Clinton Ave., Minneapolis, Minn.
Flood, John, from 297 N. State to 237 W. Erie St., Chicago.
Goffe, J. Riddle, from 22 E. 85th St. to New London, Conn.
Haines, W. D., from 683 to 1606 Freeman Ave., Cincinnati, Ohio.
Hays, T. D., from 257 S. Wood St. to 852 Randolph, Chicago.
Hadden, C. H., from Chicago, Ill., to Charles City, Iowa.
Hart, M., from Denver to Grand Lake, Colo.
Kaul, W. M., from Ohio, Ill., to Princeton, Ill.
Lebrecht, J. C., from 14 E. St. to 900 S. 4th, St. Louis, Mo.
McGahan, C. E., from Aiken, S. C., to 24 W. 57th St., New York.
Mather, E., from Paterson to Jersey City, N. J.
McGready, J. H., from Chicago, Ill., to Independence, Iowa.
McCreery, L. M., from Rocky Ford to University Park, Colo.
Neilson, W. H., from 33 Metropolitan Blk. to 104 Garfield Ave., Milwaukee, Wis.
Nunstedt, S. H., from Keokuk to Rudd, Iowa.
Osborne, G., from 161 Michigan St. to 27 N. Clark, Chicago.
Pirosh, B., from 195 W. 13th Pl. to 43 McAllister Pl., Chicago.
Ruth, C. E., from Keokuk, Iowa, to 3d Army Corps, Chickamauga, Ga.
Renn, T. H., from 227 Townsend to Packerton, Ind.
Sternuman, W. F., from Louisville, Ky., to Evansville, Ind.
Searles, L. M., from Kansas City, Mo., to Mount Ayr, Iowa.
Somers, L. S., from Philadelphia to Analomink, Pa.
Somers, G. B., from 133 Larkin St. to 1084 Mission, San Francisco, Cal.
Toron, M., from Palace Hotel to 131 N. Clark, Chicago.
Thompson, A. M., from Portland, Maine, to Snowville, N. H.
Underwood, A. M., from Lancaster, Pa., to Grove Beach, Conn.
Wilson, J. B., from Mt. Vernon, Ind., to Canon City, Colo.

LETTERS RECEIVED.

Angell, C. W., Joliet, Ill.; Armstrong, V., Pueblo, Colo.; Adams, J. Q., Columbus, Ohio.
Barlott, I. C., Hooversville, Pa.; Bewley, W. E., Warrensburg, Tenn.; Boehringer & Soehne, C. F., New York City; Byers, J. Wellington, Charlotte, N. C.; Bridge, Norman, Los Angeles, Cal.; Becroft, W. G., Madison, Wis.; Balke, A. F., St. Louis, Mo.; Berkin, Robert Jr., Provo City, Utah; Boone, H. W., Shanghai, China.
Cooper, W. R., Point Pleasant, Pa.; Chase, E. W., Omaha, Neb.; Cheney, I. V., Chicago; Crane, A. M., Marion, Ohio; Carabana Company, The, New York City.
David, E. L., Louisville, Ky.
English, D. C., New Brunswick, N. J.
Farbenfabriken of Elberfeld Company, New York City.
Gibson, J. H., Philadelphia, Pa.; Gihon, A. L., Sykesville, Md.; Gahn, J. P., Ellsville, Ill.; Gregory, Geo. A., Boothbay Harbor, Maine.
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The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, JULY 30, 1898.

No. 5.

ORIGINAL ARTICLES.

INDOL: ITS RELATION TO PROLONGED SUPPURATION AND LARDACEOUS CHANGE.¹

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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In demonstrating the proteids of food as the normal and therefore the most constant factor in the production of indol, one must not overlook the disintegration of albuminoid tissue. To do so would be a serious omission, for the recognition of an intense indican reaction as a valuable aid in diagnosis, and its general adoption as such by the medical profession must rest largely upon its relation to suppuration and allied degenerative processes, as in the necrosis of syphilis or carcinoma. Indol is set free whenever any of the following processes exist: 1. Suppuration in a closed cavity. 2. Continued suppuration with a free outlet. 3. Ulceration or necrosis of tissue.

As regards the intensity of an indicanuria from either of the first two causes, three factors must be considered: *a*, the length of time in which the purulent fluid has been secreted; *b*, the adaptability of the enclosing surfaces for absorption; *c*, the extent of surface available for absorption.

1. In the case of a sac normally secreting a serous fluid, simple increase in that secretion would not indicate indol formation. And inasmuch as transformation to a typical purulent secretion is a matter of several stages, it is but reasonable to expect at first only a slight indicanuria. And further, when pus is fully formed, the indican reaction will become more and more intense in proportion to the length of time that suppuration persists. This is especially true with regard to the empyemas of childhood, the reports of my examinations in connection with which are here given:

H. G., four ounces pus, urine loaded with indoxyl pot. sulph. (indican); B. I., five ounces pus, urine loaded with indoxyl pot. sulph.; R. J., ten ounces pus, urine loaded with indoxyl pot. sulph.; E. C., eight ounces pus, urine loaded with indoxyl pot. sulph. (five months' duration); K. M., twenty-four ounces pus, urine loaded with indoxyl pot. sulph.; L. I., ten ounces pus, urine loaded with indoxyl pot. sulph.; B. M., eight ounces pus, urine loaded with indoxyl pot. sulph.; F. N., seven ounces pus, urine loaded with indoxyl pot. sulph.; G. B., seven and a half ounces pus, urine loaded with indoxyl pot. sulph.

In addition to the above, I have examined a large number of cases of broncho-pneumonia, lobar pneumonia, and simple pleurisy with effusion; yet never have I found in any of these a heavy deposit of indigo

blue as in empyemata. I have never seen but one single case of pythorax in children in which the presence of a marked indoxyl potassium sulphate reaction, did not accurately foretell a large amount of pus. In the one exception mentioned, the previously seropurulent fluid had become purulent but a couple of days before operation.

One case in which the accuracy of this test was upheld has fixed itself strongly upon me. B. S., operated upon for empyema, and later the sinus closed very rapidly. Temperature had been normal for some time, but rose suddenly and retention was feared. Before aspirating through the scar, a test case was made of the indoxyl reaction, and upon examination none found. A diagnosis of "non-retention" was then made and proven correct by aspiration as well as later developments, for the classic symptoms of typhoid fever soon appeared and a Widal reaction was obtained.

Indol and empyema of the gall bladder.—I. C., aged 32; history of severe colicky pains in right hypochondrium together with jaundice, fever, chills and general malaise. On palpation a distinct mass could be made out occupying site of gall bladder. A heavy deposit of indigo blue was obtained from the urine and a diagnosis of empyema of the gall bladder was made, the indicanuria ruling out a collection of gall stones. In these cases it will be necessary to have the bowels thoroughly evacuated, else indol formation in the intestine may be excessive and misleading. Such a case has come under my notice.

Indol and abscess of the liver.—I. B.; all physical signs of liver abscess. Indoxyl reaction intense. Upon operation multiple abscesses found and large amount of pus evacuated.

Indol and perinephritic abscess.—*a*. M. S., perinephritic abscess rupturing into pleural cavity; large amount of pus evacuated; indoxyl reaction heavy. *b*. T. C., supposed perinephritic abscess; there being temperature and a tumor. Indoxyl examination showed only a trifling increase over normal, such as would result from digestive disorders, but not such as would come from pus. The diagnosis of renal calculus being therefore made was found upon operation to be the correct one. *c*. I. B., pyonephrosis and perinephritic abscess; very marked indicanuria.

Indol and bronchiectasis.—*a*. E. F.; typical physical signs; very foul odor of breath; indoxyl reaction intense. Upon aspiration of cavity two and a half ounces of pus were withdrawn. *b*. S. B.; bronchiectatic cavity; odor of breath intensely fetid; purulent matter coughed up; indoxyl pot. sulph. heavy.

Indol and subdiaphragmatic abscess.—F. T.; high fever, 104 to 105 degrees F.; great pain over diaphragm in breathing, together with extreme tenderness on palpation. There being no indicanuria a subdiaphragmatic abscess was excluded. No pus was found upon aspiration, and the following day the temperature became normal.

NOTE.—I am indebted to Dr. A. G. Gerster, Chief of the Surgical Staff, Mt. Sinai Hospital, New York, for permission to use the above statistics.

2. Continued suppuration with a free outlet does not present any very distinguishing feature. In time, however, as solid tissue, such as bone, becomes worn away the elimination of indol is most intense.

In both forms of suppuration the production of indol will be great, but the amount finally eliminated in the urine will depend largely upon the characteristics and size of the surrounding tissue. Thus, in a

¹ This paper was presented under a nom de plume and was awarded the gold medal offered by Trinity Medical College Alumni Association, Toronto. The judges were Dr. Wyatt Johnson, Dr. Adami and Dr. Rutlan, all of Montreal.

case of suppurative peritonitis, where pus is free in the abdominal cavity, the indicanuria will be inky in its intensity and in a comparatively short time, while the same amount of pus in the pleural cavity would only produce a similar degree of indicanuria in from six to ten weeks, or perhaps not even then. Assuming, for argument, a case of chronic Pott's disease with marked suppuration; by what chemic or physiologic means is indol formed and eliminated as indoxyl? The answer is made doubly difficult by our lack of knowledge as to the arrangements of atoms in the primary albuminoid molecule, a point which even the most modern researches have failed to elucidate. E. and H. Salkowsky, who have given so much time to the study of indol, have paid special attention to this, arriving at the following conclusions: "That in the putrefaction of albumin indol is not immediately liberated from the proteid molecule in a free condition, but that an intermediate product is formed, which is gradually decomposed by the further action of bacteria. This intermediate product is not, however, peptone, the quantity of which throughout the process of preparation is small and in the later stages seems entirely to disappear." Baumann, who first advanced the theory, held that the intermediate product was soluble in a mixture of alcohol and ether. From this substance (which is not biuret) we may reasonably assume that tyrosin is formed, it being the mother substance of indol. But we still find ourselves confronted with the questions, what is the antecedent of tyrosin; and, where does tyrosin become changed into indol? To even approximate an answer it is essential to consider the relation existing between the liver and tissue metabolism. Of necessity, our knowledge in this respect will be limited, for there comes a point when the processes of living tissue can not be reproduced in the test tube or crucible.

Nevertheless, from the products of metabolism we may learn much about the source. Urea and leucin, as allied products, may be of some value in these investigations. Since the synthetic production of urea it has been closely studied and many theories formed as to the site of its origin. Being such an important urinary constituent it was first believed to be a renal product, next the muscular tissues were supposed to be its seat, owing to its increase after exercise, and only lately has it practically been accepted as a product of the liver. When, however, we speak of the liver as the source of an albuminoid product, we really mean that this substance or its antecedent is deposited there by the blood, undergoes certain reducing processes and is again set free to be eliminated.

Consequently we presuppose a mother substance, bearing to urea, leucin and tyrosin the same relation that indol does to indoxyl, or indican to indigo blue; and like indoxyl circulating in the blood, probably in direct connection with the leucocytes. As a sequel to this hypothesis it must be assumed that the liver, by its reducing power, normally separates tyrosin from its unknown antecedent and finally indol is set free by a continuation of the same process. Most important as substantiating this view, are the researches of M. Nepveau and M. Villiard, distinguished French scientists of Marseilles and Paris respectively, who have shown that from the maceration liquid of certain pathologic specimens, indigo blue may be precipitated.

Nepveau first made his observations on a very limited number of cases, and after noting the results in the *Marseilles Médicale*, turned over the subject to

Villiard for further investigation. The results obtained I append, together with his notes:

"Nepveau has demonstrated that by examination of the alcoholic maceration liquid of organs, one may find indol or indican a considerable time after death; in one case, in the liquid from a subject after several months, the cause of death being hematuric biliary fever. The liquid in this case has been changed four times. The alcoholic, maceration liquid of other organs than the liver did not give the reaction. I have been able by nitro-prusside of soda and 2 minims H_2SO_4 , to demonstrate indol in the tumors of different cases. One should allow the liquid to remain twenty-four hours, then at the bottom may be seen an intense blue coloration. The liquid of maceration has been absolute alcohol, and we have obtained the following results:

1. Liver. Biliary hematuric fever, very intense (Nepveau).
2. Liver. Pulmonary tuberculosis, very intense.
3. Liver. Death from trauma, very feeble,
4. Liver. Uremia, very feeble.
5. Liver. Uremia, very feeble.
6. Liver. Pylephlebitis, very intense.
7. Liver. Broncho-pneumonia and grippe, feeble.
8. Liver. Fatty degeneration, intense.
9. Liver. Atrophic cirrhosis, *nil*.
10. Liver. Cholera, intense.
11. Liver. Beri beri, feeble (Nepveau).
12. Kidney. Uremia, intense.
13. Kidney. Uremia, *nil*.
14. Kidney. Biliary hematuric fever, *nil*.
15. Spleen. Biliary hematuric fever, *nil*.
16. Spleen. Broncho-pneumonia and grippe, *nil*."

"One may see by these remarks, that indol has been found in a number of cases. These researches are, however, on entirely too small a number of cases to enable us to arrive at precise facts as to the constant presence of indol in each pathologic organ. It will therefore always be necessary, in order to obtain an exact result, to know in each case: 1, the exact size and weight of the anatomic specimen; 2, the quality and strength of the liquid used; 3, the number of macerations."

"In examination of the maceration liquid of four successive macerations of numbers two and six, we have found in each maceration a diminution of the intensity. The reactions from kidneys, spleen and lungs are not constant, and will not permit of conclusions. But it will be admitted that the liver gave a pretty constant reaction, viz.: a characteristic indigo blue precipitate."

"The solution used in oxidizing the maceration liquid is as follows: Place in a test tube 5 c.c. of the alcoholic liquid of maceration (of a carcinoma of the liver, for example), add to it nitro-prusside of soda 5 parts, and in addition 30 parts of a solution of caustic soda, some drops of crystallized acetic acid and 4 drops concentrated sulphuric acid; make up with water to 100. There will be immediately produced on contact of the two solutions and the liquid, the coloration of indican, and very strongly so in twenty-four to forty-eight hours."

Not having as yet made use of the above solution I can not state its powers of oxidation, but should judge them to be quite marked.

The results quoted above, while apparently most important and convincing, must be confirmed by pathologists from all sections of the country. I myself have not been as yet fortunate in securing pathologic specimens from cases of carcinoma or prolonged suppuration, but hope before long to be able to report results of such examinations.

We may assume, then:

1. That suppuration, or rapid degeneration of tissue, causes an increased amount of indol to be deposited in the liver.

2. That in such cases there will also be an increased elimination of indican.

3. That postmortem we may, by simple extraction with absolute alcohol, take from the liver the excess deposit as its oxidation product, indigo blue.

I lay particular stress on these points, bearing as they do upon the question of the nature of that peculiar tissue change known as lardaceous degeneration, and next to be discussed.

Indol in relation to lardaceous change.—It is safe to say that the tissue metamorphosis commonly known as waxy, amyloid or lardaceous degeneration, is today almost as great a mystery to pathologists as in the earlier years of the century, when Virchow wrote about it. It is, however, worthy of note that a revival of interest in this subject is being manifested, both in Europe and our own continent; much careful work being done in government clinics and private laboratories. In Europe Virchow, Krakow, Czerny, and in England Howship Dickinson, are conducting elaborate investigations, while in Canada and the United States, private enterprise is being enlisted. Three factors render research difficult:

1. It is not always possible to say definitely during life, that lardaceous changes are actually going on, for even when there is good reason for believing that the kidneys may be involved, waxy casts may be absent from the urine.

2. The cessation with death of liver metabolism leaves us with but little to work upon.

3. Even when, with difficulty, the lardaceous material has been isolated from the liver, it responds to so few chemic tests as to give small chance for experiment.

As an offset to these disadvantages, it may be said that the etiology has been limited to two causes: degeneration of tissue and suppuration; whether these occur from bacterial activity, tuberculosis, syphilis or malignant disease.

What, then, has been the result of a century of work? This can best be answered by the following statements:

1. Previous to this century, the conditions under discussion had been noted, and the term "lardaceous" applied.

2. In the early years of the century great attention was paid to this condition by the Edinburgh school, and by them the term "waxy" applied to it.

3. In 1853, Virchow discovered the peculiar bright blue reaction obtained from the corpora amylacea upon the application of iodine and H_2SO_4 . From its similarity to the starch reaction with the same reagents, he named it "amyloid."

4. Later Kekule, Friedrich, Schmidt and others demonstrated its nitrogenous composition and proved it to be closely allied to the albuminoids, and not starchy.

5. Kühne submitted degenerated organs to gastric digestion for a long period, finally succeeded in isolating thus the lardaceous material, and confirmed the views of Kekule.

6. Dickinson, noting that in long continued suppuration the lardaceous changes were more intense when free outlet was afforded for the pus, advanced the theory that in the purulent discharge alkaline salts

were carried away, the resulting fibrin being the morbid material.

7. Ehrlich found that anilin dyes, notably alizarin blue and indo-phenol blue, were decolorized by the normal tissue of a lardaceous liver, but unaffected by the degenerated portions.

8. Czerny claimed that the white blood cells contain the precursor of the lardaceous material.

9. Krakow and others have undertaken experimental researches by inducing suppuration in animals, that the lardaceous changes may be studied in various stages.

Many more observations and experiments might be quoted, but those given outline fairly the trend of thought. Before proceeding to further discuss the nature of this morbid material, it might well be noted, that the theory of an absolute retrograde metamorphosis, as opposed to an infiltration of new material, is no longer held. On the other hand, it is freely acknowledged that whatever material be brought to and deposited in the liver, it there undergoes an almost complete transformation by the action of the liver protoplasm. Thus the question as to whether lardacein is entirely a product of degenerated cell action, or entirely an infiltration, need not longer be discussed, for undoubtedly it exists as a result of both causes, the essential factor in its formation, its precursor, that to which the color reactions are due, being deposited by the blood; while on the other hand, the nitrogenous element, that which yields tyrosin and leucin, is due to degenerated cell action. Thoma says: "It is quite possible to conceive that a preliminary stage may exist, in which the amyloid antecedent circulates in the blood, finally to pass out into the tissues and be converted into amyloid by the action of the cells." Ziegler also believes that "amyloid-forming" material pre-exists, and its deposit induced by the lowered vitality of the whole body, is due to suppuration or dyscrasia. So too Czerny, whose researches will be referred to later, believes that the leucocytes convey the amyloid precursor.

Granting that the primary and most important factor is the deposit in the tissues by the blood of an "amyloid-forming material," what is the nature of this mysterious substance? I would here with much hesitation advance the theory that this deposit is but a derivative of indol, which retains through all changes its power of easy oxidation into indigo red and blue.

We may now note the chemic properties of lardaceous material. Lardacein has the chemic formula $C_{53.6} H_7 N_{15} S$ and O 24.4 per cent., being thus closely allied to albumin and giving the xanthoproteid reaction, as also that of Millon. It is dissolved out with difficulty, and only by the concentrated acids and alkalies, being then converted into an acid or alkali albuminate. On boiling with acids it yields leucin and tyrosin.

The following color reactions can be obtained: Reddish-brown with iodine, violet or blue by iodine plus H_2SO_4 , red by methyl anilin, red by amber green. Of all the above color tests, those with iodine are the most characteristic and important, being constant and typical. Following out the hypothesis advanced with regard to the relation between indol and the primary deposit, we must look upon the mahogany red as nothing more nor less than the liberation of indigo red from the tissues, through the powerful oxidizing powers of iodine; further oxidation to indigo blue

being afforded by the concentrated sulphuric acid used in the second stage of the reaction.

In this connection the well-known blue reaction obtained from albumin in the presence of strong HCl and oxygen, is of interest. Here too we may reasonably assume that the action of the HCl is to set free from the albumin a derivative of indol, from which in turn the oxidizing power of the atmosphere soon liberates indigo blue. Occasionally also when using Heller's test, in urines loaded with albumin, the blue coloration will appear. Halliburton first called attention to the fact, as a possible source of error in testing for indican. As a matter of fact, it will be found that such a specimen is actually loaded with indican, the fuming HNO_3 playing the same rôle as the combined action of the weaker solutions, and effecting a double oxidation, indol into indoxyl potassium sulphate, and this into indigo blue.

But striking as the color reactions of lardaceous degeneration may be, and while to me they form the strongest evidence in support of the theory advanced, other proof must be adduced, before such a connection can be accepted as even possible. These other points of similarity are here arranged in parallel columns:

<i>The Lardaceous Material.</i>	<i>(The derivative of) Indol.</i>
1. Occurs in chronic suppurations.	A marked and persistent elimination of indol is seen in such cases.
2. Yields tyrosin.	Is a product of tyrosin.
3. Is deficient in potassium.	Shows a marked affinity for potassium.
4. Seat of election is the liver.	Indol is deposited in the liver in suppuration.
5. Its primary factor is deposited by the blood.	Circulates in the blood and is there oxidized.
6. Gives red or blue color change with oxidizing agents.	With oxidizing agents yields indigo red and blue.

1. About this little need be said, it being acknowledged by all writers that in chronic suppurations, or other disintegrations of tissue, indol is markedly and constantly eliminated, while the very same processes are being recognized as the only factors in lardaceous change. In other words, there is etiologic unity as regards the primary factor of lardaceous material, and the indolic pigments excreted in the urine.

2. At present not much can be said about the relation of tyrosin to these changes. It may be that in this production of leucin and tyrosin from lardacein, we have a hint of certain important proteolytic functions; but the chances are that the presence of these two rare end-products can be accounted for by the destruction of the nitrogenous element in lardaceous change, the portion produced by degenerate cell action.

3. As regards the deficiency of potassium, it must be admitted that unusual attention has been directed toward this condition. Dickinson and Marcet make many observations on this point, the former going so far as even to base a new theory upon it. That there is a marked difference in the amount of potassium is best shown by the statistics Dickinson himself gives. In seven healthy livers potassium = .209. In seven lardaceous livers potassium = .169. Noting also that in cases of continued suppuration where free outlet for the pus was afforded, the resulting lardaceous changes were more extensive, he became convinced that the fibrin resulting from this loss of alkalinity, being no longer held in suspension, was deposited in the affected organs. There is no need of discussion of this theory, Dickinson himself having abandoned

it. But may there not be another explanation of a fact which has been dwelt upon by nearly all modern writers on the subject? It seems possible that in the affinity of indol to potassium, we have an attempt of nature to repair this loss. While we have not as yet discovered an exact relation between lardaceous material and the indigo group, yet already enough striking similarities have presented themselves to warrant us looking closely into the matter; and of these, this deficiency in potassium, which was so marked as to have led Dickinson into advancing a new theory, may well claim once more our attention, and demand our careful investigation.

4. While it is true that, given the proper etiologic facts, lardaceous change will go on wherever there is blood supply, nevertheless it is a well known fact that the liver contains in each case by far the greater amount of this morbid material; so much so, in fact, that this organ is the one usually employed in experiments. Statistics to this effect are given by Kyber, Virchow, Dickinson and others, while the fact is in accordance with the law, "Lardaceous infiltration of organs is in direct proportion to their blood supply;" still, there is another and more important reason. I refer to the proteolytic function of the liver.

The power of proteolysis is being dwelt upon more and more by physiologists, and certainly it is of the greatest importance to all students of internal medicine. In the various changes which indol undergoes it undoubtedly plays a large part. Normally the process is probably as follows: Indol having been produced ultimately from the decomposition of proteid material, is absorbed and carried into the portal circulation. Here, under the combined oxidizing, reducing power of the blood and liver cells, it becomes indoxyl, a portion of which, either as such or in an altered form, remains stored away, as it were, in the liver. That which goes on again into the blood stream is eliminated in the feces and urine. The proof that indoxyl or its derivative remains in the liver, may be found in the researches of Nepveau and Villiard, quoted above, by which they obtained indigo blue by simple maceration of livers. These livers were from the very type of case which during life would show a marked indicanuria.

Accepting then this view, as representing the normal condition of things at the commencement of a suppurative process, it follows that, later on in the course of the dyscrasia, there will result a generally lowered vitality, affecting ultimately all finer natural processes, and producing in consequence diminished proteolytic powers in the liver. Hence there will be inability to properly oxidize or reduce indol, and pass the resulting product in part out into the general circulation. Thus there will remain in the liver an unusually large amount of an improperly reduced and indigo-forming substance, constantly increasing, and to which there will be added, as a further result of the impaired proteolytic and eliminative power, nitrogenous waste and degenerate cell products. From the union of all these there would result, in course of time, that which we know as lardaceous material.

But most important of all are the characteristic color reactions of lardaceous material. We know that the application of a watery and entirely colorless solution of iodine and potassium iodide to lardaceous organs, produces at once in the degenerate portions a mahogany red tint which has never yet been satisfactorily accounted for, but bears the closest resem-

blance to indigo red. The fact that this pigment, rather than indigo blue, should appear primarily, is of no account, inasmuch as both have the same chemie composition, there being merely a different arrangement of the molecules. The same phenomenon occasionally occurs in urine analysis, indigo red being thrown down and later under atmospheric oxidation becoming indigo blue.

Directly bearing on this question are the following classic observations of Schunck:

"1. Two distinct periods may be observed in the decomposition of indican: during the first the indigo blue is the chief product, during the second red and brown coloring matters with but little indigo blue are seen. 2. Let a watery solution of indican be boiled for some time and it then yields by decomposition not a trace of indigo blue, but only indigo red. 3. If it be boiled as before, but with the addition of alkalis, it then gives neither indigo blue nor indigo red, but only a brown resinous matter, indiretin."

The second color change, that resulting from the application of strong H_2SO_4 to the portions already stained red, is the appearance of a dark violet blue, occasionally a blue black, and very rarely a bright blue. Again the parallel is striking; the oxidizing power of the concentrated H_2SO_4 , altering the molecular arrangement and converting indigo red into indigo blue. Dickinson, it is true, has explained this reaction upon another basis, that of a combination between the sulphuric acid and iodid of potassium, resulting in a precipitation of iodine which blackens the tissues. But it is to be observed that although this view was first advanced in his "Treatise on Albuminuria," published in 1881, it has not as yet met with general acceptance, nor does it help in any way to explain the previous color reaction—mahogany red.

The effect of strong alkalis must be noted here. To obtain lardaceous material for study, an affected organ is treated with caustic potash, the infiltrated portion is dissolved out and a white, flaky precipitate obtained by subsequent acidulation. This precipitate will not respond to iodine or H_2SO_4 in the usual manner, but gives only a fawn color as does a similar precipitate from a healthy liver (Dickinson). So, too, if liq. potassæ be poured over lardaceous material *in situ*, before ever that identical portion has been subjected to reagents, it loses then and there its power of giving the iodine reaction. Hence the liquor potassæ, not the acid, affects it.

Now note the effect of boiling a watery solution of indican with alkalis (liq. potassæ) as described by Schunck, *vide supra*. Then compare the reaction there obtained with that just described. In both cases we see the power of yielding an indigo red tint destroyed. In short, another indigo-producing substance has been disorganized by liquor potassæ.

The relation of indigo blue to indigo white is of great interest. A solution of indigo white or indigogen when exposed to the air gradually combines with oxygen and deposits indigo blue. On the other hand, indigo blue, though strongly resisting all chemie agents, may be reduced to indigo white by fermentation. Concentrated sulphuric acid dissolves indigo blue without destroying its color, but strong liquor potassæ completely destroys its blue. In the reduction from blue to white one atom of H is gained. After liquor potassæ has been added and the blue color destroyed the tint can not be restored. But if a reducing agent is present and an acid be added, a grayish-white sub-

stance is deposited in flakes, to which the name indigogen or indigo white is applied (Schunck).

In this experiment, taken in conjunction with our previous observations, do we not find confirmation of the hypothesis advanced, viz., that a member of the indigo group is an active factor in lardaceous change? Thus, the flaky white material dissolved from degenerate organs and finally precipitated as such, bears a strong resemblance to the indigogen or indigo white just referred to. But where is the reducing agent which it has been stated is necessary to complete the process? This may be found in the action of the liver protoplasm itself, a reducing agent of no mean power, and which in spite of advanced degeneration must necessarily retain some power; for we know that a solution of alizarin blue or indo-phenol blue (an indigo derivative) is decolorized by living hepatic protoplasm, the liver cells possessing an inherent power of reduction either by themselves or through the agency of certain ferments. This is well expressed by Gamgees: "The forces peculiar to protoplasm, unknown to us but acting similarly to heat, increase the intramolecular movements of the atoms in such a way that a loosening or splitting of the molecule occurs and an aggregation of the oxygen is made possible—primary oxidation." We term this force "the proteolytic power of the liver," and Hunter has pointed out that its variations may in part be recognized by the variations of urinary pigments.

In contradistinction to the reducing power of alkalis as liq. potassæ, may be seen the oxidizing power of certain acids, as HCl, by the following observation of Dickinson: "While the liq. potassæ added to lardaceous material prevents color reagents, HCl in weak solution increases the power of the lardaceous material to respond to iodine, the resulting tint being a deeper and more durable red." What is this but the increased liberation of indigo red due to oxidation by HCl as seen ordinarily in the test tube?

Finally, the experiments of Czerny, to which reference has been made, are of the greatest practical importance. Producing lardaceous change in the organs of animals by inducing suppuration, he was led to submit the pus cells to the combined action of iodine and H_2SO_4 . To his surprise the two reactions of lardaceous tissue were reproduced. Further experiments showed also that in the leucocytes of the blood similar reactions might be obtained. In his own words: "The appearance in the pus of cells giving the characteristic amyloid reaction, the discovery in the blood of the cells and the appearance later of amyloid degeneration in the organs are facts which speak for one thing, viz., that through the leucocytes is carried a substance which must be regarded, not as a glycogen but as a forerunner of amyloid. This being my view it becomes obligatory to answer the question: Is the amyloid substance itself prepared in the blood and from it deposited in the tissues?"

The acceptance of this view will go a long way toward proving that an indigo-producing substance and not a mere tissue characteristic is the basis of the well-known color changes. For we know that indoxyl circulates in the blood, is produced in excess in suppuration and may be extracted from the liver (as indigo blue), where death has resulted from the cause. It remains but to demonstrate that the red and blue colorations of the so-called amyloid reaction are indigo red and indigo blue and nothing else. But to prove this beyond cavil will require much

time and numberless experiments. Our researches, however, will be aided by knowing that amyloid changes may be produced experimentally in animals in from four to six months.

The latest information upon the whole subject of indol production is from the able pen of Dr. C. A. Herter. Two new facts are given: one that there is in the blood that which will very quickly oxidize or reduce indol into some other form; the other that in cases of chronic indol poisoning the chief changes found were in the liver, the capillaries of the lobules being much congested and the liver cells the seat of pigmentation.

Do not these observations bear out in part the theory already advanced in this article?

SURGERY OF THE LUNG.

The Oration in Surgery Delivered at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Col., June 7-10, 1898.

BY J. B. MURPHY, M.D.

CHICAGO, ILL.

(Continued from page 165.)

SURGERY.

We will first consider accidents to and operations on the lungs. Then we will consider the diseases of the lungs and the applications of surgical procedures to them. We will also consider the general pathologic and surgical principles underlying operative procedures on the lung. I propose the following proposition without argument: The important diseases of the lungs are all due to foreign bodies, either mechanical or bacterial. Therefore viewing the question from this etiologic standpoint, in the present state of medical science operative procedures should be habitually performed. The general principles are: 1. To place the tissue in such condition as to increase resistance to infection. 2. To remove: *a*, foreign bodies; *b*, the products of infection, which in turn are foci for further infection; *c*, tissue injured beyond repair, which constitutes foyers of new infection.

Lung operations divide themselves into two classes: 1. Those that do not perforate the visceral pleura. That class of operations aims to convert the hard-walled cavity into a collapsible one. The necessity for these operations arises from the physics of the lung. The indication is collapse, and is met by: *a*, an opening in the soft parts, allowing air to enter; *b*, removal of bony parts, allowing air to enter and the wall to collapse; *c*, collapsing the lung by forcible injection of gas or liquid into the pleural cavity. 2. Those that perforate the visceral pleura. They are divided into: *a*, those that simply perforate the lung—pneumotomy; *b*, those that remove all or some portion of a lung—pneumectomy.

What are the pathologic conditions, on the one hand, requiring collapse, on the other limiting the advisability of operative procedure to collapse? *a*, empyema; *b*, tuberculosis that is moderately advanced—too far advanced for pneumectomy.

In considering these subjects several questions arise:

1. Is the lung, situated in its bone-bound cavity, accessible to surgical manipulation? *a*, What are the difficulties and dangers encountered in entering this cavity? *b*, To what extent may this wall be removed and replaced and what manipulation is permissible within the chest?

2. What is the effect of opening the pleura—of pneumothorax? *a*, Immediate—1, with adhesions; 2, without adhesions. *b*, secondary. How can its dangers be avoided or lessened?

3. Can the lung be incised? In pneumotomy what are the dangers and limitations? They are: *a*, hemorrhage; *b*, pneumothorax—1, from opening in chest; 2, from opening the bronchi; *c*, inflammation—1, pleuritis (of same and opposite side); 2, pneumonia (traumatic); *d*, sepsis.

4. What are the pathologic conditions of the lung requiring incision—pneumotomy? *a*, hernia; *b*, injuries (infected); *c*, abscesses; *d*, bronchiectasis; *e*, gangrene; *f*, foreign bodies; *g*, tubercular cavities; *h*, hydatids; *i*, actinomycosis.

5. Can the lung be excised? In pneumectomy what are the dangers and limitations? They are: Immediate—*a*, hemorrhage; *b*, pneumothorax; *c*, dyspnea (causes and relief). Secondary—*a*, shock; *b*, dyspnea; *c*, hemorrhage; *d*, sepsis; *e*, pleuritis and pneumonia on opposite side. Best method of treating stump: Extra-thoracic, intra-thoracic, drainage or closure. Pathologic histology of repair of stump: Artery, vein, bronchus.

6. How is the chest filled after excision? What are the pathologic conditions in which excision is desirable or required? 1, Neoplasms of chest wall involving lung; 2, circumscribed tuberculosis.

7. Can the lung be defunctionalized? How may this be accomplished artificially and quiescence maintained? 1, By injections into the pleural cavity; 2, by resection of the ribs, which allows the chest wall to collapse; 3, thoracotomy, with separation of pleural adhesions and compression of lung. What are the technical difficulties of intra-pleural injections? *a*, Adhesions; *b*, consolidations. What are its technical dangers? *a*, Air embolism; *b*, sub-pleural emphysema; *c*, pulmonary emphysema; *d*, dyspnea; *e*, sepsis—1, from without; 2, from within (1, tubercular foci, 2, septic foci). How can we determine that the injected material is passing into the pleural cavity and not into the lung tissue or bronchus? What is the most desirable material to use for injection? What are the effects of this pulmonary quiescence on the healthy lung—on diseased lung—particularly in tuberculosis? How long must a lung remain functionless that the process of repair in tuberculosis may be complete? Are pleuritic effusions beneficial or prejudicial to the repair of tuberculosis of the lung?

From the dawn of the history of medicine we find recorded cases of accidental penetrations of the chest by sharp or pointed bodies, as stakes, lances, sabres, bullets, forks, etc. The results of these accidents were hemorrhage, pneumothorax and pulmonary hernia, etc. An analysis shows that many of the cases recovered without surgical interference, and that a smaller number did not even present symptoms of a grave character. With these cases as guides and inducements for surgical exploration the surgeon was slow to act on the evidence which they presented. Large portions of the chest wall have been torn away accidentally and removed for tumors of the breast without opening the pleural cavity, and no special danger was attributed to the procedures. Incisions were made between the ribs for the relief of pathologic conditions from the time of Hippocrates, still it remained for Estlander, Schede and Delagéniere to popularize the free opening and removal of a considerable portion of the bony parietes. They have shown that over one-half of the costal framework of one side of the chest may be removed without any great danger. But in their operations they had present a pathologic condition of the pleura, which formed practically a secondary inner chest wall for the respiratory apparatus. As a corollary to their procedure we find recorded a number of cases of removal of the chest wall for neoplasm when there was no such secondary thoracic wall to protect the lung; the latter collapsed and the cavity filled with air. The extent to which the chest wall has been removed in these procedures can be estimated from the operations of Kolaczek,³² Liesrink,³³ Sedillot, in the pre-antiseptic period, resected the rib, pleura and part of an adherent lung successfully; since then Mass,³⁴ Kroenlein, Mil-

³² Arch. für Klin. Chir., b. 24.

³³ Ibid., b. 26.

³⁴ Verhand. des Chir. Cong., 1885.

ler and many others have opened the pleura and removed lung tissue successfully in operations on the chest wall. Cairo³⁵ collected twenty-seven cases and found that five died immediately after the operation and three somewhat later. He included cases in the pre-antiseptic period. In the later cases not a patient succumbed as an immediate result of the operation, so that the removal of the chest wall with opening of the pleural cavity is today a recognized surgical procedure. Weinlechner's case is an exception to the above; he removed a large myxochondroma of the rib, resected three ribs and left an opening in the chest wall as large as the palm of the hand; he was unable to secure a flap sufficient to cover the opening; tampon of gauze; the patient died of a septic pleuritis in twenty-four hours. Kroenlein^{36*} in 1883 removed a large portion of the chest for sarcoma of the rib which involved the pleura; in 1887 he removed from the same patient a recurrent growth involving the chest wall, pleura and lung; the latter was separated and the cavity was drained. The patient lived for seven years after the primary operation.

What are the dangers of operation on the chest wall? They are: Shock, hemorrhage, pneumothorax and sepsis.

Shock.—The shock from injuries and operations on the chest wall, without involvement of the internal viscera or the opening of the pleural cavity, is usually very slight, as may be estimated from the extensive thoracoplastic operations which are now in vogue, and will therefore receive no special consideration.

Hemorrhage.—Injuries during operation to the internal mammary artery are not likely to occur, as operations on the lung and pleural cavity do not usually extend so close to the sternum. Accidents with fatal hemorrhage from this artery have not been frequent. Situated as it is on the inner side of the chest wall (see Fig. 9) hemorrhages from it, except when the opening is large, are mostly internal and not easy of recognition. However, the regularity of its course in the upper part of the chest close to the sternum enables the surgeon to estimate with considerable exactness the probability of its involvement in a particular injury. In eleven cases reported by Tourdes, six died; all five cases recorded in the history of the American war terminated fatally. (Paget.) The diagnosis should be based on the location and direction of the penetration, the general signs of hemorrhage, accumulating fluid in the pleural cavity with collapse of the lung and occasional external hemorrhage from the wound or hemoptysis. Where internal mammary hemorrhage is seriously suspected the surgeon should have the courage of his convictions, enlarge the wound to the pleura and if necessary resect the cartilage, then the bleeding points may be recognized and ligated. Another method suggested is the placing of a ligature upon the proximal side of the injury in the second intercostal space within a quarter of an inch of the sternum. Ligation in loco is preferable, as hemorrhage from the vein, as well as the artery, is grave. We should have no more hesitancy in opening the chest wall for hemorrhage from its arteries or from the lung than we should in opening the abdominal wall under the same conditions, as with a hemothorax already present the lung is collapsed and the effect of a pneumothorax is of little importance. The question of hemorrhage from

the intercostal arteries is of great importance to the surgeon. Fatal hemorrhage from an intercostal artery has followed paracentesis and simple thoracotomy for the relief of a pleuritic effusion, and many fatalities are reported from injuries to these vessels. Paget reports twenty-three cases, eighteen of which terminated in death; fourteen of these were operated, with eleven deaths, showing what a great mortality occurs from an injury to such a small artery. It should be borne in mind that deaths did not follow extensive operations on the chest wall involving these arteries, as in the Estlander and Schede operation, as the hemorrhage in these was easily controlled, but that they followed small incised, punctured and penetrated wounds; the most dangerous condition is a splitting of an artery. The hemorrhage presents the same symptoms which guide us in the recognition of hemorrhage from the internal mammary. The indications for treatment are compression and ligation. I mention compression first in order to emphasize that it should never be relied on, either as compression from within by a plug attached to a strong silk ligature or as pressure from without. Ligature including the rib on either side of the wound is also to be deprecated. The intercostal wound should be enlarged and the bleeding point detected by the hot, pulsating stream against the end of the finger; better still, a subperiosteal resection of the rib should be made, which insures an inspection of the field and accurate localization and ligation of the bleeding points. It should be a surgical law and applicable here that when a surgeon is called to a primary or secondary hemorrhage his operation should be as radical as is necessary for the absolute control of the hemorrhage; he must not temporize, as these patients give him only one opportunity; if this is not taken advantage of they are lost.

Pneumothorax may be classed as traumatic, idiopathic (internal pathologic) and therapeutic. The apprehension of this condition has been the greatest barrier to the surgery of the chest, and still it has been one of the most common sequences to traumatism of the chest wall, as pneumothorax with or without emphysema following fracture of the rib. We ask, what are its dangers? Is the admission of air into the pleural cavity in itself a dangerous occurrence? If so, why? Is the danger due, 1, to the shock to the pleura from the admission of the air or to its absorption; 2, to compression of the lung and impairment of the respiratory exchange of gases; 3, to effect upon the pneumogastric filaments by the sudden contraction of the lung tissue; 4, to displacement of the mediastinal organs, constricting and affecting the cardiac outlets; 5, to displacement of the mediastinum, lessening the power of expansion of the other lung; 6, to increase of tension in the circulation by collapse and emptying of such a large quantity of blood from the lung into the general circulation. Different observers attribute the unpleasant effects produced by pneumothorax to the above-mentioned causes. That there is little shock or discomfort produced by the admission of air into the pleural cavity has been shown by numerous accidents to the chest, experiments and operations extending from the time of Hippocrates to the present day. The infrequency of unpleasant symptoms from traumatic pneumothorax may be estimated from the reports in the surgical history of the American Civil War; in 11,540 chest wounds, unpleasant complications from

³⁵ Deutsch. Med. Woch., 1893, Bd. lii.

³⁶ Berl. Klin. Woch., 1884, b. xxi, site v.

this cause were recorded in less than half a dozen (Paget). In twenty years' experience in emergency surgery of the large hospitals I have observed traumatic pneumothorax as a cause of unpleasant symptoms in but two cases; in both of these the wounds were small and situated in large bronchi near the hilum of the lung. In my recent compressions of the lung by injections with nitrogen gas, in my first case 120 cubic inches having been used, there was only a temporary dyspnea produced. The patient was up from the table within five minutes and refused to go to bed. In my second case I injected 200 cubic inches; it produced quickened respiration, a feeling of constriction in the chest, slight dyspnea and tickling in the throat. In the normal conditions of the pulmonary organs with a perfectly developed mediastinal septum the opening of the chest for the admission of air is not a grave occurrence, although pneumothorax is a more serious condition than emphysema. There are circumstances which make pneumothorax dangerous to life, as when the air is admitted into the pleural cavity through a valvular opening either from within or without; in which condition it may attain a considerable degree of pressure. In perforating wounds of the chest, even when the external wall and a bronchus are opened, pneumothorax is not a necessary sequence, as the cohesion of the pleuræ (West, Brousse) as well as pathologic adhesions prevent its formation. This cohesion must be stronger than the contractile power of the lung, which is equivalent to about 7 mm. of mercury or $3\frac{1}{2}$ inches of water. In my experiments and in operations in which no pathologic adhesions have existed, I have not observed in a single instance that the lung remained in apposition with the chest wall when the upper air passages were free. I am convinced from a careful observation and demonstration of this point in experiments that the pleuræ do not remain in contact when air is admitted into the pleural cavity, even through pin-hole openings. With each inspiratory act the lung recedes from the chest in proportion to the freedom of the admission of air. In expiration, with the contraction of the chest, the lung appears to come closer to the opening in the chest wall, while it really contracts closer to the hilum. With large free openings sufficient to admit the hand, the lung in two or three expirations collapses to its hilum and remains there stationary without the slightest effort at expansion if the balance of pressure within the pleural cavity and trachea is equal or when the greater resistance is offered in the upper air passages. An erroneous conclusion has been drawn by some experimenters, and the expression given in Paget's admirable work, "One may see the lung moving freely in respiration in an animal from which a great part of the wall of the chest has been removed. I have often made on dogs penetrating wounds on both sides of the chest larger than the opening of the glottis, and I know that an animal under these conditions lives a long time and dies only of a sort of gradual asphyxia." From this it would be inferred that the lung had an expansive power of itself, but this is not the case; the dog under such conditions lives for a time because in each rapid, jerky inspiration there is a vacuum or diminution of atmospheric pressure in the pleural cavity and a moderate filling of both lungs; but make these openings large and free and there will be an immediate collapse of the lungs in the respiratory act. With one pleural cavity open, divide the mediastinal sep-

tum so that the air passes freely into both cavities and there is an immediate and permanent collapse of both lungs without the slightest effort at re-expansion, either in inspiration or expiration. If one pleura remains intact and the other has free access of air the lung in the open pleura collapses on inspiration but expands on expiration, particularly when resistance is offered to egress of air in the upper air passages; by this method the air in the lung on the uninjured side in expiration is forced into the collapsed lung in the open side. I have shown by complete occlusion of the trachea with one pleura open and the other closed that an alternate expansion and contraction could be produced by the exchange of air from one lung to the other, the collapsed lung expanding in expiration and contracting in inspiration, the other lung performing the reverse of this action.

The first opportunity to observe this action of the lung in the human subject was afforded me in the case of a policeman injured by the explosion of a bomb in the Haymarket riot May 4, 1886. A considerable portion of the lower part of the right chest was carried away; the opening was so large that the hand could be inserted into the pleural cavity. The lung could be observed contracting slightly in every inspiration; with the mouth open and the upper air passages free it expanded but very little in expiration; if, however, the upper air passages were closed when the patient expired the lung filled the entire chest cavity, and when an effort at coughing was made a hernia of the lung resulted. The patient succumbed in thirty-eight hours from the effect of continued hemorrhage from extensive laceration of the liver.

A second case, a bullet wound in the seventh intercostal space on the left side in the post-axillary line. The man stated that his antagonist shot from the left and behind. The question arose, was the diaphragm penetrated, and if so, was the stomach injured? The house surgeon, under my direction, enlarged the opening, resected the ribs to examine the diaphragm and stomach through the chest, which was the easiest route. It was found when the chest was opened that the bullet had penetrated the diaphragm about two inches from the chest wall; this opening in the diaphragm was enlarged and the finger inserted into the peritoneal cavity; the stomach was found uninjured and the opening in the diaphragm was closed. The wound in the lung could be readily examined; when coughing was produced the lung protruded from the chest wall, when he inspired it again contracted, it could be easily retained in the wound. The admission of air to the pleura produced no unpleasant symptoms, it only increased the frequency of respiration.

A third case, Miss M., admitted to Mercy Hospital June 11, 1896, for the drainage of a small cavity situated in the upper portion of the lower lobe of the right lung, under the fifth rib and between the scapula and spine. In resecting and elevating the rib the pleura was torn, the lung immediately collapsed and could be seen expanding on expiration and contracting on inspiration. The pleura in the neighborhood of the opening was irritated and the flap replaced; the intention was to perform a second operation after adhesion of the lung had taken place. The anesthetic was suspended when the chest was opened, there was no marked dyspnea and the respiration was only slightly increased after the patient was returned to bed. She felt no inconvenience nor discomfort from the resulting pneumothorax. The quantity of expect-

toration rapidly diminished and when she left the hospital it was only about one third of what it had been previously. Two months later it was still more reduced and she refused to return to the hospital for the completion of the operation. May 20, 1898, I succeeded in locating this patient and made an examination. I found the cavity had increased in size and the quantity of expectoration was about double what it had been when she was first admitted to the hospital. She still refused operation.

It is not believed that the absorption of the air by the pleura produces any deleterious effects; as a rule it takes place slowly; cases have been reported in which the air disappeared from the chest very rapidly. Fowler and Godlee state that a quantity of air sufficient to give a tympanitic note all over one-half of the chest completely disappeared in three days. If the air remains long in the chest the oxygen is absorbed and the carbon dioxide and nitrogen remain. In my experiments, injecting the chest with nitrogen, it was found by means of the radiograph that at the end of five weeks there was scarcely an appreciable diminution of the quantity of gas in the pleural cavity. This demonstrates that pure nitrogen gas is very slowly absorbed. The length of time required for the absorption of a given quantity of sterilized air by the pleura can be easily determined by repeated X-ray exposures. The above mentioned experiments as well as the clinical effusions into the pleural cavity demonstrate that the dyspnea and other unpleasant symptoms of pneumothorax are not due to the diminished respiratory exchange from compression, nor due to the effect on the pneumogastric by the contraction of the lung.

There are no definite data to show that the sudden contraction of the lung upon the terminal filaments of the pneumogastric has any effect in producing the unpleasant symptoms that occasionally occur in pneumothorax. I do not see any good grounds for believing that the displacement of the mediastinal organs produces a kinking of the large arterial or venous trunks at the diaphragm and in that way hampers the heart's action. We have the same degree of displacement of the mediastinum with effusion and hemorrhage without these unpleasant effects. We can allow, experimentally, the mediastinal contents in dogs to pass far to the left, and if they are immobilized there the dog's respirations are but little interfered with. This condition would apparently place the vessels at their greatest disadvantage as far as the outlets in the diaphragm are concerned, still produce no marked effect. It has been suggested that the increased blood pressure by the large quantity of blood forced into the general circulation by the contraction of the lung produces the unpleasant symptoms of pneumothorax. This theory is very far-fetched and I recall no analogous train of symptoms produced from increase in blood pressure by its being forced into the general circulation from other parts of the body. The most pronounced and dangerous manifestation observed in my experiments was when a medium sized opening, two inches in length, was made in an intercostal space and the air allowed to pass in and out with some opposition. The lung on the open side gradually contracted to the hilum; the mediastinal septum and contents flapped to and fro in respiration like a sail during a lull; when the dog inhaled, the mediastinal septum concaved greatly to the uninjured side; when he exhaled, it convexed to the opposite side. The chest

ceased to be a cylinder for the piston, the diaphragm, in the respiratory act. The mediastinal septum became a second diaphragm which contracted and destroyed the aspirating or piston power of the true diaphragm. With this motion of the septum there was comparatively no exchange of air in the lung, there was merely a variation in the shape of the lung; the septum soon became emphysematous and ruptured. The dogs in this experiment had rapid, panting respiration, which shortly ceased. The respiration could be easily restored by placing the hand over the opening in the chest wall with the diaphragm either concave or convex; by keeping the hand in position for a few minutes, the cyanosis would disappear and the animal reacted to his normal condition, proving that it was not the displacement of the mediastinal organs to right or left, not the diminution in the respiratory area, but the absence of secure pressure which forced the air out of the lung on the healthy side in expiration and aspirated it in inspiration. The mechanism of this action can be readily demonstrated on a half-filled rubber bag. I am convinced that the dyspnea following opening of the pleural cavity is due to the vibration of the mediastinal septum and contents destroying the piston action of the diaphragm.

In support of this theory I wish to call attention to the methods of relief reported by different operators in cases of dyspnea following opening of the pleura in surgical operations on the lung or pleura. The operators closed the opening regardless of the condition of the lung, as far as contraction and expansion were concerned, still the patients were relieved. Delagéniere filled a pleural cavity with water to prevent dyspnea after he had resected the rib and removed a very large quantity of pus from the cavity. It can be seen from this case that the respiratory area was not increased, the quantity of blood in or out of the lung was not changed and the pneumogastric filaments were not interfered with, but the chest cylinder was rendered complete by the immobilization of the mediastinal septum. Covering the opening in the chest with gutta percha to prevent the intake and egress of air would have accomplished the same result. When a drainage tube has been inserted into the pleura and dyspnea occurs the occlusion of the tube relieves it.

I found that by placing a forceps on the collapsed lung and drawing it into the opening the dyspnea was immediately relieved and respiratory movements were at once resumed, a forceps placed on the hilum of the lung immobilizing the septum had the same effect. I also noted that if the lobe were secured in the aperture and only partially filled it, it did not take part in the respiration, but the dog was relieved, due I believe to the steadying of the mediastinal septum. The plugging of the trap door orifice with the lobe or suturing it to the margin was the best method for relief of the dyspnea. Carl Bayer (*Prag. Cent. für Chirurg.*, Leipzig, 1897, s. 37), when operating in a case drew up the collapsed lung and sutured it to the margin of the wound. The symptoms of dyspnea and collapse disappeared and this portion of the lung filled and emptied in respiration.

Infection of pleura.—There is great danger of infection when the pleural cavity is opened; this is particularly true in experimental work. The greatest fatality in operations on the lung in dogs and monkeys has been from a suppurative pleuritis, not alone on the side which was operated but on the opposite side; this was emphasized in the detailed reports of the

experimenters, Gluch, Bloch, Schmid and Biondi. Just why a pleurisy should so frequently occur on the opposite side is not known, unless that in the dog the infection is transmitted through the thin mediastinal septum. The same pathologic condition has been noted by surgeons in the removal of tumors of the chest wall in which the lung was involved. The pleura of the dog is much more susceptible to infection than the peritoneum, or better, it has less power to resist infection than the peritoneum. The pleuritis may be of the dry fibrinous variety, or it may be associated with a large serous effusion. (Note experiment on April 24, in which the effusion was so great as to fill the pleural cavity on the side operated and to compress the lung on the opposite side.)

Septic pleurisy of a virulent and fatal character takes place with pneumothorax when there is a rupture into the pleura of a septic accumulation which previously communicated with the external air, as a bronchiecatic cavity, gangrene, suppurating or tubercular foci, subphrenic abscess, etc. West, Walsh and Fraentzel claim that 90 per cent. of all cases of idiopathic pneumothorax are due to tubercular phthisis. Havershon, in 1357 postmortem examinations of phthisical subjects at the Brompton Hospital, from 1885 to 1896, found that septic pneumothorax had occurred in 87. Paget reports a case of septic embolus of the lung and pneumothorax occurring in typhoid fever. Rupture of the lung has taken place through the alveoli without any recognized pathologic condition. T. E. Adams³⁶ reports a case of pneumothorax with rupture of lung from an occlusion of the glottis. The dyspnea was sudden in making its appearance; there were marked physical signs of pneumothorax; its disappearance was rapid; the air was entirely removed in three weeks; there were no symptoms of inflammatory trouble in the lung; the author attributes this fact to the arterial and venous ischemia induced by compression. J. Ashhurst, Jr., reports a similar case following contusion of the chest with glottis closed; no fracture of ribs; it was followed by emphysema and hydrothorax; patient recovered without operation. Pneumothorax has been present in numerous cases of subphrenic abscess rupturing into the pleural cavity.³⁷ Pneumothorax associated with these infective processes has a great mortality; few, however, of the cases die immediately; most of them succumb to the secondary effects of the pleuritic infection.

Diagnosis of pneumothorax.—The diagnosis of pneumothorax, either traumatic or idiopathic, is not difficult. The latter (idiopathic pneumothorax) is due principally to tuberculosis; 3 to 8 per cent. of tubercular cases have pneumothorax (Eichorst, Guttmann, His). The absence of respiratory sounds, the distant bronchial breathing, the tympanitic percussion note, the displacement of the mediastinal contents and diaphragm, the bulging of the intercostal spaces and, if needed, the more positive evidence of the radiograph, confirm the diagnosis.

Treatment.—The treatment of pneumothorax depends upon the indications in the individual case. The traumatic cases rarely require surgical interference. Where, however, the displacement of the mediastinal organs is great and the dyspnea is distressing, it is an indication that there is a valvular opening which, with the jerky inspirations and fre-

quent coughing, has produced a plus pressure in the pleural cavity on the injured side. This is often associated with an accumulation of blood and serum and may readily be relieved by a paracentesis or by the introduction of a small trocar protected with cotton after the manner of a culture tube protection. The question would naturally arise, should paracentesis be performed in every case? It should if the relief of the air and fluid in the cavity were the only considerations, but as there is a laceration of the lung which must be closed, that organ is held compressed and immobilized by the air while repair of the lesion takes place. If the lung were allowed free expansion it would require a much longer time to heal the laceration and if the air were aspirated from the chest it would refill through the original rupture. If the trocar is not convenient and the symptoms are alarming, the scalpel may be used to make an opening close to the upper margin of the ninth rib directly below the angle of the scapula; Fraentzel and Senator favor this incision. Netter has shown that tubercular bacilli are always present when the pneumothorax is due to the rupture of tubercular foci in the lung, and that pyogenic and saprogenic germs are frequently found. The majority of cases of penetrating wounds of the chest pass through an aseptic course to recovery. When, however, the symptoms of septic pneumothorax with effusion are present, there is positive indication for immediate and free incision. The scalpel of the surgeon is too often withheld in this class of cases until the patients have passed beyond the possibility of recovery with its aid. An incision here can do no harm, can be performed with a local anesthetic and will save many lives if resorted to early. This rule with additional emphasis should govern the treatment of idiopathic pneumothorax, as it is practically always associated with septic pleuritis of a virulent type; if curable at all it is by early drainage, in occasional cases, in the early stage, irrigation with physiologic salt solution; later, possibly with a slight stimulating antiseptic. I believe irrigation of pleural cavities greatly overdone; the same may be said of irrigation of wounds in general. Free drainage is all that is necessary after the surface is once granulating, which practically protects it from infection and absorption by the exosmosis of the fluids. Perforations of the lung close rapidly, therefore the drain should be removed as early as possible. The treatment of pneumothorax resulting from operations on the chest wall will be considered under pneumotomy and pneumectomy.

Hernia of the lung is a very rare occurrence; there are occasional cases mentioned through the literature, the histories of which are very interesting. Hernia may be divided into two classes, simple and compound. The former, simple, includes those with internal laceration of the chest wall without an opening through the skin, and are produced by blunt objects which fracture the ribs or perforate the internal thoracic wall in the intercostal spaces. The compound are those associated with penetrating wounds of the thorax; here the lung is exposed in the wound or protrudes through the chest wall. The mechanism which produces the protrusion may be readily understood. The contractions of the chest wall on the same and opposite sides compress the air in the lungs; the opposition afforded the egress of air in the upper air passages produces intra-pulmonary tension which is relieved by the escape of the lung through the fissure. It is

³⁶ London Lancet, 1887, Vol. 1, p. 799.

³⁷ Inter. Clin., Philadelphia, 1894, Vol. III, pp. 159-161.

surprising what little pressure placed on a rubber tube inserted in the trachea is necessary to cause the lung to protrude many inches through an opening in the chest wall. A pressure equal to four inches of water suffices. A hernia may or may not have a true hernial sac of pleura, depending upon its etiology and the rapidity of its formation. In hernia of the lung we do not include the protrusions of the lung above the first rib into the triangular spaces of the neck when they are not associated with injury, nor that produced at this point by artificial respiration, as the case of Chosu of Brussels. The symptoms and the physical signs with the location of the protrusion are so characteristic that they can scarcely admit of error in diagnosis. An exception to this is when a hernia is associated with emphysema.

Treatment.—The question of treatment of the first class of cases, simple hernia, can be disposed of by fulfilling the indications of reduction and retention. The latter may be accomplished by a compress, which should be inelastic and fit the opening snugly. If the case has become chronic, operative treatment for closure of the opening in the chest wall may be instituted (Tuffier's and Reclus' cases). Compound hernia of the lung forms one of its most interesting though not practical pathologic conditions, as the accident is so extremely rare. I consider the cases reported of great value as an index of the extent to which the lung may be interfered with in a surgical way. I take the privilege of quoting verbatim from Paget the case of Rolandus, published in the year 1499: "Called to a citizen of Bologna on the sixth day after his wound, I found a portion of his lung issued between two ribs; the afflux of spirits and humors had determined such a swelling to the part that it was not possible to reduce it. The compression exercised by the ribs retained its nutriment from it, and it was so mortified that worms had been developed in it. They had brought together the most skilful surgeons of Bologna who, judging the death of the patient to be inevitable, had abandoned him. But I, yielding to his prayers and to those of his parents and friends, and having obtained the leave of the Bishop, the master and the man himself, I yielded to the solicitations of about thirty of my pupils, and made an incision through the skin, the breadth of my little finger-nail away from the wound, all round it. Then, with a cutting instrument, I removed all the portion of the lung level with my incision. The wound resulting from this resection was closed by the blood issuing from my incision, and was dressed frequently with the red powder and other adjuvants. By the grace of God it cicatrized and recovery took place. It is true that one had to wait long for it. The patient, with his master, Rolandini, has since then made the voyage to Jerusalem, and has returned in good health. If you ask me what I should have done in this case if I had been called to it at once, I answer that I should have dilated the wound with a small piece of wood, keeping the lung warm with a cock or a fowl split down the back, and should then have reduced it, and kept the wound open till the portion of the lung was wholly mortified. If you still question me, to know how this man can live without his lung, I answer that the part remaining within the chest profits by the nutriment destined for the whole of the lung, and so is developed, and that nature has been able to create supplementary parts in it, which is an easy thing in an organ which is soft and near the warmth of the heart."

A similar case was reported by Tulpin in 1674, in which the protruding portion was ligated and cut off with the scissors. Couvey collected fourteen cases treated by removal of the protruding lung, with twelve recoveries. A. Demons reports a successful case. The method of treating the stump in these cases consisted of ligation, with retention of stump in the wound, amputation with the cautery, or dressing with antiseptics and allowing the lung to slough or desiccate, as the tendency might be in the individual case, depending upon the circulation.³⁸ The fact that this class of cases recovered, after pneumectomy with the retention of the stump in the wound, led me to the experiment of amputation of the lung with extra-pleural treatment of the pedicle and the production of primary hernia of the lobe, to be removed with secondary amputation. In compound hernia it is not necessary that the protruded portion should be amputated; if seen early it is better to cleanse and return the lung and resort to drainage of the most dependent portion of the cavity, close the opening in the chest by suture of the separate layers, and if necessary by a catgut suture of the fractured ribs.³⁹

Wounds of the lung.—This subject is so extensive, and the cases are so common, that a volume might be devoted to their enumeration and analysis; still, they may be so grouped into classes for their general consideration that it will only be necessary to cite cases typical of each class. We will include here the cases of secondary infections following fracture of the ribs, stab, bullet and pointed object penetrations. Infections following simple fractures of the ribs are very rare, considering the frequency of this injury. They are readily diagnosed and the treatment should be the same as that for compound infected injuries, considered later. A case illustrating the secondary infection following fracture of the ribs is reported by Maydl,⁴⁰ in which a large quantity of the purulent fluid was removed from the lung three weeks after the accident, the pleura having been drained of blood and serum immediately after the injury; case recovered.

Stab wounds of the chest are common, but are rarely associated with serious symptoms. I recall a case which occurred in the Cook County Hospital; a patient received fourteen stab wounds in the posterior wall of the chest with a knife-blade $2\frac{1}{2}$ inches in length; many of these perforated the chest wall, still the patient suffered no serious inconvenience; there was a slight pneumothorax and hemoptysis for the first two days; the temperature did not exceed 100 degrees at any time and he made an uneventful recovery. This is illustrative of the ordinary course of stab wounds of chest with pocket knives. The lung, like the intestine, is not injured by a stab wound unless it be adherent or the penetration takes place at its hilum or mesentery. Hemorrhage, pneumothorax and hemoptysis are not common after stab wounds. The indications in these cases are to clean and seal the external wounds; administer the necessary medicines to prevent coughing; never probe or explore; refrain from protracted examinations, and allow the patients to remain in the recumbent position. If infection follows they should be treated the same as infected bullet or other penetrating wounds.

Bullet wounds of the chest produce a great variety of pathologic conditions, and still a very large percent-

³⁸ Bull. et mém. Soc. de Chir. de Paris, 1886, N. S. 12, p. 450.

³⁹ H. Hayberter: 1890, Lancet, 1893.

⁴⁰ Wien. Klin. Rundsch., June 23, 1895.

age of the cases pass through an uncomplicated course to recovery. This great difference in the course and results of cases is due to the portion of the lung penetrated, the size and character of the missile, the involvement of the large vessels and bronchi, the presence or absence of infective material and the sequence of infection. Penetrations of the periphery of the lung by bullets, as a rule, do not produce serious symptoms; there is but slight hemoptysis; this is estimated to be present in less than 20 per cent. of the cases of bullet perforations of the lung; its presence does not positively indicate perforation, though practically it has that significance; there is no appreciable hemothorax; shock, pallor, feeble pulse, apparent anemia in bullet wounds of the lung do not necessarily mean hemorrhage, as they are often pronounced when there is no appreciable quantity of blood in the pleural cavity. This fact must never be lost sight of when thoracotomy is contemplated for the relief of hemorrhage. There is usually diminution of the respiratory action on the injured side and occasionally a limited pneumothorax; on the third or fourth day after the injury there may be evidence of a circumscribed traumatic pneumonia which rapidly subsides and then the patient is convalescent. Contrast this with the course of a case in which the bullet penetrates the hilum and is associated with severe intra-thoracic hemorrhage. The patient, after the injury, is collapsed, becomes pulseless, his respirations are increased in frequency and are of a sighing character; the lung on the injured side has collapsed and within a short time the patient succumbs. This is the class of cases in which surgical interference can not be considered for the relief of hemorrhage, as they terminate fatally before surgical interference is possible. It is in cases of hemothorax where the escape of blood is slow or secondary that thoracotomy with ligation, compression or cauterization of the bleeding point comes into consideration. It has been suggested that allowing the lung to collapse would produce hemostasis. Clinical experience and experiments have demonstrated that it has no such effect, that induced pneumothorax does not act as a hemostatic and therefore should not be resorted to. In reviewing the cases of hemothorax that have been treated by open incision and ligation I have been impressed by the almost unanimous failure of mention of unpleasant symptoms from the pneumothorax produced by the operation. Whether the absence of symptoms was due to the fact that the lung was collapsed before the operation by the accumulated air or blood I do not know, but the practical fact is the same, and its clinical significance is that under these conditions the chest may be opened with little apprehension as to the pneumothorax producing unpleasant symptoms. This observation might indicate the filling of the chest with fluid or air before performing pneumotomy or pneumectomy. Of 98 cases of fatal gunshot wounds of the chest occurring at the siege of Strassburg 24 were due to hemorrhage into the pleural cavity alone. (Beck.) Of 65 penetrating wounds of the chest in military practice by Sir Wm. McCormack and Fisher 36 terminated fatally, which is a very much greater percentage than appears in civil practice. External hemorrhage is not common with gunshot wounds of the chest; occasionally there may be some bleeding from vessels situated in the outer portion of the thoracic wall. It must not be forgotten however, that in wounds of the intercostal and mammary arteries the

hemorrhage is more likely to be internal than external and these small vessels should be examined first in all operative procedures. We have no means of determining without exploration whether the hemorrhage is from the chest wall or the lung itself. Quénu, Michaux, Berger, Delorme and Reclus warmly advocate surgical interference when the evidence of hemorrhage is unmistakable. Omboni⁴¹ excised two different portions of the same lung for a bullet wound; the anterior margin of the upper lobe had a V-shaped piece removed, followed by accurate catgut suture; through the same opening of the chest a portion of the lower lobe was drawn forward, ligated *en masse* and excised; drain inserted. Patient died on sixth day. Postmortem: Fatal pyemia from sub-serratus magnus infection; stump in good condition and healing; cause of death, defective drainage of external portion of wound. V. Richards⁴² successfully excised pneumocele following penetrating wound of the thorax. Delorme and Robert operated, but patients were in such bad condition that they died within fifteen minutes after operation.

From careful examination on the cadaver and from my experiments on the dog, I am convinced that many lives can be saved by early intervention in cases of intrathoracic hemorrhage either by ligation with or without amputation, suture with catgut or cauterization with the Paquélin. I have little confidence in our ability to produce hemostasis by packing such an elastic and easily infiltrated tissue as the lung; the suture is preferable and should be performed with a round needle and absorbable material; the greatest antiseptic precaution should be exercised.

The secondary changes which occur after bullet wounds, as pneumonia, abscess, gangrene, pyo-hemothorax, empyema, septicemia (sapremia) and pyemia are of much greater importance and deserve more attention than is usually given them either in the text-books or in recent monographs on this subject. The pneumonia in many cases is limited, in others it may involve a lobe or an entire lung; it often has marked evidences of acute pyogenic infection extending even to gangrene of the infected portion. Pyo-hemothorax and empyema may occur shortly after a bullet wound of the chest. The patient shows, in addition to the symptoms of depression and shock from the hemorrhage, manifestations of infection, not necessarily a great elevation of temperature but other marked evidences of septic intoxication, as dry, coated tongue, delirium, thirst, rapid respiration, etc. These symptoms usually present themselves on the third or fourth day after the injury and rapidly increase in severity until the patient succumbs from the sapremia on the seventh or eighth day unless rescued by surgical interference. The dictum of non-interference in gunshot wounds of the chest has taken such root in the profession that even unquestionable evidence of putrefaction and suppuration within the chest does not call forth active response on the part of the surgeon to afford relief. A patient with the same evidence of sapremia or septicemia in other parts of the body is immediately assisted by the surgeon, while in bullet wounds of the chest procrastination is the practice. I wish to emphasize that whenever there is evidence of putrefaction or suppuration the chest should be immediately opened and drained the same as the

⁴¹ Bull. de Comit. Med. Cremonese, Cremona, 1884, iv. p. 228.

⁴² Indian Med. Gaz., Calcutta, 1880, xv. p. 213.

RADIOGRAPH NO. 4.



EXPIRATION

P.S.P.

peritoneum or cellular tissue would be under the same conditions. I cite here a case of this class:

J. C., male, aged 27, admitted to Alexian Brothers' Hospital June, 1895; three hours previously was shot from in front with a 44-caliber bullet which passed into the chest and fractured the fifth rib; it lodged under the skin behind near the angle of the eighth rib, which was fractured. The first day he was suffering from slight dyspnea, some pain on the right side, had expectorated a small quantity of blood and had pneumothorax. The following day his temperature was 100 degrees, pulse 94, respiration 32, tongue slightly coated. At noon of the third day his temperature was 103 degrees, dulness extended up to the axillary line in the recumbent position, tongue slightly coated, and he was mildly delirious; bronchial breathing could be heard over the upper portion of the chest behind; this was probably transmitted. Fourth day—When I arrived at the hospital at 12 o'clock temperature was 105 degrees (rectal), pulse 160, respiration 42; he was cyanotic, unconscious and in a low, muttering delirium. He was placed on the table and without anesthetic a resection of the eighth rib was made at the line of fracture. The bullet and fragment of cloth were removed from the muscle wall, also a large quantity of offensive bloody debris and fluid from the pleural cavity. The opening at the point of entrance of the bullet was enlarged and an irrigation of the cavity with sterile water was made. The day following his pulse was 132, temperature 102 degrees, respiration 36; his delirium had almost subsided and his general appearance was improved. In another twenty-four hours his temperature had dropped to 100.2 degrees, his respiration 28 and pulse 124, and his general condition was still better. From this time on his improvement was rapid. The drainage tube was removed on the sixteenth day and in three weeks he left the hospital.

This case is typical of its class, and similar cases may be observed almost any time in the hospitals of large cities. The rule is, however, that they are allowed to go on to death without surgical interference, as the following case illustrates:

M. C., age 19, admitted to Alexian Brothers' Hospital May 16, 1893. A 44-caliber bullet penetrated the anterior wall of the right half of the chest fracturing the third rib. The patient was very much shocked from the injury; pulse was 130; skin cold and clammy and countenance blanched; anxious expression; there was a marked area of dulness over the lower half of the right chest; pneumothorax of the upper half; hemoptysis was continuous but not severe. The following day the patient's temperature was 101 degrees, pulse 118, respirations 54. He requested to be discharged from the hospital and under strong pressure was persuaded to remain another day. The third day his respirations were 40, pulse 150, temperature 103 degrees. He was delirious. Operation was advised but the parents would not consent. He was taken to his home, where after surgical consultation it was decided that he could live but a few hours and that interference would be futile. The death took place five days after removal from the hospital. The attending doctor told me that his condition remained about the same until the end. The postmortem revealed a penetration of the middle lobe of the right lung and the upper portion of the lower lobe. There was a fracture of the seventh rib at its angle, the bullet had dropped back into the pleural cavity. The chest was full of an offensive sanguino-purulent fluid; there was a cloudy swelling of all the tissues, no metastatic abscesses. The cause of death was acute septicemia.

This case shows how long a patient, with this variety of infection, may live after his condition seems hopeless. I might cite many similar cases from the emergency wards of the county hospital. We hope the surgery of the future will lend a helping hand to stay the mortality from secondary infection in gunshot wounds of the chest. Simple incision and drainage may be all that will be necessary, but there should not be the slightest hesitancy in resecting one or more ribs and making a free incision in the pleural cavity in its most dependent portion regardless of the point of entrance or exit of the bullet. The clinical course and treatment of penetrations with other sharp-pointed instruments is based on the same pathologic and therapeutic principles as stab and bullet wounds;

the lung is rarely injured with these instruments and primary drainage is more frequently indicated.

(To be continued.)

REST—A NEGLECTED FACTOR IN THE TREATMENT OF GASTRO-INTESTINAL DISORDER.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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It is not within the province of my paper to enter into the discussion of the subject of rest from a physiologic standpoint. The question of rest is only being at present approached by the physiologists of the day through the study of muscle and nerve irritability, waste and repair, sleep and the still less explored domain of "fatigue." Not until sufficient experimental data will have been accumulated will we be in a position to form a rational physiologic theory of rest. I will use the word "rest" in its most comprehensive sense—the antithesis of action. Life is action, but action is made possible by the period of rest during which the spent energies are renovated. All our organs manifest periods of action and repose alternately; some are absolutely rhythmic, as the circulation of blood; others are only intermittent, as the secretions and excretions. The organs of vegetative life are so wonderfully arranged that they take their rest without asking our permission for it. Nobody can bid the heart beat 120 times a minute, neither is one able to retain his urine at will for one week. It is different with the organs of animal life. Here automatism ceases. If he will he thinks, if he will he exercises his muscles. He knows no limit except the point of fatigue, which is the threshold of the pathologic. There is another difference between the organs of animal and vegetative life. After a continuous use of any one of the organs of animal life, be it thought, sensation or contractility of muscles, there comes a period of repose during which the organs of vegetative life go on performing their functions undisturbed. On the contrary, when the organs of vegetative life have overstepped the point of fatigue, the organs of animal life invariably suffer in consequence more or less. It is well known how digestive, circulatory and urinary troubles influence the motor, sensory and intellectual functions. Rest, therefore, can be defined as nature's *prophylactic*. It not only prevents the further breaking down of tissues, but it affords the chance for the tissues to store up new energy. In the ordinary life of a healthy individual the period of activity and prophylactic rest are balanced unnoticed and unobserved. We are unable to measure the time of activity and rest. But as soon as man deviates from the normal it then becomes evident that the two must remain in a direct ratio in order to establish the equilibrium. The greater the activity that produced certain abnormal phenomena the longer must be the rest. The length of time which is required by nature for the repair of an injury must be in proportion to the severity of the injury, and the more severe the injury the longer time is required for the perfect recovery of the disturbed functions. Rest in such cases becomes a *therapeutic* agent.

Prehistoric man, I am sure, did not know of the terms prophylaxis, metabolism, katabolism, energy, etc., and yet rest has probably been his chief, and for a long time his only, remedy. Nature has insisted upon it, "even to the extent of inflicting a twinge of pain on such as disobeyed her precepts." And notwithstanding the fact that the beneficent action of rest is so obvious, and may be said to be inherent and instinctive, so much so that even animals employ it as a therapeutic agent in surgical as well as medical cases, yet it was only in the seventies of this century that the first word was spoken in the elucidation of the question of rest. I refer to the classic lectures of John Hilton on "Rest and Pain." The surgeon was the first to recognize the value of rest. In 1878 the neurologist followed and sang the praises of nature's greatest *Materia Medica*. It was our own Weir-Mitchell who elaborated in his work, "Rest in the Treatment of Nerve Disorders," a cure that bears his name, the brilliant results of which made its author known wherever medicine is practiced. Since that time it seems as if the surgeon and neurologist have monopolized "rest." It is indeed a happy coincidence that those who suffer from pneumonia and typhoid fever are unable to walk, otherwise the physician would never think of ordering them to go to bed. In our day of multiplicity of drugs, patent and proprietary, legitimate and illegitimate, nostrum and specific, when a patient presents himself, and the diagnosis is once made, the first question is: "Which of the thousand and one drugs shall I prescribe?" Surely there ought to be one which will hit the right point. The surgeon thinks first of all of rest. The neurologist tries to secure rest. The physician alone uses the pharmacopeia first, last and all the time.

True, in looking over the scanty literature on the subject of rest one finds here and there a timid voice raised apologetically for the use of rest in cardiac, pulmonary and renal troubles. But the fear of being branded a crank makes them speak in tones not louder than a whisper, and their effort is lost in the pandemonium of the "new" and "newer remedies" craze.

I wish to raise my voice many octaves above a whisper and proclaim loudly and boldly that I employ rest, nature's greatest panacea, as my first and best weapon against the greatest foe of mankind—diseases of the gastro-intestinal tract. I know that the tendency of our time is to treat diseases of the stomach by washing, scouring, scratching, punching and electrifying the stomach. The gastro-enterologists of the country have at the present time visions bright of the oncoming time when the same *modus operandi* will be applied to that poor piece of gut which measures only twelve fingers in length—when we will be able to wash, scour, scratch, punch and electrify the duodenum. Far be it from me to scorn the work of an Einhorn, Hemmeter, Stewart or Turck. There is none who appreciates more highly the services they have rendered to gastrology than I do. I can assure you that before my stomach will perform the last functions of autodigestion I will yet wash, scour, scratch, punch and electrify a good many atomacha. But I refer more to the tendency of the time, which makes everyone who reads a book on diseases of the stomach arrive at the only conclusion that lavage is the only salvation of the stomach, and that the stomach tube will "do it all."

I take the stomach and intestine to be in no way

different from any other organ in our bodies; they are made up of the same tissues, are subject to the same insults, and their mode of repair is identical with that in any other part of the body. I do not see the difference between the symptom-complex called neurasthenia and that symptom-complex called nervous dyspepsia. Why apply the Weir-Mitchell treatment in the one and not in the other? I do not understand by what manner of reasoning one arrives at the conclusion that in the treatment of a painful limb, according to the maxim of Hilton, "the maximum of result is co-equal with minimum of disturbances," and that a painful stomach or painful intestine should not be accorded the same privileges. And lastly, it is incomprehensible to fathom the wisdom of prescribing rest for the weary limb, an exhausted organ, anywhere in the body except in the stomach. The only redeeming instance in the whole array of diseases to which the stomach is heir, and in which the rest cure is recognized as the remedy *par excellence* is ulcer of the stomach. The principle of the cure was laid down by Niemeyer, recommended by Ziemssen and especially elaborated by Leube. It is expressed by Ewald in the following words: "I know but one form of treatment which holds out prospects of success . . . and this is the rest cure . . . by which the stomach is protected from all irritating factors as a broken bone is immobilized in plaster."

Now, the surgeon does not draw a line of demarcation between an ulcerated, broken, bruised or simply inflamed limb. Rest is the *sine qua non* treatment. Go over in your mind the whole gamut of diseases of the stomach from a simple inflammation of the mucous membrane to solution of continuity, and you will find that the process, both pathologic and reparative, is the same. Why, then, not apply among other things the same remedy? I have done so and nature has rewarded me most generously.

How can rest be applied to diseases of the stomach and intestine, will be asked. It is true you can not put these organs in splints, but you can, by using one or all of the following methods, secure rest: 1. Rest in bed. 2. Diet. 3. Hot poultices.

1. *Rest in bed*.—In severe cases I follow the method of Weir-Mitchell to the letter: 1. Absolute rest in bed. Sitting is not allowed under any circumstances. The bowels are regulated; the bed pan is used. 2. Sponging the whole body every morning. 3. Isolation. 4. Massage. I have not had yet a case that required electricity. In milder cases I use my judgment as to isolation and massage.

2. *Diet*.—In many severe cases of gastro-intestinal disorders the best bill of fare is abstinence. One, two or even three days' fasting will do no harm in cases of ulcer, dyspepsias, and diarrheas of all kinds and varieties. Nutritive enemata can be employed in cases where a longer period of fasting is necessary. When food by the mouth is allowed it must be given in small quantities, no matter whether liquid or solid, and at regular intervals. Every case must be individualized as to the quality and quantity of food.

3. *Poultices*.—I shall not attempt to formulate a theory as to the action of poultices. Whether the poultices hasten the expulsion of food from the stomach as has been shown experimentally by Fleischer, or they cause the acceleration of the circulation of the blood in the abdominal viscera, is not yet definitely settled. I am certain, however, of one thing, and that is that they aid the peristaltic move-

ments of the stomach, they make the patient feel comfortable and keep him warm and at rest. *The poultices take the place of splints.* In severe cases the poultices are applied constantly during the day for one and two weeks. In milder cases from four to eight hours daily.

The time allotted to me does not permit me to enter into details. Each of the three forms by which rest of the gastro-intestinal tract may be secured would require a separate essay. I will therefore limit myself to the recital of the histories and results of a few cases which have undergone the rest cure.

Case 1.—Referred to me by Dr. J. T. Eskridge. J. H. S., Plattville, Colo., aged 31 years, male, merchant. Family history negative. Had continued fever in 1887, lasting for two weeks. In 1890 had influenza. These two attacks left him in a weakened condition. For the last years the following train of symptoms have developed gradually: Headache almost constant, at times accompanied with pain in back; distress and heaviness after meals; burning sensation in stomach from one to two hours after ingestion of food, which is sometimes relieved by taking baking soda, oftener not. Appetite is good, bowels regular; has not lost perceptibly in body weight; suffers occasionally from jerking and twitching of muscles, has attacks of despondency and melancholy and spells of crying; once in three to four days, sometimes at longer intervals, becomes dizzy when commencing his meals; sleeps well; suffers from nocturnal emissions quite frequently; attacks of frequent urination. Physical examination of mouth, chest and abdomen negative, except a slightly coated tongue, and some tenderness over pit of stomach and transverse colon. Repeated examinations of stomach contents after various meals, at various times revealed a total acidity varying from 90 to 140. Not being able at that time to absent himself from home and to take the rest cure, he was ordered to subsist on nitrogenous diet; he was given strychnin in small doses, sod. bicarb. after each meal, lavage every other day. His symptoms were greatly mitigated. The headaches diminished both in frequency and severity; he could concentrate his mind; his weight increased. Yet he was not cured from the burning sensation in his stomach. He had to take soda every day, and at times even large quantities would not relieve.

Six months after he first consulted me he decided to try the rest cure. In addition to absolute rest in bed he had hot poultices applied to his abdomen twice a day, cold sponging every morning and his diet regulated. He was not given any soda, neither was his stomach washed. The burning sensation gradually diminished and at the end of fourteen days he was entirely free from this annoying symptom. Contrary to my advice that he remain in bed at least two weeks longer, in order to insure a permanent cure, he returned to his home. He informs me (now one year after the treatment) that he is doing well, and that only within the last two months he has once in a while the recurrence of slight attacks of heartburn.

Case 2.—J. O., female, 24 years of age. Married four years. Has no children. Parents healthy. Was well until five years ago, when she had an attack of influenza which left her with a bad cough, and she gradually grew worse. She came from Portland, Ore., to Denver two years ago. She markedly improved. For the last three months she commenced to cough and the expectorations were at times blood-streaked. Bloating and pressure after meals very annoying. At first she vomited after meals once or twice a week; later it became more frequent. Can not keep anything on her stomach for the last five days. She has retained, however, her appetite for food. She suffers from night sweats and violent attacks of coughing. Physical examination revealed dullness over the apex of and scattered areas of moist râles heard over the left lung, anteriorly and posteriorly. The stomach contents showed a great quantity of mucus and diminished acidity. She was sent to St. Joseph's Hospital; absolute rest enjoined and carried out. No food was given for the first twenty-four hours. For the next two days she was allowed small quantities of somatose. Hot poultices applied to abdomen constantly for first four days, then six hours daily. Cod liver oil inunctions daily. No medicines were given by the mouth, except a hypodermic injection of strychnin once a day. At the end of four weeks she ate meat at each meal and drank two quarts of milk without experiencing any distress after; has gained six pounds in weight, no night sweats, no harassing cough. She became pregnant five months after she was discharged, miscarried on the third month, and at the time of this writing, fourteen months after the treatment, continues in good health.

Case 3.—Referred by Dr. S. A. Fisk. J. H. P.; 25 years old; student. Father's mother, and sister of patient died of lung trouble. Has had lung trouble for two years. Dr. Fisk informed me that he has "considerable infiltration on the right side of his chest, and some beginning on his left; a mitral systolic lesion with a slightly enlarged heart." For four months suffers from diarrhea; has from four to five watery stools daily. No pain in abdomen; appetite fair. Pulse 110 temperature elevated in the afternoon.

Treatment.—Absolute rest in bed. No food for twenty-four hours. Somatose for two days, and after that scraped meat and kephir. For the first five days gave orphol in five grain doses, and washed the bowels twice. After that gave strychnin, one-thirtieth of a grain three times daily. He was in bed three weeks. The diarrhea never returned. Four months after he was discharged Dr. Anderson of Colorado Springs, referred him to me for the examination of his feces, which contained some peculiar extraneous matters. As his feces did not contain at that time anything peculiar, I have examined a specimen under the microscope and found numerous ova of *tania solium*. By appropriate treatment have removed without any trouble a tape worm. The patient is now (twenty months after treatment) in Switzerland and has not had an attack of diarrhea since.

Case 4.—Referred by Dr. Clayton Parkhill. F. F.; 44 years old; female. Father subject to rheumatism; mother died of a paralytic stroke. On Dec. 7, 1896, noticed a growth in the left breast, which was diagnosed by Dr. Parkhill as cancer, and which he removed. Six weeks after the operation commenced to feel pain in the epigastric region, aggravated by taking food, which continued for the last five months. Belches a great deal. Appetite fair; bowels costive. No nausea, no vomiting, no heartburn. Test meal found well digested. HCl present.

Treatment.—Rest in bed, poultices to abdomen. Meat diet and kephir. Nuxvomica fifteen drops three times daily. The pains gradually subsided, and after three weeks she left the hospital cured.

Case 5.—Referred by Drs. Eskridge and Wetherill. E. S.; 42 years old; female; single. Family history negative. At 9 years of age she had scarlet fever, since which time all her troubles date. She had attacks of dysentery periodically. Intense headache, front and nape. Frequent attacks of diarrhea preceded by pain in intestines, usually over colon. Great irritability in rectum and bladder. In 1891 had a cystic tumor removed from her right breast. In June 1894 had her uterus scraped, which relieved in a measure the irritability in the bladder and rectum. Four months after the operation a tape worm was removed. In February 1895 hysterectomy was performed and the right ovary removed. The annoying symptoms were not abated in the least. In June 1895 right nephrorrhaphy was performed. In September 1896 she came under my observation, Dr. Wetherill having, after careful examination, refused to operate on her rectum, which he found in a normal condition. After watching her symptoms for some time I have come to the conclusion that she suffers from membranous enteritis, and probably has suffered from the same malady all her life. Her treatment consisted of absolute rest in bed, hot poultices to abdomen, and high irrigation in colon with a solution of resorcin. Her diet consisted of meat, kephir, bread and plenty of butter. She showed marked improvement from the start, and life was no longer a curse to her. I can not claim that she is entirely cured. The pains in her abdomen recur once in a great while, and she then sheds a good amount of membrane, but the intervals of freedom from pain and annoyance are long, sometimes lasting four and five weeks, and the attacks are never as intense. She has taken three courses of rest cure, each continuing five, four and three weeks respectively.

Case 6.—Referred to me by Dr. D. H. Coover. D. H. C.; 38 years old; married. Father and mother of gouty disposition. Enjoyed fair health when a girl. Having resided in a malarial region, she suffered from intermittent fever. For the last fifteen years suffered intensely from pain in abdomen and diarrhea. She was never free from pain more than a few days at a time; suffered from neuralgic pain in head and sciatic nerve. As far back as 1885 she noticed in her evacuation shreds of mucous membrane, sometimes a full cast of the bowel. During the last few months the pains became unbearable; she could not sleep, was despondent and very miserable. She came under my notice June 1897.

Treatment.—Rest cure absolute, hot poultices. No food for the first twenty-four hours, and small quantities of somatose during the next four days. High irrigation of the bowel, with resorcin solution at first every day for five days, then once a week; five grain doses of orphol. At the end of the first week

she was rewarded for her enforced rest by having a spontaneous, well-formed stool, an event which has not occurred for many years. She remained in bed for three weeks. Four weeks after she had a slight relapse and was again ordered to remain in bed, and this time she remained for about four weeks. At the time of this writing, one year after the rest cure, she is in good health; has not had a single attack of diarrhea or abdominal pain.

Case 7.—Referred by Dr. S. A. Fisk. R. S.; 39 years old; female; Mexican. Three years ago had a bilious attack—headache, diarrhea and vomiting, lasting for one day. Since that time suffers from diarrhea. Has one well formed stool every morning, and four to five evacuations during the day, the last stool usually containing some mucous and shreds of membrane. She has never had a movement during the night. Stools are watery and very offensive. She has no pain in abdomen, no pressure or distress. Has lost twenty pounds in weight since her first attack. Took a course of treatment in Carlsbad and Paris, with only slight and temporary relief. She came under my treatment in September 1897. I have pursued the same course of treatment as in No. 6. Being of a highly nervous temperament, as soon as the diarrhea stopped she left for Tucson, Arizona, where she kept up the rest cure for some time. Dr. Rodgers of Tucson, under whose care she was, writes to me that she has no diarrhea and that her stools are perfectly normal.

Case 8.—Miss M. G.; 27 years old; medical student. Parents healthy. She enjoyed good health until within six months, when she commenced to feel pain in her stomach after meals. Pain is localized, aggravated by pressure and by taking food, and even water. The pain grew gradually worse, and her physician had recourse to opiates. No nausea, no vomiting, no heartburn, no belching, no headache. Appetite good; bowels regular. HCl 80. She remained in bed only ten days, as she was anxious to come up for examination in May (1898). Hot poultices were applied six hours daily. Somatose given during the first three days, and later small quantities of milk and lime water every half hour. At the end of the ten days she was free from pain. At the time of this writing, four weeks after the rest cure, she complains of slight pain once in two or three days.

Case 9.—Referred by Dr. Mullin of Aspen, Colo. M. B.; 52 years old; female; German. Family history negative. Fourteen years ago had an attack of typhoid fever. Seven years ago, immediately after drinking a cold glass of beer, was taken sick. At first she felt as if there was a load in her stomach, which continued for several days. She suffered on and off from abdominal pain, since. In 1893 had severe pains, and her physician washed her stomach and put her on a milk diet, which relieved her very much. Whenever she would have an attack this mode of treatment was employed with success. In January 1898 had influenza, and since that time the condition of stomach became worse. Pain is aggravated by taking food, by exercise, and is worse toward evening. The pains are especially severe from 8 to 11 P.M. No headache. Appetite fair. Bowels have been always regular; constipated since the attack of influenza. She came under my treatment May 14, 1898. The stomach contents revealed nothing abnormal. On palpation a tumor was found in the right abdominal cavity, movable on respiration, and making excursions from under the ribs down almost to the brim of the pelvis. The diagnosis of a movable right kidney was substantiated by Dr. C. A. Powers.

Treatment.—Absolute rest in bed, hot poultices, massage, cascara sagrada (Stearn's) for the constipation, and strychnin. The pain gradually diminished. After the first week she has not had a single severe attack. Sleeps well. Her appetite is excellent, and if she remains in bed for three weeks longer, I expect, that with an abdominal bandage so fitted as to keep the kidney *in situ*, she will remain comfortable through her life.

ANALYSIS OF THE CASES.

I have chosen from my records of over one hundred cases treated by rest-cure during the last two years these nine cases with a view of illustrating the groups of diseases wherein I found my method to give satisfaction.

Case 1 represents a type of hyperacidity upon a nervous basis. Washing of the stomach and alkalis were of no avail. Being a case of neurasthenia with hyperacidity only as a predominating symptom, rest logically suggested itself to my mind.

Cases 2 and 3 represent the usual type of tubercular patients, the first suffering from vomiting, the other from diarrhea, both conditions being analogous, and only differing from one another as to the seat of the irritability in the digestive tract. To let such patients eat, drink and walk about is simply to add insult to injury. All around rest for body, stomach and intestine is clearly indicated.

Cases 4 and 9 represent types in which the suspicion of cancer is very strong. Case 4 had a cancer removed from her breast and case 9 had all the symptoms diagnostic of cancer, her age, the constant pain, the emaciation. The first case proved to be a severe dyspepsia, the other a floating kidney.

Cases 5, 6, and 7 represent various types of enteritis. It is my belief that through a mistaken diagnosis case 5 was unsexed and otherwise mutilated.

Case 6 convinced me that all cases of enteritis without an organic lesion are amenable to treatment, and case 7 presents a point of interest that membranous enteritis does not necessarily follow the letter of the text-books, and may be present without severe pain.

Case 8 represents a type of cases in which the diagnosis of ulcer or erosion of the stomach is very probable but not certain. The age of the patient, the localized pain increased by pressure and by the taking of food, and the slight hyperacidity all point to ulceration or erosion. The diagnosis may be doubtful, but the beneficent result of the rest treatment is certain.

CONCLUSIONS.

1. It is indicated in all dyspepsias, the underlying cause of which is a deranged nervous system.
2. It is indicated in all cases where abdominal pain is present.
3. In all cases of acute and chronic diarrhea.
4. In hemorrhage from the stomach or intestines.
5. In all cases of moveable or floating kidney.
6. In all tubercular cases suffering from disturbed digestion, be it stomach or intestine, and especially those that have a vacillating temperature record, and as there are but few cases of tuberculosis that do not suffer from some form of gastro-intestinal disorders, the rest cure is indicated in 50 per cent. of all cases of tuberculosis. Not only are they relieved from their annoying digestive symptoms, but their general condition markedly improves.
7. I have yet to learn of a disease of the gastro-intestinal tract where the rest treatment is contradicted.

I will close my paper by a quotation from Hilton's "Rest and Pain," which I have altered somewhat to meet the occasion. "In all diseases of no matter what nature, of the gastro-intestinal tract, when the evidence of disease is in organic lesion or in deranged function, it becomes our duty to look upon and treat the altered structures as we do contusions and laceration of soft parts and congestion of organs in any other part of the body, and to give the stomach and intestines absolute rest, to rely on nature's power to repair the injury or disturbance, and to avoid stimulants, which excite rapid circulation as much as possible. The stomach and intestines disturbed in their vital endowment become unequal to even their ordinary duties. They recover themselves slowly; they then soon become fatigued from use, and if claims are made upon them soon after injury, that is, before structure and physiologic integrity are re-required, the patient is very likely to suffer from serious dis-

¹ My prognosis came true. Patient was discharged cured, July 1.

ease of the alimentary tract. The stomach, as well as the intestines, requires absence from occupation, *rest*, and it should be in proportion to the severity and duration of the symptoms they present."

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DISCUSSION.

Dr. H. M. McCONNELL of Pennsylvania—I do not think there is any class of cases that require rest so much as diseases of the stomach. Rest of this organ means physiologic rest. The only way to obtain this rest is to abstain from food entirely and this can only be done to a very limited extent, when it can be carried out at all. When the Doctor gave the history of his cases he did not say what they were being treated for; in some cases it is injudicious to give nitrogenous food. Some symptoms are due to auto-intoxication, and you must improve digestion in treating these cases. Take ordinary typhoid fever, a patient that takes three or four pints of milk a day is not giving the organs physiologic rest. When you take into consideration imperfect digestion, most cases of neuroasthenia are cases of auto-intoxication. Physiologic rest is very important.

Dr. Tyson of Philadelphia—In speaking upon the rest treatment of gastro-intestinal troubles the Doctor has spoken of the one thing that will do more or less good in every case of these troubles; the application of therapeutic measures in these gastro-intestinal troubles is more or less haphazard. Those who look into the subject do not receive much assistance so far as therapeutic measures go. I hope the time will come when accurate methods will produce more satisfactory results. In comparison to the rest treatment of the stomach, the Weir Mitchell method is rather analogical. In my experience food is not such a necessary factor in the treatment of these conditions as many would imagine. A patient may go one, two or three days without the ingestion of food, if he is in a position not to demand any force; food is a force-producing agent largely.

Dr. H. A. WEST of Galveston, Texas—The scope of Dr. Spivak's paper is very comprehensive, because the gastro-intestinal canal undergoes serious involvement in nearly all infectious diseases, such as rheumatism, scarlet fever, measles and diseases of that class, in which the processes of digestion are seriously involved. Rest treatment is of supreme value, not only rest so far as can be accomplished by rest in bed, but by other means. And especially as regards acute rheumatism, the prognosis in this disease as regards the subse-

quent cardiac complications can be made less or even averted by such a plan of rest in bed. The whole subject is so comprehensive that one can not discuss it in the five minutes allowed him. One point would require modification—as to the necessity of rest in all cases of tuberculosis. If the rest in these cases is limited to the organs of digestion and to the proper regulation of the diet, then I agree with the Doctor; but the large proportion of cases is benefited by exercise in the open air.

Dr. SPIVAK of Colorado—I have little to say in addition to what I have already said. I am thankful to Dr. Tyson for taking up the defense. I read the paper not so much to relate to you the nine cases as to urge upon you the necessity of rest in these cases. I wanted to arouse interest in the profession to one of the best methods that can be used and one which nature employs to cure disease. I have been interested in this subject many months. I am sorry that the facilities of the library here does not permit of more extended research on this subject; there are only fifteen or eighteen papers or monographs in the whole literature on the subject of rest. I have not found one school that treats of the subject of rest in gastro-intestinal disorders. I have seen good results in many cases and in none have I seen any harm result. In regard to tuberculosis, I did not mean to say that all cases should be treated by rest in bed; I said that those cases that were suffering from fever should go to bed. My opinion is based upon a good many cases observed. They feel a great deal better in bed than they do after a walk. Every patient who has a fever, when he exerts takes something away from his strength. Furthermore, I stated that patients who suffered from diarrhea or vomiting should also go to bed. I limit these cases where rest in bed is indicated in tuberculosis where there is temperature, diarrhea and vomiting.

DILATATION OF THE STOMACH, WITH REPORTS OF CASES TREATED BY DIET, MASSAGE AND INTRA-GASTRIC ELECTRICITY.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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There has been a tendency of late among writers to regard enlargements of the stomach as of little or no consequence, unless very excessive and complicated by such a degree of muscular weakness as to render the organ incapable of emptying itself at any time during the twenty-four hours. Some recent authors do not give any place to dilatation of the stomach as a distinct or separate entity, but describe it incidentally under the heads of motor insufficiency and obstruction at or near the the pylorus, on the ground that it is a mere sequela or consequence of one of these. But, notwithstanding the high authority which exists for a contrary view, the writer insists that there is a normal size for stomachs as much as for hearts, and that any notable enlargement of either, plus decided insufficiency, constitutes dilatation. It is granted that it is not in either case a primary disease, and also on account of the enormously disturbing influence of unhygienic diet and dress, stomachs do differ very widely in size within so-called normal limits; but even the cases called megalogastria by Ewald, in which in consequence of excessive eating or drinking the stomach is often found twice the usual size without indigestion, are no more normal than are hypertrophied hearts in which the circulation is well maintained. The enlarged stomachs which have not yet dilated are, in fact, very frequently a cause of other pathologic conditions and of symptoms both direct and indirect, especially by displacement of the uterus.

But to follow up this line of discussion would lead too far afield. The object of this paper is to show

the amenability to treatment of a certain class of cases in which the stomach as a result usually of hygienic errors, often dating from faulty feeding in infancy, has become decidedly enlarged and weakened, cases, which while much less serious than those dependent upon pyloric obstruction, have been considered rather refractory to our usual therapeutic measures, if not quite incurable. The preponderance of such cases as well as of gastropotosis in women, even in young unmarried women in whom child-bearing can not be invoked as a cause, points to the probability that their mode of dress is a factor in the etiology.

Ewald² says: "I understand dilatation of the stomach or gastrectasia to be that condition of the viscus which is accompanied by the clinical symptom of disturbed gastric function due to the enlargement of the organ." This definition will answer perfectly well for the purposes of the present discussion.

Mathieu's³ division of atonic dilatation into "temporary" and "permanent" can not be accepted, since experience teaches that by our latest resources, including intragastric electricity and abdominal massage, with the help of diet, exercise, and in bad cases, lavage, all the atonic forms of dilatation can at least be greatly improved. The mildest cases and some of the worse ones, will often yield to diet and exercise alone. The more severe ones, including even those of long standing and those complicated by gastritis, will usually improve greatly upon a careful, non-fermentable diet,⁴ lavage, special exercises for strengthening the abdominal muscles and either massage of the abdomen or intragastric electricity, the choice being dependent upon the activity of the secretion of the gastric glands. Massage suits best when there is a deficiency of the gastric juice and is apt to aggravate when there is hyperchlorhydria, as pointed out in a previous paper by the writer.⁵ This aggravation is especially to be apprehended from a deep, thorough kneading.

Intragastric electricity in the form of a strong faradic current is very efficient in strengthening the weakened gastric muscle and in contracting the dilated organ. As mentioned by me in a former contribution, in which is described a new intragastric electrode,⁶ it will, in suitable cases, often cause a retraction of the lower border of the stomach to the extent of a full inch at one sitting, demonstrating beyond cavil that it does stimulate the gastric muscle directly, and in a most positive manner. Of this marked retraction each time only a small part persists, but in the pure atonic cases it has been usual to see a permanent gain of from one to two inches as a result of twelve to twenty treatments given from five to eight minutes at a time on alternate days. Some cases treated every day responded even more rapidly, but my experience points to the need of caution in this respect, as in some of my cases there was at the same time rapid lessening of HCl, and, later, after this had gone below the normal, there resulted nausea, loss of appetite, etc., from the further electric treatments, showing over-stimulation and depression of the glandular function.

On the other hand, in two cases of chronic gastritis with deficient secretion and enormous dilatation, similar treatment along with lavage, massage and the administration of HCl internally were followed by an increase in the amount of the secretion, at the same time that the stomach contracted. But

in these the gastric mucosa was manifestly less sensitive and could better bear the powerful direct stimulation required to contract the muscular walls. In one of these two cases the increase was temporary and the proportion of HCl declined again during the further treatment; in the other one a small family battery was used at the patient's house, not the stronger apparatus with high tension coil employed in my other cases.

I have not tried the experiment of giving small doses of intragastric electricity to increase the action of the glands, since abdominal massage and hydrochloric acid administered as a remedy are sufficiently effective for this purpose, and much pleasanter, but I do not doubt that faradism applied in this way would prove a safe glandular stimulant.

Fifteen patients in all have received intragastric electricity from me. Twelve of these had enlarged stomachs with more or less muscular insufficiency. One of those residing at a distance has received only two electric treatments at long intervals and no result in this case could yet be expected. In all the remaining eleven there has been a decided reduction in the size of the stomach, with an increase in the motility. In one of these, a case of hypopepsia with aggravated neurasthenia, the intragastric method had to be suspended at the end of a week on account of increasing nausea and anorexia. The various forms of electricity used externally, together with massage, being persevered with produced in this case results as favorable as were obtained in any of the others. The stomachs of several of the eleven are already normal so far as regards their size and motor functions. It will be of interest to add that eleven of the fifteen cases had either a normal or excessive secretion of HCl at the beginning of treatment by intragastric electricity, and that in nine of these a decided lessening of such secretion was noted by the end of two to four weeks. In one only of these eleven cases there was an increase of the HCl. In the eleventh case no opportunity has yet been offered for making a second analysis of the stomach contents.

The form of special exercise prescribed for most of my patients with dilatation of the stomach is the use of sets of the now familiar pulleys with elastic cords. I have found no other exercise, unless it be rowing, so useful in developing the abdominal and trunk muscles generally.

In the following reports one or more have been selected as specimens of each of a class of cases. These include:

1. Cases treated by diet and exercise, with in some instances tonic medication.
2. Those treated by the same methods plus massage.
3. Those treated by diet, exercise and intragastric faradism.
4. Those treated by the foregoing combination of remedial measures in addition to general massage, with sometimes very light effleurage of the abdomen, avoiding all kneading over the stomach. Lavage was added to the treatment in most of the cases in which there was much stagnation or chronic gastric catarrh. The diet has been shaped to suit the various indications present, especially the state of the gastric secretion. Particular care has been exercised to have the patients with atonic stomach walls avoid eating too large meals and to take never more than half a pint of fluid with each meal, including soup, but they have

been allowed, and, except in the worst gastrectasis, urged to drink water often between meals, though never more than one glassful at a time.

The great majority of these enlarged and weakened stomachs by the time they have come under methodical treatment have developed some degree of inflammation of the mucous membrane. One of the familiar types of chronic gastritis has been set up. More often than otherwise, as seen by me, the gastritis has been accompanied by either a normal or excessive secretion of HCl, and it is worthy of note that catarrhal inflammation with much mucus, rapid multiplication of bacteria, especially yeast fungi, and excessive fermentation, proves more difficult to overcome than the other morbid conditions. In other words, I have found it easier to strengthen and contract an atonic, dilated stomach and to relieve an accompanying hyperchlorhydria, when present, than to cure the coexisting gastric catarrh. One reason for this is that patients rarely are willing to continue treatment after they have ceased to suffer much inconvenience, and when both the motor function and the secretion of the gastric juice have been brought to the normal, the remaining catarrh usually produces few symptoms, though a low grade inflammatory process lingers. The patients considering themselves virtually well, abandon treatment and then, even if they do not drift back into their former faulty habits, as they are so prone to do, there is a tendency especially in those past middle age or at any age with poor reparative powers, for the remaining foci of disease to persist and to increase again upon the slightest provocation.

Case 1.—Lady, married, aged 45, has been under my care for the past year on account of chronic gastric and duodenal catarrh, with greatly deficient secretion of HCl and marked dilatation of the stomach, complicated by slight gastroptosis, and also by violent attacks of gastric pain. This case is fully reported in another paper to be read at the present meeting of the Association before the Section on Materia Medica and Therapeutics, but a brief account of it will be of interest in this connection. The patient residing at a distance from the city, in a town where there was no masseuse, and being unable to remain under my immediate care, the treatment was necessarily limited to diet and internal medicines mainly. She was required to eat moderate meals only, never overloading the stomach, and to avoid especially sugar, fried things, nuts, shell fish, except raw oysters, and hot or fresh bread. Her medication comprised HCl and pepsin on account of the marked deficiency of the gastric juice, and during part of the time small doses of nitrate of silver in pill form. She received no massage or intragastric electricity. By the end of a year the lower border of her stomach had retracted fully two inches at the same time that the proportion of HCl and of the ferments had returned to about the normal. Her painful attacks had also ceased to recur.

Case 2.—Unmarried lady, teacher, came under treatment in the autumn of 1897, complaining of chronic indigestion with almost daily vomiting and headaches. This case was referred to me by Dr. Samuel Bolton of Frankford, and is also reported in the paper above mentioned, to be presented before another Section at this meeting of the Association. The salient facts will be very briefly summarized here. Upon beginning treatment there was moderate dilatation as well as chronic gastric catarrh and hypopepsia. The lower border of the stomach was a half inch below the level of the umbilicus and the motility was poor. When she last consulted me, April 9, 1898, her stomach had retracted to within normal limits and the percentage of HCl and of the ferments was fully up to the normal. There had been no vomiting or headache for three months. The treatment had been diet, much the same as in Case 1, and the administration of HCl and pepsin mainly. She had also been taught to wash out her own stomach and had done this every day at first, and latterly two or three times a week.

Case 3.—A gentleman, aged 53, has been under observation off and on for the past four years. When he first consulted me he had some acid gastric catarrh, with occasional transient attacks of catarrh of the small intestine, and constipation. His stomach walls were very atonic and the organ extended to

the level of the navel, with weak circulation and neurasthenia. Diet and medication at first accomplished very little except to lessen the catarrh and resulting fermentation. During the past winter systematic autolavage was practiced by him for several weeks on alternate mornings, and by means of this, together with a judicious administration of a pill of extract of belladonna and extract of yerba santa (the latter being an excellent sedative apparently to all the branches of the pneumogastric) varied occasionally by giving full doses of alkalies, the catarrhal process was greatly benefited and the HCl secretion reduced to the normal at the same time that the stomach began to lessen in size. Massage, both abdominal and general, was then added to the treatment and continued almost daily for one month. Later the patient learned to massage his own abdomen, and has since continued it. His stomach is now (May 15) within normal limits, the lower border being fully two inches above the navel and no splash is obtainable, even after drinking a glass of water. Bowels moved now easily with gr. one-tenth of aloin. Exercise with the pulleys has been practiced though not very regularly.

Case 4.—Unmarried lady, aged 25, came under my care first in Atlantic City in the summer of 1897. History of some obscure stomach trouble for six years and for a year or more past patient has had dull pain and nausea nearly every day, coming on soon after eating with frequent attacks of severe gastralgia, and occasionally marked vertigo. She was plump, well nourished and of good color, in spite of extensive atonic dilatation and very aggravated chronic gastric catarrh. The upper boundary of her stomach was in the normal place while the lower border was three to four inches below the level of the umbilicus as shown by percussion, the splash and the gastrodiphane. The stomach was never found empty except before breakfast and not always then. There were the usual signs of stagnation and excessive fermentation of food. Microscopic examination showed the stomach mucus to be swarming with yeast fungi. There were occasional attacks of acute intestinal catarrh, which yielded with difficulty, and always violent pelvic pain at the menstrual period. Large and repeated doses of anodynes had been required for the dysmenorrhoea and often at other times for the gastralgia. The stomach was washed out and a strict diet was enforced. Intragastric electricity in the form of a mild galvanic current—M.A. 5 to 10, the positive pole inside and negative pole in the form of a large flat electrode placed over the stomach—effected more relief to the gastric pain than any other agency. But the relief was temporary. The stagnation and excessive fermentation in a very largely dilated stomach were clearly the chief causes. Finally lavage was regularly employed and the high tension faradic current in as strong dose as could comfortably be borne, was used on an average every second day for at first ten minutes at a time, but later on, this dose having seemed excessive, the time of each sitting was limited to five minutes. There had never been any free HCl in the stomach since the patient had been under observation, though the T.A. an hour after a test breakfast was usually 50 to 60, representing largely fermentation products. After the intragastric faradism had been continued for several weeks a trace of free HCl once appeared in the gastric contents, but none has ever been found since.

Under this energetic treatment, continued more or less regularly for three months, the stomach walls gradually contracted and now the lower border is just above the level of the umbilicus. There was, however, during the latter part of the time that the intragastric faradism was being used regularly, a loss of digestive power and a return of nausea, vomiting and dizziness, symptoms which had previously troubled her much, but had been greatly relieved by lavage and restricted diet. During the last two months the latter measures have been relied on chiefly, with some help from external electric applications, and the patient, while retaining the gain in the size and motility of the stomach which the intragastric faradism helped to effect, is continuing to make satisfactory progress in other ways. There is no more nausea, less dizziness, and greatly less gastric pain, though there is still some mucus secreted daily in her stomach. A highly nervous temperament has complicated the case, and lack of means to obtain massage treatment has been an unfortunate embarrassment. A retraction of fully three inches in the size of such a seriously dilated stomach is, however, a striking evidence to the power of intragastric faradism in such cases.

Case 5.—Widow; aged 64; resident in a neighboring city; came under treatment Oct. 13, 1897, with complaint of cardiac palpitation and flatulent dyspepsia, dating back a year or more. She had been troubled much longer with constipation and occasional headache. A strong, active, energetic and well nourished woman, weighing 150 pounds, she complained of a painful dragging in the abdomen in walking, especially in going

up-stairs. Examination revealed an exceptionally sound, strong heart of normal size, with normal lungs and liver, and kidneys not displaced, but her stomach was enlarged from the usual level above to three and a half inches below the umbilicus. The usual tests showed only a little motor deficiency, and a small, mixed meal would leave the stomach in four to five hours, yet there was an abnormally loud and large splash after drinking a glass of water, and this together with the sensation of weight and dragging after meals, pointed to the fact that the enormously enlarged stomach was not in a proper tonic condition as to its musculature, or to use the cardiac phraseology, that there was hypertrophy, with some dilatation. The analysis of the stomach contents revealed marked hyperchlorhydria and a large amount of mucus with other signs of chronic acid gastric catarrh.

The treatment at first consisted mainly of remedies to reduce the hyperchlorhydria, and simple, plain diet, as little fermentable as possible, with lavage when she could come to the office, which was only at long intervals. Later she came to the city and began a more systematic treatment. Intra-gastric faradism was now given on alternate days—sometimes every day—with the result of rapidly contracting the stomach. The action on the glandular function was less favorable than in any of the other cases. When the sittings were daily for five minutes during one week, there was a decided increase in the percentage of free HCl, the only instance in which this resulted, in my experience, in a case of hyperchlorhydria. There was also nausea after the latter treatments. Massage was thereupon ordered instead. This was given vigorously over the body generally, but very lightly over the abdomen—little more than effleurage. Lavage was also given every morning for a while, and later every other morning before breakfast. The hyperchlorhydria was not reduced so readily as usual, requiring a pill of belladonna and yerba santa to be continued for some time before coming under control. The lower border of the stomach now, May 15, is one inch above the level of the umbilicus, when the patient stands after drinking a glass of water. This is a reduction in size of over four inches. The gastritis is also greatly improved. The patient is still under treatment.

Case 6.—Widow; aged 38; has been for years a sufferer from indigestion and neurasthenia, dependent upon acid gastric catarrh, dilatation of the stomach and a right floating kidney. There has been a remarkably relaxed condition of her tissues in all parts of the body, and yet singularly, she is almost the only lady patient seen by me with a marked dilatation of the stomach (or with gastroptosis) who has not had at the same time a displaced uterus. She had been under the professional care of various specialists on account of these ailments. During the past year and a half she has consulted me with more or less regularity. In the winter and spring of 1896-7, she made some little favorable progress as a result of diet, physical culture, massage, occasional lavage, and treatments by galvanism to the spinal and abdominal centers. But she returned to her home in a distant city during the summer, and while there suffered quite a relapse. December 10, 1897, intra-gastric faradism was begun and given, as a rule, three times a week till April 11, 1898. Massage was continued meanwhile daily, but by an unskilled attendant, and lavage was given two or three times a week. When the intra-gastric electricity was begun her stomach extended from the normal position above, to three and sometimes four inches below the level of the umbilicus. During the first three months of this treatment there was less improvement than in any of my other cases. The lower border of the stomach was still below the navel; but on persevering another month with all the measures and in addition administering full doses of a compound containing nucleo-albumins and bone marrow, she began to improve more rapidly. Now, the lower boundary of her stomach is one inch above level of the umbilicus, and she is stronger and better than for several years.

The percentage of free HCl, formerly a little excessive, has been lowered somewhat below the normal, but there has been no nausea or other noteworthy disturbance of digestion by the unusually long treatment of intra-gastric electricity.

There have been conflicting reports from other observers as to the effects of intra-gastric electricity, both on the muscles and glands of the organ. One denies that contractions of the stomach walls can be produced in this way. My cases, 4, 5 and 6 above reported, are therefore of especial interest taken in connection with the preceding summary of the results in all of the fifteen cases in which I have em-

ployed direct electrization of the stomach. They certainly establish beyond further question the fact that the motor function of the stomach can be powerfully stimulated by this means.

As to the effect upon secretion, the results above cited seem to indicate that this probably depends upon the dose and upon the degree of reaction. In the dose of faradism necessary to produce efficient muscular contractions there resulted in all except one of the cases with a normal or excessive percentage of free HCl, a depression of the secretion. In cases of gastrectasia with chronic gastric catarrh and very deficient secretion, it agreed better than in most of the others, and in one of these, not reported here in full, the current from a cheap family faradic battery, with a coil of coarse short wire and not very rapid vibrator, applied through the intra-gastric electrode, seemed to help materially, along with massage, lavage, etc., in restoring the lost function of the glands, as well as in contracting the seriously dilated stomach. It is probable that the very slowly interrupted faradic current would effect contraction in this way with less risk of over-stimulating the glands, and I shall try this in my next suitable cases.

Too much emphasis can scarcely be placed upon the importance of these comparatively simple and safe methods of curing or ameliorating atonic dilatation of the stomach. Large numbers of persons suffering from this serious condition are permitted to go without any efficient treatment, while others are submitted to the new surgical operation known as gastrorrhaphy or gastroplication, designed to reduce the size of the viscus. This may be necessary in extreme cases, but surely all other practicable means of relief should first be exhausted.

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THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE DUODENUM BY DIRECT METHODS.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY FENTON B. TURCK, M.D.

CHICAGO.

The use of the gyromele in the diagnosis and treatment of intestinal diseases is now so well known by the profession that it would seem hardly necessary to describe the method, but as more work is being accomplished and new facts learned it is destined to add to our knowledge of the physiology and pathology of the gastro-intestinal tube. The gyromele as made for diagnosis, and treatment of the esophagus, stomach and intestines is modified for each part of the alimentary tube to which it is applicable, and also for the various kinds of uses in both diagnosis and treatment. The gyromele as is well known is composed of three essential parts. The cable with a spiral attached to one end and to the other end is attached an instrument for producing revolutions of the cable and spiral. To the end of the spiral is attached a

sponge or bulb or both as required. The cables are made of different lengths and degrees of flexibility adapted for either the esophagus, stomach or intestine. When used for sounding the esophagus short cables Nos. 1 and 2 of 60 to 70 cm. in length and of 2 degrees of flexibility are used.

The spiral attached to the end is short, ending with a bulb or sponge as the conditions of the case require. Various sized bulbs can be attached as in ordinary esophageal sounds. The principal advantage found in this instrument is that the revolving sponge when it passes into the stomach can be palpated upon the abdominal walls, proving that it has passed the cardiac orifice. It is for this reason that the gyromele with a long cable and spiral 120 cm. (or longer) is of such value in passing through the stomach and pylorus into the intestines that in palpating the revolving sound upon the abdominal walls, we gain positive knowledge in locating the viscera. By aspirating through the tube which covers the cable we can obtain the contents and reach the parts safely under the observation of the palpating hand. The vibrations may often be seen as well as felt and by the introduction of water or air or both reach a confirmation in diagnosis that could not be accomplished by any other way, and further, we are enabled to carry out a line of treatment by direct methods.

Kuhn has recently devised an instrument for sounding the stomach and duodenum, but this is simply a modification of the gyromele. Hemmeter has devised a method of ballooning the stomach and passing a tube along the upper borders of the inflated bag within the stomach. This method I have not had any experience with but it appears to be ingenious and of practical value. In the *Centralblatt für Innere Medicin*, No. 9, 1898 (Turck, Die Priorität der Sondierung von Oesophagus, Magen und Eingeweide mittels der Gyromele, biegsamen Revolversonde), I have given the literature on sounding or intubation of the duodenum.

Method of Introduction.—The cable enclosed in long rubber tube is passed into the stomach in the same manner as in the introduction of the ordinary stomach tube. When the stomach is reached the revolving apparatus is attached to the outer end of the cable, and revolutions are produced. The vibrations of these revolutions are palpated upon the abdominal wall and as the gyromele is pushed along the greater curvature it reaches the pyloric end of the stomach, which may be indicated upon the abdomen by outlining with a pencil. By carefully pushing the instrument further an obstruction may be observed which after a moment's delay will disappear and allow the end bulb to pass through the pylorus into the duodenum or further into the jejunum. In case there is much retching or contraction of the abdominal muscles the end bulb and spiral may be deflected across the antrum pylorica, and reach the lesser curvature instead of passing on through the pylorus. This may be detected by palpating the revolving sound. The instrument may then be slightly withdrawn and under the palpating hand pushed onward again until the pyloric orifice is reached and then pass into the intestine.

Method of withdrawing contents and introduction of air or water into the intestines.—When it is desirable to aspirate fluid from the intestine the upper end of the tube is closed by a rubber cork through which the cable passes and is thus made air-tight. To

the side of the rubber tube is attached a small tube, through which the fluid may be aspirated. The contents thus may be used for chemic analysis and microscopic examination. When desired fluid or air or both may be forced into the intestine and by inspection, palpation and percussion location can be confirmed. When water is thus forced into the duodenum another tube can be passed into the stomach. If no fluid is found there then aspirating the fluid back from the intestine through the gyromele will give further positive evidence that the pylorus has been passed.

Treatment.—The gyromele is used in the intestines for similar therapeutic purposes as in the stomach. 1. The massage of the revolving sound produces an effect upon the entire vascular system supplying the intestinal walls. By the reflex action of the vasomotor system of the splanchnic area is stimulated, not only through the massage or rubbing effect but the vibratory effect can be distinctly felt and has been observed experimentally upon dogs, their abdomen exposed, and during laparotomies upon the human subject, in which the changes in the circulation can be distinctly seen. This has been previously reported by the writer and others. 2. Cleaning the mucous membrane by removing the adherent material with the revolving sound and green soap, then washing out this loosened slime (decomposed remnants of food, necrosed and degenerated epithelial cells and other irritating material) originated with the writer and is unquestionably of the greatest value in treatment. 3. The application of antiseptics or other medicaments can be resorted to by topical or direct methods with exact dosage, such as the use of nitrate of silver, formalin, etc. The entire mucous membrane may be coated with bismuth when desired. 4. The use of the gyromele as an electrode is superior to other electrodes because the revolving sponge can be located anywhere over the abdominal wall and the application of electricity can thus be made at will to any desired part, as for instance, in cases of patulous pylorus. The electrode may be inserted at the orifice and the faradic current used, or if indicated it can be passed on into the duodenum for the treatment of atony and vascular disturbances.

It is not possible in all cases to pass it into the duodenum; benign and malignant tumors of the pylorus when complete may obstruct, or severe spasmodic forms of stricture. The value in diagnosis is of similar importance to the esophageal sound in strictures of the cardia. In cases where there is much vomiting and retching which may become so violent as to defeat the attempt at passing the sound, then the examination may be postponed for a day or so, when on another attempt it will be found that the sound may be introduced. The contraindication for the use of the gyromele are the same as those of the stomach tube.

In conclusion I wish to particularly call your attention to the diagnostic as well as curative possibilities of the gyromele in an hitherto unexplored field, and doing away partially with the exposure of our patients to the risks of the exploratory laparotomy, which has become such a fad in the past few years, for all affections of the gastro-duodenal region which do not readily yield to medicinal treatment. By means of it (gyromele) we can with almost certainty diagnose an obstruction at the pyloric orifice or a relaxation of the same; we can enter the duodenum and apply our medicaments as called for; we can obtain the various speci-

mens of the contents (food, etc.) for chemical, micro- as well as macro-scopic examinations and determine positively whether or not we are dealing with a pathologic condition of the stomach or of the duodenum.

For want of time the cases will not be presented here but will be published later with a full report.

CHRONIC DIARRHEA ASSOCIATED WITH ACHYLIA GASTRICA.

Presented in the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Among the causes of diarrhea the different conditions of the stomach that give rise to abnormal intestinal fermentation and irritation are of the utmost importance. For many years a form of diarrhea termed *lienteric* has been described as being characterized by evacuation of the bowels immediately following each meal, the stools containing considerable undigested food. Sometimes more than one movement follows a meal. The explanation given for this a few years ago was that the food was hurried through the gastro-intestinal tract with such velocity that there was no time allowed for its digestion. While such an explanation is in part true it does not cover the phenomenon properly, nor satisfactorily account for the hurried peristalsis. It was advanced by some that the food eaten for dinner, for instance, was partly passed from the rectum immediately after that meal. It may be readily understood how this hypothesis was necessary to account for the undigested condition of the food in the fecal discharges, but no thought was had of the state of the gastric or intestinal digestive secretions. It was not until the gastric secretions were studied, and somewhat more known of the motor functions of the stomach, that a better light was thrown upon this affection. While it will be readily admitted that only a part, perhaps a minor part, of digestion is carried on in the stomach, yet it will be also confessed that the passage of much unchanged food from the bowels will not be likely to take place if the retention function of the pyloric sphincter is normal, and if concomitantly there exists an active secretion of gastric juice. That this position is quite tenable is well illustrated by the fact that it is very seldom a diarrhea is observed to be *lienteric* provided the gastric function is correct. There may be, and there often are, cases of more or less persistent diarrhea associated with a good condition of the stomach, but such cases do not usually present the characteristics of *lienteria*.

When mixed foods are retained long enough in the stomach, and the chemical and mechanical changes incident to digestion in that organ proceed actively, the food is in a fair state of solution and comminution, and will not likely pass through the small intestine without being so changed that separate food elements will for the most part have become unrecognizable. If gastric secretion were normally active, and yet the pylorus were abnormally relaxed and patulous, food might be so hurried into and through the intestines as to appear unchanged in the feces, but such a state does not frequently exist, as the pylorus is exquisitely sensitive to active secretion, and the circular fibers are stimulated reflexly to prop-

erly protect the orifice and prevent the stomach emptying itself in undue haste. On the other hand, if the gastric secretions fail and the gastric contents are not digested, whether they remain in the stomach a long or a short time, we have the most apt condition of affairs to give rise to *lienteric* diarrhea provided intestinal peristalsis is sufficiently hurried to prevent complete intestinal digestion, or provided the *succus entericus* is diminished or absent.

In the gastric affection named by Einhorn "*Achylia Gastrica*," there exists a suspension of the secretions of the stomach, in some cases as the result of atrophy of the gastric glandules, in others as the result of a nervous disturbance of secretion. It is probable that all cases of this affection do not arise from glandular atrophy. For some years Stockton has maintained that the disorder often begins, and may continue, as a neurosis, and he has found a special form of ocular refractive error associated with it. In writing upon "*Gastric Anacidity*" some years ago I also emphasized the suggestion that some cases perhaps commence as a neurosis and may go on to subsequent organic disease and atrophic changes. Be that as it may, when the disease is once established the stomach is practically useless so far as chemical change of the food is concerned. Finely divided, thoroughly masticated carbohydrates may undergo more or less digestion, but albuminoids are not changed. A remarkable absence of fermentation is observed in the stomach in this condition wherein there exists a state of affairs, one would say, should be well calculated to encourage fermentative and putrefactive changes.

As is now well known, but little acetic or butyric acid is ever formed, even when much saccharine, starchy and fatty food is ingested. Even in cases with poor gastric motricity and consequent delay in the passage of the contents into the duodenum, there is yet practically no fermentation. This is the opposite of conditions prevalent in cases of *gastroctasia* and food stagnation from pyloric stenosis or in atonic dilatation.

It should not be understood from what has just been said that food stagnation is never accompanied in these cases by putrefactive changes, as sometimes no doubt actively toxic substances are developed. However, the point it is desired to emphasize is that symptoms of disturbance of intestinal digestion seem more troublesome and pronounced in cases of *achylia gastrica* than direct symptoms of the disordered gastric condition.

As to the causes of diarrhea in cases presenting an absence of gastric secretion, they may be various. One of the most important factors is the precipitate manner in which the stomach propels its contents into the intestine in a large proportion of cases. It is sometimes found that the stomach is empty one hour after a full meal. In some of Dr. Stockton's cases complaining of no gastric trouble, but seeking advice on account of persistent diarrhea, this hurried emptying of the stomach was discovered. The chronic inflammation of the gastric mucosa may extend into the intestines and thus give rise to diarrhea from chronic catarrhal enteritis, or the intestine may simply rebel from overtaxation, and by way of self-protection expel its contents at the earliest possible moment, or the diarrhea may be the result of intestinal irritation from unusual toxic substances developed in the bowel. Hemmeter found normal pancre-

atic and hepatic secretions in five cases of achylia associated with diarrhea, and thinks therefore that extension of the inflammatory process from the stomach into the intestine is probably not the cause of the trouble. He mentions Oppler's report of a number of cases of diarrhea dependent upon loss of gastric secretion, and also Biedert's account of his own case, which is a striking illustration of the relation of one affection to the other. The diarrhea differs in different cases. For instance, in some there are invariably several morning evacuations, and after the middle of the forenoon there is no further trouble; while in others the diarrhea is post-prandial, one or more stools occurring soon after each meal; and in a third set of cases there are many evacuations during the day, taking place irregularly and not following any fixed rule. In these cases there is diarrhea every day; but there is yet another class in which looseness of the bowels is periodic, coming on suddenly, lasting a week or two and being succeeded by constipation or in some cases by regular normal daily evacuations for a short period which is followed by another attack of diarrhea. The looseness of the bowels is chronic, as illustrated by a number of our cases having had the trouble for years. In some instances a great deal of intestinal flatulency is complained of and a large quantity of gas is expelled at stool. Pain is not a common symptom in these diarrheas. There may be occasionally some colic, but as a rule it is not at all pronounced. There is usually no elevation of temperature; it is an afebrile condition, the temperature is sometimes below normal. The appetite in some of these cases is voracious, approaching indeed what might at times be dignified by the term bulimia. The character of the stools varies. In few instances is there an abnormal amount of mucus. The discharges are frequent and watery, and contain undigested food, their features being modified by temporary influences. In some cases we have observed constipation. Einhorn says there is no rule, but that either diarrhea or constipation may be present.

In the treatment of this type of intestinal affection a few drugs are in some cases most efficacious. The first and most valuable is hydrochloric acid. It is our custom to give 20 to 30 drops of the dilute acid after meals, and see that the dose is repeated in an hour. This remedy seems a positive necessity for these cases. It is the habit of some clinicians to administer it before meals in large doses, say four to eight c.c. well diluted, in deference to Jaworski's statement that the acid is needed to develop the formation of pepsinogen in the gastric glandules. D. D. Stewart recommends the use of the remedy in this manner. The acid is quickly neutralized and combined in these stomachs. I have repeatedly failed to detect its presence as early as ten minutes after its administration; indeed, after meals it has been necessary to have the patient take good sized doses several times, and then to give him an extra 30 drop dose in my office, five minutes before withdrawing the contents of the stomach in order to find a small amount of the free acid present. Another remedy that has proven useful, and which may be given with the hydrochloric acid, is the tincture of the chlorid of iron. Usually it is not necessary to give large doses, five drops being quite effective. In one case excellent results were obtained by adding two drops to every glass of water that was taken. If small doses fail to control the diarrhea, larger should be tried

before the drug is abandoned. Bismuth preparations have not proved of much use in our cases. They may, however, be of service when the intestinal mucous membrane is the seat of considerable irritation and catarrh. When an excess of indican is found in the urine, benzosol, benzonaphthol, ichthyol, ichthalbin, salicylic acid, salol, or other intestinal antiseptics may be administered, though small doses of calomel will usually cause a prompt disappearance of the indican.

As there exists in these cases what D. D. Stewart has so well characterized "a suspension of the gastric secretory function," it is advisable to give pepsin in addition to the hydrochloric acid; indeed, this is one of the few conditions that call for its exhibition. Sometimes small doses of Fowler's solution, according to the old plan, given immediately before meals, seem efficacious. In some cases I have remarked benefit following the use of small doses of a combination of arsenic, gold and the red iodid of mercury. Intra-gastric faradization has been of signal service in several of our cases; the retentive function of the stomach having been manifestly and promptly improved, probably by the effect of the electricity upon the circular fibers at the pylorus.

DISCUSSION.

Dr. J. M. ANDERS of Philadelphia—It is with pleasure that I listened to this paper dealing with two interesting and important conditions in association. I believe that achylia gastrica occurs most frequently in gastric carcinoma and atrophic catarrh of the stomach and neuroses of the stomach as he has intimated. I also meet with this condition in lenteric diarrhea. I believe lenteric diarrhea is more frequently dependent upon catarrhal states of the intestines than any other factor. To corroborate this view I frequently find more or less mucus in the stools. I was somewhat surprised not to hear that this condition of achylia gastrica has not been found associated with tuberculosis; on the other hand, a number of cases of tuberculosis associated with diarrhea—of lenteric character—have been met with. I believe that in the majority of cases some great underlying condition co-exists, tuberculosis, amyloid degeneration, stomach neuroses, etc., which should not be overlooked in the treatment of this affection. I agree with the treatment as described by Dr. Jones. This is one of the few conditions in which large doses of hydrochloric acid and pepsin are necessary.

An interesting thing from a scientific point of view that I have noticed is that in certain conditions where has been found, by the use of Ewald's test meal, an absence of hydrochloric acid and the gastric ferments in the gastric contents, that in spite of the absence of these associated constituents, there may be perfect intestinal digestion and absorption. I have seen two such cases not long since and also have read an article on this same subject.

Dr. STOCKTON of Buffalo—Dr. Jones has given us a good description of achylia gastrica in association with lenteric diarrhea. In my judgment we should separate these cases into two classes—first, those which are accompanied by intestinal disturbances, and second, those which are not so accompanied. No doubt the advent of diarrhea is an unfortunate factor in patients suffering from achylia gastrica, yet when diarrhea does not exist there is a retention of food. This peculiar symptom of achylia gastrica—diarrhea—does not depend upon one factor alone. It is largely a nervous expression. I mean to say that undoubtedly some cases are associated with atrophy of the gastric mucosa or catarrh; these cases should be recognized. On the other hand, we have cases not associated with either catarrh or atrophy of the gastric mucous membrane. These cases have periodical attacks which lighten up without any apparent cause. I have one patient who has this trouble only when pregnant; I have followed her through three pregnancies; the woman is today as well as she was ten years ago. Another patient of mine always has this diarrhea when at home; as soon as she goes away from her home she is relieved. I believe that we have certain cases of achylia gastrica dependent upon nervous conditions alone; we also have them as the result of atrophy of the gastric mucosa. When this is the case they should not be considered as typical achylia gastrica.

Dr. ELLIOTT P. JOSLIN of Boston—This paper has been one of interest to me, coming as it does from one so intimately connected with the study of this disease. Dr. Jones has placed a special emphasis on the symptom of diarrhea in achylia gastrica. It is interesting that its opposite—constipation—is perhaps quite as frequent. This is to be expected when dealing with an affection of largely a functional origin. Rosenheim pointed out in his Moscow address, it is the variability of the symptoms at different times in the same individual that stamps the nervous dyspeptic. One of these cases of achylia gastrica with constipation I recently saw with Dr. James J. Putnam. It deserves mention because the patient presented a triad of symptoms which I believe will be found quite commonly in the future. The patient was a tall, spare man of 71, a captain of a coasting vessel. He was never immoderate in the use of food or drink. Four years ago, following what was supposed to be an attack of the grippe, he developed melancholia, and on account of this sought Dr. Putnam's advice. In the course of the examination a complete enteroptosis was discovered. The lower border of the stomach, when distended with air, was at the pubes, while the upper, in the upright position of the patient, was at the umbilicus. The liver and kidneys were correspondingly depressed. But Stiller's sign, "movable tenth rib," was absent. Repeated examinations showed complete absence of free and combined HCl and peptones, thus giving us in addition to the melancholia an enteroptosis, achylia gastrica. Are not the parts of this triad melancholia, enteroptosis and achylia gastrica, simply different expressions of a disturbed mechanism?

In the treatment of this affection I can hardly agree to what has been said as to the use of HCl. My own notion was that if a nurse gave a patient, by mistake, fifteen drops of dilute HCl before a test breakfast, the test for the free HCl in the stomach contents removed one hour later would be of no avail. I am indebted to Prof. Ewald for pointing out to me my error. Some experiments of Prof. Chittenden, recorded in his book, "Digestive Proteolysis," give the explanation. To put the matter in a popular way the albumin in two or three eggs dissolved in a little water, will combine with a pint of .2 per cent. HCl, and the solution when then tested with Günzburg's reagent will fail to show even a trace of free HCl. The few drops of acid which we give a patient are simply a "drop in the bucket," and are combined with albumin and still more with peptones the moment they reach the stomach. It is practically impossible to give the needed amount of HCl in these cases. Pepsine would be an advantage in achylia gastrica if we could give a sufficient amount of acid to insure its action, but we have seen that it is impossible, and consequently pepsine can be of no use save for its mental effect on the patient. If one feels constrained to give a ferment, then give pineapple juice, as that will digest albumin in a neutral, acid or alkaline medium.

What then, shall we do in these cases? The stomach does not digest food, therefore the food must be gotten out of the stomach as soon as possible. Fortunately, nature does this for us as a rule. If she does not there is nux vomica to fall back upon. What next? The food must be given in a state to enter the intestines without further change. Finally, the recent operation of gastrostomy shows that patients can get along without a stomach, but we know they can not get along without food. An abundance of easily assimilable and nutritious food is the key to the successful treatment of achylia gastrica.

Dr. BRIDGES of Nebraska—In regard to the point made by Dr. Stockton in cases of associated diarrhea in achylia gastrica, one must remember that this condition may be, and frequently is, an independent affection of the intestines. Most authorities give constipation instead of diarrhea as existing in this condition as a rule. Achylia gastrica in most cases leads to a condition of dilatation or a condition of stagnation; we also have in many cases of achylia gastrica vomiting associated with constipation. A condition of catarrh of the duodenum or small intestinal glands giving rise to diarrhea is quite plausible. The frequent taking of certain food gives rise to irritation of the small intestine, with accompanying diarrhea. If some cases depend upon a neurotic condition there is always a possibility of a chance for improvement and possibility even for cure. I am especially interested in this subject, especially after reading the writings of Einhorn where he states that the repeated examination of the stomach contents show an absence of the stomach secretions, and even of the rennet ferment. To me there is no doubt but that there is an atrophy of the gastric follicles.

In regard to the treatment, what I would do in these cases would be to employ gastric faradization before employing medical treatment. In one case I carried out intra-gastric faradization for a period of two months with great improvement in a young girl. This treatment should be carried out two or three times weekly.

Dr. ALLEN A. JONES, in closing—Dr. Anders has mentioned the dependence of achylia gastrica upon tuberculosis. It has not been our experience to find it associated with pulmonary tuberculosis, but rather in this condition have we found catarrhal gastritis with diminished secretion of gastric juice.

Dr. Joslin has pointed out that the great desideratum in these cases is that the stomach should empty itself very soon after eating; and he also doubts the efficacy of hydrochloric acid in the treatment of the affection. While I agree with him as to the truth of the theoretic reasoning, clinical experience has taught me that these cases feel badly and have diarrhea whenever the stomach empties itself with great haste and whenever they cease taking hydrochloric acid.

HEMOGLOBINURIA AND HEMOGLOBINEMIA. REPORT OF CASES, TWO DEATHS AND FOUR RECOVERIES.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEORGE J. HIRTH, M.D.

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MILWAUKEE, WIS.

Hemoglobinuria, which may be a disease *per se*, is also present as a symptom in many other conditions, viz: in various chemical intoxications, a long list of infective processes and also extensive burns; more especially does it occur, as a disease, in paroxysmal hemoglobinuria, syphilis and malaria being the cause. A given predisposition, combined with a sufficient cause, as sudden exposure to cold, strained physical condition and the like, will produce the characteristic lesion which is to be found in the blood, and which consists of the disassociation of the oxy. or carbon-dioxy hemoglobin, the free hemoglobin being taken up by the blood plasma—hemoglobinemia (Virchow). The free hemoglobin produced by the increased hemolysis is eliminated as such, in part, by the kidney (hemoglobinuria), and in part as gall (bile pigment of bilirubin and biliverdin). The stroma of the blood corpuscles having undergone this change are to be found generally in the blood or urine a short time thereafter as *blood shades*.

In consequence of the above, there will be an elevation of temperature, enlarged spleen and liver, more or less icterus, and urine containing a high percentage of hemoglobin with possibly gall pigment and few or no *blood shades*.

The cases which I am to report may be known as group 1, patients A, B, C and D, and group 2, patients E, F and G, and before describing each case a few introductory remarks regarding group 1, as regards pre-existing conditions, will be seen to be pertinent.

Group 1: four men, A, B, C and D, painters, engaged in shellacing large beer vats for several seasons past with seeming impunity, three of whom, while working under about the same conditions, on or about January 26, and working until about seven o'clock, after which they went in seeming good condition to their respective homes, were taken ill: A, late that night, and B, the following day, both making their *exitus* within twenty-four hours after they had concluded their work on the previous day. Patient C recovered after a serious illness of several weeks, having gone through similar prodromal symptoms to those who died. A history and detailed account of symptoms of surviving patient C are as follows:

Patient C, age 26 years, weight 185 pounds, of good

family history, engaged in shellacing for several seasons, suffered in common with deceased patients A and B, at various times during several weeks prior to his illness, with nausea, headache, muscular weakness, prostration, ringing of the ears, mental impressions of exhilaration, and temporary attacks of aberration of the mind, with mental depression and sharp, shooting pains, mostly in the back—*sordes labialis* also quite extensive. On Friday evening, Jan. 28, 1898, after having worked till seven o'clock this same day, this patient consulted me for the above described symptoms, and on the following morning I was called to my office to care for patient, whom I found greatly prostrated, with pulse slightly accelerated, temperature 99.6, respiration decreased, pupils partly dilated, slightly cyanosed condition of the lips and finger tips, cheeks slightly flushed, and physical and psychological conditions of patient much involved. When patient attempted to leave he staggered and fell, there being complete inability to walk other than in a tottering condition. Patient was taken to his home and prescribed for as follows: Pills containing 3 m. of digitalis, 3 m. of strophanthus and 1/100 nitro-glycerin; one every three hours, and two tablespoonfuls of lime water every one and one-half hours, placed in a warm bed and surrounded with warm water bottles, and given a cathartic. Several calls were made during the day, and at ten o'clock in the evening patient assumed a comatose condition, countenance became from white to pale livid; respiration deep and labored, 9 per minute, and pulse between 40 and 45; extremities, nose and ears, cold and clammy. On the fourth day I found the liver and spleen much enlarged, the latter being from three to four times its normal size. Cold water was used freely on face and chest, strong, hot coffee was given after thirty minutes, when patient was brought to a semi-conscious condition. He was given a large enema of three quarts of cold water, and a great quantity of putrid fecal matter was passed, and the enema was repeated with same result. Patient remained unconscious and had no account of time for the first four days of his illness. I catheterized and drew off $1\frac{1}{2}$ pints of dark to reddish-brown urine, which, upon examination the following day, contained hemoglobin. Guaiaca turpentine test, giving an indigo-blue ring and an absence of blood corpuscles by microscopic examination. I found bile pigment on the third day, and it disappeared on the ninth, a small amount of albumin and a few *blood shades*, and no sugar.

On the second day of the patient's illness, symptoms, circulation and respiration were improved, but the central nervous system became more involved; the skin and conjunctiva became tinged with yellow; complete loss of vision, pupils completely dilated and did not react to the most intense light. Patient was kept in a dark room, eyes washed with a solution of Seyler's tablets and dressed three times daily. At the end of the fourteenth day patient began to see the larger objects in the room, such as sofa, bureau, etc., but could not count fingers at normal distance.

On the eighteenth day an ophthalmoscopic examination was made by Dr. Bartlett, professor of ophthalmology of Milwaukee Medical College, which revealed the fact that the retina was immensely congested, there being about eight to ten times the normal amount of capillaries; pupils did not respond to light, and there was a general congested condition of the eye and its appendages, with a few unaccounted

for spots in the retina. At present the vision has improved to a considerable extent, though subnormal.

On the second day patient lost control of his extremities and back, having interrupted ringing of the ears, dizziness and a train of nervous symptoms which I shall omit, and was first able to get out of bed with assistance on the twenty-first day after onset of disease.

Pustular macules significant of chronic pyemia began to appear on the seventh day in great numbers all over the body, but particularly about the face, and from that time on I opened from fifteen to thirty daily, being in full bloom of pustulation; they continued for forty days, at the end of which time a picture was taken and an actual count made, giving 131 macular lesions in one or the other of their characteristic stages, on the face alone. From this time on they began to abate considerably, with return to the normal condition of the blood.

On the twenty-first day of the disease an examination of the blood was made by Dr. Evans, with the following results: Poikilocytosis; failure to form in roulettes. Percentage of hemoglobin, .80. Number of red cells per c.m., 3,072,000. Percentage of normal, 61.44. Corpuscle index, 130. Number of white cells per c.m., 8400. Percentage of normal, 84.

Reported examination of the blood showed an increase to normal constituents until the eleventh week, at which time it was practically normal.

The pathologic findings in the urine disappeared in the following order, viz: hemoglobin was absent on the third day, bile pigment was found last on the ninth day, and the last trace of albumin disappeared on the eleventh day; spleen began to decrease in size on the twelfth day; on the sixth or seventh day the *sordes labialis* began to disappear, and the appearance of a small open sore became manifest on the left side of lower lip, and took on a very rapid growth; blood plasma constantly exuded at this point of lesion, and within fourteen days it appeared to be a typical rapidly-developing epithelioma. I considered it a dangerous factor on account of its very rapid development, and that it was due, doubtless, to the lessened cell-resistance, conjoined with increased cell irritability. Owing to the impoverished condition of the patient's blood I deemed it advisable to operate at once without an anesthetic, which was done by Dr. Earles and myself, at Trinity Hospital, on March 12, being about forty days after the first appearance of the growth. Operation a success. Microscopic findings proved it to be a true epithelioma. The report of Dr. Evans of Columbus Medical Laboratory, on same, is as follows:

"The specimen is a very pretty illustration of progressing epithelioma. You will never find a better illustration of invasion of underlying tissue than is here shown. There are no pearls or other phenomena indicating any disposition to degeneration. There is considerable ordinary inflammation."

The general tonic treatment of quinin bi-sulphate, alcohol, arsenic, iron, manganese, and faradization and galvanism, from 1 to $1\frac{1}{2}$ milliamperes, to the spine and muscles was continued, and patient from this time on made a very rapid recovery.

Patients A, B and C, were quite temperate, but patient D was addicted to the free use of stronger spirits, and, while having suffered some of the symptoms of the two deceased, and recovered, it may justly be said that he took his daily quota of stronger spir-

Right Side.

Left Side

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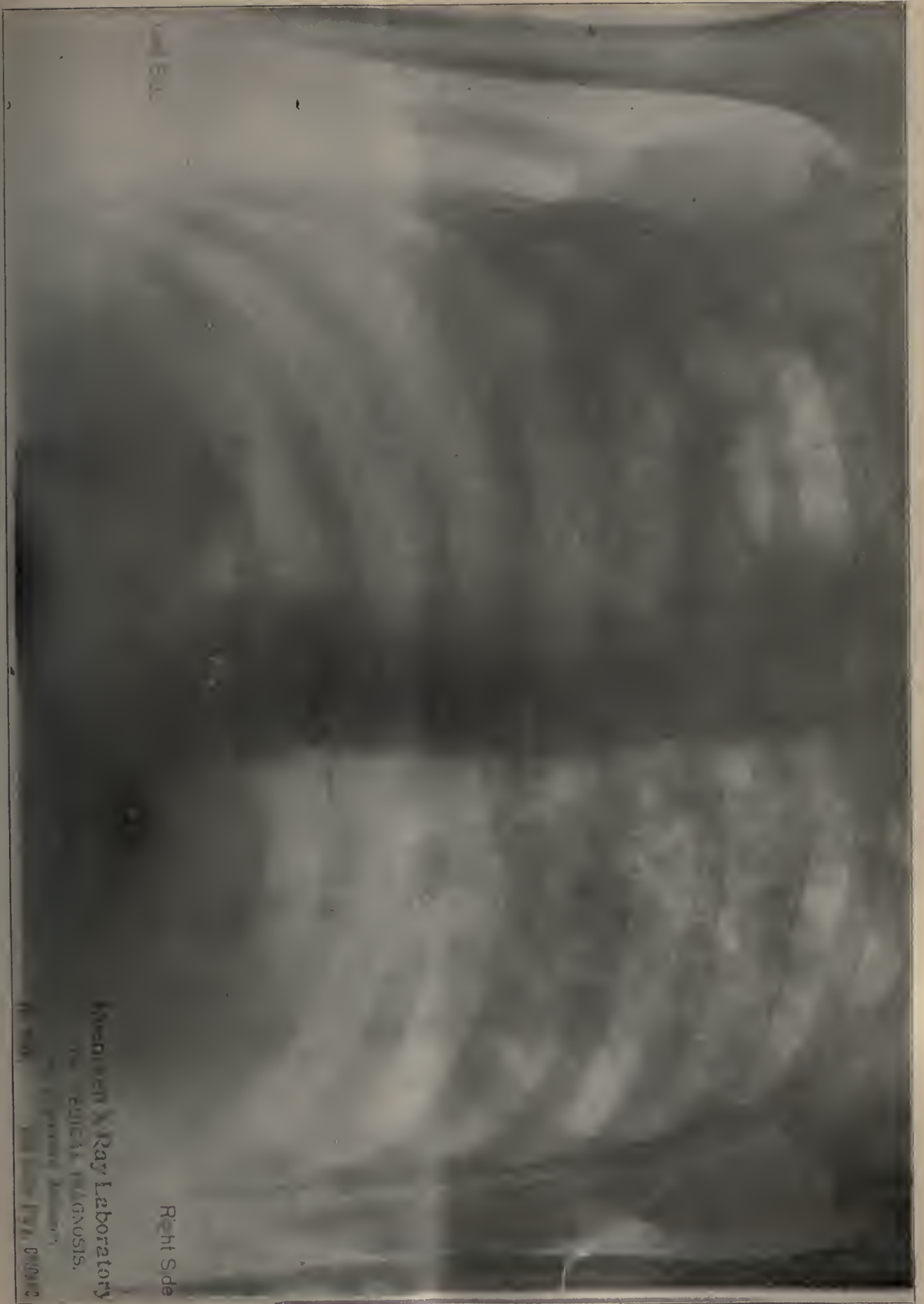
Right Side

Left Side

J. B. Murphy

Hermann X Ray Laboratory
FOR MEDICAL DIAGNOSIS.

W. C. WELLS, Manager.
115 Schiller Bldg., CHICAGO
TEL. 407.



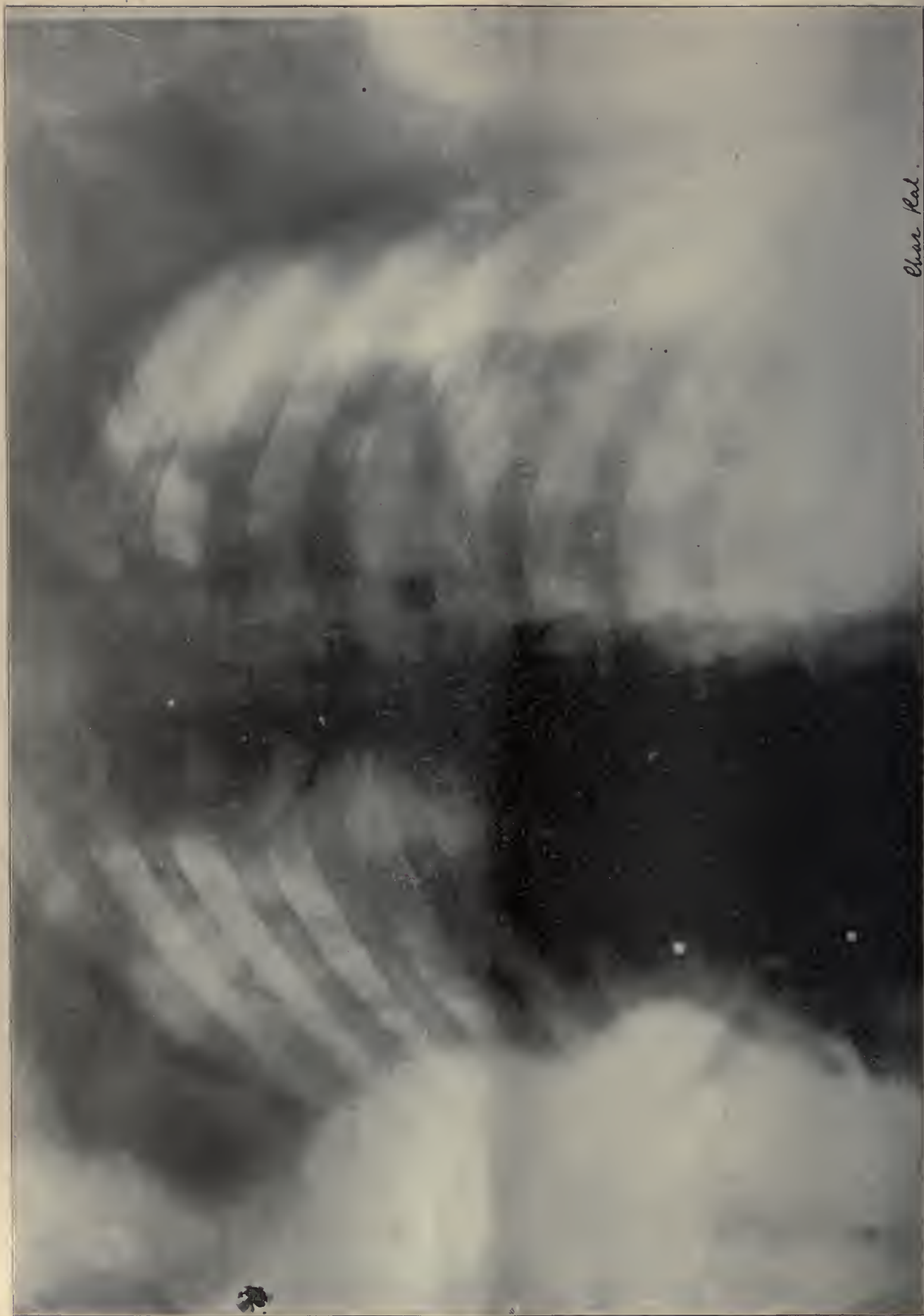
Right Side

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CHICAGO, ILL.

Phone 1234



Char. Rad.





Ed. Dayton
May 19th 1891
Baltimore - Front View
Case No. 10

1891





H. A. Edwards
Basis - Frost View
May 17th 1896
Case Dr. J. B. Murphy

its, which fact, we may justly assume, played the partial part of an antitoxin in preserving his health.

The deceased patients, A and B, had identical prodromal symptoms with the one I have just described, other than that the comatosed and unconscious condition was continued and interrupted by convulsions and finally death. The report on record at the Milwaukee City Coroner's office, as regards the pathologic findings of the two who died, shows that all organs were normal, with the exception of slight pleuritic adhesions, and heart slightly hypertrophied with thickened valves in one; in the other case all organs were normal, with the exception of the kidneys, which were possibly congested. In both cases the heart ceased to beat in systole, and blood was fluid throughout the body, and was of a dark color.

That the two who died and the one in the case just cited suffered from one and the same disease, toxic hemoglobinuria, can not be questioned; thus, the only question of interest which remains, as regards cause, is: whence the source of intoxication? The three factors which might have produced the condition were: cold, carbon monoxide, or the impurities present in the wood alcohol which was used for cutting the shellac. A free discussion and investigation of these three cases is to be found in transactions of Wisconsin State Medical Society, 1898, and for reasons given there it is plainly evident that death was caused by the impurities present in the wood alcohol which was used for cutting the shellac. Can there be any doubt that these three patients had gone through recurrent attacks of toxic hemoglobinuria due to the inhalation of the wood alcohol vapors containing, "at times, aldehyde and acetone, the latter often reaching as high as 18 per cent. by weight; but aside from this there are cyanide compounds, notably methyl and ethyl cyanide which are highly toxic." The inhalation of an extraordinary amount of this toxic alcohol produced the climacterium.

Group 2 consists of patients E, F and G. Patient E is a good example of paroxysmal winter hemoglobinuria, and since I have treated patients through a number of attacks a description of an attack may be of interest.

Patient E was a strong man, 30 years of age, good family history, no specific or malarial taint, carpenter, and has been treated by me for eight or nine different attacks during the past five years. Those attacks are characterized by a decided chill, which comes on from five to twelve hours after an exposure to cold, after having been confined in the house for a few days. Chill is of a severe character lasting from one to one and one-half hours, and is accompanied by a temperature of 102 to 103, pain in back radiating to abdominal, inguinal and vesical regions, frequent micturition of dark brown urine, extreme frontal headache and general prostration. The temperature lasts from ten to twelve hours, beginning before the chill, and only abates after the chill and pains have subsided and body is bathed in profuse perspiration.

Urine contains hemoglobin and, in severe attacks, a few blood shades, but I have never found hemoglobin after twelve hours from the onset of the chill. He is able to attend to regular duties within one or two days after an attack, and the paroxysms are best treated when left entirely alone, aside from placing patient in a warm bed. Free use of warm-water bottles, and a liberal use of alcohol have been found to cut short the chill.

Upon one occasion before I had made a diagnosis, I resorted to the use of chloroform with the view of cutting short the chill, and it came very near costing the patient his life; the chill became the most severe one I ever experienced, lasting over three hours and terminating in convulsions and final recovery. It may be of interest to note that during the past year patient has become quite addicted to the use of alcohol, and during the past winter has been free from attacks, which, during the previous ten or twelve years, has never occurred.

Patient F (female) is of little interest other than that the hemoglobin was found in the urine until eight days after a severe burn involving the anterior and lateral aspects of left leg above and below the knee.

Hemoglobinemia.—In the last case the patient was a girl 7 years of age, good family history, has just recovered from a severe attack of acute meningitis, and on the seventh and ninth days temperature ranged from 103 to 104½. Blood was extracted according to Küssner's Method, by allowing several leeches to fill on the desired blood, and then the blood was allowed to stand in ice chest for twenty-four hours; the serum was of a ruby-red color and was centrifuged with negative results for corpuscles, but it gave the two absorption bands of hemoglobin, and disappeared upon the addition of ammonium sulphate; by a similar process, other than that the serum was filtered from the blood immediately after removal; the blood upon examination on the ninth day gave same results. The urine was examined on the sixth, eighth and ninth days, with negative results, thus proving that hemoglobinemia may exist without producing hemoglobinuria.

It is authentically stated that hemoglobinemia and hemoglobinuria are frequent complications in severe cases of typhoid, diphtheria and scarlet fever, and I am of the opinion that its presence should be noted as a grave complication and such medicines as favor its production should certainly be withheld, or used with caution. Potassium chlorate, antipyrin and all coal tar derivative febrifuges, etc.

Cause of chronic pyemia and pathologic condition of patient C before referred to: As to the cause of the many various symptoms, it can hardly be questioned but that the conditions were due to the increased disintegration of the red corpuscles of the blood, through the agency of the toxic wood alcohol substances before referred to, whereby an auto-intoxication of the tissues was produced, dependent upon the hemoglobinemia. Howell, "American Text-book of Physiology," says, on page 358: "Intravascular clotting more or less general in occurrence may be produced by injecting into the circulation such substances as leucocytes obtained by maceration of lymph glands, extracts of fibrin ferment, solutions of nucleo albumins of different kinds, etc." The Dorpater School teaches us that the hemoglobin taken up by the blood plasma in cases of hemoglobinemia of any consequence produces toxic action on the white corpuscles, leading to their disintegration and consequent formation of fibrin ferment. May we not also add a third class of corpuscles, the blood platelets, which are even more unstable.

From the foregoing it follows that a chronic auto-ferment intoxication was produced, and since the clotting of the blood is produced through the interaction

¹ Perry L. Hobbs, Ph.D. Analytic and Consulting Chemist, Cleveland, Ohio.

of the fibrin ferment on fibrinogen, and (fibrinoplastin) there was unquestionably formed fluctulent fibrin coagulæ producing multiple emboli and hemorrhage of the small capillaries, thus producing the chronic pyæmia, temporary loss of vision, as also were the grave nervous symptoms produced in the same way.

Note on treatment of hemoglobinuria and hemoglobinemia of severe character.—In these cases, internal blood combustion being too rapid, a treatment with heavy oxidizing agents, such as ozone, peroxide of hydrogen and oxygen, would increase metabolism and disintegration of red blood-cells, thereby increasing the production of CO₂ and other effete poisonous products; it is therefore necessary to decrease this metabolism, which can best be done through the agency of reducing agents, the ones most available being calcium hydrate and nitro-glycerin. This also holds good in cases of gas poisoning (hemoglobinuria) which is mainly a CO poisoning. The giving of pure oxygen, ozone, etc., only does harm by adding more fuel to the flame, while the system has already been poisoned by the effete products of increased metabolism; likewise is the same true in our severe pneumonias, as in either of the two latter conditions.

SOME CONSIDERATIONS OF UREMIA AND ITS TREATMENT.

Presented to the Section on the Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY E. W. MITCHELL, M.D.

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The numerous and varied symptoms which have been classed under the term uremia have always been an interesting theme for study and speculation. Of the many special theories which have, from time to time, been proposed to account for its phenomena, none have withstood the tests of investigation and criticism. The theory so long ago advanced that the *meteries morbi* is urea was quickly and generally accepted because of the ready proof that in these cases the urea was greatly reduced in the urine and largely increased in the blood and tissues. So firmly did this opinion become fixed in the professional mind that it yet largely prevails, although it has been repeatedly shown that, administered in much larger amounts than are ever found in uremic cases, it is harmless. The fact that experimental and clinical observation teach us that the decrease of urea in the urine gives us a fairly accurate indication as to the imminence of uremic attacks has helped to keep it associated in our minds as the important causal factor in spite of the evidence to the contrary.

The failure to inculcate any one of the chemic substances of the urine, or any one of the pathologic conditions as the essential causal factor, has driven us to the conclusion that many or all of them play some part. "The uremic poison is complex in character, and may vary, not only in the proportion of component elements, but also in the elements themselves," states about the conclusion to which we have come. Repeatedly it has been demonstrated that normal urine is toxic and that its toxicity is diminished in proportion as the kidney becomes impervious. The inference is the retention within the blood and tissues of these toxic materials which the urine has failed to carry away.

As to what these elements are and their properties, we have probably the most satisfactory answer in the investigations of Bouchard, as set forth in his most admirable monograph on "Auto-Intoxication." In the normal urine he has found seven toxic substances. Among these are two which produce convulsions: one inorganic, which he has proven to be potash; another organic, whose exact chemic nature is not established; one which produces coma; a fourth produces ptalism; a fifth is myotic; a sixth lowers temperature; one (urea) is diuretic. So accurate is the work of Bouchard and so closely do the physiologic actions of these substances correspond to the several prominent symptoms of uremia, that we are justified in assuming that we have in this state a toxæmia, or to use the expression of Bouchard, an intoxication; furthermore, that the form which the intoxication will assume will depend upon the substance preponderating in the retained products. If it should be the convulsants, one or both, convulsions ensue; if the narcotic, we have coma. Mydriasis is often present. A lowered temperature is common. Ptalism is sometimes the most prominent symptom. I have seen one case in which it was the only symptom which excited suspicion of nephritis.

Mrs. F. H. came to my office complaining of excessive salivation. She had been under treatment by a physician for several weeks without any alleviation. She was three months pregnant; stated that the urine was free in quantity, although subsequent measurements showed it reduced; that she had been in good health, except for an illness a year previous, in which the urine had been very scant. Urinalysis showed a specific gravity of 1010, a small quantity of albumin and a variety of casts. Prompt treatment of the nephritis was followed by temporary improvement. A few weeks later an abortion occurred, anuria followed, with development of coma and death. Postmortem examination showed advanced diffuse nephritis.

Bouchard has shown that the narcotic substance in proper proportion has the power of neutralizing the convulsant. In this we may have an explanation of that anomalous fact that so often we have the most advanced impairment of the functions of the kidneys without the development of either convulsions or coma. Anuria not infrequently exists for many days without uremia. Reduced metabolism has never been a fully satisfactory explanation of this fact.

The recent importance attached to fermentative processes in the intestinal canal with the production and absorption of ptomaines has drawn attention to this as one source of intoxication. Bouchard has clearly shown how greatly the toxicity of the urine is increased by intestinal decomposition. It has also been shown that the physiologic secretions, such as the bile and saliva, contain toxic substances and their reabsorption may contribute to the poison. We have therefore four sources for the toxic materials: 1, the products of tissue disintegration; 2, food substances, especially the potash salts; 3, absorbable products of intestinal fermentation; 4, reabsorbed secretions, such as the bile and saliva.

I shall merely refer to another subject in this connection, but one not sufficiently worked out to be dwelt upon in this, which aims to be a brief and practical paper, namely: The functions of the liver in relation to the destruction of these poisonous products.

In view of our present knowledge of this work of the liver it can hardly be questioned that its failure

to properly dispose of the poisonous materials brought to it may be an important factor. Another point to which I shall merely allude, is that the quantity of albumin present is not a reliable measure of the danger of uremic accidents.

For the practical physician the chief value of chemic and physiologic revelations is the indications they give for treatment.

In the treatment of what may be called chronic uremic symptoms, such as headache, dyspnea, nausea, etc., we have involved the treatment of the chronic nephritis. The points I wish to insist upon in this connection are that metabolism shall be reduced by rest, intestinal fermentation guarded against by proper diet, catharsis, and if necessary the occasional use of non-absorbable intestinal antiseptics.

The bacteriologists have shown us that meat and meat products, such as soups and beef tea, are especially good media for bacterial growths, and that they produce the most virulent ptomaines. In meat also we have a source of potash salts; hence the importance of excluding it from the diet of all patients threatened with uremia. In serious cases, a strict milk diet; in the less serious, a milk diet with carbohydrate food is the most satisfactory.

Elimination by the skin is to be maintained, not by the use of drugs, but by baths, hot air, vapor or packs, selected according to the convenience and tolerance of the patient. It will frequently be found that one form is much better borne than another. Minute attention to all the habits of life, clothing, diet, the maintenance of elimination, will often defer for a long time the onset of uremic accidents. The prophylactic value of one drug is not sufficiently appreciated, namely, *veratrum viride*.

Several years ago an aged patient had several attacks of uremic coma; the pulse was hard and bounding, not only during the attacks, but also between them. Here was evidently an indication for lowering of the blood pressure, for which purpose we have no surer or safer drug than *veratrum*. In this case its administration in amounts sufficient to materially lower the blood pressure, held the attacks under control until treatment of the nephritis had restored him to health. I have since, a number of times, where uremia was threatened or feared with high blood tension, seen its good effects.

Notwithstanding most of our text-books warn against it, the use of drastic diuretics is too indiscriminate. In acute inflammations the great principle of rest is certainly as applicable for this organ as of others. It should not be stimulated to greater work, but should be as far as possible relieved by calling upon the complementary organs of elimination.

In the treatment of uremic convulsions and uremic coma there prevails a great diversity of practice and of opinion. During the convulsions, the first indication is to save life from the convulsion itself. The convulsion may be controlled by chloroform or by morphin, hypodermically. It is, however, bad practice to continue the administration of chloroform hour after hour, as is sometimes done, because of its destructive effects upon the blood corpuscles and because of its interference with oxidation. The difference in experience and of opinion with reference to the use of morphin is due to lack of discrimination in cases. For the immediate control of an acute attack, it is often most valuable, and usually safe. Its action in locking up secretions and diminishing elimination contraindicates its use in chronic conditions or its

repeated use in acute conditions. The great success of *veratrum viride* in puerperal convulsions has suggested that it may also be useful in the eclampsia of Bright's disease. I have twice used it with success in these cases. In a third case its use controlled temporarily the convulsion, but was followed by great reduction in the quantity of urine and finally coma and death. This, however, was a hopeless case; all other remedies had failed; the chief indication, the high tension of the pulse, was absent. *Veratrum* acts by lowering the arterial tension, by depressing the motor centers of the cord, and by promoting sweating.

Pilocarpin I mention only to condemn. Its sudorific effects are very often more than offset by the profuse salivary and bronchial secretions, and the patient is drowned in his own fluids. Having twice seen this result, I have abandoned it.

Bleeding, which for so long was abandoned, is again coming into favor. It will probably maintain a permanent place in the treatment of certain cases. At the present time it is especially used when combined with transfusion of normal salt solution. This leads us to the consideration of this newer means of treatment. Sufficient experience has now accumulated to prove its great value in the relief of uremic accidents. When the case is urgent, the saline solution should be given by transfusion into the vein in order to get its immediate effects. When the case admits of an hour or two delay, the solution should be given subcutaneously, since the former method is not without danger, and the latter is equally efficacious. If the blood pressure is low, the preliminary bleeding may be omitted. The reported cases, which are now numerous, show almost invariably prompt improvement. Ultimate recovery, however, depends upon the degree of disease in the kidneys. The immediate effect of the infusion is to dilute the poisonous matters in the blood and thus diminish their effects on the nerve centers. Elimination is enormously increased by the prompt production of profuse diuresis and diaphoresis. We have herein a means of tiding many patients over the emergency, giving them the opportunity to recover, provided the anatomic changes in the kidneys are not already too far advanced.

SOCIETY PROCEEDINGS.

The Medical Society of the State of New Jersey.

One Hundred and Thirty-second Anniversary at Asbury Park, June 28, 1898.

(Continued from page 185.)

SECOND DAY.

A paper was read by Dr. WILLIAM PIERSON, third vice-president, on

THE UMBILICAL CORD.

Up to the present day no settled plan of treatment of the cord has been agreed upon. Teachers differ widely, yet this is a subject demanding better consideration. He described the treatment it received in the inferior animals, torn by the struggles of the offspring or bitten off by the mother. The Indians do not sever it until the placenta is expelled. The Japanese tie close to the body and preserve the cord with the family archives until the child arrives at maturity, when he constantly carries it about with him and it is finally buried with him. Non-ligation will do when the cord is crushed, torn, chewed, etc., so that bleeding is not likely to occur. The ligature is safer, as cases have occurred where hemorrhage has come on, with fatal results, even when care had been taken. Usually it is tied as soon as the child cries; this may be well, but be not

too precipitate as we may thus rob the child of needed blood. As no harm is seen from late tying, let the child cry and breathe well for a few minutes, or wait till pulsation ceases. Narrow linen bobbin, sterilized, is best for the ligature. Silk is apt to cut the vessels and cause hemorrhage, catgut is unsuitable as it rots rapidly. The usual length from the body is about two inches. The long stump is urged, to avoid tying the intestines and to leave room for a second tie should hemorrhage occur. The short stump leaves less dead tissue, less fetor; it shrinks and sinks into the depression becoming a scab or crust less liable to be pulled or torn, hence it is better. The dressing is to aid the separation, cause complete cicatrization, lessen risk of sepsis. We must encourage the drying, hence not use grease or wet bandages. Absorbent cotton is now in general use; it prevents contact with the skin and does not prevent rapid drying. Free exposure to the air is well and the application of absorbent antiseptic powder prevents excoriations of the skin, as boric acid powder, or rub the end with a moistened bichlorid tablet; dress daily. He has followed, for the last fifteen years, the plan of stripping the stump so as to get rid of all blood and gelatinous matter, leaving it nearly dry; then it may be left without any dressing and falls off like ripe fruit. Under the moist plan the stump decomposes and sloughs off; this may extend to the umbilicus and an open ulcer follow, with great danger to the child. He had seen several such cases and several died, and it was no doubt due to infection by the umbilical vessels. Next as to the belly-band. Thanks to the efforts of several teachers, the importance of this has been proved a fallacy. The reasons urged for its use were warmth, and to retain the cord dressing. Neither of these is necessary, and to retain the cord dressing a heavy netted band may be used. If no dressing is employed then the net is not needed. The belief that support of the abdominal walls is necessary is also a fallacy. Again it was thought to prevent the occurrence of umbilical hernia. This, too, is not true. The band may prevent an expansion of the walls, compress the contents, and thus produce what we wish to avoid. Many believe they have seen this as a result of tight bandaging. The bandage then should be abandoned. The anomalies, accidents and diseases of the cord deserve more attention. Death of the fetus in the womb is not often determined as to its cause. Still-birth is given as the cause of death, when the cause of the still-birth should be given; 90 per cent., he believed, was induced by trouble with the cord.

In all cases care should be taken to determine the exact condition of the cord so as to be able to say if any anomaly here caused the death. The length of the cord varies from no cord to five feet; usually it is two and a half feet long. The implantation of the cord into the placenta varies; marginal, velamentous where the vessels pass for some distance between the corion and amnion, before entering the placental structure, or the cord may be received in the fold of the amnion. The latter is dangerous to the fetus as the vessels are liable to traumatism and rupture, causing death from shock, asphyxiation or hemorrhage before delivery. Again the jelly of Wharton may be less or greatly increased in quantity; the only danger is from an excess causing the slipping of the ligature and, as it shrinks, hemorrhage. Here, where very excessive, do not tie till the size is reduced by stripping. Torsion, knotting and coiling of the cord are often observed; the latter may produce occlusion of the circulation and death. This occurs most where the cord is very long. Knots are rarely tight, still such may occur. Coiling round a portion of the fetus is of immense importance. It shortens the cord, may produce strangulation of the fetus, may obstruct labor and may cause detachment of the placenta. All these accidents are really beyond the reach of aid, but in delivery, when a part is encircled, draw down the cord, doubly ligate and sever, after which deliver as speedily as possible, to prevent dystocia and death of the fetus. Pro-lapsus of the cord is important, causing death in very many cases. It is not a very common accident. Here, place it beyond the point of compression by the parts of the child, and accomplish delivery as rapidly as may be commensurate with safety of the mother. The postural position is best to permit the cord falling back to a safer position, but occasionally fatigue to the mother is so great that this must be abandoned. The gum catheter and loop may be employed to replace it and often succeeds, but the manual method is best when possible, but with all care is needed when the membranes are not ruptured to prevent this, as it adds to the trouble. Podalic version gives much better results when the circulation is feeble or has stopped, then delivery of the head with the forceps will give the best results.

Dr. J. C. McCoy related the conditions in a case of foreign body in the esophagus, where the child had drawn in a small tin whistle; he failed to extract it with the long forceps, dys-

pnea at first was very great, then the wire was tried. For some reason the trouble appeared much lessened, hence the parents were unwilling to have any operation performed. In the night the dyspnea returned, the child was brought to the hospital, operation performed, and after sixteen days from the removal of the body, the child was well. He condemned the efforts to extract by an instrument as often highly injurious.

Dr. W. B. JOYNSON reported a case of foreign body in the bronchus and the operation of tracheotomy.

MILK AS A CULTURE MEDIUM AND ITS CAPACITY TO SPREAD INFECTIOUS DISEASES

was discussed by Dr. R. C. NEWTON. Recently there has not been a material addition to our knowledge of bacteriology, perhaps because the subject is so difficult. Keer has followed Schwartz in advocating milk of goats in place of that of cows for invalids and delicate children. It is more uniform in quality, the animal selects her food more carefully and avoids much fluid. The animal is immune to tuberculosis, hence its milk does not need boiling. It has been demonstrated in fresh milk that the fat globules are immediately taken up into the blood and build up the cellular tissue. This constituent of cow's milk is destroyed by boiling. Boiling also alters the fluid albuminoid of the milk that it is difficult to dissolve and assimilate it in the alimentary canal. Milk should not be boiled when its nutritive value is required. All writers agree as to the great value of milk as a food. Skim-milk fed to animals gives good results except in lambs, which do not seem to assimilate it. Working horses have been so fed with excellent results. A seemingly unnatural food for milch cows is skim milk, but it has been satisfactorily practiced. The milk is heated to 155 or 160 degrees and rennet is added; while it is thickening, an equal weight of chaff or finely cut straw is mixed in, well stirred; then it stands two hours and the whole mass is left to ferment for forty-eight hours. Thus prepared, it is claimed that a gallon of skim-milk amply replaces four pounds of concentrated grain food. Feeding milk to hogs has been found to cause them to grow, digest well, and produce more uniformly high grade pork. Another writer insists that sweet milk makes the right kind of pork and sour milk is not good for them. The use of milk as an economic food is gradually increasing. Boat crews trained on milk can always outrow those trained on beer; no doubt this applies to race horses, etc. Hygiene of the stable should now be attended to. Study the manners and customs of the cow in her wild state and learn how health may be preserved. Do not keep too large herds under one roof. A number of writers have indorsed the views he offered last year and insist that milk should be fed to children as soon as possible after milking. The milk laboratories are having a struggle to exist, and it is doubtful if they can be kept open. Pasteurization of milk has encountered much opposition. Koplik of New York speaks in no uncertain terms. Most of the germs in milk which are harmful to children are not affected by pasteurization. Gastro-intestinal disturbance follows. Milk poisoning has been seen after administration of pasteurized milk. As to the spread of infectious disease by milk, there are many cases to report. In Philadelphia an epidemic of diphtheria followed the milk route of a man; the dairy was in an unhygienic condition and the sale of the milk was suspended. There were eighty-six cases and twenty-two deaths. Vaccinia in Caldwell appeared and spread rapidly and caused great inconvenience to the dairymen. The cows were isolated and the sale of the milk suspended. The veterinarians who examined the cows claimed that a majority of the lesions were due to what they called "feed boils," little abscesses on the teats and the udders when the cows went out to grass after being kept on grain and dry food during the winter. These boils need investigation, as many do not understand their etiology, etc., and some deny their existence. There is no doubt such a condition in milch cows more or less constantly in the spring.

Experiments to show the effect of infectious germs on the milk glands showed injected cultures of anthrax killed the animals but did not infect the milk. By the injection of pus cultures into the veins, in five to eight hours they were present in the milk. In two women suffering with puerperal septic infection, streptococci were found in the blood but not in the milk. They conclude that infectious germs gain access to the milk by circulating through the glands in the blood stream, and to enter the milk they must pass through the glandular substance through some injury. It is recommended that regular microscopic examinations of milk to detect pus must be made. Milk is to be rejected when over an average of five pus cells are found on the field of a twelfth-inch oil-immersion lens. An extensive epidemic of typhoid fever was traced to a dairy near Paterson. In the study of tuberculosis in milk some advance has been made. Tubercle bacilli do not always develop in

milk but remain alive and virulent for at least two months and a half. One believes it due to overmilking, and urges the law to compel cows to go dry three months after gestation. Authorities differ as to bacilli in butter. One observer examined eighty specimens and did not discover it in a single one. One believes that all tuberculosis in the human race comes from the dairy. Mr. Nathan Straus of New York has no doubt saved thousands of infants' lives by supplying sterilized milk at cheap rates. It is getting to be a fashion to work and write and spend money for the sake of obtaining wholesome germ-free milk. Even of a Tammany brave it is reported, after being appointed a sanitary inspector in New York City, that he expected to make \$20,000 by admitting rotten meat, vegetables and fish into the city, but he was going to get up "a h—l of a reputation" by shutting out impure milk. Eternal vigilance is the price of wholesome food products of all sorts. Deaths among children are due to lack of food inspection and food laws; even as high as 35 per cent. Artificially fed children can never be safe from the great white death. Let us never relax our efforts till proper and sufficient dairy laws are enacted and enforced. I have in my investigations discovered a custom so mean, revolting and so devilish that I must speak of it. The sale of bodies of dairy animals which have died of disease or accident to the bologna sausage man. This obtains even in the better class of dairies and would suggest that the dealer in "bob veal" is a philanthropist in comparison with the bologna sausage man. I would urge a law that all milk vendors shall be obliged to take out a license as to the condition of their herds, sworn to, water-supply, feeding, housing, caring for stock, milk handling—the license to be revoked when these matters fall below the standard, or when he shall fail to give notice of sickness among his cattle, his family or employees; the testing of all milch cattle with tuberculin to be compulsory; the selling of cattle which die of disease or accident, etc., to a bologna sausage man to be punishable with fine and imprisonment.

D. J. LEAL continued the discussion, considering

MILK AS A CARRIER OF INFECTION.

He said: Time will not allow me to make more than a brief statement of present opinion on the subject. That opinion may be summed up in the following propositions: 1. That milk is a carrier of infection, more so than any other article of food. The theoretic and scientific basis of this proposition is explained by the discussion on "Milk as a Bacterial Culture-Medium"; its truth is established by a vast mass of evidence which has been accumulated by practical experience. 2. That the diseases, the infection of which is certainly carried by milk, are typhoid fever, cholera, tuberculosis, diphtheria and scarlet fever. This statement, in so far as it relates to scarlet fever, is based upon analogy and practical experience. Milk is also capable of developing and maintaining the vitality and the virulence of certain groups of bacteria, the presence of which give rise to intestinal irritation. Besides, though not proven, it is considered scientifically possible, and practically probable, that the infection of smallpox, typhus fever, tetanus and malaria may be conveyed through this means.

Now as to the common methods of infection of milk by typhoid fever, cholera, tuberculosis, diphtheria and scarlet fever. By diphtheria and scarlet fever it is: 1. Through exposure to infected air. This air may have become infected through some patient suffering with one of these diseases, or indirectly through some person or thing thus infected. 2. Through exposure to infection in the handling, directly or indirectly; directly, through handling by some person or persons suffering with these diseases at the time; indirectly, through some person or persons, dishes, containers, apparatus or utensils which have become infected by such person or persons. By tuberculosis it is: 1. Through exposure to infected air, this air containing dust formed in part of dried tubercular sputum. 2. Through direct infection from some person or persons suffering with the disease, as by particles of expectoration flying into exposed milk during an attack of coughing, by handling with infected hands, etc. 3. Through some person or persons, dishes, containers, apparatus or utensils infected directly by some person or persons suffering with the disease, or indirectly by infected dust, etc. 4. Through cows having tuberculosis udders. By typhoid fever and cholera it is: 1. Through the intentional or accidental addition of infected water. 2. Through handling with hands infected by discharges or water. 3. Through dishes, containers, apparatus or utensils infected in handling or by water. 4. In the case of typhoid fever infection through infected ice.

It follows from the above that certain rules must be carefully observed in order to prevent milk from acting as a carrier of infection. 1. That milk for food purposes must be taken only from healthy animals. 2. Every precaution must be

taken to prevent exposure to air which by any possibility could be infected. 3. Those handling the milk must not only be personally free from these diseases, but must also be protected from infection through others. 4. All premises, dishes, containers, apparatus and utensils must be guarded from infection through persons, air and dust. 5. All water and ice used in connection with milk must be free from infection. That these rules should be properly carried out is of vital importance to the consumer and of much interest to the profession, the function of which is not only to cure disease but also to prevent it. Unfortunately, however, the producer does not always look at the matter from our standpoint, and is apt to resent, as interference with personal and property rights, our well-meant efforts in this direction. The only solution of the difficulty is the wider dissemination of knowledge upon the subject, and therefore the better education of the people, which must come through the medical profession.

First practical illustration.—In October, 1889, thirty-four cases of typhoid fever were reported to the Board of Health of Paterson. Investigation showed that twenty-seven of these cases were supplied with milk from the same dairy. Further investigation by my friend, Dr. William K. Newton, then State Dairy Commissioner, and myself, disclosed the following facts: Said dairy was situated in an out-lying township. The water-supply was from a spring in the milk house, which was about two hundred yards distant from the other farm buildings and out of the direct line of drainage, and from a well in the barnyard. The well was so situated as to receive the general barn drainage, as well as that of an immense pile of manure placed within fifteen feet of it and in the direct drainage line. Chemic examination of the water-supply showed the water of the spring to be pure and that of the well to be badly contaminated. The dairy people declared that neither the milk, the cans, the dishes nor the utensils came in contact in any way with the water of the well, that the cover full of water which they admitted putting in each can of milk "for the purpose of preserving it," came from the spring, and that cans, etc., were washed with the same water. They denied ever having anything connected with the milk business anywhere about the place except at the milk house, and asserted that water from the well was only used for drinking purposes by the men employed about the barn, and for washing purposes about the house. We also found that on the 14th of the preceding month a stranger from Pennsylvania had been employed about the place. He had complained from the first of not feeling well, suffered from fever, diarrhea, headache, prostration, etc. He held out until the 25th when he was forced to return home. On October 5 another man who had been employed upon the place steadily for two years became ill about the same way and left on the 12th to enter the hospital. Our twenty-seven cases in the city using this milk all developed between October 2 and 24. We succeeded in locating the two employes, one in the Bethlehem, Pa., hospital, the other in the Paterson General Hospital, both suffering with typhoid fever. We also found that both these men while ill on the place had been in the habit of using the manure pile which drained into the well as a convenience. It was easy for us to reach the conclusion that the first man had been a "walking case" of typhoid, that through his use of the manure pile he had infected the well, and that the second man had become infected through drinking the water of said well. The difficulty was to connect the infection with the milk, as according to all the evidence obtainable neither man had anything whatever to do with the milk business. The missing link was found, however, when a female servant confessed that she had been in the habit of washing the can covers with water from the well. The well was filled up on the 16th and no cases developed after the 24th.

Second practical illustration.—The average number of cases of typhoid fever in Paterson during the months of November and December for the six years preceding that of 1896 when we were in the midst of a general epidemic due to an infected public water-supply was, during November 8 cases, and during December, 5 cases. During the first half of November, 1897, 3 cases of typhoid were reported to the Board of Health. From November 15 to Jan. 1, 1898, 142 cases were reported. All of these 142 cases became ill between November 5 and December 15. All but 5 became ill between November 14 and December 15. The number of these cases in well-to-do families was far out of proportion, considering the character of our population. Ninety-nine of them received their milk supply from a certain creamery for all or a portion of the fifteen days preceding the commencement of their illness. Of the 43 cases left, 14 had used cream, or ice-cream, or soda-water containing cream from the same creamery, on one or more occasions, between the fifteenth and fifth days preceding their illness. Thus of the 142 cases developing between November 5 and December 15,

only 29 could not be connected with the product of said creamery. The natural conclusion to those who have had experience in tracing epidemics due to milk, and understand its difficulties, is that at least a portion of these 29 cases could have been connected if it had been possible to have obtained the facts in every case. Among the handlers of the milk in town or among their families, were 8 cases of the fever. In the Paterson Orphan Asylum, which was the only institution supplied with milk from said creamery, there were 9 cases among the 70 odd inmates. On November 29, I became convinced that everything pointed to the milk as the source of infection, and therefore telegraphed to Dr. Henry Mitchell, Secretary of the State Board of Health, requesting that he have an investigation made of the state of affairs at the suspected creamery. Such investigation was made by Dr. A. C. Hunt, State Inspector, on December 1. During the evening of the same day he reported to me a very suspicious condition of affairs existing there. He had been unable to find any possible source of infection outside of the creamery. At the creamery he had found that water from a brook was pumped into the creamery for general use through a pipe, the intake end of which was from 115 to 139 feet below the privy belonging to the proprietor's residence, which privy overhung said brook. Four or five other privies were situated upon the banks of the same brook within an eighth of a mile. He was also informed that the three sons of the proprietor were ill in the house with remittent fever. He at once ordered the pipe taken out. At Dr. Hunt's request I accompanied him on December 2 for the purpose of making a more thorough inspection. I found the creamery situated upon the bank of a brook. The premises consisted of the creamery, stable, ice-house, cheese house and residence. The privy overhung the brook about 100 feet above the creamery, and was directly in the rear of the cheese house and residence. The water-supply to the creamery was first from the brook through a pipe as described above, which pipe had been removed before my arrival, according to orders given the day before by Dr. Hunt, and second from a spring in the cellar of the cheese house through another pipe. The water-supply of the cheese house was from the spring in the cellar, and the residence was supplied from the same source through a pipe by means of a pump. The house drain, a wooden box, passed through swampy and made ground at a higher level and about fifteen feet above the spring, entering the brook a few feet above the privy. We found that the creamery received the milk of fifty-three dairies, and that said milk was all handled at the creamery and sent to Dover, Morristown, Paterson, Newark, Arlington, Jersey City and New York. Inquiry from physicians, the creamery proprietor and other residents, failed to give any clue to suspicious illness at any of these dairies. I will here state on the authority of the State Dairy Commissioner that all of these dairies were afterward inspected and no source of infection found. The three sons of the creamery proprietor were visited, examined and found to be suffering with typhoid fever. In this diagnosis both Dr. Hunt and the attending physician concurred. Their temperatures varied from 102 to 105 degrees; the typic tongue, irruption and diarrhea were present; they suffered from nose bleed and presented the abdominal symptoms. Not a single important symptom of typhoid was absent except intestinal hemorrhage, and I am informed by Dr. Hunt that two of them afterward suffered from that condition. Dr. Richard N. Connolly of Newark, also produced the Widal reaction in specimens of blood taken from these patients, and isolated the bacillus of Eberth in a specimen of water taken from the cooling vats in the creamery. Taken all in all, considering the arrangement of the premises, the privy, the house drain, the water-supply, the milk handled upon the premises, the presence of the three cases of typhoid, a better illustration for a lecture upon "How our milk supply might become infected by typhoid" I can hardly conceive. There followed a history of the three cases in detail.

I have already stated that milk from this creamery was shipped to Dover, Morristown, Newark, Arlington, Jersey City and New York, as well as to Paterson. I have no information from Dover or Morristown, but am informed by health officials of the other cities as follows: Newark, unknown number of cases among those using milk from said creamery. Arlington, 17 cases and 6 suspected cases, became ill about November 20; all except one used milk from said creamery. Jersey City, 35 cases taken ill November 15 to 20; 24 used milk from said creamery. New York, 9 cases found among those who had used said milk.

Third practical illustration.—A small outbreak in connection with this greater one may possess some interest. A farmer in an adjoining township ran a milk route in Paterson. His supply was from his own cattle. Running short on November 13, 19 and 27 he supplemented his supply with milk from the

before mentioned creamery. Between December 1 and 10 his son, living with him, and five of the patrons of his milk route in Paterson developed typhoid fever.

Fourth practical illustration.—On Jan. 1, 1898, a milkman, living and doing business in Paterson, became ill. He was supposed to have malarial fever. On January 9 Dr. John C. McCoy was called in and found him suffering with typhoid fever. In the interval between the first and 9th he had continued at his business, personally engaged in bottling and otherwise handling his milk. Dr. McCoy, at his visit on the 9th, at once ordered the patient to bed and thus broke up his connection with the business. Between January 15 and February 1, 27 cases of typhoid fever developed in town; 19 of these cases were supplied with milk by this milkman during that period of his illness between January 1 and 9. The outbreak ceased suddenly here, only four scattering cases developing during the whole month of February, and these having no connection with said milk. One of this series of cases was especially interesting. I personally attended the case and established the facts beyond the shadow of a doubt, the patient himself being a physician and his attendants more than usually intelligent. On the morning of January 2 the Doctor's usual milk supply failing him, the deficiency was supplied from the establishment of said milkman. It was the first and only time that his milk had been obtained at that place. The doctor used said milk upon his oatmeal and drank two glasses of it. On January 15 he became ill with what proved in a few days to be typhoid fever.

There is no other one article of our food supply which is more valuable, which is more capable of harm, and which requires more watchful and constant care. Ignorance and selfishness should not be allowed to stand in the way of our exercise of the right of self-protection. Thousands of lives are lost every year through want of that constant and watchful care. The general public is dependent for its safety in this respect upon the medical profession. That responsibility must be met. We, as an organized profession, should insist that the State throw around this product of such vital importance, every protection which science and experience teach to be effective.

On Wednesday afternoon, Dr. JUDSON DALAND read a paper on

THE METHOD OF ADMINISTERING AND THE USE OF ENTEROCLYSIS.

The only instrumental help is a soft rubber tube, a fountain syringe and a funnel. We must not use anything which will irritate the internal mucous membrane. He preferred a rectal tube with rather thick walls, two feet long and three-eighths of an inch in diameter. Its surface must be as smooth as the finest bougie, the tip slightly tapering, rounded and with a direct opening. Eight inches from the end is a black line encircling the tube. The patient assumes the position and when the lower bowel is emptied by a small enema the soft tube is well oiled and slowly introduced by rotary movement till it passes the sigmoid flexure and enters the colon. The right lateral position is assumed when the cecum and ascending colon are to be irrigated. In an adult, eight inches of the tube must be introduced before entering the colon, as indicated by the black line. Occasionally the tube doubles on itself or is caught by folds of the mucous membrane. This can be overcome by allowing the water to flow from the syringe while being introduced, thus dilating the bowel and smoothing the mucous membrane before it. If much difficulty be found, or pain, it may be from impacted feces, hemorrhoids, tumors of the sigmoid flexure or rectum, etc. Skilful manipulation generally is successful, or we may use the knee-chest position. The raising or lowering of the reservoir will increase or diminish the flow. The liquids employed are water, salt solution, sea water, boric acid, nitrate of silver solution, etc., the temperature between 40 and 105 degrees. The quantity depends upon the age and sex and object desired. A child takes one pint, an adult, two, three or four pints. Ten minutes should be occupied in the work and the liquid be retained that long before being evacuated. An urgent desire is felt at first, but can be overcome by pressure on the anal or peritoneal region and rest in bed. When colicky pains due to gas from too rapid introduction occur, let off the liquid or introduce it slower. If there is abdominal relaxation, bandage beforehand. Use it daily every four hours, or alternate days, according to circumstances. Even if the first effort is not successful, we often succeed by a renewal. It is employed in severe cases of cholera, tannic acid being the medicine used, which was vomited, showing that it had passed the valve. The conditions in which the enteroclysis are indicated, are obstinate constipation, autointoxication, gout, chlorosis, pernicious anemia, conditions indicating an increased supply of water, as a diuretic, diabetic coma,

uremia, cholera Asiatica, typhoid fever, cholera morbus, summer diarrhoea, enteritis, pseudomembranous colitis, chronic dysentery, sunstroke, hyperemia, volvulus, invagination.

In the discussion of Dr. Daland's paper, Dr. NEWTON alluded to the use of chlorin water, and the good results of cold water, and in cholera infantum the temperature is readily reduced by the continual use of water per rectum.

Dr. BENJAMIN regarded this method as valuable in typhoid fever. When he found a sudden fall of temperature he generally saw a hemorrhage from the bowel. Then this plan was good. Ice cold water was sure to arrest the hemorrhage. It also proved very useful to produce antiseptics.

Dr. BARKER had for years employed this means, especially in catarrhal jaundice. He employed ice-water followed by hot water later in the day. It is sure to bring away the obstruction. He differed as to the length of the tube. It must be long enough to carry well up into the bowel, as the solution is better retained.

Dr. DALAND, in closing, had not mentioned antiseptics, as the washing out makes this less needed and he feared danger from the absorption of the articles used. Chlorin was useful, as was a 3 per cent. solution of tannic acid. It inhibited the growth of bacilli; in cholera infantum it was of great value; practically the saturated solution of boric acid is the antiseptic.

Dr. W. B. JOHNSON read an essay on

SCHOOL HYGIENE, WITH REFERENCE TO THE PRODUCTION OF OCULAR DISEASE.

He alluded to the consideration of this subject as early as 1800. The special point in this country is the construction of school buildings; arrangement of rooms, furnishing and lighting, as related to ocular disease, was brought forward by Dr. P. A. Callan of New York. He had concluded after many examinations of school children that the methods of construction were a means of injury to normal vision, as also to the general health and physical development. Improvements in some locations have taken place. The expense is the main cause of the building of schools without the proper arrangements. The movement in behalf of better construction is gaining strength. Scientific facts are not appreciated by the layman. We must get the public to know the great needs of our children in the schools. The most important adjunct is the expensive ventilation. The subject is not studied sufficiently so as to operate the less expensive methods. The window should be used for ventilation and aeration in the absence of the students. The authorities of our States should have regular systematic ocular and physical examinations of our school children. Other States have made vast strides in this direction.

The report by Dr. G. T. WELCH, Chairman of the Sanitary Committee of the Board of Education, shows a preponderance of eye disease, etc., in schools poorly lighted and ventilated over those recently erected, with more direct light, etc. This caused a bill to be presented prohibiting the erection of schools where it is possible for them to be overshadowed by other buildings. It failed to pass and there is now a retrograde action perceptible. Other cities have taken up the matter, and in Paterson a committee has been appointed to confer with the Board of Education to endeavor to have such improvements obtained. Philadelphia and a number of Western cities are working up the matter. New York has instituted the examination of children in public schools with a plan so simple that results are easily obtained. He gave in detail the schedule for the teachers. He alluded to the inspections as practiced in Boston, Chicago, etc., and the valuable results obtained both as to eye troubles and contagious diseases. This will result in placing children with physical defects in separate classes with selected studies such as they will be able to perform, and thus not detract from the proper advancement of those able to do the entire work of the curriculum. We thus may avoid the constant falling by the wayside of so many who are physically unable to perform the work of the usual curriculum. Scientific observers show that the myopic state is the result of ocular application. This is constantly increasing and the time has come when we must prevent its further increase. Recent examinations of volunteers show a very high percentage of rejections, especially of city-bred men. This should impress our citizens of the necessity of action; public institutions must learn that the work intrusted to them must be in accordance with the best known methods. The ideal school house must be built upon a site selected with a view to the possibility of providing adequate light supply for every classroom. This should be direct, not transmitted. The window space must be arranged in relation to the desks, that all light enter from the left and behind the scholars. He then gave details as to scientific construction of the windows, etc., maps,

blackboards, etc., to be so placed as not to reflect the light and visible from every part of the room, with a dull surface; the walls etc. to be tinted in light colors, preferably subdued grays or buffs, dead finish, the ceiling lighter than the walls. Ventilation can not be overestimated; the air must be entirely changed once every twenty minutes. The furniture should be of stable character, size proportionate to the pupil who is to occupy it. Desks must be adjustable. Improperly adjusted seats and desks produce many forms of spinal troubles. Specializing the work of teachers requires the changing from room to room of the pupils, making it impossible to occupy the appropriate seats by those who have had them adjusted for them. Teachers might better be moved, but they object, as interfering with the preparation of blackboards, etc. Still, some plan might be obtained to obviate the physical injury to the pupils, even though attended by difficulties to the teachers. Paper and black ink must be used rather than slates or lead pencils. There should be roomy, airy, well ventilated cloak-rooms, the toilet arrangements of the most approved style, and constantly guarded lest they are fouled. Any child applying for admission, having reddened or weak eyes, should be at once referred for an examination as to the question of the communicability of its condition, or any developing such condition should be at once sent home with a note and be obliged to present a certificate citing the harmless character of the disease. Physical as well as ocular disease results from faulty light, improper position at work and bad air. Inspection then is demanded daily. Lectures at intervals on subjects pertaining to school hygiene, etc., will be of great value both to teachers and pupils. While it is likely that many will still suffer from the defects of schoolhouses and the want of proper arrangements, yet the belief is that progress now once started will be constant and more rapid, till in the near future we shall see each and every school fully up to the mark, and in every way provided for the physical welfare of all.

Dr. L. F. BISHOP of New York read an essay on

THE CARE OF CHRONIC CARDIAC DISEASE, WITH A CONSIDERATION OF RESULTS.

In the mitral group are included most young people who have acquired a cardiac lesion as a complication of an acute infectious disease, who, while preserving the appearance of good health, still are subject to passive congestion, the so-called cardiac cachexia. This gives them the high color so becoming but so significant of venous stasis. These are less prone to an increase of the cardiac lesion. The aortic type includes, generally, older people, or at least young people who age prematurely, are apt to become anemic, emaciate, develop chronic nephritis, etc. Many will have lesions of both orifices, but will classify themselves under one or the other of these types. There is probably an underlying condition. In a person without a tendency to arterial disease the mitral valve is the more liable to suffer in an acute attack, while where there is a tendency to endocarditis the aortic valve, situated where it is, practically at the beginning of the largest artery, is the seat of inflammation. In the management of chronic heart cases, it is well to bear in mind these two types, because what may benefit one may be prejudicial to the other. The difference is almost the difference between rheumatism and gout; rheumatism representing the mitral cases and gout the aortic cases. It is not necessary to distinguish particularly, from the view of therapeutics, between mitral stenosis and regurgitation. Congestion of the liver undoubtedly has a broader influence upon the whole economy than we are prone to believe, the blood circulated through the liver again and again without being supplied with those elements that favor its healthy metabolism and which seem essential to its proper purification. In addition, the liver has the direct function of producing bile, the natural primitive laxative. The organ is found enlarged and sometimes its functions are interfered with so as to cause complete jaundice. The functions of the liver must be stimulated from time to time by appropriate means, but local applications as to the chest should not be neglected. Congestion of the kidneys is benefited by digitalis, on the circulation, but where there is albuminuria it must be treated as nephritis. Causes of local congestion, whether from displaced or inflamed organs or overloaded viscera, must be treated. Chronic constipation is a foe to these patients; it must be met with diet, training and drugs. It is a vice of indolence; will-power must be induced. Give the fluid extract of cascara in a single large dose at bedtime, instructing the patient to modify the dose nightly, as it secures a free evacuation. At the end of a month the dose may be reduced by drops each night till reduced to five drops. This is continued for its moral effect, to be gradually abandoned. Intermittent catharsis almost always fails. When laxatives must be used, the patient is instructed to

repeat the same process, not to take a single large dose to be followed by diarrhea, but take the drug for a series of days, gradually abandoning it. The evils of constipation are so great that this introduction of the subject is fully justified. The idea of influencing the course of cardiac disease by physical means is no new thing, and yet there is hardly any therapeutic system with so radical a basis that has been as frequently advocated and then discarded or neglected. The reason is not clear, but may be traced to the injudicious claims of over-enthusiastic advocates. The advocates of the Schott system bring forward evidence to prove that there is great improvement under exercise slowly and regularly carried on. The chief effects claimed are a slowing of the pulse and a diminution in the size of the heart. The plan of treatment is not recommended in aneurysm or where there is a high degree of tension, nor is the exercise all of the treatment. The patients also receive baths with mineral constituents, as chloride of sodium and calcium, at first at a temperature of 92 degrees from six to eight minutes, then the proportion of sodium is lowered and free carbonic acid gas is present in abundant quantities. Climate, with special reference to altitude on cardiac cases, must be studied as to the individual. When the valvular lesion is grave, the patient should remain at a low level. But in cases where the circulation is well carried on, but with persistent murmurs, with the probability that anemia is a strong factor in their production, patients may improve in a high sunny climate. It seems to be agreed that the removal to a high altitude has the immediate effect of increasing the red blood corpuscles. The cause is not well established. I would suggest that the rarefied air brings an amount of oxygen to the lungs in a diminished quantity, thus creating a demand for more corpuscles to gather in the oxygen for the use of the system. Change from an indoor to an outdoor climate is a great deal a matter of volition. The open windows at night and the waking hours spent out of doors, with the adaptation of home life to the system that would be found in places specially resorted to for health, approximate closely in results what is accomplished by health resorts. Too often the means for a change of climate are said to be lacking when the knowledge and moral force are really the elements needed. The influence of the mental health upon the course of cardiac disease is well shown by instances of persons who go on in comparative comfort for many years through the cultivation of even living and quiet thinking. This is especially true of the heart damaged in early life that has placed a limit on the possible activities. These patients who adapt themselves to the inevitable are not made unhappy thereby, but are often rather spared the irritation of the average man who believes that his progress is retarded by his own indolence. In fact, the treatment of heart disease is the treatment of the whole body in each of its divisions. The physician must stand in relation to the patient with chronic heart disease as the captain does to the ship, constantly guiding, and not as the occasional pilot taken aboard when special danger threatens. The physician has the power to save the patient from dangerous conditions, but at each time with a loss of reserve force and with a prospect of a sooner return to the same dangerous condition. Far better is it for the physician to be put in charge before the rocks are encountered and disaster is threatened. It is important to dispel from the mind of the cardiac patient the notion that his chief danger of death is a sudden one. He should be instructed that the probabilities are that if he dies of his heart trouble the death will be gradual, and he should be warned that the first part of the descent from the plane of good general condition marks the danger point. He must be taught to believe that in him disturbances of digestion, loss of color, malnutrition, particularly dyspnea and edema of any kind, should immediately result in an overhauling of his plan of life and system of management.

(To be continued.)

PRACTICAL NOTES.

The Efficacy of Urotropin in Phosphaturia is announced by L. Casper of Berlin, who states that one to two grams a day will suppress the phosphaturia, which does not reappear again for a long while, if at all. The use of mineral acids, the usual treatment, is only effective while the medication is kept up.—*Semaine Méd.*, November 10.

Hemoptysis.—In the *Philadelphia Medical Journal* for July 16, Thomas makes a report on the use of atropin hypodermically in the treatment of hemoptysis. In his seven cases the drug acted promptly and well, except in one case, and often

when all other remedies had failed. He believes the evidence sufficient to justify the continued use of atropin hypodermically in any serious condition. He considers the ice-bag to the chest of doubtful utility, except that it quiets the mental state.

Restoration of the Urethra.—Froelich reports two cases in which the urethra had been destroyed in the course of childbirth, in which he has restored the canal with such success that the patients are freed from their former troubles and normally continent. The external meatus was intact and he inserted a trocar, passing through this and through the length of the superior urethral wall to the bladder, thus opening a passage through the inside of this thick muscular wall which answers perfectly for an urethra. He is watching the patients for any indication of contraction in the passage, ready to dilate the passages if necessary, as the conditions are similar to those following external urethrotomy in men, although so far no contraction has occurred in his cases.—*Presse Méd.*, November 6.

Gastrorrhagia Cured with Injections of Hot Water.—Prof. R. Tripier (*Semaine Méd.*, June 1) proclaims the surprising success of rectal injections of water at 48 to 50 degrees C., in arresting and permanently curing a number of threatening cases of gastric hemorrhage and black feces, which were about to be operated as a last resort. The patient reclines motionless and makes no effort to retain the water, which is injected at least three times a day. No food nor drink of any kind is allowed (except rectal, alimentary injections and artificial serum if thirst is excessive) for a week, when all trouble is usually at an end. He advises prompt application of this treatment at the first indications of gastrorrhagia, and suggests that it may prove effective in other hemorrhages by the reflex action of the hot water on the nerves of the intestines, which may possibly affect all sources of hemorrhage, internal or external.

Treatment of Herpes Zoster.—Dr. Leonard Weber (*Medical Record*) prefers locally at the onset, bismuth subgallat and talcum in equal parts, with sterilized gauze as a cover. When this is uncomfortable, subnitrate of bismuth, one part, to cold cream, three parts, may be spread on the lesions, to be continued until healing results. For the neuralgias after herpes he confides somewhat in ten to fifteen grain doses of quinin two or three times a day for a week. In a case of neuralgia after cervico-brachial herpes in an old man with sclerotic arteries, he gave for a month, with success, iodid of potash, grains x to xx, and strychnin, grains $\frac{1}{30}$, thrice daily. Aside from drug great quiet, in an even temperature, with good feeding and the essentials for restoration of normal bodily functions, are peremptorily demanded. The galvanic current may be a resort after quinin fails, but careful nursing, etc., constitute the really important adjuvants.

Simple and Effective Substitute for Hot Cataplasms.—With a continuous flow of hot water through a small flexible lead pipe, wound spirally around a joint, all the benefits of a hot poultice are secured with none of its disadvantages. The patient can attend to the simple process himself, with a couple of kitchen sauce pans and an alcohol lamp on a table beside him. The lead pipe communicates at each end with one of the pans by rubber tubing. The current is started by suction, when it continues indefinitely. A faucet in the outlet tube regulates the flow, allowing only a drop to escape at a time. The joint is held still and the heat regularly diffused by a shield made of three layers of plastered mull applied before winding the pipe around it. The same apparatus can be applied to the chest or abdomen, winding the tube in a flat coil over the plaster shield, or to the neck, etc. It has been well tested at Trendelenburg's clinic, with surprising success in gonorrhoeal and rheumatic joint affections, and seems to solve the problem of a simple, inexpensive, clean method of applying heat more or less permanently to any part of the body.—*M. Wilms, Deutsche Med. Woch.*, June 9.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2 00
Single Copies	10 Cents

In requesting change of address, give old as well as new location.

Subscriptions may begin at any time and be sent to

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No. 61 Market Street (Occidental Bldgs.), Chicago, Illinois.

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SATURDAY, JULY 30, 1898.

THE MILITARY GOVERNOR OF SANTIAGO.

"En manos esta el pandero que le sabra bien taner."

The Public Service column of the JOURNAL, May 7, 1898, page 1136, contains among other notices the following:

"Captain LEONARD WOOD, Asst. Surgeon, is relieved from duty in this city, Washington, D. C., and will proceed to the following named places in the order designated, for duty in connection with the recruitment of a regiment of mounted riflemen to be organized, under Section 7 of the Act of Congress approved April 23, 1898: Guthrie, Oklahoma Ter., Santa Fe, N. M., Phoenix, Arizona Ter., Carson City, Nev., Salt Lake City, Utah, Cheyenne, Wyo., Boise City, Idaho."

At that time who could have imagined what fate had in store for Assistant-Surgeon WOOD?

The rapid organization of the "Rough Riders"; the election of Doctor WOOD as colonel; their success in being sent to the front with the first expedition; their bravery and gallantry in action; the epigrammatic advice of Colonel WOOD to his men in the trenches, "Don't swear! fight!"; the promotion of Colonel WOOD to be Brigadier-General, for gallantry on the field of battle—all these events have passed so quickly that it seems almost like a fairy tale.

General WOOD has now succeeded General MCKIBBON as Military Governor of Santiago, and we feel sure that the choice of a medical man for this great and responsible position will result in great good to the country, the army, and the world—the country and the army by the enforcement of sanitary regulations while the troops remain in the vicinity of Santiago, and the world will be benefited by having eventually another healthy port in the tropics.

The sanitary officer can do little unless either clothed with ample power himself, or backed by those in

authority. General WOOD being invested with full authority, is now in a position where his sanitary training in the army will make him an ideal sanitary officer, and we fully expect to hear, in time, that Santiago, from being a danger point to the world's commerce, has advanced to the front rank as a salubrious spot.

No other man has ever had such a glorious opportunity, and General WOOD's record, although brief, is such as to give every assurance that this great sanitary work will be performed wisely and well. As the Spaniards say, "the drum is in the hands of one who knows well how to beat it."

NON-COMBATANTS.

When Assistant-Surgeon JOHN BLAIR GIBBS, of the United States Navy, was shot to death by the enemies of his country, to whose hostile fire he was exposed in the performance of his official duty, the word "non-combatant," by which he and others of his class have been almost sneeringly designated, ceased to have the pretense of propriety. When an assistant engineer yielded up his life in the engine-room of the *Maine*, along with the line officer who was likewise at his special station, the quibbler who would continue to dub the former only a staff non-combatant and the latter a military fighting man, would deserve ten-fold the contumely he would have imposed upon a brother soldier. When an assistant naval constructor performed the most heroic act in the existing war and won the admiration of soldiers of prowess all over the world, the bright light of his brilliant achievement brought into pitiable prominence the littleness which would deny him the right and title of a military officer.

It is not at all likely that these will be all the instances by which the staff officers of the Navy will vindicate their claim to be considered *bona fide* combatant officers, and though they have no Victoria Crosses displayed upon their breasts as on their British confères', to bespeak deeds of valor signally conspicuous where all men are valiant, the common sense of the American people and the justice of American legislators will surely recognize that tweedledee and tweedledum are miserable distinctions between men whose bodies are riddled by bullets on the self-same field of battle.

Bracketed between the names of Major ESKRIDGE of the Infantry and Second Lieutenant TURNER of the 6th, one reads among the wounded Dr. DANFORTH, Assistant-Surgeon, instead of First Lieutenant DANFORTH of the Medical Department, a careless oversight, showing how the old opinion of the medical officer as "nothing but a doctor" still lingers. Since in the army tardy but complete recognition of the military equivalence of the medical officer's status and function has been accorded, and when First Lieutenant DANFORTH of the Medical Corps of the army died from the wounds he had received from a Spanish sharp-

shooter while he was in the front in the very act of caring for other wounded, his real brothers in arms, who placed him in a soldier's grave, would be the last to say that he was only a non-combatant.

When WINTHROP CHANLER fell wounded at the attack on Las Tunas, Drs. LUND and ABBOTT carried him into the brush and all three sank up to their necks in the swamp. Dr. LUND, who was formerly a German army surgeon, and who is a giant in strength, managed to extricate himself, stripped off his clothing and swam in the darkness to find the ships. A boat from the *Florida* picked him up and he was taken over to the *Peoria*. As the strange figure clambered up the ladder, the sentry on guard at the gangway challenged him but Dr. LUND brushed past him and strode in his nakedness up to Lieutenant RYAN, gave the customary formal salute, and with the utmost gravity said, "I have come to report that the men over here require assistance." When CHANLER and Dr. ABBOTT were rescued they were still in the water up to their necks. Does it not savor of the ridiculous to call CHANLER a combatant and his heroic life-savers only non-combatants, merely because they were medical men?

The present war makes evident the difference between the military and naval services in this matter of the recognition of the military status of the so-called non-combatant staff. Among the roughest riders of Dr. LEONARD WOOD'S Rough Riders—he a Colonel and since a General, every inch of him, albeit a doctor—is Dr. CHURCH, a medical officer, one of Princeton's champion athletes, who wears a sword and carries a revolver, knowing well how to use both, and from the medical colonel down to the cowboy private, not one would intimate that he was only a non-combatant, when he checked his riding and dismounted to succor a wounded comrade of the troop. The shot that enters a man-of-war's boat at the bow, rakes the men pulling at the oars, and lands in the stern-sheets to maim or kill the lieutenant in command or the assistant-surgeon by his side, does its deadly work without regard to which is combatant or non-combatant; nevertheless antiquated tradition and ingrained custom concede to the dead as to the living medical officer only a relative (quasi or simulative) rank, instead of the same military status in the performance of an equally honorable, responsible and patriotic duty, involving precisely the same exposure to danger and the same risk of life.

The practical consequence of this difference in the status of the medical officers of the two services is pointedly illustrated in the instances of the hospital-ships, which the exigencies of the prevailing war have called into existence. The announcements that "yesterday the *Olivette* was made the military hospital-ship of the Fifth Army Corps and put *under the command* of Major A. H. APPEL of the Medical Department of the United States Army;" and that "tomorrow the

U. S. Army Hospital-Ship *Relief* will sail *under the command* of Major GEORGE H. TORNEY, Surgeon United States Army," would occasion no remark or question in the Army, but in the Navy the assumed non-combatant character of the medical officer, however high his relative rank, precludes his discretionary control, charge, a technical command, and it is therefore considered essential that a line officer shall be on board as the authoritative superior dignitary. It would not be enough for the commanding medical officer, as in the army, to have a navigating officer under his command to perform the necessary nautical functions of going and coming, of anchoring and getting under way, of heaving to in a clyone or edging off from a lee shore: naval tradition requires that there shall be a line officer, whether Admiral or Ensign, to exercise the prerogative of command, as well over Medical Director as over Acting Assistant-Surgeon. Hence the naval ambulance-ship *Solace*, although the creation of a medical officer and the embodiment of his ideas, is actually commanded by a line officer who directs these medical officers what they shall do or leave undone, nor has the Surgeon-General of the Navy the direction of its movements, as has his Army colleague of the vessels in the military service, which fly the Geneva Cross.

The *Navy Personnel* Bill, which failed to be enacted at the session of the Congress just adjourned, although indorsed and earnestly advocated by the Navy Department, after a remarkably able argument in its favor by former Assistant Secretary ROOSEVELT, proposed to do justice to one branch of the so-called non-combatant staff, by giving its officers actual (that is positive) rank, thus recognizing their equivalent military character; but the bill would have failed to do equal justice to the other staff departments—especially the medical corps—whose *bona fide* military importance has been already so often demonstrated during actual hostilities.

Hence, the medical officers of the Navy have very modestly and respectfully asked that they shall be put on precisely the same footing as medical officers of the Army of corresponding grades and length of service. As Colonel A. of the Medical Department of the United States Army is never by any possibility confounded with Colonel A. of the United States infantry or artillery, and as he never attempts to exercise a colonel's authority over a regiment or a battery or outside of his own department, it is claimed with equal reason that Commander B. of the Medical Corps of the United States Navy will never go on deck to supplant Commander B. of the line in getting up steam or coming to anchor, or in any other way exercise authority outside of the Ship's Hospital or over the men of the Hospital Corps. Just as Major C. of the Medical Department of the Army has had his rank and status defined beyond mistake or question, and his equivalence with all other Majors of Artillery,

Cavalry, Infantry, Engineers, Quartermasters, Commissaries, etc., determined, so does Lieutenant-Commander C. of the Medical Corps of the Navy, ask that he be legally declared to be entitled to all the rights, privileges and immunities of all other Lieutenant-Commanders, be they of the line, engineer, construction, pay or other corps, claiming that his intelligence, naval training and common sense would prevent him from attempting to violate the law by asserting or assuming an authority which his commission does not confer, and for which he would be certainly and properly punished by a court of his own colleagues, should he do so.

Our British cousins have satisfactorily demonstrated their right to military precedence. The *London Lancet* says: "When the medical history of the last war in India is written it will prove interesting reading. There were many difficulties overcome and hardships endured with the usual element of danger," and goes on to relate how, when the medical officers were at work extracting fragments of a missile from the leg of General WOODHOUSE, the Afridis crawled up and suddenly blazed into the hospital tent, sending thirteen shots through the canvas without disturbing the operation, "which went on as if there was no Afridi within a hundred miles." Surgeon-Captain BEYTS and Surgeon-Lieutenant HUGO have added their names to the already long list of medical military heroes in the British Army; and Lieutenant FORD, whose life was saved by the latter, after remaining over three hours with his unconscious wounded patient under a hot fire, will doubtless indignantly deny that a Surgeon-Lieutenant is not every bit the combatant hero that he was himself. The Victoria Cross pinned upon the breasts of such men loses nothing of its value as a distinctly military reward. Rather, the recital of the unparalleled deeds of bravery which have led to its bestowal in these instances, which lacked the maddening stimulus of the charge or the fierce excitement of an engagement, adds luster to the honored roll of its wearers. The percentage of medical officers who have won the Victoria Cross is already so great that its conferment upon another has ceased to be exceptional, and the corps to which these officers belong can no longer be denied an essentially military, therefore, combatant prestige.

What is in a name? A Lieutenant-General ought to be a less resounding title than Major-General, but it is not, and mere General, without any adjectival qualification, outranks all other kinds of Generals. It is the acquired significance of the title which has given each its importance, and military heroes are correspondingly exultant and flattered by their bestowal. *Surgeon*, however, has ceased to be even technically a proper designation for a medical officer either of the Army or Navy, and *Assistant-Surgeon* is an even more objectionable title for a subordinate who does not necessarily assist. So the attempted

professional designation of the Colonels and Lieutenant-Colonels of the Army Medical Department, as Assistant Surgeon-General and Deputy Surgeon-General has not been generally acceptable. Lieutenant-Colonel Jones of the Medical Department, U. S. A., Medical Director of the Department of the East; Major Brown of the Medical Department, Senior Medical Officer of the Fifth Army Corps; Captain Smith of the Medical Department, U. S. A., 14th Volunteer Infantry, are explicit and unmistakably distinct as would equally be Captain White of the Medical Corps, U. S. N., Medical Director U. S. Naval Hospital, Norfolk; Commander Green of the Medical Corps, U. S. N., Fleet Medical Officer, Atlantic Station; or Lieutenant-Commander Black of the Medical Corps, U. S. N., Senior Medical Officer U. S. S. *Hawaii*. With equivalent pay and privileges, the matter of line and staff contention would be forever settled, for there would be nothing left for which to contend. The *amour propre* of each department of the service would be satisfied and respected; the special functions of each would be defined; and the service become, as it should be, a brotherhood of men enlisted in the common cause of serving and defending their country.

And it may be pardonable here to state that a greater enemy than armed men and belching cannon is to be combated, and that by medical men alone—the enemy that lurks in the dark and strikes in the back, against whom earth-work and trench and rifle-pit are no protection, but into whose lair the medical officer walks undismayed, though knowing he may be the first of the forlorn hope to fall. No stricken soldier in the field will gainsay the title of *combatant* to the medical comrade who has saved him from death at the hands of this unseen foe.

MALINGERING.

In these enlightened times, when the great public knows well its rights, and knowing dares maintain, it is indeed rare for one of its members to receive an injury that he does not endeavor to make the party or parties whom he deems responsible for his suffering, compensate him for at least the losses he sustains during his forced retirement from his occupation. Such compensation is an act of justice, and in a majority of cases would be readily met by the company or individual responsible. But the injured man is rarely content with simple justice; his friends and his newspapers have warped his judgment and filled his mind with stories of large sums extorted from companies by men not nearly so severely injured as he imagines himself to be. Not infrequently a lawyer belonging to the "shyster" class arrives at his home before he has a chance of having his injuries properly dressed, and excites his cupidity by promising him a good sum in return for his injury, "and it will not cost you a cent contingent fee entirely, my

dear sir." So suit is entered for many thousands of dollars, though happily the plaintiff is often after a few examinations ready to compromise for as many hundreds or less. At this point the most common of the various forms of malingering enters: an aggravation more or less marked of a symptomatology really present. He naturally thinks that the greater the amount of his apparent suffering, the greater the sum of money he will get, and the more readily the responsible party will be inclined to settle without suit. Your true malingerer usually disregards small surgical affections, fractures, dislocations, sprains and the like, and strikes directly at the nervous system; for he seems to know instinctively the difficulty of diagnosing nervous diseases even among specialists. He then has a local paralysis or a "railway spine," about which he has read so much. The affection fixed upon may be feigned entirely, which is rare, or as mentioned above symptoms really present may be exaggerated. It must not be thought that this latter form is always feigned, and merely for purposes of gain. Surgeons who have attended a number of traumatic cases in which the injured parties have no chance of obtaining compensation, know well that neurasthenic symptoms not infrequently develop, and the victims have no idea but that they are seriously and permanently injured. It is astonishing what large numbers of such cases come to trial, and it is still more surprising with what readiness corporations will compromise even grossly unjust claims rather than submit to a suit, for well they know that the jury is prejudiced in favor of the injured party before a word of testimony has been offered. It is the poor man against the "grinding monopoly," and the average jury will side against the rich corporation every time, regardless of law or justice. Indeed, instances are on record where the judge was compelled to take the case out of the hands of the jury and award the fight to the defendant. That the medical profession is responsible in great part for this deplorable state of affairs cannot be denied and such things will continue until legislation decides the exact status of the so-called "medical expert." The term now is not only one of reproach but of ridicule as well; indeed, it could hardly be otherwise when the patent medicine charlatan, from the mere fact that he is the holder of a diploma, is able to meet the real scientist and deny the latter's statements with an equal chance of being credited.

There are forms of malingering where considerations other than those of a pecuniary nature are at stake, for this is a semblance of disease that involves classes, races and conditions of people, the sexes to an almost equal degree, and as regards age, from the cradle to the grave. The efforts of a child to escape punishment and the exaggerated complaints of the septuagenarian to excite sympathy and attention are familiar examples. Not common in this country,

where there is no compulsion to a military life, but of exceeding frequency abroad where some countries demand service training of all able-bodied males, all sorts of injuries and diseases are feigned to endeavor to evade the sharp eyes of the examining surgeon. Especially is this the case in times of actual fighting, when drafting of men become necessary to recruit the forces in the field; in times of peace, exaggeration of injuries or diseases said to have been inflicted or brought on when the claimant was a soldier. "Said to have been," for a history of the case may reveal the fact that the injury occurred years before enlistment. This "substitution of origin" (BAILEY), as it is called, plays a most important rôle in the science of malingering.

Probably the most successful of simulators are the poor and vagrant of our great cities, hospital habitués as they are sometimes called. The care and comfort, warmth and good food that the various hospitals and asylums afford, draw large numbers of these people of both sexes to their doors, and expert receiving physicians are often tricked by their artful representations. When in the wards their former experiences stand them in good stead in making themselves out as ill, with the result of obtaining comparative comfort for a few weeks, after which the experiment is tried elsewhere. Almost every physician of hospital experience will recall such cases which have been discharged after a few weeks with the diagnosis of "malingerer." The ailments they will counterfeit embrace the entire range of the science from medicine to the specialties. Their particular trouble largely depends on the particular ward they have occupied during a former stay. Indeed it is not too much to say that they study the symptoms of their immediate neighbors with as lively an interest as the attending physician. Neuralgia and rheumatism, headache, epilepsy, insanity and coma are especial favorites. The obstetrician not infrequently finds cases of phantom tumor. The surgeon encounters cases of simulated tumors and strictures, while simulated blindness and deafness are by no means rare finds for the specialist in those fields. One of the most common attempts in recent days to extract money from a recalcitrant corporation is the attempt to palm off an old hernia as being the result of some recent injury. Some most flagrant attempts of this character have recently fallen under our personal observation.

THE DANGERS OF TINNED FOODS.

From time to time we read in the daily press accounts of poisoning by food products, more particularly by those that are prepared in large quantities and sold in tins or canned packages. Perhaps it is just as frequent, if indeed not more so, for investigation to reveal that the really poisonous effects are due to carelessness in the preparation or in some

defect of the cooking utensils and that there were no canned goods used whatever. But this fact does not do away with a certain prejudice or fear that impels the public to attribute, on the first impulse, all these accidents to the use of these products, though not apparently with the result of very greatly reducing their consumption. Ptomaines, we are aware, may be generated in fresh as well as in preserved meats, and acid can corrode cooking utensils as well as preserving tins, but it is more natural to assume that time and defective preparation in the wholesale establishments are at fault than that the sufferers themselves were in any way responsible. The cheapness and convenience of the canned goods, however, keep them in popular favor, and the temporary loss of confidence in their wholesomeness seems on the whole to have little effect on their sales. It is estimated that in Great Britain alone their consumption amounts to 581,000 pounds daily; a figure that indicates the extent of their demand when one bears in mind that it can be, at best, but a small fraction of the total consumption.

There are, nevertheless, some special dangers in canned foods if they are carelessly or fraudulently prepared, and these have been very well discussed by Dr. BROWN, an English local health officer, in a paper in the *Journal of the Sanitary Institute* for April of this year. The dangers of canned meats are from ptomaines, and these may be developed before canning, after canning, and more than at any other time after opening. The first contingency is probably a rare one, though it is possible that unwholesome meats may be put up and the methods of preparation be insufficient to counteract the growth of ptomaines. In cases of putrefactive changes after canning, the bulging tin is generally a sufficient indication, but there is no security against bacteria after the package has been opened and the contents not immediately disposed of. The age of the contents, other things being equal, is no bar to their wholesomeness; Dr. Brown has tested packages twenty and thirty years old, and except a slight loss of freshness of flavor found them still serviceable.

Canned fruits, on the other hand, are more liable to deteriorate with age; and the dangers in their case are chiefly the absorption of mineral poisons from their receptacles. This goes on at a steadily increasing ratio each year, and freshness is therefore a prime requisite for their perfect wholesomeness. It is probable that many acid canned fruits contain appreciable if not really dangerous quantities of malate of tin and other salts. The quality of the tin and solder used is an important element in the case; Dr. BROWN holds that over 1 per cent. of lead in the tin or over 10 per cent. in the solder should be considered dangerous. In some cases considerable solder escapes into the can from careless soldering, and this is also objectionable. It would be in all respects better if fruit could be put up exclusively in bottles or jars

without even metal tops, as regards the question of safety to their consumers.

The cautions Dr. BROWN suggests may be repeated here. They are: Use soon after opening; keep the cans in a cool place, as heat favors fermentation; examine plating of interior of can and distrust corrosion or any bluish slate color as risky; avoid resold-ered goods; and do not take the cheapest, as they are likely to be the worst. A valuable reform which he recommends would be to have the date of canning stamped on every package, and this is the most important for canned vegetables and fruits. This is, it is said, compulsory by law in Germany, and it would be well were it so for the home market also.

In spite of all the possibilities of evil, the rarity of trouble from the use of canned goods speaks well for the general honesty of the manufacturers. It is well that it is so since, were it otherwise, a cheap and palatable class of foods would have to be distrusted and often, in common prudence, disused.

WAR NEWS OF THE WEEK.

The war news of the week has not been of an exciting character, although it concerns the progress of an outbreak of yellow fever in an army of twenty thousand susceptible men exposed to the infection, under conditions of fatigue and exposure which would be expected to measurably increase their susceptibility. The first cases of yellow fever appeared July 7, when four cases were taken from a house occupied by our troops at the front. A fifth case was discovered next day in a house in Siboney, directly across the road from the fever hospital established by Dr. GUITÉRAS. The danger of occupying such houses was strongly set forth and widely distributed in a circular from the office of the Chief Surgeon; but this advice was disregarded. The houses, filthy beyond measure, were crowded with soldiers and utilized as offices and store-houses. Shortly after this they were all destroyed by fire under the orders of the commanding general. While Colonel GREENLEAF, chief surgeon on the staff of General MILES, remained at Siboney he telegraphed daily the progress of the disease, but since his embarkation for Porto Rico the information received from the vicinity of Santiago has been meager. The latest information, under date July 23, is to the effect that there are about fifteen hundred patients in the hospitals but that only one hundred and fifty of these are yellow fever cases. Meanwhile the troops have been moved to better camping grounds where a fine breeze usually blows from 9 A.M. until sunset. The atmospheric humidity at the present time is very great, a constant steam or mist rising from the ground. Heavy clouds hang over the hills most of the time, and on the lower grounds early in the day. Rain falls only in the afternoon or night, three or four times a week, and although the showers last but a short time they are so heavy that the poncho and shelter-tent

give little protection. The ground is so porous and its surface configuration so irregular that the heavy rainfall is either absorbed or drained off in a short time.

Such are the conditions before the army medical officers of the Fifth Army Corps at the present time. Whether they will be able to control the disease by prompt isolation of yellow fever cases, and the removal of regiments from infected localities remains to be seen. Up to the time of the surrender they were handicapped by the military necessity which required the troops to occupy certain lines, irrespective of yellow fever infection, and during that time the slow progress made by the disease shows the influence of their restrictive measures. It is to be hoped that they will be able, under the better conditions now existing, to embark the regiments for the United States with a clean bill of health, while the immune volunteers take their place as the garrison of Santiago.

WOUNDS AND DISEASE AT THE FRONT.

Medical officers returned from Cuba with sick and wounded from General SHAFTER'S command have given us interesting details of the medical and surgical work during and after the engagements at Santiago. On the debarkation of troops at Baiquiri they were pushed rapidly forward, each man carrying his blanket roll and three days' rations. Regimental surgeons with their hospital corps men accompanied their respective commands; but all regimental medical and surgical chests, dressings, etc., were of necessity left behind, as no horses or mules had as yet been landed. Surgeons applied to higher authority for their medical property and sent back to Baiquiri to endeavor to recover it; but in the meantime the vessels, emptied of troops, had been ordered out of the harbor and had gone to ports unknown or lay too far out at sea, with no way of communicating with them. Ultimately a launch was procured and some of the regimental medical supplies were gathered up from such of the transports as could be reached. Thus, although the army had embarked with adequate first aid supplies, only a percentage of them was available when the time came for their use. Fortunately, however, the men carried the necessary dressings on their persons, for every soldier of the army, with the exception of the men of one regiment, was provided with the official first aid dressing packet containing two antiseptic compresses of sublimated gauze in oiled paper, one antiseptic bandage of sublimated cambric with a safety pin and one triangular bandage, also with a safety pin. Fortunately also, the arrival of the ambulances from Tampa and of the *Relief*, the hospital ship despatched by the Surgeon-General to meet just such an emergency, put an end to what would otherwise have been a difficult situation.

According to Captain E. L. MUNSON, who was one of the operators at the field hospital, surgical opera-

tions were required only in shell wounds. Wounds by the Mauser bullet were apparently either immediately fatal on the field or trivial in their subsequent course. There were no explosive effects from the brass jacketed bullet of the Mauser rifle, the wound of exit in most instances being scarcely larger than that of entrance. Long bones were usually perforated, without comminution, often even without fracture. Only about thirty-five cases required splints. Abdominal wounds were classed among the immediately fatal, as few of them were seen in the hospital. There was little hemorrhage. The Mauser bullet deformed frequently, but even then it did not make the ghastly wounds that were expected. Keyhole wounds made by the bullet when striking with its long axis were fairly common. Many bullets, even when fired at short range, lodged instead of perforating. In eight out of forty-one consecutive cases the bullet was lodged. This was attributed to an inferior or a deteriorated character of the powder in the cartridges supplied to the Spanish infantry. Antiseptic first aid was eminently successful, wounds healing quickly under a scab.

Malarial fevers were infrequent at first but after the rains began to fall they became quite prevalent. A number of cases of typhoid fever and measles occurred, due to infection brought with the troops from the United States. Heat exhaustion and a mild type of sunstroke incapacitated a number of men from duty. Diarrheas and dysentery are rare, a fact attributed to the purity of the water supply. Baiquiri is supplied by a pipe-line from the river of the same name, a pure, limpid stream flowing rapidly over a pebbly bed. The water at Siboney comes from the pipes of the Juragua Iron Company, which run to their wharves near the city of Santiago, following the tracks of the company's railroad for about twelve miles. The hospital is pitched close to this pipe at Siboney and has thus an easily available and unlimited supply of pure water; while at the front the troops obtained water from springs and from the Aguadores, a branch of the San Juan river. Yellow fever is of course the disease in which is centered the interest of the medical officers at the front.

CORRESPONDENCE.

Treatment of Tetanus.

AUSTIN, TEXAS, July 20, 1898.

To the Editor:—I send you report of a case of tetanus treated successfully by the use of antitetanic serum. The diagnosis of the case I believe to have been correct, as shown by the history, the symptoms, the response to each dose of the serum, and, further, that the patient lived ten miles in the country, and was not familiar with the symptoms of tetanus.

A study of this case shows the immediate response to the antitetanic treatment, *i. e.*, the pulse, temperature, pain, stiffness and restlessness were all reduced soon after the injection was given. It can further be seen that the dose of serum should have been repeated sooner in this case; but owing to

the inaccessibility of the patient it could not be done. There were no unfavorable effects from the use of the serum, not even an eruption.

I give the case in detail, as follows: On June 14, I was called to see a case of tetanus, in consultation with Dr. F. A. Maxwell, near Austin, Texas. Minnie T., age 19 years, weight 180 pounds, of robust constitution, on June 6 was in the cow and horse lot and stepped on a rusty nail which entered the fleshy part of the foot for some distance; the nail was removed, there was but little bleeding, turpentin was applied externally and no more notice taken of the foot other than that caused by the attendant soreness usual in such cases, until the afternoon of June 13, when she noticed sharp pains in the wound, running up the leg, especially noticeable when pressure was made over the seat of injury; also pains extending up the spinal column, especially the neck, with a decided stiffness of the jaws and a twitching of the muscles of the arms and legs at times and much nervousness and excitability. Dr. Maxwell had examined the foot, found it tender in the neighborhood of the wound, which had healed, and he made an opening and washed it out with carbolic acid solution and ordered it poulticed to relieve the pain; gave doses of calomel to move the bowels and left potassium bromid to be given every few hours as indicated. The next day I was called in consultation with Dr. Maxwell and found the patient with a pulse of 108, temperature 99.5 degrees, very restless; the pains seemed to run from the foot up the leg and extend on up the spine; there was much stiffness of the jaws; she could, with much difficulty, open the teeth as much as half an inch; peculiar sensations, as she described them, would run up her back and the slightest breeze was sufficient to bring them on. Dr. Maxwell and I decided to administer antitetanic serum at once. We thereupon, at 4 P. M., June 14, injected subcutaneously, in the right gluteal region, one-third of a ten c.c. bottle of fresh liquid antitetanic serum (Parke, Davis & Co.), using the regular antitoxin syringe and observing all antiseptic precautions. The patient was seen again at 10 P. M. She had slept from 6 to 9:30, felt well, pulse 90, temperature normal, stiffness greatly reduced in jaws and slight perspiration.

June 15—Seen at 10:30 A. M., pulse 73, temperature normal, no pain; but tenderness in the muscles of the foot, a little stiffness in the jaws; had rested well the night before until 5 A. M.; she was then given potassium bromid and slept quietly until morning.

June 16—Seen in the forenoon, she was a little restless, slept well the night before, condition as on former day, except pulse more frequent (90), temperature normal; at 6 P. M. was more restless, complained of the jaws, soreness in the limbs, pain in the stomach, temperature 99, pulse 96; the second dose of the serum was given, also potassium bromid and chloral hydrate.

June 17—Patient slept well the night before, all the symptoms had improved and the pulse and temperature were normal.

June 18—Found the patient much improved in appearance, temperature 99, pulse 80, cheerful, no nervousness, though complained of tired feeling in the muscles of the jaws when the mouth was opened widely; had been gaping all through the day; could open the mouth widely and had eaten a good dinner.

June 19—Temperature normal, pulse 80, restless until twelve o'clock the night before and then slept well; appetite good; complained of some pain in the foot and leg.

June 20—Temperature 99, pulse 90, rested well the night before but complained of some stiffness in the jaws at times and other symptoms seemed to indicate a recurrence of the attack; she was given, therefore, the last third of the bottle of antitetanic serum; the symptoms gradually disappeared and she made a complete recovery and today shows no evidence of the attack.

Remarks: 1. The serum treatment offers the best chance for life in cases of tetanus; it should not be relied on entirely, however, but other remedies should be used when indicated. 2. The treatment should be used early, preferably as a prophylactic, and the dose should be repeated as soon as any unfavorable symptoms appear. 3. The antitetanic serum should be of the best quality, injected with an antitoxin syringe and under antiseptic precautions.

Yours fraternally,

MATTHEW M. SMITH, M. D.

The Bill was Disallowed.

CHICAGO, ILL., July 20, 1898.

To the Editor:—I wish to call your attention to two cases which will be of interest to the medical profession.

On March 25 I appeared before Judge Kohlsaas with a bill for \$25 for professional services against the estate of Byron A. Baldwin. My bill was for administering an anesthetic and assisting at an operation. The surgeon's bill, presented at the same time, was allowed after being cut down. My bill was taken up immediately afterward, when the judge delivered himself, in substance, as follows: Haven't I just allowed one doctor's bill against this estate? When one doctor is paid, they are all paid; I can't have half a dozen doctors coming here making claims against this estate. If you are entitled to anything you must look to the other doctor for it. The bill is not allowed.

The following is from the *Chicago Record* of July 12, 1898: "WINE BILLS ORDERED PAID.—The club dues and wine bills of John Borden Ketcham, over whose estate there was much litigation after his death last fall, were ordered paid by Judge Kohlsaas yesterday. Among the claimants who appeared with unsatisfied bills were the Washington Park Club, \$31; the Chicago Club, \$53; the Gardiner Commission Company, \$178, and the Bodega Wine Company, \$25."

From this, one is justified in inferring that the judge thinks it scarcely necessary that doctor bills should be paid, or that a man is not entitled to the services of more than one doctor at a time; and that wine bills are sacred, and that a man may patronize as many liquor dealers as he chooses. If the judge's ruling in this case is in accordance with the law, it behooves doctors to collect in advance for all consultations and for surgical operations, where more than one doctor is always required. But then the judge's office-boy knows that this is not law, but caprice.

Yours truly,

D. H. GALLOWAY, M. D.

200 Oakwood Boulevard.

Inebriates in the Army.

HARTFORD, CONN., July 20, 1898.

To the Editor:—I have received two very urgent letters for my opinion on what is asserted to be facts in relation to the appointment of several persons to very responsible positions in the army. It is said that these persons are moderate and periodic drinkers of spirits, who are frequently intoxicated, and I am requested to write an opinion of such persons and their disabilities for such service. I can not say anything of the individual cases mentioned, but the same business principles should prevail here as in civil life. The moderate or periodic drinker is not considered a safe man in positions of responsibility, no matter what his capacity may be otherwise. In the early days of the Civil War, a number of inebriates were in responsible positions on both sides, and some way sad disaster followed their bad judgment. In those days the delusion prevailed that alcohol was a real stimulant and tonic, and in times of great strain a valuable help. Some most bitter experiences disproved this, and the last years of the struggle found nearly all the leading officers in command total abstainers, at least those in active duty on the battle-field. The moderate drinkers, and the men who drank to give them force and

strength for great emergencies disappeared. They were put aside as dangerous men to depend upon. The facts are established beyond question, that no brain-worker can use alcohol to advantage in times of excitement and mental strain, and no inebriate is competent for emergencies of any kind. These facts are the result of constantly increasing experience in business circles, and their recognition is more and more prominent in every field of activity. An inebriate officer in the army is a very dangerous man, more so than an inebriate engineer on an express train. Talent and capacity is of little value compared with a clear brain and steady nerve. While it is possible that inebriates may secure responsible places in the army, it is almost absolutely certain that their disability will be recognized, and in times of great peril they will be found in subordinate places. A very capable officer was suddenly detached from active duty in the Civil War and placed in an unimportant position. He died with the impression that it was the jealousy of the commander that put him aside at this time, and wrote bitterly of this and other events. In reality he was an inebriate, who a short time before this event was widely delirious on the battle field. His superior officer was afraid to trust him, and the real reason was never mentioned. Service on the field and in the camp always sifts out the strong, capable men, and no officer can hope for promotion or eminence, who depends on alcohol for aid in the hour of trial. There was in all probability no better army than the one dissolved in 1865 at the close of the Civil War. The army of today is commanded very largely by the veterans of 1865, and it is safe to say that few, if any, alcoholic incapables will ever occupy responsible situations, at least very long. Such men may be in the service, but their incapacity will certainly find them out.

T. D. CROTHERS, M.D.

Human Serum in Yellow Fever.

ATLANTA, GA.

To the Editor:—During the Yellow fever epidemic of 1897, while regretting that Sanarelli had not been able to put out his serum for the treatment of this disease, the thought occurred to me that the blood of a person having had the disease should answer all the purposes as well as the serum prepared by the tedious process through animals. It would be a simple matter to take blood from the vein of an immune, preferably one recently recovered from the disease, and immediately inject it into the patient affected or one to be protected. It would certainly be as safe as to use serum prepared through animals, which is bottled and kept some time before using, and I believe, would be fully as effective.

I made this suggestion to the Boards of Health of New Orleans, Mobile and Montgomery, but it was late in the epidemic and if it was tried I have not heard of it. A few days ago I wrote to Surgeon-General Sternberg suggesting that it be tried among our soldiers now exposed to such great danger from yellow fever in Cuba.

The success attained in the serum treatment of diphtheria certainly warrants hope for like results in other microbic diseases, and the method here suggested is applicable to them all.

C. C. STOCKARD, M.D.

Precocious Pregnancy.

PHILADELPHIA, July 19, 1898.

To the Editor:—In reference to your article of July 2, 1898, page 42, I recall a case in 1867 (of which I have notes) of the delivery of a girl ten days before she was twelve years of age. The confinement was normal, but was followed by a phlegmasia alba dolens in both legs. She had been brought up in a house of prostitution, and at the age of eight years had commenced cohabitation with boys. She menstruated at ten, and at the time of delivery, pelvis, mammae and pubic hair were well developed.

I was able afterward to confirm her statement. Her subsequent course was somewhat peculiar. After ten years of the most vicious profligacy she married a staid, quiet farmer, settled down to a life of intensely hard work, and after a number of syphilitic abortions, was so far cured that she raised a family of several children.

Very truly yours,

DE F. W.

Malaria Is Not a Disease.

NEW YORK, July 25, 1898.

To the Editor:—I note that in your items for your issue of the 16th inst. Dr. Koch is represented as speaking of "tropical malaria" as if the cause and effect were the same. That is to say, if my view is correct, malaria is a "bad air" or other bad influence that begets a certain disease, namely, malarial fever. I would like to ask you to turn to Dr. Koch's own writing in the *Deutsche Med. Woch.*, June 16, and tell your readers if he has fallen into the error of lumping cause and effect, or whether the *lapsus* has occurred in the course of transcribing his valuable observations into the English. By giving your readers a little light on this subject, you will, no doubt, confer a favor on others beside

Yours faithfully,

ZETA.

Appendicitis.

RICHMOND, IND.

To the Editor:—I am quite disposed to favor the writer of the article on "Appendicitis" in the *JOURNAL* of May 14, as I am perhaps the cause of several articles which have appeared in the *JOURNAL*. . . . Dr. Carstens has made the *amende honorable* in the same propositions, which I quote from his second article in the *JOURNAL* of February 19. Apropos, the London medical men are and have been laughing over the question of "What is Fame?" which was brought out by the indifferent regard to such names as Treves and Talamon, when such names are quoted with much gusto, as Price, Deaver, Murphy, Fowler, Morris and others. The last mentioned, as if aching for a controversy, thrust in his lance of the quill, hoping somebody would recognize him as the New York gladiator on this important topic.

First then to Dr. Carstens' propositions, viz.: 1. "He (Dr. Haughton) and I agree that a diagnosis should first be made." 2. "He (Dr. H.) and I agree that a convalescent patient should not be operated upon." 3. "He (Dr. H.) and I agree that patients absolutely recover without recurrence and without an operation." 4. "He and I agree that some patients need an operation, and if there is any difference in our views, it is simply when is the best time." So he says, "finally, after all, we are near together; there is no use in splitting hairs about it, and I am perfectly convinced that Dr. H. is a good fellow who means well and, what is more, is progressive and wants the truth." This is making the *amende* (?) all right as I took his first article. . . . This is what I expected the New York man would do, and so I have waited for him to define and commit himself, which he has quite fully done in the article, which I am about to review. I do not know Dr. Morris, but I shall attempt to pay my respects to him also in this squib, which would never have been written if he had not openly thrust in his lance in the Carstens' episode. I quite fully recognize the animus of New York surgeons toward western surgeons, and if any man will read his last article in the *JOURNAL*, and do it carefully and dispassionately he will come to the conclusion that he is arbitrary and dictatorial in tone in the assumption which is here quoted from the editorial of the *Texas Med. News*: "We feel that we are guilty of no exaggeration when we assert that such men, viz., men occupying extreme positions in every profession, and especially so in medicine and surgery." I am glad he put that in, as I may have occasion to use it before I am done. These men he refers to

us occupying extreme positions, are dangerous elements in the medical profession, a menace to the well being of society. The editor of the *Texas Med. News* is personating Dr. Morris, and goes further in saying that *such extreme radical teaching* by influential members of the profession, such as Dr. Morris, "is well calculated to do great injury." We quite agree with the Texas editor, and I am glad he comes to the front like a man and declares his convictions. Dr. Morris hence classifies himself in the category as radical, as distinguished from conservative. I had always believed that the truth is usually found midway between two extremes, and in this case I am betwixt and between. I am conservative when best and radical when best, and Dr. Morris can not do my thinking nor indicate in my cases what ought to be done. I fear it is too much the tendency of the younger surgical profession in the East to think for the entire profession. It ought to be remembered that some of us who live West, where broad prairies bound our vision and large rivers roll carrying our trade, and white-winged ocean birds of commerce infuse powers and dignity and "no pent-up Utica bounds *our* powers." It ought to be remembered also that some of us in the West sat upon seats of medical colleges in eastern cities and received instruction from the honored names who instructed the same men who now are at the front in surgery. It ought to be remembered also that some of the illustrious names who have been called to eastern schools and have aided the development of surgery, were men gathered from western fields. Sims, Gross and Parvin and others, have gone East to medical centers, and we have heard their teachings, and if this idea prevails in any large degree let it be understood that we upon western soil are *men* of large mould, and our institutions are developing them, the peers of any age or class.

I have nothing to say for myself except that having spent fifty years in college, hospital and general surgical work, and having taught surgery for fifteen years, I do not permit them to be more careful in diagnosis or in operative methods, and always reserve the right to adjudicate the situation if I am to be the operator. This is just what Dr. Morris does, only he is too radical; and all the knowledge of this question will not die with him.

I desire that these men, who are in positions to teach, should remember that he teaches best who teaches facts which can be utilized in the future. One fact is worth a thousand theories, and one life saved by any process which is best is a fact worth more to patients than all the theories of ages. So we go for the facts. We ask, is it so? Can you prove it? Besides, if you do or can, it is more convincing than to abuse men who dare to think, investigate and logically work out conclusions, and then go to the bedside and demonstrate them. I do not believe more than half I see, and very little of what I hear. I am more fully occupied with what I think along surgical and medical lines.

Appendicitis proper. Its medical and surgical relations.—I desire to notify all that I did not desire or intend to be drawn into any controversy, and made no attack upon anybody, but I am not disposed to be dictated to as to what I shall do or think in this disease. I am in favor of a correct diagnosis, which I think but very few men can make differentially, and also in favor of a definite pathology of its progressive stages, as already well defined by writers, and whatever else may or can be known of the disease before we have determined to at once cut into and dissect out or remove what has always belonged to him, unless we assume that man was originated from a gorilla in the upward scale, and did not have an appendix at first.

"*Extreme Positions.*" Dr. Morris says "it makes a difference whether an extreme position is based upon knowledge or theory. The subject of appendicitis is so thoroughly understood by a *part* of the profession, and data so well classified, that we can now maintain the *extreme* position that operation should be done as soon as diagnosis is made."

Readers here will please notice that only a *part* of the profession (which part we are left to infer) is the New York portion of it, and the rest know nothing about it. Again, he admits his position is an *extreme* one and a *radical* one, and in view of all that is known to us in the West, where we see it perhaps as often as elsewhere, we are modest enough to say that the Doctor has mistaken his audience, if he supposes that men believe that all the facts of this disease lie in the immediate environment of the writer, who has assumed to say what must be done in any given case. I presume it will be admitted that on the first attack of pain, it can not be said: This is a case and operation must be made or the patient will die. This is a bold barefaced assumption, because my own considerable experience contradicts it. He cites diphtheria, etc., as infection, and reaches the other conclusion that the appendix is infected and must be removed to prevent further infection. We will take peritonitis. It may be simple or infecting. Does Dr. Morris, or any other man, open the abdomen, on diagnosis, to remove the infecting cause. Nay, he can not, he does not know what is the cause, and yet these cases where my own judgment would say to open the abdomen and disinfect it, as giving the best chances for life, are not so fully accepted by the cautious, honest surgeon, who values a human life more than he does his reputation or applause of men. Dr. Morris writes and talks like a man who did not intend to admit that there was but one side, that all other men were color-blind and he alone could see the *white* light. He talks as if the question had been already adjudicated and settled and he was the judge upon the bench to deliver the opinion, whereas he ought to remember that the profession of the United States and the world is but the great intelligent jury, who are determining the facts and evidence, and the time has not come for the judge to deliver his opinion to the jury. He says himself he is making an effort to gather up the statistics (that is, facts), and if so the evidence is not all in, nor the case closed. I quote a few lines from another (western man) of the medical profession, who says: "It is our opinion that operative surgery has been carried to an alarming extent; formidable operations involving the *lives of patients* have been performed upon the most trivial pretext or excuse. It is of daily occurrence to hear of women being submitted to operations, dangerous in themselves, for ailments that have been successfully relieved in the past by medication, and perhaps not one in ten, who may happen to survive the operation, are cured, and often are miserable sufferers the balance of life, while those who have succumbed and gone out of life are legion." He says further (American surgeons hear this arraignment of your surgery): "I do not hesitate to say, without fear of *successful contradiction*, that if the statistics were carefully procured the number of deaths from the effects of modern surgery, in the past ten years, will outnumber the deaths in both American armies during the late rebellion." I do not suppose it is so large (it may be) if we but reflect that in every city and town, and possibly at every cross roads, there is one or more surgeons who supposes "he carries his star in his brain," and is prepared, as he thinks, to diagnose and operate on any case presented to him, and, like Dr. Morris, is making cases for *statistics* and record.

"*Conservatism,*" "*philologists,*" "*radicals.*"—If we look over this ground the Doctor has seen fit to broach, we find only the same original idea of the man who imagines he is the old schoolmaster, or pedagogue, and imbued with the idea of hammering into his pupils his one idea: "I am the master of this small confederacy and you are subjects," viz., pupils. It is but a trite saying that such an idea is but a simple monarchy, which form of government becomes dissipated into thin air when pupils grow up, as it is now in Cuba, while Spain refuses to be convinced. What does he want to invoke the aid of philologists for in this question; because somebody used a word in Webster's Unabridged which is well understood,

where men are versed in the use of words to express ideas, and there is no necessity to call the attention of philologists to the use made of it. There is a degree of reckless surgery in many directions which is noticeable and we call a halt on this line, to say that the principles of pathology have been guiding us in determining our conditions along these lines, and "that every case should be operated upon as soon as diagnosis is made" is, to my mind, to ignore vital force and all other conditions having relation thereto; is a principle of surgical practice I have never subscribed to, and I am guided by the best pathologists of the past ages as to what inflammation is in its essential character, as well as its results upon the tissues involved. I know these things as well, I presume, as Dr. Morris; but I claim the right to do my own thinking in my own way, guided as I always am by the signals of our science and art, as well as by the principles of a conservative regard for human life and suffering. I know he claims the results of statistics to prove that under "proper surgical treatment" at the proper time, has been shown to be less than 1 per cent. in the hands of several American surgeons, that is, less than one death in one hundred cases. He claims this is proved. I do not accept it, because if the cases who do not recover after operation relief, are also given, we shall have a standard by which to judge of the results of operation. Figures on paper look well, but we want something more, as we have been in a number of large hospitals for six month periods and know something of the history of methods.

The unkindest cut of all by the writer under review is this, viz.: "That conservatism takes the place of knowledge." (We deny it.) That a large part of the profession is uninformed upon the subject of appendicitis, and the further suggestion that the profession is uninformed (that is, ignorant, to put it broadly) because it can not have learned "the unwieldy sum total of our advanced medical knowledge." Now, it is clear to every well balanced mind, on reading Dr. Morris's article, that he is in a state of mind. Just what that is would require possibly a *lunatico-inquirendo* into the mental question, before giving any value to such statements regarding the general medical profession of this country.

"Members of the profession to use their own judgment about the propriety of operation." If not, who shall decide? When doctors differ who shall decide? Now again: "Shall we let members of the profession all use their own judgment, or shall we ask the men who are thoroughly familiar with the subject to teach principles and make rules for aiding those whose opportunities for gaining accurate information have been more limited." Look at the presumption and the assumption of such a proposition to the American profession. When in every important city and town, and those also less so, there are hospitals and sanitariums as thoroughly equipped with men and modern means as even those of New York City, and men of much better balanced minds than the author of the paper under review, who are just as capable of investigation with the microscope and tests, and the knife, as our writer, hence it is downright presumption and ignorance of the facts of the qualification of the American surgeon, to have written such a diatribe against them. The writer from New York had better get out and come West and mingle with the profession more fully and freely in their State and county, and perhaps also the National conventions, and then go with them to the hospital fields of labor, and also to the private bedside of a large and very intelligent and educated clientele, and he will begin to conclude he does not know it all and that possibly among all of these he may gather up some new facts about *bacteria* and results upon tissues, or the methods of performing successful operations upon his patients. It certainly is not probable or possible that all the knowledge of this subject, which has called out so much discussion and airing of surgical opinion, is found with Dr. Morris, and he at least ought to have learned so much as this, that an attempt to belittle the knowledge of his confrères in the general profession is a calumny which deserves to be widely resented, and the other spirit of generous confidence and yet independent and cautious statement in all medical investigation should be recognized as the inalienable right of him who devotes himself to the good of others and advancement of the profession to which "I (Dr. Morris) have sworn allegiance."

I, not more than others, my dear sir, who have spent a lifetime in learning "what is truth," am still, with others, asking the same question. But Dr. Morris has not answered it upon this question, as is already well understood. We are open to the truth and say nothing about the *ipse dixit*, but we know and see the truth, when not offensively paraded before us, that in me lies the truth, all the truth of this question. Other men have some experience along this line, and as all truth is a unit it might be just as well if it was not projected so forcibly that, like a cannon ball, it overcomes all our sense of appreciation. This is but suggestive, however, to the Doctor, as it seems to me and I think will readily appear to others, that he himself is "intoxicated" with the "spirit of controversy," which he charges upon another. And in winding up his article he says: "Call it intolerance if you will, but I have no motive excepting that of being useful to the profession to which I have sworn allegiance." So be it, yet I trust in future he will stand behind the utterances (if for truth) and the "truth shall make men free," if they shall perceive it, more than the man. We shall rest just here and say, come on with your facts, your statistics, your experiences, if you have any, and let us compare notes and let there be an end of all this which from the first was sought to be avoided, but was drawn out finally by references and statements, which indicated that the writer was either "intoxicated" with his "spirit of controversy," or he had set himself the ignoble task of illuminating the benighted and ignorant profession, as it had not yet learned the density of the ignorance which had covered the professional mind upon this most important question, which has come down to the few years of this closing nineteenth century, to receive the flash-light of transparent truth in the *ipse dixit*. We will receive the truth, though it blind us.

R. E. HAUGHTON, M.D.

(Finis.)

NEW INSTRUMENTS.

EUREKA HOT-WATER VAGINAL APPLICATOR.

BY S. L. WEST, M.D.,
PHILADELPHIA, PA.

My apology for presenting a new hot-water vaginal applicator to the medical profession is that so far no approved method of applying hot water internally to the female pelvic organs is at our command; and the great necessity for prompt relief of the many minor ills arising from perverted and suppressed functions of those organs demands some commendable appliance. The hot water douche is only an apology for a better method of accomplishing the great demand for local treatment of those organs. To say the least, it is attended with discomfort and fatigue to the patient, and, as used by the majority of patients, its benefits are questionable.

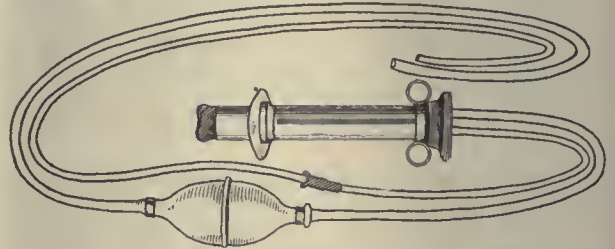


Figure 1.

The merits of the "Eureka Hot-Water Vaginal Applicator," which is here illustrated, at once commend it to the attention and approval of the medical profession. Its application may be briefly stated as follows: Freely soap the rubber bag (never use vaseline nor oils) and return or replace it within its holder, and open the cut-off on discharge of the rubber tube; place a pitcher of hot water, the hotter the better, conveniently near the side of the couch or bed, and drop the ends of the rubber tubes of the applicator into the pitcher; the patient reclines upon a couch or bed, on her back, with legs drawn up and knees abducted, and taking the applicator in either hand to suit her convenience, introduces the vaginal end of the applicator into the vaginal orifice, passing it up until the flange of

the applicator comes in contact with the labia, then placing the index and middle fingers of the other hand in the rings on the piston, she presses the rubber bag as high up into the vagina as can be comfortably borne, as shown by cut No. 2, holding the applicator in this position, and taking the rubber bulb on the feed tube in the other hand, she grips it two or three times, allowing the water to pass up through the rubber bag and flow out through the discharge tube. This removes the air from the rubber bag. Now close the cut-off and continue to pump water into the rubber bag. The amount of water required to be pumped into the rubber bag is determined by the discomfort produced by distension of the pelvic viscera, as shown in cut No. 3. As the parts become tolerant of the pressure, pump in more water. If it be desirable to continue the operation for fifteen minutes or half an hour, especially in chronic pelvic cellulitis attended with exudates, it will be well to empty and refill the vaginal bag, without removal, several times during the operation, thus producing the highest order of massage.

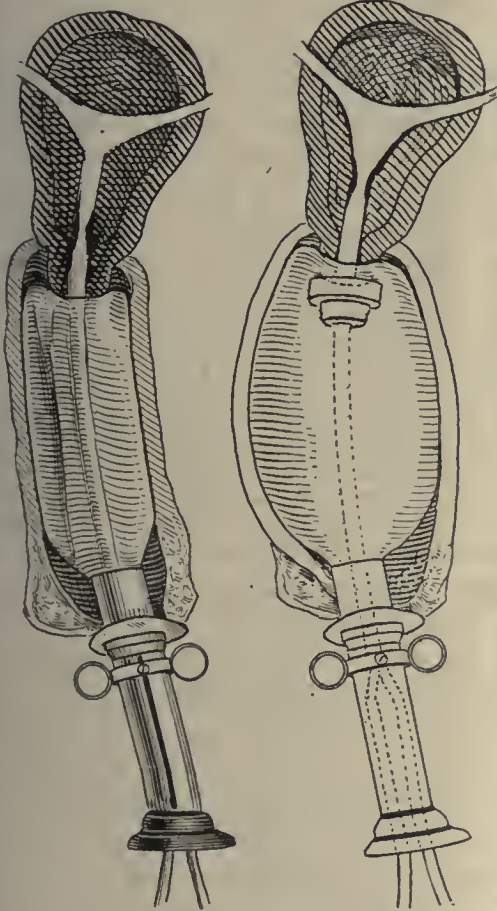


Figure 2.

Figure 3.

After a varied experience in the use of the "Eureka Hot-Water Vaginal Applicator," covering a period of several months, I respectfully beg to refer especially to the following: In dysmenorrhea it gives prompt and immediate relief, relaxing the tissues and thereby promoting the menstrual flow. In climatic and neuralgic pains of the pelvic organs and viscera, it has no equal in promptly relieving the pain. In pelvic distress, heavy weight and bearing-down pains, the results of long standing or fatiguing walks, it acts like magic, restores the parts to a normal position and rapidly promotes absorption of the local congestion. In chronic pelvic cellulitis with inflammatory exudates and adhesions, it, under the relaxing influence of the hot water and expansion or equal tension of the tissues, most effectually breaks up the adhesions and rapidly promotes the absorption of the exudates.

BOOK NOTICES.

Scientific Memoirs by Medical Officers of the Army of India. Edited by Surgeon-Major-General J. CLEGHORN, M.D., C. S. I., Director-General of the Indian Medical Service and published from the office of the Superintendent of Government Printing, Calcutta.

This work has just reached this country. It is a small quarto of 130 pages beautifully illustrated with chromolithographed plates. It contains five papers, the first "On Choleraic and Other Commas," by Surgeon-Lieutenant-Colonel D. D. Cunningham, in which he gives interesting articles under sub-headings as: A description of some new species of commas occurring in association with cholera in Calcutta; comma-bacilli occurring in bodies of water apart from the existence of any cholera in the vicinity, etc. Under the heading, "On the relation of vibronic organisms to cholera" he states that the continued study of the bacteriology of cholera in Calcutta has in no way caused him to modify the views which he has on several previous occasions expressed in regard to the absurdity of talking of "the cholera bacillus." The longer the question is investigated in the endemic area of the disease, as represented by Calcutta, more and more evidence accumulates to show that the choleraic condition is not necessarily associated with the presence or predominance of any one species of vibrio within the intestinal tract, and that any assumption that such an association necessarily exists is merely founded on the fact that Professor Koch when in Calcutta, was either profoundly ignorant of vibronic schizomycetes as a group, or that owing to his brief and limited local experience in the locality, he accidentally encountered only a single species in connection with the few cases of cholera which he had the opportunity of investigating. At the same time it must be allowed that he was the first observer who drew attention to the undoubted fact that a very special relation does exist between the occurrence of the disease and the predominance of the vibronic schizomycetes within the digestive tract, for although a certain number of exceptional cases do occur in which the choleraic condition exists apart from the presence of any abnormal predominance of intestinal vibrios, there can be no question whatever that an association of the disease with such predominance is normal. The author concludes by insisting on certain facts: 1. Artificial administration of comma-bacilla very rarely serves to induce cholera. 2. Commas may be present in the intestinal contents of those to whom they have been administered without any evidence of the establishment of the choleraic condition. 3. Cholera may be present apart from any evidence of commas in the intestinal tract, and the numbers of vibrios and severity of the case do not necessarily run parallel. 4. The administration of different species of commas may be followed by the development of the choleraic state. 5. The physiologic properties of commas and other schizomycetes may unequivocally vary very greatly under different circumstances, and consequently the nature of the products to which they give rise in the substratum must also vary greatly. The second paper consists of notes on the malarial parasite as observed in the blood during life, and in the tissues postmortem at Lahore, Punjab, by Surgeon-Captain J. Murray. He presents fine plates showing stages in the development of the quartan parasite, the tertian parasite, the quotidian parasite and those of malignant remittents. He cites many European observers but does not appear to be aware that any work of this kind has been done at the Johns Hopkins University. Then follows a paper in which Surgeon-Captain Leonard Rogers presents some observations and statistics to show that the incidence of malarial fevers is proportioned to the height and fluctuations of the ground water-bed level. The last two are by Dr. Cunningham: one on the results of experiments on the action of various reputed antidotes to snake venom, conducted during

the season 1895-96; the other on certain fungal and algal diseases affecting economic plants in India. The most important of the conclusions reached by Dr. Cunningham's experiments were: 1. The serum of the blood of animals which have been artificially immunized to the action of lethal doses of snake venoms by means of habitual and cumulative treatment with the latter, unequivocally possesses antidotal properties, and hence may fairly be denominated antivenene. 2. The term antivenene is, however, of generic, not specific value, for the antidotal material contained in the blood of animals which have been artificially immunized against colubrine venom is inert against viperine venom and *vice versa*.

Diseases of the Eye. By EDWARD NETTLESHIP, F.R.C.S., Ophthalmic Surgeon at St. Thomas' Hospital, London; Surgeon to the royal London (Morsefields) Ophthalmic Hospital. Revised and edited by W. T. HOLMES SPICER, M.D., M.A., F.R.C.S., Ophthalmic Surgeon to the Metropolitan Hospital and to the Victoria Hospital for Children. Fifth American from the Sixth English Edition. With a supplement on color-blindness by WILLIAM THOMPSON, M.D., Emeritus Professor of Ophthalmology in the Jefferson Medical College of Philadelphia. With two colored plates and 161 engravings. Philadelphia and New York: Lea Brothers & Co. 1897.

A book which has passed through five editions needs no special recommendation. It is sufficient to say the present edition is fully up to date. It is unquestionably the best compendium on diseases of the eye ever written in the English language and, therefore, justly recommended in many medical colleges, for recitation work.

The supplement by Dr. William Thomson, on the practical examination of railroad employes for color-blindness, gives the work an additional value to physicians engaged in railroad service, as there is no one who can speak more authoritatively on this subject or who has more practical experience in this work than the venerable emeritus professor of ophthalmology in the Jefferson Medical College.

Annual and Analytical Cyclopedia of Practical Medicine. By CHARLES E. DE M. SAJOUS, M.D., and 100 Associated Editors, assisted by Corresponding Editors, collaborators and correspondents. Illustrated with chromo-lithographs, engraving and maps. Vol. i. Philadelphia, New York and Chicago; The F. A. Davis Company, publishers. 1898. Price, cloth \$5.00.

After ten years publication of the *Annual of the Universal Medical Sciences* in a series of five volumes every year, the plan has been changed so that hereafter one volume appears every six months and the whole alphabet will be covered in three years. Every three years therefore the subscribers will have a six-volume reference system which will cover the most that is valuable in the medical literature of the period. The volume before us is very handsome, attractively presented and is arranged alphabetically. The illustrations are fine; the paper and type are excellent.

We think in its present arrangement the "Annual" will be found more useful than heretofore because of its alphabetic arrangement.

A System of Medicine by Many Writers. Edited by THOMAS CLIFFORD ALLBUTT. Vol. vi. Pp. 1058. New York: The Macmillan Company, 1898. [From A. C. McClurg & Company. Chicago.] Price \$5.00.

This volume is devoted to diseases of the respiratory organs in which are articles by Dr. Wm. Ewart, Dr. P. H. Pye-Smith, Dr. Percy Kidd, Dr. J. T. Arlidge, Dr. Rolleston, Dr. Kingston Fowler and Dr. James F. Goodheart; Diseases of the pleura by Dr. Samuel West, Dr. Gee, Dr. Herringham and Dr. D. W. Finley; diseases of the circulatory system by Professor Michael Foster, Dr. Monckton Copeman, Prof. Sherrington, Prof. Allbutt, Dr. Sidney Coupland, Dr. Samuel West, Dr. Wickham Legg, Dr. John Thomson, Dr. Stephen Mackenzie, Mr. W. Johnson Smith, Dr. Cheadle, Dr. Robert Muir, Dr. Dickinson, Dr. Laurence Humphry, Dr. F. T. Roberts, Dr. Thomas Oliver, Prof. Dreschfeld, Sir R. Douglas Powell and Dr. Ernest Samson.

There is a story in the author's preface which has a direct interest for American readers. He says: "An article by Prof. Welch on 'thrombosis and embolism' was to have been in my hands in ample time for the publication of this volume last Christmas. . . . Unhappily before the completion of his task Prof. Welch found himself committed to a desperate fight for the freedom of physiological research in the United States. As President of the Congress of American Physicians and Surgeons the duty fell upon him of organizing the profession in opposition to a bill now before Congress charged with restrictions so vexatious that all enlightened medical and scientific men in America consider that its enactment would be nothing less than a calamity. In addition to his laboratory and lecturing work Dr. Welch had to write innumerable letters, prepare papers and documents, organize committees, visit Washington repeatedly, have interviews with senators. He is unkind enough to add that all this trouble came from England where if your scientific men had made any sort of courageous stand twenty years ago I should not have been sacrificing my time and energies in this way. I am disposed to think that the trouble that I have caused you is a judgment for the delinquencies of your countrymen in this matter. Such are the uncertainties in the course of political business, that although Prof. Welch expected every week that the matter would come to a vote and thus liberate him to fulfill his obligations to me, yet week after week he has been disappointed and compelled to keep up agitation and organization. Even yet the fate of the bill is not sealed. Had Prof. Welch foreseen this grievous delay he would have withdrawn from his engagement in time for me to place the article in the hands of another contributor. This story I have ventured to tell at some length because it contains an interest and perhaps a warning for us all."

It will perhaps interest Prof. Allbutt to know that at adjournment of Congress the Anti-Vivisection bill remained unadjusted, but it is not believed that it can now pass either house of Congress. Nevertheless the profession in this country will take advantage of the summer vacation and personal contact with members of Congress and the Senators; to inform them of the consequences of this most ill-advised measure.

The work under consideration represents the present state of British medicine as set forth by some of its ablest exponents.

Hay Fever and Its Successful Treatment. By W. C. HOLLOPETER, A.M., M.D. Pp. 137. Philadelphia: P. Blakiston Sons & Company, 1898. Price, \$1.00.

The author says: "Having had remarkable and uniform success with the simple treatment of hay fever for the last ten years, during which time I have given complete relief to over 200 patients in my private practice, and having made a thorough clinical study of this affection, as well as an exhaustive review of the literature relating to it, I feel justified in presenting the results of my labors in this short treatise."

The treatment advocated by the author is strict sterilization of nasopharynx—daily sterilization. Surgical treatment is indicated, according to the author, only when gross lesions exist. In old cases the treatment should commence two or three weeks before the anticipated recurrence of the paroxysms.

The author has conferred a benefit on the profession in making his views public. For whether others sustain in actual practice the therapeutics here recommended or not, careful cleansing of the nasal passage must result in good, and many patients be relieved from the cruel and heroic measures so frequently recommended.

A copious bibliography concludes the book.

Schenk's Theory. The Determination of Sex. By Dr. LEOPOLD SCHENK. Authorized Translation. Pp. 222. The Werner Company: Chicago, Akron, Ohio, and New York, 1898.

The lay press has extolled this book to an extent that renders it unnecessary for a medical journal to say much. The

amount of sugar in the system, according to the author, determines the sex of progeny. For example, a woman with diabetes is nearly certain to have female children. And in all cases in which there is a predominance of female offspring the Trommer test shows the presence of sugar. The natural sweetness of the female sex is thus biologically accounted for. The question of diet is therefore the controlling factor under the Schenk theory. When male offspring are desired the diet should be on antidiabetic lines.

PUBLIC HEALTH.

Health in Chicago.—The report of the Department of Health for June gives 1581 deaths for the month, a rate of 0.98 per 1000 as compared with 1 per 1000 for June 1897 and 1.17 for June 1896. Of these deaths, 296 were of persons under one year old and 181 between 1 and 5 years. The principal causes were: Diseases of the nervous system, 224; consumption, 218; pneumonia, 142; diseases of the heart, 101; acute intestinal diseases, 88; cancer, 73; bronchitis, 47; typhoid fever, 35; diphtheria and membranous croup, 30.

Death-rate in Diphtheria.—Professor Kassowitz of Vienna denounces antitoxin, stating that the published percentages are misleading and that the actual mortality from diphtheria has not diminished in recent years as claimed. He cited statistics from Moscow, London, New York, etc., which prove that the number of deaths has not decreased, whatever the percentages may show, while statistics everywhere prove that tracheotomy, primary or secondary (after intubation), is still followed by death in 70 to 90 per cent., that the number of cases of consecutive paralysis (heart death) has actually increased, and that renal complications are not affected by the antitoxin, while croup continues its course unchecked by the injections. He even refuses to consider the Klebs-Loeffler bacillus the specific cause of diphtheria, which he says is yet to be discovered. In the cities (Vienna, Paris) in which the mortality is actually lower of recent years, the disease has been of a milder type.

NECROLOGY.

EDWARD HAMILTON KIDDER, M.D., Fall River, Mass., died July 16, 1898, after an illness of some two or three months. Dr. Kidder was 32 years of age and a native of Lincoln, Mass. He attended Harvard University, graduating in the class of '88. After a year of teaching he went abroad for study and observation in hospital work. On his return he studied medicine, graduating from the Harvard Medical School in the class of '93. He was given an appointment as house surgeon at the Massachusetts General Hospital, serving nineteen months. He was especially devoted to the study and practice of surgery and was notably successful in his hospital practice in this work. He came to Fall River in 1894 and was a leading spirit in the organization of the Emergency Hospital and the Training School connected with it, and the success of these institutions has been largely due to his enthusiastic and energetic support. In the death of Dr. Kidder the profession and the city of Fall River alike suffer a distinct and appreciable loss. He was a man of unusually fine spirit, unswerving of himself in the work he had to do. His early end was in part the result of overwork. Dr. Kidder was a member of the Massachusetts Medical Society, the Fall River Medical Society and the Harvard Medical Alumni Association.

ALAN PENNEMAN SMITH, M.D., died July 18, at his home in Baltimore, M.D., in which city he was born in 1840. He was a son of Dr. Nathan Ryno Smith, a graduate of Princeton, and in 1861 of the University of Maryland, Medical Department. As one of the trustees of the Johns Hopkins Uni-

versity and as a member of many societies he was widely known despite his modest and unobtrusive ways. Early in his career he was in high repute as a lithotomist. Six children survive him, one of whom is a physician. He had many friends in the profession and out of it.

JOHN HEWITT WILSON, M.D., Glasgow, Scotland, 1844, of New York city, was found dead in his room July 15. Cardiac disease is given as the cause of death. He was born in Auchnacloy county, Tyrone, Ireland, in 1818, and came to America in the year after his graduation. Two daughters are his survivors.

R. O. MOFFAT, M.D., a young physician of Toronto, Canada, died in a dentist's chair from the effects of chloroform, July 18.

JAMES T. BALL, M.D., Colorado City, Colo., died near Judson, Ind., July 15, aged 39 years.—**F. H. Bodenius, M.D.,** University of Heidelberg, Germany, 1869, of Madison, Wis., died at Baltimore, Md., July 21, aged 53 years.—**Jacob Boon, M.D.,** Glen Olden, Pa., July 17, aged 61 years.—**Frederick W. Vogel, M.D.,** Boston, University of Halle, Germany, 1868, died July 16, aged 52 years.—**Henry E. Werner, M.D.,** Rush Medical 1888, died at his home, Le Claire, Iowa, July 16.

DEATHS ABROAD.—**F. Cohn,** professor of botany at Breslau, whose name will be remembered with those of Nägeli, Pasteur and Koch, as one of the founders of bacteriology.—**Dr. Levieux,** formerly physician to the Bordeaux Hospitals, corresponding member of the Académie de Médecine, aged 80 years.—**Dr. Anton R. Kerner von Marilaun,** professor of botany in the University of Vienna, aged 66 years.

SOCIETY NEWS.

Medical Temperance Association.—This Association, organized at the Washington meeting of the AMERICAN MEDICAL ASSOCIATION in 1891, has attracted a good deal of attention lately. Its particular object is the special medical study of alcohol as a medicine and beverage. Its members are almost all members of the AMERICAN MEDICAL ASSOCIATION, and the annual meeting is held at the same place and time as that of the ASSOCIATION. For several years it has held a summer meeting at Staten Island, in July, which has been largely attended by philanthropists and temperance reformers as well as medical men. The particular object of these meetings has been to group and collate a mass of testimony which has been both exaggerated and minimized by physicians and temperance advocates, and to point out the real facts and the lines of investigation now being pursued. These meetings have followed National gatherings of reformers and been very influential in many ways. The meeting this year, July 5 and 6, followed a temperance congress of four days' length, closing the day before the medical convention began. The papers presented were purely scientific, but were listened to with much interest by a large mixed audience. Both the papers and discussions were temperate in tone and very reasonable suggestive presentations of facts and conclusions. Meetings of this character exercise a strong influence and are of great value to both the profession and the laity, correcting popular errors and rousing up new interest in a subject of increasing importance in every circle of society. Both the English and French societies have quarterly meetings, in which leading temperance men take part. Here the meetings are restricted to medical men. The medical side of the temperance question is a very large and almost unknown field, and increasing interest will follow the work of this society in the future.

The French Congress of Surgery will meet at Paris, October 17 to 22, with Professor Le Dentu in the chair. Nephrotomy will be the subject of addresses by Guyon and Albarran, and the "Treatment of Goiter" (exclusive of cancerous and exophthalmic goiter), by Reverdin of Geneva. For further particulars address Lucien Piqué, Secretary, rue de l'Isly 8, Paris.

Mississippi Valley Medical Association.—The twenty-fourth annual meeting of this association will be held at Nashville, Tenn., October 11-14, under the presidency of Dr. John Young Brown of St. Louis, Mo. The annual addresses will be made by Dr. Jas. T. Whittaker of Cincinnati, on medicine, and by Dr. Geo. Ben Johnson of Richmond, Va., on surgery. Titles of papers should be sent to the secretary, Dr. Henry E. Tuley, 111 West Kentucky Street, Louisville, Ky., as early as possible. Reduced rates on all railroads will be granted on the certificate plan.

Cumberland County Medical Society.—A meeting of the Cumberland County Medical Society was held at Hotel Cumberland, Bridgeton, N. J., July 12, and was presided over by Vice-President Dr. J. B. Ware. Dr. T. G. Davis of Bridgeton read a paper on "Nephritis in Children." Dr. H. W. Elmer, as delegate, reported on the AMERICAN MEDICAL ASSOCIATION, and Dr. L. L. Hand of Leesburgh on the State Medical Society.

The French Congress of Gynecology, Obstetrics and Pediatrics will meet at Marseilles, October 8-15. The subjects to be discussed are: Extra-uterine pregnancies; auto-intoxications during pregnancy; congenital hernias; microbial associations in diphtheria; school children's dyspepsia; infantile cardiopathy; the purpura, diplegia and colitis of infancy and paralytic club-foot.

MISCELLANY.

Not a Good Showing.—An English inspection reports that out of 8125 children scarcely 40 per cent. have normal vision in both eyes.

Chicago Polyclinic.—This flourishing school has paid off the last of its indebtedness, and the building and grounds now belong to its Faculty without incumbrance.

Dr. Eugene S. Talbot, on account of his original investigations, has been elected honorary member of the Odontological Society of Spain.

Formaldehyde Only a Surface Sterilizer.—Dr. Harrington of the Harvard Medical School, after experiments, concludes that this gas has no penetrating power in the presence of moisture.

The Penalty of Philanthropy Remitted.—The Russian branch of the Red Cross Society has handsomely recognized by a pension of one thousand rubles, the services of M. Henri Durant of Geneva, now in poverty. This sum is to be paid annually.

Origin of Red Blood Corpuscles.—Dr. A. Pappenheim (*Virchow's Archives*, Band 151), after attaining his best results by fixing with heat at 120 degrees C. for five or ten minutes, then dipping five seconds in a concentrated sublimate solution and staining with alum carmin—methyl green, concludes that the red blood corpuscles are derived from the basophile leucocytes.

Sleep for Children.—(*Pediatrics*, Vol. v, No. 2; *Am. Medico-Surgical Bulletin*, July 10, 1898). The approximate period of sleep for children is given as between one and two years, six to eight waking hours; between four and six years, nine to eleven waking hours; between nine and 13 years fourteen to sixteen waking hours. Still the comment is that perhaps too much stress is laid upon the harm of over-sleeping, particularly in young children.

Hysteric vs. True Peritonitis.—Hopkins, *Colonial Medical Journal*; *Am. Medico-Surgical Bulletin*, maintains the rarity of the simulation of acute diffused peritonitis on the part of the hysteric. In neuropathic women the localized inflammatory affections are at times closely counterfeited. In hysteric peritonitis a slight touch of the skin is more distressing than deep pressure, although in neuropathic patients deep pressure in the hypochondriac region causes intense suffering. Pulse and

temperature in simulated peritonitis are usually about normal, while vomiting is often present, but never nausea. Besides, the vomiting does not become fecal.

Correction of Curved Tibia.—Hopkins in the *Annals of Surgery* for July, describes an operation which consists of a combination, in a modified form, of osteotomy and osteoclasia. In reality, he performs two operations, incomplete osteotomy and osteoclasia; in the first, dividing the bone, with a chisel, one-half of its thickness at its inner curve. When the skin wound is healed, but before bone repair has restored the original strength, the osteoclast is applied and the deformity corrected by a fracture at the weak point of the bone. He reports one case.

In Favor of the Post-Graduate Hospital.—The report of a special committee appointed to investigate charges against the New York Post-Graduate Medical School and Hospital was adopted at a meeting of the State Board of Charities today. The charges were that money given for the endowment of beds had been misapplied, and that the city of New York had paid for children who had never been in the institution. The report says that the charges were not sustained.—*N. Y. Sun*, July 13.

Cerebro-spinal Fever.—Osler (*Maryland Medical Journal*, July 16) reports seven cases. He says the disease is never pandemic, but the outbreak is more or less localized and there is an absence of any continuous extension. He considers the treatment still in an unsatisfactory state, and in four of his cases recovery did not seem to follow the use of any special drug nor any special treatment. He advises sponging, etc., for fever, also an ice-cap and opium for the pain. Counter-irritation he considers important, the best method being to "touch along the spinal column lightly with the Paquelin cautery."

Multiple Neuritis.—Ruffin (*Medical Record*, July 9), points out that the diseases with which multiple neuritis are confounded are acute ascending paralysis of Landry, diffuse myelitis and spinal meningitis, anterior poliomyelitis and locomotor ataxia, it being most apt to be confounded with the latter. He believes that absolute rest in bed should be insisted on in all forms of the disease, and symptomatic treatment be resorted to. He advises massage as of great importance, often using it from the beginning of the attack. Aside from alcohol, he considers lead poisoning the most frequent cause for peripheral neuritis, paralysis of the wrist extensors being the most striking feature.

Cholelithiasis in Infancy and Childhood.—Wendel (*Medical Record* for July 9) writes concerning the symptomatology and diagnosis of these cases, basing his paper on observations of sixteen cases in persons under eight years of age. He confirms former observations that in young persons jaundice caused by gall stones without pain is rare, and says that in young individuals, as a rule, the expulsive faculty of the bile-duct does not permit the calculi to remain long in the common duct, and in these cases jaundice is so slight as to be apt to be overlooked. He believes that in every case of convulsion occurring without premonition, gall stone colic should not be excluded as a cause until a careful examination has been made, this being often overlooked in the case of young persons.

Milk for Infant Feeding.—Freeman presents a summary of the answers received to questions sent to the members of the American Pediatric Society as to whether the milk used for infant feeding should be heated for the purpose of killing germs, and if so, at what temperature and how long continued, in the *Archives of Pediatrics* for July. The replies showed a remarkable unanimity of opinion, the predominating opinion being that raw milk would be the best food if it were possible to obtain it clean, while a considerable number evidenced their willingness to take their chances with raw milk during certain seasons and under certain conditions. He believes that under

present dairy hygiene some sort of sterilization must be used, and favors pasteurization at a temperature of about 155 degrees F. for thirty minutes, followed by rapid cooling, as such temperature destroys the germs of diphtheria, typhoid fever and tuberculosis. This at the same time does not give the milk a "cooked milk" taste, and chemical changes would not occur until a temperature of 10 degrees higher was obtained.

Suture Material.—Gordon (*Medical News*, July 16), in a paper on "Suture and Ligature Material—Absorbable and Non-Absorbable," believes that silver wire is entitled to preference over nearly all kinds of non-absorbable material, silkworm gut coming nearer to this than any other. His conclusions are: 1. All suture material unabsorbed must necessarily have more or less exudate about it. 2. Such exudate is of lower vitality than normal repair where tissues are just approximated and not strangulated. 3. A few days only are necessary to insure repair, if there is no infection, and therefore in cases where no great amount of strain exists, absorbable sutures only are needed. 4. Where continual strain on the parts is inevitable, non-absorbable sutures should be used for at least two weeks, but should be so placed as to be removable. 5. For such sutures silkworm gut seems to be the best, as it can be made sterile and kept so. 6. For all other purposes catgut is sufficient. 7. Inflammation is always destructive to complete repair. 8. Inflammation is always due to infection. 9. Sterile catgut or kangaroo tendon should therefore fulfil all indications for suture or ligature material, with the exceptions named.

Anomalous Cords of the Heart.—Lewis (*Philadelphia Medical Journal* of July 16) in a dissection of eighty hearts, found fifty-one showing anomalous cords. Some of the hearts were from monsters, a few were abnormal only as to their tendinous cords and the others pathologic. Thirty-two of the fifty-one had abnormal bands across the cavity of the left ventricle and in twelve of these more than one such band, some being branched or forming a net-work across the cavity. As to the right ventricle, twelve contained one or more such bands, and in five of these they were multiple. Six of the above showed aberrant cordæ tendinæ in both ventricles, and in six there were one or more cords, or a network running vertically across the posterior appendix of the right auricle. Thin cords singly or in net-work occurred in eight cases in addition to or in place of the valve of the coronary vein, and four hearts had bands stretched between the papillary muscles. No case showed a cord across the cavity of the left auricle. He believes that the aberrant cords are of clinical significance in adding murmurs which obscure the cardiac sounds, or serving as points on which the blood may clot, or interfering with the complete opening or closing of the mitral or tricuspid valves.

That Tuberculosis Number.—We notice that our esteemed contemporary, the *Philadelphia Medical Journal*, is patting the *London Practitioner* on the back for publishing a recent issue entirely devoted to tuberculosis, a movement which originated with the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* with the issue of Feb. 5, 1898, but which our valued contemporary did not venture to make mention of, although in that issue of the *JOURNAL* there appeared thirteen original articles, comprising forty pages of two columns each, on various phases of tuberculosis, also two exhaustive editorials and several pages of miscellaneous items on the subject. In addition to this mass of matter on this special subject, the *JOURNAL* of that issue also contained other editorial and department matter on general subjects. These papers were from the pens of leading men in medicine throughout the country, and a column of the *JOURNAL* is practically equivalent, in amount, to a page of the *Practitioner*. When it is remembered that the *Practitioner* is a monthly publication and that this issue of the *JOURNAL* was our regular weekly edition, the matter is still more noteworthy.

In Praise of Ebrlety.—To show how the times have changed, let it be known that an old and curious book exists upon the virtues of alcoholic addiction. It was printed for E. Curl, against Catherine Street, in the Strand, London, in 1723, and is marked "Price Five Shillings." The title is as follows: "Ebrietatis Encomium, or the Praise of Drunkenness; wherein is authentically and most evidently proved, the necessity of frequently getting drunk; and that the practice of getting drunk is most ancient, primitive, and catholic. Confirmed by the example of Heathens, Turks, Infidels, Primitive Christians, Saints, Popes, Bishops, Doctors, Philosophers, Poets, Freemasons, and other men of learning in all ages. By Boniface Oinophilus, de Monte Fiasco, A. B. C."

Vinum retificans cor hominis,
Narratur et Prisci Catories,
Saepe mero caluiese virtus.

—Horatius.

The author lays down the following rules for getting drunk, to-wit: 1. Not too often. 2. In good company. 3. With good wine. 4. At convenient times. 5. Force no one to drink. 6. Do not push drunkenness too far.

A Medico-Cleric gets Some Advice Gratis.—The *Lancet* tackles a would-be homeopathic clergyman as follows: "We extract the following advertisement from the Bazaar:—"

MEDICAL.—Wanted Standard Homeopathic books and drugs. Hints gratefully accepted. VICAR B.

We are happy to give "Vicar" a hint and hope he may be as grateful for it as he promises to be in the advertisement. We might multiply hints, but one hint will cover all the ground. It is that he should not interfere with what he does not understand. Suppose he drugs a person and that person dies, "Vicar" can not sign a death certificate, at least not a valid one. In that case the Coroner at the ensuing inquest would certainly make strong remarks upon "Vicar's" unfortunate position, and "Vicar" might even find himself nearer a trial for manslaughter that would be seemly in one of his cloth.

Curvature of the Neck of the Femur.—Frazier writes on this subject, sometimes called "Coxa Vara," in the *Annals of Surgery* for July. He says there is usually no relation between the physical development of the patient and the deformity. Atrophy of the muscles of the thigh is present to a greater or less extent in every case, according to the amount of functional disturbance of the joint, and in some cases the difference in circumference between the two thighs amounts to seven centimeters. The trochanter major is usually displaced upward; in many cases, upward and backward, and upward and forward in not a few cases. As to the attitude of the limb, in sixty cases in which the position was abnormal, fifty-four presented outward rotation. Occupation seems to be the predisposing cause, also sex, 70 per cent. occurring in males and 30 per cent. in females. For diagnosis, he advises examination as to the following points: atrophy; position of the trochanter in relation to Nélaton's line; relative length of extremity, measured from anterior superior spine to internal or external malleolus; actual length of extremity, measured from tip of trochanter to external or internal malleolus; extent of outward rotation; limitation of inward rotation; restriction of abduction and adduction and disturbances of flexion or extension. Treatment includes rest, extension and massage, with attention to hygiene and phosphorus internally, if there are evidences of rickets. Operative interference is reserved for cases in which the disability is pronounced.

Venomous Spiders.—Dr. Andrew Ross of New South Wales has reported a supposed case of serious toxic effect from the bite of a spider. A boy, aged 5 years, while eating some bread and butter on a doorstep, suddenly cried out and complained of being bitten on the neck behind the lobe of the right ear. He pulled his hat off and threw it on the ground, when a large black spider with a bulbous belly and red spot on the back was

discovered inside and instantly killed. Curious toxic symptoms shortly afterward began to develop in the patient. These were mainly acute pains in the legs and feet and inability to stand or walk. On examination, a large erythematous circle at the spot where the spider was supposed to have bitten him was found. The restlessness and acute suffering continued, and nothing afforded any relief. The affected part was bathed in hot water, and at short intervals strong doses of ammonia were administered and teaspoonfuls of strong brandy were given until about four wineglassfuls had been used, but the symptoms were unrelieved. It was not until five emetics had been taken and full vomiting induced that the patient began to improve. Subsequently he recovered, but his convalescence was for some days delayed by the loss of power in the lower limbs, and recurring attacks of pain. The genus to which the spider belonged was probably *lactrodectus*, of which in Australia there are two species, viz., *L. scelio* and *L. parsettii*. The bite of all species of this genus in every part where they are found, as for example in Southern Europe, California, North Carolina and New Zealand, is credited with venomous qualities in a marked degree and deaths of human beings have been reported as the result of such bites. Some dead spiders of the Australian species which were sent to Professor Kobert of the Dorpat University were found to be inert as far as poisonous properties were concerned.—*Medical Press and Circular*.

Cincinnati.

A VACCINATION STORY.—Some months ago a bona fide case of smallpox was detected in the receiving ward of the Cincinnati Hospital. He had lately been in a region known to be infected, and his latest boarding house was in a very densely inhabited part of the city, peopled for the most part by negroes. It was deemed necessary by the health department that vaccination should be carried out in this locality on a large scale. Many laughable incidents are narrated by the physicians to whom the work was assigned. The greatest difficulty was encountered in making them submit, and only threats of a "ride in the wagon" could influence the most of them. But when vaccinated, they became most zealous in pointing out to the amused officers the hiding places of others in the building. One dusky matron called up stairs after her own arm had been thoroughly vaccinated, "Mistah doctor, dar's a low-down niggah under de bed in de fron' room." One of the physicians in his enthusiasm pounced upon the bed in question, which with a crash came to the floor, scattering bed-slats and cureses with equal impartiality in every direction. "Say, white men, can't ye let a feller sleep?" came from the depths of the ruins, but his earnest plea was disregarded, much to the delight of the already vaccinated darkies who had gathered around to see the fun.

San Francisco.

SAN FRANCISCO COUNTY MEDICAL SOCIETY.—At the June meeting Dr. Thorne reported a case of removal of the stomach, gastrectomy, which he stated was the fifth operation of this kind that had been made. The patient was a German woman 52 years old, and the family history was quite negative. She had done a good deal of hard work, principally at the wash-tubs, and had always had a good appetite. For about four years there had been a good deal of gastric disturbance, principally confined to pain after eating, also flatulency. When examined the tumor was found to be kidney-shaped in the left hypogastric region and freely movable. It was not differentiated from a misplaced kidney, though the two alternative conditions of cancer of the stomach and floating kidney were recognized. The patient entered the hospital on June 23, and was operated upon on June 26. All preparations had been made to remove the stomach, if the condition was found to be one of cancer of that organ upon opening the abdomen. This was found to be the case, and the operation for removal was at once undertaken. The omentum was ligated in sections and

tied off. Several adhesions were treated in the same way, and the organ at last freed from its connections. The intestine below the pylorus was seized with a strong forceps, the blades of which had been covered with rubber tubing and the stomach tied off and cut away; a similar method was employed in dealing with the cardiac end of the stomach. The esophagus had to be dissected away from adhesions and ligaments before it could be brought down low enough to tie to the intestine. The cut ends were united by means of a Murphy button reinforced by a line of sutures. During the operation the patient had been given regular doses of strychnin and whisky, hypodermically, and the total time of operation was two hours and forty-five minutes. She recovered from the anesthetic well and suffered little or no pain, but was intensely prostrated. Strychnin, whisky, digitalin, etc., were given at frequent intervals, but the patient steadily sank; she was conscious and rational until the last, but died forty hours after the operation. Her system had been so reduced by the long continuance of the disease that she was unable to rally from the slight shock of the operation. Dr. Chas. G. Levison reported several cases of operation upon the kidney, with one of nephrectomy for angioma of the left kidney, the twenty-eighth case reported as successfully operated upon. The diagnosis was very difficult, as there was no symptom except the frequent appearance of blood in the urine, which when it occurred, was in considerable amount. When there was no blood present the urine was free from casts, cells or crystals, and no indication of a diseased kidney was to be found. At the time of hemorrhage the blood and clots so filled the bladder that it was impossible to obtain any information by means of cystoscopy. It occurred to the doctor to make a trifle more pressure on the region of the kidney and see if any hemorrhage resulted; in this way he imagined he could gain some information as to which kidney was the affected one. This was tried on the left side first, and the experiment was followed in fifteen minutes by a free flow of blood. On this indication the operation was directed to the left kidney, which was found to be the site of a large angioma, located in the lower portion of the kidney. The operation was entirely successful, and the patient has quite recovered with no indication of any recurrence.

Philadelphia.

MORTALITY STATISTICS.—For the week ending June 16 there were 493 deaths, a decrease of 227 from the previous week and 135 from the same period last year. The low mortality for the week is no doubt due directly to cooler weather, there being fewer deaths noted among children.

INFECTIOUS DISEASES.—This week: Diphtheria, 14 deaths, 73 cases; scarlet fever, 27 cases; typhoid fever, 5 deaths, 50 cases. Last week: Diphtheria, 11 deaths, 49 cases; scarlet fever, 3 deaths, 17 cases; typhoid fever, 13 deaths, 50 cases.

PREVENTION OF DEATH FROM LIGHTNING.—During the 4th of July festivities, while thousands of persons were in Fairmount Park, a severe thunder-storm came on, and while there was only one or two severe flashes of lightning, one of them struck in the midst of a crowd sheltered under a tree, killing three persons instantly. It now seems that the Park Committee on further inquiry learned from several leading physicians that suspended animation following lightning stroke does not always prove fatal provided the necessary precautions are taken. Dr. J. Howard Taylor, Chief Medical Inspector of the Board of Health, is quoted as saying: "There can be no doubt that there are cases of suspended animation from lightning stroke or other electric shock just as there are such cases of drowning. There certainly ought to be rules thoroughly known by police and park guards for the treatment of victims of electric shocks. Such rules would be of especial value in saving the lives of men shocked by electric wires in case of fires, etc. The fact that death is not always instantaneous following an electric shock reflects unfavorably

on punishment of criminals by electrocution." It is also stated that the United States Weather Bureau has tabulated some imported statistics regarding this subject. "In the United States for the five years 1890-1894, 1120 lives were lost by lightning stroke or an average of 224 lives each year. Nearly all of these fatal losses occurred from the month of April to September, the maximum deaths occurring during June and July. Thickly settled communities are far less subject to lightning stroke than sparse settlements. In general the risk in the country is five times greater than in the city. Geologic conditions are also important factors, as for instance chalk is least susceptible to lightning stroke. Marl is twice as liable as chalk, clay seven times as liable, sand nine times and loam twenty two times. Different kinds of trees are liable in different degrees. The oak is most frequently struck, while the beech is least frequently affected. Pines are struck fifteen times more frequently than the beech and the oak fifty-four times. Most generally trees struck are those standing in the clear or on the edge of forests, their height averaging from fifty-two to sixty-six feet." It is reported that the lightning strokes which recently proved fatal concur accurately with these statements. Since this subject has received the attention of the Park commissioners and physicians, it is proposed that rules be formulated for the proper guidance of park guards in resuscitating patients, such as arousing the patient, application of the cold douche, friction of the extremities, warm applications, administration of stimulants, and artificial respiration to be persisted in for at least one hour.

REPORT OF HOWARD HOSPITAL.—The 44th annual report has just been issued. The total number of new cases treated in the hospital and dispensary was 8306, compared with 8431 last year, 8438 for 1896, and 7167 for 1895. The total number of visits of patients was 32102, compared with 28180 last year and 28065 for 1896. Of the total number of new patients there were 6491 white and 1815 colored, 3911 being males and 4395 females. Nativity: United States, 6140; Ireland, 1278; Italy, 318; Russia, 221; Germany, 173; England, 129; Scotland, 47. For 1897, of 8431 cases treated, the nativity was as follows: United States, 6092; Ireland, 1447; Russia, 255; Italy, 240; Germany, 183; Scotland, 47; France, 7; Arabia, 4.

A third story has been added to the annex department and a sick diet kitchen constructed on the second floor, greatly facilitating the preparation of proper food for patients. The total receipts as shown by the treasurer's report were \$35,378.54, and the expenditures \$31,438.59, leaving a net balance in cash, March 1, 1898, of \$3,912.30.

MEDICAL EXAMINING BOARD.—As a result of the examination for licensing physicians by the State Board of Pennsylvania, 317 applicants presented themselves for examination; out of this number 271 obtained certificates, 43 failed to pass, 2 were dismissed for unfair methods, while one withdrew to join the army. A fee of \$25 must accompany each application, which fee is divided among the members of the Board. Dr. W. B. Stanton of Philadelphia received the highest general average, 91.73, out of a possible 100.

AFFECTED WITH TUBERCULOSIS.—Dr. Pearson, of the Veterinary Department of the University of Pennsylvania, and State Veterinarian, has recently made his report to Governor Hastings in regard to the work of the State Live Stock Sanitary Board. It is stated that from June 1, 1897, to June 1, 1898, 1900 cattle were inspected and the number of infected cattle was 12 per cent. The greatest number of infected cattle came from New York, New Jersey and Maryland, while some came from the Western States. Of 1000 cattle from Ohio six were found affected. Dr. Pearson has been appointed to represent Pennsylvania at the International Tuberculosis Congress at Paris, July 27 to August 3, inclusive, and is now on his way to that city.

Louisville.

LOUISVILLE MEDICAL COLLEGE.—Attorney John S. Jackman has just been appointed by the judge of the common pleas court a receiver for the Louisville Medical College property. Some weeks ago the Fidelity Trust and Safety Vault Company filed suit in the law and equity division for sale of the property, being large holders of the college paper, and a decree

of sale was ordered. An appeal was taken by Dr. Samuel Cochran to the court of appeals, and pending a decision of this, a receiver was asked to preserve the property and lease it. Several pleadings were filed in this suit, several sensational statements being made by Dr. Samuel Cochran in regard to the financial conduct of the institution.

LAW.—Dr. Wm. V. Lawe, for some time assistant to Dr. J. M. Mathews, has accepted a position in the Medico-Chirurgical College of Philadelphia, as demonstrator of surgery, where he will be associated with Prof. Wm. Rodman, formerly of this city, professor of surgery and clinical surgery. Professor Rodman will not leave for Philadelphia until September 30, having an office for the summer at Second and Walnut Streets.

MATHEWS.—Dr. J. M. Mathews, president-elect of the AMERICAN MEDICAL ASSOCIATION, and Mrs. Mathews, who have been spending some time on the California coast, have returned.

MARVIN.—Dr. J. B. Marvin and family will sail August 1 for Europe, for the summer months.

CARTLEDGE-BULLITT.—The profession of Louisville have received announcements of the partnership of Dr. A. M. Cartledge and Dr. James B. Bullitt. They will office at Second and Broadway.

McMURTRY.—Dr. L. S. McMurry will spend his vacation fishing in the Canada lakes.

MEYERS.—Dr. Sidney J. Meyers, until recently associated with Dr. Wm. L. Rodman in this city, has been appointed acting assistant surgeon in the army and has reported for duty to General Brooke at Chickmauga, Ga., in the division hospital.

ADDRESSES.—At a meeting of the Executive Committee of the Mississippi Valley Medical Association, the following were chosen to deliver the annual addresses at the next meeting in Nashville: Dr. James T. Whittaker of Cincinnati, on medicine; Dr. George Ben Johnson of Richmond, Va., on surgery.

COMMITTEES.—The following are the Committees appointed by the Chairman of the Committee of Arrangements for the next meeting of the Mississippi Medical Association: Arrangements: Duncan Eve, Chairman; W. D. Haggard, Jr., Secretary; J. A. Witherspoon, Paul F. Eve, R. E. Fort, S. S. Crockett, G. C. Savage. Reception: L. B. Graddy, Chairman; W. A. Atchison, W. D. Haggard, Sr., W. F. Glenn, W. L. Dudley, James B. Stephens, W. C. Bilbro. Entertainment: J. Y. Crawford, Chairman; W. G. Ewing, Larkin Smith, A. B. Cook, J. W. Handey. Exhibits: Dr. Dering, J. Roberts.

QUARANTINE.—The epidemic of smallpox in Jackson County has assumed such a serious aspect that, as the county court will not appropriate sufficient funds to stamp it out, the State Board of Health has, by the Executive Committee, at a meeting held at the office of Dr. Wm. Bailey, on the 21st inst., declared a rigid quarantine against Jackson county. The adjoining counties are Madison, Clay, Estell, Lee, Owsley, Laurel and Rockcastle. The Quarantine Proclamation states that "After due notice and repeated urging from this and the County Board of Health, the authorities have persistently failed to take any steps to prevent the spread of this highly dangerous and contagious disease . . . The State Board of Health of Kentucky . . . declares Jackson County and each of its inhabitants to be in quarantine, and establish the quarantine line along the entire boundary of said county, and forbids any person to enter or leave said county without a special permit from this Board, under the pains and penalties of law, which is a fine of not less than \$50, nor more than \$500, or imprisonment in the county jail of not less than sixty days, or both fine and imprisonment." This is the first time in sixteen years that an absolute quarantine has been declared in the State.

Societies.

The following recent meetings are noted:

Illinois.—Iowa and Illinois Central District Medical Association, Rock Island.

Indiana.—Mitchell District Medical Association, West Baden Springs, July 19 and 20; Tri-State Medical Association, Elkhart, July 19.

Iowa.—Botna Valley Medical Society, Atlantic, July 14.

Maryland.—Cecil County Medical Society, Elkton, July 14.

Minnesota.—Interurban Academy of Medicine, Duluth, July 20.

Missouri.—St. Louis Medical Society, July 14.

Ohio.—Eastern Ohio Medical Association, Steubenville, July 12; Muskingum County Medical Society, Zanesville, July 14; Northern Ohio District Medical Society, Fremont, July 21.

Pennsylvania.—Cumberland County Medical Society, Newville, July 12.

Texas.—Briggs Medical Society, Waxahachie, July 12; Central Texas Medical Association, Temple, July 12 and 13.

Vermont.—Rutland County Medical and Surgical Society, Burlington, July 12.

Virginia.—Seaboard Medical Association, Norfolk, July 15 and 16.

THE PUBLIC SERVICE.

Movements of Medical Officers in Active Service.—

Assigned to duty with the 2d Army Corps, General Wm. M. Graham, Camp Alger, Va.: Majors Jabez N. Jackson and Wm. F. de Nledman, brigade surgeons. To the 3d Army Corps, General James F. Wade, Chickamauga Park, Ga.: Major Guy L. Edie, brigade surgeon, from San Francisco, Cal., and Acting Asst. Surgeon Robert W. Andrews from Poughkeepsie, N. Y. To the 4th Army Corps, General J. J. Copplinger, Tampa, Fla.: Major Edward Martin, brigade surgeon, relieved from duty with the 2d Corps; Capt. E. L. Munson, U. S. A., from Ft. Monroe, Va., recently from Santiago, Cuba; Capt. Allen M. Smith, U. S. A., from Ft. Hamilton, N. Y., and Capt. Champe M. McCulloch from Ft. Barrancas, Fla., and the following acting assistant surgeons: Irving E. Bennett from Ft. Delaware, Del.; Patrick H. McAndrew from Washington, D. C.; G. Moreno de la Torre from the hospital transport *Olivette*; E. A. Romig from Blg Rapids, Mich., and Paul C. Hutton from Washington, D. C. To the 5th Army Corps, General Wm. R. Shafter, Santiago, Cuba: Major W. C. Gorgas, brigade surgeon, relieved from the hospital ship *Relief*; Acting Asst. Surgeons R. Fleming Jones and H. J. Thomas from Winston, N. C., to go by way of Tampa, Fla.; Acting Asst. Surgeons Aristides Agramonte and Charles T. Newkirke from Washington, D. C., to go by way of New York City; Acting Asst. Surgeons Paul Mazzuri and Myer Herman from New Orleans, La., and J. F. Archer from Shelby, Miss., to go by shipping on the *Resolute* at New York City, and Acting Asst. Surgeon Domingo Lagomasino and Asst. Surgeon B. H. Kiltrell, 1st Mississippi Volunteer Infantry, to go by shipping on the *Olivette* at New York City. To the Leiter general hospital, Chickamauga Park, Ga.: Capt. Geo. M. Wells, Asst. Surgeon U. S. A., from Ft. Ringgold, Texas, and acting assistant surgeons John A. Metzger and Ira C. Brown from Washington, D. C. To the general hospital, Ft. McPherson, Ga.: Major Royce D. Fry, brigade surgeon. To the general hospital, Ft. Monroe, Va.: Capt. Francis A. Winter, Asst. Surgeon U. S. A., and acting assistant surgeons Samuel P. Cottrell and Edward J. Mayer.

Nominations by the President.—To be Asst. Surgeons: 2d Volunteer Engineers, Edward J. Barrett; 3d Volunteer Cavalry, Edward S. Grigsby; 2d Volunteer Infantry, Charles Brunning, and 3d Volunteer Infantry, William A. Chapman.

Major George Franklin Shleas has resigned from the 8th California Volunteers to accept position as brigade surgeon.

Resigned.—Major George D. Ramsey, Surgeon, 69th New York Volunteers.

Disability Existing Prior to Enlistment.—The following, providing for the discharge of volunteer soldiers unfit for military service by disabilities existing prior to enlistment, was published from Headquarters of the Army, July 16, 1898. The necessity for this was developed by the examination of men for transfer from the line of the volunteers into the hospital corps of the regular army. So many of these men were found to be physically unfit for service that a general weeding out was considered necessary:

Information having reached the War Department that, notwithstanding the medical examination prior to muster in, men have been enlisted in the Volunteer Army who should have been rejected at that examination as unfit for military service, the attention of chief surgeons is directed to this subject as one of great importance. Systematic inquiry, with a view to eliminating such men, should be made in the various regiments and other commands by the medical officers on duty with them. A board of medical officers should be appointed in each division to carefully examine and make recommendations in each of the cases submitted by individual or regimental medical officers. In every case where discharge from service is recommended it should be seen that the certificates of disability embody a statement to the effect that the cause of the disqualification for the military service existed prior to the enlistment of the man, if such is found to be the fact. Department and corps commanders are authorized to order discharges on certificates of disability, such orders to be carried out by the regimental, independent battalion, battery or detachment commanders as the case may be. Such provisions of paragraph 140 of the Regulations as are inconsistent with the foregoing, are suspended during the war.

In the examination of certificates of disability for discharge, it is enjoined upon the chief surgeons, and others accountable, to observe that there is no conflict between the reports of company commanders, medical and other officers thereon, as to whether disability was incurred in line of duty, or not in line of duty. If any discrepancies exist in this particular, every possible means will be employed to harmonize the reports before finally forwarding the papers to the Adjutant General of the Army.

PAMPHLETS RECEIVED.

A Second Contribution to the Treatment of Cancer by Injections of Alcohol. By Edwin J. Kuh, Chicago. Reprinted from Phil. Med. Jour. Annual Report of the Board of Health of Winona, Minn. Paper. Pp. 8. Winona: 1898.

Baltimore Medical College. Annual Announcement of.

Diseases of Tropical Climates: their Prevention, Diagnosis and Treatment. By T. S. Dabney, New Orleans, La. Reprinted from N. Y. Med. Jour.

Etiology and Pathology of Delirium, The. By C. W. Simmons, Philadelphia. Reprinted from Med. Times.

Gross Medical College; Circular of Information, Denver, Colo. Das Ichtlyol in seiner Verwendbarkeit f. die Schiffs- und Tropen-Praxis. By Dr. Leo Leistikow, Hamburg. Reprinted from Archiv. f. Schiffs- und Tropen-Hygiene.

Kryoline. By Eugenie Back. Reprinted from New Eng. Med. Mo. L'ichtlyol les Lymphangites de Penfance and leurs Consequences. By Dr. Moncorvo fils, Rio de Janeiro.

New and Original Method of Osteoplastic Resection of the Skull. By J. J. Buchanan, Pittsburg. Reprinted from Med. Record.

Radical Cure of Inguinal Hernia by Prof. Kocher's Latest Method. By J. J. Buchanan, Pittsburg. Reprinted from Phila. Med. Jour.

New Forceps for Intestinal Anastomosis. By Ernest LaPlace, Philadelphia. Reprinted from Phil. Med. Jour.

Observations upon the Diagnosis and Surgical Treatment of Certain Diseases of the Stomach, Based upon Personal Experience. By W. J. Mayo, Rochester, Minn. Reprinted from Med. Record.

President's Address before the So. Carolina Med. Association. By Chas. W. Kollock, Charleston, S. C.

Prostatorrhoea Simplex and Urethrorrhoea ex Libidine. By F. R. Sturgis, New York, N. Y. Reprinted from Jour. of Cutan. and General-Urinary Disease.

Pulse Medical College; 27th Annual Announcement. Cincinnati, Ohio. Relations of the People of the United States to the English and the Germans, the. By William Vocke, Chicago.

Report of the Committee on Car Sanitation. By Granville P. Conn, Concord, N. H. Reprinted from Trans. of Am. Public Health Association.

Sanitary Redemption of Havana; the Need and the Means. By George Homan, St. Louis, Mo. Reprinted from Med. Review.

Septic Perforation of the Right Internal Carotid Artery. By A. Jacobi and James Ewing, New York, N. Y. Reprinted from Phila. Med. Jour.

Tribute to Dr. J. N. Brown. By W. F. McNutt. Reprinted from Pacific Med. Jour.

Tonic and Spasmodic Intestinal Contractions with Report of Cases; Two Interesting Cases of Intestinal Resection with End-to-end Anastomosis. By X. O. Werder, Pittsburg, Pa. Reprints.

Ueber die Anwendung des Ichtlyols bei Augenkrankheiten. By Dr. M. Ebersohn, Tarnow. Reprinted from Klin-therap. Woch.

Woman's Medical College of Baltimore. Announcement and Catalogue.

Woman's Medical College of the New York Infirmary for Women and Children. Annual Catalogue and Announcement.

Woman's Medical College of Pennsylvania. Catalogue and 49th Annual Announcement. Philadelphia.

CHANGE OF ADDRESS.

Burroughs, H. S., from 6200 Penn to 301 N. Highland Avenue, Pittsburg, Pa.

Branlton, G. A., from Chino, to Oxnard, Cal.

Campbell, T. F., from Belle Fourche, S. D., to Springview, Neb.

De Witt, Dr., from 1643 Polk to 1196 Kentucky Street, San Francisco, Cal.

Faukboner, A. V., from Fairmount to Summitville, Ind.

Ferguson, C. J., from 574 South Fremont Street to the Denison Bldg., Denver, Colo.

Fithian, J. W., from Camden to Sea Girth, N. J.

French, E. H., from Piqua, to Glendale, Ohio.

Grieger, H., from 3132 Boulevard to Cheesman Block, Denver, Colo.

Gilbert, B., from Denver to Durango, Colo.

Gordon, H. S., from Tombstone, Ariz., to 2508 South Flower Street, Los Angeles, Cal.

Gillmore, R. J., from Denver, Colo., to 460 E. 63d Street, Chicago, Ill.

Hannan, J. C., from Hoosick Falls to Port Chester, N. Y.

Keen, E. J., from Denver to Longmont, Colo.

Klein, M. J., from 1128 Washington Boul., to 823 Lincoln Avenue, City.

Loeb, L., from 371 Center Street to Claremont Bldg., Chicago, Ill.

Palmer, V. R., from New Castle to 209 Penn Street, Braddock, Pa.

Swartz, T. B., from 77 39th Street, to 3543 Cottage Grove Avenue, Chicago.

Sterrett, J. K., from 6200 Penn to 122 Collins Avenue, Pittsburg, Pa.

Valentine, L. P., from Western Union to Somers, Wis.

Wiggins, O. C., from Kingstone, R. I., to Keysville, Va.

LETTERS RECEIVED.

Ashton, A. S., Piqua, Ohio; Ambrose, O. A., St. Louis, Mo.; Applegate, J. C., Bridgeton, N. J.

Beard, R. O., Minneapolis, Minn.; Bufkin, C. W., Runnells, Iowa. Battle Creek Sanitarium, Battle Creek, Mich.; Baker, H. B., Lansing, Mich.

Cheate, C. M., Buda, Ill.; Caldwell, J. J., Baltimore, Md.; Clark, L. Pierce, Souey, N. Y.; Carrow, J. F., Marion, Mich.; Critchlow, J. F., (Mrs.) Salt Lake City, Utah.

Davidson, F. B., Fleetville, Pa.; David, E. L., Louisville, Ky.; Dexter Folder Co., Pearl River, N. Y.; Dewar, J. B., Cedar Springs, Mich.; Davis, L. W., Knoxville, Tenn.

Eshner, A. A., Philadelphia, Pa.

Graef, Chas., (2) Sandusky, Ohio; Gage, W. V., McCook, Neb.

Hamill, J. R., Chicago, Ill.; Hotz, F. C., Chicago, Ill.; Hektoen, L., Chicago, Ill.; Hawkins, T. H., Denver, Colo.; Hausheer, W. V., Detroit, Mich.; Hodges, J. Allison, Richmond, Va.; Holmes, Bayard, Chicago, Ill.

Hirth, Geo. J., Milwaukee, Wis.; Hoffman, D. S., Lake City, Colo.; Haggard, W. D., Jr., Nashville, Tenn.

Kanll, W. M., Princeton, Ill.; Knapp, M. S., Trenton, Mich.; Knight S. Helen, New York, N. Y.

Lea Bros. & Co., Philadelphia, Pa.

Moore, H. C., Beville, Texas; Metcalf, Wm. F., Detroit, Mich.; Manitou Mineral Water Co., Manitou, Colo.; Montgomery, A. B., Reynolds, Ill.; Murphy, J., Sherman, N. Y.

N. Y. Post-Graduate Medical School and Hospital, New York, N. Y.

Philadelphia Medical Publishing Co., Philadelphia, Pa.; Paquin Laboratories, St. Louis, Mo.

Rush Medical College, Chicago, Ill.; Roosa, D. B. St. John, New York, N. Y.

Simplex Lamp Mfg. Co., Brooklyn, N. Y.; Shastid, T. H., Battle Creek, Mich.; Smith, Kline & French Co., Philadelphia, Pa.; Spring, Edwin H., Gloucester, Eng.; Stedman, A., Denver, Colo.; Schuster, Ed. & Co., Milwaukee, Wis.

The Maltine Co., New York, N. Y.; Talbot, Newton, Boston, Mass.; Tulcy, H. E., Louisville, Ky.

Vaux, F. Leonard, Ottawa, Ontario.

Walker, H. D., Detroit, Mich.; Whitehead, W. H., Atlanta, Ga.; Walling, P. A., Park Rapids, Minn.; Winslow, J. R., Baltimore, Md.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, AUGUST 6, 1898.

No. 6.

ORIGINAL ARTICLES.

A CONSIDERATION OF FOUR CASES OF EPILEPSY WITH REFERENCE TO CAUSE.

Presented to the Section on Practice of Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., July 7-10, 1898.

BY CHARLES S. BOND, M.D.
RICHMOND, IND.

It sometimes happens that a consideration of much worn subjects is profitable, and I therefore ask your indulgence for a few minutes to a subject, which is as old as any, in medicine, and which has profited as little as any, by the experience of past centuries. Undoubtedly the cause of this tardy progress is due in large measure to the multiplicity of irritations, which directly or indirectly produce the cortical explosions. Barring traumatic causes of direct influence, the study of peripheral sources of irritation is most interesting and fraught with the most lasting results. It is to this side of the study that the cases, selected out of a large general practice, are intended to be added.

□ *Case 1* is that of a little boy nine months old, who had his first epileptic seizures when but three months of age. The parents of this child are free from all influencing hereditary diseases; are not of neurotic temperament, and have neither of them ever manifested any tendency to epilepsy. Child cut two lower incisors at three months of age. Had no enlargement of head or abnormal curving of bones of spine or extremities. Has no organic disease of kidneys or liver. Was born under my care without instruments and being the sixth child, labor was easy. Child has never received any injury to head. Bones of skull do not overlap, nor are they in any way malformed. Child has never had any of the exanthemata, or other serious diseases, other than the one under consideration. So far as can be determined it has not inherited syphilis or tuberculous tissue. No intestinal worms were passed either before medication or afterward. It weighed about ten and one-half pounds at birth and increased its weight to eighteen pounds at the end of three months. Since this time diet has been limited and child now weighs about twenty-two pounds. It had never taken drugs of any kind until day of first fit, and had not been sick, in the belief of parents. Mother is a large, healthy woman, who had successfully nursed through babyhood four other healthy boys. Milk upon examination was found normal after child had first fit. Child was allowed during holidays to eat largely of candy and crackers for three or four days. At the end of this time the first seizure came on about seven o'clock in the morning, after a restless night. When called I supposed I had one of the numerous phases of convulsion so often noted in children. As I did not see this attack, was only permitted a description of it, which was to the effect, that child turned its head to right side, while in mother's arms, and began jerking the arms, then the head, and finally the whole body. Eyes were partially open, and eyeballs rolled upward with irregular motion.

At time of visit which was about one-half hour after seizure was over, which they said lasted about ten minutes, I found child still unconscious. Pulse 120. Temperature normal, skin moist. Pupil of eyes dilated, with balls turned upward. I advised a brisk cathartic of citrate of magnesia, and returned the

same evening to learn the child had gained consciousness in about one hour, was restless under influence of previous experience, and cathartic. Bowels had moved three times and stools contained large quantities of fermented milk and pieces of undigested crackers. Child had still no fever or other evidence of organic disease aside from symptoms detailed. During the day following child developed a condition of larynx which excited both curiosity and fear. Often, but not always, when the child would undertake to drink or cry, the larynx would be thrown into a tonic contraction which would last one-half minute and be accompanied by the most violent efforts at inspiration, the face becoming livid and very anxious until relaxation came on rather slowly and relieved. No loss of consciousness seemed to accompany these movements, yet within the same day child would often, some ten or twelve times, fix its eyes upon some object, or stare into space, without parents being able, for a short time, to attract its attention. These two evidences of petit mal have continued with more or less frequency for the past four months, while but four attacks of the heavier type have occurred, and these have been on two occasions accompanied by errors in diet by indulgence of parents. Am thoroughly convinced that the cortical explosions are induced by the toxic influence of fermenting food in the alimentary canal. It would seem to be the general effect, yet not being able to obtain urine from so young a child, it can not be definitely affirmed, that some end products might not have had also their normal lines of cleavage disturbed, with consequent leucomaine poisoning. Limiting the diet, opening the bowels, and promoting good digestion have still further argued, by much improvement in the direction of this conclusion.

Case 2.—Boy 6 years old. Had his first epileptic seizure when seven months of age. As I did not see him until he was 4 years of age, I have been compelled to content myself with the history as given to me by the child's mother. These attacks as described by her were probably epilepsy, and occurred every month or oftener, at irregular intervals, and although constantly under a physician's care, grew worse both as to interval and severity of attack. When first seen in a convulsion three years ago the following memoranda were made: Face pallid, pupils dilated and turned upward, skin covered with profuse perspiration. No fever. Face was turned to right side, and muscles of arms in tonic contraction, thumbs being drawn into palmar surface tightly. Foamed at mouth and had bitten tongue slightly. Seizure lasted about thirty minutes, when it was succeeded by an interval of one hour of profound unconsciousness, after which he slowly regained a knowledge of his surroundings.

Father in this case has within the last four years, developed locomotor-ataxia. Is still able to attend to business. Mother at time of birth of this child had three uremic convulsions, and child was hastily delivered with forceps. No other hereditary tendencies have been transmitted to this child so far as can be learned from ancestors; child is very irritable and stammers in speech. Has never had any injury to

head, even including forceps delivery. He is about normal as to weight, active but impulsive. Eats heartily, and occasionally voraciously. Has no evidence of rickets. Has never had any of the exanthemata. Kidneys produce a normal quantity of urine, with urea and uric acid in proper proportion. The uric acid group, including xanthin and paraxanthin, was normal even following severe attacks. Fits occurred most often at night but occasionally during the day. Child had quite often during the day very unique pharyngeal contractions which were accompanied by a fixed gaze and a loss of consciousness. Radical errors in diet were often committed because of over-indulgent parents, and these errors were always marked by increased major and minor seizures. Conversely, the strict adherence to a limited diet of milk, without bromides, caused a very much longer interval, so much so that with aids to digestion there is hope that child may entirely recover from attacks.

Case 3 is that of a girl 17 years of age. Had first fit at age of 13, when she had three or four per day for an interval of four weeks. Menstruation had been established at 12 years of age. Mother healthy and no hereditary tendencies. Father now has paralysis agitans but otherwise family history is good. Girl is well developed. Weight about 110 pounds, height 5 feet, 4 inches. Has two healthy sisters, but no brothers. She has never had any serious sickness. Has had no injury to head. Can find nothing abnormal about uterus or clitoris. Has no habit of masturbation so far as careful watching can detect. In fact her history is negative except from causes that have their origin in the alimentary canal. Patient presented a model picture of gastric atony brought about in her case no doubt by prolonged habit of overloading the stomach. Physical examination and use of stomach tube disclosed a very greatly dilated stomach with consequently lowered powers of digestion, fermentation and retarded digestion being the inevitable result. This result was not mitigated even in bowels as particles of fermenting food were often passed in quantity per rectum. This was the condition at the time of first seizure. By the use of lavage twice per week and limiting the diet to one-half pint of milk every three hours for six weeks, the epileptic manifestations subsided. With but one exception this condition of passiveness continued for three years. In the meantime patient was gradually allowed a more extended diet, and after a time relapsed into old habits, when the seizures returned with renewed vigor. Most of them come on in the night, but several times she has fallen in the day time. Generally bites her tongue, and usually cries out upon the beginning of the attack. The same conditions exist as were found in the first instance, as regards stomach troubles.

I believe the source of irritation is also sharply defined in this case, and hope can be expressed in her case in my judgment. This last invasion has existed now about five months, with fewer attacks all the time. At first of period three or four attacks occurred daily while now only one a week. One curious fact which I think worthy of mention in this case was observed, and that was that when bromid of sodium was given it so disturbed the stomach that attacks were increased; at the same time she had aphasia, stammered, and could scarcely express her thoughts. This was after the use of forty-five grains per day for eight days. When drug was discontinued symptoms cleared away again. This was repeated three times with the same results, so that I feel confident of the observation.

Examination of urine in this case showed slightly diminished quantity of urea for twenty-four hours but no other abnormal products. Uric acid normal, paraxanthin only a trace, for four litres of water.

Case 4.—Young man 27 years of age. Family history good, on side of both parents. Has never been sick except during childhood. Has never received any severe injury. Was well born but has neurotic temperament. Has no organic disease of kidneys, liver, spleen, heart or lungs. Mentally quite bright and has no defects of special senses. Urine shows no abnor-

mal products in large quantities. Ten years ago while in school had first fit. After this had most of seizures at night about one or two months apart. About five years ago they had attained an average of one every two weeks. Has no petit mal, but says he can feel the approach of the attacks some time before they come on, by a peculiar nausea and hot sensation in epigastric region. This patient for six years had been under treatment of very competent specialists without relief. Bromid of sodium, and in fact all the bromides had been tried without limiting disease more than a short time.

A careful study of this patient four years ago, revealed the following facts, other than those before mentioned. Was very tender in region of epigastrium. Had dull, with occasional sharp pains in left side, augmented about one hour and a half to two hours after eating. Had a voracious appetite for food rich in carbohydrates, ate rapidly and failed to masticate his food properly, and went at once into active physical labor. A test meal, after one and one-half hours revealed a plus quantity of HCl, showing abundant remnants of the carbohydrates with absence of albumen and muscular fibers as revealed by the microscope. This condition was most marked at night, and it was at night that he had the epileptic seizures. I therefore, omitted all bromid salts, and recommended lavage before bed time—about two and one-half hours after evening meal. Used four drams of bicarbonate of soda to quart of hot water. Restricted diet to conform to these facts, using magnesia once a day to evacuate bowels. On this plan patient went five months without an attack. Interval of seizure has grown longer steadily, until it has reached nine months, and it is to be hoped that interval will increase indefinitely.

It will be observed that these cases represent great variety as to age. They include three boys and one girl, but they all have something in common, some form of irritation originating in the alimentary canal, causing, according to the best of belief, a cortical disturbance which in turn produces unconsciousness directly and reflex tonic and clonic spasm of peripheral muscular fibers. This analogy has been sought from a number of cases under observation, because of the stronger proof that such cases are to have upon the more extended knowledge of peripheral irritants in epilepsy, a fact which neither therapia nor many bright minds in the profession, are wont very rapidly to appreciate. Whether we believe in the causative influence of uric acid, or leucomain products from this group, or whether confidence is given to the total toxic effects of maldigestion, the fact still remains that a very strong relation exists between these products, and those cortical disturbances seen in the various forms, of so-called idiopathic epilepsy. Other sources of extrinsic irritation are numerous and have received due credit in most instances long since, while this more obscure field, and therefore all the more interesting one, still presents much for careful study, in the differentiation of such irritants. If the rationale of this phase of the disease is, therefore, that irritants from the digestive tract, through the blood, come in contact with the cortex, thereby evolving a constant or intermittent efferent current in like manner controlling the muscles, it would seem the highest service to such patients must come in the prevention of these products from entering the blood current. Under this view it is difficult to understand how the bromid salts can do more than palliate and thereby perpetuate an evil which is quite removed from the drugged cortex. Indeed, I shall venture the opinion, that in many of these cases, in the end the bromids do much more harm than good. In the first place by suppressing to a certain extent the evidence of an evil, which at that period is the most amenable to treatment, and in the second place by injury which these drugs often have upon the already diseased digestive tract, and lastly, the unusual effect which sometimes occurs to the cortex itself.

DISCUSSION.

Dr. C. G. STOCKTON—I have seen cases belonging to the class of cases the doctor has described so well; when I state that I state about as much as I can add to the discussion. I have seen cases of epilepsy in which the convulsions disappeared and there was no return. I have seen other cases in which the convulsions disappeared, but find only a temporary improvement, with a return of the seizures. My own opinion is that, first, many cases can be relieved by proper attention to the gastro-intestinal tract. Secondly, that in many cases there may be some improvement by aiding digestion. Thirdly, that there are many cases in which there is no improvement as far as can be found out.

Dr. LOCKARD of Colo.—I should like to call attention to some rational causes that existed in a case that I had recently. On the 12th of May last I was called to see a child, 2½ years of age; the messenger said the boy was about to die, for he was in convulsions. Upon arriving at the home of the child I found the child had epileptic seizures. I inquired into the causation or the history, and I elicited the fact that on the paternal side the great grandfather had been subject to epilepsy since childhood, he was then 64 years of age, and the attacks had begun in early childhood; when about middle age he moved to Colorado, when the attacks became less frequent. I further learned that one or two other members of the family, also on the paternal side, were victims of epilepsy. I therefore felt reasonably certain of the hereditary conditions being present. But to make sure that there could be no mistake in the diagnosis, and that it might possibly be a case of poisoning, because the attack came on so suddenly, the child being perfectly well all its life, I gave a hypodermic of apomorphia and I soon got the stomach contents. The attack had come on soon after dinner. The contents contained some blood that had been swallowed; nothing else was found. The child soon rallied, and the next two or three days was apparently as well as ever. It seemed to be a case of hereditary epilepsy. It was also discovered that the child had a phimosis, but because micturition was not difficult, an operation was refused. Here was found two pretty rational causes for the attacks. After the second day the child began to be restless and irritable; he would rouse from his sleep suddenly, and he grew gradually worse. The parents then called me in again, and I found symptoms of meningitis. On the following day there were more symptoms of meningitis, and in the course of twenty-four hours it turned out to be a typical case of tubercular meningitis—typical in every respect. The child grew worse, Cheyne-Stokes respiration appeared, and the signs were as typical as I ever saw. The child died three weeks after the epileptic attack. Here is a case in which we had two apparently rational sources to draw from. Yet the resulting subsequent course proved the attack to be due to tubercular meningitis; this should make us bear in mind that there may always be other causes of convulsions; we should especially look out for meningitis. I think in this case that the sudden development of tuberculosis brought on the attack.

Dr. TYSON—Doubtless all of us have had cases of epilepsy quite as difficult in explanation; some of them can be explained as Dr. Bond explains them, partly the result of reflex irritation and absorption of toxic substances. I remember two cases, both occurring in adults. One was in a girl, who had terrific convulsions until she was relieved of a tape-worm. Another occurred in a young man, who had convulsions for two or three years, and who was the victim of obstinate constipation. He had no attacks after his constipation was relieved. There are a few instances in which this condition is a result of Bright's disease; I am satisfied, though, that the reverse is true; that is, cases that are supposed to be due to Bright's disease are actually cases of epilepsy. An examination of the urine is important in these cases in order to settle any question. It is rare, but it does occasionally happen, that toxic substances and diabetes also may produce convulsive seizures of this kind.

Dr. ALLEN A. JONES—This paper is one of great importance and calls to mind some cases that I have had in which there has been not only the probability of auto-intoxication but occasionally a condition which gives rise to irritation of the stomach and to reflex disturbances. One case that I now have under my care and observation is that of a boy, aged 9, who had numerous convulsive seizures before I saw him. After going over the case carefully and eliminating some of the factors which might cause the convulsive seizures, I finally found a gastric catarrh with hyperchlorhydria, with gastric dilatation. After finding these conditions and placing the boy upon a restricted diet, and instructing the parents that the boy should not be allowed to bolt his food, and giving the patient HCl after meals and otherwise giving directions as to the hy-

gienic living of the child, the convulsions diminished in intensity and frequency until now, fourteen or sixteen weeks have passed, there is only the slightest evidence of disease. I never had a chance to see the case in a convulsive seizure. I am satisfied, however, that the boy should be classed as one having had epilepsy. He should be watched for several years.

Dr. SIMME of Kentucky—I should like to state in confirmation of Dr. Bond's paper, that 95 per cent. of the cases of epilepsy, whether petit mal or grand mal coming under observation have been from reflexes from alimentary causes. This is true whether it occurs in infancy, childhood or in adults. Consequently I take the position that in the majority of cases the best remedy should be the regulating of the diet in regard to quality and quantity.

Dr. ANDERS of Philadelphia—If I understood Dr. Bond correctly he advises against the use of bromids in the treatment of epilepsy. In cases connected with certain causal factors it would be proper to drop the bromids and direct attention to the removal of the cause. In cases where the gastro-intestinal canal is disturbed, the question then might come up if it would not be better to treat the case in another way. Cases may occur in your practice in which the bromids are tolerated, where there is not the slightest evidence of gastro-intestinal disturbance, here it is certainly the first duty of the physician to continue the use of the bromids as the best means to ameliorate the attacks and the frequency of occurrence.

Dr. WEST of Galveston, Texas—I understood the gentleman from Kentucky to say that 95 per cent. of the cases of epilepsy were due to gastro-intestinal irritation; if that be the case why should so many of these cases be absolutely incurable?

Dr. ALLEN A. JONES of Buffalo—I should like to ask Dr. Bond the conditions of the eyes in the cases he reported.

Dr. ROBINSON of Illinois—I am much pleased to hear the paper read. It has been my experience that the diagnosis of epilepsy in children is not always easy; it is often very difficult, because we find so many convulsive seizures in children that are not epileptic. Last winter I was called to see a child, six weeks old, and could not determine the cause of the child's convulsions. A careful examination was made and I could give no reason for the seizures until I found small boils or abscesses upon the head of the child. I came to the conclusion that the child was pyemic; the abscesses upon the child's head had existed since birth and the blood was poisoned. The treatment directed to that condition was followed by recovery. The convulsions in this case were probably due to toxemia.

Dr. BOND of Richmond, Ind.—Four cases were presented with relief of the particular cause and it was shown that they do as well without bromids, if attention be directed to the alimentary canal by eliminating the products known to be in the canal. These cases do better without the bromids.

Of course there are many gentlemen who attend cases in childhood who see many cases due to various causes which are not epileptic in any sense of the word. Every one knows what cortical disturbances are; patients come to you with a history of having had epileptic seizures for a long time. As soon as the trouble is removed the patient recovers.

ON NATURE'S CURE OF PHTHISIS AND AN EFFORT TO IMITATE IT.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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CINCINNATI.

Schlenker made a complete autopsy of 100 bodies of adults and children, subjecting the lungs, especially the apices, to thorough scrutiny, and examining minutely the mesenteric, bronchial and cervical glands. Of the 100 bodies, 66 were found to be tuberculous, and of these cases tuberculosis was the cause of death in 53 per cent., was of great importance in 6 per cent., and was latent in 41 per cent. of cases. These numbers are minimal because the examination was macroscopic, not microscopic, and because, even with the most critical examination by a special expert, concealed depots can be overlooked. A true estimate of the frequency of this infection can be derived only from tests with tuberculin. In this way, Kossel, one of Koch's assistants, who has devoted himself especially

to the study of tuberculin under Koch's personal direction, found that 2459 children at the Berlin Dispensary, tested as they came, reacted to the old tuberculin. Tuberculosis was evident in but four of these cases; in all the rest it was latent. The conclusion was that 40 per cent. of city children secrete tuberculosis in some part of the body. This test has already raised the ratio in cattle in various places from 15 per cent. to 40 per cent. No pathologist of repute will dispute the assertion that tuberculosis is present in two-thirds of mankind.

It is universally conceded that two-sevenths of mankind succumb to tuberculosis of the lungs alone. Including cases of intestinal, bone, joint and gland infection, it would be perfectly safe to raise the limit that minute amount which would bring the fraction to two-sixths. We will say, therefore, to be within the limits of perfect safety, that two-thirds of mankind are affected with tuberculosis and one-third dies of the disease. Therefore, in one-half of all the cases recovery is complete, or the disease is reduced to such quiescence as to become practically non-existent.

What is the process of cure in these cases? Nearly all the cases which have the benefit of altitude recover. There is something in altitude which in the first place gives immunity and in the second place arrests the progress of the disease. Individual cases recover also in all other regions of the earth, under all climates, with every kind of treatment, and under every variety of surrounding circumstances. There are conditions, therefore, under which patients affected with tuberculosis *must* recover, and others under which they *may* recover from the disease. What factors peculiar to altitude or common to all places may be adduced to account for these recoveries? An autopsy reveals in the cases the presence of adhesions, of nodules, of cicatrices and cirrhotic induration. The natural processes of cure would seem to be initiated, 1, by means which in some chemical way destroy the tubercle bacillus directly, as by the action of toxins or antitoxins, or 2, indirectly by sterilizing, immunizing or invigorating the soil.

Notwithstanding the great resistance of the tubercle bacillus, chlorin, carbolic acid, corrosive sublimate, the cyanides, and many other agents of great bactericidal power, destroy or inhibit the growth of the tubercle bacillus in various culture soils. None of these agents, however, is found natural in the body; therefore, they need not be considered here.

But we must bear in mind that phthisis or tuberculosis pulmonary as we see it, is not a simple, but is a mixed infection, whereby toxins are intensified through symbiosis. Certain micro-organisms antagonize, others intensify each other. The engrafting of the streptococcus pyogenes upon the tubercle bacillus produces toxins of higher degree of virulence than belong to either alone. One of the most essential factors in the treatment of tuberculosis is the prevention of mixed infection, especially with the streptococcus.

CREOSOTE.

Do we get any light as to natural processes from, or any successes with drugs? Creosote is the only drug which has held its place in the treatment of phthisis. Does it sterilize the soil and is there any such substance produced in nature? Unfortunately there is no good working theory to explain the action of creosote. Summerbrodt admits that a scientific explanation is still lacking, but maintains that creosote alters

the chemical properties of the juices of the body so that they no longer furnish a suitable soil for the tubercle bacilli, the colonies of which will not grow in it. Ludwig claims that creosote destroys the toxin of the tubercle bacillus, and Peter ascribes its virtue to the substitution of a curable hyperemia for a tuberculous hyperemia. Guttman found that in a solution of 1:4000 creosote exercises a marked inhibitory action on the growth of tubercle bacilli. It is certain that creosote in the dose in which it can be administered has no direct influence on the tubercle bacillus or on the streptococcus.

Cornet showed that the introduction of large quantities of creosote in the stomach did not prevent the development of the tubercle bacillus in guinea pigs. In the proportion of 1:100 it fails, after 24 hours' exposure, to destroy the tubercle bacillus in sputum. Sternberg found that a saturated aqueous solution does not destroy the tubercle bacillus in cultures in 12 hours. Trudeau observes that rabbits inoculated with tuberculosis and treated with creosote subcutaneously present the same lesions as control animals not so treated. Nevertheless the virtue of creosote is undeniable. It is admitted on all sides that creosote destroys all organisms that induce fermentation in the stomach without affecting the processes of digestion, and the virtues of creosote have been ascribed to the improvement of nutrition which sets in in some cases surprisingly soon. The remedy acts best in largest dose immediately after meals. Perfectly pure creosote is entirely void of toxic properties.

What would seem to lend support to the view that creosote acts by improvement of nutrition is the superior virtue of the carbonate of creosote, the so-called creosotal, the least irritating to the stomach of all the preparations of creosote or guaiacol. Pure creosotal has a syrup-like consistence and unless warmed is so thick as to drop with difficulty. As it is insoluble in water and only sparingly soluble in alcohol, it is best given in oil and milk. It exercises its best effects in doses of 40 to 60 drops dissolved in cod liver oil, or in warm weather suspended in half a glass of milk taken immediately after meals. My own experience confirms that of Gram, who finds after the use of large doses of creosotal a more rapid improvement in the general condition and of the local symptoms in a larger number of cases than after the creosote, and in a certain number where creosote fails. But as in the case of creosote itself, it may not be predicted in the individual case whether the effect will be good or not. As with tuberculin, it is necessary to try to find out. Neither creosotal nor creosote exercise any direct effect upon the streptomycosis, as neither agent will arrest or control acute hectic fever which depends upon an inundation by the streptococcus. Creosote may have some sterilizing properties, ill defined, but at the present time the conclusion is, subject to revision by enlargement, that creosote acts by improving the nutrition and thus invigorating the soil. We have no knowledge of any manufacture of creosote in the body.

TUBERCULIN.

The only natural agents of which we have any knowledge that are known to exercise an inhibitive action upon the tubercle bacillus are some of its own products, to-wit, the various so-called tuberculins which have been extracted from culture soils. These agents, which constitute the most remarkable contri-

bution to materia medica in modern times, give us the power of absolutely recognizing the disease in its very inception, and of nearly completely controlling it so long as the disease remains pure. There is nothing so subtle in medicine. Many obscure cases of failing health, of anemia, pleurisy, bone disease, are thus shown to be tuberculous, and tuberculin, further used in treatment, becomes a tonic in these cases of the very highest power. I have myself never seen any danger in the reactions of tuberculin and have never seen in any case a general reaction as severe as that which attends every vaccination. In either case extreme reactions are due to impurities, and it is interesting to know that the new tuberculin is now being prepared in solid form to obviate the evils of contamination. Tuberculin is produced in the bodies of tuberculous patients. It is present, for instance, in the fluid of pleurisy, which will give a reaction in guinea pigs. Doubtless many cases are naturally cured in this way. But for the most part the tuberculin is produced slowly and the body grows immune to it.

ARTIFICIAL SCLEROSIS.

Gross attempts at imitation of nature through the processes of cicatrization were made by Landerer with cinnamic acid and by Lannelongue with chlorid of zinc. Landerer set himself to work to convert a tissue poor in blood vessels and showing a tendency to caseation into a tissue rich in blood vessels with a tendency to form granulations and cicatricial tissue. After experimenting with a number of agents he found that cinnamic acid had the highest chemotactic properties, that is, that it would induce a migration of leucocytes into the necrotic tissue of tubercle. This process, he declared, is followed by the penetration of the mass by young blood vessels, the formation of young connective tissue, with subsequent shrinkage and contraction. In man there occurs also besides this shrinkage, calcification. Of 50 cases treated in this way 58 per cent. were reported cured, 20 per cent. improved, 4 per cent. unimproved, while only 9 per cent. of the patients died. Unfortunately, other experimenters failed to get such good results. The latest effort to secure leucocytosis by the ingestion of various nucleins, enzymes, etc., find also only individual support.

Lannelongue tried to induce sclerosis by the injections of the chlorid of zinc, finding after the introduction of this remedy an afflux of new tissue elements which infiltrated the periphery of the tuberculous mass, penetrated it somewhat and surrounded it with a fibrous wall which isolates the diseased tissue. These experiments fail, however, for the same reason as the surgical. They overlook the seat and center of the disease in the bronchial glands whence new colonies issue for new invasions of the soils.

EXPOSURE.

Nothing in art approaches the efficacy of nature in controlling tuberculosis of the peritoneum by exposure of that structure to the external air. Many theories have been proposed to account for the really wonderful results which followed this accidental discovery. But of all the theories offered, nothing is more satisfactory than the simple exposure to light and air. Many of the cases of typhlitis so happily controlled by simple incision are cases, not of appendicitis at all, but of tuberculosis of the peritoneum. Appendicitis is not as common as measles or mumps, as some of the surgeons seem to think, but tuberculosis is.

CARBONIC ACID.

An attempt at imitation of nature consisted in producing hyperemia in order to secure the effects of carbonic acid gas. As Traube showed long ago, patients affected with disease of the heart attended by hyperemia of the lungs enjoy a certain immunity to tuberculosis, as do also individuals affected with emphysema. Rokitansky had remarked before upon the exemption from phthisis secured by certain forms of heart disease. Patients with deformed thoraces, hunch-backs, are also largely exempt from tuberculosis of the lungs, not on account of the limited expansion of the chest, but because the same amount of carbonic acid gas is distributed over a smaller surface. Workers about lime ovens are said to enjoy the same immunity for the same reason. Traube therefore proposed to treat the disease by developing carbonic acid gas in the stomach with hydrochloric acid and bicarbonate of soda. It will be remembered that Bergeon, at a much later date, attempted to secure the same effect by the injection of sulphuretted hydrogen gas into the intestine. Both observers reported good results, which, however, were not subsequently sustained. The latest application of this treatment is the method of Bier, which consists in inducing artificial hyperemia about tuberculous bone and joint disease by the application of an incomplete Esmarch bandage. But this method acts only temporarily and only in individual cases.

ALTITUDE.

Is there anything which acts in all cases? There is universal testimony to the effect that altitude actually cures phthisis. It is accepted, in fact, that climate, meaning for the most part the climate of altitudes, is a remedy so powerful as, if practicable in every case, to render superfluous every other treatment. We may ask ourselves, therefore, what are the peculiarities of the climate which control phthisis?

Altitude acts in various ways. First, by dryness. High air is dry air, and dryness is inimical to the growth of the tubercle bacillus. Second, by cold. On the average the temperature falls about 3 degrees for each 1000 feet of elevation. Cold favors dryness. It is also a stimulus. It increases the tendency to sleep, exemplified best in states of hibernation, during which there is little waste. Third, by sunshine. Tubercle bacilli are killed under an exposure to direct sunlight in a period varying from a few minutes to a few hours, according to the thickness of the layer exposed, and by ordinary diffuse daylight in six to seven days. It would appear from the analogies of photography as if the germicidal action of light is due to the increased oxidation. Fourth, by increase in the quantity of ozone, the natural purifier, which has in the minutest quantities enormous bactericidal effect. Fifth, by purity, as the air becomes more and more free of organic matter, including bacteria, as we ascend. Miquel found the air of Paris to contain 55,000 bacteria to every ten cubic meters. These bacteria decreased steadily with altitude until at the height of two and one-half miles they disappeared entirely. Sixth, by rarefaction, which is the most important factor of all. The air grows lighter and thinner as we ascend, until at the elevation of Potosi, Bolivia, 13,300 feet, it is only one-sixth as dense as at the sea. The rarefaction of the air leads to increased exercise of the heart and lungs and thus to continuous, even though unconscious, gymnastics. The

dyspnea, palpitation, vertigo, which attack the mountain climber, the cyanosis and unconsciousness experienced by the aeronaut at still greater heights, depend upon insufficient oxygenation of the blood.

POLYCYTHEMIA.

Now, as there is no elevation which man has ever attained in which the quantity of oxygen in the air is not more than sufficient for the wants of the body, it was for a long time difficult to account for these symptoms, which are sometimes embraced under the term "mountain sickness," in altitudes. The explanation was finally found in the phenomena of pressure. The blood corpuscles will take up oxygen only at a certain degree of pressure. Any great variation from this degree is attended with difficulties which are sometimes serious. Bert found that a pressure of fifteen atmospheres is fatal. On the other hand, the blood corpuscles will not take up enough oxygen under a greatly diminished pressure, and nature adjusts herself to this difficulty by increasing the number of blood corpuscles and diminishing their size. The curious fact is observed, therefore, that as the flora differ at different altitudes, so do the number and size of the blood corpuscles. It was Viault who first observed that the number of red blood corpuscles was increased one-half at the height of 14,000 feet in the Cordilleras. This fact has since been abundantly confirmed, so that at the present time tables are constructed showing the number of blood corpuscles at different altitudes, ranging from 4,974,000 at Christiana, to 5,752,000 at Zurich, 1,373 feet; to nearly 6,000,000 at Reiboldsgrün, 2333 feet; to 7,000,000 at Arosa, 6000 feet; and to 8,000,000 at the Cordilleras in Peru, 14,640 feet.

Here, now, is a clue which nature gives and which should be followed up. The specific value of altitude is therefore not merely exposure to outdoor air and sunshine, though by the so-called out-door treatment or porch treatment we imitate the methods and secure the virtues of oxygenation and insolation in the greatest possible degree in low levels. But the polycythemia is an accommodation to the lessened pressure, for the same increase in the number of blood corpuscles in animals may be artificially produced by confinement in a rarefied atmosphere. Thus Raynaud put a rabbit under a bell glass jar, taking the precaution always to have two jars that the animal might be transferred from one to the other for the sake of cleanliness, reducing the atmospheric pressure to an equivalent of an elevation of 9500 feet. The rabbit remained in this atmosphere a month and a half and came out fat and healthy. Examination of the blood showed it had absorbed 21 c.c. oxygen, while its fellows at sea level had absorbed only 17 c.c. This capacity of greater absorption of oxygen was obtained in four weeks.

May we imitate this process in the pneumatic cabinet? I made a number of experiments with men in this way, but obtained no favorable results whatever. But the pneumatic cabinet may in no way compare with mountain climate. In the first place, the stay must be necessarily short. In the second place, the individual becomes contaminated by his own exhalations, as the enclosed chamber necessarily implies a defective ventilation. The experiments made hitherto have shown no increase in the blood corpuscles or in the hemoglobin and still less that increase in strength which develops so rapidly in the mountain climate.

As the virtue of the mountain climate under a combination of all the factors found in altitude seems to depend chiefly upon the increase in the number of blood corpuscles, it occurred to me to try to secure this increase in a more direct way.

TRANSFUSION.

The transfusion of blood is as old as the history of medicine. Such extravagant ideas are entertained regarding the value of it as to have led to its abuse and abandonment altogether. But transfusion is one of those things that will keep coming up. It has been revived from time to time with various improvements in the method of use, but has become practically limited in our day to the treatment of hemorrhage and to poisoning by certain gases. Thus Stocker mentions the fact that the introduction of defibrinated human blood succeeded in rescuing a case, after artificial respiration, fresh air and Faradization of the phrenic nerve had remained without effect. The writer once succeeded in the same way in recovering a patient who had been bled *ad deliquum animi* under the hemorrhage from gastric ulcer. Arm to arm transfusion, as by the direct method of Aveling or by the indirect method of v. Ziemssen, by the aid of three syringes, has been rendered practicable in expert hands. But transfusion by the amateur is not without danger, and on account of the difficulty of obtaining blood at the proper time, is limited in use. Aside from the inevitable danger of coagulation, direct transfusion, even when most successfully practiced is sometimes followed by fever, which is looked upon as a sign of ferment intoxication (Heineke). Sometimes this ferment intoxication shows grave symptoms, bloody stools, tenesmus, even sudden death by asphyxia. The occurrence of dyspnea or cyanosis should interrupt the process at once until these symptoms disappear.

The difficulty, often insuperable, of obtaining the blood of man has led to the use of the blood of the lower animals. But there could be no question of the direct injection of the blood of lower animals into the veins of man. Landois showed long ago that heterogenous blood, that is strange blood, in the proportion of 20 per cent. of the original mass causes death on the first and second day, while less than 10 per cent. produces great weariness, diarrhea, dyspnea and a tendency to real hemorrhage, vomiting of blood, extravasations, bloody discolorations of the urine. Ponfick finds that hemaglobinuria constantly occurs even after the injection of 1 per cent. of strange blood into the vessels of the dog. Landois demonstrated further that strange blood corpuscles act like foreign bodies and are rapidly destroyed. The free hemaglobin colors the transudations and the urine, and forms cylinders in the urinary tubules, destroying the urinary secretion. The horse and ass, the dog and fox, different varieties thus of the same species, may exchange blood and it is only the blood of distant animals that may be regarded as heterogeneous, lamb's blood, for instance, in dogs and man. Von Recklinghausen reported a case of transfusion of lamb's blood in man followed by death in fourteen hours. In this case there was an exquisite amyloid degeneration of the liver.

In order to obviate these dangers v. Ziemssen recommended the subcutaneous transfusion. This author, who made a large number of experiments, found this method of value in the treatment of poison-

ing by gases and in certain chronic infections. He got his best results, however, in the treatment of scurvy and pernicious anemia. The subcutaneous transfusion has the advantage of being entirely free from danger. The blood thus introduced is speedily incorporated, so that the blood corpuscles actually multiply under its use. The method has, however, the great disadvantage of being so painful as to necessitate the use of anesthesia, a fact which soon led to its speedy abandonment. v. Ziemssen succeeded, however, in rapidly increasing the number of blood corpuscles in this way.

All these experiments were made with defibrinated blood. The blood was defibrinated both on account of the difficulty and dangers attending clot formation. The great desideratum was to secure a heterogeneous blood which could be introduced into the body with all of its ingredients quickly, safely, and pleasantly. In the ordinary process of defibrination the blood is stirred with rods, and the coagulum, which contains the bulk of the corpuscles, both red and white, is removed. But it was exactly the corpuscles which are wanted in the imitation of the natural process of polycythemia. It is the increase in the number of blood corpuscles in mountain air which enables animals, in spite of the reduction of pressure, to retain the oxygen of the blood in normal degree. This process of acclimatization is usually very rapid, the increase to the normal number of corpuscles being reached in two weeks.

Although it was not to be expected that corpuscles of heterogeneous blood or even of homogeneous blood could be bodily incorporated, it was fair to assume that the ingredients, especially the oxygen and the hemoglobin might be absorbed. I wanted to get also all the bactericidal properties of the blood. Fodor showed that fresh blood destroys numbers of bacilli, the serum more rapidly than the corpuscles as it is always seen that bacteria perish more slowly in the coagulum than in the serum. It was desirable also to have the blood of the youngest animals, as older blood loses its power to destroy bacteria. The immunity of sucklings may find its explanation in this way. The blood is therefore its own disinfectant inside the body. The increase in number of red blood corpuscles in animals increases the resistance and lessens the susceptibility to experimental inoculation of disease. It had, in fact, long been established empirically that anemic people are more easily disposed to infection than others. It was desirable also to increase the number of leucocytes. The process of leucocytosis marks a period of crisis by the liberation of antitoxins. The bactericidal property of the blood which resides chiefly in the serum is derived from the white blood corpuscles, in whose cells, according to Gärtner, all microbicidal power slumbers. The dissolution of the white blood corpuscles, under the action of bacteria liberates the antitoxin which destroys the bacteria. This bactericidal power is therefore weakened by hydremia, anemia, chlorosis and hemorrhage, so that the victims of these diseases, or puerperal women who have lost blood, are more disposed to infectious diseases and suffer elevation of temperature under slighter injury. Richter-Loewy finds that the introduction of agents into the blood which produce a hyperleucocytosis, such as peptones, cinnamic acid, or spermin, fortifies or protects the individual against infectious diseases, that is, that the increase in the leucocytes brings about a cure in cases in which

the result should be fatal without such treatment. It is a question if the enormous multiplication of leucocytes in leucemia be not a conservative effort to destroy the toxins of some malignant process.

It is a fact that hyperleucocytosis occurs during the development of malignant tumors and disappears after operative removal of the tumor. It is a fact also that leucocytosis has prognostic value in that the slight development or absence of it is an unfavorable sign. v. Jaksch goes so far as to recommend the induction of an artificial leucocytosis by the use of pilocarpin, antifebrin, etc. Certain tonics produce an increase of leucocytosis, tincture of myrrh, tincture of cinchona and other bitters (Hirt) further many ethereal oils (Binz) and the intense odors of fruits and spices (Pohl). The influence of perfumes upon neuralgia, headache, etc., may be thus explained.

Schattenfroh was able to obtain bactericidal materials from the polynuclear leucocytes after freezing and again thawing. These materials are probably excreted from the living leucocytes. Bordet too finds that the leucocytes furnish bactericidal matters to the blood. This conclusion is reached by comparing the effect of the serum of an immunized animal with the edema blood of the same animal. The edema fluid has no leucocytes and no bactericidal power. The blood has leucocytes and is strongly bactericidal.

Fischl of Prague, shows that the leucocytes contain a powerful protective agent against penetrating disease, as there was a marked increase of white blood corpuscles in animals that were saved from infections over those who died. The leucocytosis disappeared almost at the same time with the bacteria of the blood from the diseased animals. As the coagulum entangles most of the white blood corpuscles, it was necessary to prevent coagulation to secure their presence.

COAGULATION.

Coagulation sets in, as a rule, rapidly, within two to three minutes after venesection, and the process is complete in seven to eight minutes. The process of coagulation is closely connected with the life of the blood. The problems connected with it have received much study and are by no means settled as yet. The whole question is too complex for consideration on this occasion, when I have to speak only of means of arresting or preventing it. It may suffice here to say that the process is initiated with the changes characteristic of the blood of the cadaver, so that it may be said in a general way that the process of coagulation represents a beginning dissolution of blood and the prevention of it with simple means, may be regarded as the preservation of the life of the blood.

Coagulation is hindered by cooling, by increase of carbonic acid gas, whence it is that venous blood coagulates more slowly than arterial blood. It is prevented or delayed also by the addition of water, egg albumin, sugar and glycerin. A mixture of the blood with trypsin or with pepton stops it. Freund found that the presence of oil prevents the adhesion of the corpuscles, which he considers to give the impulse to coagulation. Thus blood received into a vessel from which oil has been poured does not coagulate, and coagulation does not occur when blood is stirred with an oiled glass rod.

The most curious fact in this connection is the prevention of coagulation by leech bites, discovered by Haycraft. The severe hemorrhage which is sometimes encountered after the application of leeches, is

only rarely to be ascribed to the hemorrhagic diathesis, but is much more frequently produced by the peculiar principle found in the front part of the body and secreted in the mouth of the leech. After the injection of the extract of the leech into a vein, the blood which flows from the carotid artery coagulates only very slowly at the end of an hour. At a still later period the coagulability of the blood becomes more normal because the substance which prevented coagulation escapes through the urine. Landois extracted this principle as a clear, slightly alkaline fluid and experimented with it on a large scale. The extract of the leech head does not injure the red blood-corpuscles, and it has been proposed to utilize the solution in small quantities in the prevention of thrombosis. v. Sahli, and associated with him, Aguet, showed that the thrombi usually formed by foreign bodies introduced into the circulation are hindered in their formation by the extract of leech. The possibility of utilizing this serum, especially in heart disease in which there are thrombi and infarctions, will depend upon further experiments upon animals. The exact nature of this principle is not established, though it is known not to be a ferment, as boiling does not destroy it. The poison of snake bites, especially that of the viper, contains the same principle.

The bite of many poisonous snakes, with the exception of the cobra, induces a permanent fluidity of the blood. The blood serum of different varieties of eels (Muränen), according to Mosso, 1888, delays or prevents the coagulation of the blood of warm-blooded animals. Snake bites poison the blood, while leech bites do not hurt it. The leech extract destroys the fibrin ferment without perceptible alteration of the blood, and the injection of it into the veins of a living animal stops coagulability without producing a toxemia. Anything like a long duration of the effect is hindered by the fact that the substance is speedily eliminated by the kidneys.

Leeches are sold with us at the rate of twenty cents each. Although the amount of material furnished by a single leech would prevent the coagulation of a considerable amount of blood (I have not yet determined the exact amount), the expense of securing leeches for copious or frequently repeated transfusion would prove an obstacle to their use. It is probable that if equally effective means had not been found, a larger demand might have secured supply at cheaper rates.

Various drugs and chemicals have the same effect. Thus Horne found that the soluble salts of calcium, strontium or barium delay or prevent the coagulation of blood in the proportion of one-half per cent. Barium are stronger than strontium salts, and these than lime. Chlorid of barium distinctly delays coagulation in the proportion of one-fourth per cent. Chlorid of sodium, chlorid of calcium in 0.07 per cent. and over, still more delay the coagulation of blood treated by the above-mentioned salts. It has long been known that oxalic acid and the oxalates prevent coagulation. I have found in my observations that five grains of the sodium oxalate would prevent the coagulation of a pint of blood. But oxalic acid is poisonous. The sodium oxalate as prepared for me by Mr. Fennel, contains oxalic acid in the proportion of 30 per cent. The largest fatal dose of oxalic acid recorded by Taylor is sixty grains, so that this small quantity is not dangerous. In fact, in

my observations no unpleasant effects of any kind were ever observed after the use of the sodium oxalate. I have been led to abandon this preparation, however, by the observation that the blood could be kept fluid by a number of agents, each of them constituents of the blood and therefore each of them articles of nutrition. These various agents are in common language common salt, the bicarbonate of soda and the sugar of milk. Thus a teaspoonful of common salt, two tablespoonfuls of soda and a tablespoonful of sugar of milk will keep a quart of blood fluid long enough for all practical purposes.

ALKALESCENCE.

The chlorid of sodium itself has a tendency to prevent coagulation. It also distinctly favors the hemopoietic process. The soda makes the blood additionally alkaline, and alkalinity favors additional bactericidal properties. It also favors osmosis. Alkalescence is one of the most important properties of the blood. It diminishes in anemia and cachexia and increases with improvement. The experiments of Calabrese showed that the alkalescence of the blood protects the body against the injurious effects of toxins. Alkalescence is connected with leucocytosis. Jacob holds it not improbable that the increase of alkalinity is due to a leucolysis. Bonne believes that increase of alkalescence increases resistance to the poison of bacteria. The alkalescence of the blood stands in close relation with carbonic acid gas. Krauss showed in unison with others that a high acidity and a remarkably low alkalescence is found under a great reduction of the CO₂ contents of the blood. The virtue of carbonic acid gas may find explanation in this way. Fever reduces alkalescence. Behring finds that the stronger alkalescence of the blood (corresponding to the greater amount of CO₂) of white rats furnishes immunity to milzbrand. So everything which has a tendency to drive out the CO₂ or to fix it in combination, limits the bactericidal property of the blood. Thus there is after all scientific basis for the carbonic acid saturation, and effervescent drinks are something more than merely grateful drinks to fever patients. Krauss demonstrated that while the urine in health became alkaline after the exhibition of two to eight grams of bicarbonate of soda, alkalinity occurred in fever only after the exhibition of twenty to thirty grams.

v. Fodor found that the blood of rabbits has much stronger bactericidal properties after the injection of an alkali, and finally reached the result in his experiments that the organism reacts to certain pathogenic infections with rapid increase of alkalescence, which is followed by a greater or less reduction of it. If the infection is fatal, this reduction is pronounced and progressive; if it is not fatal, or less marked, the alkalescence increases anew and may exceed the original degree, the animal becomes more resistant to the bacteria which caused the infection. Neumann showed that an artificial reduction of the alkalinity of the blood lessened the resistance of the animals to infection, and Fodor demonstrated that the increase of alkalinity under the use of the mineral alkalies increased the resistance, so that it could be said that the degree of alkalescence in the blood destroys the susceptibility of animals to certain infections. According to Poehl, artificial immunity which is carried to great height by successive inoculations after the method of Behring, finds its explanation in the arti-

cially induced leucocytosis with a simultaneous increase of the alkalescence of the blood. Fodor and Riggler in continuing their experiments showed that the alkalinity of various infections, including tuberculosis, increases under immunization, so that the alkaline co-efficient of the blood serum stands in direct relation to the degree of protection. Thus the degree of alkalescence has great practical value as showing the effect of the immunization, antitoxic treatment, etc., and as showing the power of the body to overcome infection. Fatigue diminishes this alkalescence and renders the individual susceptible to infection. Loewy and Richter showed also that the cooling of the body is attended by a simultaneous reduction of the leucocytes and of the alkalescence of the blood, and explain in this way the contraction of disease under what is called by the laity the process of "taking cold." What is more to the point with us at this time is the observation of Bonne, who found that the reduction of alkalescence under cold, remarked by Loewy and Richter, was attended with an increased coagulability of the blood. The fulminant character of certain diseases has been ascribed to a constitutional reduction of alkalescence.

Finally I added sugar, because the various sugars, especially the sugar of milk, all delay the process of coagulation. Besides, the sugar of milk has high nutritive value and makes but little demand upon the digestive juices.

The addition to fresh blood of salt, soda and sugar of milk adds nutritive principles, preserves the corpuscles, red and white, intensifies the alkalescence, prevents coagulation and prolongs the life of the blood. Thus the first part of the question was solved.

HOW TO INTRODUCE IT.

The next problem, the method of introduction, which seemed to be the most difficult, turned out the most easy. The nutritive properties of the blood are so well recognized as to be appreciated by the laity, and it is the custom in some countries, especially in France, but also to some extent in our own country, much wider than is commonly believed, to drink blood fresh at the slaughter houses. Sometimes patients stand in rows waiting their turn, cup in hand, as at mineral springs. The drinking of blood, however, is nauseating to many people. It is objectionable also because the blood coagulates in the stomach, forming a mass which may even fatally interfere with the action of the heart. Blood ingested in this way has, in comparison with other equally nutritious food, no advantage, but on the contrary much disadvantage. Recent studies go to show that the principles of blood are not disposed of in the stomach, but must be discharged into the intestine to be digested and absorbed.

It occurred to me, therefore, to introduce the blood directly into the intestine, and after some slight experimentation it was found to be perfectly easy to inject large quantities of fluid blood high into the intestinal canal. The injection may be made with the common fountain syringe or the bulb syringe, but is easiest and best effected by pouring it into the funnel and tube of the common stomach tube, which is easily pushed into the rectum to and beyond the sigmoid flexure. If the fluid is now poured slowly, a large quantity of blood may be carried into the colon so that much of it will pass the ileo-cecal valve to reach the small intestine. This injection is much

more bland and unirritating than the same amount of water, and is easily retained by all patients in the absence of any ulceration or deep congestion of the rectum. There is not the same desire, therefore, to discharge the fluid as in the case of a similar amount of water; not so much even as attends the injection of the same amount of olive oil. The injection is best taken at night with the patient lying upon the left side, and after the injection of it the patient should lie fifteen minutes further upon the back and fifteen minutes upon the right side, that the fluid may find its way throughout the colon.

I direct my patients to add a teaspoonful of salt, two tablespoonfuls of soda and a tablespoonful of sugar of milk to a pint of boiled water, and to pour one-half of this quantity into a clean glass jar, requesting the butcher to add to it one pint of fresh calf's blood. The fluid should be injected at once, or if this is not practicable, the jar should be put upon ice and the contents used within twelve hours. In no case should the fluid be heated, as heating favors coagulation and dissolution of the blood. This quantity should be introduced every night; in bad cases twice a day, morning and evening, and in all cases the bowel should be previously washed out with a simple injection of water. As a rule, to which there are many exceptions, the blood is entirely absorbed, so that often not even a trace of it is found on irrigating the bowel on the following morning.

The idea of using blood is so natural, the process is so simple and the results in many cases are so striking as to have led me to look up the literature to discover any former use of it in this way, and if so, the reason of its abandonment. For in all the recent studies concerning nutritive enemata, no mention is made of the use of blood. I find in the literature that Andrew H. Smith, of New York, first suggested and reported the use of *defibrinated* blood, in the *New York Medical Journal*, 1878, and that further reports were made in the Proceedings of the Therapeutic Society of New York and the New York Archives of Medicine of the same year. I learn further that A. Earnest Sanson made a report upon the use of blood clysters after the method of Andrew H. Smith, in the *London Lancet*, February, 1881. These were the first therapeutic suggestions. The report of Smith is based upon sixty-three cases, including thirty-eight of tuberculosis. In eight of these cases the blood could not be tolerated on account of irritability of the rectum or colicky pains. Ten cases remained uninfluenced by the treatment, or the improvement which showed itself had begun before the use of it. In twenty cases the good effect was distinct and was marked by increase of appetite and speedy disappearance of night sweats and diarrhea, lessening of cough, and especially by gain in weight. This treatment, however, was carried on in connection with the use of cod liver oil, brandy, expectorants and various remedies in address to the different symptoms. Nevertheless, distinct advantage could be ascribed to the injections, as after interruption of them the patient grew worse, but on resumption of them began immediately to improve and gain in weight.

The most striking results were obtained in cases of great impoverishment of blood. Eight cases of anemia of high degree were entirely cured. Five cases of dyspepsia from various causes experienced great improvement and were finally cured, including

one of chronic asthma. Two cases of exhaustion were markedly benefited, one after fistula and one after dysentery. One case of uncontrollable vomiting from ulcer of the stomach entered the hospital unconscious and apparently moribund. Clysters were given of pure blood while brandy and milk were given internally. The patient recovered consciousness completely on the next day, was soon able to take food into the stomach, and left the hospital cured in five weeks. The conclusion was that nourishment could be introduced in this way better than in any other, and that there was no danger in the method, though continued for weeks.

Hanks reported a case in which a patient who suffered from uncontrollable vomiting after hemorrhage from the uterus, was sustained by blood clysters until the stomach could retain its nutrition; Brown, a case of paralysis with threatening inanition in a child aged two years, in whom clysters of dried ox blood were used and perfect recovery was accomplished. Sansom reported two cases, one of gastralgia in a boy who could take no food, in whom there was retention of urine, blood and pus in the urine, inflammation of the ureter, probably from oxalic acid stone. This patient received four ounces of blood, at first once a day and later twice, gaining gradually in weight as the stomach recovered its tone. Another case of gastrectasia marked by extensive purpura, violent pain, vomiting and great anemia was recovered under the use of blood clysters twice a day, improvement beginning as early as the third day.

Möller in his report in the *Deutsche Med. Woch.*, Vol. vii, pages 45 and 46, communicates the experiments made by Mosler in the Griefswald Medical Clinic. He showed that while a part of the blood was rejected, a certain quantity was always absorbed. A woman aged 55, suffering with chronic enteritis, marked by great anemia, received every day for four weeks injections of five ounces of blood, the condition improving continuously. The number of blood corpuscles increased from 1,804,000 to 1,865,000. A second patient, who had twice suffered an attack of pneumonia, was now affected with extreme anemia from frequent nose bleed and hemorrhage from the bowels. This patient, edematous about the legs and face, with enlargement of the liver and albuminous urine, showed all the symptoms of anemia of the brain. Blood clysters, five ounces, were injected daily, the weight increasing from 119 to 124 pounds, the blood corpuscles from 960,000 to 1,136,000. Although in a third case the nutrition was sustained entirely in this way for one week, it did not seem to be determined that life could be supported indefinitely by these injections.

The experiments of Mosler were made with swine's blood, those of Smith, Sansom and others with ox blood. It will be seen that these observations and experiments were quite different from my own. In all cases the quantity was small, four to six ounces, and in all cases the blood was defibrinated. I used blood with all its ingredients, and instead of subtracting from it by the removal of any of its elements, I added to it principles of great nutritive value, salt, soda and sugar of milk, which served also the additional purpose of increasing the alkalinity, preventing coagulation, facilitating absorption, and above all things, prolonging the life of the blood. Further, the quantity which I used was four to six times as great as in previous observations, the easy retention of the

larger amount in the great majority of cases being due to the blander character and to the deeper introduction of the nutritive fluid.

In my experiments I have lost a good deal of time in determining the best agents for preventing coagulation, so that I am able to report upon but twelve cases of phthisis and one of apparently pernicious anemia. I make this statement, therefore, only as a preliminary report. In two of the cases there was considerable difficulty at first in retaining the fluid. In all the rest the blood was held without effort. The patients without fever or with but slight fever showed a continuous gain in weight, but patients with high fever showed no improvement, and in one case of severe hemoptysis, under the charge of my assistant, Dr. Malsbary, the number and frequency of the hemorrhages remained uninfluenced. In fact, the fear was entertained that the injection of blood sustained the hemorrhages, but no improvement followed cessation of their use. The most decided change was seen in the cases of anemia, one of which—a seemingly fatal case of apparently pernicious form—after failure with iron, arsenic, and later mercury, gained twenty pounds in three weeks under the blood clysters alone.

The cases of phthisis marked by anemia were the most benefited and the most rapidly, registering gains in several cases of two to three pounds a week. The bactericidal virtues I had hoped to secure were by no means so pronounced, but the gain in nutrition fully equaled expectation. I can commend these blood clysters as far exceeding in nutritive value any other as yet devised. They are also, as a rule, better borne.

SOME USUALLY OVERLOOKED PHYSICAL SIGNS AND SYMPTOMS IN CHEST DISEASES.

Presented to the Section on the Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The tendency of the mind of the young doctor, and some times of the older one, is to look for the classical and typical changes in all chest diseases. He knows well what ideal bronchial breathing is; what râles are and the different sorts; what pectoriloquy, egophony, amphoric sounds and metallic tinkling mean. He knows flatness on percussion and dulness when marked; and cracked-pot percussion sound with open-mouth breathing. And if these or a combination of them are found in any case, diagnosis is supposed to be thereby relatively easy.

In our early studies we learn to look for these signs, and are disappointed sometimes when the symptoms have led us to expect to find them and we do not find them. Failing to discover them we sometimes wholly fail to detect other ample physical signs, that are however less prominent and pronounced. The descriptions in the text-books have given us these and similar classical signs as they are found in their perfection, and we are liable to dwell on them so fully that anything short of their ideal manifestation we pass over and hardly notice. This is one of the faults of our usual method of study which is to consider the sick from the standpoint of the classical description of the different diseases, and try to find the right picture to fit each case, rather than from the clinical standpoint

of the symptoms and signs which the patients as they come to us actually have.

In certain lung diseases, notably tuberculosis, it is of the greatest moment to be able to make an early diagnosis. Many a patient, who must otherwise die, could be helped if the diagnosis were made early, and before the different or any of the classical physical signs are completely developed. To do this we must invoke several aids and tests not usually thought of. We must learn to detect slight changes from the normal conditions, the first intimation of those variations of sounds in auscultation and percussion that progressively develop into classical signs. The doctor who examines his cases critically sees forty-fold more of them having these slight changes, than of those which show the ideal signs.

Pulmonary tuberculosis, fortunately for this study, is usually unilateral at beginning, and so we have early a normal side of the body for comparison. By examining the two sides critically, and comparing them with each other repeatedly, it is often possible very early to detect alterations that point unmistakably to lesions that are progressing. We perhaps find on one side a slight lessening of the force and loudness of the vesicular murmur on inspiration. Or there is a slight increase in expiratory sound at first without a particle of the quality known as tubular. Can we hear the expiratory sound better on one side than on the other? If so, there is an abnormal condition in one lung, either where the sound is louder or softer, of course always making allowance for the slight disparity in sounds between the two apices. Later, if the change progresses actual tubular breathing may be heard, at first with so little of the tubular quality that it can barely be perceived.

The two sides should be gone over everywhere carefully, and corresponding points of the two critically compared, to see if any anatomic region can be found where there is even a slight difference between them in: *a*, length of the inspiratory sound; *b*, intensity of the normal vesicular quality of that sound; *c*, length of the expiratory sound; *d*, intensity of this sound and the elevation of its pitch above what is normal; *e*, vocal fremitus on the uttering of words that cause an extreme degree of vibration, as *ninety-nine*, and *f*, the transmission to the auscultating ear of the ordinary voice and soft whisper. Râles should be searched for in deep inspiration with profound expiration and on voluntary coughing. Tuberculosis usually begins in a circumscribed region of one lung, and is often first seated in the bronchial mucous membrane. If there is any tendency to recovery, any conservative power, it soon causes a deposit of adventitious fibrous tissue (fibrosis) through contiguous lung tissue, which invariably changes the physical signs and in the way indicated, only a slight change being perceptible at first and the signs being most changed nearest the focus of the disease, and shading off toward normal sounds farther away.

Finding any of these slight changes we should carry our comparison of the two sides to other regions, all over the lungs, and find where they are most evident. That will be nearest to the focus of the tuberculosis if this disease is present. If a deposit exists in an apex, fibrosis will spread from that point. The back is the best region for comparison of the two sides. Listening over the lower zone of the lungs posteriorly the sounds are absolutely alike and normal on the two sides; as we rise step by step, listening over every

half-inch vertically and changing the stethoscope repeatedly from one side to the other we soon strike a zone, perhaps at the lower angles of the scapulae, where we can barely perceive that on one side the vesicular murmur on inspiration is a trifle less pronounced and the expiratory sound perhaps a trifle more so and longer than on the opposite side at the corresponding point. One inch higher up this disparity is, while apparently not more marked, yet slightly more perceptible, which means that it must be more marked. Above this level the difference is progressively greater; the vesicular murmur is, as we ascend, growing less and the expiratory sound greater, louder, longer and stronger, and soon higher in pitch. Perhaps near the spine of the scapula the expiratory sound is longer than the inspiratory, and is definitely tubular and has a pitch perhaps as high as the inspiratory sound. Over the seat of the deposit, if the bronchi are not closed by phlegm or otherwise, this tubular breathing is most striking, and is ideal if the deposit is extreme; at the same time the vesicular murmur on inspiration may be nearly gone. But if the deposit or thickening of the connective tissue is slight, the most pronounced change in the sounds does not reach an entire ablation of the vesicular murmur on inspiration, nor is there any ideal bronchial breathing, but only a slight increase in the loudness and length of the expiratory sound.

As the expiratory sound increases in loudness and rises in pitch there is always, other things being equal, a corresponding increase in the vocal fremitus over the region, as well as in the transmission through the chest wall of the voice in phonation and whisper. With patulous tubes these sounds increase in loudness if not always in distinctness, as the solid substance of the breathing organ increases in mass. For the interest of the patient it is in cases of just such slight alteration as here indicated that the signs are of paramount importance, that is, mainly in cases of incipient phthisis. This careful method of auscultation from side to side and the testing of the fremitus and voice transmission, should be made in all cases where there is a particle of question as to some disease of a lung.

Many things beside tuberculosis may cause a slight disparity between the two sides of the chest, and pleuritis is one of them and rather a common one. If the difference between the two sides is slight and uniform over the whole of both lungs at the back, and there are no other signs, then a former pleuritis is probably the cause. The disease may have occurred many years before, producing slight changes in the superficial portions of the lung, probably in the shape of permanent thickening of the connective tissue, whereby the vesicular murmur is a little reduced on inspiration and the expiratory sound is prolonged. The thickened tissue of a cured tuberculosis makes disparity of sounds between the two sides, but not a uniform one; the difference is greatest over the lesion.

In many cases of considerably advanced phthisis the physical signs are markedly reduced, especially the râles, by deep inspirations and failure to expire freely. The result of this is a dilatation of the bronchi and lung tissue to such a degree that the moving air does not disturb the phlegm to cause râles, and the otherwise marked bronchial breathing is nearly abolished. In a few incipient and slight cases this trick of many patients is quite enough to hide all the signs. Patients must sometimes be taught and induced to expire profoundly to enable us to detect fine râles in

bronchi of only moderate size. It is an impulse of many patients to make the chest large for the doctor to listen to; it is either an act of politeness or to show themselves at their best. They first increase the lung air contents enormously by expansion, then take in and expel but little air with each respiratory act, so that the residual air is greatly increased and the bronchi are distended, and the phlegm that lines them is not disturbed and so no râles result. Let a full expiration be made and râles at once appear. Failure to resort to this maneuver has several times caused an early diagnosis, that was perfectly possible, to be missed in a case of incipient phthisis confined mostly to the bronchi. Nor should one trial of this measure be regarded as sufficient in a doubtful case, but repeated similar tests should be made.

The diagnostic value of extreme expiration is not confined to the production of râles by the undisturbed flow of air through the narrowed air channels. Sometimes if the patient will voluntarily cough at the end of such an expiration râles will be most unexpectedly brought out that could not occur without it. This test should always be attempted in a doubtful case. The explosive blast of air may under forced expiration easily move some phlegm, creating a sound audible to the auscultator, when no amount of deep breathing could produce it.

The limit of possible expiration should be secured, with open-mouth breathing in making the test with the fingers or a soft hammer for cracked-pot percussion sound. This will often produce it to a slight degree when it could not otherwise be developed. I do not undertake to say amidst the doubt on this point, just what a slight cracked-pot sound always means in disease of a lung, but when it can be produced on one side only, and especially in conjunction with slight râles, even if both are made possible by the maneuver referred to, it certainly denotes some disease of the part, and that in beginning cases is important.

The average patient does not know how to make profound expiration. Tell one to do this and he will at first as likely take a deep *inspiration*. The human mind, save in the susceptible and very teachable and adaptive years, can not do a new sort of muscular evolution off-hand on simply being bid to do it. One must be taught. Profound expiration is such an act, open-mouth, normal breathing is another; and in our efforts at teaching them people are as amusing as they are in that other experience of doctors with them, when bed-patients are asked to turn over on their backs. Fully ninety-nine per cent. of them will turn themselves prone with their backs uppermost, or start to do it, before they discover their mistake.

In a lung with beginning tubercular deposit in the upper part near the larger bronchi, the vesicular murmur is sometimes lessened over almost the whole lung, except the part that lies directly above the deposit, and there is very little expiratory sound with little of the tubular quality and few or no râles, while the vocal fremitus is still moderate in degree and the percussion resonance is nearly normal, but there is reduced transmission of voice sounds. There seems no way of explaining such a state of things but by assuming a complete closure of some of the bronchi, by pressure from without or by thickening of their walls or by thick phlegm within them. For the lungs are full of air as shown by the resonance on percussion; there can be no great consolidation, and if tubes are only partially closed there is sure to be râles of some sort, and usually many of them.

Early in most cases of unilateral, localized tuberculosis, some aid to diagnosis may be found in the symptom, usually neglected, of greater cough during recumbency on the affected side. If there is much phlegm having a fair degree of fluidity, and the local seat of its formation does not reach to the lateral periphery of the lung, and usually in the beginning it does not, it is sure, when the patient lies on the bad side, to run down into the smaller bronchi by gravity and provoke cough. If he lies on the opposite side gravity carries the product into progressively larger tubes where it can spread out, its bulk lessened by drying, and adhere to the tube-walls without causing much cough often for many hours, even to the limit of a night. In the morning the activity of the patient and perhaps the taking of food and drink, induce a paroxysm or two of cough and the mucoid accumulations of the night are expelled. As soon as the lesion extends to the lateral periphery of the lung, or if it should happen to begin there, so that its tubes and perhaps its air vesicles are full of fluid this test will fail. But it must be rare that for this reason it would fail in an incipient case; it more often fails from the paucity of the secretion. It is not at all unusual for this symptom to be pronounced early in a case and exactly the reverse symptom be present later when the air channels of the periphery of the affected lung become full of muco-pus; and on rational grounds this is what we should expect. The cough then is least when lying on the diseased side.

A striking tendency to error in considering chest signs is shown in cases of fluid in the pleural cavity in little children. In a considerable majority of instances this condition is at first overlooked, as it is often missed throughout the whole sickness. This error is not confined to young doctors but comes often enough to veterans. It comes probably of the double mistake of supposing that the physical signs in children and adults are the same with given pathologic conditions; and in taking too literally in diagnosis certain rules which have grown into the literature and seem altogether rational, but which are unreliable and lead to many pitiable blunders.

Dulness on percussion is a sign in pleural effusions, but in small children there is little or no dulness over the lower part of the chest, especially on the left side; the gas in stomach and bowels almost completely masks this sign. If the pleural cavity is full to the very apex there is dulness, even flatness at the top, which by absence of dulness low down often leads to the erroneous theory of apical consolidation of the lung.

The books say, and it is a fatally false guide, that the intercostal spaces bulge. They do when the pleura is tense nearly to bursting, once in a hundred cases, not more. Why should such a misleading statement be perpetuated through generations of writings! Why not have said that the intercostal spaces are less depressible and more firm, and been correct and consistent?

It is well understood that lung sounds are not much transmitted through fluid; but over a child's pleural cavity full of fluid faint bronchial breathing is heard. This fact, with the absence of bulging spaces, leads many doctors to dismiss the theory of fluid in the cavity, although vocal fremitus is absent or greatly reduced and the heart is beating far to the right or left of its normal position. The change in the fremitus (if the bronchi are patulous) must mean fluid or air in the pleural sac, and the heart does not move

without assistance; yet we ignore these facts because we hear bronchial sounds or distant murmur, fail to find dulness in the lower chest zone, and the intercostal spaces do not bulge.

DISCUSSION.

Dr. E. FLETCHER INGALS of Chicago—The paper which has just been read has many points of interest to many physicians and I think they can not be insisted upon too strongly. The majority of the points are familiar to most of us, but to the young physician particularly it is easy to point out discrepancies between actual facts and those laid down in the text-books. It is especially important in the early stages of phthisis, where the disease is localized in the beginning. There is a decided or a slight change from the normal if the disease is limited to a small portion of the lung and that is a grave sign. We must remember that similar changes occur in bronchitis and, not infrequently, in pneumonia. This should be taken into careful consideration before pronouncing diagnosis. In comparing the two sides the statement that the back is better than the front does not correspond with my observations. I understand perfectly well that we can get clearer sounds over the lower lobe of the lungs than elsewhere, but in comparing the two sides, in the majority of cases, you can get better results in front than posteriorly. You can count more upon the changes heard from in front. There is a disparity between the two sides in 50 per cent. of the cases. While the paper directs proper attention to the early signs, we should be especially careful that these early signs are not confounded with other signs which have nothing to do with tuberculosis. I see a large number of patients sent to me by other physicians where there has been an error in diagnosis in pronouncing the case one of tuberculosis. I have seen many lamentable cases where the patients have been told that they had tuberculosis and they were made miserable for life and driven to an early grave. I have in mind now two ladies, occupying high positions in society, who were condemned to die with tuberculosis; in neither case was there any tuberculosis.

A sign not spoken of in the paper seems to me to be of greater importance every year, and that is the pulse. A rapid pulse of 115 to 120 in a person otherwise well points pretty positively to tuberculosis. Bronchial breathing is practically found in all patients suffering from pleurisy, over the effusion, but not as continuously as over solid lung. In the text-books the voice sounds are represented as being present over the fluid. In not one out of fifty will you be able to get voice sounds over the fluid.

Dr. JAMES TYSON of Philadelphia—Dr. Bridge struck the keynote in speaking of pleurisy with effusion in the fact of diminished fremitus, which always means pleurisy with effusion. There is, however, one exception, which occurs in children with a purulent effusion as contrasted with serous effusion; sometimes there is an increase of fremitus. This is said to be the case, although I have never realized that such was so.

Dr. C. E. EBSON of Denver—I want to add to the remark made by Dr. Tyson in regard to the rapidity of the pulse not only occurring in advanced cases, but in the incipient ones; the rapidity of the pulse is a sign which has made me very suspicious in many cases. It is not only the rapid pulse which makes me suspicious, but also the irritable pulse. It is the nervous irritable pulse of small caliber that makes me suspicious of the early stages. This is not only a diagnostic sign, but one of certain prognostic importance, particularly in cases in this high altitude. It is a pulse which does not slow down in a reasonable space of time. If the pulse continues to be irritable the cases do not do well in the long run.

Dr. BEGGS, of Denver—The paper is an extremely important one, especially to the younger members of our profession. I remember one statement made ten years ago by Dr. Glasgow, of St. Louis, Mo., which has always impressed me; it was that no man was capable of diagnosing incipient phthisis until he had examined one thousand chest cases. What he meant was, the diagnosis of the early cases. This diagnosis depends upon the alterations in the quality, and this is extremely hard for students—yes, medical men, too—to learn to recognize in the early stages. I have found that statement to be true to a certain extent in my own experience. I am not sure of my own ability to make an early diagnosis, although I have been practicing thirteen years. In cases of incipient tuberculosis there is an inconstancy in the occurrence of vocal fremitus. I have found many cases which have practically the same anatomic conditions present, in which the character of the vocal fremitus and resonance varies; and, even in the same patient this varies from time to time just sufficient to make vocal resonance a matter of doubt. I also find that I must agree that the front of the chest is better for comparison than the back.

As regards pleurisy, I have in mind a case of a child 14 years of age, in whom the right pleural cavity was nearly filled with a serous effusion, as was proven by puncture; in this case there was no bulging, and the measurement of the chest showed no difference between the two sides. And, so far as we could detect, there was no difference in volume in the two sides of the chest.

There is another sign which has given me more trouble than any other, which is mentioned in most text-books, and that is the *muscularis sussurus*; this has been to me a source of error in making diagnosis. This, too, is a sign that every student should have his attention called to.

Dr. BRIDGE—As I stated at the beginning of this paper, I intended to call attention to a few of the possibilities and likelihood of error in the diagnosis of chest diseases, particularly on the beginning of such diseases as phthisis. I should have made mention of the errors which might occur on account of the muscular action; this is a source of error and great trouble to young practitioners in listening to chests, where particular care should be taken to place the muscular fibres of the chest wall at rest. Here muscle tones are produced by contraction which would interfere with intra-thoracic tones if one be not careful.

It is possible that I did not make myself sufficiently well understood in speaking of comparing the two sides of the chest. In the beginning of phthisis at the apex, I have been better satisfied with an examination made from in front of the chest. Slight fibrosis begins above and extends downward, and frequently this fibrosis has so far extended as to interfere with the accuracy of this examination when made from in front. Then, too, you do not have confused condition of the heart sounds as in front. If you find that there is evidence of fibrosis extending below the fissure between the two lobes of the lung posteriorly, it is a very strong evidence that there is a lesion of considerable consequence existing above it. Another point I wish to emphasize is that the patient should be made to expire profoundly. I can mention many cases during the past two years where the diagnosis could not have been made of incipient phthisis without this fact being known.

In answer to Dr. Tyson I would simply say that I do not recall any instance where the tactile fremitus from the voice was greater over the accumulation of pus than over the opposite side.

I am amused at the statement made that one should examine one thousand cases of chest diseases before one is capable of distinguishing the slightest changes that occur in incipient phthisis. Practically that statement is true, though I do not believe that this is necessary.

ANEURYSM OF THE CONCAVITY OF THE TRANSVERSE ARCH, APPEARING EXTERNALLY AS A LARGE TUMOR IN THE REGION OF THE HEART.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1895.

BY H. W. McLAUTHLIN, M.D., AND W. N. BEGGS, M.D.
DENVER, COLO.

Charles M., aged 52 years, musician, entered the Arapahoe County Hospital, Denver, March 9, 1898. His mother died of cancer, at the age of 70 years, and a sister of his mother died of phthisis. He had been given to dissipation, contracting syphilis when about 20 years old, and he was addicted to drink. He had contracted gonorrhoea several times. During the last fifteen years he had had some rheumatism. He said his present trouble commenced four months before, with a bad cold accompanied by a severe cough, at which time a swelling appeared in the left chest, which had gradually increased.

The tumor had been tender and attended by shooting pains, moderate in character and confined chiefly to the region of the swelling. About two months before entering the hospital he became short of breath and this had increased so that he could with difficulty move about. He had coughed considerably and expectorated freely. His appetite had continued good but he was inclined to diarrhoea. He had lost about twenty pounds in weight during the four months. He had also had some difficulty in swallowing.

Physical examination.—Patient is of small stature and stoops. He appears apathetic and weak. His memory poor. He answers the same questions differently at different times. Scars, apparently syphilitic, are abundant on legs and back. A tumor, the size of two large fists, on the left side of the sternum, extends from the lower border of the second rib to

the upper border of the seventh rib, and laterally from the center of the sternum to the middle of the axillary region. The tumor is firm to touch, but pulsates distinctly under the fingers, more especially at the base. No distinct bruit is audible. The position of the heart can not be determined, although the sounds are distinctly audible in the interscapular region and throughout the right side. In the left axillary region, just below the tumor, a systolic murmur is audible; flatness exists over the whole chest. The respiratory sounds are feeble and fremitus is absent, except in the upper part near the spine, where the breathing is bronchial with coarse râles. The right side shows exaggerated respiration in spots, with moist râles, the last being more abundant in the lower back. There is some edema about the ankles and the eyelids show distinct puffiness. The pulse averaged about 90 per minute; respiration, 39. In the right radial artery pulsation is scarcely perceptible, in the left it is present but extremely weak. Pulsation in the carotids is apparently equal. There is no tracheal tugging. The right pupil is larger than the left, the latter being smaller than normal, accompanied by some ptosis. But convergent strabismus in the right eye, the patient claims, is of much longer standing than the tumor. Slight hoarseness is present. Urine analysis negative.

He became progressively weaker. His temperature varied from 96 to 100, being below normal more than half the time. The tumor continued to enlarge perceptibly in every direction. On March 26 it is noted as extending from the clavicle to within four inches of the lowest rib, and laterally from the posterior part of the left axillary space to a point two inches beyond the right border of the sternum. The surface measurements were, vertical ten inches, transverse thirteen inches.

Dr. E. J. Rogers, the attending surgeon, saw the patient in consultation soon after his admission. A number of other physicians, especially Drs. Eekridge, Whitney and Sewall, made careful examinations. Dr. Rogers, by the exploring needle, withdrew a small amount of straw-colored liquid from the left pleural cavity. It was not, however, deemed wise to withdraw a considerable amount of fluid, although doubtless present, as it would tend to interfere with the established resistance hitherto offered to the advance of the tumor in certain directions. About ten days before death a reddened appearance of the skin at the summit of the tumor was noticed, as if the skin were about to ulcerate. A day or two later blood began to appear at this place, the most of it clotting as it appeared on the surface. It continuously stained his clothes. On several occasions he had requested the loan of a knife from neighboring patients, and he was put under more careful watching, as a mild delirium became manifest.

Early on the morning of March 28 he became quite suddenly and extremely distressed for breath. He complained of severe pain but could not locate it. He received temporary relief from one-quarter grain of morphin, hypodermically; about six hours afterward he began struggling for breath, tearing at his throat and was unable to speak. He conveyed the idea to those around him that his throat was closing up. There was apparently spasm of the larynx. Respiration ceased about thirty minutes later.

Postmortem examination by W. N. Beggs, M.D., four hours after death. It is the body of a middle-aged, rather emaciated, man. Rigor mortis is established and livories are present in the dependent (posterior) parts not subject to pressure. The eyes are dulled. Projecting from the left thorax is a large, almost hemispheric tumor. It extends from the left anterior axillary line to one inch to the right of the sternum and from the clavicle to the seventh rib. It is rather moderately firm to pressure. Over the anterior surface, including the area of the nipple, the skin is eroded and covered with dried, clotted blood for an irregular ovoid space two by one and one-half inches in dimensions. In dissecting away the skin over the tumor it was found that as this eroded area was approached the skin became progressively thinner, the subcutaneous tissue disappearing entirely and the cutis vera becoming so thin that, although great care was used, it was impossible to avoid invading the tumor itself. This having been done a very considerable amount of crur was expelled and it was found that the tumor was saccular, communicating with the aorta. The eroded distal extremities of the second and third ribs extended into the cavity from the left and the fourth and fifth ribs were imbedded in the cavity, both being eroded, chiefly on the upper edges and under surfaces. The left edge of the sternum was eroded to a depth of about one-half inch, extending from the attachment of the second to the fourth ribs, the costal cartilages of which had entirely disappeared.

The pericardial cavity was entirely obliterated by adhesions of slight degree of firmness, not entirely recent, however. The heart, small, was turned to the right on its axis, the left

ventricle turned toward the front. The heart muscle was pale, flabby, rather friable, and of a uniform, diffuse, slightly yellowish cast. Death had occurred in moderate diastole and all the cavities contained a slight amount of mixed blood clot. The valves were normal. The ascending and transverse portions of the arch of the aorta were considerably dilated and the inner surface was wrinkled and freely dotted with irregular, yellow, very slightly elevated patches (atheromatous). At the concavity of the arch, beginning one and one-eighth inches above the upper margin of the semilunar valves, was the opening of the aneurysmal sac. This was eight and one-half inches in circumference. The sac was directed first downward and forward, then forward and upward, compressing somewhat the left bronchus, although there were no traces of erosion therein. Externally to the bony thoracic wall, the wall of the aneurysmal sac seemed to be composed of the soft parts of the thoracic wall.

In the right pleural cavity there were numerous, firm, old adhesions throughout. The right lung presented no peculiarities except a slight amount of emphysema. The left pleural cavity contained one and one-half quarts of a clear amber-colored fluid. The left pleura was much thickened and opaque. The left lung was very much compressed and consolidated, and contained no air, portions of it sinking in water. On cut surface it was of bluish-gray color, mottled with very many rounded and triangular-shaped patches, slightly elevated above the cut surface, varying in color from gray to yellow and in consistency from moderately firm to almost semi-fluid, the latter being characteristic of the yellow patches.

The liver was of approximately normal size. The upper surface was granular and covered with numerous shallow, richly-stellate scars. On the cut surface it was slightly granular, with distinct lobular markings, mottled dark bluish-red and yellowish. The splenic capsule was much thickened and opaque, white in color. On the surface were a few shallow stellate scars. Otherwise the spleen and the other organs not mentioned presented no peculiarities of special interest here.

A peculiarity of this aneurysm is the location of the external tumor, the usual place being beneath the sternum, below the right or left clavicle or in the back. A review of several authorities has failed to disclose so large an aneurysm, similarly situated. In case No. 150 in Hayden's work, the aneurysmal tumor extended from the level of the second to the eighth dorsal vertebra, occupying the position of the left scapula, which was displaced backward and outward. It was hemispheric and measured nine inches in the transverse and fourteen in the vertical diameter.

Differential diagnosis.—What were the signs and symptoms during life favoring the diagnosis of aneurysm and what other diseases should have been considered? The age of the patient, the history, the signs of syphilis, together with a pulsating tumor of the chest and pressure symptoms would certainly strongly suggest thoracic aneurysm. Yet the pulsation was nowhere strong, although toward the base a forcible and expansile pulsation was felt. Da Costa's most emphatic sign, viz., the presence of "two points of pulsation in the chest, two hearts apparently, each with its own distinct beat, its own distinct sounds," was absent, as the tumor included the ordinary cardiac area and the real location of the heart was not ascertainable. The absence of a thrill and of a murmur from the tumor is more corroborative than essential to the diagnosis, according to most authors, the number and solidity of clots in the tumor causing the variations in the signs to be derived from auscultation.

A pulsating empyema is said by all authorities to occasionally simulate aneurysm, especially when a pulsating tumor is situated in the region of the heart. In the case reported, physical signs of fluid in the left chest were present, viz., flatness, with absence of respiratory sounds and lack of fremitus. The tumor in this case was, however, enormously large for an empyema pointing externally. Moreover, the tumor was firmer and the pulsation more expansile than

would be expected in empyema; neither was the pulsation disseminated over the chest; unmistakable pressure signs were also present. The needle showed the fluid in the chest to be non-purulent.

The following case of pulsating empyema is reported in Stokes' work on the "Heart and Aorta":

The heart was displaced far to the right. "Each stroke of the misplaced heart produced the most extraordinary diastolic pulsation of the whole left side. The bed was shaken at each beat of the heart, and the patient's sleep interrupted by the vast and violent throbbing of the side; yet the force of the heart did not seem much augmented. There was no appearance of any external pointing of the contents of the sac."

Solid tumors of the chest.—Sarcoma, lymphomata and lymphadenomata are infrequent and tend to grow inward rather than outward. Cancerous growths are more frequent. If such a growth projects externally and pulsates, the symptoms and signs may simulate an aneurysm with rather firm clots. The expansile force is usually, however, much less distinct. The adjacent glands of the axilla and neck are often enlarged. The veins on the side of the thorax affected are more apt to be distended and especially, according to Hayden, varicose. The amount and character of pain is unreliable as a differential symptom. It should be noted in passing, however, that the degree of pain in this case was far less than would be expected in either an aneurysm or a solid tumor as large as the one under consideration. It is possible that he may have previously had more pain, but failed to recall the fact owing to the weak condition of his mind. It is more likely that pain was not prominent on account of the pressure of the tumor being outward rather than inward. The general health is usually poorer in cancer. In this case the general health was poor, but the other conditions could account for it. Osler and other excellent authorities speak highly of the diagnostic value, in aneurysm, of tracheal tugging, first mentioned by Oliver. On the other hand, Wood and Fitz state that Grimsdale considers the sign of little positive value, "since he found it in 16 per cent of a number of persons free from aneurysm and examined with reference to its presence."

Mediastinal abscess.—The size and location of the tumor, the character of pulsation, the degree of pressure symptoms and the character of the temperature would all tend against this as a probable diagnosis. Nevertheless, although there was a general expectation to find an aortic aneurysm at the postmortem, that expectation fell considerably short of being a conviction in the minds of those who had examined this patient the most carefully. The fluid in the pleural cavity, being clear, thin and non-fibrous, was probably due to pressure. Osler speaks of aneurysm from the lower or posterior wall of the arch compressing a bronchus, thereby producing bronchorrhea, gradual bronchiectasy and suppuration in the lung—a process which by no means infrequently causes death in aneurysm, and a condition termed at the Montreal General Hospital "aneurysmal phthisis."

Pepper speaks of an irregular type of fever in such cases, as occurred in the case here reported, and that chills and sweats may occur, more strikingly showing a septic process.

Lebert, who analyzed a large number of cases, found that the average duration of life after the first distinct symptoms of thoracic aneurysm was from

fifteen to eighteen months. A number of cases, however, are on record where life was prolonged for several years, and in a few for even ten years after an external tumor had appeared. In Hayden's analysis of sixty-eight cases, death occurred from rupture of the aneurysm in twenty-six instances. In only one of these twenty-six was the rupture external. Nine of the sixty-eight cases died from asphyxia. In the case reported here death would probably have occurred in a very short time from external rupture.

In reviewing this subject one is struck with the fact that hemorrhage from aortic aneurysm is far from being always fatal. Slow oozing or even quite severe and repeated hemorrhages, if there are intervals in which to recover from the immediate shock, may extend over a considerable time. Osler reports a patient who had "several brisk hemorrhages and who died four years after, having in the meanwhile enjoyed average health." Where there is an external tumor signs are apparent before rupture occurs. Stokes relates the following case, in which there was an external tumor in the lower sternal region which had caused absorption of the bone. There had been discoloration of the skin, followed by signs of sloughing, "so as to display what seemed to be the outer surface of the coagulum of the aneurysm. At each systole of the heart this coagulum moved outward, so as to close up the orifice in the skin and then receded during the diastole. After some days the coagulum gave way and a deluge of blood poured out. Immediate death would have followed but for the presence of mind of the nurse, who, on the instant, snatched up a cotton apron and stuffed a portion of it into the opening of the chest." The patient lived many days in good health and spirits, his life, so Stokes says, "depending on the precarious support of a plug of cotton rag which at every stroke of the heart appeared on the point of being forced out of its situation. The result was of course fatal."

Osler says that spontaneous cure is not very infrequent in small sacculated aneurysms of the ascending aorta. In many of these cases, the disease has been unsuspected during life and the obliterated sac found accidentally at the postmortem. Wood and Fitz state that aneurysms of the arch of the aorta "are always a source of danger and usually prove fatal, although they may exist for years. Their progress may be checked for a long time by the formation of thrombi, but the process of repair is always incomplete, and it is doubtful if any true aneurysm of the arch large enough to produce symptoms has ever been healed."

About ten years ago a patient died at the County Hospital here whose physical examination gave dullness over a portion of the chest, which, together with other signs which have escaped my memory, could not be satisfactorily explained. At the autopsy we were surprised to find the remains of thoracic aneurysm, the laminae of organized fibrin showing beautifully.

THE PATHOLOGIC ANALOGY OF BRIGHT'S DISEASE AND SYPHILIS.

BY W. H. WHITEHEAD, M.D.

ATLANTA, GA.

First having my attention called to the efficacy of specific treatment in a case of albuminuria, in which I gave the mixed treatment of potassium iodid and

mercury bichlorid for specific trouble, I was greatly surprised to see the albumin disappear, instead of its being increased by the supposed irritant properties of the iodid (as I had been taught it was "hard" on the kidneys), and was led to make a series of experiments in an effort to discover the modus operandi of this mixture, and whether it was the iodid or the mercury that produced the result, also, was the remedy only applicable to specific kidney lesion, or was it a remedy for the condition which we know as Bright's disease, but which I prefer to call arterio-sclerosis renal, as this term conveys some idea of the pathology of the condition.

Some years ago I was resident physician to a famous lithia springs, the waters of which are highly extolled for "all kidney and bladder affections." This modest claim brought many sufferers to "Mecca." Some were benefited remarkably, but I saw no authentic cure of Bright's, though many were greatly benefited in health, feelings, etc., and the albumin diminished notably. This was due to the large dilution of the urine, the increase in volume, and consequent removal of a larger per cent. of deleterious matter.

While at the springs I also had many syphilitics under my care, and to one of these cases is due the present series of experiments I have made, and am making, in regard to the treatment of albuminuria with antisymphilitic remedies, mercury and the iodids. The case that first claimed my attention was one of chronic syphilis, fifteen years after the initial lesion, and was then suffering from intense pains in both tibiae, and orbital pains. These pains came on at sundown, lasted all night and went away early in the morning, leaving the patient exhausted from suffering and terrific night sweats. It was a sad prospect, and to add to the dilemma, his urine was "loaded" with albumin. I made no quantitative test, but upon boiling in a test tube, the urine became gelatinous. The patient had been to Hot Springs, Ark., twice, with some relief each time, but soon relapsed. The physicians there told him his trouble was not specific but malarial, and gave him arsenic, iron, quinin, *et al.* He also took some baths and "rubbed some mercury" while at Hot Springs. I do not remember now whether he was instructed to do this by his physician, or whether he did it to keep from appearing odd.

At this time I was passing through the stage of evolution professionally, best called the electric craze. I tortured this poor man for weeks by applying galvanic electricity to his exquisitely sore shins and frontal region. Usual result. Having my suspicions aroused by the nocturnal recurrence of the pains and previous history of syphilis, I told him I thought a trial of antisymphilitic remedies was warranted. He consented readily, but there was that albumin, and the old idea of potassium iodid being hard on the kidneys.

But something had to be done, as the resident physician is supposed to be equal to all emergencies, at least to the keeping of all corners as long as possible, so I gave the regulation mixture:

Potassium iodid	ʒ iiss	80
Bichlorid mercury	gr. vi	72
Aqua qs. ad to make	ʒ iv	130

M. Sig.—20 drops t. i. d. in half a glass of sweet milk after meals. Increase as directed.

In this mixture he received about fifteen grains of potassium iodid and about one-sixteenth grain of bichlorid in each twenty drops. This dose was in-

creased one drop daily until he was taking thirty-five drops three times a day, or about twenty-five grains of potassium and about one-ninth of a grain of bichlorid. At this time ptyalization caused the remedy to be suspended for a while, and on resuming it was given in fifteen drop doses t. i. d., increased as before. I will not dwell on the syphilitic feature of this case, as all such is ancient history. It is sufficient to say that all pains, night sweats, etc., disappeared within one month, and that under a continued and varied course of treatment extending over two years, he was thoroughly restored to health, gaining over sixty pounds in this time.

The only connection between all this, which happened years ago, and the present paper, is the above mentioned albumin. Being solicitous on account of the fallacious idea believed to be medical knowledge, and having heard some one say, or read that some one did say, "iodid of potash was hard on the kidneys," I often spoke to others of the danger of giving large doses of iodid of potash on account of the kidneys, and they, like myself, said "yes, yes, it is very dangerous." All had heard or read the same fallacy, for it is a fallacy, pure and simple. So, when I examined the urine of my patient, who had albumin, and whom I had put on the dangerous iodid, and found no increase of albumin, but on the contrary not near so much as I had found on the previous examination, I said, syphilitic albuminuria, gunma of the kidneys, fortunate thing, all syphilitic, will get well, and so he did; but I came near losing what I believe to be a grand truth. It passed me like a ship in the night. I thought the albuminuria was due to syphilitic disease of the kidneys, and hence the result. Today, I believe this the true and rational treatment for the condition we know as Bright's arterio-sclerosis renal. If the therapeutic test is worth anything, one of two things is true: Bright's disease is of syphilitic origin and demands syphilitic treatment, or the pathologic condition of arterio-sclerosis and cell infiltration that is present in both diseases demands the same remedies: witness the absorption of immense gunma, or the magic healing of old syphilitic rupia, to say nothing of the remote neuroses and circulatory lesions, even mental equilibrium being restored by specific treatment, when such conditions are truly due to syphilitic processes.

There is nothing strange or occult in the action of these drugs; it is simply the eliminating qualities of them. I do not know just how the thickened walls of the delicate arteriole and capillaries are absorbed, their elasticity and contractility restored, their circulatory functions renewed, and even the necrosed material absorbed or washed away by the renewed life current; but I know that this very thing is done when a syphilitic sore is healed, or a gumma is absorbed by the intelligent use of mercury and the iodids.

If then, we admit the striking similarity in the pathology of syphilis, and the disease process known as Bright's disease, why should we marvel if the same remedies are applicable to the same pathologic condition, even though etiologically different, which is not proven.

I have no table to submit, no ax to grind. I have applied this theory now in many cases of albuminuria, only one, the first, having any personal history of syphilis. In all of them the albumin is diminished or disappears altogether in from thirty to sixty days; recurring in some, to again disappear under the same treatment. In some it has not recurred at all after a

lapse of years. I have used the proto-iodid in one case along with potassium iodid. Results the same. I have tried iodid alone and mercury alone. Either will diminish albumin, but the best results are obtained by the mixed treatment.

I now submit the proposition to the profession and await the result.

GOLF FROM A NEUROLOGICAL VIEWPOINT.

Read at a meeting of the American Neurological Association in New York, May, 1898.

BY IRVING C. ROSSE, M.D.
WASHINGTON, D. C.

Long before the Columbian rediscovery of America our hardy Caledonian ancestry amused themselves by playing the royal and ancient game which has been defined as the putting of little balls into little holes with instruments very ill adapted to the purpose. In those days certain ascetic and lugubrious persons, like the sham-pious reformers of the present, who condemn as sinful anything that makes people feel happy, cried down golf, football and other so-called unprofitable sports, which were prohibited by decree, the legislative blight being a canon of the old Scotch parliament against golf.

Being difficult to extinguish strong instincts, people gave no heed to such prohibitions against the natural and wholesome promptings of the play impulse and manly pastimes of a vigorous race, and today we find a game with a long pedigree taken up and assimilated from Scotland, and so fascinating as to have spread around the English-speaking world.

Instead of dividing mankind, as some mathematicians do, into two classes, namely, those who have read analytical geometry and those who have not, it is now more appropriate to say those who play golf and those who do not, or as an enthusiastic devotee to golf might put it, those who are long drivers and those who are not.

What was yesterday the fad of a few has today become the practice of many sorts and conditions of men, who find in the exhilarating game of golf (which experts prefer to call a *study*) a means of hygiene and sport of inestimable value.

A short time since, in a paper prepared for this Association "On the Conservative Value of the Play Impulse," I endeavored to point out the individual and phylogenic good brought about by the exercise of the manly sports and amusements that brought together men and women of the leisure class at such places as the tennis court, the hunt, the meet, the golf links. Since then the game of St. Andrews in Fifeshire has encircled the earth, like the world-invading Campbells, and the descendants of a race to which piper Findlater belongs take their amusement seriously at sea-side links or on grassy moorlands at a game than which none is a severer test of nerve and none requires more stupid, dogged patience and harder work.

Any golf player familiar with the niblick shot out of sand in front of a bunker cliff will, I am sure, recognize the cool judgment and prompt action required by a successful player who makes a good drive and avoids or extricates himself from awkward hazards, as well as the many advantages entailed thereby in the way of invigorating and healthy employment of the highest bodily activities.

Doubtless from the sportman's point of view and that of the hygienist, the value of golf is quite apparent, but its therapeutic value, not so well established, is practically an untrodden field and in need of an exponent.

In the capacity of physician and neurologist it is impossible to familiarize one's self with the facts of the game in this relation without seeing its many advantages and acknowledging merits beyond all praise.

To the neurologist, who trusts to psychic, mechanical and hygienic influences rather than to drugs for treatment, the theme is replete with magnificent possibilities of prophylaxis and even of therapeutics. We have a royal road to physical exhilaration in a game that can be played all the year round, independent of atmospheric vicissitudes, during all the seven ages of man, by delicate young girls as well as by strong athletes, and even by decrepit old men, whose declining powers do not admit of severe exertion. It combines exercise, pleasure and fresh air without the risk of injury to heart, lungs or nervous system of some other exercises in which there is high blood pressure and arterial tension. To be more specific, there is absolutely no danger attached to the game, and consequently no accidents ensue. Unlike the bicycle, it is doubtful whether such a thing as an accident insurance was ever paid for injury incurred at golf. Nor is the game contraindicated in heart lesions, arterial calcification, albuminuria, old age, childhood and certain hysterical conditions which would be aggravated by such exercise as bicycling, swimming, horseback riding, or by mountain climbing.

To be more explicit, I may say that in all affections marked by slowing of oxidation, or in those consequent upon intoxication by the products of organic disassimilation, the game of golf is to be recommended as the best adjuvant method of bringing about a cure.

The obesity and degeneration of middle age, when the biceps has diminished and one's energy is wanting, may be helped by devotion to golf. The further tendency of the exercise is to eliminate the so-called diatheses and thus do away with gout, lithemia, headache and dyspepsia; while its hygienic and therapeutic consequences are admissible in cardiac and pulmonary affections. Although moderation is advisable in such circumstances, there can be no doubt of the benefit derived in some cases of cough, nervous asthma, and in affections of the bladder and prostate.

But it is pre-eminently in functional nervous disease that our great Anglo-Saxon game is to be recommended, both as prophylactic and curative. No exercise or recreation is better for the mentally overworked, the hysterical, the melancholic; none helps to preserve the concerted action of eye, brain, and muscle known as the psychological moment; none, perhaps, with the exception of swimming, gives one so good an appetite; there is not a more sovereign remedy for dyspepsia, and as to insomnia, such a thing scarcely exists among the devotees of golf.

Improvement in appetite and digestion has come under the notice of nearly every one connected with a golf club. Only two years ago the breezy air of the Newport golf-green caused such an improvement in this respect that the members of the club discharged a French for a negro cook, whose dishes were considered more wholesome and better suited to a golfer's appetite.

In addition to the unconscious vigor of body and

mind imparted by golf, the social amenities arising therefrom are of unquestionable therapeutic value, since the genial influences of the game, by expanding the ideas, tend to promote the good fellowship that comes from diversion and sensuous amusement, and by oiling the wheels of life, so to speak, makes them go on with rattling glee. In these days of excessive drive, competition and over-pressure, when undue waste of vital energy shows itself to the clinician in the way of various neuropathic conditions and decayed nerve elements, the problem of averting or mitigating such mischief comes to us with much seriousness. An obvious help in the solution is the encouragement of all innocent sports and recreations as a compensating factor in the phenomena of life. The condition applicable to the greater number is partly met by the present "boom" in a game that accurately reflects and expresses a great race and falls in with the spirit of our age of haste and subjectivity.

If there be one innocent recreation adapted more than another to all sorts and conditions, but more especially to the gloaming of life, when the mind needs an alterative, that healthful tendency is to be found in the national game of Scotland.

MEDICO-INSURANCE.

Presented to Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY S. T. McDERMITH, M.D.
DENVER, COLO.

Briefly as possible I will venture a few suggestions along lines that point to a domain unexplored by this Association, or at least unoccupied by this body. It is a virgin field, inviting the cultivating touch of the medical husbandman; an undeveloped province awaiting conquest.

For fifty years the profession of this country has had vague cognizance of the existence of such an Eldorado, but has never braved the wilderness, the tropics or the desert, to reach it.

The populace of this country had a vague knowledge of the Philippine Islands; that much of our hemp and palm leaf fans and manila wrappers for cigars were imported from there; but not until the echoes of Dewey's guns and the dull thud of a Spanish fleet striking the bottom of Manila bay and startling from its lethargy a civilized world, was any interest manifested in those tropical isles so rich in natural resources.

So I say for years the profession has, in a desultory way, and incidentally, had to do with Medico-Insurance, but no influence has been sufficiently exerted to arouse it to an appreciation of this rich isle in the Medical Pacific; rich in subjects for study and rich in results.

The writer, mindful of the couplet that

"Fools rush in
Where angels fear to tread,"

has no expectation that this shot will electrify a profession, an association, or section, and start it charging to encompass the goal, but he hopes that it may modestly contribute to forces whose captains and commanders yet to be chosen may ring the changes and fire the ordnance, the echoes of which may be heard to the uttermost confines of this Association's domain.

When you stop to consider that the personality and skill of the physician are important factors in commercial transactions involving billions of dollars, as the combined life insurance bodies now do, providing a source of income to the profession, of millions of dollars annually, is it not amazing that this Association, the most important and authoritative organization of medical men on this continent, has given the subject no recognition? Is it not astonishing that the insurance interests have not ere this demanded recognition?

It has ever been taken for granted that a physician, any physician of recognized good standing, was fully competent to prosecute an examination for life insurance.

Prior to the advent of specialties in medicine, it was likewise assumed that the general practitioner, the only kind of practitioner then known, was quite competent to diagnose and treat diseases of the female organs, genito-urinary or skin affections, ophthalmic and aurial ailments, equally with fevers and all other systemic derangements.

If any logic will justify specialties in medical practice, it will equally sustain the demand for special study as a requisite to competent work in the field of medico-insurance.

However well equipped a medical man may be for encountering the host of destroyers in the open field of pathology, without self or other training for medico-insurance, he is incapable for estimating the factors which go to make up the rating in a given case. And the lack of familiarity in this operates to render his examinations and report thereon indifferent, or of doubtful value.

The whole scheme of life insurance is based, not on certainties, but on probabilities, yet it is the business of the actuary with the essential aid of the examining staff to eliminate all of chance that it is possible to eliminate, by adding pillars of strength to the structure's foundation, and this consists in the judicious selection of life risks, and the responsibility for such selection rests almost wholly with the medical examiner; and how, without special study fitting him for the work, can an examiner meet that responsibility and render a service consonant with the demands of the service?

To attempt to enumerate, much less discuss the subjects for study which naturally group themselves under the general heading of medico-insurance, would extend this paper to unreasonable limits. A few examples are alone sufficient to suggest the broad field that is open to those who would till it. But I insist that this Association should be the gateway to that field.

First. "Appendicitis as a factor in insurance."

Second. "Consumption from an insurance standpoint."

Third. "Cancer and its relation to insurance."

Fourth. "Syphilis, its bearing on life risks."

These, with hosts of other sub-titles entering into personal or family history, together with the weight of the applicant in relation to height, the occupation, habits, environments, etc., are subjects for chapters and volumes, which should vitally concern any one essaying the important rôle of medical examiner.

The British Medical Association has inaugurated a Section devoted to this special study, the first session having been held last week at the meeting of the

Association in Edinburgh. The Section is there given equal recognition with Medicine, Surgery, Ophthalmology, or any other recognized branch of the profession.

Insurance medicine has therefore, in a sense, been legalized as a specialty by a scientific body which easily stands at the head in the civilized world. It would be appropriate for this Association to early follow the example.

That there is a demand for opportunities to cultivate and develop this important field, and that there is an awakening along these lines, it only need be mentioned that special, independent associations have been formed, as "The Association of Medical Directors," an organization of Medical Directors of old line companies, "The Chicago Association of Medical Examiners," "The Pacific Coast Examiner's Association," and other independent societies, besides the Sections in the Fraternal Congress and the Mutual Life Underwriters' Association, devoted to the subject. I am informed, too, that special courses on insurance have been provided in a few centers of medical tutelage, in the University of Yale and the Vanderbilt University, and perhaps others.

So, since the growing need of a wider dissemination of medico-insurance knowledge is so apparent, I would venture to suggest that its recognition and fostering through the medium of either a separate Section or as a sub-division of the Section on Practice of Medicine would be a move in harmony with progress, in keeping with the needs of the profession, and would comport with the objects and dignity of this, the largest and most august Medical Society in the land.

SURGERY OF THE LUNG.

The Oration in Surgery Delivered at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Col., June 7-10, 1898.

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(Continued from page 216.)

INFECTIVE LESIONS OF THE LUNG WHICH CONCERN THE SURGEON.

The surgical infective lesions of the lung are abscess, bronchiectasis, gangrene, foreign bodies, cysts (echinococcus and dermoids), tuberculosis and actinomycosis. Abscess of the lung is not as common a pulmonary affection as might be inferred from the number of cases reported as such in the literature. A careful scrutiny shows that a considerable percentage of the cases reported as abscesses are empyema communicating with the bronchus, subdiaphragmatic abscess rupturing into a bronchus, or circumscribed interlobar pleurisies.

Abscess—Etiology.—The most common cause of abscess of the lung is: 1, acute circumscribed inflammation, as pneumonia, followed by necrosis and softening of the lung, 46 per cent.; 2, peribronchitis; 3, septic embolism of the pulmonary artery, or a single branch of the bronchial (pyemic embolism), 3 per cent.;⁴³ 4, rapid tubercular caseation and necrosis, with secondary infection; 5, perforation of the lung by infection from malignant diseases of the esophagus and mediastinum; 6, subphrenic perforations into the lung with retention; 7, foreign bodies in the bronchi 11 per cent. (Tuffier); 8, infections following injuries;

9, suppurative inflammation around calcareous deposits, the latter either a sequence or a cause of the suppuration. From the above it will be seen that the pathology of abscess of the lung is as varied as its etiologic factors. Its clinical course, its treatment and its termination will vary with its etiology; what then concerns us most as surgeons is its diagnosis and treatment.

Symptoms.—The symptoms will vary also with the etiology; take, for example, an abscess following pneumonia. The case runs the ordinary course of a pneumonia; there is nothing special to indicate the probable necrosis and suppuration of the lung during the course of the disease till the time for resolution has presented itself; when the time has arrived for the cessation of fever, cyanosis, delirium and toxic symptoms the sudden change so characteristic of pneumonia does not take place. The fever continues with more marked morning remission and evening elevation. The hectic flush and sweats are more pronounced; the tongue remains dry, coated and cracked; in other words, the symptoms of pus infection have supplanted the symptoms of pneumonia. In some cases there is a sudden expectoration of a large quantity of pus in which may be found lung tissue and various micro-organisms, as pneumo-, strepto- and staphylococci, bacillus communis coli, etc. The expectoration is most frequently fetid, though not necessarily so. This fact aids materially in making a diagnosis. If the abscess be caused by a septic embolus, by a foreign body, perforation of the esophagus, etc., the history will vary from the above. Where it is produced by the suppuration of a cyst, as a hydatid the characteristics (hooklets) will be present; again, when a dermoid in the chest cavity suppurates and opens through a bronchus there will be found sebaceous material, hair or even teeth in the expectoration. (Ogle-Godlee.)

Physical signs and diagnosis.—The physical signs will vary with the size, location, presence or absence of bronchial communications and etiology; the presence of dulness, the absence of respiratory sound, absence of cavernous breathing, the diminished vocal fremitus, the absence of intercostal movement in respiration, the stationary area of dulness, lead to the belief that there is an accumulation of fluid; a differential diagnosis must then be made between cysts, pleuritic effusion, gangrene, abscess, and consolidation. Inspection shows a marked loss of respiratory movement and occasionally signs of edema where the abscess is situated close to the chest wall. If it be deep in the lung the respiratory movements may not be interfered with. Percussion where the abscess does not communicate with a bronchus reveals a circumscribed dulness. If the abscess communicates with a bronchus we may get a cracked-pot sound, or the dulness may be the same as if non-communicative if the cavity is kept constantly full of pus. Great care should be taken in making comparison between the deep and superficial percussion notes to determine if lung tissue intervenes between the abscess and the chest wall; the area of deep and superficial dulness should be carefully outlined on the chest surface.

In auscultation the sounds will vary, depending upon the presence or absence of bronchial communication. There may be a superficial respiratory murmur with a deep abscess. The vocal fremitus is diminished. If the abscess be large, distant bronchial breathing can often be detected. When bronchial

⁴³ Porter: Jour. Amer. Med. Association, March 9, 1891.

communications exist we have the amphoric breathing, often the distinct metallic tinkle, the whisper sounds and the gurgling. In pulmonary abscess and bronchiectatic cavities the stethoscopic examination is liable to be misleading as to their location, they often appear to be situated farther from the hilum than they are in reality. In my experience this was not true, as the percussion and auscultation revealed the location when the cavity was situated in the anterior portion of the lung.

Exploratory puncture has been considered the crucial test, although authors differ widely as to its value and significance as a negative manifestation. E. Bull considered it of only moderate value; still he insists that it should always be used where drainage is indicated. He attributes its deficiencies, 1, to failure in proper location of abscess by other physical signs and therefore not reached by needle; 2, to a plugging of the needle before the cavity is reached, and 3, to abscess contents being too viscid to pass through the needle. Tuffier says exploratory puncture is permissible but often deceptive, and when negative the puncture is to be made many times. In his cases he made from two to twelve punctures in each case and found with this large number of efforts he failed to locate the cavity in 17 per cent. of the cases of gangrene, 17 per cent. of the abscesses and 33 per cent. of the bronchiectases. He further states that puncture is harmless when done at the time of operation, but at other times may be dangerous; it is deceptive, as it does not show the multiplicity of the lesions. He found in twenty-eight cases that the primary exploratory puncture produced positive results in sixteen, multiple punctures added seven positive results to the number, and in five the result was negative. Foul gas in the syringe is just as positive, from a diagnostic standpoint, as pus. Bushnell favors repeated punctures for localization.

The dangers of exploratory puncture are: 1. Hemorrhage. In recalling our anatomy we are reminded that a blood vessel accompanies each of the bronchi; these are likely to be punctured in exploration, give blood in the hypodermic, and may be followed by fatal hemorrhage; a case is reported by Fraentzel. In two of my cases of bronchiectasis there was considerable blood expectorated after puncture, but not sufficient to cause alarm. 2. Infection of pleura. The literature supplies a number of cases in which the pleura became infected following exploratory puncture, either from the escape of pus through the puncture canal, or from an advancement of the process along the canal into the pleura subsequently, producing an infective pleuritis. 3. Gangrene. A gangrene along the line of puncture involving the external chest wall has followed exploratory puncture, therefore exploratory puncture is not as harmless even in pleuritic adhesions as might be believed. 4. Pneumothorax. This has proved to be a serious complication following exploratory puncture only when accompanied by infection. I am convinced that exploratory puncture in the surgery of the chest, for diagnostic purposes, will not become a common procedure except for localization at time of operation.

Location of the abscess.—The abscess may be situated in any portion of the lung. Tuffier found it in the lower lobe in 80 per cent. of the cases and most frequently in the posterior portion of that lobe. With the aid of the radiograph we are able to determine if the abscess be close to the anterior or poste-

rior wall of the chest, as can be seen from radiographs of Miss K.

Treatment.—After the diagnosis has been determined, should the treatment be palliative (therapeutic, pneumothorax, puncture with trocar or aspiration) or surgical (resection of chest wall with compression of lung over abscess, incision with drainage)? That will depend somewhat on the etiology and location of the abscess, but more particularly upon its size. Should there be an absence of adhesion and the lung collapse when the pleura is opened, and if the abscess communicates with a bronchus, it would seem from a theoretical standpoint that it should drain and close. Thoracotomy in this manner is so easily performed that it appears to me applicable in the class of cases in which pneumotomy is most dangerous, *i. e.*, where there is an absence of adhesions. It allows of, *a*, drainage through the bronchus; *b*, contraction of the cicatricial abscess wall; *c*, peripneumonic compression from the air in the pleural cavity. All of these should favor the repair of the abscess. We know from the results following operations for pyo- and hydrothorax that the lung after a long period of compression, re-expands and functionates; this point is most forcibly illustrated by the cases of Delagéniere. If pleuritic adhesions exist there can not be a general collapse of the lung; it would only be partial.

Puncture and aspiration as treatment for abscess of the lung has rapidly fallen into disuse. William Koch favored this procedure, as he feared pneumotomy. The treatment of suppurating cavities by means of aspiration in most positions in the body has been very unsatisfactory, and abscess of the lung is no exception to the general rule. The trocar and permanent canula have been advised and used in cases with adhesions, and particularly advocated when adhesions did not exist; the canula was intended to conduct the septic material across the pleural cavity to the opening in the chest wall. Dr. E. Fletcher Ingals⁴⁴ reports three cases treated by aspiration alone; all recovered. He states the diagnosis of abscess was not confirmed by microscopic examination and might have been circumscribed or interlobar pleurisy. Dr. McArthur, in discussing Dr. Ingals' paper, advocated operation with packing of pleura with gauze to protect the pleura when adhesions were absent. T. Anderson⁴⁵ successfully operated a case by first introducing a trocar, waiting two days and then dilating with artery forceps; there was no hemorrhage. Cummins⁴⁶ did a similar operation with recovery.

It would seem far preferable in these cases to make a large free opening in the chest by resection of the sixth, seventh and eighth ribs, pack gauze around the infected area, open the lung cavity and freely drain the costo-diaphragmatic cul-de-sac, as advised by Delagéniere for empyema.

The canula and trocar have been used with indifferent success in the treatment of pulmonary abscesses; while its inefficiency has not been so pronounced in abscess as in gangrene, the records show that it is far from satisfactory and not free from danger; in many cases secondary thoracotomy and pneumotomy had to be performed. A case forcibly illustrating this point is reported by J. Eustace Webb,⁴⁷ where an apparently perfect drainage through the

⁴⁴ *Jour. Am. Med. Association*, Vol. xxviii, 1896, p. 397.

⁴⁵ *Am. Prac. and News*, Louisville, 1890, N. S. X., 10-12.

⁴⁶ *British Medical Jour.*, 1889, Vol. 1, p. 209.

canula ceased after six weeks; a few weeks later a pleurotomy had to be performed on the anterior side; patient recovered. H. Havelock Davies reports a successful case with the canula and trocar treatment.⁴⁸

Bull, in 1884, urged that all abscesses should have artificial fistulae established; that all cavities should be drained to prevent secondary results. He realized the difficulty of estimating the size of the cavity and differentiating between one large cavity and multiple closely allied small ones. He considered that tuberculosis was a positive contraindication to the establishment of drainage.

By an external physical examination we are unable in the great majority of cases to determine the presence or absence of adhesions. Occasionally a friction sound will be heard, which will indicate that there are no adhesions at that point. I have demonstrated that the absence of adhesions can be positively diagnosed. By introducing an exploring syringe trocar through the skin into the intercostal muscles; the stilette is then withdrawn and the trocar is connected with a filter bottle to which a bag of nitrogen gas or sterile air is attached; a slight pressure is placed on the reservoir and the trocar is pushed forward until the parietal pleura is penetrated; if adhesions do not exist the gas will suddenly commence to flow and the lung will collapse. On the other hand, if the lung be adherent, the trocar will traverse the parietal and visceral pleurae and penetrate the lung and the gas will not flow. To illustrate:

Case 1.—Mr. K., clerk, age 24, Cook County Infirmary, admitted to hospital April 30. Suffering with tuberculosis of the right apex; physical signs extending down to the margin of the third rib in front; tubercle bacilli present. He was placed on the table and a puncture made with the trocar, as described above; when the parietal pleura was punctured the gas was seen to suddenly pass through the filter solution and soon the physical signs of pneumothorax presented themselves; 120 cubic inches were injected, proving absence of adhesions. The history of this case will be given in full in connection with the treatment of tuberculosis by defunctionalization.

Case 2.—E. L., male, age 34, Cook County Infirmary. Phthisis in second stage, with cavity in right upper lobe; the method was the same as was used in the preceding case; after the insertion of the trocar there was no escape of gas until the lung was deeply penetrated, then it passed freely and was detected in the upper air passages; there was no collapse of the lung; no inconvenience was produced by the injection, showing that adhesions existed.

Bull considered it was not necessary to a good result in opening abscesses that adhesions should be present; this is also shown by the case of Kroenlein. One of the indications given by him for success, was that the cavity must be near the surface, and if adhesions were not present a trocar should be used to conduct the pus out of the pleural cavity. He advised the use of caustics to produce adhesions. This, however, had been advised previously by Krimer in 1830. Péan, in 1861, suggested suture of the visceral and parietal pleurae for the production of adhesions before opening the abscess cavity. Barry and Graux also advised this method. Godlee suggested puncture for the production of adhesions. Mosley favored salicylic acid. Quincke urged zinc chlorid for the same purpose; Krause, a tampon. Quincke made fifteen experiments for the establishment of adhesions by suture; his results showed the method a failure.⁴⁹ Tuffier found adhesions present in 87 per cent. of the septic cases.

Tuffier,⁵⁰ in his most excellent paper, considers that the dangers are great where adhesions do not exist and that opinion was based on his experience in eight cases in which complete pneumothorax occurred during the operation; in two death was immediate; one died a few hours after the operation; two recovered (suppurating foci not opened); one recovered (focus opened four months later), and one with immediate opening of focus. The first three of these results appear to be attributable rather to the character of the opening than to the presence of a pneumothorax. From a perusal of the most recent cases reported and from my experiments I feel convinced that adhesions are not necessary to success, and furthermore that their absence has advantages, as then the entire hand may be inserted into the chest for the palpation of the lung and location of abscesses; further, I am convinced that abscesses without adhesions, and with bronchial communications, should not be treated by incision and drainage through the chest wall, but by producing collapse of the lung by injecting nitrogen gas or a liquid into the pleural cavity, thus compressing the lung and allowing the connective tissue in the wall of the abscess to contract and obliterate the cavity with the aid of the bronchial drain.

Operation.—In abscesses of the lung the earlier the operation the better the prognosis (Sonnenberg). The incision in the chest wall should be the U or H shape which admits of an extensive resection and thorough exploration of the field in which the abscess is located. The ribs should be resected subperiosteally, if possible without opening the pleura. After the chest has been opened and adhesions found present, the location of the abscess must be determined; this may be accomplished with the exploring needle, with the scalpel, or, better still, by careful digital palpation. The lung may be pushed away from its parietal adhesions and a digital palpation made in every direction until the position of the abscess is determined, then the exploring needle may be used to confirm the diagnosis. The scalpel should be used to incise the lung and abscess wall. E. W. Andrews favors the scalpel, and successfully incised an abscess four inches below the surface of the lung and removed thirty-five grammes of calcareous material from the cavity. The hemorrhage is unpleasant but rarely dangerous, three serious cases having been reported, one by Quincke, and two fatalities, one each by Fabricant and Andrews. In the latter case no autopsy was permitted. The patient had several severe hemorrhages preceding the operation; it is presumable that the fatal hemorrhage was from the same source. The hemorrhage following the incision can be controlled by compression, or better, by accurate catgut suture. I found the latter more satisfactory in my experimental work. The scalpel is preferable to the cautery; it produces a clean incision; it allows of inspection of the tissues divided; it permits a view of the cavity when opened and a suture of the lung tissue for hemostasis if necessary; the cautery may be used on the incised surface to still the bleeding. There is, however, with incision some danger from air embolus of the pulmonary vein, as the blood here may have a minus or a very feeble plus pressure, and in deep inspiration the air is aspirated into the vein. Quincke reported a fatal case of this character. Reclus favors the Paquelin cautery for opening the abscess. If

⁴⁷ Lancet, London, June, 1895, p. 640.

⁴⁸ Lancet, London, Sept. 1, 1888.

⁴⁹ Med. Week., Paris, 1895, p. 505.

⁵⁰ Inter. Med. Cong., Moscow, 1897.

the lung recedes after the division of the pleura the opening should be rapidly enlarged and the hand or cyst forceps inserted to draw the lung out. It can be retained here by sutures to the parietal wall and packed around with iodoform gauze. The lung in this position admits of accurate palpation and if the tampons are properly placed there should be little risk in the immediate opening of the abscess. A large drain of soft pure rubber should be inserted and secured by suture to the lung and chest wall; or, better still, rolled gutta percha paper or gauze drain may be used. The rubber drain has been charged with being the immediate cause of hemorrhage from pressure necrosis of the vessel wall. (Walsham and Sutherland.)

The irrigation of pulmonary cavities is rapidly going into disuse; it produces unpleasant symptoms and in one case caused a fatal result—laryngo bronchitis—boric acid and thymol having been used. H. W. Austin⁵¹ reports a case in which irrigation with bichlorid was used without producing unpleasant symptoms, although the patient almost drowned from rupture of the abscess into the bronchus during operation. Case recovered.

Experiment 1.—Nov. 1, 1897; black dog, weight about 30 lbs.; right side of chest was shaved and rendered aseptic by scrubbing with soap, ether, alcohol and bichlorid 1-1000; ether anesthesia; usual antiseptic precautions with instruments, ligatures, towels, lap sheets, hands, etc.; an incision 3 inches long, over and parallel to the second rib was made; resected three inches of the latter; the pleura was incised for two inches; immediate collapse of the lung was observed; the vibrations of the mediastinal septum were watched and it was noted that with each inspiration it vibrated farther to the left and with each expiration farther to the right; it became thinner and thinner until it was a mere film and looked as if it would rupture; the attenuation took place anterior to the mediastinal contents; the dog became cyanotic and finally ceased breathing; the chest walls were then compressed and the opening in the right side closed by the palm of the hand; when the chest expanded the dog began to breathe regularly and rapidly; his cyanosis quickly disappeared; when the hand was removed respiration would rapidly cease, when replaced it would go on as before; it appeared to make no difference whether the aperture were closed at the end of inspiration or expiration. The upper lobe was drawn out through the opening with the forceps; the apex was split with the scissors down $1\frac{1}{2}$ inches; the incision was closed by accurate continuous catgut suture; the lung was dropped back into the chest and the opening closed with a deep suture of muscle and fascia with catgut and a subcutaneous buried suture of the same material; the dog was not sick after the operation; as he abandoned on the twelfth day I was unable to obtain the specimen, with which I wished to show the histology of repair of incision. The literature furnishes us many reports of repaired punctured and bullet wounds of the lung. The restoration is so perfect that it is often difficult or even impossible to locate the track of the missile from the pathologic evidence. I therefore did not repeat this simple experiment.

Prognosis.—Reclus reported 23 pneumotomies for abscess, with 20 recoveries and 3 deaths. J. Schwalbe* says that, of 50 per cent of the cases operated for acute and chronic gangrenous abscess recovered and 40 per cent died. In chronic bronchiectatic and simple abscess only 16 per cent recovered, 41 per cent died. Of 43 cases collected by Tuffier there were 10 failures; in 7 per cent of these the failure was due to inability to locate the abscess, from an inexact diagnosis or from the absence of adhesions. Fabricant reports 17 abscesses following pneumonia all operated, with 14 recoveries; 7 following infection, with five recoveries; 3 suppurating hydatids, all recovered; 2 gunshot wounds, both recovered; in all, 29 cases, with 24 recoveries. J. Blake White per-

formed pneumotomy twice on the same patient at an interval of three months with success. Ramsay† reports four cases of pneumotomy. The ultimate results, when the abscess has been opened and drained, are favorable, particularly in the acute abscesses following pneumonia: the subacute or chronic heal slowly with prolonged or permanent fistulae. The earlier the operation the more certain and rapid the healing, as the wall is thinner, the cavity usually small and the reparative process more rapid. I have collected 71 cases of abscess of the lung; of these 49 completely recovered; 5 recovered with fistulae; 16 died, 1 from the operation, 10 from undetermined causes, 3 from exhaustion, 1 from hemoptysis, 1 case was lost sight of.

Lung Abscesses from 1878 to 1897, years in rotation.

Case 1, 1878. Radsch, Centralblatt f. Chir., 1878, No. 44, p. 750. Male, aged 44 years. Two large abscesses in region of right mamma. Emphysema necessitatis, with communication with right bronchus; located in region of right mamma; incision and escape of one liter of pus; irrigation with carbolic acid, followed by rise of temperature. In next few hours there was improvement. Death in 29 hours. Necropsy: Large abscess cavity in lower lobe and fresh pleuritis on opposite side.

Case 2, 1879. Austin, Rep. of Super. Surg.-Gen. Marine-Hosp. Service, Vol. 17, 1879, p. 246. Male, aged 21 years. Empyema and abscess of lung, duration 3 months. Had a cough. Located in left side; abscess in upper lobe of left lung; abscess probably communicated with pleural cavity. Aspirated several times about 1 month before operation; aspiration showed a clear fluid at time of operation; puncture almost pus. Incision $1\frac{1}{2}$ inches long in axillary line between 9th and 10th ribs; rubber drainage tube inserted, 5 quarts of offensive pus escaped at once; 3000 c.c., 1-4000 HgCl. solution irrigated. Recovery, with persistent fistula.

Case 3, 1879. Sedgwick, Lancet, March 29, 1879, p. 441. Abscess of lung. Typhus. Puncture twice at short intervals.

Case 4, 1882. Fime, Norsk Mag. for Hæger, 1882, No. 22, in Runeberg obs. 4. Female, aged 4 years. Abscess of lung. Duration 7 weeks. Acute lobar pneumonia upper left lobe. Location, apex of left lobe in front. Incision in 2d or 3d intercostal space; pneumotomy; Pus had mixed with air; drainage. Slow recovery.

Case 5, 1882. Lancet, 1882, Vol. 1, p. 601, Payne. Male, 23 years. Abscess that had been diagnosed as purulent pleurisy. Acute inflammatory affection of lung (pleurisy). Located at base; adhesions. Puncture, axillary line; positive result. Incision, pleurotomy (venous hemorrhage); drainage. Temporary improvement; patient died seven days after. Necropsy: No pleurisy; abscess of lung; report not very precise.

Case 6, 1882. Quiss, Wiener Med. Woch., No. 3, Vol. 3, 1882, p. 364. Male, middle aged. Abscess. Pneumonia; fluctuation on chest wall. Incision 1 cm. long in seventh interspace, large quantity of pus removed two hours after operation; great bleeding; gradual improvement. Dismissed in seven weeks cured.

Case 7, 1884. Rohden, Deut. Med. Woch., 1884, Vol. 14. Female, 20 years. Empyema and abscess of lung; duration two months. Left-sided pneumonia, on lower left side. Puncture at angle of sixth and eighth ribs, emptying 100 c.c. of fetid pus. Thoracotomy on August 8; drainage and irrigation with salicylic acid sol.; fever diminishes and improvement sets in; on August 30 drain is removed, temperature now rises and patient becomes worse; the wound reopened, drain and finger introduced; abscess of lung is thus opened and pus escapes; continuous irrigation. Improvement; after several months the fistula is healed.

Case 8, 1884. Pridgen Teale, Lancet, 1884, Vol. 2, p. 6. Male, 54 years. Pulmonary abscess cavity. Pleuro-pneumonia one month before. Location at base of right lung posteriorly; pleural adhesions. First puncture, serous liquid; second puncture, pus; two days after cavity punctured with trocar, fetid pus. Incision at right of puncture; pleural cavity contains no liquid; puncture of adherent lung yields pus; opening enlarged with finger, escape of two pints of pus; drainage, carbolic irrigation. Recovery; drain removed five months after. Patient seen three years after; some retraction of thorax and feeble respiratory excursion on right side; later patient had two operations with death.

Case 9, 1884. Waugh, quoted by Tabacaat. Male, 53 years. Abscess of lung; acute pneumonia of left lung. Resection in ninth intercostal space; profuse hemorrhage, checked by tamponade. Good and complete recovery.

Case 10, 1885. Broadlett, Med. Jour., May 31, 1884. Large cavity in lower left lobe, which was opened, followed by slight improvement. Cavity opened. Death.

Case 11, 1885. Andrews, Jour. of Am. Med. Assn., 1885, Vol. 5, p. 261-265. Male, 28 years. Abscess of lung. Located left side posteriorly. Signs of cavity. Puncture between fourth and fifth ribs, no result; second puncture in anterior chest wall, finds pus. Incision on needle, no rib resection; large amount of fetid pus escaped; irrigated with carbolic solution. Recovery rapid and complete.

Case 12, 1885. Korobein, 1885, quoted by Fabricant. Female, 11 years. Abscess of lung and empyema. Located in left lung. Positive puncture. Resection after eight days' drainage; after seven months wound made larger. Recovery.

Case 13, 1886. Bouilly, 1886, quoted by Fabricant. Male, 46 years. Cavity in upper right lung. Echinococcus removed 10 years ago by expectoration. Located in upper right lung; pleural adhesions. Resection of 6.7 cm. from third and fourth ribs; pneumo-cautery used. Recovery; left on eighteenth day.

Case 14, 1887. Hassen, Mamm. Dissect. Kiel, 1886, et Berlin Woch., 1887, Obs. du Quincke, p. 138. Female. Old pulmonary abscess or bronchiectasis. Duration twelve years. Pulmonary affection of undetermined nature; base of left lung. Signs of cavity; no adhesions. Exploratory puncture axillary line, negative; five injections of one-fourth or one-half tinct. of iodine; second puncture at same point yields a few drops of very fetid pus. Died three weeks after of purulent pleurisy.

Case 15, 1886. Rockett, 1886, Wid. Abscess. Resection. Recovery. Case 16, 1886. Wiener Med. Presse, 1886, p. 1235. Male. Chronic abscess; base of right lung; pleural adhesions. Incision in sixth intercostal space; pneumotomy and drainage. Death eight days after, abscess communicating with abscess of liver.

⁵¹ Marine Hosp. Rep., Washington, 1889, p. 246.
* Cent. f. Chir., vi. p. 171.

† Ann. Surgery, St. Louis, 1890, xi. p. 43.

Case 17, 1887. Quinke, loc. cit., p. 20 and 21. Obs. 2 at Berlin Klin. Woch., 1887, p. 337, et in *bassca* loc. cit. Male, 25 years. Chronic abscess; pneumonia two years before, base of left lung posteriorly. No signs of cavity; no adhesions. Incision: zinc cl. 2 paste, in ninth intercostal space, repeated several times; resection of 4 cm. of ninth rib; puncture incision with thermo-cautery; treatment lasted three months. Pus is voided by wound for three weeks after operation; recovery with fistula. Saw case twelve years after; has a fistula which secretes a little.

Case 18, 1887. Runeberg, Deut. Archiv, 3, Klin. Med., 1887, p. 91. Male, 33 years. Acute abscess; five weeks; chronic pneumonia; base of right lung beneath spine of scapula. No signs of cavity; adhesions; exploratory puncture. Resection of sixth rib on axillary line; incision of a superficial abscess; irrigation with carbolic and drainage. Recovery in two and a half months.

Case 19, 1887. Thiriar, Bull. Acad. de Med. de Belgique, 1887, No. 10. Male, 22 years. Pulmonary abscess, hemoptysis; base of left lung posteriorly; adhesions; two negative punctures. Resection of fifth, sixth and eighth ribs; large resection; horizontal incision extending from 15 cm. of axillary line to angle of vertebral column along eighth rib; a vertical incision 5 cm. from vertebral column; opening of cavity with thermo-cautery. Recovery.

Case 20, 1887. Zieluivitz, Deut. Med. Woch., 187, Vol. 13, p. 239. Male, 15 years. Empyema; abscess of lung found at operation for empyema. Morbid pneumonia, three months later an empyema was found; lower left lobe. Resection of sixth and seventh ribs, exudation cleaned out; irrigation; abscess cavity opened along fistulous tract through empyema, incision; opening tamponed with iodoform gauze; empyema cavity tamponed. Patient cured in eight weeks.

Case 21, 1887. Zieluivitz, Deut. Med. Woch., 1887, Vol. 13, p. 239. Male, 15 years. Empyema with abscess of lung; abscess of lung healed was found at operation for empyema; a few weeks before empyema was opened. Seventh rib resected at a second operation for the empyema; cavity was cleaned out; healed abscess cavity was discovered. Recovery complete in six weeks.

Case 22, 1888. H. N. Davis, London Lancet., Vol. 2, 1888, p. 419. Male, 21 years. Abscess of lung. Duration from beginning of sickness, about three years. Subacute pneumonia of left side, a year later consolidation of right lung; right side. Signs of cavity. Positive puncture in fifth interspace; anterior axillary line. Incision, upper border of sixth rib; trocar and canula introduced, a quantity of fetid pus removed; cavity washed out twice daily with carbolic col. for three weeks. Recovery; one and one-half months after operation cavity was closed; patient completely recovered and well and at work five months after.

Case 22, 1888. Godley, Brit. Med. Jour., 1888, Vol. 2, p. 880. Abscess; no adhesions. Suture of the two pleurae, pneumotomy. Death three days after from abscess of other lung.

Case 23, 1888. Quinke, loc. cit., pp. 6 and 7, Tab. 1 a, Obs. 5. Male 32 years. Acute abscess. Duration, four weeks. A typical pneumonia ten weeks before; base of right lung posteriorly. No signs of cavity; no adhesions. Paste of zinc cl. 2, in eighth intercostal space; resection of 5 cm. in eighth and ninth ribs; new application of zinc cl. 2 paste nineteen days after exploratory puncture; abscess opened with thermo-cautery, 600 c.cm. of pus removed; treatment had lasted five weeks. Complete recovery in four months.

Case 24, 1889. Cummins, A., British Med. Jour., 1889, Vol. 1, p. 299. Female, 32 years. Abscess of lung; hemoptysis. Duration, six months. There was dulness of clavicular and infra-clavicular regions of left lung; increased vocal fremitus; fluctuation between eighth and ninth ribs on axillary line. Oblique incision, two inches in length, over eighth and ninth ribs, a dram of pus evacuated by means of probe; an opening was found between ribs, this was dilated by forceps and fingers; 3-4 oz. of fetid pus escaped; air passed in and out of cavity with respiration and expiration; pus discharged freely, lost after expectoration diminished; finger inserted every two or three days. Recovery. Patient began to improve and left hospital; re-admitted a few months later and died.

Case 25, 1889. Delpratt, Brit. Med. Jour., Vol. 1, p. 470. Male, 33 years. Abscess of lung. Calculus, pyelo-nephritis; base of left lung; adhesions. Pneumotomy without costal resection; drainage. Drainage tube removed at the end of three months; recovery in six months.

Case 26, 1889. Mosevig Moorhoff, Wiener Med. Presse, 1889, p. 1. Male, 22 years. Abscess following a traumatic fistula. Duration three years. Cause gunshot wound of chest, base of left lung; adhesions. Incision; three months before operation had resected fourth and fifth ribs; diagnosis, an empyema; pneumotomy enabled the operator to remove three fragments of ribs located in the parenchyma. In seven days wound was nearly healed, then Jacksonian epilepsy appeared which proved fatal three weeks after the operation.

Case 27, 1889. Selby, Brit. Med. Jour., Vol. 2, p. 766. Male, 26 years. Pulmonary abscess; axillary line right side at level of fifth rib; no signs of cavity at time of operation; adhesions. Two negative exploratory punctures; third puncture below preceding strikes pus. Resection of one and one-half inches of fifth rib; no pus in pleural cavity, lung hard and congested; abscess was not incised. Fetid expectoration, signs of cavity at base of right lung; recovery.

Case 28, 1889. Jonq. Keder, Tyds. 1, 13, 1889, in Quinke Witt aus *groezgeb*, 1895, 1 obs., pp. 6 and 7. Male, 33 years. Acute abscess, lasting several days; pneumonia on fifteenth day; base of left lung. Signs of cavity; pleural adhesions. Exploratory puncture; positive aspiration, lavage injections of iodine; abscess 5 cm. below surface. Recovery.

Case 29, 1890. Herbert Hawkins, Lancet, 1890, Vol. 2, p. 1330. Male, 14 years. Abscess, expectoration fetid; duration three weeks; pneumonia; left axillary region. Signs of cavity; adhesions; there was a consecutive purulent pleurisy. Positive puncture, pus at depth of 5 or 6 cm. Incision without costal resection; adhesions; pneumotomy; drainage. Recovery, but two days after patient had purulent pleurisy; empyema. Recovery in seven months.

Case 30, 1890. Hoffman, Deut. Med. Woch., 1890, p. 1156. Male, 24 years. Fetid metastatic abscess; duration, several weeks; otitis media and pyemia; base of right lung posteriorly. No signs of cavity; adhesions. Positive exploratory puncture. Costal resection; pneumotomy; drainage. Recovery in seven months.

Case 31, 1890. Liedard, Lancet, 1890, Vol. 1, p. 964. Pulmonary abscess; two and one-half months; pulmonary affections undetermined; left base axillary line. Signs of cavity; adhesions. Exploratory puncture in fifth intercostal space; positive. Incision at level of puncture; resection of sixth rib, flow of pus; dilatation of wound cavity covered with calcareous masses; irrigation with boric acid produces coughing spells. Died five days after from hemoptysis. Necropsy: cavity size of goose egg, no bronchial communication, recent tuberculosis.

Case 32, 1890. Ramsay, Obs. 3, Annals of Surg., 1890, Vol. 6, p. 34. Female 17 years. abscess. Duration, one month; Measles and pneumonia one month before; to left. Signs of cavity. Resection of third, fourth and fifth ribs, opening of cavity with thermo-cautery, tamponing. Septicemia in two months; death. Necropsy: Ramsay says there were multiple abscesses.

Case 33, 1890. Ramsay, Obs. 4, Annals of Surg., 1890, Vol. 6, p. 34. Abscess; few months duration; typhoid fever; inferior lobe of right lung. Resection of third, fourth and fifth ribs under median line; pneumotomy with thermo-cautery, little pus escaped, tamponing. Perfect recovery; patient has been able to resume work.

Case 34, 1891. Green, Lancet, 1891, Vol. 1, p. 193. Male, 6 years. Acute abscess; eight days' duration; pneumonia of five weeks' standing; base of left lung. Puncture in fifth intercostal space in axillary line. Incision: pneumotomy on trocar, drainage. Recovery in twelve days.

Case 35, 1891. Huber, Med. News, 1891, Vol. 59, p. 455. Male, 4 years. Acute abscess; six weeks' duration; pneumonia; left summit forward. No signs of cavity; adhesions. Incisions in third intercostal space without costal resection; exploratory puncture confirmative, dilatation of puncture, drainage. Recovery in eight months.

Case 36, 1891. Indiania, Med. Gazette, 1891. Calcutta in Morillon, These Paris, 1897, p. 5, des Tableaux. Male, 35 years. Abscess of lung opened and fistula; fistula going from below up back toward axilla; four months' duration. Located at base of right lung posteriorly; adhesions. Resection of eleventh rib posteriorly; hemorrhage from intercostal artery, three ounces of fetid pus; irrigation with bichlorid of Hg. Recovery with retraction of thoracic wall.

Case 37, 1891. Terriet, Soc. de Chirurgie, 1891, p. 741; Morillon, Paris, 1897, p. 62. Abscess of lung, secondary to liver abscess that has opened in the bronchi; one year's duration; liver abscess dysenteric; located at base of right lung posteriorly. Signs of cavity; adhesions. Puncture behind in axillary line posteriorly, in eighth interspace; escape of pus. Resection of eighth rib; drainage of abscess; improvement, but accidents of retention cause symptoms of gangrene thirteen and a half months afterward; new resection of eighth rib; incision of lung; this incision leads into a dilated bronchus, curretment of this bronchial dilatation. Complete recovery; patient seen two years after recovery, he is a navy surgeon and can resume his work.

Case 38, 1892. Andrews, Chicago Med. Rev., 1892, Vol. 3, p. 537. Male. Abscess of lung, several years' duration; recurrent pneumonia; cavity of middle lobe; pleural adhesions. First puncture negative, second puncture under chloroform entered cavity at depth of 7 to 8 cm. Incision, trocar inserted in the sixth interspace; pneumotomy; amlioration four months later because of retention; thorocoplasty was made; resection of third, fourth, fifth and sixth ribs in the axillary line opening of a large cavity containing calcareous debris. Recovery with fistula. Death four and one half years later from acute broncho-pneumonia.

Case 39, 1892. Ricard in Record Gazdezhop of 1892, Maus of Soc. Chir., 1895, p. 689. Male, aged 36 years. Suppurative interlobular pleurisy of left lobe or abscess of lung. Several months; pleuro-pneumonia; traumatic of three months standing; right axillary region; no signs of cavity; adhesions; eleven negative and one positive puncture. Resection of fourth rib on axillary line of seventh and eighth ribs on a level of last puncture; exploratory puncture; opening of cavity with thermo-cautery; cavity was 2½ cm. below surface tamponing. Rapid improvement; recovery without fistula in thirty-four days.

Case 40, 1893. Fairchild, Chicago Clin. Rev. Vol. 9; No. 93 in Wein, klin. Woch., 1893, p. 633. Male, 55 years. Abscess of lung. Pneumonia. Location, base. No signs of cavity; adhesion. Repeated negative punctures; at last a positive puncture in fifth intercostal space. Incision in fifth intercostal space on trocar section of 2 cm. of fifth rib; pneumotomy; abscess containing eleven ounces of pus; drainage; irrigation; no coughing spells. Uneventful recovery in one year.

Case 41, 1893. Huber, Arch. of Baldustrue, Vol. 10, 1893, p. 1006. Age, 13½ months. Acute abscess. Acute lobar pneumonia. Located at base of left lung. No signs of cavity; adhesions. Two positive exploratory punctures in third intercostal space. Incision upon a trocar as psosas; pleuro-pneumotomy; one and one-half ounces of pus; drainage; abscess communicates with bronchus. Rapid recovery.

Case 42. E. F. Ingals, Jour. Am. Med. Assn., Vol. 27, p. 397. Female, aged 40 years. Abscess of lung. Liver abscess. Located in lower outer cover of right mammary region. Positive puncture; fistula left along needle. Five months after first seeing of patient portions of two ribs resected; lung tissue penetrated and abscess cavity opened; cavity communicated with liver abscess and bronchial tubes; drainage tube. Failed after operation; died in three weeks.

Case 43. E. F. Ingals, Jour. Am. Med. Assn., Vol. 27, p. 397. Male, aged 36 years. Pneumonia. No positive signs of a cavity. Punctured between seventh and eighth ribs near angle; positive; drew off offensive pus; another positive puncture six days after the first; third puncture negative. Recovery.

Case 44, 1893. Mouson, A., Lancet, Vol. 1, 1893, p. 1196. Female, aged 32 years. Thrombosis of lung or mediastinal abscess discharging through lung. Duration, five months. Sickness dated from child-birth, about five months before; slight cough before that. Location, right posterior apex. Signs of cavity. Incision in right interscapular region; after piercing third right intercostal space, near angle of ribs, small quantity of pus. Patient died twenty days after operation. No necropsy.

Case 45, 1893. Tizobick, Wien. klin. Woch., 1893, No. 2, 1722. Female, aged 42 years. Pyemia abscess, duration fifteen days. Peripneural infection of two months' standing. Location, base of right lung posteriorly. No pleural adhesions. Punctured; 500 c.c. of pus. Resection of seventh rib three days after incision; pneumothorax. Death ten hours after. Autopsy: No pleural adhesions; serous pleurisy in stage of resolution; operation in extremis.

Case 46. Chuston by Littlewood, Brit. Med. Jour., 1894, Vol. 1, p. 69. Aged 12 years. Two small pulmonary abscesses. Resection of two ribs; pneumotomy. Recovery.

Case 47, 1894. Delageniere, Arch. Provençales de Chirurgie, 1894, Janvier. Female, aged 37 years. Lung abscess; pneumonia; pleural adhesions. Pneumotomy after resection of sixth, seventh and eighth ribs. Recovery; maintained no fistula.

Case 48, 1894. Kasauli, in Fabricant Chir. Viesnik, 1894, p. 763. Obs. 29. Male, aged 36 years. Abscess of lung; duration, eighteen months. Gunshot wound of chest eighteen months before; base of left lung; adhesions. Incision at time of accident; incision of second and third ribs; persistent fistula; accidents of retention and of septicemia necessitating, eighteen months after, a pneumotomy; eighth rib resected; opening of an abscess. Recovery but still had a fistula forty days after.

Case 49, 1894. Neuber, Mittheil d. Vesius Schleswig Holstein Aerzte, 1894, p. 55, in Quinke loc. cit., Tab. 11a, pp. 20 and 21. Male, aged 45 years. Chronic abscess of eight months' duration. Calcareous concretions in bronchi; base of right lobe posteriorly. Signs of cavity; no adhesions. Resection of eighth, ninth and tenth ribs; 18 cm.; pneumotomy six days after; 500 grains of pus and calcareous concretions. Recovery with persistent fistula; patient is alive four and one-third years after; general good health; however, there persists a fistula and a cavity the size of a fist secreting a mucus liquid; bronchi open in this cavity.

Case 50, 1894. Rochester Med. News, 1894, in Morillon Th. Paris, 1897, p. 96. Male, aged 15 years. Pyemic abscess of a few days. Appendicitis operated on twenty-seven days before. Location, base of left lung, pos-

teriorly. Signs of cavity. Resection of 6 cm. of sixth rib on posterior axillary line; pneumotomy; 8 c.c. of sanguinal pus; drainage. Improvement twenty-three days after, wound healing; no more signs of cavity.

Case 51, 1894. Matequon, Arch. gen. de Med., 1894-2-1, p. 162. Male, aged 22 years. Chronic abscess; hemoptysis; profuse expectoration; one and one-half years duration. Acute pneumonia. Location, right apex, forward; signs of cavity; ancient and firm adhesions; two negative exploratory punctures a long time before operation. A resection of 4 cm. of second rib; positive exploratory puncture; incision with thermo-cautery of 5 cm. of pulmonary parenchyma; a cavity opened; accidents of retention four days after second pneumotomy, after negative puncture at base of first cavity. Recovery after relapse, which necessitated a third pneumotomy; several hemoptyses; profuse expectoration; cicatrization in three months. Patient seen in six months after in good health.

Case 52, 1895. Berger, Soc. de Chir., 1895, p. 716. Abscess of the lung. Rib resection; pneumotomy with a cautery; incision 4 cm. in depth; no abscesses found, but the hemorrhage necessitates a tamponade and suspension of operation. Death several days after. Necropsy: The pulmonary incision is found just between two purulent cavities.

Case 53, 1895. Soc. de Chir., 1895, p. 733. Monod. Male, aged 35 years. Abscess at base of lung. Signs of cavity; adhesions. Resection of the seventh and eighth ribs; pneumotomy; cavity located higher up than had been thought; opened with thermo-cautery after two exploratory punctures; it had the volume of a walnut. Recovery.

Case 54, 1895. Quincke, Mittheil. aus Zrenzeb. der Med. Chir., 1895, p. 1. Loc. cit., pp. 6 and 7, Tab. 1, Obs. 7. Male, aged 23 years. Acute abscess three weeks after onset; profuse expectoration and hemoptysis; later bloody expectoration; nine weeks' duration. Pneumonia twelve weeks previous. Location, base of left lung, posteriorly; no signs of cavity. Incision: Application of ZnCl₂ 2 paste in ninth rib intercostal space; eighteen days after resection of ninth rib, exploratory puncture; no cavity is found. Complete cure in six weeks; rapid retraction of thoracic wall.

Case 55, 1895. Quincke, Mittheil. aus Zrenzeb. der Med. Chir., 1895, dd. a. B., p. 1. Male, aged 33 years. Acute abscess of lung, two months duration. Pneumonia due to aspiration of mud. Location, base of left lung; no signs of cavity. Puncture; 300 c.c. of serous fluid. Sudden death ten days after puncture. Necropsy: Seropurulent pleurisy and primary abscess of lower left lobe, opening into pleura bronchi; ectasis and cicatrix of a healed abscess situated above first mentioned abscess; right-sided pneumonia.

Case 56, 1895. Ricard, Soc. de Chir., 1895, p. 689. Pyemic abscess mistaken for interlobular pleurisy. Location, base, posteriorly; no signs of cavity; partial adhesions. Resection of 10 cm. of eighth rib; incision; partial pneumothorax; abscess located higher and in the lung; is incised and drained. Recovery.

Case 56, 1895. Thnlier, Soc. de Chir., 1895, p. 766, Obs. 2. Male, age not given. Lung abscess; pneumonia. Incision without costal resection; complete pneumothorax focus could not be opened. Pyepneumothorax which was followed by empyema. Death one year later. Necropsy: Purulent pleurisy and abscess not opened.

Case 58, 1895. Valton, Belgique Medicale, 1895, Vol. 2, p. 545. Male, aged 13 years. Abscess of lung; lung cavity; fetid expectoration; eighteen months duration; pneumonia. Location, base of right lung. Resection of the seventh, eighth and ninth ribs; lung apparently normal after several negative punctures had been made; pus was found; pneumotomy with thermo-cautery; after suturing lung to pleura partial cleansing of cavity; drainage. Death twenty days after from exhaustion.

Case 59, 1895. Webb, J. E., London Lancet, Vol. 1, 1895, p. 1140. Female, aged 27 years. Abscess of lung. Duration, one month. Maternal history of phthisis inflammation of lung in early childhood. No physical signs of cavity. Puncture; anterior axillary line, sixth interspace; twelve ounces of pus removed. Trocar and canula inserted into cavity just above angle of scapula, between it and vertical column, directed forward and outward; fourteen ounces of pus removed; drainage tube passed through canula; iodoform injected. Two months after operation discharge ceased; two and one-half months later fluctuation was detected in the fifth interspace below the nipple; incision made and pus evacuated; this sinus closed in a few days; ultimate recovery.

Case 60, 1896. Bushnell, Am. Jour. of Med. Sci., 1896, Vol. 112, p. 298. Male, aged 36 years. Abscess of the lung; interlobular pleurisy; several weeks' duration. Acute pneumonia; location, base; partial adhesions; three positive punctures in sixth interspace. Incision; in sixth interspace no adhesions at this level; partial pneumothorax without gravity; puncture of lung; pus is immediately under the visceral pleura. Rapid disappearance of pneumothorax; six punctures parietal and five punctures a little later. Completely cured; abscess discharged into bronchi; recovery in seven months.

Case 61, 1896. Esquerdo, Rev. de Cien. Med. de Barcel., 1896, Vol. 22, pp. 244-250. Male, aged 42 years. Lung abscess; pain in side and diphuella cough; expectoration profuse; at first purulent, later putrid; slight hemoptysis; fourteen months duration. Exposure to cold; sailor. Right lung; signs of cavity; no pleural adhesions. Incision above seventh right rib, extending backward to axillary line; resected 10 cm. of rib; sutured lung to parietal pleura; explored with finger; induration found; thermo-cautery tip introduced into induration; cavity found and contents evacuated; packed with iodoform gauze; fourth day, cavity washed with warm boric acid; it came through into wound; solution came through into mouth; irrigation repeated many times; after eight days drainage tube put in. Cough and expectoration became less after operation; cavity became swollen; at end of forty days, no discharge from tube and patient has no cough or expectoration; four days after this he had a slight hemoptysis; ultimate recovery.

Case 62, 1896. Luther, Australian Med. Gaz., 1896, Vol. 15, p. 344. Male, aged 37 years. Lung abscess opening into a bronchus; duration, six weeks. Chill and pain in left side; located in left lung; no positive sign of cavity; pleural adhesions. Incision over seventh rib; center of incision midway between spine and wound in axillary line; part of seventh rib resected; adherent pleura; lung easily broken down by finger; one-half pint of pus and debris; cavity donched with 40 per cent. creolin; drainage. Recovery; great relief. Cough and expectoration ceased; night sweats did not recur; temperature fell to 100, then to normal five days after operation; gained strength rapidly; perfect recovery.

Case 63, 1896. Sims, Med. Rec., 1896, Vol. 49, p. 500. Lung abscess. Incision and drainage. Recovery.

Case 64, 1897. Andrews, in Morillon de Paris, 1897, p. 71. Male, aged 17 years. Lung abscess; duration several months; location, base of left lung; pleural adhesions. Puncture, 500 c.c. of pus. Resection of second rib, posteriorly; pneumotomy; enlargement of the puncture wound. Rapid recovery; seen sixteen years later; cured.

Case 65, 1897. Andrews in Morillon de Paris, 1897, p. 72. Female, aged 35 years. Abscess of lung; several months duration. Angio-cholecystitis; cholecystenterostomy after mercury. Location, right lobe, posteriorly; no signs of cavity; pleural adhesions. Punctures of lung and liver negative. Resection of two inches of seventh rib posteriorly; puncture negative; trocar inserted in all directions; at last reached a purulent cavity internally close to the vertical column; pneumotomy with cautery; 150 c.c. of pus. Recovery in ten months.

Case 66, 1897. Carl Beck, N. Y. Med. Jour., 1897, Vol. 66, p. 207. Male, aged 31 years. Duration, three months. Pneumonia when 10 years of age; in November, 1885, pleuro-pneumonia followed by cough and fetid expectoration. Location, right side anteriorly and below; signs of cavity. Incision over ninth rib from post axillary line to transverse process of ninth dorsal vertebra after right eighth and tenth ribs were resected; pleura was packed with aseptic gauze; needle pushed into lung; cavity entered; offensive pus aspirated with needle; opening dilated and packed with gauze. Considerable cough and expectoration after operation; patient improved rapidly; wound closed two months after operation.

Case 67, 1897. J. Curnow, London Lancet, 1897, Vol. 2, p. 1188. Male, aged 37 years. Empyema and abscess of lung; twelve days duration. Acute pneumonia; apex of left lower lobe; signs of cavity not certain; pleural adhesions. Positive puncture below angle of left scapula; twenty-four ounces of odorless pus removed. Incision in eighth interspace, median axillary line; twenty-four ounces of pus removed; drainage tube. Patient died next day. Necropsy: Right lung showed congestion and bronchitis of lower lobe of left lung; adherent pleural pneumonia abscess; cavity 2 cm. from apex, posteriorly.

Case 68, 1897. Edwards, London Lancet, Vol. 2, 1897, p. 1583. Female, aged 21 years. Lung abscess of two months duration; pleuro-pneumonia of right side; no positive signs of cavity. Puncture in the eighth interspace below angle of right scapula; two and one-half to three inch cavity was revealed; offensive pus; incision two and one-half inches long over ninth rib below angle of scapula; one inch of ninth rib resected; trocar and canula put into cavity and opening enlarged with finger and forceps; rubber drainage tube. Marked improvement; three days later temperature increased and condition was critical; one week after operation improvement again took place. Perfect recovery six weeks after operation; wound closed.

Case 69, 1897. De M. Moir, London Lancet, Vol. 1, 1897, p. 105. Male, aged 34 years. Liver abscess ruptured into the lung; liver abscess had existed about ten months. Etiology: Malarial perineal abscess and gonorrhoea; obstructed liver abscess breaking into lung. Location, right lung in axilla; signs of cavity. Liver abscess incised and drained through the sixth interspace about two months before lung abscess was opened; mass far back in right axilla over fifth rib; one inch of fifth rib resected; counter opening in front in fourth space below nipple, opening up a secondary cavity which communicated with the first, also with liver abscess; drainage tubes in both incisions; taken out after seventeen days; wound closed rapidly. Discharge and expectoration diminished. Gradual improvement and ultimate recovery.

Case 70, 1897. Routier, Soc. de Chir., 1897, p. 133. Lung abscess; no signs of cavity; pleural adhesions. Pneumotomy after costal resection. Patient getting better when observation was reported.

Case 71, 1897. Ballington, Arch. Gen. de Med., 1897, Vol. 20, p. 465. Male, aged 6 years. Pleurisy and lung abscess. Pneumotomy; drainage of pleuro and abscess cavity. Recovery.

Case 72. Maydill, Jour. Amer. Med. Assn. Male, aged 29 years. Lung abscess of one month's duration; rupture of lung, posteriorly; signs of cavity; partial pleural adhesions. Resection of rib over area of dullness, near angle of scapula; cautery used to open cavity; escape of fetid fluid; masses of gangrenous lung discharged. Pulmonary edema and pneumonia of sound lung followed recovery. Cavity slowly diminished in size.

Bronchiectasis.—A dilatation of a bronchus may be cylindrical or ampullar, local or diffuse. (Grawitz.) Etiologically it may be a congenital defect or anomaly. (Welch.) It may be intrinsic, the result of inflammation, necrosis, softening and dilatation, with retention of secretion in the bronchi; extrinsic, the result of contraction of the lung tissue or pleuritic adhesions. The ampullar variety when localized is the one which concerns the surgeon. The universal bronchiectasis, or the entire involvement of the bronchial tree (Osler), should not be treated surgically. Habershon⁶² reports autopsy with multiple gangrenous bronchiectases of all lobes of both lungs. Pathologically the wall of the bronchus may be attenuated and its mucosa lined with pavement epithelium; more commonly it is ulcerated, with the lung tissue in the neighborhood involved in an inflammatory infective process. As surgical bronchiectasis is secondary to other pathologic conditions its symptoms are usually intermingled with those of the original disease. In the ampullar variety, however, the cough and expectoration are distinctive. The patient will pass many hours without coughing, followed by a violent attack with the expectoration of several drams or even ounces of a grayish, purulent fluid, with a sour and sometimes fetid odor; the microscope reveals crystals of fatty acids, occasionally those of hematoidin, and in tubercular cases bacilli. The physical signs are those common to cavities; exploratory puncture gave positive results in 50 per cent. of the cases reported. (Terrier.) Endeavor has been made to disinfect and medicate cavities of this class through inhalation. This up to the present has not been very successful. Hesse, of Schwartzberg, showed that dust does not reach beyond the third division of the bronchus. Dr.

⁶² Lancet, London, April, 1894, p. 1012.

Homer W. Thomas has made some excellent and interesting experiments in this line; he showed that vapors were carried into the alveoli themselves and demonstrated in one of the cavities on which I operated that the cavity could be filled with a sterilizing vapor.

Operation.—The sacculated is the only variety that admits of surgical treatment, and in this we have again the difficulty of differentiating between a number of small cavities closely situated and a large cavity. This was illustrated in a case to be related subsequently. The great obstacle in the surgical treatment of this class of cases is our defective localization, and while the radiograph shows distinctly the outline of large cavities it is not yet practical with small ones. Operation should be the same as that performed for abscess, though not more than two ribs should be resected. Adhesions were present in 84 per cent. of the cases operated. Digital exploration of the lung may aid in the localization of the cavity. The exploratory needle is also of service; when located the scalpel should be used to open the abscess and the cavity should be tamponed with iodoform gauze. Osler⁵³ cites a case of death following the operation for bronchiectasis with fetid bronchitis. Hofmök⁵⁴ strongly favors the opening and drainage of these cavities and reports 42 cases, 14 cures, 3 fistulae, 24 deaths, 1 result unknown. The results of operations in this class of cases have been very unsatisfactory. Roswell Park⁵⁵ collected (including Truo's) 23 cases with 9 deaths. Of 38 cases collected by Tuffier there were only 9 cures; certainly not a tempting inducement for incision and drainage. Leser,⁵⁶ of Halle, favors this operation. I have collected histories of 44 cases of bronchiectatic cavities that were operated upon; of these 25 recovered, 19 died. Of the 19 deaths, 11 were from undetermined causes, 1 from chloroform syncope, 1 from acute bronchitis, 2 from collapse, 3 from brain abscess, 1 from hemorrhage. We will await with interest the results of local compression after the removal of the thoracic wall as a treatment for this class of cases, as well as the results from artificial pneumothorax either of which I believe is preferable to drainage.

Case illustrating local compression, referred by Drs. Homer W. Thomas and Geo. W. Johnson: Maggie C., aged 48, admitted to Cook County Infirmary October, 1897, suffering from pulmonary tuberculosis; bacilli demonstrated; evening temperature, 102-103°. Physical examination reveals consolidation of both apices; rales universal; amphoric respiration demonstrated in left upper lobe anteriorly; the cavity is apparently large, extending from the first interspace to the third in the anterior axillary line, and having a transverse diameter of about three inches; the most pronounced signs are at the lower margin of the second rib; there is also evidence of a cavity in apex of left lower lobe posteriorly. The belief was that the cavity was very large.

Diagnosis.—Bronchiectatic cavities (tubercular).

Operation.—November 14, 1897, resection of three inches of the second rib, left side, without opening the pleural cavity; found pleura adherent; Paquelin cautery was used and a small cavity the size of a walnut was opened; this was packed with iodoform gauze and the lung was compressed. The patient was in good condition on the table; six hours after the patient's temperature dropped to 95°, pulse became extremely weak and 160 beats a minute. Active stimulation was resorted to and in eight hours she rallied perfectly. The packing was not disturbed for three days, when it was removed; it was thoroughly saturated with pus and blood. The dressing was changed daily thereafter. The quantity of discharge was excessive at first and gradually diminished; the daily temperature was 102° in the evening and gradually dropped from that until it reached 90°. The improvement, diminution of discharge, increased appetite and lowered temperature continued

for about three weeks. The temperature began to rise; the night sweats reappeared, the expectoration rapidly increased, evidences of the formation of cavities in the right lung appeared and the patient grew rapidly worse. The cavity in the left lung was granulating and the discharge had almost ceased. The patient died rather suddenly on December 15, having shown no signs of approaching dissolution to within half an hour of her death.

Postmortem revealed multiple cavities in the upper lobe of the left lung and numerous cavities in the upper and lower lobes of the right lung; there was an acute necrosis and gangrene of the walls of the cavities in many places, which probably accounted for the sudden death. The cavity which had been drained was almost obliterated, cicatrized and covered with healthy granulations. There were numerous small cavities in close proximity to this which caused the error in the estimate of the size of the cavity at the time of operation. (History furnished by Dr. Clara Ferguson). Bronchiectatic cavities operated, forty-six.

Bronchiectatic Cavities from 1873 to 1897.

Case 1, 1873. Mosler and Huter, *Klin. Woch.*, 1873, p. 43. Male, aged 49 years. Signs of bronchial dilatation of five years' standing. Incision at the upper border of the third rib to 5 cm. from the right border of the sternum; opening of the pulmonary cavity; drainage. Recovery; temporary improvement; death three months later, Oct. 5, 1873. Necropsy: Bronchiectatic cavity of the right upper lobe; amyloid degeneration of the viscera.

Case 2, 1875. Riéus, *Klin., Clin. de la Pitie*, 1894, p. 39, and *Congress de Clinique*, 1875, p. 62. Male, aged 50 years. Incision at the level of the third interspace; resection of 6 cm. of third rib. Recovery; amelioration; fistula persistent and accidents of retention; Eslander's operation two months later; death during chloroform anesthesia.

Case 3, 1882. W. Koch, *Deutsch Med. Woch.*, 1882, p. 440. Male, aged 24 years. Signs of cavity in the right lower lobe; four years' duration. Resection of the sixth rib; the pleura adherent; opening with cautery of a large cavity the size of a child's fist; situated three finger breadths from the surface of the lung and into which several large bronchi open. Second operation, resection of the eighth rib; no large cavity. Third operation, opening of a large cavity between the eighth and ninth ribs. Recovery with marked improvement.

Case 4, 1882. W. Koch, *Deutsch Med. Woch.*, 1882, p. 441. Male, aged 24 years. Signs of cavity in right lower lobe with abundant fetid expectoration; 800 to 1000 c.c. in twenty-four hours; duration, four years. Resection of four inches of fifth rib; incision, oblong, with cautery; opening of cavity the size of a fist; expression of the lung in this cavity and opening of a second cavity the size of a child's head, from which escaped the little fetid fluid. Death seven days later, July 22, 1882; collapse. Necropsy: Phlebitis of the portal vein; amyloid degeneration of the viscera; broncho-pneumonia of the left lower lobe.

Case 5, 1882. Mosler and Huter, *Berl. M. A. Cong. for Med.*, Vol. 2, 1882, p. 87. Pneumotomy without rib resection; opening of a bronchiectatic cavity; drainage. Recovery without fistula; cure maintained fifteen months; death March, 1876; general tuberculosis. Necropsy: Amyloid degeneration of viscera.

Case 6, 1882. Williams, *Marshall Lancet*, 1882, Vol. 2, p. 1107. Male, aged 40 years. Bilateral pneumonia with right bronchiectasis; abundant fetid expectoration; duration, one year. Vertical incision from fourth to fifth ribs; puncture of the lung with a large trocar; escape of air and fetid pus; drainage. Recovery; moderate improvement; death July 5; cerebral accidents. Necropsy: Total adhesion of right pleura; fistula between fourth and fifth ribs; numerous bronchial dilations of the anterior portion of the lung, the larger, the size of an orange, has been opened; no other bronchial dilations; abscess of the right cerebral hemisphere.

Case 7, 1883. Bull, *North Med. Archives*, 1883, Vol. 15, p. 17. Male, aged 25 years. Chronic general bronchitis with signs of cavity of right base; retraction of the thorax; duration, seven years. Incision in the seventh interspace with cautery; the lung examined with the finger; no cavities of large size; escape of fetid gas; hemorrhage; tamponade. Recovery; amelioration; several exploratory punctures without results; death one month later. Necropsy: Right pleural adhesions; multiple bronchiectases; no large cavity; interstitial pneumonia in the left; pleurisy and bronchial dilatation.

Case 8, 1883. Kazorowski, *Deutsch Med. Woch.*, Vol. 9, No. 29, p. 432. Female, aged 26 years. A bronchial dilatation or purulent pleurisy. Resection of the sixth rib; pneumotomy; opening of a large cavity. Recovery; purulent pleurisy, consecutive.

Case 9, 1883. Laden, *Deutsch med. Zeitung*, No. 28, 1883, p. 375. Patient expectorates nearly one-half liter of fetid sputa and not containing portions of lung substance; cavity in lower portion of left lung or pleura; general condition bad. Incision without narcosis; large amount of fetid fluid. Recovered; two days later resection of rib; antiseptic irrigation; condition becomes better; improvement slight; fistula remains.

Case 10, 1884. Albert Wiener, *Med. Press*, July 6, 1884, p. 855. Bronchiectatic cavity in lower left lobe. Opened with thermo-cautery. No result.

Case 11, 1884. Biss and Marshall, *Med. Times and Gazette*, 1884, Vol. 1, p. 747. Male, aged 32 years. Bronchiectasis of the right base; bacteriologic examination negative; duration six months. Operation between the tenth and eleventh ribs; a puncture of the pleura; escape of air and bloody fetid liquid; drainage; irrigation with permanganate not tolerated. Death eighteen days later; cerebral accidents. Necropsy: Multiple bronchiectasis of the right base, of which the larger have been opened; the left lung normal; two brain abscesses.

Case 12, 1884. Tausenstein, *Cent. f. Chir.*, 1884, p. 290. Male, aged 37 years. Fetid, abundant expectoration; duration several years. Resection of four inches of the anterior portion of the eleventh rib; puncture of the lung with a trocar; dilatation of the tract; large cavity with resistant walls; insertion of drain. Recovery. According to Quinke this patient met death from hemoptysis.

Case 13, 1885. De Cereville, *Rome Med. Suisse Romande*, 1885, Vol. 5, p. 462, obs. 1. Male, aged 50 years. Sacciform excavation of right lower lobe; puncture with a large trocar. Recovery. Death two months later; mania; refused nourishment. Necropsy: Pleural adhesions; a regular cavity surrounded by sclerotic tissues; no tuberculosis.

Case 14, 1885. De Cereville, *Ibid.*, obs. 2. Cavity of the left base; duration, four years. Puncture with a large trocar; dilatation. Recovery. Death nine weeks later. Necropsy: Irregular excavation of the left lower lobe; kidneys and liver sclerotic.

⁵³ Johns Hopkins Hospital Bulletin, Baltimore, 1889-90, Vol. 1, p. 109.

⁵⁴ Wien. Klin. Woch., 1893, vi, p. 68.

⁵⁵ Ann. Surg., St. Louis, 1887, v. 385. ⁵⁶ Lancet London, March 9, 1891.

Case 15, 1886. Rochelt, Wiener Med. Presse, 1886, p. 1264. Male, aged 54 years. Bronchiectasis of the right lower lobe; examination for bacilli negative; duration three years. Operation in two sittings; first is resection of sixth rib; second is pneumotomy forty-eight hours later with the cautery; cavity the size of a hen's egg; drainage. Recovery.

Case 16, 1886. Rochelt, Wiener Med. Presse, No. 37. Female, aged 36 years. Fetid expectoration; fever; abscess formation at the base of left lung with excavation in the sixth interspace; incision for empyema. No amelioration of general symptoms; incision made in lung; pus and blood escaped; patient had an attack of hemoptysis; iodoform gauze tampons inserted; wound washed out next day; débrida was taken out; iodoform tampons. Fever abated; cough and fetid expectoration ceased; complete recovery of gangrenous excavation inside of four weeks.

Case 17, 1886. Williams and Godley, Brit. Med. Jour., 1886, Vol. 1, p. 590. Male, aged 67 years. Bronchiectasis of the left base; duration two years. Incision at the level of the eighth interspace. Recovery. Death from cardiac syncope one year after operation.

Case 18, 1886. Williams and Godley, Med. Chir. Transactions, 1886, Vol. 69, p. 234. Female, aged 21 years. Multiple bronchiectasis at the level of the sixth and seventh interspace. Resection of an inch of the seventh and eighth ribs; puncture of the lung; drainage. Recovery; amelioration.

Case 19, 1887. Benson and Godley, Lancet, 1887, Vol. 1, p. 716. Male, aged 55 years. Signs of cavity upon the left in the axillary line. Incision in the tenth interspace. Death three days later. Necropsy: Multiple dilations of the whole left lower lobe; no large cavity; fatty degeneration of the heart; nutmeg liver.

Case 20, 1887. Godley and Powell, Lancet, 1887, Vol. 1, p. 716. Male, aged 35 years. Duration of symptoms one year. Death from chloroform syncope at beginning of operation. Necropsy: Bilateral general bronchial dilatation.

Case 21, 1887. Godley, Lancet, 1887, Vol. 1, p. 717. Female, aged 29 years. Bronchiectasis limited to the left base. Resection of the tenth rib; opening of a bronchial cavity; drainage. Recovery. Not seen after leaving hospital.

Case 22, 1887. Stewart, Brit. Med. Jour., 1887, p. 179, and 1893, Vol. 1, p. 1147. Male, aged 27. Signs of cavity at angle of left scapula; duration nine years. Incision; rib resection; opening of a pulmonary cavity; counter-opening and drainage. Recovery.

Case 23, 1888. Hoffmoki, Soc. Imp. Roy. des Med. de Vienne, January, 1888. Male, aged 32 years. Rib resection; incision of the lung with cautery; opening of a cavity located at the depth of 7 cm.; escape of air. Recovery.

Case 24, 1889. Mackey, Brit. Med. Jour., 1889, Vol. 2, p. 660. Male, aged 20 years. Signs of cavity of right base; duration four years. Intercostal incision, pleuro-pulmonary adhesions; puncture; operation suspended on account of cough; eight days later incision of the lung; opening of a cavity filled with pus, Recovery. Death six weeks later. Necropsy: Multiple cavities occupying the whole of the right lower lobe; focus of pulmonary gangrene in the left lower lobe, but no bronchial dilatation of this side.

Case 25, 1889. Mosler and Volk, in Hortwin Inaug. Dissert., Griefswald, 1889. Male, aged 13 years. Bronchiectasis of the left lobe. Resection of the third rib; opening of a cavity the size of an apple; counter-opening between the ninth and tenth ribs at the level of which we came upon a cavity containing one and one-half liters of pus; pleural adhesions. Death seven days later.

Case 26, 1890. Osler, Johns Hopkins Bulletin, Vol. 1, 1890. Male, aged 60 years. Had pneumonia several times in many years; has had pain in side and chest, spitting blood at times; cough and fetid expectoration; clubbed fingers; wasted; left side of chest retracted; amphora sounds; temperature 98 to 101. Resection of portion of fourth and fifth ribs; a series of cavities opened; these were packed with iodoform gauze. Patient sank after operation and died on third day. Necropsy: General bronchiectasis; no tuberculosis.

Case 27, 1891. Krecke, Munich Med. Woch., 1891, p. 399. Male, aged 48 years. Bronchial dilatation of the left base; duration several years. Exploratory punctures; escape of pus; rib resection; incision; no pleural adhesions; pneumothorax makes the examination of the lung impossible. Death several hours later. Necropsy: Multiple bronchiectatic cavities; large cavity in the left lower lobe.

Case 28, 1891. Haache, Mag. forger, 1891, No. 4, in Quincke Mittheil aus d. Grenz. gebäul-wehr, 1895, Vol. 1, p. 44, obs. 7. Male, aged 17 years. Sacciform bronchiectasis; signs of cavity; duration six years. Exploratory puncture; resection of 5 cm. of the eighth rib in the axillary line; no pleural adhesions; suture of the lung to the lips of the wound; eight days later opening of a cavity with cautery. The immediate result was amelioration. Persistence of a fistula; expectoration reduced from 900 to 100 c.c.; Death nine months later from meningitis (abscess of the brain).

Case 29, 1892. S. Coupland, Lancet, 1892, Vol. 2, p. 369. Female, aged 16 years. Cavities of the left base; no bacilli; duration two years. Operation by Pence-Gould; two exploratory punctures, below and above the eighth rib, May 10; May 17, diffuse swelling at level of puncture; incision; opening of pulmonary cavity; resection of eighth rib. Death from chloroform syncope. Necropsy: Sacenlar dilatations of the bronchi in the left lower lobe; another bronchial dilatation of the left upper lobe and the right lung.

Case 30, 1893. Hoffmoki, Wiener Med. Presse, 1893, April 30. Male, aged 43 years. Sign of cavity in right apex. Incision with cautery in the second interspace; escape of pus; drainage. Recovery.

Case 31, 1895. Reclus, Klin. Clin. de la ditle., 1894, p. 39, Cong. de Clin., 1895, p. 62. Male, aged 50 years. Incision at the level of the third interspace; resection of 6 cm. of third rib. Recovery. Amelioration; fistula persistent and accidents of retention; Eslander's operation two months later; death during chloroform anesthesia.

Case 32, 1895. Biondi, Clinica Chir.-Milaro, 1895, Vol. 3, p. 475. Male, 26 years. Left interstitial pneumonia, putrid bronchiectasis; dry adhesive pleurisy and the existence of a superficial cavity in the lower part of the scapular region. Pneumectomy performed. Death fifteen hours later. Necropsy: Postmortem purulent pleurisy from escape of bronchiectatic fluid into pleuric cavity during the operation; multiple bronchi dilatations.

Case 33, 1895. Abrona, loc. cit., ibid. Bronchiectasis; fever and abundant expectoration. Pneumectomy performed. Recovery; temporary amelioration; reappearance of the irregular fever and expectoration several days after the operation.

Case 34, 1895. Quincke, Mitt. aus ten Granzg. der Med. Chir., band 1, H. T. 1, 1895, p. 15, obs. 2. Male, aged 25 years. Multiple bronchiectasis; signs of cavity upon the left posteriorly and at the base; expectoration amounted to 150 to 200 c.c.; duration two months. Incision in eighth interspace; three applications of paste of chlorid of zinc; eighteen days later resection of the ninth, tenth and eleventh ribs; application of the paste of chlorid of zinc four days later; exploratory puncture; pus; incision with cautery. Recovery; Patient left in August, 1896, and returned to his work.

Case 35, 1885. Quincks, loc. cit., p. 41, obs. 12. Male, aged 49 years.

Cylindrical bronchiectasis of left base. Application of paste of ZnCl. 2; four weeks later resection of 4 cm. of tenth rib; no cavity; opening of a bronchiectasis. Recovery; amelioration; left hospital five months later.

Case 36, 1895. Quincke, loc. cit., p. 17, obs. 3. Male, aged 34 years. Multiple bronchiectasis of left base; retraction of thorax; no signs of cavity; duration several years. Incision in eighth and ninth interspace; application of zinc chlorid; resection of ninth and tenth ribs; wall incised with cautery; Zn. Cl. 2 on lung. Recovery; amelioration; patient escaped tuberculosis.

Case 37, 1895. Quincke, loc. cit., p. 18, obs. 4. Male aged 36 years. Bronchiectasis of left base, secondary to a chronic bronchitis; twelve years' duration. Resection of ninth rib; Zn. Cl. 2 applied without result; later resection of the tenth rib. Recovery; amelioration; death two years later.

Case 38, 1895. Quincke, loc. cit., p. 27, obs. 7. Male, aged 66 years. Bilateral multiple bronchiectasis with sacciform dilatation in left base; signs of cavity; duration four years. Resection of 7 cm. of ninth rib; exploratory puncture without result; no pleural adhesions. Death; collapse before the incision of the cavity. Necropsy: Amyloid degeneration of viscera.

Case 39, 1895. Quincke, loc. cit., p. 34, obs. 9. Male, aged 12 years. Multiple cylindrical bronchiectasis of whole right lung; no signs of cavity; duration three and one half years. Resection of second, third, eighth and ninth ribs; exploratory puncture. Recovery; no amelioration.

Case 40, 1895. Quincke, loc. cit., p. 32, obs. 8. Female, aged 42 years. Bronchiectasis of left base; sacciform and cylindrical; no signs of cavity; five applications of Zn. Cl. 2. Resection of tenth rib; incision with cautery. Death four days later; collapse. Necropsy: Small bronchial dilatations; large cavity in left apex.

Case 41, 1895. Quincke, loc. cit., p. 35, obs. 11. Male, aged 31 years. Sacciform bronchiectasis of left base; no signs of cavity or pneumonia; duration five years. Incision; application of Zn. Cl. 2; resection of 4 cm. of tenth rib; incision of the cavity; drainage. Recovery; fistula. Death during second operation; hemorrhage and entrance of air into pulmonary veins.

Case 42, 1895. Quincke, loc. cit., p. 37, obs. 11. Male, aged 54 years. Sacciform bronchiectasis of left base. Three applications of Zn. Cl. 2 paste; resection of eighth, ninth and tenth ribs; pleural adhesions. Death one month later from hemorrhage.

Case 43, 1895. Walter, Congress de Chir., 1895, p. 101. Female, aged 26 years. Chronic bronchitis with bronchial dilatation of entire left lung; purulent pleurisy existed in lower portion of left pleura, probably consecutive to a point of pulmonary gangrene, with pleuro-bronchial fistula. Resection of seventh and eighth ribs posteriorly; pleural adhesions very large; resection of eighth and ninth ribs; opening of an enormous cavity; tamponade with gauze and sponges. Recovery without fistula after secondary thorocoplasty.

Case 44, 1896. Pierre, Selbet in de Agincourt thesis de Paris, 1896, p. 73. Male, aged 45 years. Bronchiectasis of left base; expectoration reaching as high as one and one-half liters. Resection of 5 cm. of the seventh rib; opening of a large cavity the size of a nut, surrounded by other small cavities at a depth of 5 to 6 cm.; escape of fetid pus; drainage. Recovery; marked improvement. Death twenty months later.

Case 45. Gerard Marchant in Guillmont and Herbert, Soc. Anatomy, 1896, p. 92. Bronchiectasis of right base. Resection of seven to eight cm. of fourth rib; resection of third rib; cavity located higher than had been supposed; opening of a cavity the size of a hen's egg; walls of cavity bleeding; two forceps left attached. Amelioration. Death four months after the operation. Necropsy: Right lung, except at a point in the upper lobe, is entirely destroyed and perforated by irregular cavities, the larger of which are the size of a walnut.

Case 46, 1896. Wills, Lancet, 1896, Vol. 1, p. 1563. Unilateral bronchiectasis. Rib resection; several punctures; negative; pleural adhesions. Death on the eleventh day. Necropsy: Unilateral cylindrical bronchiectasis without a large cavity.

Case 47, 1897. Coppehkov, Wratch, 1897, No. 6. Female. Bronchiectasis with hemoptysis. Pneumotomy; opening pocket the size of a nut. Recovery of hemoptysis; several days later second pneumotomy; opening of several cavities. Cure maintained several months.

Case 48, 1897. Nelaton in the Busard, Paris, 1897. Male, aged 34 years. Repeated bronchitis during past four years and secondary bronchiectasis of left base; interlobar pleurisy. Incision in the sixth interspace; no resection of ribs; opening of a cavity; drainage; irrigation incites cough. Death twelve days later; coma. Necropsy: Multiple dilatations of bronchi of left lower lobe; large cerebral abscess occupying the frontal and cerebral lobes; but one bronchiectatic cavity opened.

Case 49, 1897. Nelaton in the Brusard, Paris, 1897. Female. Bronchiectasis. Pneumotomy performed. Recovery; amelioration for six months; recurrence.

Gangrene of the Lung.—Gangrene of the lung may be diffuse or circumscribed. It has four distinct stages: Necrosis, putrefaction, demarcation and elimination, and reparation. It is most frequently a result of acute pneumonitis. Andral found it present in 3.3 per cent of post mortems for pneumonia; Hughes found it in over 10 per cent. in Guy's Hospital (Paget). In place of resolution taking place at the proper time there is a death of lung tissue. The lung tissue is unable to react from the destructive effect of the infection by reason either of its character or intensity, and as a consequence gangrene results. Gangrene may be the result of a foreign body in the bronchus, an inhalation infection, a septic embolus, necrosis of an infarct, etc. It may be the result of an extension of infection from a bronchiectatic or abscess cavity or from a putrid bronchitis, when it is often multiple, as shown in a case by Walter D. de Jersey.⁵⁷ It may result from perforation into the lung of abscess cavities, as

⁵⁷ Lancet, London, Jan. 21, 1892, p. 27.

mediastinal or subphrenic, from perforation of the esophagus, with foreign bodies, as in a case reported by Pasteur, London, and operated by Bilton Pollard, in which a communication was found between the esophagus and the bronchus at its bifurcation; a gangrene of the right lung was produced; it was treated by double drainage. Gangrene occurs most frequently in the lower lobe, and is most often situated near the surface of the lung, next near the center and less frequently near the interlobar septum. (Tuffier.) After necrosis it may undergo rapid decomposition, depending upon the presence of saprophytes. In the diffuse variety an entire lobe may be involved. (Trier.) The separation of the slough is slow; the sequestrum may be expelled through the bronchus or through the chest wall by extension of the necrotic processes. The gangrenous areas are multiple in 15 per cent. of the cases.

Diagnosis.—The symptoms of gangrene of the lung are usually very pronounced, though they may merge from those of a severe pneumonia. When the typhoid mutterings, nervous prostration and evidence of intense intoxication continue beyond the usual limit for a pneumonia, gangrene should always be suspected. If it be diffuse, the breath and expectoration soon become offensive; the latter is a brown, frothy, muco-purulent fluid; it is often profuse; the amount expectorated in one seizure of coughing is some index to the size of the cavity; there is probably no odor so offensive as that of the breath in gangrene of the lung. In the circumscribed variety the gangrenous cavity may not communicate with the bronchus, in which case there would be no odor. There is usually circumscribed dullness but rarely edema of the chest wall. Exploratory puncture gives a foul-smelling fluid or a very offensive gas. This procedure is not devoid of danger. Gangrene of the tract of the needle and gangrene of the wall of the chest with emphysema followed in case of E. Bull; incision and drainage were resorted to with recovery. Errors in localization of cavities have been of frequent occurrence with the best diagnosticians. Barry called attention to this in 1726. Tuffier found exploratory puncture positive in but two-thirds of the cases. He emphasized its dangers and said it should be restricted to the time of operation. Lejous⁵⁸ removed the eighth, ninth and tenth ribs and detached pleura, made digital inter-pulmonary exploration for a case of gangrene, presumably of the lower lobe with negative result; the patient succumbed, and post mortem showed the gangrene in the upper lobe. In another case in which he made inter-pulmonary palpation he succeeded in locating the induration and opened a cavity near the spine. He favors this method. Dr. Routier,⁵⁹ Paris, favors digital palpation, and located in this manner an inter-lobar abscess ten centimeters from the surface of the lung.

The following diseases, bronchiectasis, fetid bronchitis and gangrenous pleurisy may be confounded with gangrene. The history aids very much in the differential diagnosis, while the physical signs and the result of exploratory puncture may be the same in both cases. Under medical treatment the mortality of this disease is upward of 80 per cent. Surgery has reduced this mortality somewhat, although it is still great. Sonnenberg says that in seventy-four operations 35 per cent. recovered. Langenbeck oper-

ated successfully as early as 1879. (Gluck.) The surgical treatment of gangrene received its greatest impetus from Bull, Copenhagen, who made incision and drainage a recognized surgical procedure; his suggestions and conclusions have scarcely been improved upon. I therefore quote the following: "Limited pulmonary gangrene recovers without operation or puncture; extensive gangrene cannot be cured by bronchial drainage or aspiration, as the necrotic portions cannot get out; free incision should be made when gangrene is diagnosed. If cavities are multiple, more than one opening may be necessary; operation is the only therapeutic efficient; pleuritic adhesions are an essential condition; vibration of needle with puncture is not a reliable negative symptom, nor absence of vibration positive of existing adhesions." Thomas Williams in 1877 diagnosed pneumonia followed by abscess and operated; patient died of pneumonia. When this was reported, Thompson, Bryant and Mamder favored this operation in discussion; Douglas Powell opposed it. Lowson reported a fatal case. Berkely Hill Sedgwich and S. C. Smith reported recoveries; the latter gave as indications for operation: 1, in cases where the gangrenous cavity is imperfectly drained through the bronchus; 2, where too much irritation is produced from the discharge; 3, in rapid emaciation; 4, unquestionable signs of cavity present.

The consideration of the results obtained in operations for gangrene shows a marked improvement as time has advanced, from Truc's cases, 1879 to 1884, 13 operations, 3 cures, 2 relieved and 2 on the way to recovery, 6 deaths. To those of Reclus, 1885 to 1895, 14 operations, 11 cured, 1 improved and 2 deaths.

Chloroform is the best anesthetic. (Tuffier.) The Schleich method of local anesthesia is good, and I consider it indicated here more than anywhere else. The question has been raised, should the operation be performed immediately or should we wait for certain pathologic changes to take place? The rules advanced in favor of delay are: 1, we should not operate until liquefaction of the slough has taken place; 2, we must be sure adhesions are present; 3, we must remember that circumscribed cases recover of themselves. The latter is the only rule of significance; when the abscess is small and there is free expectoration with the absence of toxic symptoms, time may be given with the hope of recovery without operation, though the sequestrum is rarely ejected through a bronchus. It must not be expected in the early stage that a cavity will be found; at this stage it will be a succulent, boggy mass, with very offensive odor; the mass should be freely incised for drainage, but no effort should be made at excision. The gangrenous cavity may have large vessels traversing it in which thrombosis has not taken place. Runneberg,⁶⁰ Fenger and Hollister⁶¹ were early and strong advocates of the free incision and ample drainage.

It is not necessary to wait for the separation of the slough before operating, as the danger of retention and the extension of the process increases as time advances; there is little danger of operating too soon, as the process is usually advanced before the diagnosis is made; neither is it necessary to wait for adhesions. The pleural cavity is most always infected and should be freely drained; recoveries in the absence of adhesions are reported by Krause, Paget, Reclus and others. When the gangrene

⁵⁸ Paris Med. Week, February, 1897, p. 21.

⁵⁹ Paris Med. Week, Feb. 26, 1897, p. 97.

⁶⁰ J. W. Runeberg, Helsingfors, Dent. Arch. f. Klin. Med., 1887, xii.

⁶¹ Am. Jour. Med. So., Philadelphia, 1881, Vol. xxxii, p. 870.

is situated high up it is very desirable to have adhesions, and unless they exist at the time of operation they should be induced by exposure and tampon or suture after the method of Péan, Roux and Godlee. The latter reports a case in which he adopted this method.⁶² It is desirable to open into the most dependent portion of the cavity, as it allows of better drainage and prevents the escape of pus into the bronchus, though it contributes little to the healing, as this is accomplished by cicatricial contraction. If the gangrene be in the depth of the lung, the pulmonary tissues should be freely incised, hemostasis secured and the surface protected by the application of the Paquelin cautery. The trocar and canula are not to be used in gangrenous cases, as they do not admit of sufficient drainage and are likely to be occluded by the slough. Injections of disinfecting material have proven a failure and should not be used. O. Hewdke, of Warsaw, used various injections in four cases without a cure.⁶³ If the operation be performed early the question arises, Shall the necrotic portion be excised, or merely incised and drained? The principles of surgery governing this appear to be the same as those governing gangrenous tissue in other portions of the body, *i. e.*, the sphacelus should not be excised; it will separate at the line of demarcation. The auto-separation appears to have an additional advantage, as it insures the thrombosis of the vessels and lessens the liability to hemorrhage in a location in which the surgeon is not entirely master of the situation. When the sphacelus is detached, it should be carefully removed at the time of operation. The cavity should not be irrigated, particularly if it communicate with a bronchus; large incision and free drainage is all that is necessary. The period of time which is required for the separation of the slough is indefinite. I have found in my experiments that pressure necrosis of the lung with separation of the stump after ligature takes place very slowly; it requires ten to twelve days, which would indicate that the line of demarcation forms slowly. The length of time required for the closure of the cavity depends upon its size. It may, however, close rapidly, as is shown by the following case:

Mr. F. W. M., age 58, was seen by me in a consultation, out of the city, Nov. 16, 1893. He was in the third day of an ordinary croupous pneumonia of the lower lobe of the right lung. I saw him again on the 24th, eight days later. Resolution was well established, the temperature had subsided to 99 degrees morning and 100.4 degrees evening. I learned later from his physician that his convalescence from the pneumonia was slow; two weeks after my last visit, Dec. 7, I was informed that he had a thrombo-phlebitis of the left leg and that he still had a slight cough, with no expectoration. His temperature with the phlebitis reached 102.3 degrees. His convalescence from the phlebitis was also slow. On the 29th of December he complained again of pain in the right side (not severe), began to cough and had a slight muco-purulent expectoration. I saw him in consultation on Jan. 6, 1894, seven weeks after the onset of his pneumonia. He was having night sweats, had a dry hacking cough and slight dyspnea. There was still some edema and tenderness in the leg and thigh. An examination of the right lung revealed a circumscribed area of dulness two inches in diameter, beginning just below the angle of the scapula. This area was sensitive on deep pressure; there was no edema of the wall. Respiratory sounds were absent and vocal fremitus diminished. The exploratory puncture gave one-half drachm of brown, sanguino-purulent, particularly offensive fluid.

Diagnosis.—Circumscribed gangrene not communicating with the bronchus. The question arose, was the phlebitis a sequence of the pneumonia and the gangrene the result of a

septic embolus from the vein, or was the gangrene the direct result of the pneumonia and the phlebitis one of the manifestations of sepsis? This is a question which I am unable to answer with any degree of certainty, but from the course of the disease I believe it was the result of a septic embolism.

Operation.—St. Joseph's Hospital, Chicago, January 9, an incision 2½ inches long was made in eighth interspace immediately below the angle of the scapula. As the pleura was approximated the tissues were edematous, showing that adhesions existed. (This tissue edema is one of the best evidences of adhesion of a suppurating focus to the wall either in the abdomen or chest; it far exceeds in value the vibration of the needle.) The pleura and underlying tissues were divided so as to admit the index finger; there was an escape of two ounces of fetid pus and some gas. Digital examination revealed a slough which was extracted with forceps; the cavity could be readily examined with the finger; its wall was irregular; there was no hemorrhage; it was not irrigated; a rubber drain was inserted; five days after the operation the odor had entirely disappeared and there was a clear serous discharge. On the twelfth day the drain was removed and on the thirty-third day he left the hospital with the wound entirely closed. This illustrates how early the drainage may be removed and how rapid the convalescence. Within three months he gained forty pounds and enjoys excellent health at the present time.

The extremity to which these patients may be reduced before an operation, and still be able to recover, is remarkable, as may be seen from the history of many cases; the surgeon should feel it his duty to operate on them even when it appears that they would not survive the hour of operation. The following is a good example:

Thos. K., age 22, on Sept. 9, 1897, was seized with a chill, severe pain in the left side and the usual symptoms of pneumonia. On the twelfth day of the pneumonia his temperature dropped and his symptoms improved. Four days later he began to cough and there was an expectoration of an offensive bloody fluid. A few days after the expectoration became yellow and still more offensive. The quantity increased with great rapidity, so that at the end of ten days the patient was expectorating a pint or more daily. He emaciated rapidly and became very weak. This deplorable condition continued until the 29th of December, when he was sent from the hospital to his home to die. Two weeks later he was seen by a very able practitioner who said he could not possibly survive three days. On the 2d of March I saw him in consultation; his pulse was 156, respiration 44, temperature 97 degrees; he was coughing incessantly; he could not speak above a whisper; the odor in the room from breath and expectoration was nauseating; he was emaciated to a skeleton, resting in a semi-sitting position from which he could not be moved; his pupils were dilated and he was apparently drowning from the accumulation of fluid. The nurse stated that this had been his condition for nine weeks. From this history obtained from the patient's friends and nurse, and the physical signs present, a diagnosis of gangrene of the left lung was made. Local anesthesia was employed and a three-inch incision was made in the eighth intercostal space, post-axillary line; about a quart of most offensive pus with necrotic shreds of lung escaped; a double drainage tube was inserted; he gave a few gasping respirations and I thought he was dying; the cough subsided in a few moments, his breathing became easier, and when I heard from him last, three weeks later, he was able to sit up in bed. The long period of time which had elapsed between the apparent hopelessness of his condition and the time of the operation is an illustration of how long these patients stand the deleterious effects of the pus accumulation and how they rally when relieved.

The complications that arise in operation for gangrene are pneumothorax and hemorrhage. In the former the lung should be harpooned or grasped by the forceps and sutured to the edge of the wound. Tuffier collected nine cases of hemorrhage with four deaths. The hemorrhage usually followed the removal of the tampon; the quantity of blood necessary to cause death under these conditions is very small compared with the fatal quantity from external hemorrhage. The greatest care should be exercised in the dressings, and irrigation should be avoided. Priestley Leech⁶⁴ of Halifax introduced iodoform into the cavity

⁶² Lancet, London, Oct. 20, 1888, p. 768.

⁶³ Lancet, London, Feb. 20, 1892, p. 440.

through the drainage tube with good effect. Tier,⁶⁵ Copenhagen, in four cases operated had three fatalities; one death from hemorrhage from drain pressure; in the successful case one-half of the lung was gangrenous, still patient recovered. Seitz⁶⁶ collected nineteen cases of gangrene operated, with four recoveries, four improvements and eleven deaths. Perier⁶⁷ reports continuous pleuro-pneumonic suture and drainage in second interspace for gangrene; the suture was made after opening the lung; recovery.

I have collected 96 cases of gangrene of the lung operated upon: 53 completely recovered; 3 recovered with fistula; 3 termination unknown; 37 died, 1 from cerebral embolism, 1 from meningo-encephalitis, 1 from pneumonia, 17 from undetermined causes, 3 from diffuse gangrene, 2 from septicemia, 4 from pyemia, 4 from exhaustion, 4 from hemoptysis.

Gangrene, from 1879 to 1897; Years According to Rotation.

Case 1, 1879. Cagley and Lawson, Brit. M. J., 1879, Vol. 1, p. 550. Male, 40 years. Gangrene, general condition grave; five weeks duration; pneumonia of left base posteriorly. Signs of cavity; adhesions. Exploratory puncture positive. Incision in ninth interspace, 5 oz. fetid pus, drainage. Death six days later. Necropsy: complete pleural adhesions, cavity with irregular walls, granular kidney, tuberculosis of right apex.

Case 2, 1880. Salomon Smith, Lancet, 1880, Vol. 2, p. 85. Male, 60 years. Gangrene. Duration, two months. Acute pneumonia, spurious, right base posteriorly. Signs of cavity. Exploratory puncture, putrid gas. Pneumotomy at the level of lower angle of scapula, no rib resection, ligature excited coughing. Death eight days later.

Case 3, 1881. Bull. Nordiskt. Archiv., 1881, vol. 13, p. 27, No. 17, in Runeberg Deutsche Archiv. für Klin. Med., 1887, p. 91. Female, 23 years. Gangrene. Duration two months. Acute broncho-pneumonia, left apex anteriorly. Signs of cavity. Puncture with a Pravaz syringe shows sero-sanguinous fluid. Incision two inches long in fourth interspace at level of the puncture, dilatation with forceps; some days later extraction of fragments of friable lung; carbolic irrigation. Recovery, several attacks of hemoptyses during following weeks.

Case 4, 1882. Leyden and Koch, 1882, quoted in Fabrickaut. Male, 24 years. Gangrenous cavity in right lung, lower part; putrid bronchitis. Resection of sixth rib with thermo-cautery, drainage. Improvement.

Case 5, 1882. Leyden and Koch, 1882, quoted in Fabrickaut. Female, 29 years. Gangrenous cavity in right lung. Opened by thermo-cautery, washed out with thymol sol., drainage. Died from septicemia. Necropsy: suppurative near portal vein, broncho-pneumonia of opposite side.

Case 6, 1883. Boechen, Cent. für Chir., 1883, No. 37, p. 598, and Med. and Raccogliatore, 1891, Vol. 2, p. 561, 5th series. Female, 27 years. Gangrenous abscess of lung; pneumonia; right apex laterally; adhesions. Exploratory puncture positive. Incision in right interspace without rib resection; puncture, then pneumotomy; issue of pus and of pulmonary debris. Amelioration; case reported before complete recovery.

Case 7, 1883. Sutton in Mosler, Wiesbaden, 1883, p. 38, and in Ramsay, Obs. 2. Male, 34 years. Gangrene, large cavity; Pneumonia five years previously; left base. Signs of cavity. Exploratory puncture, issue of pus. Incision in sixth interspace, drainage daily, carbolic irrigation. Sudden death thirty-first day. Necropsy: large cavity of the base.

Case 8, 1884. Cagley and Gould, Brit. Med. Jour., Jan. 1884, Vol. 1, p. 1045. Female 12 years. Acute metastatic gangrene. Duration eight days. Pyemia following otitis with an old mastoiditis; left base posteriorly. Signs of cavity. Puncture with large trocar, issue of pus and debris. Recovery in forty days.

Case 9, 1884. Drinkwater, Trans. of the Northumberland and Durham Society, May 15, 1884, in Revue des Sc. Méd., 1885, Vol. 25, p. 300. Male, 60 years. Acute gangrene. One month duration. Chronic bronchitis, acute pneumonia; right apex; adhesions. Incision of an abscess just below the clavicle, drainage of a pulmonary cavity through intercostal space. Improvement, recurrence three months later, incision and resection of one and one-half inches of the third rib, ablation of a portion of the gangrenous lung, drainage and irrigation; recovery without fistula.

Case 10, 1884. Fenger, Med. News, June 7, 1884, in Cent. f. Chirurg., 95, p. 208. Male, 36 years. Circumscribed gangrene. Six weeks duration. Croupous pneumonia; right base anteriorly. Signs of cavity. Puncture with hypodermic issue of gangrenous fluid. Resection of the fifth rib, puncture of the cavity and incision with the cautery, salicylic irrigation gave rise to cough, drainage. Rapid improvement, drain removed on twenty-second day; fistula six weeks after operation; recovery.

Case 11, 1884. Fermev, Dublin Jour. of Med. Sciences, Jan. 19, 1884, in Revue des Sc., 1885, Vol. 25, p. 299. Male, 30 years. Gangrenous cavity and empyema; base posteriorly. Incision at the level of lower angle of the scapula. Death five days later. Necropsy: diffuse gangrene.

Case 12, 1885. Gairchier and McLeod, quoted by Fabrickaut, 1885. Boy. Gangrenous cavity; left lung. Resection of ribs, drainage. Death after few days.

Case 13, 1886. Brookhouse, Lancet, 1886, Vol. 1, p. 1111. Male, 36 years. Gangrenous abscess, three months duration. Spurious pneumonia; left base posteriorly. Signs of cavity; adhesions. Puncture with large trocar in eighth interspace, axillary line, daily irrigation, cough. Death seven days later.

Case 14, 1886. Hevilich, Charité Annal, 1886, Vol. 2, p. 230. Female, 27 years. Pulmonary abscess, expectoration purulent and fetid. Three weeks duration. Puerperal infection; right base posteriorly. Signs of cavity; adhesions. Puncture positive, several punctures at the level of lower border of ninth rib, without result; positive puncture in ninth interspace in axillary line. Resection of four cm. of ninth rib; puncture, 3 c.c. of pus and fetid clots, dilatation of the tract, we came upon the cavity the size of a fist with irregular walls. Hemorrhage into cavity during operation arrested by tamponade; death three days later. Necropsy: Puerperal

metro-peritonitis and para-metritis, right pneumonia and cavity of base of right lung the size of goose egg, embolism of the pulmonary artery, firm adhesions, another focus of pulmonary necrosis superficially in the right face.

Case 15, 1886. Perigmbec and de Beurrisin, Franceis Médicale, 1886, Vol. 2, p. 1463. Female, 12 years. Gangrene, hemoptysis and cavity, and bacilli. Several years duration. The pulmonary affection not determined; right antero-lateral region. Resection of 5 cm. of fifth and sixth ribs, pneumotomy with the cautery at depth of 3 cm., drainage, no irrigation. Complete recovery, no details.

Case 16, 1886. Wagner, Berlin Clin. Woch., Sept. 6, 1886. Male, 17 years. Gangrene of the lung and putrid pleurisy; croupous pneumonia of left side. Incision in eighth space near vertebral column, offensive odor, piece of gangrenous lung discharged through wound. Gradual recovery.

Case 17, 1887. Zezas, Corresp. Blatt of Schweiger, Aerzt., 1887, Vol. 17, p. 455. Male. Pyemic abscess. Five and one-half months duration. Pyemia secondary to a foreign body in the larynx; right base posteriorly. Signs of cavity; insufficient adhesions. Incision and resection of seventh rib (6 cm.), opening of cavity at a depth of 3 cm., tamponade and drainage. Death fourteen days later. Necropsy: Pyo-pneumothorax, insufficient adhesions, central edema from thrombosis of the jugulars, abscesses in the two lungs.

Case 18, 1887. Runeberg, Deutsche Aschit. für Med., 1887, Vol. 41, p. 91, Obs. 2. Female, 23 years. Gangrene and circumscribed pneumothorax; chronic bronchitis and multiple bronchiectasis bilateral; left upper lobe anteriorly and posteriorly. Signs of cavity; total adhesions. Exploratory puncture without result, puncture in the axillary line to the fourth interspace positive. Resection of 4 cm. of fourth rib in post-axillary line, small cavities, no pus, punctures with a fine trocar, no cavity. Two days later issue of pus through the tract; death ten days later. Necropsy: communication of the pelvis with the wound, gangrenous cavity, of lower lobe; cavity of the upper lobe of 4 cm. into which a bronchus opens, numerous small cavities in the upper and lower lobes, no more in the left lung, small cavities in the right at the base.

Case 19, 1887. Leyden, Arch. Gen. de Méd., 1887, Series 7, Vol. 20, p. 472. Gangrene; puncture. Incision, escape of large quantity of pus, irrigation. Recovery.

Case 20, 1887. Guernonpuz, Académie de Médecine, 1887, Vol. 18, p. 332. Male, 23 years. Gangrene. Four years duration. Typhoid fever; base. Signs of cavity. Exploratory pleurotomy; resection of two ribs, two pneumotomies. Recovery.

Case 21, 1887. Godlee, Lancet, 1887, Vol. 1, p. 512. Female, 19 years. Gangrenous abscess. Fourteen days duration. Pneumonia of six weeks duration; left base. No signs of cavity; adhesions; exploratory puncture. Incision in the eighth interspace without rib resection, cavity at a depth of 6 cm., drainage. Recovery, three and a half months later slight scoliosis.

Case 22, 1887. Godlee, Lancet, 1887, Vol. 1, p. 513. Female, 44 years. Gangrenous abscess; eight days duration. Pleuro-pneumonia of twenty-four days duration; right base anteriorly. No signs of cavity; adhesions. Incision in the seventh interspace above the nipple, no rib resection, drainage. Recovery, six weeks after opening of an abscess into the colon (Quincke) necessitated between a gangrene or an empyema.

Case 23, 1887. Dubmeil, Gaz. Hebdom. des Sc. Méd. de Montpellier, 1887, p. 517. Female, 25 years. Chronic gangrene; duration fourteen months. Broncho-pneumonia, hamoptyses, no tubercle bacilli; right base posteriorly. Signs of cavity; adhesions. Puncture with fine trocar for the diagnosis of adhesions. Incision, resection of one and one-half cm. of the sixth rib; pneumotomy; opening of a series of cavities of the size of a hazel nut, drainage, boric acid irrigations incite cough and suffocation. Death one month later without improvement.

Case 24, 1888. Koch, in Openchowski Wratsch., 1888, p. 743, in Zeit. für Klin. Med., 1889, Vol. 16, p. 393. Male, 30 years. Gangrenous abscess; four months duration; pneumonia four months previously; right base between the post-axillary and mammary lines. Signs of cavity; adhesions. Two exploratory punctures negative, one month and three weeks before the pneumotomy. Resection of fifth and sixth ribs (10 cm.), opening of a cavity at a depth of 2 or 3 cm. the size of a fist, gangrenous focus in an old abscess, cauterization with the thermo-cautery. Recovery, irrigation with permanganate of potash excites cough, drains removed, thirty-six days after the operation; eighteen months after recovery slight scoliosis and scar, depressed respiration, feeble on the operated side.

Case 25, 1888. O'Keel, Lancet, 1888, Vol. 1, p. 622. Pulmonary gangrene; several weeks duration; pleuro-pneumonia; right base; adhesions. Pneumotomy. Recovery.

Case 26, 1888. Pollard, in Pasteur Chir. Soc. of London, 1888, in British Med. Jour., 1888, Vol. 2, p. 279. Male, 7 years. Gangrene; Three weeks duration. Pneumonia, probably secondary to a foreign body; right apex anteriorly. Signs of cavity. Incision in the second interspace, enormous cavity; counter-opening in sixth interspace. Death on thirteenth day. Necropsy: Cavity occupying one-third of the center of lung (the three lobes affected), esophagus adherent to the right bronchus and communicating with the same, cause of this communication unknown.

Case 27, 1888. Page, London Lancet, 1888, Vol. 1, p. 572. Male, 13 years. Pulmonary gangrene with hydropy-pneumothorax; run over by a car. Signs of cavity, probably due to pneumothorax. Aspiration, 20 ounces of sanguinous serum. Pleura opened and tube inserted in fifth left interspace in mid-axillary line, offensive pus evacuated, tube taken out about one month after operation; immediate improvement; discharge lessened daily, piece of pleura and lung discharged, complete recovery.

Case 28, 1888. Pasteur, Brit. Med. Jour., 1888, Vol. 2, p. 879. Male, 7 years. Gangrene of lung; four weeks duration; insidious onset but had developed rapidly; right upper lobe. Signs of cavity. Cavity incised into extreme of right second space one inch from sternum, large quantities of gangrenous lung and putrid fluid were expelled, cavity reached to sixth rib, opening made in sixth space, and drainage tube inserted, cavity washed out twice daily, pus appeared later. Next morning patient much relieved; expectoration small quantities of frothy spits, free from pain; improvement not maintained; after ten days fetor and temperature reappeared; patient sank rapidly three days later. Necropsy: Huge cavity occupied anterior one-third of lung (right) lined with thin layers of granulation tissue, pericarditis present, esophagus adherent to bronchus, commenced between esophagus and right bronchus.

Case 29, 1888. Seitz, Inaug. Dissert., Würzburg, 1888. Male, 35 years. Acute gangrene; five weeks duration; typhoid fever six weeks; left base posteriorly. Signs of cavity; adhesions. Resection of seventh and eighth ribs, 4 cm., incision of lung with bistoury, cauterization, drainage. Death twelve days after a second cavity containing 250 grams was discovered. Necropsy: A right pneumonia and cathesis.

Case 30, 1888. Shewen, Aust. Med. Gaz., Sydney, 1888-89, Vol. 8, p. 173. Gangrene; pneumotomy. Recovery.

Case 31, 1889. Basteaneli, Bull. de Soc. Lanc. de Osp. Roma, 1889-90, Vol. 10, p. 35. Female, 34 years. Acute gangrene; duration one month. Septicemia following ovariotomy; right base axillary line. Resection of fifth and sixth ribs in axillary line, puncture cavity 1½ cm. deep, irrigation of cavity, syncope, tamponade. Death fourteen hours later, coma

⁶⁴ Lancet, Jan., 1894, p. 87.

⁶⁵ Cong. Inter. Med., Copenhagen, 1884, Vol. vii, p. 146.

⁶⁶ Wurtzberg, Aelhaftenberg, 1888, Schippaer, W. & C.

⁶⁷ Lancet, London, 1892, p. 777.

left hemiplegia. Necropsy: Embolism of sylvain artery, thrombosis of a pulmonary vein.

Case 32, 1889. Freiberg, *Meditzina*, St. Petersburg, 1889, Vol. 1, No. 50, in *Chicuerink*, 1894, p. 763, Observation 41. Male, 26 years. Fetid abscess with hemoptyses; two months duration. Acute frank pneumonia; left base posteriorly. Signs of cavity; doubtful adhesions. Incision internal to the lower angle of the scapula; resection of the sixth rib, pelvis thickened where there has been applied a paste; enlargement of the opening with the cautery, cavity 3 cm. deep, into which the bronchi opened, drainage and iodoform gauze. Death sixteen days later, septicemia. Necropsy: Purulent and hemorrhagic pleurisy, septic lobar pneumonia, multiple adhesions, the cavity the size of a fist.

Case 33, 1889. Ramsay, *Annals of Surg.*, 1889, Vol. 2, p. 144, and 1890, Obs. 2. Male, 25 years. Gangrenous abscess; four weeks duration. Injury by forearm of thorax and lungs; axillary region and anteriorly. Signs of cavity; adhesions. Thoracotomy, resection of the second, third, fourth, fifth, sixth and seventh ribs, pneumotomy, issue of pus and of débris of garments. Recovery.

Case 34, 1889. Smith, S. C., *Lancet*, 1889, Vol. 2, p. 113. Female, 39 years. Gangrenous abscess; duration five weeks. Pneumonia for three weeks; right base posteriorly. Signs of cavity; adhesions. Exploratory puncture at the angle of scapula without result. Incision without rib resection at lower angle of scapula, dilatation of a focus opening of a small cavity. Recovery with fistula in four weeks.

Case 35, 1889. Von Openschowki, *Zeitschrift für Klin. Med.*, Berlin, 1889, xvi, 393 and 398; Male, 30 years. Lung abscess and gangrene, three weeks after onset coughed up cup of fetid pus, no tubercle bacilli; four months duration. Exposure and cold; right side middle lobe. Signs of cavity; pleural adhesions; Negative puncture on right side, repeated punctures a week later give negative results. Incision between mammillary and hind axillary line over fifth and sixth ribs were excised to extent of 10 cm.; opened directly into lung with thermo-cautery, at depth of 2 or 3 cm. cavity was opened, patient coughed and emptied out of wound a greenish, fetid pus; lining of cavity suspended with fingers, cavity irrigated with dilute potassium permanganate sol., drainage and antiseptic packing, wound irrigated twice daily at first and daily later. Recovery; patient discharged as cured seven months after admittance.

Case 36, 1889. Walsham (Symonds), *St. Bartholomew Hosp. Reports*, 1889, Vol. 25, p. 253. Male, 33 years. Acute gangrene; seven weeks duration. Pneumonia, aspiration of material (submission); left base posteriorly. Rib resection, drainage and irrigation. Improvement; death five weeks after, hemoptysis from the pressure of the drain. Necropsy: Cavity diminished in size.

Case 37, 1890. Anderson, *Am. Pract. and News*, Louisville, 1890, Vol. 10, p. 10. Male, 32 years. Gangrene cavity; forty-five days duration. Pneumonia; lower lobe. Puncture in sixth interspace, one inch behind axillary line, pus. Incision two inches long over seventh interspace, one inch behind axillary line, down to intercostal muscles; inserted trocar five inches long, blood; inserted needle and obtained pus; reinstated trocar into cavity and drew off one pint pleurant matter; dilated opening with forceps, introduced rubber tube, irrigated next day, some fluid passing into trachea. Recovery; cough ceased.

Case 38, 1890. Ramsay, *Annals of Surg.*, 1890, Vol. 2, p. 34. Male, 32 years. Gangrene. Acute pneumonia; right base posteriorly. Signs of cavity; adhesions. Exploratory puncture positive. Incision and resection of 3 cm. of seventh rib, puncture incision above the trocar with the bistoury and forceps, issue of gangrenous liquid, drainage. Recovery in six months, the drain removed the seventh day but was replaced on account of retention, no fistula.

Case 39, 1891. Fenger and Hollister, *Munch. Med. Woch.*, 1891, p. 8. Male, 34 years. Gangrenous abscess. Suppurating hydatid cyst; lower lobe. Signs of cavity. Exploratory puncture. Incision of the third interspace anteriorly, counter-opening in fifth interspace in axillary line. Recovery in six weeks.

Case 40, 1891. Krecke, *Munch. Med. Woch.*, 1891, Vol. 38, p. 399. Male, 20 years. Gangrene of lung, purulent pleurisy. Stricture of esophagus from alkali poisoning, unable to pass tongue; right side empyema and gangrene lower lobe. Esophagotomy, external resection of ribs for empyema; gangrenous area was opened, cavity discovered the size of a chicken's egg. Patient died six hours later.

Case 41, 1891. Krecke, *Munch. Med. Woch.*, 1891, p. 399. Female, 15 years. Gangrene. Stricture of the esophagus, treatment by esophagotomy; right base posteriorly. Pneumotomy. Death from exhaustion. Necropsy: Multiple abscesses in the left lung, the right cavity cicatrizing.

Case 42, 1891. Porter, *Journal of Am. Med. Ass'n.*, 1891, Vol. 16, p. 335. Young female. Gangrenous abscess. Grippe after confinement; left base. Signs of cavity; adhesions. Incision and rib resection, irrigation, drainage. Complete recovery.

Case 43, 1891. Ochler, *Munch. Med. Woch.*, 1891, p. 713. Male, 30 years. Chronic gangrenous abscess; two years and seven months. Pleuro-pneumonia two years previously, expectorate gangrenous and hemoptoic, left base posteriorly. No signs of cavity except for one month; no adhesions. Resection of the seventh rib, pneumothorax; the operation abandoned; drainage of the pleura, pneumothorax absorbed within a few days; four weeks later a new incision at the same point and depth of 5 cm. in the lung; the cavity opened spontaneously into the liver, two days later drainage. Recovery, purulent fistula one and a half years later; the patient has been troubled since his fistula closed (fetid sputum fever).

Case 44, 1891. Porter, *Journal Am. Med. Ass'n.*, 1891, Vol. 16, p. 335. Male, middle-aged. Gangrenous abscess; left base. Signs of cavity, abscess contains gas; adhesions. Incision and rib resection, irrigation, drainage. Complete recovery.

Case 45, 1891. Thue, *Nordiski-Magaz.*, 1891, p. 771, in *Johnesbericht*, 1891, Vol. 11, p. 445. Male, 37 years. Gangrene. Acute bronchitis and double pleurisy; right apex; partial adhesions, insufficient. Resection of the third and fourth ribs, lungs fixed in the incision by sutures because of the insufficiency of the adhesions. Purulent pleurisy, death three and a half months later. Necropsy: Purulent pericarditis.

Case 46, 1892. De Cerenville and Roux, *Rev. Méd. de la Suisse Romande*, 1892, p. 233. Male, 53 years. Acute gangrene; four weeks duration. Bronchiectasis; left base anteriorly and in axillary line, disseminated foci. Signs of cavity. Pneumotomy in extremis, resection of fifth rib, axillary line opening with a cautery, a large cavity. Death a few hours later. Necropsy: Bilateral bronchial dilatations, gangrenous cavity of left base.

Case 47, 1892. De Cerenville and Roux, *Rev. Méd. de la Suisse Romande*, 1892, p. 229. Male, 18 years. Acute gangrene; eight weeks duration. Grippe in 1889; bronchitis; right base posteriorly. Signs of cavity; partial adhesions. Puncture, serous fluid. Resection of 6 cm. of ninth rib, partial pneumothorax, lung grasped with forceps, immediate suture of two pleurae; purulent pleurisy eight days later; puncture, pus; pleurotomy sixteen days later complete pneumothorax, second pleurotomy. Recovery; seen nine months later, cured with excavation.

Case 48, 1892. De Jersey, *W. B., Lancet*, Vol. 1, 1892, p. 21. Child 21 months.

Gangrene of lung; six weeks duration. Pneumonia, history phthisis; left side. No signs of cavity positive; pleural adhesions. Puncture in left chest rib, sixth space, axillary line, and in same space to angle of scapula, pus was withdrawn. Incision in sixth space between post and mid-axillary lines, one dram of pus of fetid odor escaped; temperature fell after operation. Death three days after operation. Necropsy: Left lung solid, tubes thick and containing pus, scattered particles of gangrene; bronchitis.

Case 49, 1892. De Bourman, same, Female, 12 years. Gangrene. Broncho-pneumonia or suppurative interlober pleurisy; middle lobe of right lung. Signs of cavity. Resection of fifth and sixth ribs, incision with thermo-cautery through 3 cm. of lung tissue, large drain, irrigation. Recovery.

Case 50, 1892. Delagrue, *Cong. Trans. de Chir.*, 6, 1892, p. 583. Male, 37 years. Gangrene of lung; ten months duration. Fall upon chest; base of left lung. Trocar finds pus, puncture at level of ninth rib. Resection of seventh, eighth and ninth ribs in their entirety from posterior angle, opening of abscess, escape of one-half liter of greenish, fetid pus, irrigation of cavity with 1 oz. Cl. 1 to 2000, drainage. Recovery; drainage tube removed twenty-seven days after recovery; fistula.

Case 51, 1892. Hagen, *Thomwratsh*, 1891, and *Meditzina*, St. Petersburg, 1892, Vol. 4, p. 455. Male, 32 years. Gangrenous abscess. Fibrinous pneumonia; right base anteriorly. No signs of cavity; adhesions. Exploratory puncture, fetid pus. Incision of 5 cm. in the fourth interspace. Recovery in one month.

Case 52, 1892. Monod, *Soc. de Chirurgie*, 1892, p. 578, and 1895, p. 723. Male, 48 years. Acute gangrene; twenty days duration. Pneumonia, two months duration; left base posteriorly. Signs of cavity; adhesions (not diagnosed). Exploratory puncture in ninth interspace negative, puncture in eighth interspace positive. Pneumotomy without rib resection at the level of eighth interspace, abscess situated at depth of 10 cm. Recovery in one and a half months.

Case 53, 1892. Perier and C. Paul, *Bull. Acad. de Méd.*, 1892, Vol. 27, p. 375. Male, 58 years. Gangrene; four months duration. Bronchitis and gangrenous septicemia seven months previously; left apex. Signs of cavity; loose adhesions. Incision in the second interspace, focus and depth of 2 cm. containing 60 c.c. of pus, drainage (naphthol camphor). Recovery in fifty days.

Case 54, 1893. White, *Medical News*, 1893, Vol. 62, p. 38. Female, 30 years. Chronic gangrene (first focus), second focus three and a half months since; three and a half months duration. Old infectious pneumonia, acute pleuro-pneumonia; right base anteriorly and posteriorly. Signs of cavity; adhesions. Exploratory puncture positive. Incision in sixth interspace, two ounces of fetid pus, irrigation, drainage; incision of rent in post-axillary line sixth interspace, issue of several ounces of fetid pus and fragments of gangrenous lung. Cured, two months drain removed, cured in eight months; observed two years after, cured.

Case 54, 1893. Hofmahl, *Wiener Klin. Woch.*, 1893. Male, 25 years. Gangrenous abscess, putrid bronchitis; one month duration. Bronchitis; left apex anteriorly. Signs of cavity; adhesions. Incision in the second interspace, cavity not opened; six days later resection of 8 cm. of third rib; puncture of lung, at third puncture issue of air and secretion upon dilatation of tract; hemorrhage arrested by tampon. Recovery in one and a half months without fistula.

Case 55, 1893. Tizebicky, *Wiener Med. Woch.*, 1893, Nos. 21 and 22. Male, 58 years. Chronic gangrenous abscess; three months duration. Traumatic pneumonia three months previously; right base anteriorly. Signs of cavity; adhesions. Exploratory puncture. Resection of the fourth rib (4 cm.); two days after the puncture opening of a gangrenous cavity. Death sixteen hours later.

Case 56, 1894. Grube, in the *Clin. Vjestnik*, 1894, p. 63, observation not published. Male, 42 years. Gangrenous abscess, no bacilli of tuberculosis; two years duration. Fibrinous pneumonia; right upper lobe anteriorly, thorax retraction. Signs of cavity; adhesions. Incision in second interspace; exploratory puncture with hypodermic needle, issue of pus; incision of parenchyma with cautery to depth of 6 cm., small, insignificant cavity; five days later the larger cavity opened spontaneously through the incision, no drainage, strand of gauze. Recovery; he left hospital one and a half months later with a wound on its way to cicatrization.

Case 57, 1894. Habersbun, *Lancet*, 1894, Vol. 1, p. 1012. Male, 32 years. Gangrene of lung; six months duration. Syphilis; left apex and right base, advanced toward bases. Signs of cavity; pleural adhesions. Positive puncture. Portion of rib resected, but little pus obtained. Patient died a short time after operation. Necropsy: Right lung firmly adherent posteriorly, pleura thickened, extreme apex fairly healthy, though emphysematous; posterior two-thirds of lung a series of red eating cavities; in left lung broncho-pneumonia, gangrenous patch; tubercle bacilli found, also giant cells.

Case 58, 1894. Priestly, *Teck, Lancet*, Vol. 1, p. 87. Male, 22 years. Chronic abscess complicated with secondary gangrene; four months duration. Pleuro-pneumonia, six months duration; left side anteriorly. No signs of cavity; adhesions. Incision in third interspace; multiple punctures (5), negative puncture in second interspace, the second puncture brought pus; incision with the trocar; dilatation with the forceps of Lister, pus, drainage. Recovery after having hemoptyses twice during convalescence; complete recovery six months after.

Case 59, 1894. Mackay, *Inter Col. of J. F. M. and S.*, Melbourne, 1894, Vol. 1, p. 52. Male, 12 years. Gangrenous abscess, hemoptysis; Several days. Acute pulmonary affection of five weeks duration; no diagnosis; right base antero-laterally. No signs of cavity; adhesions. Puncture negative. Incision below the lower border of the scapula; resection of two ribs, adhesions; multiple punctures in all directions, at last upon finding a small cavity the size of a walnut containing gangrenous débris, this cavity was incised. Death, hemoptysis. Partial Necropsy (lung only): The upper lobe normal, the lower and middle lobes adherent; a cavity, the size of an orange opened, separated by thicknesses of 3 mm.; five or six other small abscesses of lower lobe, abscess of the middle lobe.

Case 60, 1894. Rodman, *Am. Prac.*, Louisville, May 5, 1894, in *Chir. Am.*, 1895. Young male. Acute gangrene. Infectious pneumonia following a fracture of the ribs. Incision and resection of sixth rib twenty days after the accident (four inches), pus and pulmonary débris; repeated tamponade. Recovery.

Case 61, 1894. Rochet, no date, given immediately under another dated May, 1894. Local gangrene. Resection. Recovery.

Case 66, 1894. Rochet, *Inaug. Dissert.*, Kiel, 1894. Male, 28 years. Gangrenous abscess, gangrenous pneumonia; three weeks. Old bronchial dilatations; third interspace anteriorly, right base posteriorly. Signs of cavity; no pleural adhesions. One puncture in the ninth interspace negative, one puncture in the third interspace anteriorly positive. Application of a paste of chlorid of zinc; resection of 3/4 cm. of the third rib; spontaneous opening of the cavity ten days later; ten weeks later the same operation posteriorly at level of fifth rib, opening of cavity on seventh day. Death two days after opening second cavity. Necropsy: Old bronchial dilatation, broncho-pneumonia cachexia; the patient improved after first operation, failed after second.

Case 62, 1895. Bazy, Soc. de Chirurgie, 1895, p. 69. Male, 20 years. Gangrene; right base; partial adhesions. Incision 10 cm. long parallel to the ninth rib, which is resected as well as the eighth (6 cm.); digital exploration through a small opening in pleura, adhesions above the incision, second incision above the first; pleural adherent gangrenous focus, 12 cm. deep. Cured in twenty days. Death three or four months later from epilepsy.

Case 63, 1895. Harrison, in Quinke Mittheil. Aus. den Greug., 1895, Vol. 1, p. 1011, table 1 b, observation 1. Female, 27 years. Gangrenous abscess; six days duration. Pulmonary embolism following puerperal fever of three weeks standing; right base posteriorly. No signs of cavity; adhesions. Exploratory puncture. Resection of four cm. of the ninth rib, opening of the cavity containing 300 c.c. of pus. Death three days later. Necropsy: Pyemia.

Case 64, 1895. Krause, Berliner Klin. Woch., 1895, p. 347. Male, 36 years. Chronic gangrene; nine months duration. Infectious pneumonia; left base posteriorly; no adhesions. Resection of 12 cm. of ninth and tenth ribs, opening of the pleura; the upper lobe retracted, the lower lobe adherent to the thorax, tamponade with iodoform gauze; five days later sufficient adhesions except at one point (above); opening of the cavity, cavity the size of an apple, gangrenous fragments of lung, two drains. Recovery; the bronchial fistula closed twenty-five days later; three and a half months later cured a little roughness of respiration, and amplitude of thorax slightly diminished.

Case 65, 1895. Krause, Berliner Klin. Woch., 1895, p. 347. Male, aged 33 years. Purulent pleurisy; gangrenous abscess(?) ; three months' duration. Bronchitis and right side pleurisy; right base anteriorly; adhesions. Resection of fourth and fifth ribs in the maxillary line; pulmonary fistula; pneumotomy; at 2 cm. we come upon a cavity the size of an egg; tamponade. Recovery; left the hospital three weeks after the operation, wound healing.

Case 67, 1895. Podieze, Rev. Gende. Chir. et de Ther. Jour. des Praticiens Paris, Nov. 19, 1895. Gangrene of left lung. Incision 12 cm. long from above down in left subclavicular region; excised 3 cm. of second and third ribs; sutured pleural transverse incision in lung; fetid pus escaped; walls of cavity swelled; irrigation with Thiersch sol.; iodoform tampon. After third dressing pus lost fetid. Wound healed in three weeks. In forty-five days after operation patient had gained thirty-one pounds.

Case 68, 1895. Quinke, Mittheilungen an der Grezgebden Medici und Chir., 1895, Bd. 1, H. T. 1, obs. 6, p. 25, and Tab. 2, observation, 3, pp. 30-31. Male, aged 34 years. Chronic purid abscess; duration one and one-half years; pneumonia complicating grip; left base and the axillary line; signs of cavity; adhesions. Resection of the third rib in the axillary line anteriorly; opening of cavity. Death one and one-half hours later. Necropsy: Several cavities if only opened; death from exhaustion; recent gangrene in right; pleural exudate in the right.

Case 69, 1895. Quinke, *ibid.*, Bd. 1, H. T. 1, Tab. 1, observation 6, pp. 10 and 11, and obs. 1, p. 3. Male, aged 33 years. Acute gangrene (gangrenous abscess); duration four weeks; acute pneumonia two and one-half years; right base posteriorly; signs of cavity; adhesions. Exploratory puncture; issue of pus. Resection of eighth, ninth and tenth ribs 6 cm. in the scapula line; H-shaped incision at level of ninth rib; two sutures of lung to the pleura; multiple exploratory punctures without result; three days later a purulent fistula formed; opening enlarged with the cautery; five days later rib resection; drainage. Recovery in six weeks; completely cured in two months.

Case 70, 1895. Quinke, *ibid.*, 1895, Bd. 1, H. T. 1, obs. 5, p. 23 and Tab. 2, pp. 28-29. Male, aged 39 years. Chronic gangrenous abscess with secondary bronchiectasis; duration ten months; left base posteriorly; signs of cavity; partial adhesions ascertained by the puncture. Exploratory puncture in fifth interspace, axillary line; pus, sero-sanguinous fluid. Application of paste of chlorid of zinc; resection of 3 cm. of sixth rib fourteen days later; puncture; pus; opening of the cavity with cautery. Death three days later. Necropsy: Sero-purulent pleurisy; encysted in the left; multiple cavities; chronic meningitis.

Case 71, 1895. Tuffier, Soc. de Chir., 1895, p. 769, obs. 1. Male, aged 59 years. Acute gangrene, fifteen days duration. Infectious pleuro-pneumonia of forty-five days' duration; right base in axillary line; signs of cavity; no adhesions. Incision in sixth interspace without rib resection; complete pneumothorax; total retraction of the lung; impossible to open the lung; drainage of the pleura. Recovery.

Case 72, 1895. Tuffier, *ibid.*, 1895, p. 767, obs. 5. Female, aged 19 years. Gangrene of three months' duration. Acute pneumonia and pyemia since three and one-half months; right apex anteriorly; signs of cavity; partial adhesions. Incision at level of third interspace; no adhesions at this point; separation of the parietal pleura adhesions at the level of second rib; resection of 5 cm. of this rib; pneumotomy; opening of a cavity the size of head of fetus; tamponade. Death fifteen days later; meningococcal meningitis. No necropsy at the time of operation; the patient presented the accidents of gangrenous embolism of the sylvan artery; this suddenly the same day as the pneumotomy and as the trephining of the head.

Case 73, 1895. Tuffier, *ibid.*, 1895, pp. 676 and 769, obs. 4. Male, aged 60 years. Acute gangrene of six weeks duration. Pneumonia; right base posteriorly; no signs of cavity; partial adhesions. Incision in eighth interspace; separation of the parietal pleura adhesions at level of the seventh rib; resection of seventh rib; opening of a cavity the size of a fetus head; tamponade. Death six days later; cause, hemoptysis. Necropsy: Hemorrhage in the center of the cavity; no plenrisy or pneumothorax.

Case 74, 1895. Tuffier, *ibid.*, 1895, p. 771, obs. 5. Male, aged 41 years. Acute gangrene of three weeks duration. Pneumonia of four months; right base anteriorly; signs of cavity; adhesions. Incision below the fourth rib within the nipple; no rib resection. Death five days later; hemoptysis. No necropsy.

Case 76, 1896. Duret, Arch. de Medicine, 1896, Vol. 1, p. 67. Female, aged 21 years. Chronic gangrene of the lung. Old bronchiectasis; right base posteriorly; signs of cavity; positive puncture. Rib resection (three ribs), 7 to 8 cm.; incision of the pleura; pneumotomy; opening of a cavity the size of a hen's egg, into which opened two bronchi; cauterization; drainage. Amelioration; recurrence nine months later; curettage of the cavity; counter-opening; drainage; fistula resulted, which was operated on with success four years later. Complete recovery two and one half years after last operation.

Case 78, 1896. Meakin, Brit. Med. Jour., 1896, II, p. 746. Female, aged 31 years. Probable gangrene of pleura and lung of a few days' duration. Acute pneumonia; adhesions. Sixth and seventh ribs resected in anterior axillary line, one-half inch from each; pleural cavity opened; grayish-black very fetid fluid escaped from lung; did not collapse; lung was hard except one spot, which was doughy; in this spot a forceps was plunged, followed by a drainage. Distress diminished steadily; recovery after first few hours; discharge dark red, tarry quality, becoming like pus; discharge after first four days was not fetid.

Case 79, 1896. Phillips and Nash, Lancet, 1896, Vol. 2, p. 1454. Male, aged 36 years. Acute gangrene of one month. Pleuro-pneumonia; right base in axillary line; no signs of cavity; adhesions. Exploratory puncture; pus, blood, debris. Incision in the sixth interspace; resection of

one and one-half inches of sixth rib; gangrenous cavity; debris of neurotic lung; irrigation; no improvement; one month later resection of seventh and eighth ribs, two inches (posterior axillary line); numerous exploratory punctures without result; no cavity. Recovery fourteen months; purulent discharge through the wound at several relapses; drain one year; hemoptysis thirteen months after the operation. Complete recovery; seen four years later.

Case 80, 1896. Smith and Treve, Lancet, 1896, Vol. 2, p. 532. Male, aged 40 years. Gangrenous abscess of one and one-half months. Acute pneumonia; between inner border of scapula and spine; no signs of cavity; adhesions. Negative exploratory puncture two days before operation. Incision and resection of rib; opening of a small abscess. Recovery, but later relapse and formation of a second abscess at the site of the first, which is opened and drained.

Case 81, 1896. Smith and Treves, *Ibid.*, p. 522. Male, aged 45 years. Fetid gangrenous abscess of four months duration. Pleuro-pneumonia; posteriorly below the angle of the scapula; signs of cavity; partial adhesions. Incision and rib resection; exploratory puncture negative; cavity the size of a cricket ball; pleura not adherent at the base; protected with tampon. Death twelve days after a second cavity containing 250 grams was discovered. Necropsy: A right pneumonia and cachexia.

Case 82, 1897. Andrews in Morillon These de Paris, 1897, p. 71, observation 2. Male, aged 42 years. Gangrenous abscess of fourteen weeks' duration. Pneumonia; left base anteriorly and laterally; no signs of cavity; adhesions. Resection of 8 cm. of fifth rib in axillary line; puncture; pus 8 cm. deep; incision and curettage of cavity; during the operation syncope caused by an embolism of lung tissue. Improvement; the patient was lost sight of before recovery was complete.

Case 83, 1897. Andrews in Morillon These de Paris, 1897, p. 75, obs. 5. Male, aged 21 years. Gangrenous abscess of two years' duration. Pneumonia; left lower lobe; signs of cavity; adhesions. Resection of 2 cm. of two ribs in axillary line; incision of lung with the bistoury; cavity 4 cm. deep, contained necrotic lung tissue; iodoform dressing. Rapid recovery. Death two years later; cerebral syphilis probable cause.

Case 84, 1897. Bazy, Soc. de Chirurgie, 1897, p. 67. Gangrene; adhesions. Pneumotomy; extraction of 32 grams of shreds of pulmonary sloughs. Result unknown.

Case 86, 1897. Jagle et Raffray in Morillon th. Paris, 1897, p. 105, et Soc. Aust., 1896. Female, aged 41 years. Acute gangrenous abscess, putrid expectorate; thirteen days duration. Acute frank pneumonia six weeks before; right base posteriorly; signs of cavity; adhesions; two negative punctures. Incision in the eighth interspace (cocain anesthesia); puncture of the pleura negative; incision; a violent cough brings forth two to three spoonfuls of fetid pus; irrigation with sublimate provokes violent cough; issue through the wound; two pulmonary sloughs; two drains. Improvement for three days; death the fourth day. Necropsy: Cavity in the right lower lobe posteriorly, into which many bronchi open.

Case 87, 1897. Lapujko, Soc. de Med. des Kieff, Wratch, 1897, p. 173. Female. Gangrene; pneumotomy; cured several months.

Case 88, 1897. Lapujko, *Ibid.*, Wratch, 1897, p. 173. Male. Gangrene; pneumotomy (several fragments of lung); recovery.

Case 89, 1897. Tejars, Soc. de Chirurgie, 1897, Feb. 17, and Gaz. Hebd. de Medicine et de Chirurgie, 1897, p. 181. Male, aged 50 years. Pulmonary gangrene with an arterio sclerosis and general paralysis. Few signs of cavity; partial adhesions, inextensive at the level of gangrenous focus. Resection of three ribs, fourth, fifth and sixth; pleuro-parietal separation; incision of the pleura; lung held with forceps and explored; opening of a cavity the size of a hen's egg at depth of 1.5 cm.; suture of lung to parietal pleura. Death two days later from exhaustion. Necropsy: No other gangrenous cavities.

Case 90, 1897. Tejars, *loc. cit.* Male, aged 33 years. Pulmonary gangrene, acute, eight days' duration. Infectious broncho-pneumonia of two months; right base posteriorly; no signs of cavity; loose partial adhesions. Incision; separation of the pleura; pneumotomy at a point; adhesion; the cavity not found. Death of infection two days later. Necropsy: The cavity is located in the apex; cavity also at the base.

Case 91, 1897. D. M. Moie, London Lancet, 1897, Vol. 1, p. 105. Male, aged 23 years. Gangrene of lung of forty-five days' duration. Acute pneumonia of left lung; adhesions. Horizontal incision two inches long in fifth interspace of left side; escape of fetid fluid and debris; drainage tube; tube removed three weeks after and wound closed one month after. Complete recovery.

Case 92, 1897. Welkowitz, Soc. de Med. de Kieff in Wratch, 1897, p. 175. Male, aged 35 years. Acute gangrene of one month duration. Pneumonia, but no bacilli of Koch; right base anteriorly; signs of cavity; adhesions. Resection of 6 cm. of fifth rib; opening of a cavity, long and narrow, counter-opening posteriorly at the ninth rib, which leads to a pocket the size of an infant's head; these two cavities are separated one from the other. Probable recovery.

Case 93, 1897. Northrupaud Medice, N. Y. Med. Jour., Jan. 14, 1897. Female, aged 33 years. Gangrenous abscess of three months' duration. Pleuro-pneumonia; influenza; fetid bronchitis; right base anteriorly; no signs of cavity; partial adhesions, absent anteriorly. Puncture at level of third interspace at the axillary line; many punctures below nipple without result. Incision and resection of sixth rib (3.5 cm.) in the axillary line; partial pneumothorax (not alarming); puncture of the lung; pus at depth of 2 cm.; incision with the scissors; three ounces of pus and gangrenous fragments of lung; second abscess above the first also opened. Recovery; frequent hemoptysis during convalescence; wound completely closed in three months; no hemorrhage; no irrigation; drainage. After nine months acute extension with fetid expectorate at this time; recovery without intervention.

Case 94, 1897. Pitts, London Lancet, Vol. 2, p. 915. Child, aged 4 years. Gangrenous abscess of six weeks' duration. Caseous mediastinal glands; left side; pleural adhesions. Rib resected; exploration failed to reveal cavity in lung. Death nine weeks after operation. Necropsy: Caseous bronchial glands, which had opened into esophagus and left bronchus tubercular glands of neck and mediastinum.

Case 95. Pitts, London Lancet, Vol. 2, p. 915. Child, aged 5 years and nine months. Breath fetid, temperature high; hemoptysis had occurred. Caseous mediastinal glands; posterior part of right lung; signs of cavity; pleural adhesions. Exploratory punctures through incision failed to reach cavity. Excision of sixth and seventh ribs in right interscapular region; lung adherent. Child collapsed and died several hours after operation. Necropsy: Caseous abscess cavity size of walnut at root of right lung, opening into right bronchus; caseous glands close to abscess; no signs of tubercle; several patches of gangrene apart from abscess cavity.

Foreign bodies.—The subject of foreign bodies in the bronchi is treated here after abscess and gangrene, as they frequently result in abscess and gan-

grene. A great variety of foreign bodies have been aspirated or thrown into the bronchi. The most common variety, in America at least, as taken from the statistics of Dr. Weist, who collected over a thousand cases (Trans. Am. Surg. Ass. 1881), is a grain of corn; in frequency this variety is followed by inhalation of the various seeds, as melon, pumpkin, orange, etc., beans, buttons, pebbles and marbles. The effects produced by these foreign bodies on the lung may be divided into primary and secondary. The primary are the dyspnea, pain and coughing; the former may be mild or intense, even to death, depending on the size and location of the body; the pain is usually very severe, and is often a guide to the location of the body; the coughing is persistent, and is often associated with pain. If the body be smooth and of regular outline it may prevent the admission of air to a lobe or even to an entire lung, and by the frequent efforts of coughing and the ball valve action of the body, the lung may be emptied of air and inspiration made painful and distressing; the foreign bodies are retained in their position, principally by the edema of the mucosa; occasionally by the swelling of the seed. Weist's statistics show that the seeds, for the number aspirated, do the least harm; they are the most difficult to find in operation, and therefore should not be operated except when especially indicated. The body may be arrested in the larynx, trachea, at the bifurcation or in a bronchus. Numerous statistics have been published to show that the foreign body has been arrested most frequently in the right bronchus. A comparison of all statistics shows that the arrest occurs in the right and left bronchus with almost equal frequency. The location of the foreign body can often be ascertained by the physical signs. We can at least determine which bronchus is occluded. We are now greatly relieved of the uncertainty of location by the assistance of the X-ray. Many methods have been suggested for the primary treatment of these cases: one of the best is taking advantage of gravity early in the case, *i. e.*, holding the patient by the feet, requiring him to cough as deeply as possible, and slapping the chest forcibly at the time of expiration; this often forces the foreign body out of the bronchus. In upward of 60 per cent. of the recorded cases the foreign body was expelled in this way; as many of these cases are never recorded or even come under a physician's care, it is certain that a much larger percentage recover by this method. Tracheotomy for foreign body has given very good results, but should not be practiced until other means have failed. When the tracheotomy was successful in the removal of the foreign body, the mortality was 6 per cent. When unsuccessful 21.5 per cent. (Weist).

The secondary effects of foreign bodies in the bronchi are even more serious than the primary, as they induce infective processes—abscess, gangrene, bronchiectasis and tuberculosis, which terminate fatally. When it is a metallic or dense substance it can be readily located in a radiograph. The outlines of the abscess can also be defined by this means. G. A. Sutherland reports an instructive case of bronchiectasis, a sequense to an inhaled O'Dwyer tube. The bronchiectatic cavity was opened and the foreign body was not found. The patient died of hemorrhage about three weeks later. Postmortem showed the tube in the right upper bronchus. Multiple bronchiectatic cavities were found.

The following case illustrates the secondary effects of foreign bodies:

Case 1.—March, 1886, Katie M., aged 14, was brought to my office suffering from dyspnea and constant bronchial irritation, following the inhalation of a shelled peanut. It was believed to be in the bronchus of the middle lobe of the right lung; the inhalation was followed by consolidation of this lobe; the expectoration was not offensive, but sero-purulent, tinged with blood. Three weeks later, in a severe attack of coughing, the patient ejected the peanut. The expectoration from that time was scanty but continuous; it was not offensive; the consolidation did not disappear. Six months later she called at my office again; I found her suffering from an acute pulmonary tuberculosis. There was a cavity in the middle lobe of the right lung and bacilli were present in the sputum. Patient died two months later. No postmortem was made. I believe that the foreign body produced the *locus minoris resistentia* for the tubercular infection.

I recall a postmortem made during my internship in 1879, in which a 6-penny shingle nail was the foreign body and the exciting cause of the tuberculosis. The literature on tuberculosis abounds with cases of this class, and the secondary results of foreign body in the lung must not be overlooked though the patient escapes the gangrene and abscess as earlier results.

The presence of a foreign body in the bronchus should be a source of great anxiety until it is removed. The method of its removal has offered fruitful material for speculation and experiment. Primary opening of the bronchus and trachea has been suggested and executed successfully, but the percentage of cases in which the foreign body has been found in the operation has been small, and the results of primary anterior or posterior bronchotomy or pneumotomy do not justify the operation although it often seems indicated. (Truc.) DeForest Willard made extensive and praiseworthy experiments on the removal of foreign bodies in animals, and came to the conclusion that bronchotomy for the removal of foreign bodies should not be attempted. Of 11 operations collected by Tuffier there were four immediate deaths, and in only one of the 11 was the foreign body recovered at the time of the operation. The other cases made only temporary recoveries or had fistulae. The dangers of bronchotomy are, hemorrhage, pneumothorax and infection. From the results of operations and experiments we are not justified in operating for the removal of the foreign body *per se*. These cases should be carefully watched, and early intervention should be made when the secondary changes have taken place, as abscess and gangrene.

TUBERCULOSIS.

Tuberculosis of the lung has been considered a medical and not a surgical disease. In a few instances the surgeon has had the courage to open and drain tubercular cavities in the lung; in a still smaller number he has excised a portion of the lung for the removal of a circumscribed tubercular nodule. Wm. Koch suggested the injection of disinfectants and chemical irritants into the diseased portion of the lung, but they have been used to a very limited degree. With these few exceptions, the disease has been left entirely to the care of the physician. We ask ourselves, what has been achieved in tuberculosis? With the exception of a thorough knowledge of its etiology and pathology, comparatively nothing. We have volumes of literature on the subject, describing its various phenomena, course and terminations. From a sanitary standpoint, since Villemin in 1865 showed its infectious character and Koch dis-

covered the particular bacillus, we are possibly lessening the number of infected; from a therapeutic standpoint we had hoped, and still hope, that tuberculosis may be cured, alleviated or curtailed in its destructive effect by products derived from the tubercular bacillus under certain conditions. The results barely justify a continuation of the hope. Can surgery contribute anything toward the repair of tubercular lesions of the lung? It has accomplished much in the treatment of tubercular lesions of the articular and osseous systems; its results in the treatment of tuberculosis of the peritoneum have been little less than brilliant. The ideal treatment of tuberculosis is eradication; extirpation of the tubercular focus. In only a few instances has the surgeon been able to attack it so as to obtain this ideal result, as in cutaneous, synovial and osteo-tuberculosis. His best achievements have been obtained in cases where he merely placed the tissues under favorable conditions for repair by nature, as drainage of the peritoneal cavity with or without extirpation of the original focus of infection. This necessarily demands the consideration and reparative power of individual tissues when attacked by tuberculosis. Some tissues resist completely its invasion, as the fibrous tissue of tendons and fascia; others, when attacked never tend to repair, as tubercular ulcers of the intestine. In still others, as the peritoneum, the reparative power or resistance offered to the advancement of the disease is great. While a large percentage of the mortuary material is furnished by tuberculosis of the lung the statistics show more than an equal number in which the tuberculosis of the lung was completely cured or circumscribed and did not contribute in any way to the death of the patient. So common are the evidences of repaired, cured tuberculosis in the lung that the Germans have an axiom that every man at the end has a little tuberculosis. In 1000 necropsies, excluding 216 cases that died of phthisis, Osler found undoubted evidence of previous tuberculosis in 59 cases, 7.5 per cent., but Bollinger, Massini and Harris placed it very much higher, ranging from 27 per cent. to 39 per cent., far exceeding those that died of tuberculosis. Bouchard, in his report of postmortems, found that in over 75 per cent. of persons dying suddenly there was some evidence of tuberculous lesions, active or obsolete. A comparison of the postmortem evidences of repair of tuberculosis in the various tissues shows that the lung far exceeds any other tissue in the body, not excepting the peritoneum, in its ability to overcome the effects of tubercular inoculation. This repair is effected by the development from fixed connective tissue cells of resisting capsules of connective tissue with sclerosis and cicatrization of the walls of the cavities. These walls resist the biotic and toxic effect of the bacillus; subsequent degeneration of the encapsulated products takes place, or there is an elimination of the infected focus with its bacilli by necrosis and exfoliation, as illustrated after the use of the Koch tuberculin injections. Investigation shows further, that the so-called "deaths from tuberculosis" are rarely due to the tuberculosis itself, but to secondary infections, that is, it is not the tuberculosis which kills but the mixed infection (pus and saprogenic) of the tubercular centers; the same is true of tuberculosis in other tissues. Do postmortem examinations show us how the encapsulation of tuberculosis is favored or accomplished? Yes, to a limited degree. Does clinical experience, surgical or

medical, offer any suggestions or proofs? Yes, both furnish many if they are properly interpreted. Tuberculosis of the lung is primarily in the great majority of cases a local disease involving but a small portion of one lobe of the lung. Ewart and Kingston Fowler described this process and showed that its extension followed well-defined routes. It advances from the original pulmonary focus by continuity, through the lymph spaces and lymphatic channels and through the blood, and rarely, if ever, along the mucous surface on which the myriads of bacilli are transmitted to the mouth. Pathology teaches us that the effect of the biotic and toxic stimulation of the bacillus is to produce lymphoid cells and a multiplication of the fixed and connective tissue cells of the part; they induce increased deposit of leucocytes and vascular changes, with subsequent necrosis and caseation of the center of the nodule. (Baumgarten.) In tissues containing epithelium these cells also proliferate and the connective tissue cells yield epitheloid and giant cells. (Gaule and Arnold.) Further, the tendency in most tissues in the body is to wall in the destructive process by the formation of a capsule. Tubercular lesions represent reaction of the tissues to the irritation of the tubercle bacillus. In the center of the foyer the irritation is sufficient to destroy the tissues; farther off the irritated tissues build a wall, which in time, makes a cicatricial barrier, plugging up lymphatics and constricting vessels. Leucocytes and wandering cells are attracted by dead bacilli. Living bacilli stimulate connective tissue alone. (Evans.) We have still further abundant proofs that this capsule is destroyed or lessened by secondary infections; that its limiting power is enhanced and favored by physiologic and anatomic quiescence. Its strength and resistance are further favored by aseptic stimulation of cell proliferation in its periphery. The study of the literature on repaired tuberculosis of the lung shows that there was an atelectasis and cicatrization of the pulmonary tissue in close proximity to the nodule; that there was a fibrous and cicatricial development often in the entire lobe which was repaired; that the pleura in the neighborhood of repair was greatly thickened, and effectually immobilized the lung contiguous to it; that the chest wall was contracted and motion of the diseased part was restricted. In other words, the histology of the repair of tuberculosis of the lung in its entire range, from the solitary tubercle to a complete lobe, is made up of a series of defunctionalizing processes, anatomic and physiologic, in every tissue involved directly or indirectly.

Treatment.—Hiller, Berlin, hoped to aid the cicatrization and contraction of the lung by the injection of irritating material into the lung itself, as iodine, iodid of potassium and carbolic acid. His method was tried by Ewald, Pepper and Jablovoski; they failed to obtain good results. Lepine injected sublimated solution into pneumonic lungs and observed a rapid diminution of temperature and improvement in breathing. Contraction of the chest wall for the cure of tuberculosis by means of cauterization of the chest was practiced by Guerin and Vidal. They reported 37 good results in 44 cases. Mosler tried this treatment in 20 cases and while he found great improvement in many he does not report a single cure.⁶⁵ Rive injected iodine and iodid of potassium into the cavities

⁶⁵ Verhand. des Cong. f. Innere Med., Wies., 1883, vols. i-ii, p. 82.

with only temporary relief; he had one fatal result from cerebral embolus.

The pathology of repair of pulmonary tubercular cavities involves certain physical conditions which are peculiar to the chest (they exist to a certain degree in abscess of the bone and brain), namely, the constant resistance of the bony framework against contraction, the effort at expansion of the cavity in each inspiratory act. The best illustrations exist in large empyemic cavities. The bony framework of the chest wall admits of a certain degree of contraction of the cicatricial tissue which makes up the boundary of the empyemic cavity, and then contraction ceases and the cavity remains permanent; as shown in Fig. 20a. This element was overcome by the operations of Estlander, Schede, Delagéniere and their modifications, all based upon the same principle, reducing the bony resistance; all artificial means of allowing the obliteration of a cavity by cicatricial contraction and agglutination of its walls. This same resistance to nature's repair exists in every pathologic pulmonary cavity in addition to the ordinary abscess conditions. Allow the wall of the abscess to collapse, to empty thoroughly, and it will heal as other abscesses of the same pathologic character; this I believe is, the keynote to the successful treatment of pulmonary cavities. How to overcome this resistance of the chest wall was a stimulus to my investigations in lung surgery and led to the hope that not only might pulmonary cavities be obliterated by permitting or forcing their collapse, but that primary tuberculosis might be encapsulated by mechanical immobilization of the diseased portion by collapse and enforced rest of the lung as a respiratory apparatus, thus allowing the cicatrization and encapsulation of the tubercular foci; in other words, that tuberculosis of the lung might be treated as we treat tuberculosis of the joints, by immobilizing and enforcing physiologic rest; by enforcing drainage of the secondary products through the bronchi and allowing the ulcer or cavity to heal.

Are we furnished any evidence from the record of postmortems that may be appropriated to support the principle that immobilization and physiologic rest of the lung is favorable to the healing of pulmonary tuberculosis and pulmonary cavities? Yes. 1. Lungs that have been severely involved in tuberculosis, empyema, pneumonia, gangrene or abscess when repaired show a contraction of the chest wall in proportion to the degree of tissue involved; 2. Lungs with tuberculosis that have been compressed by pleuritic exudates, usually sequences of the pulmonary tuberculosis, have repaired the primary tubercular focus during their quiescence; 3. Lungs that have been allowed to collapse following radical operations for the obliteration of empyemic cavities (tubercular in a large percentage of the cases) have healed.

That empyema is curative of tuberculosis of the lung in its early stage I believe can be readily proven. The great majority of empyemas in the adult is the result of primary pulmonary tuberculosis, 83 per cent.; in children tuberculosis is rarely the cause of empyema. In most of the post-mortems on chronic purulent tubercular pleurisy tubercular lesions of the lung or other organs are found, but these lesions are generally quiescent and localized. Empyema from tuberculosis never absorbs and rarely opens into a bronchus. It is a result of mixed infection of the primary tubercular nodule in the lung extending to the pleura. (Strauss.) Of 164 uncomplicated cases of empyema operated by

Koenig, Cabot and Runeberg, 7 remained with fistulae and were incomplete cures, 4 died, and 9 were lost sight of before the cure was complete; all the others recovered. This shows what a favorable termination empyema may have, and considering that it is secondary to tuberculosis in a great majority of cases (83 per cent.) it speaks forcibly for its curative effect upon the lung. Whitney⁶⁹ says "the course of tubercular empyema is peculiarly benign." In 16 cases of pleuritic, non-suppurative effusion, Netter found bacilli in all. It is the prevalent opinion of pathologists that pleurisy from "cold" rarely if ever occurs. Strauss quotes from German authors that "simple" pleurisy is tubercular pleurisy, the true nature of which is not recognized; tuberculosis is the usual etiologic condition in pleurisy; one can say that it represents the real cause in over three-fourths of the cases. Landonzy regards pleurisy from cold as absolutely exceptional. Kelsch and Villard, who investigated 16 cases, say that pleurisy is only a local manifestation of tuberculosis. Chauffard and Gombault inoculated the fluid from 20 simple pleuritic exudates in guinea pigs; 10 died of tuberculosis, the negative cases do not prove that they were not tubercular. Every general practitioner recalls numerous cases of tuberculosis of the lung resulting in empyema or hydrothorax in which there was a complete recovery of the tuberculosis when the empyema and hydrothorax were operated at the proper time. In considering the curative effect of pleuritic effusions upon tuberculosis of the lung we do not include the advanced cases of tuberculosis in which one or more lobes are honeycombed with the disease; here, on account of the consolidation of the lung, it is impossible for the pleuritic effusion to produce collapse and compression of the cavities. When I began this line of investigation I had hoped to find in the reports of the great pathologic institutes detailed accounts of the condition of the primary tubercular focus in the lung and prove my position by them; so far I been unable to find this material, as the postmortem records at my disposal have been defective in this particular. I have called the attention of a number of pathologists to this point and hope shortly to be able to submit accurate descriptions of the tubercular process in the lung with empyema. I do not believe that the empyema or the hydrothorax is advantageous to the tubercular process; by an inhibitory power exercised by the fluid or by a venous stasis, as suggested by Fowler,⁷⁰ of Brooklyn, in his able article, "Surgery of Intrathoracic Tuberculosis." On the contrary, from this standpoint it is detrimental, as it impairs the general condition of the patient. It increases the immediate danger, but favors the ultimate result. Nothnagel and Schrader do not remove the effusions primarily. The force of numbers of operated cases of empyema with permanent cure of the primary tuberculosis of the lung carries conviction that the compression of the lung favors the reparative process, and in this way the pleuritic effusion is curative. Quiescence of the lung greatly diminishes lymphatic circulation and thereby lessens materially the likelihood of the propagation of the tuberculosis to the other parts (W. A. Evans), a fact of great moment, as the tuberculosis is disseminated, from a practical standpoint, almost exclusively by the lymphatics. The methods of obtaining pulmonary quiescence or

⁶⁹ Twentieth Century Practice of Medicine.
⁷⁰ Ann. of Surgery, 1886, xxiv, p. 591.

collapse are: 1. By permitting or forcing the collapse of the lung by separation of the parietal pleura and intrathoracic compression (extra-pleural pneumothorax); 2, by removing the bony resistance and allowing the collapse of the chest wall, thus favoring contraction and cicatrization (thoracoplasty); 3, allowing the lung to collapse by intrapleural injections of gas or fluid. The third method appears to offer more than any of the others. We know that atelectasis of the lung may exist for months, or even years, and the lung be again restored to its function, as shown by West's cases of six to eighteen months' compression with effusion, which were followed by immediate restoration of the lung to full size after removing the fluid; 2, the treatment is simple and painless; 3, the patients will consent when the pathologic condition is most favorable.

Good results were obtained in tubercular cavities with thoracoplasty by a number of authors. De Cazenville and Sengler report recoveries from disease of right apex. Baier reports a temporary recovery. Stewart Tiday supplemented this operation with external compression with adhesive plaster. Coromilas and McEwan favor thoracoplasty.

I have performed the following operation for the purpose of allowing the lung to collapse over a tubercular cavity:

Case 1.—Stephen D., English, age 40, single, clerk, Cook County Infirmary, Surgical Ward 7. Family history: Tuberculosis caused death of mother, two sisters and two brothers. Has had tuberculosis for three years; is emaciated and anemic. The upper lobe of right lung is consolidated; has evidence of a large cavity extending from the first rib to the lower margin of the third with a transverse diameter of two inches; has marked cracked-pot sound; he expectorates two ounces of material with each seizure of coughing; rales over the upper portion of the right lower lobe behind and some rales over the upper lobe of the left lung; no evidence of consolidation in this lobe; tubercle bacilli present; patient had an evening temperature ranging from 102 to 102.5 degrees F. It was decided that he was not in a condition to drain the cavity, and a compression of the lung over the position of the cavity was determined upon.

Operation.—Jan. 9, 1898, chloroform narcosis. Immediately before operation the patient's temperature was 100 degrees, pulse 98, respiration 28; there was a frequent hacking cough. A U-shaped incision was made, beginning at the sternum and the second rib, extending down to the third and then three inches to the right and up again to the second rib; the skin and muscular flaps were elevated; subperiosteal resection of three inches of the second rib; the parietal pleura was detached from the chest wall for a considerable area downward and outward, so as to allow of a greater compression of the lung at that point. The flap was replaced and retained with a deep musculo-cutaneous suture. Very little chloroform was used, as the patient was somewhat cyanotic when the operation began; it was feared he might die on the table. He was placed in bed and rallied rapidly.

At 7 P.M. the day of operation pulse was 108, temperature 101, respiration 32; January 10, 8 A.M., pulse 98, temperature 99.2, respiration 30; slept five hours; cough more constant and less spasmodic with considerable expectoration. January 10, 2 P.M., pulse 100, temperature 99.6, respiration 27. January 10, 7 P.M., pulse 104, temperature 100.2, respiration 30. January 11, 3 A.M., pulse 102, temperature 99.2, respiration 30; slept eight hours. January 11, 8 P.M., pulse 104, temperature 100.2, respiration 52. January 12, A.M., pulse 94, temperature 99.4, respiration 32; slept nine hours. January 12, P.M., pulse 96, temperature 99.8, respiration 34. January 13, A.M., pulse 94, temperature 98.8, respiration 30. January 13, P.M., pulse 96, temperature 99, respiration 32. January 14, A.M., pulse 98, temperature 98.8, respiration 30; slept nine hours; marked improvement in cough and expectoration. January 14, P.M., pulse 100, temperature 99.4, respiration 34. January 15, A.M., pulse 88, temperature 98.8, respiration 32. January 15, P.M., pulse 90, temperature 99.4, respiration 34. January 16, A.M., pulse 84, temperature 98.6, respiration 32. January 16, P.M., pulse 86, temperature 98.4, respiration 33. January 17,

A.M., pulse 88, temperature 98.4, respiration 24. January 17, P.M., pulse 90, temperature 98.4, respiration 24. January 18, A.M., pulse 84, temperature 98.4, respiration 22.

From this time on his temperature, pulse and respiration have been normal; there was primary union of the wound and great depression of the chest over the site of operation. The patient's expectoration has diminished more than half, and is of a light foamy character. His improvement was progressive. He has gained in weight and appearance. April 30 physical examination reveals an entire absence of rales and bronchial breathing on the right side; there is diminished respiratory sound over the seat of depression of the chest wall; no physical signs remain to indicate that a cavity had existed in this locality. On the left side there are rales extending down to the nipple. These physical signs were verified by Drs. George W. Johnson and W. A. Evans. The repair of the lung which has taken place can be seen in radiograph of the right lung; no cavity exists. If the lung in this case were involved to a greater degree I could have inserted my entire hand through the opening in the chest wall into the chest cavity and separated the lung from its adhesions to the wall and compressed it.

Examination July 8 shows that the tuberculosis in the right lung was entirely quiescent. There was not a rale to be heard; the cavity was obliterated; there were some rales over the upper lobe of the left lung and the upper portion of the lower lobe; the patient has had no fever and has had but little expectoration.

Dr. Alexander C. Weiner and Dr. James G. Berry examined this patient with me.

(To be concluded.)

SOCIETY PROCEEDINGS.

Association of American Medical Colleges.

Denver, Colo., June 6, 1898.

[From advance sheets of "Bulletin of American Academy of Medicine."]

The Association was called to order at 10 o'clock A.M., at the Albany Hotel, Denver, Colo., June 6, 1898, by Prof. JAMES W. HOLLAND of Philadelphia, President. The Secretary announced the following members present by delegates: Jefferson Medical College, Philadelphia; Cincinnati College of Medicine and Surgery, Cincinnati; St. Louis College of Physicians and Surgeons, St. Louis; University of Georgetown, Washington; Woman's Medical College, Baltimore; Columbian University, Washington; University of California, San Francisco; Willamette University, Salem, Ore.; Crsighton Medical College, Omaha; University of Illinois, Chicago; Medical College of Indiana, Indianapolis; Woman's Medical College, Philadelphia; Detroit College of Medicine, Detroit; University of Louisville, Louisville; Hospital College of Medicine, Louisville; University of Colorado, Boulder; Baltimore Medical College, Baltimore; Kansas Medical College, Topeka; Kentucky School of Medicine, Louisville; University of Minnesota, Minneapolis; Arkansas Industrial University, Little Rock; University of Iowa, Iowa City; Keokuk Medical College, Keokuk; Medico-Chirurgical College, Philadelphia; College of Physicians and Surgeons, Boston; Omaha Medical College, Omaha; University of Denver, Denver; Illinois Medical College, Chicago; University of Southern California, Los Angeles; Milwaukee Medical College, Milwaukee; Barnes Medical College, St. Louis; Wisconsin College of Physicians and Surgeons, Milwaukee; Miami Medical College, Cincinnati; Fort Wayne College of Medicine, Fort Wayne; Syracuse University, Syracuse; College of Physicians and Surgeons, Baltimore; Rush Medical College, Chicago; Western Reserve University, Cleveland; Gross Medical College, Denver; Woman's Medical School, Northwestern University.

On motion, the President appointed the following committee to consider and report on the proposed amendments to the constitution: J. M. Bodine of Louisville, T. H. Hawkins of Denver and H. O. Walker of Detroit.

Prof. MONTGOMERY A. CROCKETT of Buffalo, N. Y., read an essay on "The Developing Method in Teaching Medicine." The subject was approvingly discussed by the following gentlemen, all of whom had slight modifications to suggest: Prof. Chas. G. Stockton of Buffalo, Prof. John Minney of Topeka, Prof. Dudley S. Reynolds of Louisville, Prof. A. Stewart Lobingier of the University of Colorado, Prof. Bayard Holmes of Chicago, Prof. John V. Shoemaker of Philadelphia, Prof. Ernest LaPlace of Philadelphia and Prof. H. J. Herrick of Cleveland.

Professor Crockett was called on to conclude the discussion, after which the Association adjourned until 2 o'clock P.M.

SECOND SESSION.

The Association was called to order at 2:15 P.M. by the President, Prof. James W. Holland. The Secretary read the minutes of the last annual meeting, held at Philadelphia, May 31 and June 1, 1897, which were approved. By request, the Secretary called the roll; twenty-seven colleges answered present by delegates.

The President called past-President James M. Bodine to the chair, and proceeded to read his address. The address was well received, and on motion the Secretary was ordered to publish it and furnish each member of the Association a copy.

Prof. JAMES M. BODINE, Chairman of the Committee on Constitutional Amendments, reported as follows: The amendment proposed for Art. III, Sec. 5, extending the required hours for a year's work to 800, is not a desirable change, and your committee respectfully reports against its adoption. The proposed amendment to Art. III, Sec. 7, by the addition of the following: "A college not giving the whole four courses of the medical curriculum and not graduating students, but otherwise eligible, may be admitted to membership," is respectfully approved by your committee. On motion, the report of the committee was unanimously adopted and the amendment made part of the constitution.

Prof. DUDLEY S. REYNOLDS, Chairman of the Judicial Council, reported as follows: The University of Colorado having been, by recent decision of the courts, obliged to remove its medical department from Denver to Boulder, the question of retaining membership was presented to the Council. The chairman advised as follows: "If you keep your dues paid up, and send annually a representative to the meetings of the Association, your membership is continued until somebody shall prefer, in due form, written charges of violation of some part of the organic law of the College Association, supported by convincing evidence. I would advise you, however, to make no attempt to confer degrees until you are thoroughly equipped for the completion of the required courses of instruction." This advice was accepted, and by your recent action in amending the constitution, the institution is still in every way eligible to membership.

In answer to a communication of Aug. 7, 1897, addressed to Secretary Holmes by Prof. G. M. Waters, M.D., Dean of the Ohio Medical University, Columbus, Ohio, the Council rendered the following decision:

Aug. 20, 1897.

To the Ohio Medical University, Columbus, Ohio:

G. M. WATERS, M.D., Dean:—For answer to your communication of Aug. 7, 1897, addressed to Bayard Holmes, M.D., Secretary of the Association of American Medical Colleges, your attention is invited to the following decision of the Judicial Council in answer to your communication of Dec. 22, 1895: "III. The time requirements of the Association are fundamental," etc. Again, in answer to interrogatories of the Ohio Medical University, of Sept. 4, 1896, the Council decided that "the whole period of time devoted to college work by the student shall not amount to less than four collegiate courses in four separate years in 1899 and thereafter, nor less than three collegiate courses of not less than six months each in three separate years, prior to 1899.

"Second, you can not admit a man to the senior class who has attended but one course of college instruction, no matter how long since that course may have been taken. If he can establish the fact that he did attend one regular collegiate course in an accredited college, you may graduate him after two full courses in addition to that one which he has already taken, provided you do it before 1899. After that time he would be required to take three additional courses. The College Association does not recognize any period of time devoted to practice as equivalent to any part of the prescribed course of study, and can not grant advanced standing to any person upon any ground other than previous collegiate work performed in regular and systematic order."

You say three-course graduates are eligible to registration in Ohio until July 1, 1899. If this be true, the Ohio State Board lowers its standard beneath that of the College Association. No college in good standing can graduate a student in 1899 who has not attended four courses of graded instruction in four separate years, subject alone to the exemptions of Sec. 6, Art. III, of the constitution as amended at Philadelphia, May 31, 1897.

The Mr. Browning of Charleston, W. Va., a copy of whose letter accompanies yours of Aug. 7, 1897, can not now avail himself of the provisions of Sec. 5, Art. III, of the original constitution of the Association of American Medical Colleges,

and you can not admit him for graduation on less than three courses of graded instruction in three separate years, prior to 1899, after which date you can not admit him to the degree of Doctor of Medicine until after he shall have attended four courses of graded instruction of not less than six months each, in four separate years, subject to the exemptions herein cited. It is the judgment of the Council that the date set for the observance of the four years' requirement in 1899, and subsequent classes, begins Jan. 1, 1899.

The study of anatomy can not be completed in less than two separate annual courses. Final examinations in no part of the curriculum are granted prior to the conclusion of the second annual course.

No reputable college can admit the said Browning, or any other student, upon terms different from those specified in the constitution of the Association of American Medical Colleges as heretofore interpreted by the Judicial Council of the said College Association.

If the Ohio State Board of Examiners establish a standard below the minimum of the Association of American Medical Colleges, the Council can simply deplore the fact, but it can not permit your college, or any other institution holding membership in the Association of American Medical Colleges, to violate the fundamental principles set forth in the time requirements of Article III of the constitution of the Association of American Medical Colleges.

DUDLEY S. REYNOLDS,
STARLING LOVING,
JAS. H. ETHERIDGE,
VICTOR C. VAUGHAN,
ALBERT R. BAKER,
RANDOLPH WINSLOW,
JOHN B. ROBERTS.

On motion of Prof. P. Richard Taylor of Louisville, the secretary was directed to publish this decision and supply a copy to each member of the association.

On Nov. 15, 1897, Prof. Pickney French, secretary of the Barnes Medical College of St. Louis, addressed the following letter to Secretary Holmes:

St. Louis, Nov. 15, 1897.

Dr. Bayard Holmes, Chicago, Ill.

DEAR DOCTOR: I have been instructed by the faculty of Barnes Medical College to make the following inquiries of you:

1. Is a medical college that begins its session on January 1, and terminates the same in the following June, strictly speaking, a summer school of medicine, especially when it issues to students, who leave the institution on May 10, certificates of having attended a full course of lectures?

2. If the Barnes Medical College accepted into its regular session a student from such a college, in what way would it be a violation of the rules of the American Association of Medical Colleges?

3. Is there such a rule in force in the Association of American Medical Colleges that requires a lapse of six months' time between the termination of one session, at which a student attended, and the beginning of another which he desires to attend?

4. Is it not a fact that there is a rule only which requires that no two sessions shall be within the same year?

It was the view of our faculty that a summer school of medicine was one beginning its session in the Spring months and terminating its session in the Fall; that a school that began its session, 60 or 90 days later in the winter and terminated its session only six or eight weeks later in the Spring months, was nothing more than a regular winter session of college work. This being our view with reference to question 1, it naturally follows that we can see no impropriety in accepting a student from such an institution, as having completed a regular course during the year prior to the time which he enters and terminates his session with us; hence this expresses our views with respect to the second question.

The asking of the third question seems to be an absurdity, when we reflect that such a rule would interfere with every college of first-class standing in the United States. For instance, the length of session of all high-graded schools is from six and one-half to nine months. The Barnes Medical College began its present session September 13, and will close the same April 12. Rush Medical College has eight months' session, and the medical departments of our State universities, almost invariably nine months' attendance.

In regard to question 4, we suggest that the rule requiring that no two sessions shall be in one and the same year is not violated by accepting students from a college that graduates its students from the middle to the 25th of June, while other colleges graduate their students between the 2nd week of April, and the middle of May.

Barnes Medical College has always taken pride in enforcing the rules of the American Medical College Association, and it is the purpose of her faculty to abide by the decision of your committees, or the officers of the association—we, therefore, submit this question to you, desiring a speedy reply. If you feel like assuming the responsibility of speaking for the association, we will accept your individual views; otherwise we would be pleased to have you submit this communication to such committee as is empowered to pass upon the subject-matter involved and let us have an answer as quickly as is consistent with proper consideration of the subject.

I am very truly,

PINCKNEY FRENCH, Secretary.

The letter being referred to the chairman of the council, the following answer was returned:

LOUISVILLE, KY., Nov. 20, 1897.

Prof. Pinckney French M.D., Barnes Medical College.

DEAR SIR: For answer to your letter of November 15 addressed to Prof. Bayard Holmes of Chicago, I have to say that a medical college which begins its session on January 1 and terminates in the following June, can not be held to comply with the rules of the Association of American Colleges, if it issues tickets for a full course of lectures, on the 10th of May. The time-requirements have been repeatedly held to be fundamental, and it can not be maintained that a student who begins January 1, can possibly have attended one full course by the following 10th of May.

Second, if the Barnes Medical College accepted into its regular session a student with no other qualifications than those above stated, such student could not be credited with having attended one full course, and would therefore be obliged to enter the same grade over again.

The terms of Sec. 5, Art. III, of the constitution, as it existed prior to June 1, 1897, and of the amended constitution, as it now exists, demand that all candidates for the degree of Doctor of Medicine must have attended three courses of graded instruction of not less than six months each, in three separate years, prior to 1899. After the first of January, 1899, all candidates for the degree of Doctor of Medicine must have attended four courses of graded instruction of at least six months' duration, no two of which shall have been in the same calendar year.

The council has several times heretofore decided that "No student can be admitted to a second course of instruction within less than twelve months from the date of the beginning of the first course," and so on through all the succeeding annual courses required of candidates for the degree.

It has also been held that the Ohio Medical University could not receive a student for the second course of instruction in September, 1895, who had completed a first course of graded instruction beginning Jan. 1, 1895, and ending with the month of June, 1895, notwithstanding the fact that the session of the Ohio Medical University beginning in September, 1895, would not terminate until May, 1896. No member of the Association of American Medical Colleges can be permitted to evade the time-requirements with impunity.

If this letter is not entirely satisfactory, I will cause your letter to be copied and submitted to the entire council; I am sure, however, that the council could not, without stultifying itself by a reversal of former opinions, dissent from the opinions herein expressed.

I am, with great respect, yours truly,

DUDLEY S. REYNOLDS,

Chairman of Judicial Council, A.A.M.C.

Similar communications were received from Prof. Samuel O. L. Potter, Secretary of the College of Physicians and Surgeons, of San Francisco; Prof. W. W. Grubbe of the Toledo, Ohio, Medical College; Prof. Wm. V. Morgan of the Central College of Physicians and Surgeons, of Indianapolis; and many individual correspondents, not connected with colleges, all of whom were answered in similar terms. Accompanying the application of the Milwaukee Medical College, for membership, I have received a certified copy of resolutions adopted by the faculty of the Milwaukee Medical College, Jan. 29, 1898, as follows:

COPY OF RESOLUTIONS ADOPTED BY THE FACULTY OF THE MILWAUKEE MEDICAL COLLEGE AT A REGULAR MEETING HELD JANUARY 29, 1898.

(1) *Resolved*, That beginning with April 5, 1898, the course of study of the Milwaukee Medical College shall consist of four years of six months each.

(2) *Resolved*, That in addition to the winter course, there shall be a spring course of six weeks, said course to be optional.

(3) *Resolved*, That henceforth the Milwaukee Medical College conform to the standard of requirements and rules of the

Association of American Medical Colleges and to those of the Illinois Board of Health.

(4) *Resolved*, That the dean of this school be and is hereby instructed to make formal application for admittance to the Association of American Medical Colleges, with the view of having the school admitted at the next meeting of said association.

All the above resolutions were unanimously adopted.

B. A. BROWN, M.D., Secretary.

Upon the basis of these resolutions the application for membership is approved.

The application of the Illinois Medical College, made through its president, Prof. Randolph N. Hall of Chicago, is approved, with the understanding that the institution will observe all of the requirements of our association.

On the 15th of April, 1898, Prof. P. S. Conner of Cincinnati charged the St. Louis College of Physicians and Surgeons with violation of Article III, Section 7, of the Constitution, specifying that, in March, 1897, the institution conferred the degree of Doctor of Medicine upon Oscar B. Ormsby of Murphysboro, Ill., and M. A. Finley of Mortimer, Kansas, both of whom it was charged, matriculated as first-course students at the Illinois Medical College of Chicago, for the season beginning March 15, 1895, in support of which the statement of Prof. H. H. Brown, Secretary of the Illinois Medical College, was filed. A correct copy of the charges and specifications, and the evidence supporting them, being furnished the defendant, it was shown that the Finley named in the charges had attended one full course of instruction in the Kansas City Medical College, Kansas City, Mo.; one course at the Illinois Medical College in a separate year, and two terms in two separate years in the St. Louis College of Physicians and Surgeons; and that the Ormsby mentioned in the specifications, being a pharmacist, and having taken a regular collegiate course of instruction, was entitled to one-half term of advancement in his standing. The institution having acted in apparent good faith, and doubts of the sufficiency of the evidence to support the charges in the face of the testimony for the defense, the council decided that the charges should be dismissed, and they are declared, not sustained.

On the 15th day of April, 1898, Prof. P. S. Conner of Cincinnati, preferred charges and specifications against the Hospital College of Medicine of Louisville, and the Kentucky School of Medicine, Louisville, Ky., charging both of these institutions with graduating at the close of their annual sessions, on the 30th of June, and the 1st of July, 1897, respectively, students who had taken the first course of instruction at the Illinois Medical College, Chicago, during the session of 1895, in violation of Article III, Section 7, of the Constitution. To these charges both institutions plead not guilty. To the specifications they plead guilty, and set forth the facts that students attending a full course of instruction in a regular college, in the year 1895, and a second course in the accused institution in the separate year of 1896, and a third course in the separate year of 1897, thus fulfilled all the requirements of Article III, Section 7, of the Constitution, inasmuch as the Illinois College holds its sessions in the spring and summer only, and the two defendants begin their sessions with the month of January and conclude with the month of June, holding no official terms. In view of this testimony, and these facts, the charges are not sustained, and have been dismissed. In the determination of these matters against the Kentucky School of Medicine and the Hospital College of Medicine, the chairman expressed no opinion, and cast no vote.

Before proceeding further with the report, on request of the chairman, that the association should take action upon so much as had already been submitted, it was, on motion, unanimously adopted.

Continuing the report, the chairman stated that the decision declaring the Medical College of Ohio to have forfeited its membership, having been published, and the institution thereby sufficiently punished, the chairman desired to submit the following: "The council now asks permission to declare that the judgment heretofore rendered against the Medical College of Ohio, declaring its membership forfeited, is now vacated and set aside, and the said Medical College of Ohio is invited to renew its membership in the Association of American Medical Colleges. The chairman desires permission to promulgate the decision."

On motion, the consent of the Association was granted unanimously.

On motion, the report of the Judicial Council, as a whole, was unanimously adopted.

By request of the chairman, all applications for membership from colleges not fully complying with the rules and regula-

tions of the Association, may, upon furnishing satisfactory evidence to the council of a determination in future to make full compliance with all the rules and regulations of the Association, be admitted to full membership in the interval between this and our next annual meeting.

On motion, this request was unanimously granted.

Prof. Henry O. Walker of Detroit, presented the following, which was unanimously adopted:

Resolved, That a committee of three be appointed to ascertain the amount of work being done by the several colleges, members of this Association, and offer such amendments to the Constitution as may seem fit to them, for consideration and action at the next annual meeting.

The president appointed the following committee to take charge of the resolution: Prof. Henry O. Walker of Detroit; Prof. John C. Oliver of Cincinnati, and Prof. Thomas H. Hawkins of Denver.

On motion, the secretary was directed to publish the constitution, by-laws, rules of the Judicial Council, transactions of the association, addresses, and papers presented, and all the decisions of the Judicial Council of permanent value, and to furnish six copies to each college holding membership in the association, and one copy to each of the other medical colleges in the United States; homeopathic, eclectic, and to the secretary of each State board of health and to each State board of medical examiners.

The Association then proceeded to the election of officers, with the following result: President, Prof. Henry O. Walker of Detroit; first vice-president, Prof. H. Bert Ellis of Los Angeles; second vice-president, Prof. Samuel C. Woody of Louisville; secretary and treasurer, Prof. Bayard Holmes of Chicago.

The members of the Judicial Council whose terms expire at this meeting are: Prof. Dudley S. Reynolds, Louisville; Prof. Victor C. Vaughan, Ann Arbor, and Prof. John B. Roberts, Philadelphia, each to serve three years from this date.

The president elect requested to be released from the duties of chairman of the committee, created by resolution, which request was granted, and Prof. E. Fletcher Ingalls of Chicago, was appointed instead.

On motion, the Association adjourned to meet on the last day preceding the next assembling of the AMERICAN MEDICAL ASSOCIATION, at the place chosen by that body.

BAYARD HOLMES, Secretary.

The Medical Society of the State of New Jersey.

One Hundred and Thirty-second Anniversary at Asbury Park, June 28, 1898.

(Continued from page 244.)

In the evening Dr. J. C. APPELEGATE read an essay on REGRESSION VS. PROGRESSION, VIEWING THE GENERAL PRACTITIONER FROM A SCIENTIFIC STANDPOINT.

He did not propose to prove regression on the part of the general practitioner as a whole. With few exceptions, their progressive strides have not been in keeping with surgery and other special branches. The world, it is true, has reached a period in the germ theory that our forefathers never dreamed of, yet the germ theory of most infectious fevers remains still a mystery, and will remain till we have learned the cellular life processes and the ability of cells to resist invasion. Many are in the profession who should be at the plow or the anvil, or *vice versa*. It is the noblest profession because the humblest of the profession is the general practitioner. His responsibilities are great. Is it not true that too often our researches decline at the expiration of our demonstrative course of teaching when it ought to be but the beginning. To be successful we must be perpetual students. During the last decade many evils have arisen tending to belittle the profession. These evils have rapid growth. When the student of today enters upon his field he is confronted by many obstacles. Specialists crowd him; some are *bona fide*, others lack the fundamental principles needed. An eminent physician recently said that in the future each patient will be visited by the family physician and the specialist. Who will then bear the responsibility? The splitting up of the profession into specialties has resulted in great danger to the unity of medical science. A man can not be a successful specialist unless first a successful general practitioner, any more than a man can be a successful contractor until he has labored at and mastered the minor details in connection with the art of building.

The general practitioner often encounters patients who have suffered for a period with vertigo, etc., when inquiry of the brain specialist is made, while the cause of the malady exists

in some remote part of the system, probably of gastric origin, or neurasthenia when the neurologist is consulted; while the origin is local and ought to be in the hands say of the gynecologist. He quoted a case where a lady, aged 45 years, became the victim of epilepsy. Growing worse, she was referred to the gynecologist. Nothing abnormal was found. The nervous specialist was consulted; no relief. But an humble general practitioner, after a careful study of her case, relieved her entirely by anti-syphilitic remedies. He did not condemn specialists, only the excessive and incompetent specialism producing discontent among the laity and producing trouble for the physician. Next, the universal use of proprietary remedies, endorsed by members of the profession, does much to check scientific advancement. Even in this age we find learning and science mingling with ignorance and superstition. In the larger cities the public charity abuse, unless modified, will soon cause the extinction of the aspiring specialist who is not connected with one of these. The motive may be good, but the effect is bad. It encourages the wasting of the wages in debauchery. They claim they are not to work as the good people have provided for them. This evil is unlimited and injurious to the laity as well as the profession. The difficulties to be overcome are many, for it is well known that many are deserving but few in comparison with the host of applicants who are in no wise in need. When the boards succeed in correcting this evil their work will be commendable. The general practitioner is thus deprived of valuable material. The method in vogue at the present time, giving greatest semblance to scientific regression, is the result of the relationship between the physician and the pharmacist. When the two were co-operative, things were better. While the physician is engaged in compounding his own prescriptions, or dealing out fixed formulae, the apothecary is prescribing over the counter and practicing the art of surgery whenever the opportunity affords. If he claims to have been forced into this policy it is in a direction where the counter-pressure is strongest; for the physician has but to look around in almost any home to discover numerous remedies, not proprietary, for various ills, compounded by the authority of one of his own pharmacists. The physician has to become his own clerk, assuming responsibilities which belong to the pharmacist. With the beginning practitioner, no better method could be adopted than to handle his own nostrums, as familiarity tends to better his knowledge. The established physician can better afford to leave this work to the pharmacist, utilizing his time in seeking for more accurate knowledge of disease and its remedy. Can we afford to fill our cases with combinations of tablet triturates, etc., furnished by dealers, with foot-notes telling us in which diseases, etc., we shall use them? One of the greatest evils is the indiscriminate use of fixed formulae. He who would be a progressive scientific practitioner must discard such and decide as to what to give his patient after a careful study of the history, etc., of his patient. The science of medicine is a living, not a dead, science. With the suppression of these evils, why should we not note a period in our profession paramount with the historical eighteenth century? He who tells us he has something good to reduce temperature without weakening the heart, and can not name the ingredients, had better remain on the farm. In the golden age of medicine, the eighteenth century, the profession was not overcrowded and there was much less of that one-sided narrow education that obtains today. What shall be the future? Will we continue to approve the use of proprietary nostrums? Or shall we take a bold stand in favor of scientific advancement, making the first decade of the twentieth century an epoch in the history of progressive medicine hitherto unsurpassed? In this the general practitioner should play a most active part. He comes in contact with a disease which claims the lives of thousands annually, one-eighth of the whole human family, regardless of science, more destructive than Vesuvius and more deadly than war. Were he to devote his life to this and establish treatment to successfully combat it, it would be well spent. We can not all be Grosses, Agnews or DaCostas, but he who first is successful in isolating the tubercle bacillus and points out the antidote to effectually neutralize it in the system, will go down in history beside Jenner and his name will be emblazoned on the tablet of fame.

Dr. P. A. HARRIS read an essay on

THE DANGERS OF CERTAIN FAULTY IMPRESSIONS REGARDING THE MENOPAUSE.

This usually occurs between the ages of 40 and 50 years. It is not attained by all in the same manner. Two-thirds skip one, two or three periods for a longer or shorter time prior to cessation. The rest stop suddenly. The average time for this large class to menstruate irregularly is two and a half years. To aid in judging as to what is physiologic and what patho-

logic we must learn the previous habits of the patient. When we find the lengthened period and flow markedly out of proportion to her habit, we will be warranted in assuming that a pathologic condition is present. Endometritis, small myomata, the forthcoming cancer, were doubtless the pathologic causes of the floodings observed. The profession and the laity still have incorrect impressions as to the menopause. Even Tilt regarded as connected with the change many things observable constantly under other circumstances. These are merely coincidents, I believe insanity and melancholia may be a result. Leucorrhœa and painful menstruation should not be credited to it. These disturbances may often be readily relieved. The uterus is a pocket, its cervix a sinus, and when once well inoculated with pyogenic tubercle, etc., it is common for the disease to extend to the fallopian tubes, producing pelvic pain, backache, fever, headache, yet neither of these may be sufficient to cause all so affected to apply for relief. If a patient is nearing the age when the menopause is expected, if she skips a period, has a leucorrhœa, etc., she is apt to regard it as the change. Usually her physician agrees with her, orders some slight treatment, and she returns later with an increase of the symptoms. He then makes a physical examination and may at once discover an unmistakable carcinoma. The question of operation occurs, but the case has been made worse by the delay or neglect; thus, constantly, carelessness causes injury and perhaps loss to the physician. Often, on the other hand, the woman is led astray by her friends, who view all such matters in the light of the change and believe that all will soon come right. Here the delay is the result of the common belief that so many things are due to the change. After carcinoma, the most common trouble is the development of uterine fibroid or myomata. Even small fibroids are often dangerous to neglect, producing emaciation and an appearance as of carcinoma. The expectant treatment must here be abandoned as a cure is almost sure to follow the proper treatment. There is little in the change of life to affect the woman so as to produce serious pathologic conditions. Such may coexist, but are not in relation as cause and effect. In all cases we must make particular inquiry and physical examination; never let the nearness of the menopause influence the opinion to the neglect of every precaution. It is important to detect cancer early. Remove such and the mortality will be largely reduced. While late operation often results in good, yet we have no right to expect it. We should not depend solely upon the fingers, eyes, etc., but use the microscope. Let us then remember that the menopause of itself has little if any effect in either precipitating or arresting the more serious diseases of the pelvic organs; that many of the pathologic conditions are inaugurated and maintained with little regard to that special period in the life of females when the phenomena of ovulation and menstruation are preparing for their final adieu.

Dr. S. A. TWINCH read a paper on

THE EARLY DIAGNOSIS AND TREATMENT OF POTT'S DISEASE.

This paper was well illustrated by pictures on the screen and gave much satisfaction to the society. Spondylitis is a chronic tubercular osteitis which may begin in any part of the spinal column. The symptoms which aid in the diagnosis during the period before deformity appears, he mentioned, as it is then arrest of the trouble may be hoped for. There is a lowering of the vital functions as a premonitory stage. The cervical form shows a rigidity of the muscles around the neck, with difficulty of breathing and occipital neuralgia.

The head is in various positions, generally to one side, the face looking down. The positions assumed are maintained by the rigid cervical muscles. The body turns with the head. Dysphagia is present, caused perhaps by abscess of the vertebra. Such cases are more comfortable when standing or sitting than lying down. Cervical caries is often confounded with torticollis. In caries there is often spasmodic contraction while in torticollis only the one muscle is affected. In dorsal caries an early symptom is rigid back muscles and a prominence of the abdomen. This is nature's method of splinting the spine. The natural flexibility of the healthy spine and the reverse of the diseases is significant. Stooping shows this peculiar gait is an early symptom; he walks with care. Lateral deviation is also a well-known symptom on which great reliance can be placed. This may be slight and easily overlooked. Elevated temperature is constant. The afternoon rise is from 1 to 4 degrees. Paroxysmal pain is frequent at the seat of the disease or in the chest or abdomen aggravated by jar, etc. At night this simulates his disease, by the night cries, or it may be mistaken for stomach-ache. Persistent abdominal pain ought to receive attention although it is not diagnostic of Pott's disease. Absence of pain can not be assumed as absence of Pott's disease. Tiring easily, leaning on chairs or tables means

danger ahead. Dorsal must be differentiated from rachitic and rotary lateral curvature of the spine. Here we have rachitic symptoms, enlarged epiphyses, open fontanels, decayed teeth, etc. Again there is no spasm of the muscles, little or no pain and no elevation of temperature. Lumbar Pott's disease is more difficult to detect early. The occurrence of deformity may be preceded by flattening of the lumbar curve. The attitude is that of lordosis, the gait military and careful. Here curvature is most marked. We may be deceived by the ease with which the child bends the spine to stoop. In Pott's disease the irritation of the lumbar nerves causes psoas contraction, drawing up the thigh. Early, it is difficult to differentiate the two troubles; generally, when the hip symptoms are due to Pott's and the joint symptoms are caused by psoas irritability, the motion in the hip is the loss of extension while abduction and internal rotation are free and not affected. The limitation of motion in one direction is usually sufficient to establish the presence of Pott's disease. Complications are abscesses, the location varying. In cervical it usually opens into the mouth or neck; in dorsal or lumbar in the back or may burrow to open below Poupart's ligament, etc. Watch carefully that the spine is properly supported, remove all weight from the vertebrae. In treatment we must not forget it is tubercular and calls for constitutional treatment. The local affection must be treated by rest; prevent friction, relieve superincumbent weight. We have the plaster jacket and the spinal steel brace. Both have their uses. The first has the advantage of cheapness and can be moulded to fit the body. It is also porous and should be renewed every three months. The jacket is especially suitable for mid dorsal lower dorsal and lumbar Pott's disease. When above the lower dorsal region a jury mast should be used to support the head and shoulders. Accurate adjustment is needed. It must not have any buckles and straps at the will of the patient. If there is to be any fastening, let it be a single row of hooks as on a laced shoe, and care must be taken to bring the edges together. The advantage of the plaster jacket is, once applied it can not be tampered with. We usually keep a child in a closed jacket for three years, then a lace or open jacket another year, taking it off at nights the last six months. For upper dorsal and cervical the jacket is not suitable, not supporting the parts above the disease. It can here only serve as a support for the jury mast. A good apparatus here is Sayer's body brace combined with Schaffer's head-piece. It immobilizes the weight and supports it, thus being superior to a jury mast. The foundation of all jackets is the hip bones, hence it is useless to apply anything till this part of the anatomy is developed to give the support. This is usually by the age of three years. The only satisfactory way of treating very young children is by recumbency and the wire cuirass. A board can be cut to the shape of the child, well padded to be comfortable to lie on. If traction is required a mast can be applied to the upper end. The child is then bandaged to the board, being partially removed morning and evening so that the back may be rubbed with alcohol and treated with powder to prevent irritation. A proper and concise record should be kept to see that the deformity does not increase. The little knuckle at the back may increase so slowly that it is not noticed. A photograph is useful here, or better a tracing with a flexible piece of zinc. If we find increase, no matter how slight, look for the cause. There may be fault in the apparatus, not giving sufficient support to the spine, or the child may be doing too much running around; here recumbency is indicated for a few weeks. For bed patients it is advisable to use apparatus to ensure the child being kept in a recumbent posture. The Bradford frame is extremely simple. It is made of four pieces of gas-pipe put together with elbows. Across the frame are stretched two pieces of canvas between which a space is left opposite the buttock. This frame can be laid on the bed and the child strapped to it. It can be carried all over the house. Abscess depends on location. Post-pharyngeal must be opened as soon as possible because of the tendency to embarrass respiration; elsewhere, better let it alone unless there is a great deal of systemic disturbance or when increasing rapidly. If opening is imperative, after this dress antiseptically and keep clean. Iodoform and glycerin injection are of no use as not reaching the seat of the disease. The formation of an abscess, however, in a case which has been under treatment for some time, suggests that the spine is not being fully and properly supported. The case may need a jury mast, or possibly ambulatory treatment for a time is contra-indicated. Here keeping in bed, wearing the apparatus, will be of inestimable service.

After some routine business the officers for the ensuing year were elected: President, C. R. P. Fisher, Bound Brook; first vice-president, Luther M. Halsey, Williamstown; second vice-president, Wm. Pierson, Orange; treasurer, A. Mercer, New-

ark; secretary, W. J. Chandler, South Orange; corresponding secretary, E. L. B. Godfrey, Camden. Next place of meeting Deal Beach, last of June, 1899.

PRAGTICAL NOTES.

Abdominal Massage is being highly recommended for its diuretic effect in heart disease.—*Bull. de l' Acad. de Méd.*, May 10.

Urethran and Quinin hydrochlorate in the proportion of 1 to 2, form an effective combination for intravenous and subcutaneous injection.—*Gaz. degli Osp. e delle Clin.*

The Almost Invisible Cultures of the Influenza Bacillus become large and prominent if inoculated with the staphylococcus aureus. This fact, recently announced by Meunier, may prove important in the study of micro-organisms.—*Progrès Méd.*, June 18.

Tachycardia in Pulmonary Tuberculosis is always an indication of a rapid course and fatal termination of the disease, according to Sirot. It is symptomatic of an endocarditis from specially virulent bacilli or of a myocarditis from miliary tubercularization.—*Semaine Méd.*, June 8.

Dry Suture of Intra-abdominal Hydatid Cysts.—The cyst is evacuated and wiped dry with sterilized tarlatan, then sutured with a continuous suture, followed by the suture of the abdominal wound. The cyst does not fill again, and obliteration is much more rapid and complete than by the usual methods.—Bobrov of Moscow: *Semaine Méd.*, June 7.

Intranasal Synechia is very apt to follow galvanocauterization, but it can be entirely prevented by cauterizing with a few crystals of chromic acid melted on the tip of the probe. The scars thus produced act as insulators, and the process is but slightly painful, much to be preferred to the metal plate and celluloid plates recommended for the purpose.—*Jour. des Soc. Méd. de Lille*, June 18.

Combined Electric Treatment of Sciatica.—Renault has cured 80 per cent. of all his cases by combining the electric bath from a static machine with sparks induced along the spine and course of the sciatic, and faradization of the atrophied muscles in turn until ten to twelve contractions have been produced. The seances are repeated every day or alternate days. Some are cured in one to five; others require twenty to thirty.—*Semaine Méd.*, June 1.

Cimicifuga Racemosa for Buzzing in the Ear.—Robin and Mendel have found thirty drops a day of the extract of cimicifuga racemosa extremely effective in arresting the noises in the ears caused by direct or reflex stimulation of the auditory nerve, with or without accompanying lesions, ear-plugs, etc. This drug has already proved a good antispasmodic for parturient cases, with marked diaphoretic, narcotic and antipuritus properties.—*Munich Med. Woch.*, May 31.

Inflammatory Processes in Meckel's Diverticulum produced symptoms resembling appendicitis in two cases recently observed by W. Kramer. In one case the trouble was not located until a second operation, when the diverticulum was found occluded by a fruit seed. In the other it had encircled and crooked a loop of the intestines, causing symptoms of ileus. Both were resected after double ligature. One other similar case has been reported by Picqué.—*Munich Med. Woch.*, May 31.

Methylene Blue in Migraine and Nervous Headache has been found very effective in several cases, including himself, by E. Thomson of Dorpat. It prevented the appearance of the severe headache that had previously always accompanied the arrival of the menses in some of the patients. He noticed the increased desire to urinate, and the green tinge of the urine that accompanies its use. It is given with nutmeg aa. 0.1, in a

gelatin capsule. One dose may prove sufficient.—*St. Petersburg. Med. Woch.*, June 11. Migrol, a combination of equal parts brenzcatachuin-monoacetic acid, caffen and guaicatin, has also been found very effectual in migraines. Dose 0.5, one to three times a day.

Acute Phosphorus and Morphine Poisoning.—Potassium permanganate has been found effective in neutralizing these intoxications, as it transforms the phosphorus and morphine into harmless oxidated combinations, but, as the potassium itself is poisonous to a certain extent, Schreiber has been testing sodium permanganate, which he finds equally effective and non-irritating. He advises a 0.2 per cent. solution to rinse out the stomach, afterward introducing half a liter and leaving it.—*Obl. f. Inn. Med.*, No. 23.

Movement Test for Lumbago and Ischias.—L. Minor calls attention in the *Deutsche Med. Woch.*, Nos. 23-24, eleven cuts, to the characteristic manner in which patients raise themselves from a seated position on the ground. With lumbago the motions are the same as in pseudo-hypertrophy of the muscles; the patient bends forward and raises himself by pressing down on his legs, thus climbing to an erect position. In ischias the center of gravity is thrown backward, and the patient supports and raises himself on one hand placed behind him, balancing the other in the air.

Iodin for Infective Gastro-enteritis.—Grosh administers a teaspoon of the following every one or two hours: Tinct. iodine, 15 to 18 drops; aq. dest., 150 grams; simple syrup, 20 grams. The vomiting, pain, diarrhea and fetid odor of the stools disappear with this treatment, which is also effective in icterus, gastric grippe and incipient appendicitis. He has also found iodine an effective disinfectant in typhoid fever, giving six drops tincture in a little sweetened water three or four times a day.—*Semaine Méd.*, June 22.

Milk for Nutritive Enemas.—Some recent tests at v. Leube's clinic show that milk is the best substance for this purpose, as a liter introduced into the colon is readily absorbed without any irritation or pain, or the appearance of albumin or sugar in the urine. No digestion occurs in the colon. The carbohydrates are absorbed best, the albuminoids next and the fats least. The coagulation produced by the bacillus coli interferes with the absorption. This is avoided by thoroughly rinsing out the bowels before administering the milk and by the addition of 1 to 1.5 grams sodium carb. to the liter.—*N. Y. Med. Monatsschrift*, June.

Incompatibilities of Antipyrin.—Tannin precipitates antipyrin in the form of a tannate. Calomel combines with antipyrin to form a very poisonous organic mercurial combination. Antipyrin and carbolic acid also form a combination which forbids their being prescribed together, as is also the case with antipyrin and substances which contain nitric acid, such as amyl or ethyl nitrite. If antipyrin and sodium salicylate are mixed in a powdered form they combine into a gelatinous mass, but they do not affect each other in solutions.—*Vienna Klin. Rundschau*, May 29.

Electric Treatment of Psychoses proceeding from paræsthesia of the dura mater, has been found effectual in four cases, by C. Mondino of Palermo. These psychoses commence with tingling, sense of pressure and burning in the cranial vault, followed sooner or later with impairment of the mental faculties, pronounced hypochondria, and various fixed ideas: persecution, an insect crawling under the skin, etc. All these symptoms are connected with the paræsthesia of the dura mater, which can be cured with galvanization, when they at once cease. A large electrode is applied over the affected region on the skull, connected with the positive pole with a current of 10 to 15 milliampères. Six to fifteen seances accomplished the cure.—*Semaine Méd.*, June 1.

Excision of the Fibula for Sarcoma.—Lloyd, in *Annals of Surgery* for June, reports a case which he believes to be the first example of excision of the fibula for malignant disease, as in malignancy amputation is usually resorted to. In this case there has been no sign of recurrence, and while there is considerable ankylosis at the ankle-joint, the patient walks with very little limp and claims to be perfectly comfortable.

Treatment of Paralysis Agitans, based on the observation that the rigidity and trembling affect the flexors only, while the extensors strive to correct this tendency, has resulted most successfully in the experience of R. Veerhogen (*Jour. Med. de Bruxelles*, 1897, No. 38). He aims to strengthen the extensors and tranquillize the flexors; the former by faradization as powerful as the patient can bear, followed by light massage; the latter by administering atropinum sulfuricum, 0.25 mg., combined with 0.2 gram secale cornutum, and connecting the positive pole of a galvanic current. His patients have resumed their occupations and consider themselves cured.—*Deutsche Med. Woch.*, June 16.

The Deodorizing Properties of Formalin have not been emphasized to the extent they deserve. A tablespoon of formalin in a liter of water will be found the most efficient of all deodorants, non-toxic and absolutely non-irritant. It is especially recommended for offensive discharges, for the anal and genital region, for excessive perspiration of the feet and armpits, to use after dissections, to wash off furniture, commodes, lower part of walls, vessels, etc. The upper part of the walls may be deodorized by evaporating the "formalin water" in a pan over a lamp. The vapors do not affect the inmates of the room.—*Munich Med. Woch.*, May 31.

Value of the Salts of Ammonium.—F. Mohrroff announces that these salts, and especially the ammonium-silicon fluorid, have a most powerful antiseptic and tonic effect when inhaled; "an ideal medium for the treatment of all diseases caused by abnormal metabolism, as diabetes, etc., as well as affections of the air-passages." As a tonic the effect is more direct and immediate than that of iron. He has invented an improved inhaler which renders its application more convenient, but does not describe its features in his communication to the *Deutsche Med. Woch.* of June 9, merely mentioning the maker.

Cocain Intoxication.—Weigand has collected 250 cases of acute cocain intoxication, twenty-one fatal. It is impossible to establish a maximum fatal dose for man, as the tolerance varies widely. The most dangerous application seems to be large amounts applied to the mucous membrane. Seven deaths followed its use internally, two in the rectum (*Cbl. f. Chir.*, May 28). Bozza reports, in an Italian journal, that the hypodermic injection of physiologic salt solution immediately after the ingestion of nearly twice the fatal dose of cocain will preserve dogs from intoxication. He therefore recommends hypodermoclysis for cocain intoxication.

Urethral Pencils must be made of a substance that will not melt and run out. A combination of two parts cocoa butter, one part lanolin is recommended in the *Bulletin of the Bordeaux Soc. de Pharmacie* for May. This is melted and set aside until needed, when it is remelted and the medicament blended with it. A glass tube is then inserted in the fluid mass and it is drawn up into the tube by suction with the mouth. The other tubes are filled in the same way, and when the fluid is hardened, but not really cold, the contents of the tube are pushed out with an iron rod, 3 mm. in diameter, which fits smoothly inside the tube. The pencil is received on a marble or glass slab. They can be delivered at once, but are not perfectly solid until the next day.

The Success of Salophen in Curling Pruritis is proclaimed by several writers in the *Dermat. Ztschft.* for May. Salophen is a combination of salicylic acid with acetylparamido-phenol, and

passes through the stomach unchanged, to be slowly split up by the alkaline secretions of the intestines. It cured a number of chronic rebellious cases accompanying moist eczema, diabetes, urticaria and psoriasis, and checked any recurrence of the pruritus. The dose is 3 to 6 grams a day. Drows ascribes the cure to it in a couple of cases of gonorrhoeal rheumatism out of five treated. According to Draesche, it produces copious perspiration and the skin is found scattered with minute crystals of the same form as salophen crystals. All state that it does not disturb the digestion.

Cheese in Nervous Dyspepsia.—The dyspepsia accompanying herpetic or neuro-arthritis is very deceptive in its manifestations; patients complain of heart, lungs, brain affections, vertigo, paralysis, but the true trouble is indicated by the triad; cold extremities, insomnia during the middle of the night and fatigue on waking in the morning, with, occasionally, pain in the sternal or intercostal regions, palpitations, drowsiness in the evening, etc. Lancereaux forbids to such patients everything fried, acid or uncooked, wine, chocolate, colored sauces, fruit and bread, except the crust or toast. But he recommends the cheese of the Brie, Camembert and Roquefort varieties, a little very fresh butter, eggs, broiled or roast meats, etc.; for breakfast a crust of bread, soft egg and Brie cheese. Water is the principal beverage, with a little tea, coffee or mild beer, or ordinary beer diluted with Vals water or very weak brandy water.—*Union Médicale*, May.

Treatment of Prostatic Retention.—Rochet bases his treatment on repeated catheterization, provided it can be done with ease and is not required too frequently, in which case a permanent catheter should be inserted. If catheterization is too difficult and urine is retained, with fever, pain, hemorrhage, etc., the bladder should be punctured again and again, or temporary drainage of the bladder arranged, after which the congested condition may pass away and the normal flow of the urine be restored or catheterization become easy again. Chronic cases may require perineal drainage, dilatation and perineal prostatectomy. For extreme cases with infective suppurating cystitis, suprapubic cystostomy is the only means of relief. The importance of immediate investigation by both abdomen and rectum in case of any disturbance in the functions of the bladder in elderly men has recently been emphasized by Englisch, who adds in regard to catheterization that the "longer the retention has lasted, the more slowly should the bladder be emptied."—*Cbl. f. Chir.*, June 11.

Treatment of Lupus with the Roentgen Ray and Concentrated Sunlight has passed beyond the experimental stage. H. Kümmel of Hamburg, announced at the German Congress of Surgery that he had positively cured sixteen patients to date with exposure to the Roentgen ray for fifteen to twenty minutes, twice a day for a period of four weeks to several months. The sound skin is protected by a light sheet of lead or stanniol, cut to expose only the lupus patch, with the tube from 20 to 40 cm. distant. All irritation of the skin is most carefully avoided, and exposure individualized to prevent the slightest dermatitis. The lupus patches heal over with a smooth surface scarcely to be distinguished from normal skin. Similarly favorable results have been secured by Finsen of Copenhagen, with contracted sunlight or electric light, excluding the heat rays. As blood prevents the passage of the rays he expels it from the point to be treated by a convex, transparent glass saucer, strapped on tightly. He reports a large number cured from one to two years, but his process requires months of treatment, as only a small point can be treated at a time. The combination of this method with the Roentgen ray treatment promises remarkable results. The latest tests fail to confirm the bactericidal action of the Roentgen ray. Its effect on lupus is evidently due to some still undetermined influence on the lupus tissue, possibly electro-chemic or trophoneurotic.—*Cbl. f. Chir.*, July 2.

SELECTIONS.

Medical Education in Mexico.—In 1578, a chair of medicine was initiated in the University of Mexico—that institution being then twenty-five years old—and was the first of the kind to be established in the New World. It was called the *prima* or morning class, and the professor was expected to cover the whole field of the science, as it then was taught; and it was said that he managed to do so in the course of four years. The student, as the custom then was, was required to serve a pupilage under some practitioner for a longer or shorter period. Candidates had previously to study Latin and to go through the course of arts, and astrology or mathematics, and to obtain the degree of Bachelor of Arts. In 1599 a second chair of medicine was founded, which was called *vesperas*, or evening class. In 1661 chairs of *methodus medendi* and of anatomy and surgery were established; and later a class of dissection and operative surgery was added. At the end of the curriculum the student obtained the degree of Bachelor of Medicine; subsequently, after a fresh examination, that of licentiate; and finally, after an interval, that of doctor. In 1768 a Royal College of Surgeons was established on the model of similar colleges then existing in Cadiz and Barcelona. In this college practitioners of a lower grade were trained; they were called "Romancist surgeons," to distinguish them from the "Latin surgeons" who studied in the University. At this College, also, phlebotomists, dentists, bone-setters, midwives, etc., picked up such scraps of knowledge as were required for the exercise of their several functions. After a time an ordinance was made that no one should be allowed to matriculate in this school who did not know Latin. In 1830 a further step was taken for the improvement of the professional education of the surgeons in the shape of an enactment that no one should be admitted to the school of surgery who had not previously obtained the degree of Bachelor of Philosophy. In 1831 the two branches of the profession were finally amalgamated; all candidates were required to submit to examination in medicine and surgery, and the faculty conferred a diploma in both, instead of the various diplomas of physician, "Latin surgeon," and "Romancist surgeon," which had previously been given. The numerous political changes which swept over Mexico in the years following 1833 affected the medical school, which was several times closed, and more than once in danger of destruction. Largely owing to the public spirit of its professors, however, it managed to survive, and under the enlightened administration of General Diaz, it has now developed into a highly efficient teaching institution. Before 1833 it had 11 professorships; from that date to 1877 only 5 were added. From 1877 to the present date 10 new chairs have been established, without counting a large class of clinical teachers, assistants and prosectors.

Cesarean Section.—Reynolds (*Am. Jour. of Obstet.*, June) considers Cesarean section justified in all cases where a mechanical obstacle renders delivery, in an otherwise healthy woman, more than ordinarily difficult and dangerous. His experience covers twelve years' service in a clinic which delivers 2500 women every year. He believes that symphyseotomy should be restricted to the class of cases from which he would exclude performance of Cesarean section, *i. e.*, cases of moderately contracted pelvis in women not previously healthy, or in women exhausted by long labor. His conclusions are: 1. That in women who are the subjects of visceral disease or other previous ill health, and in women who are exhausted by long labor, the maternal mortality of the Cesarean section is too great to allow of its performance in the interest of the child alone. 2. That in primiparæ with moderate contraction the decision whether or not the Cesarean section should be performed as an alternative operation at the beginning of labor in prefer-

ence to an attempt at an intrapelvic delivery, is a decision which is intrinsically so difficult that it should be attempted by none but the most experienced obstetricians. 3. That in most cases of moderate contraction in primiparæ it is best to wait until the progress of labor teaches us which is to be the safer operation in the given case. 4. That when any healthy woman has lost one child by a difficult operative labor in the hands of an expert she should in the next labor be prepared for Cesarean section and delivered by it, unless the course of labor shows that from some changed condition, *e. g.*, a small child or a more favorable position, a forceps delivery is likely to be easy. 5. That when any case occurs in the practice of the comparatively few men who are really experienced in both obstetric and abdominal surgery, in which an attempted forceps operation proves to be exceptionally difficult and version promises no better results, the forceps operation should be suspended, and if the fetal heart is undisturbed, should be abandoned in favor of the Cesarean delivery. 6. That in very small pelvis, *e. g.*, those under three and one-fourth inches in the conjugate, the Cesarean section in favorable circumstances is the operation of preference.

The Treatment of Carbolic Acid Poisoning with Vinegar.—The following case is related by Dr. Steavenson in the *Indian Medical Record*: The patient was a girl 18 years old, who said she was subject to "fits." On Aug. 3, 1896, she was taken with one, and when the physician saw her she was in a semi-conscious condition and frothing at the mouth. She had vomited slightly, and the vomited matter had a sour smell, but no carbolic acid odor was observed. She regained consciousness, and a bromid draught was administered. She gradually became worse and another physician was called to see her. He diagnosticated the case as one of carbolic acid poisoning and as he could not rouse the patient nor get her to swallow anything he ordered her to be removed to the hospital. On admission, she was still wholly unconscious, cyanosed and nearly pulseless. The lips and tongue were discolored and the breath had the odor of carbolic acid. The physician gave her a hypodermic injection of strychnin (one-eightieth of a grain). He then passed a soft stomach tube, washed the stomach out with equal parts of vinegar and water, and followed this with about six pints of warm water. He then gave her five ounces of milk and an ounce of brandy. She was then put into bed and kept warm. She gradually regained consciousness, and a few hours afterwards was able to speak. She was fed on Benger's food, milk and soda-water for the next three days. She did not vomit or complain of any pain. Carboluria was present for two days. The author states that he was led to use vinegar in this case by Professor Carleton's suggestion in the *Practitioner* of August, 1896. He can not state definitely how much carbolic acid was taken. The long period of unconsciousness, the rapid recovery, and the absence of discomforting after-effects speak well, he thinks, for the vinegar, and he is of the opinion that it should be given a fair trial, especially as it is a remedy easily obtained.

Primary Tuberculosis of the Spleen.—Quenu laparotomized a woman of 21 years, in April, 1897, for a painful tumor of the spleen. She had previously been affected with cervical adenopathy. The lower portion of the organ was found grayish-white and fluctuating, the seat of a tumor the size of a man's head, but adhesences rendered extirpation impossible, although he was able to bring it into the abdominal wound and suture it to the parietal peritoneum. An incision only brought a few drops of fluid. A couple of pockets were excavated with the fingers, removing a fibrinous substance, and drains inserted. A fetid fluid was discharged through them and, in a few days, the wound filled up with a greenish, granulating mass, which was removed every day with the scissors or thermocautery, in fragments. This elimination of the mortified substance continued into August, but the wound definitely healed over by September. The Koch bacillus was noted in the tissues removed. In May a tumor of tuberculous origin also appeared in the supraclavicular region, which was promptly extirpated.—*Rev. de Gyn. et de Chir. Abd.*, March and April, 1898.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, AUGUST 6, 1898.

UPON THE EXISTENCE OF A MINUTE MICRO-ORGANISM IN CASES OF CIRRHOSIS OF THE LIVER.

While working with the so-called Pictou Cattle Disease, in 1894-5, Professor ADAMI of Montreal, obtained from the livers and abdominal lymph glands a characteristic micro-organism. The striking feature of this disease is an extensive cirrhosis of the liver, accompanied by swelling of the periportal and retro-peritoneal lymph glands, with some ascites, and with follicular ulceration of the fourth stomach. The recognizable symptoms, the most marked of which is falling off of the milk, which becomes bitter when heated, occur shortly before death. Hence the cirrhosis must have been advancing for some time without producing any symptoms.

The microbes referred to are very difficult to stain, that is to say, they stain easily but lose their stain with extreme facility. They are also extremely minute, being barely recognizable with a fifteenth immersion lens.

The presence of these micro-organisms in the cirrhosis of the liver of Pictou Cattle Disease led ADAMI to examine cirrhotic human livers for the purpose of observing whether or not the same or similar micro-organisms occur there. It will be recalled that HANOT and French pathologists in general have for some time held that the large, smooth cirrhotic liver with jaundice (hypertrophic cirrhosis) is of infectious origin. No one, however, has ventured to state that the more common, so-called atrophic cirrhosis, is due to

microbes, the general opinion being that alcohol and other irritants, by causing a chronic gastro-enteritis, lead to the absorption of toxic bodies from the food, which toxic substances induce, as they are taken up by the portal blood, a proliferation of the portal connective tissue.

Professor ADAMI's study of human atrophic cirrhosis was met by many difficulties, the chief one being the difficulty of securing a satisfactory and positive stain. In favorable instances, however, he was able to make out that certain fine granules in the liver sections resolved themselves into large numbers of minute micro-organisms of the character observed in Pictou Cattle Disease, but smaller. In the main they were present as diplococci, with slight halos around them. Many of the forms resembled small gonococci, but variations in size of the micro-organism occurred. Some of them resembled short bacilli.

ADAMI has not yet been able to elaborate a perfect stain. The most satisfactory procedure so far consists in placing the sections for a minute or two in a weak solution of acetic acid, then to wash out the acid, and after passing the sections through absolute alcohol, to place them in a solution of methylene-blue and anilin oil. Here they are left for half an hour. They are then transferred for fifteen seconds into a mixture of two parts anilin oil and two parts xylol, and then into xylol. This method gives fair results for immediate study but does not yield permanent specimens. By this method the bacteria are seen plainly in the newly-formed connective tissue, and also, without doubt, in the liver cells. Some of them do not stain perfectly, remaining brownish, and these are probably dead.

At the time of making this report ADAMI had come across this micro-organism in every case of advanced hob-nailed liver examined (five cases) and he would go so far as to state, that in a number of cases, at least, of atrophic cirrhosis, there is present a minute micro-organism resembling closely the one in the infective cirrhosis of cattle.

Since making his first report ADAMI has had occasion to study material from Rush Medical College, Chicago, and the Johns Hopkins Hospital of Baltimore, and in all of the Chicago cases, as well as in ten well-marked examples from Baltimore, he was able to recognize the appearances above described.

A fuller description of these most interesting observations will be presented at the meeting of the British Medical Association at Edinburgh, by Dr. Osler.

CONCERNING THE SO-CALLED APOPLEXY OF THE UTERUS.

The condition described by CRUVEILHIER, and later by ROKITANSKY, KLOB and DITTRICH, under the term of apoplexy of the uterus, has not been given any consideration in the ordinary gynecologic text-books.

¹ Montreal Medical Journal, July, 1898.

C. VON KAHLDEN,¹ of Freiburg, has recently described several cases which he has observed anatomically and subjected to a thorough examination.

The anatomic condition is, in its principal features, the same in all cases. While the size of the organ may vary, as well as the size of its cavities, there is found everywhere, in the mucous membrane of the uterus, more or less pronounced hemorrhagic infiltration, which in the least marked instances remains limited to the mucous membrane, while in the more advanced cases it extends deeply into the muscular coat. The cervical mucous membrane is always free from extravasations.

The most striking as well as most characteristic features in these cases are the changes in the vessels in the outer half of the wall of the uterus. These changes are regarded by VON KAHLDEN as arterio-sclerotic in nature. The arteries present segmentary semilunar, and even annular, calcification of the media, with advanced narrowing of the lumen, the intima being sometimes ten times as thick as normal, the muscle granular, more rarely the seat of a hyaline degeneration. This thickening in the intima very often reminds one of the endarteritis of syphilis. In advanced cases the calcification may have involved the intima. The veins in the vicinity of the diseased arteries are greatly dilated and filled with blood: the muscle of the uterus being sometimes necrotic and sometimes the seat of atrophy and connective tissue substitution. These various changes are finely illustrated by means of lithographs of colored drawings. VON KAHLDEN does not regard the hemorrhages into the mucous membrane as due to rupture pure and simple, because the diseased vessels are so far away from the inner lining. He is inclined to the opinion that the hemorrhage results from retrograde changes in the blood, which view, although it seems rather unreasonable on account of the numerous anastomoses of the uterine arteries, yet appears to be well substantiated by the considerations presented in the article.

The etiology is entirely obscure. Among the conditions that might be brought into question, although any direct connection with any one of them has not yet been established, may be mentioned pregnancy, involution, inflammatory puerperal processes, menstrual congestions, and old inflammations. Under all conditions the cause has to be sought in local changes, because the arterio-sclerotic process described runs its course independent of arterio-sclerosis elsewhere in the body.

The diagnosis is not easy. The hemorrhages constitute a prominent feature. With a curette it would often be impossible to bring away any of the typically diseased vessels, and even should this be the case the condition may be readily confounded with carcinoma and inflammatory processes. The hemorrhages and the old age of the patient are facts that at once pre-

possess the physician in favor of a carcinomatous process, and the extravasated masses of blood very often press together the glandular tubules in such a way that they resemble not a little the glandular masses of carcinoma. It is the fact that this process may be confounded with carcinoma that has led us to call attention to it.

SALINE INFUSIONS.

It is surprising that the use of saline infusion, a method so incomparably superior to all others in the treatment of hemorrhage and shock, should meet with such restricted use among the general practicing physicians. There are perhaps few hospitals that are not provided with the apparatus and the sterile salt solution necessary for infusion at ten minutes' notice, yet the general practitioner seems almost never to class it among his methods of combating hemorrhage, shock and septicemia. He feels his duty done when he has filled the patient with strychnin, whiskey, digitalis, nitroglycerin or coffee. The effects of intravenous and hypodermic infusions are so immediate and so absolutely life-saving in many instances that nobody who has ever seen its use can doubt for a moment its superiority as a surgical method. The greater the pity, then, that the general practitioner of the country and city districts, nay many a surgeon in hospital practice, should fail to place this among his everyday practices in the treatment of his cases. It is needless for the country practitioner to say that he rarely has the opportunity for its use, because he certainly has cases of typhoid with hemorrhage, postpartum hemorrhage, septic cases, and many cases of severe injury to treat in the course of a twelve-months. He need not cast aside the hypodermic syringe, the stimulants and all other means of combating shock, but in omitting the use of the infusion of salt solution he is omitting the most nearly life-saving agent that he ever can have at his command. To say that he has not the surgical skill is absurd. Hypodermoclysis, or the injection of salt solution into the loose subcutaneous tissues, is perfectly easy and simple in any private residence. The physician needs a fair-sized aspirating needle (or his hypodermic needle will do) and three feet of good rubber tubing. These should always be in his bag and when occasion arises it is perfectly simple to call for a clean half-gallon stew pan, fill this with clear water and make a normal salt solution by adding one drachm of common table salt to the pint of water. The tube and needle are now placed in this salt solution and both solution and tubing sterilized by boiling for a few minutes. The salt solution can be quickly cooled to a temperature of 105 to 110 degrees F., by placing the vessel in cold water, and the syphon is established by means of the rubber tubing which has been connected to the needle. When the fluid is flowing and all air is expelled from the tube, the needle is thrust

¹ Ueber die Sogenannte Apoplexia uteri, Zeigler's Beiträge, xxiii, 1, 1898.

into the subcutaneous tissues of the chest, axilla or abdomen; and from a pint to a quart of the salt solution allowed to slowly run in. This puffs up the skin and forms a tumor, but the solution will absorb rapidly and an abscess will almost never form. The patient revives as by magic, unless his vital processes are at such a low ebb that the solution cannot be absorbed, when intravenous injection will be indicated.

The intravenous injection should not be more formidable to the practitioner. Anybody ought to be able to find a vein in the arm or the leg, and there is practically no danger in looking for it. Having found the vein, a small canula of metal or glass should take the place of the needle used in the method previously described, and this inserted into the proximal end of a vein which has been one-third or one-half divided by a clip of the scissors. The canula is held in place by a ligature previously thrown around the vein and the fluid may flow in rapidly, with, of course, much more rapid effect than could be expected in hypodermoclysis. It is folly to think of either one of these methods as a difficult process, and furthermore, no matter how difficult it may be, it is the duty of every practitioner to understand its use. Should a new specific drug for a cold or pneumonia be placed on the market, every practitioner in the country would prescribe it and, furthermore, his patients would demand it. The use of saline infusions is as specific in its field of usefulness as any drug that we possess.

Salt solution is the one preferred by almost all surgeons, and the addition of the chlorid of calcium and potassium, as in RINGER'S fluid, are found to be unnecessary. Pure water has been used without damage in emergencies. The percentage of salt need not be accurate, and is obtained by adding 3i of common salt to Oi of water. One to three quarts may be given, and it is well to remember that it is hard to give too much since experiment has shown that 40 to 80 c.c. per minute are not toxic. The temperature in the supply reservoir should be 105 to 107 degrees, in order that the temperature of the fluid may be approximately 100 degrees F., when it enters the vein or subcutaneous tissue. The injection may be repeated a number of times should the patient's condition fail to improve or become worse after a temporary improvement.

There are many cases of hemorrhage where the patient is so completely exsanguinated that it seems the only possible benefit can come from the transfer of oxygen-carrying blood from another man or animal to our patient. Yet, it must always be remembered that in the majority of cases it is impossible for a patient to lose enough red blood-corpuscles to impair the respiratory function. He invariably faints first, because the circulating blood is insufficient to supply the heart, the respiratory centers and the brain. The real need is to furnish enough fluid to suspend the

remaining red blood-cells for circulation through the system and restore a normal amount of circulating fluid for the heart and arteries to act upon. As has been said before, a 6 per cent. salt solution answers every purpose of complex solutions that attempt to reproduce the chemic composition of normal blood serum; it is always at hand and easily made; furthermore, it can be boiled for sterilization without changing its composition. The transfusion of blood is entirely abandoned as a dangerous procedure and as one that is inferior to saline infusion even when it works without accident. As previously stated, there are enough red blood-cells left to perform the function of respiration.

In conditions of shock without great loss of blood, the entire nervous mechanism of organic life, according to GROENINGEN, is raised to a maximum stimulation, and the inhibitory centers are paralyzed; the sensations are dulled and the motor functions are suspended; the depraved metabolic processes give rise to a weak heart and respiration and the blood fails to circulate. It is impossible in such a condition of shock to at once restore these over-stimulated nerve-cells from their paralyzed state to one of normal activity, but by restoring the normal volume of blood, nutrition is restored to the cells, there is an increased heart and respiratory function and the metabolic processes throughout the body are restored during the time that these nerve-cells are resting.

We have for our justification of the use of infusion in conditions of septicemia the two important facts of the increased activity of the leucocytes and the increased activity of the skin and kidneys whereby the toxic products may be destroyed or eliminated. There is the further advantage of diluting the poison in the blood.

The exact action of saline infusion in any condition has not been as accurately worked out as the importance of the subject justifies, but whatever it may be, there is no other remedy comparable for the relief of the symptoms of shock and hemorrhage. The changes that take place in the patient are immediately perceptible. There is a restoration of the normal heart action, pulse volume and respiratory function; the unconscious and paralyzed patient opens his eyes, speaks and invariably begins to move. In one to two hours there is a rise of temperature not over 100 degrees F., and there is a diuresis with no albuminuria. Most important of all, the restoration of function is permanent. With such points as these in favor of a remedy it is difficult to see how it can fail to meet with universal practice.

DOUBLE-HEADED MONSTERS IN FICTION.

The utilization of pathologic data in fiction has become so widespread that the neglect of the rich field of teratologic conditions must appear rather mysterious. Considering the casuistic discussions of

the marriage of the Siamese twins and of the marital status of the pyopagic (backunited) "Double-Headed Nightingale," it seems strange in these days of realism, that so little use should be made of double-headed monsters in fiction. This appears particularly unaccountable, when the legal, amatory, ethio and marital complications thereon resultant (capable of producing such beautifully intricate plots) are considered. The "Double-Headed Nightingale" was legally decided to be two persons; marriage of one man to whom would result in bigamy. Under certain legal opinions in Illinois, simultaneous marriage with more than one woman does not constitute bigamy in that State. Under this construction of the Illinois statute regulating marriage, the marriage ceremonies must be separate to constitute bigamy. Marriage in Illinois with the "Double-Headed Nightingale" could easily be made a practical simultaneous procedure and hence legal. Under the intricacies of the New York divorce law, a New York marriage could, under certain technicalities, be easily set aside in Kansas, and a second marriage thereafter would be legal. As the first marriage was still legal in New York, a man could easily have two wives in that State without committing bigamy. One half the "Double-Headed Nightingale" could be married in New York and the other (after proper divorce proceedings) in Kansas, both halves being legally wives of the same man in New York. Despite those tempting literary possibilities fiction has neglected this field. BESANT employed, it is true, a double monster, but only as a portent in "For Faith and Freedom." Through the pages of that clever parody, "King Solomon's Wives," flits a double-headed caricature of RIDER HAGGARD'S terrifying Gagool. With these exceptions, fiction has until lately neglected the fertile literary possibilities of female double-headed monsters.

It was reserved for an Ohio physician to demonstrate the brilliant outlook for fiction in this particular. Dr. W. C. COOPER of Cleves, Ohio, has proven the great value of the double-headed monster in fiction in his "Mystery of the Wetheron Mansion." His heroine is an atlodymus with two heads united at the neck to a single body. This monstrosity is the child of a wealthy judge of Southern Illinois, who is a man of broad, general culture. Dr. COOPER is called to attend the wife of the judge in confinement. Owing to severe dystocia the patient becomes moribund. Whereupon Dr. COOPER performs Cæsarian section, delivering an atlodymus thus described by himself: The heads and necks were entirely distinct, the union of the necks occurring at their junction with the thorax. It was highly probable that tracheæ, esophagi and blood vessels became uniform and common on entering the body. Young as this infant was, it was plainly evident that each head was directly individual. It could be seen too that the child was ambidextrous. There were undoubted signs too that

one head bordered strongly on the brunette and the other on the blonde type. They could nurse separately or simultaneously. The only difference was that when both nursed at once the appetite was satisfied twice as quickly as when only one of them was fed. The body was that of a girl.

The Southern Illinois village, where the judge resides, is cursed by the usual spinster gossip, with prurient prudery and mendacity. One of these, loitering around the keyhole of the lying-in room, hears what she considers suspicious remarks by Dr. COOPER. An attack of cholera infantum, due to an uncleaned nursing bottle, calls Dr. COOPER (during the week following the delivery) to the mansion to attend the monstrosity. On his way back to his office he is waylaid by the female "Paul Pry" aforesaid. Injudiciously, but professionally, hoping to check her inquisitiveness, he informs her that the monstrosity is dead, whereupon she has him arrested for murder. Through the judge's influence and cash, the charge is withdrawn. Popular rumor imputes the death of the monstrosity (which is assumed to have taken place) to natural causes. The monstrosity is, however, brought up in the seclusion of the mansion, to womanhood, and carefully trained by a governess sworn to secrecy. The judge, who has not recovered from the shock of the death of his wife and the birth of the monstrosity, finds from growing age and mental infirmity that he needs a private, confidential secretary. A young lawyer named Jack obtains the place, and in most things, the judge's confidence. The secret of the monstrosity is, however, kept even from him. As the judge has exhibited continuously increasing mental depression from the time of his wife's death, his suicide is not a remarkable outcome. The agitation in the household reveals for the first time the existence of the monstrosity to the private secretary. The heads of the atlodymus have been called Alice and Anna.

"Jack falls hopelessly, helplessly in love with Alice. In the innocent frankness of her unsophisticated nature she confesses without a moment's hesitation that his passion is fully reciprocated. Alice and Anna are nearly inconsolable over their father's death. Alice, however, rallies from the shock as time drags by. She has Jack's love to lean on and feed on. Not so with Anna, who being in a decline before her father's death, receives from that calamity a tremendous downward impetus, and has not the tonic of a lover's helpful sympathy and counsels to brace her. It becomes rapidly evident that she is sinking back to God. She is absolutely certain that she can die without involving the death of her sister. Alice herself also feels sure of this. It seems that some infallible intuition guides them to this conclusion. Since her father's death, and especially since Jack's appearance on the scene, Anna becomes positively anxious to die; there is nothing in the world left for her to live for.

However dearly Alice might love her, the conditions were such that life for herself meant wretchedness for her sister. Unless her sister could be happy, she could not. If she should die, two would be perfectly happy. If she should live, three would be miserable. Her intense desire to die no doubt hastened that event, which occurred about two months after her father's death. The necessity for amputation is evident, but Alice insists on holding the corpse two days to comply with the custom of civilized people. Alice makes a quick recovery after the amputation, and her neck rapidly grows into correct relationship to her body. The outcome is a faultlessly beautiful woman, whom "to see is to love."

Her feelings after her separation from her sister, Dr. COOPER (in accordance with the well-known literary canon) leaves to the imagination, for whose assistance the fact is mentioned that the head of the sister was preserved in alcohol to be buried with Alice in the same coffin.

It must be obvious from this résumé that Dr. COOPER has excellently opened a fertile relatively unworked field of limitless possibilities in fiction. He might have instituted a rivalry between the two heads, or might, with the aid of the New York and Illinois statutes, have had a simultaneous marriage. He, however, preferred to blend the older romantic ideas with his fiction, and skilfully employed the self-sacrifice of Anna to relieve the general realistic gloom of the story. What the possibilities for sensational fiction are in this field is shown by the fact of the case reported years ago by a Brazilian physician, where a double-headed male pyopagus fell in love with a single-headed female syndelphus with a double pair of lower extremities and two sets of pelvic organs. It is hoped, however, that future delvers in this field of fiction will emulate the delicacy of Dr. COOPER in their productions.

MEDICAL CONFIDENCES AND MEDICAL TESTIMONY.

The question of medical confidences is a perennial one, and will be till some uniform regulation or understanding is reached in regard to it. It is, moreover, not a subject that can be left exclusively to the ethical sense of our profession; it has its legal bearings entirely apart from what we may or may not consider our individual duty in regard to it, and the question may arise at any time whether as physicians we shall be compelled to state for the benefit of lawyers and their employers what we may have received as confidential communications from our own clients. As the case usually stands, and in most parts of our country, the legal has a decided advantage over the medical profession. In a few States, it is true, there are rigid statutes in this regard, that would even quench the gossip that thoughtless men have sometimes been guilty of, under penalty, but these, like most other

statutory enactments, are possibly evadable by clever lawyers, one of whom has said that he never saw a law framed that he could not drive a coach and four through. Where such laws do not exist they have a free hand, and doctors are generally at their mercy.

There is another aspect of the case, and one even less satisfactory, in the fact that there are physicians of reputable standing in the profession, whose sense of medical honor is not sufficiently high to keep them from voluntarily violating professional confidences for a fee, sometimes a pitifully small one at that. Let a case for damages against a railway company be supposed, whether meritorious or not is indifferent to the present question, the defendant corporation naturally seeks in every way to find something to break the force of the plaintiff's claim. This may often be best done by attacking his former health record, and it is not infrequently the case that physicians who have treated him prior to the injury complained of, are found willing and even anxious to go on the witness stand to reveal facts obtained by them in confidence that may be utilized in the defendant's case.

It is not a valid excuse for such a course to say that by it a fraud is prevented, for this implies an absolute knowledge of all the facts down to date, which is rarely possessed by these witnesses, and it is therefore also within the bounds of possibility that by their testimony they are assisting in an act of rank injustice. The only proper professional course would appear to a right-minded man in such an emergency to be to keep out of the case altogether and leave the medical testimony entirely to the corporation's and plaintiff's doctors and experts. Those who are authorized by the parties interested have, of course, a right to testify, but without such authorization it is difficult to characterize the conduct of a physician who reveals voluntarily what he has learned in his professional capacity, and that to his patient's damage, as anything else than dishonorable. Even the advertising specialists, who are reckoned as without the pale of legitimate medicine, have sometimes a higher ethical standard in this respect than some of the so-called regular members of our profession.

Of course there may be occasions when the rule of professional secrecy does not hold in a strictly individual moral point of view. Treason and murder, and some other exceptional conditions might be excluded, and no one would blame a physician if, for example, he should do his utmost to prevent, let us say, the marriage of an innocent female to a man rotten with syphilis or suffering from any form of actively contagious venereal disease. He might under some interpretations of the laws make himself liable for damages, as has actually been the case in France, but there marriage is looked upon more as a financial transaction than it is in this country, and courts conduct themselves accordingly. In such a case, moreover, very much may be done without actually vio-

lating medical confidence, which should be only done as a very last resort, all other means having failed. The physician should, moreover, be sure of his facts and be able to demonstrate them and the honesty of his motives before a judge and jury, as well as to convince them that he had acted with due discretion and had given no needless publicity to discreditable suspicions. The failure in these respects was undoubtedly the cause of the excessive award of damages in the celebrated PLAYFAIR case in England not long since, and a similar result might easily follow like conduct in our own country. Even without special statutes against it the physician, when he violates professional confidence to the damage of his patient, does so at a certain risk.

If such is the case in the general intercourse of man with his fellows, it certainly ought not to be the privilege of the unethical physician to voluntarily reveal the facts entrusted to him before a jury to the intended injury of his former patient, and to do this for a fee, thus dishonorably making a second profit from the confidence entrusted to him. Nor should it be the law that he can be compelled to testify or even allowed to do so in cases where he has not a personal interest involved, as in suits for remuneration or in personal defense of his property or his liberty. In all other cases his knowledge thus obtained should be privileged; professional medical confidences thus gained should be held sacred in courts of law. Where there is now no recognition of this by the courts, legislation should at the earliest possible moment supply the deficiency.

PROGNOSIS OF EPILEPSY.

Epilepsy has been studied more or less diligently for the past three thousand years. Notwithstanding this fact, we are surprised, in the review of the literature, to find how few good general rules there are for a basis of prognosis in this affection.

Since we have established colonies and special institutions for epileptics, we hope to see something done to aid the general practitioner in extricating himself from the predicament of making a prognosis in this disease.

As yet we have to learn of an institution for epileptics in which a department has been established for experimental psychology to be used for the end of a more definite study of epilepsy. When such a department shall be established in connection with these institutions, similar to those referred to by Dr. FREDERICK PETERSON in his inaugural address before the New York Neurological Society, then we shall be able to measure the exact degree of motor, sensory, sensory motor and idio-sensory and motor defects of the epileptic and ascertain to what extent the hereditary element is at fault in the epileptic predisposition. Again, we shall be able to find the state of the mental faculties, how much they have undergone impairment

in any single case. When we take into account that an insane epileptic has never yet been known to recover from his epilepsy, we at once see how important such study becomes.

We have reason to believe that the acquired impairment, mental as well as physical, may be separated in a measure, by careful observation, from hereditary impairment so often found in this disease.

Up to the present time sane epileptics have not been brought together in this country in sufficiently large numbers to warrant such thorough studies, but we hope that the Craig Colony of New York State, established at Sonyea, will speedily grasp the importance of such work in a field where comparatively little has been done. We trust that such study will be attended by success and profit to the scientific medical world.

CHOLERA BANDS FOR TROOPS.

In the early days of the Civil War the soldier from the north was not considered to be properly equipped for service in the south without a havelock or white cover of washable material for his forage cap, with a flap falling to the shoulders to protect the head and neck from the scorching sun. Ladies all over the land made these havelocks, but the troops in the field never wore them. On a hot day's march the soldiers put one or two broad green leaves, oak, maple or sycamore in the crown of his cap as an all-sufficient protection. At the present time the havelock seems to have been forgotten, and cholera bands or abdominal bandages have become the imperative necessity, to supply which, for the protection of our soldiers in Cuba and the Philippines against diarrhea and dysentery, the patriotic ladies in many of our cities have been sewing assiduously for several weeks back. It is generally understood among the profession that the flannel bandage has a reputation in tropic climates as a prophylactic for intestinal affections. Professor PARKES in his "Practical Hygiene," states in discussing the causation of diarrhea and dysentery that in almost all hot countries chilling of the abdomen is considered particularly hurtful, and shawls and waistbands are usually worn, giving as an instance the cummerbund of India; but it is difficult to understand how this knowledge became popularized so quickly, and with such practical results at the present time. Various patterns have been used. The simplest consists of an apron of flannel, six or seven inches in length, tied around the waist with tapes. Others are more elaborate, fastened with buttons, hooks and eyes or eyelet-holes and laces; but whether the men will treat them as their fathers treated the havelocks appears as yet to be unknown. The subject, however, will soon be ventilated and placed upon an official footing, for a board of medical officers has been appointed by the War Department to meet in Washington, D. C., for the purpose of considering the question as to whether

or not the Government should issue the so-called "cholera bands" for the use of United States troops in the field, the idea apparently being that if the bands are essential to the welfare of the men their supply should be furnished officially, and not be left to voluntary contribution. The board consists of Colonel DALLAS BACHE, Assistant Surgeon-General, Lieutenant-Colonel CHARLES SMART, Deputy Surgeon-General and Major WALTER REED, Surgeon.

CORRESPONDENCE.

Pottery Evidences of Leprosy.

NEW YORK, July 20, 1898.

To the Editor:—I send you a translation from the *Dermatologische Zeitschrift*, May, 1898, on Huacos pottery evidences of leprosy in pre-Columbian America, a continuation of the discussion on my paper, "The Question of Pre-Columbian Leprosy in America," and my photographs in the Berlin Lepra Conference. Dr. Glück entirely agrees with me that these Peruvian figures show no characteristics of leprosy. (*Vide* "Pre-Columbian Leprosy," JOURNAL OF AMERICAN MEDICAL ASSOCIATION, April, May and June, 1895.) Virchow, in his position, is clearly wrong. ALBERT S. ASHMEAD, M.D.

LETTER OF MR. COUNSELOR OF SANITATION AND CHIEF PHYSICIAN, DR. LEOPOLD GLÜCK, IN SERAJIVO TO THE DERMATOLOGISCHE ZEITSCHRIFT (PROF. LASSAR'S PAPER), BERLIN.

"... Mr. Polakowsky was kind enough to send me a reprint of the Berlin Anthropological Society of what Virchow says about the morbid representations on old Peruvian pottery. In the last of the communications, of Dec. 18, 1897, Mr. Polakowsky refers to my humble person, saying: 'You will find three papers about the leprosy of the nose in the first volume of the communications of the Lepra Conference. Among them there is also a great work of Dr. Glück, chief physician of the lepra hospital in Serajivo. This gentleman said to me, after the October meeting, that I had been quite correct in my judgment that these vases did not represent leprosy. He asks me to say at the next opportunity, referring to himself, that the nasal leprosy has another aspect, that the bridge of the nose sinks, that the openings of the nose are closed, that the wings of the nose swell considerably, giving the idea of a opera-glass; these are the *ipsissima verba* of Dr. Glück. Dr. Leloir, one of the first leper physicians, who died prematurely, uses the same designation.' It is correct that after the meeting of the Berlin Anthropological Society, Oct. 16, 1897, at which I assisted, on the invitation of Dr. Virchow, as a guest, I have declared to Mr. Polakowsky that these vases represent no leprosy; it is likewise true that I have spoken with the said gentleman about the deformations of the nose in lepers, but I can not remember whether I have mentioned then, only the opera-glass nose, or also the other deformities of this organ. At any rate I want to declare here that I distinguish not one, but three types of nasal deformities on leprosy, as appears from my report published in the first volume of the Transactions of the Lepra Conference: '*Leprosy of the upper respiratory and digestive tracts.*'

"But it was not the defects of nose and lips alone which compelled me to believe that the vases did not represent leprosy. In considering those vases, I asked myself what form of leprosy we could have here? The faces of the fingers show no vestige of leontiasis; the tips of the ears are neither thickened nor elongated; the hands are not swollen, therefore we can exclude lepra tuberosa, especially as extensive mutilation of the inferior extremities never occurs in this form of leprosy.

It could then only be lepra nervosum sen anæsthetica. It is true, I know neither by the literature nor by personal observation any case of lepra nervosum in which the tip of the nose and of the septum, as well as the upper lip, have perished; yet this would not be impossible, especially if one considers that paralysis of many facial nerves, with consequent inflammations and ulcerations of the skin, are not particularly rare in this form of leprosy. The mutilations (?) of the legs, it is true, do not occur frequently either, in the form which is represented in our vases; but this is also possible in lepra anæsthetica. But now the hands of the figures show absolutely nothing abnormal, which alone speaks quite decidedly against the assumption of leprosy.

"It may happen here and there, now and then, that the affections on the legs are more advanced than on the hands, but it is entirely improbable that the latter, in such a later stage of disease as that represented on the figures, could remain entirely intact. The muscular atrophy and the contractions of the fingers are, in all cases of lepra nervosum which have reached any considerable degree of development, manifestations so conspicuous and characteristic, that the old Peruvian artists would certainly have been aware of them.

"Finally, as to the legs, I see in them no mutilations, but amputation-stumps, as those which remain after a regularly executed amputation of the leg. The stump has a smooth hemispherically-shaped extremity, deep, horizontal or vertical furrows, which must be considered as retracted scars after flap amputation on the legs.

"If we consider all these facts, one becomes convinced that the old Peruvian potteries which Virchow, on the 13th of October, 1897, has demonstrated in the third sitting of the Lepra Conference, and which afterward have repeatedly been the object of debate in the Berlin Anthropological Society, certainly represent no leproses.

"It must be left to the investigator of the old Peruvian civilization to explain in a positive manner the meaning of the vases in question, that is, of the figures which adorn them; the leprologist can do that only in a negative manner, by declaring that the affections which are apparent in them can certainly not be considered as leprosy."

A Department of Health.

CHICAGO, July 28, 1898.

To the Editor:—Congress adjourned, and with the knowledge presumably (see reports of Senator Gallinger and others, from personal observations made while investigating certain parts of Cuba last spring of the great need and urgent necessity of reform in sanitary matters among the unhappy people of that desolate island) or oversight, that legislation upon this all important topic was *apparently either relegated to the waste-basket, pigeon-holed or deferred*. Call it by whatever term we will.

For years the writer, in his feeble efforts, has tried to use what influence he possessed to promulgate argument, why our government should establish a department of health, having at its head an efficient, painstaking, scientific medical secretary. A large majority, perhaps 90 to 95 per cent., of the medical profession throughout our country have favored this project. The JOURNAL has repeatedly published the same views. The great majority, as just stated, of the noble men in our profession favor this, and as such are good samaritans (not for self-aggrandizement, as possibly some might interpret, but for "the welfare of our people"), and our National legislators should have listened to our appeal, *i. e.*, paid heed to the bill prepared by the special committee of the AMERICAN MEDICAL ASSOCIATION upon this timely measure. Congress, in my opinion, will doubtless do so in due time; but, in my judgment, this much-needed legislation should have been enacted years ago. Had this been done, an intelligent commission,

composed of medical scientists from the United States, would doubtless long ago have been detailed to visit the Philippine Islands, the Canary Islands, the Ladrões, and other Spanish territory, and report upon the *status præsens* of the diseases that prevail or are indigenous to those islands, and upon the sanitary and other conditions existing among the inhabitants. A full knowledge of the sanitary conditions of Manila, Santiago, San Juan, Porto Rico, the city of Ponce, Havana, and of all other portions of those pest-ridden cities, and in the islands named, would have been officially known, not omitting, of course, Honolulu, the East Indies, etc., as well as scores of other places that might be enumerated.

This brings the writer to mention that the hardships and suffering, by illness and otherwise, of our brave soldiers at the front would doubtless have been greatly mitigated and unknown numbers of our brave sons saved from death by yellow fever, if such a branch of our Government had been established. Indeed, is not this a crying necessity? Is this not, *Jure humana et Jus divinum?*

Very sincerely yours,

LISTON H. MONTGOMERY, M.D.

The Probate Court.

CHICAGO, July 30, 1898.

To the Editor:—I am glad to see Dr. Galloway has the courage to relate his experience with Judge Kohlsaatt. It probably coincides with the experience of the majority of physicians who are so unfortunate as to be obliged to prove their accounts in the probate court.

Some months ago I filed a claim against an estate in which the executrix was willing to allow the claim at \$8 a visit, and Judge Kohlsaatt arbitrarily cut the claim down to \$2 a visit, not inquiring into the circumstances of the case but remarking that the court would never allow a claim for more than \$2 a visit. I admire a judge who looks sharply after the interests of heirs, but think it is time we as physicians should take a hand in the election of the probate judges and try and secure the election of judges who will give us just fees and not humiliate us in court. Yours truly,

JOHN A. ROBISON, M.D.

PUBLIC HEALTH.

Behring's Tetanus Antitoxin has a record to date of eleven recoveries and eleven deaths, according to the *Munich Med. Woch.* of May 24.

Sanitation of Match Factories.—The recent agitation in France has resulted in the production of a sanitary match paste which contains none of the dangerous white phosphorus and is harmless alike for the workmen and the public. It is claimed that the new matches made with it are more than satisfactory.

Tubercle Bacilli can be readily detected in milk by adding a few drops of peroxid of hydrogen to a sample of the milk in a test-tube and then a few drops of parrastinglecadiamin, C_6H_4 $2(NH_2)$. The color of the milk remains unaltered unless it contains tubercle bacilli, when it at once turns a grayish-green on being shaken.—Professor Storch: *St. Petersb. Med. Woch.*, June 11.

Doctors Opposed to Marine Hospital Extension.—John B. Corliss has run afoul of the medical fraternity. He has, in a euphemistic way, called Dr. C. Henri Leonard a liar, and the Doctor does not like it. Besides, the several medical associations think that Corliss has not acted square on their pet measure of a department of health. The agitation for such a department was started about six years ago, by the AMERICAN MEDICAL ASSOCIATION. It was proposed to make the secretary a cabinet officer, to have the Federal Government exercise control over the hygienic condition of the country and over intercourse with

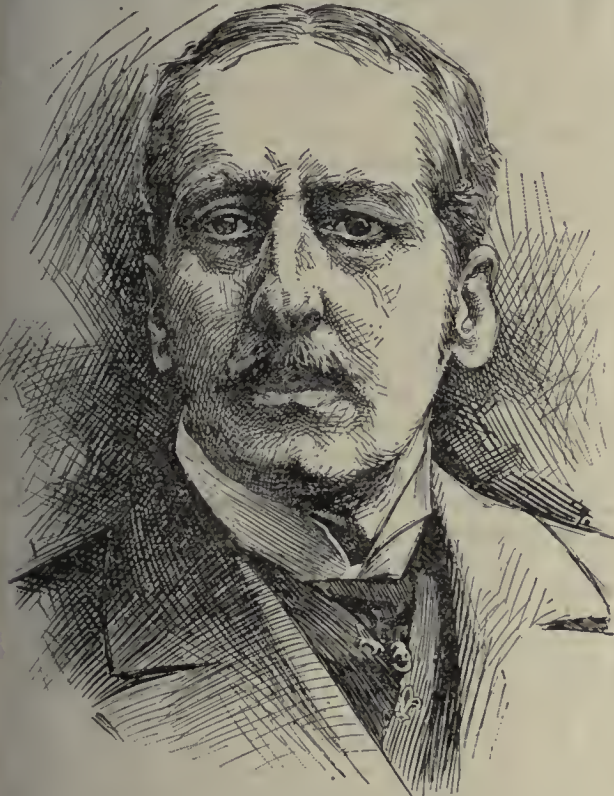
other nations. President Cleveland recommended the measure in one of his messages, and the doctors have been driving at it since. During the session of the Michigan State Medical Association last May, it transpired that Corliss was pushing some health bill. It turned out to be the "Hepburn bill," which enlarges the scope of the Marine-Hospital Service. The doctors have no use for this measure, and adopted condemnatory resolutions, which were sent to Corliss. Corliss wrote back that the medical fraternity had acted without proper investigation; that it was his "duty" to report the Hepburn bill; that the bureau scheme would be a "very large expense." He trusted Dr. Leonard would "undo the evil" he had created by the publication of "facts not true." This made Leonard hot. He replied that Corliss had quibbled, and warned him that the Hepburn bill was distasteful to the entire medical fraternity. He criticised Corliss' plea about "expense" and reminds him that the doctors may conclude that some Congressmen are too "expensive." This correspondence was published in the medical journals and evoked a letter to Leonard from Dr. Wingate, chairman of the Public Health Committee of the AMERICAN MEDICAL ASSOCIATION, in which he says that Corliss obstinately favors the Hepburn bill, and that he simply would not listen to arguments for any other measure. Dr. Wingate intends to place the entire correspondence in the hands of Senator Spooner and Congressman Otjen, strong friends of the department bill. Corliss will have more explaining to do than he had with the ticket-brokers when he found himself in a somewhat similar position.—*Detroit News*, June 26.

The U. S. A. Hospital Ship "Relief."—The finest hospital ship that ever floated is the *Relief*, just fitted out at the Brooklyn Navy Yard, under the charge of Surgeon George H. Torney, U. S. A. The result is a great credit to that officer, who has given his personal attention to every detail of construction. The *Relief* was formerly the steamer *John English* (*Vide JOURNAL*, July 2 p. 42) plying between New York and Portland. There are two wards on the promenade deck, fore and aft; two on the main deck, and another on the after berth-deck. Not less than 350 patients can be accommodated in the five wards as now arranged, and by the addition of extra cots it is estimated that 500 wounded men could be cared for in an emergency. The officers' ward is forward on the main deck, and does not differ materially from the others. On the after main deck is the surgical ward, and adjoining this is a good-sized and well-lighted operating-room. In it are three operating-tables and two cabinets for surgical instruments. The entire interior of the vessel is finished in white enamel paint with gold trimmings. The floors of the wards and operating-room are covered with rubber tiling. The cots are of iron, painted white, and most of them have an upper and a lower berth, arranged like a sleeping-car section, to accommodate two patients. In each ward are baths fitted with the Gegenstrom system of hot and cold water, by means of which water may be drawn and kept at any temperature desired, by simply turning a lever above tub. The plumbing is said to be the finest ever put on board a ship. On the berth deck are staterooms to accommodate fifteen male and fifteen female nurses, and forward are the roomy and well-lighted officers' quarters. The ship carries a disinfecting plant, an ice-plant capable of producing 200 tons a day and an electric plant which supplies power for incandescent lights throughout the vessels and also for a 7000 candle-power searchlight, which is operated from the pilot-house. In addition to this all the wards and the quarters of the officers and the nurses are provided with high-power electric fans, which are expected to cool even the heated air of Cuba. A small portion of the after promenade deck has been left open at the sides, and here hammocks are to be swung for the benefit of convalescent patients. Besides the appliances already enum-

erated, the *Relief* has a carbonater for supplying mineral water, two X-ray outfits to aid the surgeons in locating bullets, a microscopic laboratory, and a well-equipped photographic dark room. On the main deck is a telephone, by means of which communication may be established with the shore or with other vessels. The ship carries eight life-boats, four life-rafts and two 28-foot steam launches. Her exterior is painted white, except for an olive-green band which will encircle the vessel, in accordance with the requirement of the Geneva convention. An apparatus has been devised by means of which the sick or wounded may be hoisted on board with the least possible trouble. This consists of a steel boom, which can be swung over the deck of a war-ship, and is fitted with tackle for hoisting.

NECROLOGY.

WILLIAM PEPPER, M.D., the friend of young men, is not now numbered among the living. He has been cut down in the height of his glory. When word came from California, whither he had gone for a brief respite from his labors, announcing news of his death from angina pectoris, it fell like a pall over the hopes and ambitions of many men in Philadelphia. His father, the elder Dr. Pepper, was one of the emi-



WILLIAM PEPPER, M.D.

nent men of his time, and therefore, by birth and by nature, his advent into the world was distinguished. Dr. William Pepper was born in Philadelphia, Aug. 22, 1843. His early life was one of progress, and his whole career one of work and usefulness. The keynote of his success was intuition, tact, persistence and constant application. No doubt he would have succeeded in any profession he might have chosen. Dr. Pepper graduated from the University of Pennsylvania when 19 years old and at the age of 23 received the degree Doctor of Medicine. From that time onward his life was devoted to utility and to the elevation of his profession. At the age of 25 he became professor of pathology of his Alma Mater and of his beloved college. In 1840 he was made professor of clinical medicine and at the age of 33 succeeded Dr. Alfred Stille as

professor of theory and practice of medicine in that institution. In 1881 he was elected provost of the University and resigned in 1894. His administration was marked by unparalleled success. If you wish to see evidences of his genius in Philadelphia "look around you." From a university of modest proportions, he built one which now covers fifty-two acres of ground, and aggregating, all told, \$5,000,000 in value. Dr. Pepper has given hundreds of thousands of dollars to the University. Under his administration there arose the Wharton School of Finance and Economy (1881), the Department of Philosophy for Post-Graduates (1882), the Department of Veterinary Medicine (1883), the School of Biology (1885), the Department of Physical Culture (1885), the School of American History (1891), the Department of Archeology and Paleontology (1891), and the Department of Hygiene (1892). He was instrumental in building the Agnew Memorial Wing to the University Hospital, the Maternity Hospital, the Wistar Institute of Anatomy, and he built and endowed the William Pepper Laboratory, a memorial to his father. His fervent hope was that the University should outrival the colleges of the old and new world. In the medical department his efforts have always succeeded, and his endowment of \$50,000 made this University one of the leading spirits among all others in requiring a four-year graded course. He brought together in this teaching faculty many of the foremost men of his day. Agnew, Leidy, Wormley and Goodell are gone, but there yet remain Wood, Ashhurst, White, Tyson, Piersol, Reichert, Penrose, Hirst and Abbott among the living. He not only gathered to this center the older men, but also looked to younger men to perpetuate it when others are gone. He gave them encouragement and they honor him for it. Always showing an intense zeal for his work, he animated others who came under his direct teaching. A man of keen perception, a wonderful judge of human nature, and of profound learning, he was bound to succeed. As a diagnostician, possibly no man was his superior. His mind was ever alert, ready to grasp the hidden thoughts of the patient and to detect the varied pangs of disease. He was artful to a wonderful degree and elicited symptoms which often defied the senses of others. His talents secured his reputation and his private practice was immense. As a lecturer he had few equals. His language was clear and his phrases most plain. He had a faculty of readily imparting the knowledge which his energies had brought him and they were untarnished when he imparted them to others. Dr. Pepper's talents were versatile and his great vitality gave him no rest. He was constantly reaching out for other useful fields than medicine. He was a man of executive ability, an organizer, as shown by the establishment of the Philadelphia Museum, of the School of Industrial Art, and many public enterprises. He was a leader in the American Society for the Extension of University Teaching, and always exercised an interest in all public measures which brought good to his fellow-man. Dr. Pepper's reputation was not merely local; his name is known throughout the medical world. He had been knighted by the King of Sweden and received the degree of LL.D. from both Lafayette and Princeton. As a writer he is well known. Who has not heard of Pepper's "System of Medicine, and of the "Diseases of Children" by Meigs and Pepper? A visitor to his office would always find him occupied, and this incessant toil sowed the seeds which at last broke him down. An attack of la grippe last year left its mark upon him, which a journey to Florida never relieved. His manner was kind, gentle, wholesouled, and his demeanor always suave, frank and affable. He made friends readily. His name has been honored by his native city and State, by the two Americas, being president of the first Pan-American Medical Congress, and by the Old World, and at the age of 55, lacking one month, his life work has ended. His friends are many and their grief is made the more profound since death

came when so far away from them and from the city which will do honor to the name of William Pepper for generations to come.

HENRY E. DIETRICH, M.D., 422 Center Street, Chicago, died at a private sanitarium near Milwaukee, from nervous troubles, the result of a runaway accident several years ago, July 22, aged 48 years. Dr. Dietrich had practiced here for fifteen years, was a native of Switzerland and a son-in-law of the president of the Swiss Republic, Carl Schenck. He studied in Zurich, Berne, Heidelberg, Prague and Vienna. In 1877 he came to America and went to Yankton, S. D., where he practiced until 1880, then coming to Chicago.

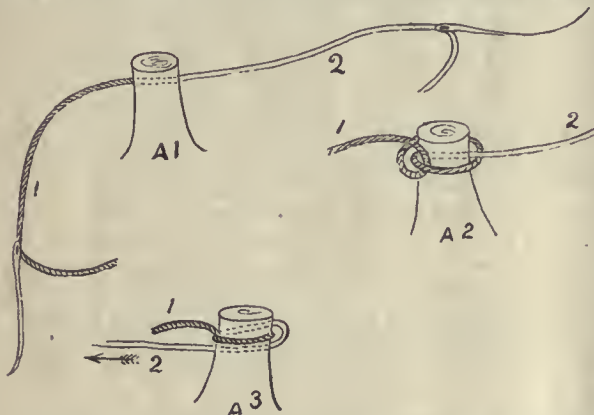
P. N. ADAMS, M.D., Dayton, Ohio, July 17, aged 44 years.—Robert Geddes Graydon, M.D., Southport, Ind., July 23, aged 79 years.—J. W. Gulich, M.D., Corsicana, Texas, July 23, aged 69 years.—G. B. Harrison, M.D., Washington, D. C., July 19, aged 54 years.—Charles H. Mitchell, M.D., Baltimore, aged 41 years.—George W. Patton, M.D., Pana, Ill., July 24, aged 65 years.—S. M. Swan, M.D., Johnstown, Pa., July 23, aged 68 years.

NEW INSTRUMENTS.

NON-SLIPPING PEDICLE LIGATURE.

BY W. V. GAGE, M.D.
MCCOOK, NEB.

By the use of the accompanying crude drawings, I wish to illustrate the application of a non-slipping pedicle ligature. It is impossible for it to slip from the pedicle when properly tied, a thing, I believe, which can be said of no other pedicle ligature.



The grasp of the ligature is limited, but by repeating the tying process a pedicle of any size could be securely held, or the entire broad ligament tied off. Let Fig. A 1 represent the pedicle. Through it is passed the ligature, on each end of which is threaded a needle, the projecting ends being numbered 1 and 2. No. 1 is passed entirely around the pedicle under the point of exit of No. 2 and looped into itself from below, at its own point of exit, as shown in Fig. A 2. Both ends are now drawn tight, No. 1 held snugly and No. 2 passed through the tissue, at a point about one-eighth of an inch below where No. 1 goes around the pedicle, emerging the same distance below on the other side, both ends are again drawn taut enough to control any bleeding that may be present and the ends tied. Although the description of this method of ligation may be somewhat obscure, the method of applying the ligature is simple, as you may demonstrate by using a piece of roller bandage about one-fourth of an inch through, for an imaginary pedicle, and applying the ligature yourself.

A THREADED NEEDLE-HOLDER

exhibited at the German Congress of Surgery is a perforated board with a two-inch wall along each side. The threaded

needle is passed through corresponding holes in each wall and the thread tied. Two dozen can thus be fastened and the whole sterilized at once. The needles are used in turn, cutting each knot separately, and if a needle-holder is used to insert the needle, instead of the fingers, the chances for stitch-hole infection are reduced to the minimum. Needle-holders are being used more and more abroad. A useful model is illustrated in the *Cbl. f. Chir.* of July 2. One of the handles ends in a ring that slips over the little finger, from which the pincers hang when not in use. The other handle is merely a short curved crossbar for the thumb. The jaws hold the needle slanting in the proper position.

BOOK NOTICES.

System of Diseases of the Eye, by American, British, Dutch, French, German and Spanish authors. Edited by WILLIAM F. NORRIS, A.M., M.D., and CHARLES A. OLIVER, A.M., M.D. Vol. iii. Local diseases, glaucoma, wounds and injuries, operations. Pp. 962. Philadelphia: J. B. Lippincott & Company, 1898.

The contributors to this volume are: Charles Steadman Null, M.D.; George C. Harlan, A.M., M.D.; Samuel Theobald, M.D.; Swan M. Burnett, M.D., Ph.D.; W. A. Brailey, M.D.; Sydney Stephenson, M.B.; A. Hill Griffith, M.D.; Isidor Schnabel, M.D.; Joseph Schobl, M.D.; Johann Deyl, M.D.; Priestley Smith, Esq.; Emil Gruening, M.D.; Robert L. Randolph, M.D.; Herman Knapp, M.D. The translators are Charles H. Reed, M.D., Adolf Alt, M.D., Robert Sattler, M.D. The illustrations in this work are magnificent, and the publisher has spared no expense to produce a first-class work.

A Manual of General Pathology for Students and Practitioners. By WALTER SIDNEY LAZARUS-BARLOW. Pp. 795. Philadelphia: P. Blakiston Sons & Company, 1898. [From E. H. Colegrove, Chicago Agent.] Price, \$5.00.

This is an attempt to separate general pathology from pathologic anatomy and to condense the subject of general pathology into a simple volume. The work is divided into 14 chapters, as follows: 1. Introduction. 2. Vegetable Micro-Organisms. 3 and 4. Pathology of the Circulation. 5 and 6. The Pathology of the Blood. 7 and 8. Pathology and sequelae of Inflammation. 9. Pathology of Infection. 10. Pathology of Heat Regulation. 11. Pathology of Shock and Collapse, Transfusion. 12. Pathology of Nutrition. 13. The Pathology of Various Morbid Conditions which are Characterized by Abnormalities of Secretions and Excretions. 14. The Pathology of Respiration. These chapters are followed by an appendix in which is discussed ptomain poisoning; life under aseptic conditions; fragmentation of the heart; death from certain causes, such as extensive burns; drowning; death from thirst and lightning. There is also an index of authors and a copious general index.

The work is dedicated to Joseph, Lord Lister, and was primarily intended for students as a recitation book, and for that purpose is excellent, and it will be found of great value to those practitioners who wish to keep abreast with the times in the great science of pathology.

Inflammation of the Bladder and Urinary Fever. By C. MANSELL MOULLIN. Pp. 153. Philadelphia: P. Blakiston Sons & Company, 1898. [E. H. Colegrove, Chicago Agent.] Price, \$1.50.

The author states as a reason for the publication of this book the fact that the principles of aseptic surgery seem still to stand in need of an advocate when the bladder is concerned.

The book discusses the predisposing cause of cystitis; the cause and classification of cystitis; simple and suppurative cystitis; the changes in the urine in suppurative cystitis; the organisms found in the urine in suppurative cystitis; symptoms of suppurative cystitis; urinary fever; the way in which

micro-organisms gain access to the bladder; the treatment of suppurative cystitis; cystitis due to specific organisms.

Moullin is well known through his system of surgery (which has had a wide circulation in this country) as a practitioner of ability and vast experience. The monograph under consideration is one deserving of the highest consideration. We commend the work to our readers.

A System of Practical Medicine by American Authors. Edited by ALFRED LEE LOOMIS, M.D., LL.D., and WILLIAM GILMAN THOMPSON, M.D. Vol. iv. Pp. 1120. New York and Philadelphia: Lea Bros. & Company. 1898.

The contents of this volume are: Diseases of the Peripheral Nerves; Diseases of the Spinal Cord; Diseases of the Medulla and Pons; Diseases of the Brain; Functional Nervous Disorders; Vasomotor and Trophic Disorders; Disorders of the Mind; Diseases of the Muscles, and miscellaneous subjects not specially mentioned in this and the preceding volumes.

The contributors to Volume iv are: Frederick Finley, M.D.; M. Allen Starr, M.D.; Christian A. Hertler, M.D.; D. D. Stewart, M.D.; J. T. Eskridge, M.D.; F. T. Miles, M.D.; F. X. Dercum, A.M., Ph.D., M.D.; Frederick Peterson, M.D.; Charles L. Dana, M.D.; William H. Thomson, M.D.; James J. Putnam, M.D.; Charles K. Mills, M.D.; Morton Prince, M.D.; W. Gilman Thompson, M.D.; Wharton Sinkler, M.D.; James Stewart, M.D.; William B. Pritchard, M.D.; William Noyes, M.D.; Landon Carter Cray, M.D.; Pearce Bailey, M.D.; A. Jacobi, M.D.; and Warren Coleman, M.D.

This work is handsomely printed and the contributors have ably represented American medicine.

Transactions of the Academy of Stomatology. Paper. Illustrated. Pp. 83. Philadelphia: J. B. Lippincott Co. 1898.

This volume covers the period from Jan. 26, 1897, to Dec. 28, 1897, and is reprinted from the *International Dental Journal*; is well printed on excellent paper and is of value, especially to practitioners of this branch of medicine.

Studies From the Department of Pathology of the College of Physicians and Surgeons, Columbia University, New York City. Volume v, Part 2. Paper. Illustrated.

This volume of studies comprises a collection of reprints of the more important articles published by the workers in the department of pathology in this institution during the college year 1897-98. The volume is gotten up in the usual excellent style noted in Columbia University publications, and contains the following papers of interest to the medical profession: "An Experimental Study on the Therapeutic Value of Blood-letting;" "Studies of Ganglion Cells;" "Suture of the Cornea after Removal of the Lens;" "A Case of Acute Leukemia;" "Further Studies (third series) on the Gonococcus (Neisser);" "A Modification of Cullen's Method of Preparing Fresh Sections for Microscopic Work;" "On the Occurrence of Typhoid Fever without Characteristic Lesions of the Small Intestine;" "The Bactericidal Action of Lymph Taken from the Thoracic Duct of the Dog;" "On a Method of Isolating and Identifying Bacillus Typhosus, Based on a Study of Bacillus Typhosus and Members of the Colon Group in Semisolid Culture Media," and "Some Laboratory Moulds."

Seventeenth Annual Report of the State Board of Health of New York. Cloth. Pp. 620. Maps. New York and Albany: 1898.

This report is for the year 1897, contains the rules and regulations for sanitary protection of water supplies of various cities, and reports of a number of special investigations in various cities, on sanitary matters. The report is accompanied by a large number of maps, twenty-four having to do with sewer systems and sewerage disposal works.

Transactions of the Medical Society of the State of California. Cloth. Illustrated. Pp. 352. Vol. xxviii. Published by the Society.

The volume is printed on excellent paper and has to do with the twenty-eighth annual meeting held at Fresno, Cal., in April,

1898, and, besides the proceedings, contains a biography of the President, Cephas L. Bard, his annual address, and reports of various committees, as well as the committee on clinical medicine, serotherapy, medical typography, etc.

SOCIETY NEWS.

American Electro-Therapeutic Association.—The eighth annual meeting of this association will be held on Sept. 13, 14 and 15, 1898, at Buffalo, N. Y. There will be an exhibition of electric apparatus for diagnostic, therapeutic and radiographic work; a handbook of information will shortly be issued by the Committee on Arrangements. Hotel Iroquois will be the headquarters; John Gerin, M.D., secretary; Charles R. Dickson, M.D., president.

Post-Graduate Medical Schools.—At the regular meeting of the Alameda County Medical Society the following resolutions were adopted:

WHEREAS, It having come to the knowledge of this association that the post-graduate medical schools of Chicago, New York and Philadelphia are permitting the matriculation of irregular practitioners of medicine; therefore, be it

Resolved, that this association voices its denunciation of this lax practice as subversive of the distinction heretofore rightly made between regular and irregular practitioners of medicine.

As regular students have been denied advanced standing in regular student bodies, we are further

Resolved, That the permission granted them, after graduation, of matriculation in regular post-graduate schools tends to discourage the standard heretofore obtaining in our regular colleges.

Resolved, That this association point out the injustice done regular practitioners in permitting the matriculation of irregulars in post-graduate schools, as they are there drilled in practical work, in manual technique, without regard to scientific acquirements; and they are, in some instances, thus enabled to compete successfully in private practice with men who were obliged to reach a higher standard of scientific attainment before being granted diplomas, and who have not had the leisure or the money to supplement graduate with post-graduate study.

Resolved, That it is the hope of this association that this matter receive the attention of other medical societies, and of the profession in general, to the end that so strong a feeling may be formed against this abuse that the governing bodies of the offending schools may be moved to correct it.

E. J. OVEREND, M.D.,
S. H. BUTEAU, M.D.,

Committee.

Oakland, Cal., June 14, 1898.

MISCELLANY.

Recurring Tubal Pregnancy.—O. Falk reports a woman of 29 years operated on twice successfully for ruptured tubal pregnancy, one on each side.—*Munich Med. Woch.*, May 31.

"The Tonsils an Open Gate for general acute infection" is the subject of an article in the *Munich Med. Woch.*, June 7, from F. Jessen, who confirms the statements of American writers.

Professor Albert's Rule in regard to mutilating operations on either male or female: "Castrate your neighbor only as ye would that others should castrate you."

A Large Primary Sarcoma in the Omentum was removed by Henricus recently from a girl of five; fatal recurrence in a few months.—*Cbl. f. Chir.*, June 2.

Botulism Antitoxin.—Kempner has produced an antitoxin from bacilli found in the fecal matters of pigs, that protects against fatal doses of botulin derived from the bacillus botulinus.—*Ztschft. f. Hyg.*, xxvi, 3.

Intermittent Exophthalmus and Endothalamus.—A peculiar case is described in the *Deutsch Med. Woch.*, No. 24, evidently caused by varicose dilation of the vena ophthalmica, exaggerated by stooping and by the menses.

Flexion of the Uterus and its accompanying pains are attributed by Schaffer to anomalies in innervation producing convulsive contractions in the posterior wall.—*Monatsheft f. Geb. u. Gyn.*, January.

Hospital for Red Cross.—Henry M. Flagler, the Standard Oil millionaire, will, it is alleged, build a hospital at Miami, Fla., for the Red Cross, to accommodate 1,000 patients. The cost of the building will be \$40,000.

Gift to Harvard Medical School.—The late James Stevenson of Brookline, Mass., a wealthy hotel owner and real estate dealer, has promised in his will \$10,000 for the establishment of two free scholarships.

The Value of Vaginal Disinfection in childbed can only be decided when the temperature is noted every two hours. Kalmus urges the general adoption of this practice to decide this important question.—*Cbl. f. Gyn.*, No. 19.

The Tomato as a Cause of Cancer.—A N. Y. contemporary gravely publishes the statement that the tomato, eaten in any form, can not cause cancer. The doctrine of signatures explains away the difficulty and there are still extant many pathologic plates which suggest decided similitudes.

National Relief.—The National Relief Committee reports from New York City some generous contributions, among which was one by Mr. D. O. Mills of that city for \$5000, to assist in the establishment of ice-producing plants at Jacksonville, Key West, Jekyl Island and Santiago or Guantanamo Bay.

The Bacillus of Whoopingcough.—Spengler and Davos, *American Med. Surg. Bulletin*, have isolated a bacillus of whoopingcough which resembles the Pfeiffer influenza bacillus. This is probably the same organism as that of Czaplowski and Hensel (*vide JOURNAL*, Jan. 29, 1898, p. 280).

The Proportion Between the Prostate and the Testes in various vertebrates indicates that these organs partially substitute each other, as in animals with large testes the prostate was extremely small, while with small testes the prostate was exceptionally large.—Disselhorst, *Munich Med. Woch.*, May 24.

The Cure of Gtaucoma by Resection of the Superior Cervical Sympathetic Ganglia is reported by Jonnæso, who has performed the operation seven times for this purpose and found the improvement marked and progressive, even in cases that had resisted iridectomy.—*Presse Méd.*, June 8.

A Small Epidemic of Meningitis Cerebrospinalis has been noted recently in Paris, occurring in scattered localities, showing no evidence of direct contagion, as the microbe is enclosed in the skull and spinal cavities. The nasal or aural passages are considered the most probable routes of infection.

Radiography in Dental Surgery has been much improved by the use of the radio condenser (*JOURNAL*, xxx, 988) and "metallic rubber." Some interesting radiographs were recently presented at the Paris Acad. de Méd., among them some that showed the fully-developed canines buried deep in the palatine arch, with no possibility of eruption.

The Resistance of Pathogenic Germs in a Fatty Vehicle to the Gastric Juice has been demonstrated by the Italians. Mixed with fat, oil or butter, typhoid, cholera, anthrax bacilli and Fraenkel's diplococci remained unaffected by fresh gastric juice indicating that they pass intact into the intestines.—*Munich Med. Woch.*, June 21.

An Instructive Case of Eclampsia is reported by Vinay, the patient apparently in the seventh month, IV-para, the eclampsia of the most severe type, child apparently dead. The patient recovered after artificial delivery followed by the injection of three liters of salt solution; with the patient kept under the influence of chloroform several hours, taking 300 grams of chloroform in all.—*Klin-therap. Woch.* June 19.

Sero-reaction and Immunity.—A communication to the Paris Académie de Méd. states that although Arabs are rarely affected by typhoid fever, examination of the blood of twenty-three subjects failed to show any sero-reaction; which is a new proof that the agglutinating power is not necessarily connected with immunity, but is an infection, or defense reaction.

Peritoneal Adherences do not follow thermocauterizing unless there is simultaneous infection, Ten Brink asserts as the result of numerous experiments on guinea-pigs. The infection of the cauterized spot with staphylococci resulted in adherences eight times out of nine. He is confident that these conclusions will apply also to man.—*Munich Med. Woch.*, May 31.

Psychosis Consecutive to Iodoform Treatment.—Frankenburger reports a patient of 50 years treated with iodoform-glycerin injections (6 weeks, 4, each 0.5 gram. iodoform) for a cold abscess in the thigh, which healed, but a psychosis developed, with melancholia, mania of persecutions, disturbed sight and hearing, etc., which persisted long after cessation of the injections and required removal to an institution.—*Munich Med. Woch.*, May 31.

Pain in the Bones after Extirpation of the Spleen has been observed in a recent case operated by Lucetti. The pain was intense, especially in the diaphyses of the long bones. There were no other unusual phenomena; the glands did not swell, and the pains were evidently merely the results of the sudden vicarious demands upon the blood-manufacturing bones.—*Munich Med. Woch.*, June 7; *Giorn. Intern.*

De Renzi's Treatment of Pneumonia.—Fanoni, in the *New York Medical Journal* of May 7, claims for this treatment that it increases the strength and rapidly diminishes the fever. He considers it a remedy of undoubted efficacy, as indicated in the diseases caused by Fraenkel's bacillus, namely, epidemic cerebro-spinal meningitis, pleurisy, pericarditis, peritonitis, the arthritis of pneumonia, etc.

Diphtheria of the Scrotum.—Dr. le Clerc of Brussels has observed three cases of diphtheria in which the local process was confined to the scrotum, which swelled as large as a child's head. In one case the throat was also affected. All presented the symptoms of general diphtheritic intoxication, and recovered with antitoxin and local measures, but extensive plastic operations were necessary to replace the destroyed tissues.—*Dermat. Ztschrift*, May.

Multiple Neurotic Gangrene of the Skin.—An interesting case is described by Dehio, in which any slight fright, the falling of a heavy book, the spilling of a bottle of wine on the tablecloth, or anything of the kind, was at once followed by the development of a patch of gangrene on some part of the body, hand, foot, arm, cheek, which healed in a month, more or less, leaving a deep scar; patient a well-to-do young woman, otherwise healthy.—*St. Petersb. Med. Woch.*, June 11.

A Clamp to Draw Down the Rectum in extirpations, that closes the lumen at the same time was presented at the German Congress of Surgery. Between the semicircular jaws a bullet-stopper moves up and down on a slide. This is inserted in the rectum and screwed firm, the jaws clamping together around it. The stopper can be slipped out at any moment without opening the clamp. It is illustrated in the *Cbl. f. Chir.* of July 2.

Rovsing's Study of the Infections of the Urinary Passages runs through the *Ann. des Mal. Genito-Urin.* from September to March. He does not endorse the generally accepted theory which ascribes to the bacillus coli the principal rôle in these infections, but announces the existence of a non-suppurating catarrhal affection caused by non-pyogenic, urine-decomposing microbes. Any pyogenic microbe may induce cystitis, whether inoculated in some lesion of the mucosa or arriving by metastasis, but in most cases it is due to pyogenic, urine-decompos-

ing microbes, the study of which may result in a practical sero-therapy. The bacillus coli is the most frequently encountered micro-organism in these passages, usually in the mild form of bacteriuria or, when there is lithiasis, in a slight suppurating pyelitis. In a few cases it may induce cystitis and nephritis. He even considers it possible that the antagonism between the bacillus coli and other microbes may transform malignant into benign infections. His work is based on 125 observations.

Lack of Sensibility in the Female Urogenital Organs is important from a medico-legal point of view as it renders the assertions of women in regard to therapeutic or criminal manipulations unreliable. The sense of touch and localization is very defective. Calmann reports that he packed the vagina of some patients with cotton, or with shot wrapped in cotton, to a weight of 100 grams, without any knowledge on the part of the subjects of the nature of the substances inserted. The urethra and cavum uteri are sensitive to pain, the remaining parts much less so.—*Berl. klin. Woch.*, No. 15.

Ephemeral Pneumonia.—Molteni has observed a number of cases in an epidemic of croupous pneumonia, and describes two at length in the *Gaz. d. Osp. e d. Clin.* of June 5. They commenced with a sudden severe chill lasting half an hour, with unconsciousness; temperature rose to 40.5 degrees C., respiration 44 and pulse 130, but the disease passed through all its phases, including aphasia, pulmonary edema and slight paralysis, to the crisis and commencing convalescence within twenty-four hours. The streptococcus was found with Fraenkel's diplococcus in the sputa.

Local Anesthesia is supplanting general to such an extent that the number of operations in which chloroform was used at Mikulicz's clinic has fallen from 815 to 324 during the past year. Manz reduces the pain from the ligature in Oberst's "regional cocaine anesthesia" (*vide JOURNAL*, xxx, 496, 736 and 1236), by tying a second ligature close to the first when it becomes painful and removing the latter, repeating as often as necessary. He has used this method satisfactorily for severe operations on the lower arm, but prefers a 0.5 per cent. solution. Maniewicz advocates simultaneous injection of morphin, as so much of the injected fluid escapes through the incision.

Tetanus Toxin increases the Pressure.—The increase is not proportional to the dose of toxin but is closely connected with the contractions of the muscles, as is evidenced by the fact that curare arrests it. This effect of tetanus toxin is also connected in some way with the bulbar vasomotor center, as section of the medulla in the neighborhood of the cervical enlargement likewise arrests it. The frequency of the pulse is increased, and also the excursion of the vessel. The respiration is rendered systematically slower, while the expired carbonic acid increases in progressively regular amounts. *Munich Med. Woch.*, June 7; from *Morgagni*.

Derivation of the Tetanus Bacillus.—Molinari asserts after extensive research that the tetanus germs exist normally in the soil as assumed, but are found only in the superficial layers. Oxygen and sunlight attenuate their virulence, but this is enhanced by passage through the intestines of animals (not man), which seem to be their chosen home and developing place. The pathogenic germs are therefore derived from the dung of animals, consequently are most frequent in gardens, on the street, in barns, etc., wherever animal fecal dust can penetrate, including that from rabbits, poultry, cats, etc.—*Munich Med. Woch.*, June 7.

Physicians of Olden Times.—It is said that a statute of Henry VII of England ordains that the healing art shall be limited to those persons who are profound, sad, and discreet, grandly learned and deeply studied in physic. Upon the whole, this seems a formidable curriculum even for a medical student of

the present day to face. The lecturers on "profundity," we presume, would have about as much chance of imparting knowledge to their class as the lecturers on botany have in the present century. As for the lecturer on "sadness," there would certainly be a difficulty in filling the post. Without awaking further inquiries into the adaptability of Henry VII's curriculum for the medical students of his time, we feel certain that our own is generally calculated to be in the end more useful to the community.

Bertillonage to Receive Tardy Recognition in Germany.—The Germans have been slower than others in adopting Bertillonage, as it is called, the system of personal recognition by a series of measurements and the notation and registration of any natural pigmentary or hairy peculiarities. While the system is in use in France and very generally in Belgium, Switzerland, Russia and Italy, only isolated cities in Germany have adopted it. Some recent work with it at the prison at Moabit, in Berlin, has been encouraging, and now it is announced that the police departments of most of the south German towns are about to adopt it, Munich, Nurnberg, Regensburg, Augsburg and Wurzburg having already made the necessary arrangements for its introduction.—*Phila. Medical Journal*.

Hematomyelia from Gunshot Wounds of the Spine.—Cushing (*American Journal of Medical Sciences*, June), reports cases in which the missile lodged in the centrum of a vertebra without direct injury to the chord, but producing symptoms of hemileision; both cases illustrate unusual features of a type of the Brown-Sequard paralysis, the value of the X-ray in locating the missiles without operative interference, etc. There was a degeneration of the pyramidal tract, leaving paralysis in the lower extremities, and in one case involvement of ventral horn ganglia of the cervical enlargement has resulted in trophic changes with atrophy of some muscles. He concludes that paralytic symptoms which follow injuries to the cervical region are generally due to hemorrhage in the substance of the corde and that this hemorrhage is a predilection to a site in the lower part of the cervical enlargement. The hemorrhage, as a rule, occurs primarily on one side and leads to the Brown-Sequard type of paralysis. Hemorrhage also leads to cyst formations in many cases, producing symptoms quite like those of syringomyelia. Prognosis is good when uncomplicated by sepsis.

Master not Obligated to Furnish Medical Attendance.—There are authorities, such as decisions in Illinois and Indiana, holding that where there is an extreme emergency, and an injury has been received by an employe of a corporation, it is within the authority of an agent of the employer, highest in authority at the time and place where the injury occurred, to bind the company by a contract to pay a physician for services rendered to the injured servant. But the supreme court of Colorado says that it is cited to no case and finds none, where it is held to be the duty of an employer in the absence of contract, to furnish medical service and to send to a hospital a servant injured while in the service. If by analogy to the cases just referred to, it can be said that such a duty ever exists independent of contract, which it reiterates is not the law, the court goes on to say it is only in a case of great emergency, and where it is imperative to save life or prevent great harm. The mere fact that an injury was inflicted requiring medical or surgical treatment, or that the locality where it was received was remote from the place where such treatment was accessible, the court declares in *Denver & Rio Grande Railroad Company vs. Iles*, March 21, 1898, does not make it negligence on the part of the employer if the latter declines a request from the injured servant to be permitted to seek treatment, or does not obtain for the servant, or aid him in obtaining the same. The general rule deduced is that in the absence of contract, a master is not obliged to furnish medical attendance to a servant who is injured in the performance of his duty.

The Physician of Napoleon Bonaparte.—"Few students of Napoleonic history," says the *London Chronicle*, "are aware that Dr. Antommarchi, who attended upon Napoleon I during his last illness at St. Helena, is buried in the cemetery at Santiago de Cuba. He had a brother living in that island, and after the Emperor's death proceeded thither and lived at Santiago, exercising his skill as an oculist gratuitously among the poor. After his death in 1825 a public monument was erected to his memory in the local cemetery." This Francesco Antommarchi, like Napoleon, a Corsican, according to "Chambers' Encyclopædia," did not publish "Les Derniers Moments de Napoleon" until 1826. He emigrated to America about 1836 and died at San Antonia in Cuba, April 3, 1838. He seemed possessed of a disputatious turn of mind and the last quoted authority somewhat sarcastically hints that his celebrity was based entirely upon his intimacy with the great emperor during exile, at whose death he became a beneficiary to the extent of about 100,000 francs.

Professorship Not in Nature of an Office.—People vs. New York Post-Graduate Medical School and Hospital is the title of a case in which application was made for a writ of mandamus, based upon the notion that the position of a professor in the defendant college is in the nature of an office, and that it is in the province of a mandamus to reinduct a person into that office and keep him there. But the first appellate division of the supreme court of New York pronounces this, May 6, 1898, an erroneous view, both of the professor's true position and of the office of the writ. It says that the college is a private corporation, and its professors and instructors are simply professional men appointed to serve the institution in a particular manner. They either hold contract or honorary relations with the college; but which was not clearly disclosed in this case. If the former, the court says, a professor wrongfully removed can sue for his salary, or for any other emolument to which he is entitled. If, however, the relation is honorary, its continuance or discontinuance must be mutually optional.

Tinea Tonsurans.—Sheffield, in the *New York Medical Journal* of May 14, presents a method by which he claims severe cases of ring-worm of the scalp can be cured within three to six weeks. He clips the hair close to the scalp and applies once a day for five successive days over the entire scalp, but more thickly over the affected spots, the following ointment:

R	Acidi carbol.	} āā	65	0
	Olei petrolei.			
	Tinct. iodini.	} āā	110	0
	Olei ricini.			
	Olei rusci (German), q. s. ad.		500	0

On the sixth day he wipes this off with a rag dipped in olive oil, again clips the hair, washes the scalp thoroughly but gently with green soap and a soft nail brush. The next day he applies the mixture as thickly as before, and repeats the whole process regularly for three or four successive weeks, depending on the severity of the case, when it is found that new hair begins to grow and no trichophyton fungi can be found in the hair microscopically. For a few days he then applies a 10 per cent. sulphur ointment and then for about two weeks as follows:

R	Resorcini	} āā	16	0
	Acidi salicyl.			
	Alcoholis		120	0
	Olei ricini, q. s. ad.		500	0

Splenectomy.—Vanverts concludes, from a study of 279 cases, including thirteen never before published, that the removal of the spleen is never in itself fatal. The circulation is not materially affected when a sound spleen is removed, but very much enlarged organs which sometimes contain as much as liters of blood, naturally affect the circulation more. He notes the fact that after ligation of the splenic vessels there is occasion-

ally a sudden violent hemorrhage through the vessels of the wound. After removal of the spleen the red corpuscles and hemoglobin decrease and the white corpuscles increase in number, but these alterations are of varying intensity and duration, from a few days to months. The mortality in 242 cases was 102, or 41.7 per cent.; splenectomy on account of injuries, 18 with 10 deaths; abscess, 4 with 1 death; cysts, 18 with 3 deaths; hypertrophy from leukemia, 29 with 26 deaths; from malaria, 79 with 23 deaths; from other causes, 94 with 38 deaths. Vanverts' thesis is a comprehensive and valuable review of the subject, according to the *Cbl. f. Chir.* of June 11. Henricius describes in the same issue a fibrosarcoma that weighed 3500 grams, starting in the capsule of the spleen, the first of the kind on record. Splenectomy was not performed. The tumor recurred even after a second extirpation, terminating fatally.

Treatment of Leprosy in the Fijl Islands.—Prof. L. Lewin has been investigating the peculiar properties of the tree with which the Fiji islanders cure leprosy, according to the accounts of the missionaries. He recommends further research in regard to what may prove a valuable acquisition to our therapeutics, administered in a less barbarous fashion. The person affected with leprosy is placed in a small hut and rubbed down with the fresh leaves of the *excoecaria agallocha*, or poison milk tree. His body is then covered with the leaves, his hands and feet tied and he is dragged to a small fire made of boughs of the tree, his head in the midst of the heavy black smoke, about fifteen inches from the floor. The friends then retire and close the door, unmoved by the cries and appeals of the victim, who is left in this smudge for several hours, when he is removed and the skin scraped, and scratched in various places deep enough to draw blood, when he is left to rest. Some die, but those that survive are cured of the leprosy. The essential points are the heat, the long-continued action of the milky sap and its melted products, and possibly the scarifications. The tree is known throughout the Pacific as very poisonous, causing blindness if any of the sap gets into the eyes. One or two drops will purge like croton oil (*Deutsche Med. Woch.*, May 26). The *Cronica Méd. de Filipinas* mentions that the natives dip strands of cotton in the sap and dry them, soaking a strand in a glass of water, which they drink when a powerful purge is desired.

Medical Examination of Plaintiff as New Question in Kentucky.—The question whether a plaintiff in an action for damages for permanent injuries to his person may be required to submit to medical examination has, as readers of the *JOURNAL* know, received considerable attention in some of the states. But the court of appeals of Kentucky says, in *Belt Electric Line Company vs. Allen*, Jan. 11, 1898, that it does not appear to have heretofore arisen in that state. And while the decisions are not entirely uniform on the subject, it thinks that the weight of authority, which it seems disposed to follow, is that such physical examination may be demanded in cases where discovery of the truth will more likely result with, than without the examination, and the ends of justice be thereby better subserved. The conclusions which the various courts and some of the text writers have reached, it takes pains to summarize as these: 1, that trial courts have the power to order surgical examination by experts of the person of a plaintiff who is seeking to recover for personal injury; 2, that the defendant has no absolute right to have an order made to that end, but that a motion therefor is addressed to the sound discretion of the court; 3, that the exercise of that discretion will be reviewed on appeal and corrected in case of abuse; 4, that the examination should be ordered and had under the direction and control of the court, whenever it fairly appears that the ends of justice require the disclosure or more certain ascertainment of facts which can only be brought to light or

fully elucidated by such an examination, and that the examination may be made without danger to the plaintiff's life or health, and without the infliction of serious pain; 5, that the refusal of a motion, when the circumstances present a reasonably clear case for examination under the rules stated, is such an abuse of the discretion lodged in the trial court as will demand a reversal of a judgment in the plaintiff's favor.

The Question of Non-bacterial Immunity has been neglected, and yet possibly the solution of many problems may be bound up in it. Why are frogs unaffected by snake poison? why is digitalis harmless for rabbits; atropin and cicuta for goats? As a contribution to the question Prof. A. Horvath of Kasan has been investigating, and confirms the peculiar immunity of the hedgehog to cantharides. He publishes a number of tests in which freshly captured hedgehogs were fed with the fresh cantharides, which were greedily eaten without the slightest disturbance except a slight, transient loss of weight, possibly to be ascribed to the confinement. Sometimes as much as 120 flies or 30 grams were taken at a time, and the animals disposed of enough cantharides during the tests to have exterminated a regiment of soldiers, without being injuriously affected in any way. The flies were found in the dejecta in minute fragments (*Deutsche Med. Woch.*, June 26). This peculiar immunity is confirmed by Professor Lewin, who also states that the animal resists the action of opium, hydrocyanic acid and alcohol very much longer than others before showing the effects of intoxication. But it succumbs to large amounts of cantharidin administered subcutaneously or per os, and cantharidin produces an inflammatory reaction in the skin, as in other animals. He also states that neither the blood nor the serum of cantharidinized hedgehogs protects other animals against the poison, which recalls the relative immunity of birds to strychnin, and the impossibility of transferring this immunity by injecting other animals with their serum. He considers it probable that the hedgehog's tissues merely possess a higher coefficient of resisting power than others.

Against Experimenting with Instruments.—The supreme court of Wisconsin has heretofore held that, in an action for personal injuries, the court may, in a proper case, at the trial, direct the plaintiff to submit to a personal examination by physicians on behalf of the defendant. But it holds, in the case of O'Brien vs. the city of LaCrosse, May 3, 1898, that it was not only not an abuse of discretion to refuse, but would have been an abuse of discretion to force the plaintiff to submit to an experiment with instruments under the circumstances. This was an action brought to recover damages for a personal injury sustained by reason of a plank in an alleged defective sidewalk flying up and striking the plaintiff across the abdomen, and throwing her down and permanently injuring her bladder, or muscles connected with her bladder. After submitting to one examination, by the defendant's physicians, which was full and complete, except that the plaintiff, under the advice of her physicians, refused to permit the introduction of a catheter into her bladder, for the reason that it would endanger her health, it was insisted that the court should compel her to submit to a further examination by physicians on the part of the defendant, to ascertain the exact nature of her injuries, and how long they had existed, which the trial court refused to do, and the supreme court upholds it in not doing, as above stated. The supreme court says it seems that courts differ widely as to the absolute right to a personal examination, in the absence of statute, by physicians or experts of the opposite party. Some courts deny the right altogether. Some hold that an absolute right to such examination exists at common law. Such differences of opinion, it suggests, may be accounted for in part by the difference in the circumstances under which such examinations were requested. The better opinion, it thinks, makes the right, in the absence of statute, to rest in the sound discretion of the trial court.

Yellow Journalism Rebuked.—The following letter concerning the prurient proneness to criticise the Medical Department of the Army without due regard to the facts, is self-explanatory. This JOURNAL has been fair in the matter. Its columns have been open, but it has excluded much carping criticism, but Wm. Wood and Company's medical journal has lost no opportunity to hamper the Medical Department of the Army and cripple its usefulness by publishing "yellow" articles, while the gallant medical corps are fighting the enemy in the field. This is another unfortunate exhibition of that sort of "enterprising" which has made this publisher's organ such a notorious example of all that is worst in medical journalism. It is peculiarly fitting that in the same article to which exception is taken by the Surgeon-General, a fulsome compliment is handed a sanitary officer, whose official course has been repudiated by the principal sanitary organizations of this country.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, D. C., Aug. 1, 1898.

To the Editor of the *Medical Record*, New York, N. Y.:—Sir—It is a matter of great surprise to me that a leading medical journal should condemn the Medical Department of the Army, without a hearing, upon the reports of newspaper correspondents. I regret that the pressure of official duties makes it impossible for me at present to make a full reply to these strictures. I will, however, take time to state a few facts.

The number of medical officers allowed by law is inadequate in times of peace. The total number allowed is one hundred and ninety-two (192). There are at present thirteen (13) vacancies. The administration of the Surgeon-General's Office and Army Medical Museum requires six (6). Eleven (11) are on duty at medical supply depots and as chief surgeons of military departments. One (1) is at the Soldiers' Home; fifty-six (56) at general hospitals, on hospital ships and at garrisoned posts. Four (4) have been disabled during the war by sickness. Five (5) are on duty as chief surgeons of army corps. This leaves ninety-six (96) medical officers available for duty with the troops in the field. Of these, thirty-five have been appointed brigade surgeons of volunteers and are distributed among the various army corps.

This deficiency in regular medical officers has made it necessary to employ nearly three hundred contract surgeons, and more are being employed every day. Most of these doctors from civil life are doing good service and many of them are thoroughly well equipped physicians and surgeons with ample hospital experience; but it has been impossible to make a careful selection owing to the great pressure of business in the Surgeon-General's Office, and the urgency has been so great that it has not been practicable to have Examining Boards to pass upon their qualifications.

General Shafter's Army at Tampa was thoroughly well supplied with the necessary medicines, dressings, etc., for field service, but owing to insufficient transportation he left behind at Tampa his reserve medical supplies and Ambulance Corps. Every one who has read the papers knows about the difficulties encountered in landing supplies at Siboney. As is usual under such circumstances, the fighting men with their guns and the rations necessary for their subsistence were first landed and hurried to the front. The *Relief*, loaded to her utmost capacity with medical supplies, arrived at Siboney four days after the fight at El Caney. That she was not able to get there sooner was a great disappointment to me, but was no fault of the Medical Department. I asked for a hospital ship in good time but there was unavoidable delay in securing a suitable vessel and in preparing her for service.

It has not been the expectation of the Medical Department that every wounded man would immediately receive the attention of a surgeon. No modern army makes provision for so large a number of medical officers as this would require. But attached to our Army there is a Corps of noncombatants known as the Hospital Corps, which is the organized and authorized Red Cross Corps of the Army. At the outbreak of the war we had 800 Hospital Corps men in service. At present there are more than 4000. These men wear a brassard upon the left arm bearing the Red Cross of the Geneva Convention. We have done our best to instruct them in giving first aid to the wounded, and in a majority of cases a first aid dressing properly applied by one of these men is all that is required. All of the surgeons who have come from the front have testified to the remarkable results attained from the prompt application of aseptic dressings by our Hospital Corps men and by the soldiers themselves or their comrades. The proper application of the dressings contained in the first aid packet, which is carried by every

soldier, is, under existing regulations, a matter in which every enlisted man has special instruction. For some time past this instruction has been given first by our medical officers to the company officers, and by them to the enlisted men.

My position with reference to the inadvisability of sending female nurses to our camps of instruction, or with our armies in the field, has given great offense to some members of the Red Cross Society, and it is evident that the unjust attacks made upon me and upon the Medical Department of the Army result largely from the stand I have taken in this matter. I have gladly accepted the assistance offered us in the way of delicacies for the sick, etc., and we have now a large number of trained female nurses on duty at our general hospitals, where they are giving great satisfaction, but I see no reason to change my views with reference to the sending of female nurses with our troops in the field. They are an incumbrance to an army mobilized for active operations. This objection does not apply to the sending of immune female nurses for service in our yellow fever hospitals near Santiago; and I have already sent nearly one hundred.

The first aid dressing is to be put on at or near the firing line, and the men have usually to be transported to the field hospitals on litters. In this age of aseptic and conservative surgery comparatively little operating is required, and our regular force is ample to attend to this. Moreover, we have men selected for their experience and skill to decide whether operations are necessary and to perform them. I have never objected to the surgeons and ambulances of the Red Cross Society going to the field for the purpose of rendering any necessary assistance, but, in my opinion, they should be independent as regards transportation and should not call upon the Government for assistance in getting to the field of operations. The editor of the *Medical Record* knows that when he, in company with other prominent gentlemen from New York, called upon me in my office to offer the assistance of this organization, I said that an emergency might arise in which such assistance would be most welcome, and suggested the despatch of a hospital ship to the seat of active operations. If there has been any failure to get necessary supplies to Cuba it has been because of the difficulty of securing adequate transportation and of landing supplies through the surf; but we have been constantly importuned to transport Red Cross agents and female nurses to the front. I am informed that many of these so-called nurses had never received any special training to fit them for the duties they were so eager to undertake. The National Red Cross Society should have been entirely independent of Government transportation if it expected to fulfil its proper function of affording aid to the wounded of both armies, in accordance with the terms of the Geneva Convention.

As regards the *Seneca*, I am informed by Major Torney, in charge of the Hospital Ship *Relief*, that he transferred forty-two (42) wounded men, most of whom were entirely able to take care of themselves, from the *Relief* to the *Seneca*, because at that time it was expected that our troops would storm Santiago, and that a large number of wounded would be sent to the Hospital Ship for treatment. For the same reason a certain number of convalescents were sent from the shore hospital. Two acting assistant surgeons were sent on board with a supply of the most necessary medicines and dressings. If the ship was overcrowded or inadequately supplied with water, knives and forks, etc., the Medical Department is in no way responsible.

Finally, I would say that when the medical officers now at the front return home, I expect to have full information with reference to the efficiency of the medical service in the vicinity of Santiago, and in the meantime I hope that the profession at large will not be so ready to draw inferences unfavorable to the Medical Department of the Army on the basis of reports published in the daily papers, as the editor of the *Medical Record* has been. Very respectfully,

(Signed) GEO. M. STERNBERG,
Surgeon-General, U. S. Army.

A Heavy Rise.—The *Medical Record* says it has every belief that "Surgeon-General" W—n "will rise to his opportunities." No reason is given for this wild flight of imagination on the part of the *Record*, and the general judgment of the American Public Health Association, the AMERICAN MEDICAL ASSOCIATION, the Kentucky State Board of Health, as expressed in recent resolutions, is to the effect that a very considerable adipose dead weight will have to be removed before this picturesque person can either "rise" very high or fly very far. However, we shall watch this highly diverting and fuga-

cious performance on the part of the *Record's* heavy-weight with interest.

Hysterical Blackmail.—What was aptly described as "one of the perils of medical life," by the preceding magistrate at a London police court, is an illustration of the difficulties which sometimes beset the medical practitioner in the discharge of his duties. Mr. A., a surgeon, was brought to the court on a warrant, charged with committing a criminal assault on a Mrs. B. The solicitor who had been instructed to prosecute said that since the case had been put into his hands he had examined the witnesses for the prosecution and, in his judgment, the evidence did not support the charge. The statement of prosecutrix was not corroborated in important points. Mr. Jones, to whom Mr. A. acted as assistant, was called and he stated that he found the prosecutrix suffering from hysteria, and that Mr. A. had only done what was quite right in enforcing the administration of a soothing draught. The judge decided that Mr. A. was entirely and completely exonerated, stating that such cases frequently occurred, and expressing sympathy with any gentleman subjected to such a charge as this. A favorable ending to an unfounded charge of so serious a nature hardly compensates for the perils the medical man is exposed to in dealing with a certain class of patients, but it affords an example of the annoyance and risks which constitute one of "the dangers of medical life."

Surgical Experiences in the Late Frontier War of Northern India.—The *Indian Medical Record* gives the following interesting conclusions regarding the last important conflict in which the English have been engaged: "The surgical emergencies of the struggle were immense, and the demands on the operative skill of the Army Medical Staff were equally so. Capital operations of the severest type have been performed by the hundred on the battle-field and in the movable camps, and so perfect has been the equipment, and so harmoniously have the medical units fitted into every emergency, that there has not been a single hitch during the whole campaign. The sick and wounded have been attended to admirably, and the results of the surgical work on the field have been brilliantly successful. Every case of amputation of limbs has proved a success. Not a single septic difficulty has been found in the whole history of the campaign. These facts speak volumes to the credit of our medical staff and to their hard-working local staff, the Military Assistant Surgeons. We understand that the great French military medical expert, who was deputed to observe and to criticise the working of the British system of military medical equipment in India, and who has seen the whole scheme in active order on the frontier, has pronounced the most favorable opinions on our army medical organization. It is, he says, infinitely superior to anything else in the world. The opinion has been fully endorsed by a Japanese expert also. Unquestionably, the Army Medical Staff has fully vindicated its professional honor in such a manner as to silence the hostile and envious criticisms of the authorities at the War Office, who so grudgingly concede the pressing reforms of which this excellent service stands so much in need."

Calisson Disease at the Gouverneur Hospital, New York City.—The first symptoms of that disease resemble those of apoplexy. In one case a man came into the hospital with every symptom of having had an apoplectic stroke. He was unconscious, the pupil of his eyes were unequally distended, his respiration was stertorous. He remained unconscious for fifteen minutes and then recovered only partially. When he did recover there was anesthesia extending all through the lower half of his body. This is a symptom usually betokening spinal trouble. For short periods he became utterly unconscious. During the time he was conscious he seemed to be perfectly rational. I questioned him and found that he remembered nothing whatever that had happened since he had been attacked by the dis-

case half an hour after he left the caisson. After he died we had an autopsy, and about the only thing we gained from it was that there had been a hemorrhage into the heart muscles. The cases vary in their symptomatology. In one case a patient's right arm became absolutely rigid in such a position that the hand was bent back near the chin. Meantime his left arm was working in spasmodic convulsions that could not be controlled. The common symptom is that of intense pain at the ears. Treatment here is to administer stimulants and to induce perspiration as copiously as may be. In most cases this works very well. On the Brooklyn side, where similar work is being done, the workmen undertake to treat one another by plunging the affected man into a hot bath. It is their ignorant way of applying the same remedy that we do here; but the depressing effect of a hot bath is a danger for the men in the state in which victims of caisson disease are usually found to be when they are picked up. The theory of the disease is that the air-pressure in the caisson prevents the system from throwing off the injurious gases of the body, particularly the nitrogenous compound. The pressure prevents the various organs of the body from discharging their functions toward one another, and congestion, with the symptoms of paralysis, results. Engineer Washington A. Roebling was obliged to give up his work on the Brooklyn Bridge for a long time, because of an attack of caisson disease and that his life was endangered by it. Three hundred or more men are employed from time to time in the caissons at the foot of Delancy Street, and they have been twenty-five or thirty applications for treatment at the hospital since the work began.

Part of Physician's Account Outlawed.—A physician sued to recover for services rendered during a term of years, some of the items of his account being more than six years old, for which reason it was contended that they were barred by the New York statute of limitations. No one tried to make out that the account between the parties was a mutual, open, and current account, so that the earlier items would be carried along by the later, as is true of some classes of accounts, but the physician insisted that the account was continued by reason of certain payments made on it. But, on that point, the fourth appellate division of the supreme court of New York decides against him; *Burdick vs. Hicks*, May 7, 1898. When it was shown that the account had run for more than six years, the court says, the burden was upon the physician suing to show that the case was accepted from the statutory bar, which he failed satisfactorily to do. The legal effect of a payment upon an account which has run for more than six years (the New York limit) is that of a new promise to pay an old debt, and the promise revives the old debt. Yet such a promise should be made with a clear and explicit understanding of the true condition of the account; and, where a creditor relies upon such a payment to take an account out of the statute of limitations, it is incumbent upon him to show that the payment was made with a clear understanding on the part of the debtor that there was a balance still remaining unpaid after such payment. The fatal weakness of this case was that the evidence afforded no ground for assuming any admission on the patient's part, or for inferring a new promise made by her to pay the balance of the debt; for the reason that there was nothing to show that, at any time when payments were made, she knew that there was a balance remaining unpaid, or that there still continued an obligation or debt in favor of the physician against her.

Avian Surgery.—Some interesting observations relating to the surgical treatment of wounds by birds were recently brought before a Genevan society by Professor Fabio. The author quotes the case of the snipe, which he had often observed engaged in repairing damages. With its beak and feathers it makes a very creditable dressing, applying plasters to the bleeding wounds, and even securing a broken limb by means

of stout ligature. On one occasion he killed a snipe which had on its chest a large dressing composed of down, taken from other parts of the body and securely fixed to the wound by the coagulated blood. Twice he had brought home snipe with interwoven feathers strapped on to the side of fractures of one or other limb. The most interesting example was that of a snipe, both of whose legs he had unfortunately broken by a misdirected shot. He recovered the animal only on the following day, and he then found that the poor bird had contrived to apply dressings and a sort of splint to both limbs. In carrying out this operation some feathers had become entangled around the beak, and not being able to use its claws to get rid of them, it was almost dead from hunger when discovered. In a case recorded by M. Magner, a snipe which was observed to fly away with a broken leg, was subsequently found to have forced the fragments into a parallel position, the upper fragments reaching to the knee, and secured them there by means of a strong band of feathers and moss intermingled. The observers were particularly struck by the application of a ligature of a kind of flat-leaved grass wound round the limb, of a spiral form, and fixed by means of a sort of glue.

Louisville.

OSTEOPATHY.—A suit has just been filed against the State Board of Health, by Harry Nelson, a graduate of the "American School of Osteopathy of Kirksville, Mo.," asking that its members be restrained from pursuing him criminally, or setting on foot any criminal proceeding against him, or in any other manner interfering with or molesting him in his profession. He also asks for a writ of mandamus compelling the State Board of Health to recognize and endorse the American College of Osteopathy "to the end that his diploma therefrom may entitle him to a certificate to practice his profession." The decision will be watched for with great interest, as it is the final card played by this "school" to gain recognition at the hands of the State Board of Health. At the last session of the Legislature it was decided that the osteopaths must pass an examination before they be granted a certificate, and as just recorded in these columns only one woman presented herself upon call of the Secretary of the Board to pass the examination. The plaintiff in this case states that the school and the system in which he practices is a perfected one, and has the recognition of law in a number of States. He understands that the State Board is preparing to prosecute him under and by authority of the act on "Empiricism," which act he alleges is in violation of the bill of rights.

FINES.—The following physicians were fined in the ordinance court, \$10 each, for not having paid their physician's license: Drs. M. Thum, F. F. Berry and Miles Willett.

LOUISVILLE MEDICAL COLLEGE.—The announcement of the reorganization of this college has just been made, as follows: Dr. C. W. Kelly, Dean and Professor of Anatomy and Clinical Medicine; Dr. Geo. M. Warner, Secretary and Professor of *Materia Medica* and Diseases of Children; Dr. H. B. Ritter, Professor of Obstetrics and Hygiene; Dr. A. M. Cartledge, Professor of Gynecology and Abdominal Surgery; Dr. William Cheatham, Professor of Ophthalmology, Otology and Laryngology; Dr. Jno. G. Cecil, Professor of Theory and Practice of Medicine and Nervous Diseases; Dr. W. C. Dugan, Professor of Surgery and Clinical Surgery; Dr. Adolph Pfnigst, Professor of Physiology and Histology; Dr. Harrie Kelly, Professor of Chemistry and Toxicology; Dr. Fouché Samuels, Professor of Practice of Surgery and Operative Surgery.

HEALTH OFFICERS' REPORT.—There were 56 deaths for the past week, with 48 the corresponding week of last year. Thirty-five of these were white and 21 colored.

Philadelphia.

PROF. JOHN GUITÉRAS WILL REMAIN IN CUBA FOR THE PRESENT.—A false rumor to the effect that Dr. Guitéras was soon to return to Philadelphia has been set at rest by the statement

recently made by Senor Dominguez, who is at present making his home at Dr. Guitéras' residence in Philadelphia. Senor Dominguez said that the report had been denied by Surgeon-General Sternberg and by Dr. Guitéras. In a private letter received recently he reported the outbreak of yellow fever among the United States troops, but stated that the epidemic was very mild and that the troops of our country would not suffer much. It is well known that as a diagnostician in cases of yellow fever Dr. Guitéras has no superior, but as to executive work he has little taste or inclination for it.

NO YELLOW FEVER FOUND.—On July 20, Governor Hastings had a conference with Dr. Benjamin Lee, city health officer of Philadelphia and secretary of the State Board of Health, relative to precautionary measures in preventing the invasion of yellow fever into the State of Pennsylvania and especially through the port of Philadelphia. It is known that boats from Cuba frequently land here, and the regions around the wharves would be fertile soil for the development of this scourge. The health authorities have therefore been up and doing, and a house-to-house inspection has been or will be made. The work was divided into two sections, Medical Inspector Taylor with fifteen assistants looking after all the houses south of Market and east of Third, while Nuisance Inspector Kennedy and twenty assistants will attend to the section north of Market Street. Dr. J. Howard Taylor recently said: "We have determined to institute this investigation in order to prevent the disease getting into this city. We do not expect it here, and the precaution is taken simply as the result of many years of experience in the regulation of health matters. If a disease, no matter how easy it may be to control, gets the start of the authorities, it will reach such proportions that the ultimate result can not be conceived of; but if it is broken at the start we can so regulate it that it will not get beyond control. That is the intention with regard to yellow fever. I want to say most emphatically that we do not anticipate an outbreak, we do not even expect one case, but we will have this inspection and observe every precaution in order to insure immunity from the disease. How we are to guard against fever victims coming in by train is difficult to determine, and if the disease does get into the city it will in all probability be by means of railroads." It is stated that should a contagious disease be found the house will be quarantined, thoroughly disinfected, and the patient sent immediately to the municipal hospital.

MORTALITY STATISTICS.—For the week ending July 23, there have been reported to the Bureau of Health 523 deaths, an increase of 30 over last week and of 48 over the same period of last year; 214 deaths were in children under five years of age. The following were some of the causes: Bright's disease, 8; cholera infantum, 86; cholera morbus, 7; tuberculosis, 46; inanition, 11; marasmus, 21; sunstroke, 10; teething, 2; uremia, 7; heart disease, 3; appendicitis, 3; peritonitis, 6; cancer, 14; dysentery, 4.

INFECTIOUS DISEASES.—This week: Diphtheria, 16 deaths and 46 cases; scarlet fever, 1 death and 25 cases; typhoid fever, 6 deaths and 70 cases. Last week: Diphtheria, 14 deaths, 73 cases; scarlet fever, 27 cases; typhoid fever, 5 deaths, 50 cases.

RED CROSS AMBULANCE.—Some time ago the Red Cross Society of this city appealed to the charitably disposed for funds necessary for an ambulance and equipments for the soldiers in Cuba. The ladies of the North Broad Street Presbyterian Church became interested in the work and quickly raised the necessary amount (\$275) besides a full set of harness. Dr. De Forrest Willard was appointed by the Red Cross to receive the ambulance on July 26.

A CASE OF MEDICO-LEGAL INTEREST.—On July 4, Coligny Scheer, a lad 14 years of age, living at 2404 North Sixth Street, received a wound from the accidental discharge of a pistol. A few days later lockjaw set in, from the effects of which the patient died. At the inquest it was learned that on June 19

the patient accidentally had a nail thrust into his foot, and the facts not being plain to the coroner as to which wound gave rise to tetanus, the case has been submitted to physicians for a correct decision.

CASES OF BERIBERI.—A few days ago seven foreign sailors with beriberi arrived from Probolinggo, one of the Bermuda Isles, on the German bark *Steinbeck*. All the patients were taken to the German Hospital, where at last accounts they were doing well.

CHANGE OF ADDRESS.

Austin J. H., from 912 Walnut Street to Commerce Building, Kansas City, Mo.
 Bartholomew, H. B., from 1468 S. Pearl Street to 104 Broadway, Denver, Colo.
 Blake, J. D., from 602 S. Paea Street to 1014 W. LaFayette Avenue, Baltimore, Md.
 Bell, S. H., from Jackson Bldg. to Ferguson Bldg., Denver, Colo.
 Babcock, H. L., from Findlay to 660 Stocking Avenue, Toledo, Ohio.
 Fenelon, M. P., from Chicago, Ill., to Ripon, Wis.
 Getzlaff, from St. Peter, Ill., to Grand Haven, Mich.
 Hodson, F. A., from Denver to Florence, Colo.
 Kindig, F. E., from 2139 Wabash Avenue to 100 E. Twenty-second Street, Chicago, Ill.
 Klasen, J. P., from 1462 Wabash to 1415 Michigan, Chicago, Ill.
 McElfresh, C. H., from 1417 Bremen Avenue to 437 N. Broadway, St. Louis, Mo.
 McAllister, A. M., from 2045 Chestnut to 3626 Hamilton, Philadelphia, Pa.
 McKleeven, F. G., from 219 S. Grant Avenue to 103 Byers Street, Denver, Colo.
 Nihlack, E. S., from 502 Lafayette Avenue to corner 7th and Elm, Terre Haute, Ind.
 Palmer, G. T., from Alton to Poplar Grove, Ill.
 Palmer, T. D., from 1705 Lawrence Street to Steele Block, Denver, Colo.
 Page, J. F., from New York, N. Y., to Paxton, Ill.
 Post, M. H., from St. Louis, Mo., to The Moorlands Hotel, Gloucester, Mass.
 Perkins, D. S., from Cleveland, Ohio, to Chase, Colo.
 Prather, D. J., from Oakland to Sacramento, Cal.
 Porter, I. W., from Mobile, Ala., to Atlanta, Ga. Box 100.
 Peavey, J. L., from 314 McPhee to 1253 Sherman Avenue, Denver, Colo.
 Rogers, O. L., from Milledgeville to Sandersville, Ga.
 Rimkel, A. E., from Jefferson to Chambers and Hopkins Streets, Milwaukee, Wis.
 Rogers, B. W., from Oakland, Cal., to 55 33d Street, Chicago, Ill.
 Robertson, J. J., from Little Rock to Wynne, Ark.
 Sampson, J. H., from 6th and Felix to Corby Bldg., St. Joseph, Mo.
 Snitker, H. C., from 801 14th Street to 907 17th Street, Denver, Colo.
 Tombaugh, L. H., from Three Rivers, Mich., to Sheridan, Ill.
 Tyler, J. A., from 423 E. Long Street to 288 N. Champion Avenue, Columbus, Ohio.
 Van Slyke, W. H., from Calumet to Opechee, Mich.
 Willey, W. B., from Davenport to Bennett, Iowa.
 Wood, E. M., from Steele Block to Box 644, Denver, Colo.
 York, F. A., from 709 28th Street to 1109 E. Alameda Avenue, Denver, Colo.

LETTERS RECEIVED.

American Therapeutic Co., New York, N. Y.; Alden, W., Roxbury, Mass.; Adams, C. B., Vanceburg, Ky.; Ashmun, G. C., Cleveland, Ohio.
 Bansch & Lomb Optical Co., Rochester, N. Y.; Bond, R. L., Hartshorne, I. T.; Berteling, J. B., South Bend, Ind.; Bell, O. G., Norwich, N. Y.
 Caldwell, J. J., Baltimore, Md.
 Dewar, J. B., Cedar Springs, Mich.; Dagny, T. F., Philadelphia, Pa.; Dupont, R. S., Detroit, Mich.
 Evans, D. W., Dell Rapids, S. D.; Eggart, X. C., Chicago, Ill.; Ernst, Mrs. C., Toledo, Ohio; Elliott, A. V., Beresford, S. D.; Edes, Robert T., Jamaica Plain, Mass.; Estep, T. L., Stratford, N. C.; Elliott, H. G., (2) New York, N. Y.; Etheridge, J. H., Chicago, Ill.
 Finley, F. W., Red Ash, Ky.; Fordyce, W. E., Washington, Iowa; Fite, C. C., New York, N. Y.
 Gibbert, J. B., Dallas, Texas; Gould, George M., Philadelphia, Pa.; Garey, J. H., Wilsey, Kas.
 Hummel Adv. Agency, A. L., New York, N. Y.; Herrick, A. B., Santa Rosa, Cal.; Hoagland, George A., St. Louis, Mo.; Hodges, J. Allison, Richmond, Va.
 Jackson Sanitarium, Dansville, N. Y.; Johnson, J. C., New York, N. Y.; Jordan, L. H., Mt. Jackson, Va.; Joslyn, Henry, Denver, Colo.
 Kellogg, J. H., Battle Creek, Mich.; Keller, J. W., Hot Springs, Ark.; Kieffer, A. E., St. Louis, Mo.
 Livingston, G. M., Kalamazoo, Mich.; Lucaet, T., Milwaukee, Wis.; Levy, R., Denver, Colo.; Lehn & Fink, New York, N. Y.; Leffingwell, W. E., Watkins, N. Y.; Lange, Etta, Dayton, Ohio.
 Martin, Franklin H., Chicago, Ill.; Matthews & Swartz, Pine Bluff, Ark.; Metz, A. L., New Orleans, La.; Marechal, Charles, New York, N. Y.; Massey, G. B., Philadelphia, Pa.; MacLennan, Donald, Tonga, Friendly Islands, Polynesia; Moore, C. R., Chicago, Ill.; Murphy, J. B., Chicago, Ill.; McKee, Mrs. N. A., Plymouth, Pa.; Mulford Company, H. K., Philadelphia, Pa.; Mooney, F. J., Old Forge, N. Y.
 Parke, Davis & Co., Detroit, Mich.; Prince, David, New York, N. Y.; Perkins, D. S., Cleveland, Ohio; Parker, E. F., Charleston, S. C.; Paul Paquin Laboratories, St. Louis, Mo.
 Rawlings, J. A., El Paso, Texas; Reed & Carrick, New York, N. Y.; Schameker, J. A., Cleveland, Ohio; Smith, D. G., Freeburg, Pa.; Smith, H. S., Ortonville, Mich.; Stell, George S., Paris, Texas; Spalding, W. C., New York, N. Y.; Sprague, W. B., Eureka Springs, Ark.; Schneider, A. J., Indianapolis, Ind.; Smith, W. O., New Castle, Pa.; Senn, Col. N., New York, N. Y.
 Townsend, W. R., New York, N. Y.; Tracy, J. L., Toledo, Ohio.
 University of Illinois, Champaign, Ill.; Unger, A. E., Dundee, Mich.
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The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, AUGUST 13, 1898.

No. 7.

ORIGINAL ARTICLES.

THE DIAGNOSIS AND SURGICAL TREATMENT OF MALIGNANT OBSTRUCTION OF THE PYLORUS.

WITH REPORT OF THREE PYLORECTOMIES AND FOUR GASTRO-ENTEROSTOMIES.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. W. MAYO, M.D.

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The stomach is undoubtedly the most common seat of carcinoma. Hartley, in a recent paper on "The Etiology of Tumors" before the New York Surgical Society, says that not less than 34.97 per cent. of all carcinomata are to be found in the stomach, and points out clearly the relation between the chronic irritation to which the stomach is subjected, and the disease.

Gussenbauer and Winiwarter estimate that more than 60 per cent. of stomach cancers are at the pylorus, and according to Bull, in more than one-half of these cases, the mechanical obstruction causes death before glandular infection takes place or the infiltration of neighboring structures is far advanced.

Senn, in his monumental work on "Tumors," says that the histologic structure of cancer of this organ mimics the tubular glands, while the character of the tumor is determined by the relative amount of epithelial cells to the stroma. This is well shown by the clinical history of the case. If the cell structure is in excess, the growth is active, ulcerates early, and glandular infection occurs so quickly that the diagnosis will seldom be made in time to be of value. In this class of cases, complete gastrectomy would be the only procedure indicated, as there will seldom be marked obstructive symptoms requiring gastro-enterostomy for relief. The successful case of Schlatter is hardly sufficient to give the operation a permanent position, nor can the curetting of the growth through a gastrotomy incision, as practiced by Bernays, be greatly commended as a palliative measure.

That variety of carcinoma of the pylorus in which the stroma is in excess, quickly produces obstructive symptoms which lead to a diagnosis, and the nature of the tumor does not favor early glandular infection. These growths are often annular in form, greatly resembling the carcinomatous stricture commonly met with in the colon. Rarely the infiltration may involve the whole of the stomach, without special contraction of the pylorus, the walls being of enormous thickness and the cavity small, the latter a point of diagnostic importance, as the great thickness of the stomach wall resembles that due to pyloric obstruction with consequent dilatation. Hektoen recently exhibited two marked specimens of general gastric

cancer before the Chicago Medical Society. The large fibrous stricture of the pylorus described by Greig Smith as probably non-malignant, greatly resembles general gastric carcinosis. Sections showing malignancy are difficult to obtain in both instances. Maylard, in speaking of this variety of obstruction, says that in the latter stages glandular infection takes place and the histologic structure of the adenopathy is typically carcinomatous.

The enormous hypertrophy of the walls of the pylorus may form a distinct tumor, and these cases have usually been treated by gastro-enterostomy, particularly by Doyen.

I have met with one well-marked example of this so-called large fibrous stricture of the pylorus which had well defined limits. If these cases are malignant, pylorotomy is indicated; this was the view I took of it and acted accordingly. Clinical experience will soon demonstrate the question as to whether they are cancerous or not.

Rokitansky long ago pointed out that extension of any form of stomach cancer to the duodenum seldom took place. Sutton describes an adenoma as a rather infrequent tumor of the pylorus, which may be obstructive in its nature and possibly become malignant. Sarcoma of this region is so rare as to be a pathologic curiosity, and need not bedwelt upon here.

The diagnosis of obstruction of the pylorus and resulting dilatation of the stomach is not difficult. Senn teaches us that when the fundus lies below the level of the umbilicus, there is pathologic dilatation unless gastroptosis is present. Inspection of the abdomen in marked cases will often reveal the outlines of the stomach, and if it be distended, succussion will produce splashing sounds. It is a simple expedient in the diagnosis of dilatation to pass a stomach tube and inflate the cavity with atmospheric air by means of a valve syringe, making its outlines evident, over-distension relieving itself around the tube.

The normal stomach, as shown by Haslam, is contracted, and its walls in apposition or in close contact with ingesta. The differential diagnosis as to the malignant or non-malignant character of the obstruction is often difficult and occasionally impossible without incision of the abdominal walls. The history is of the utmost importance. A long history and a slow indefinite course in the early stages is against cancer, and in the stenosis due to scar contraction, an early history of frequent painful vomiting, especially after taking food, and the other classic symptoms of previous ulceration, are often brought out.

In cancer the onset may be insidious, but is limited to a few weeks or months, rather than years. In the latter stages the vomiting of great quantities of partly digested food at intervals is indicative of the dilatation, but has little differential value as between malignant and non-malignant obstruction.

The presence or absence of a tumor has some sig-

nificance in connection with the history. In eleven cases of non-malignant obstruction, three had a well-marked tumor of the pylorus due to a thickened board-like scar, while in seven cases of cancer operated upon, in three no enlargement could be felt. A tumor with a short history, accompanied by a cachexia, which while not peculiar to cancer, is of such frequent occurrence as to be clinically called "cancerous cachexia," is of great diagnostic importance.

What shall be said as to the absence of free hydrochloric acid, or presence of lactic acid, in the differentiation? Dr. Christopher Graham has made systematic examination of such cases as have been admitted to St. Mary's Hospital for four years. In cancer, the absence of free hydrochloric acid has been the rule, but has occasionally been absent in the late stages of non-malignant obstruction. On the whole, the chemic tests have been disappointing. The presence or absence of lactic acid varied in the same case at different tests, while the iodid test for absorption and salol test for motor power added little to knowledge more reliably furnished by clinical methods in common use. The gastroscope and the gastrodiaphranoscope do not give encouraging results, even in the hands of their advocates. The X-ray adds little to the diagnosis, although, as shown by the cases of Meisenbach and others, it is of the greatest value if foreign bodies are contained in the stomach. After all, of what great value is the preliminary exact diagnosis in cases of marked pyloric obstruction, as, under any circumstances, surgical intervention is necessary, and the earlier it is instituted the better will be the results, and as Haslam says, it may be impossible with the growth in hand to tell a hard carcinoma from a fibrous stricture, or a beginning cancerous degeneration of the scar of former ulceration. Other things being equal, an early diagnostic incision, to be extended if feasible into therapeutic measures, should be the rule.

In seven cases of malignant disease, which I have explored, nothing further was done. In two of these cases great improvement followed, in one case lasting for a year. Tait, long ago, called attention to the good effect upon intra-abdominal malignant disease the mere incision of the peritoneum occasionally had.

Upon opening the abdomen the cancerous nature of the disease can usually be readily recognized by the enlarged tortuous vessels in the peritoneal covering, so different from the whitish scars of former ulceration. The nature of the so-called large fibrous stricture, upon which Loretta first performed his operation of digital divulsion is in doubt. Whether the exploration shall end as such or be converted into the first step of a pylorotomy or of a gastro-enterostomy, will depend upon the extent and character of the disease, the adhesions to surrounding viscera, and the condition of the glands.

The non-operative treatment consists of careful regulation of the diet and the use of bismuth, salol and gastro-intestinal antiseptics of this class to relieve the attendant catarrh. The late Dr. David Collins of Minnesota thought the internal administration of one grain of methyl blue, with three grains of powdered nutmeg after eating, was of great benefit. Ochsner, in hopeless cases, practices the routine use of the stomach tube twice a day for the removal of the unabsorbed remains of ingesta to prevent irritation.

There are but two operative procedures which can claim serious attention: pylorotomy, a radical opera-

tion based on the hope of a cure, and gastro-enterostomy, for palliative purposes.

Pylorotomy is not a popular operation, its great immediate mortality, 40 to 70 per cent., and the few cases which have survived the three-year time limit have been discouraging, but if it is a fact that 50 per cent. of pyloric obstruction cases die before systemic infection takes place, an early operation should give better results. Bernay takes the view that the operation is useless unless we take out the entire stomach, seeming to class it with cancer of the breast or uterus, yet in cancer of the colon, which appears often as a stricture and produces an obstruction, mechanical in its nature, he would hardly hold the analogy complete and advise the removal of the entire large bowel.

When the whole question is opened it would seem that the enormous mortality has really been the objection, and the only cases which have appeared to justify the risk, have passed beyond cure. Improvements in technique will soon remove much of this fear. Kocker has had seven recoveries out of nine cases; Pean eight recoveries out of twelve cases. One cause of the great mortality in the so-called Bilroth method was imperfect union and resulting leakage at the suture angle, that is, at the point where the narrowed stomach was fitted to the duodenum.

The performance of pylorotomy, and either side to end gastroduodenostomy or side to side gastrojejunostomy has remedied this weak point in the older technique and is now usually employed by the continental surgeons. Of these two later methods, gastroduodenostomy is the operation of choice, as one of the constant dangers of gastrojejunostomy is the so-called regurgitant vomiting, the bile and the pancreatic juices passing into the stomach through the fistulas opening, rather than along the intestinal tract. I quote in full from a paper which I read before the Minnesota Academy of Medicine, Feb. 2, 1898, and published in the *Medical Record* for June 11, 1898, a description of an operation for removing the pylorus and part of the stomach, which has been successfully employed by myself and my brother, Dr. C. H. Mayo, on three occasions.

These cases all recovered from the operation, and while now in good condition, sufficient time has not elapsed to speak of them as cured. The method of pylorotomy we have followed has been so speedy and satisfactory that I would like to call your attention to it. The ease with which any desired amount of stomach can be excised is especially noticeable; in one case the upper suture angle lying behind the left costal arch in close proximity to the cardiac orifice, passing obliquely downward and to the right more than six inches in length, making a sort of shovel nose to the amputated end.

I make no claim to originality, although I know of no method of equal simplicity, and in the cases referred to, and also in a number of cadaver operations, the details were readily carried out. The steps are as follows:

1. A median incision above the umbilicus and, if needed, a cross-cut of the rectus.

2. Double ligation and division of the necessary amount of gastrohepatic omentum; this allows the pylorus and lesser curvature to be delivered. The fingers are now in the lesser cavity of the peritoneum and at once slip under the pylorus and act as a guide to the careful double ligation and division of the gastrocolic omentum attached to the malignant area.

3. The diseased part is isolated by a piece of gauze drawn under it and a pair of forceps are caught from each side, separating the diseased from the healthy stomach and also preventing leakage from below. With a knife make a circular cut completely around the healthy portion of the stomach to the mucous coat. The muscular and peritoneal coats are stripped back and a few bleeding points caught with forceps. The mucous coat is cut inch by inch and at once closed by a continuous catgut suture; this is cut short and the detached pylorus and tumor is covered and turned out of the way. A second continuous catgut suture of the muscular coat rolls in the mucous, while outside of this, a good silk Lembert of the peritoneum and muscular coats protects and rolls in the two first rows of sutures.

4. The end of the stomach is slipped to the right and the ends of the tied omentum are sutured to each other and to the suture line, not only making further protection, but also anchoring the stomach to the right and preventing undue traction upon the duodenum after it is fastened in place.

5. The duodenum is cleanly amputated at a healthy point and buttoned with a Murphy button to the anterior lower wall of the stomach (at least three inches from the suture line, see Case 3).

We have made this operation once in forty-five minutes, once in one hour and five minutes, once in one hour and twenty-five minutes. I mean by this, from the time the operation is commenced until the dressings are in place, and in each case from four to six and one-half inches of the stomach have been excised.

In the appendix to this paper will be found the detailed histories of these cases. The operation herein described is a modification of the one published by Murphy in the London *Lancet* in 1895, and to him is due the credit of first clearly directing attention to the value of the combined operation.

Gastro-enterostomy, or the operation of Wolfler, is a much more popular procedure than pylorotomy, although in performing it we frankly accept the inevitable. This operation has been so thoroughly discussed recently by Willy Meyer in the *Annals of Surgery* for July, 1897, and by Dr. Robert Weir in the *Medical Record* for April 16, 1898, that I will not take up much of your valuable time with it.

At present there are but two methods of gastro-enterostomy which have a considerable following: the suture operation and that with the Murphy button. I recently had the privilege of witnessing the distinguished surgeon, Professor Senn, do the suture operation. In his hands it seemed easy and was certainly rapid and satisfactory. I have made ten gastro-enterostomies, four only for malignant disease, with one death. All of my operations have been with the Murphy button, and I have had no cases of regurgitant vomiting nor of recontraction. One non-malignant case now of over three years' standing.

The collection of cases reported by Meyer and Weir show the great frequency and fatal character of the regurgitant vomit, and the importance of the subject is shown by the numerous methods of preventing its occurrence by Kocher, Doyen, Braun and others. From a careful study of histories of the fatal cases in which this has happened, I believe it to be less common with the button than with the suture. The method of gastrojejunostomy I have followed has been to grasp the jejunum at its origin and form a

coil which shall be sufficiently free to attach to the anterior wall of the stomach without dragging, using no sutures whatever.

As the stomach wall is very thick, it should be cut to the mucous coat before the puckering string for the button is put in, and the bite of the suture in the stomach wall should not be great, to prevent the button remaining too long in place. It occasionally happens that the button will drop back into the stomach. In the reported cases of this accident it has caused no harm and not infrequently it has been voided weeks or months after the patient has passed out of observation.

I think too much importance has been attached to the question of whether the bowel shall be fixed to the anterior or posterior wall of the stomach; the results seems to be about the same in either case. At the present time I believe the results, both immediate and remote, with the button are better than with the suture.

A few words in regard to the preparation of the case for operation upon the stomach. It has been my experience that the preliminary cleansing and emptying has been less perfect than would appear reasonable to expect, and at the operation a stomach apparently empty before will be found to contain a considerable amount of material, and as this viscus is elevated outside of the abdominal incision during the operation this fluid may gravitate into the dependent esophagus and be aspirated into the lungs, causing a fatal septic pneumonia. Great care on the part of the anesthetizer is necessary in these cases to prevent this accident.

Case 1. Cancer of the pylorus; pylorotomy and gastroduodenostomy.—B. McD., female, aged 61 years; Irish; admitted to St. Mary's Hospital, Rochester, Minn., Sept. 22, 1897, giving a history of an obscure stomach difficulty which had existed for several years past. Within the previous six months the character of the distress had changed, was accompanied by vomiting at irregular intervals of large quantities of decomposed food. There had been twenty-five pounds loss of weight. Physical examination.—Patient somewhat emaciated, no tumor could be discovered; stomach greatly dilated; no free hydrochloric acid. Operation Oct. 1, 1897. A carcinomatous contraction of the pylorus was found, no glandular enlargement. Pylorotomy and gastroduodenostomy. Button passed on the seventeenth day. Discharged Nov. 30, 1897.

Case 2. Cancer of the pylorus; pylorotomy, partial gastrectomy and gastroduodenostomy.—P. D., female, aged 54 years; Irish; admitted to St. Mary's Hospital, Rochester, Minn., Nov. 8, 1897, with a history of gastric symptoms extending over a period of several months. For the past two months she has vomited large quantities of partially digested or decomposing food, once or twice in twenty-four hours and has grown weaker, with a loss of about fifty pounds in weight. Physical examination.—Patient emaciated, face drawn and haggard in appearance; lungs and heart in good condition; urine contains one-fourth of one per cent. of albumin, no casts. A large quantity of decomposing food material was removed with the stomach tube; through the tube the stomach was distended with air and its lower border shown to be three inches below the umbilicus. An obscure tumor could be felt in the epigastrium; no free hydrochloric acid present in the stomach contents. Operation Nov. 25, 1897. A carcinomatous stricture of the pylorus was found, the infiltration extending along the lesser curvature to a point three inches from the cardiac orifice. No apparent glandular enlargement. Pylorotomy, partial gastrectomy (one-third of the stomach) and gastroduodenostomy. Button passed on the sixteenth day. Discharged Dec. 23, 1897.

Case 3. Cancer of the pylorus; pylorotomy and gastroduodenostomy.—M. T., male, aged 42 years, German; admitted to St. Mary's Hospital Jan. 3, 1898, with a history of gradually increasing stomach trouble during the past three years. He has been unable to eat solid food for nine months, vomiting the greater part of the nourishment taken at irregular intervals, and within a month has had two attacks of apparent complete pyloric obstruction, each lasting three or four days and accompanied by great prostration. Physical examination.—Patient

extremely emaciated, no tumor, stomach enormously dilated and partly full, the lower border apparently resting on the pelvic brim; no free hydrochloric acid. Operation Jan. 5, 1898. The so-called large fibrous hypertrophy of the pylorus was found. Obstruction almost complete. Pylorotomy and gastroduodenostomy. It was noted after the anastomosis was effected that the opening was rather too close to the suture line, but as the patient was in bad condition it was not corrected. Button passed on the twenty-first day. Patient discharged Jan. 31, 1898. Six weeks later, having up to that time gained thirty-two pounds in weight, patient was suddenly seized with symptoms of acute pyloric obstruction. His condition rapidly became worse, and in three weeks the man was reduced to a remarkable degree, the emaciation being beyond anything I have seen. As he was unable to return to the hospital, I proceeded to his home at Kasson, Minn., where I found him confined to his bed and partly delirious from starvation. With the help of my brother, Dr. C. H. Mayo and Drs. Bedient and VanCleve of Kasson I made a gastrojejunostomy. No attempt was made to ascertain the cause of the recent obstruction on account of his weak condition. For two weeks following the patient remained in a precarious condition, from which time his recovery was rapid, and in two months he had gained forty-two pounds and is now apparently well and of greater weight than ever before.

Case 4. Cancer of the pylorus; gastro-enterostomy.—A. A., male, aged 70 years, Norwegian; admitted to St. Mary's Hospital Aug. 2, 1894. Gastrojejunostomy for malignant pyloric obstruction. Death on the fourteenth day from aspiration pneumonia. Postmortem showed union complete; button in the stomach. Case reported in *Annals of Surgery* for 1895.

Case 5. Cancer of the pylorus; gastro-enterostomy.—J. K., male, aged 58 years, German; admitted to St. Mary's Hospital March 5, 1895. Gastrojejunostomy for malignant pyloric obstruction March 8, 1895. Button passed on the twentieth day. Discharged April 5, 1895. Remained in good health for thirteen months, then died from rapid return of disease.

Case 6. Cancer of the pylorus; gastro-enterostomy.—D. D., male, aged 60 years, Welsh; admitted to St. Mary's Hospital June 30, 1896. Gastrojejunostomy July 2, 1896, for obstructive cancer of the pylorus. Button passed the eleventh day. Discharged July 18, 1896. Lived for more than one year in comparative comfort before death from extension of the disease.

Case 7. Cancer of the pylorus; gastro-enterostomy.—M. T., male, aged 42 years, German; Feb. 26, 1898. Gastrojejunostomy for acute pyloric obstruction six weeks after pylorotomy for malignant disease (see Case 3). Button not passed, so far as is known. Patient now, three months after, has gained fifty-two pounds in weight and is in fine condition.

DISCUSSION.

Dr. J. B. MURPHY of Chicago—I have been much pleased with the emphasis laid by the essayist upon the importance of early exploratory operation in these cases and consider this one of the most important points in the paper. I would like to compliment the author upon the energetic manner with which he has pursued his ideas. I have made a number of exploratory operations in order to determine the diagnosis. If we are to have good results and permanent cures, which I believe we should have just as in cases of removal of the cervix for carcinoma, in the early stage, it is proper to make an early exploratory incision for the exposure and examination of the pylorus, a procedure involving a risk of less than 1 per cent. When one considers the number of cases that occur every day in practice, we are justified in taking these chances, and the time will come when we are obligated to make an exploratory incision and not allow the large number of cases of malignant stenosis of the pylorus to go on to a fatal termination as we do now. The method of drawing forward the pylorus is important, and enables us to bring it immediately out of the abdomen, and facilitates the operation. Gastro-enterostomy has become a well-recognized procedure and has much to recommend it. When a surgeon performs this operation he has rarely seen the case from the beginning, and when a medical man refers the case to the surgeon for gastro-enterostomy the patient has usually been allowed to pass beyond the line of the preservation of his life and is sent to the surgeon for operation so that he may die easy. If you let carcinoma of the cervix go on a certain time hysterectomy will be useless. In the pylorus, however, a longer time usually elapses after operation before secondary infection occurs. It makes the obligation to operate greater, because the symptoms exist for a more-prolonged period and we should not be compelled to do gastro-enterostomy at such late days.

Dr. McARTHUR of Chicago—We might reverse the method

in making a gastro-enterostomy prior to the removal of the carcinomatous or constricted pylorus. If a passage were to be provided prior to the removal of the pylorus, the patient could better stand an operation later for the removal of the stomach.

Dr. JOHN B. HAMILTON of Chicago—Three years ago a case came under my observation, when I acted from similar motives to those contained in Dr. Mayo's suggestion, and the patient is still living. She was at that time 30 years of age, had vomiting, was greatly emaciated, weighed only about ninety pounds and could retain nothing in the stomach. Malignant disease of the pylorus was suspected, but no hemorrhage was present; an exploratory incision was made. When I opened the abdomen I found no glandular involvement, but there was great enlargement of the duodenum at the pylorus. I opened the stomach and passed my finger into the pylorus and examined it. I found that it yielded to the finger pressure and then inserted one, two and three fingers so as to forcibly dilate it, thus performing Loretta's operation. Finding that I now had a free opening and believing the case to be non-malignant I closed the stomach wound in the ordinary way. The woman today weighs about one hundred and forty pounds.

INTESTINAL ANASTOMOSIS BY A NEW METHOD.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM F. METCALF, M.D.

DETROIT, MICH.

Since Lembert, about 1825, asserted that the union of serous surfaces was to be aimed at in intestinal anastomosis, many methods of suturing have been introduced and many mechanical substances used to facilitate the suturing, but no appliance has yet been invented in the use of which the union should not be fortified by suture. This being true, if device is to be used, it should possess the following qualifications: 1, it should be rigid so as to hold the parts firmly in apposition; 2, it should, as soon as its function is performed, as soon as the suturing is done, pass quickly away to leave the lumen of the gut free; 3, it should be easy of introduction.

In gastrectomies upon dogs I found it difficult to make a satisfactory union between the intestine and esophagus. This led me to experiment with various appliances to facilitate suturing. When I decided to use sugar I had cylinders of hard candy prepared around which I filed grooves. This made them easily broken at the line of filing. To overcome this objection I had molds prepared in which to run the sugar. Many different sizes being needed, a consideration of expense led me to adopt the following method of preparation.

Cylinders of sugar are prepared carefully so as to exclude the presence of air spaces. These cylinders vary in size by the eighth of an inch, the smallest being one-half inch in diameter. By the aid of a file they are broken into pieces, one and one-half inches long. Around the center of each piece a groove is burned by a screwdriver one-eighth of an inch wide. The ends are rendered cone-shaped by the same instrument and smoothed by moistened fingers. They are then dried and wrapped in oiled paper to keep them from long exposure to the air. This device enabled me to make the union of the intestine and esophagus in less time and more satisfactorily than was possible by either the bone or metal buttons, or by unaided suturing. I then began its use in intestinal anastomoses with results that were satisfactory except for the fact that numerous adhesions would occur between the line of union and mesentery, liver, parietal peritoneum and other loops of intestine. The first four

specimens presented are samples of these adhesions. Baum's recommendation to apply to the line of union absorbable tissue is obviously wrong. I proved this to my own satisfaction, however, by careful experimentation with the application of gold-beaters' skin and the fibrous coats of stomachs and bladders. In all cases operated upon by various methods the autopsies showed one condition ever present, that the omentum became adherent to every accessible point of wounded tissue. This observation led me to direct the efforts of nature by wrapping a fold of the omentum around the gut at the point of union. This I found prevented

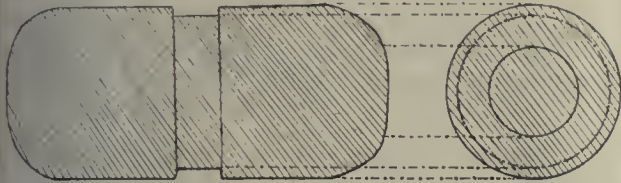


Figure 1.

adhesion in nearly every case, as the remaining specimens show. I knew at the time that Dr. Senn recommended the use of omental grafts and afterward learned that Dr. Theodore A. McGraw had protected his line of suture in the large intestine by covering it with a fold of omentum. Leaving the blood supply of the omentum undisturbed I consider a valuable feature of the method.



Figure 2.—A Catgut draw suture.

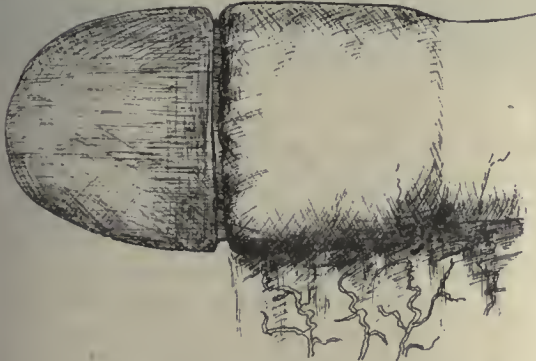


Figure 2 B.—One end of button in place.

I will now call your attention to the method of applying the sugar approximator. (Fig. 1.) In end-to-end anastomosis, a spiral suture of carbolized catgut is passed as shown in A of Fig. 2 to bring the edges of all the coats of the gut together to the bottom of the groove shown in B. The size of the approximator

should be such that its insertion will necessitate a slight stretching of the gut. To do this without crushing the tissues, I have had made the forceps as shown in Fig. 3. Their importance is enhanced by the fact that temporary spasmodic stricture occurs near the line of section. Insertion of the other end into the gut is made in the same manner, the spiral suture tied, when the ends will appear in apposition as in Fig. 4. The groove should be shallow, to permit the placing of the first line of suture as near the edge of the serous coat as possible. I use fine braided silk. The next suture is placed in the same manner

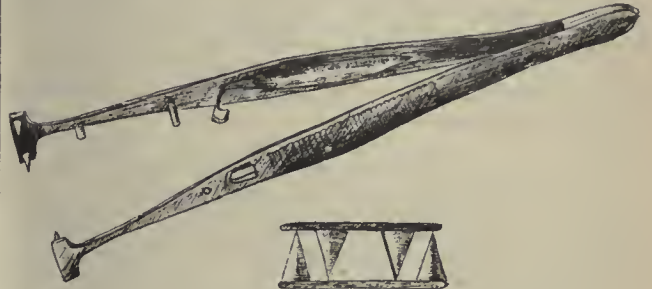


Figure 3.—Forceps.

and about one-sixteenth of an inch from the first, the gut slipping easily over the cylinder to permit accurate co-aptation. Fig. 5 represents a longitudinal section showing sutures tightened and approximator in place. Fig. 4, omitting the red line of suture, presents the appearance of the completed union.

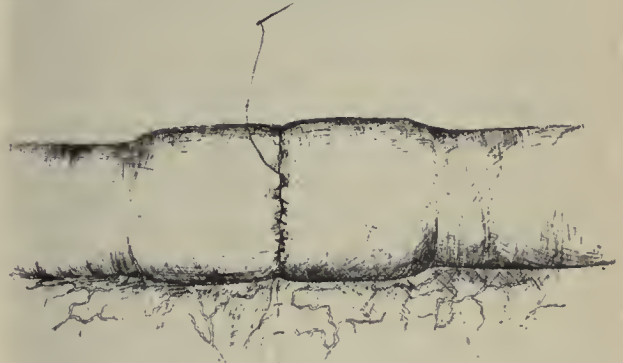


Figure 4.—Ends approximated, showing placing of first suture.

The subsequent narrowing of the lumen of the gut depends upon the extent of union of the serous surfaces, the extent of this union governing the amount of fibrous tissue formed, to which the subsequent contraction is due. In order to show you the extent of contraction in any case, it would be necessary to permit the animal to live several months and present a

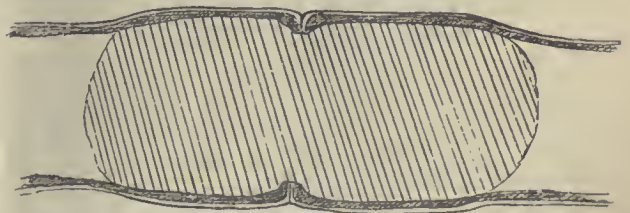


Figure 5.

photograph of a microscopic section. This, time would not permit me to do on this occasion. Specimen No. 9 is one showing lines of suture too far apart, that is, the union of too great an extent of serous surfaces. The operation is completed by wrapping a fold of omentum around the line of union and secur-

ing it by one stitch at the mesenteric border. Lateral anastomosis may be done in substantially the same manner.

The advantages of the method are: 1, the approximator will quickly disappear and will therefore give no future anxiety; 2, with the approximator in place the mesentery may be accurately adjusted by rotating before suturing; 3, the ease and rapidity with which the union can be effected (Specimen 8 shows one removed from a dog upon which I operated without assistance); 4, the ease, rapidity and cheapness of manufacture of the approximator; 5, the spiral catgut stitch uniting the edges of the coats, tends to prevent accumulation of fluid and formation of abscess beneath the mucous coat; 6, a doctor of average surgical ability can perform the operation when emergency demands.

DISCUSSION.

Dr. H. H. GRANT of Louisville—I have done several of these operation both anatomically and surgically, and have gotten along as well without artificial aid as with it. The device suggested is a slight modification of the one we are familiar with, merely using a potato or turnip and preparing it just before the operation. The device facilitates the operation in the hands of those who have had little experience in the handling of the needle but the time occupied is not much less than a skilled operator would employ without much aid. If we must use a mechanical device we should employ the Murphy button. It is true that failure has occasionally resulted from imperfect approximation of the surfaces with the Murphy button, but this results largely from a want of familiarity with the mechanism of the button. If the serous surfaces are brought accurately together, the necessity for the use of sutures will rarely occur. The employment of these devices takes time and adds to the risk of hemorrhage. There is very little to do in securing apposition of the surfaces other than that which nature will take care of, and I question whether it will be to the interest of the profession to substitute anything for the Murphy button which can usually be dispensed with.

Dr. METCALF, in closing: I agree with the gentleman who has discussed my paper that it is an easy thing to do an intestinal anastomosis, but it is not easy at times to make the anastomoses that we are called upon to do. My experience is that I can do the operation in one-half the time that I used to be able to do it, and in such a way that there will be less serous surface to approximate. The results will be more accurate and the subsequent contraction less."

THE ADVANTAGES OF A PERMANENT ABDOMINAL ANUS AND OF TOTAL CLOSURE OF THE SACRAL END OF THE RECTUM, IN OPERATIONS FOR CANCER OF THE RECTUM.

Presented to the Section of Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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In the *Therapeutic Gazette* for May, 1897, I published fifteen cases of amputation of the rectum by Kraske's method, to which I have since added two more, making seventeen in all. Three of the patients died, giving a mortality of 17.07 per cent. Of the fourteen cases that have recovered, six have now passed beyond the three-year limit and may be considered reasonably safe from recurrence. Two of the men, in spite of the loss of the coccyx and part of the sacrum, ride bicycles with ease. Besides these the paper included a number of other cases of cancer of the rectum, operated on by other methods.

As a result of my experience in these cases, I have

reached a definite conclusion as to what is the best course to pursue. Evidently after the operation the bowel must continue to be emptied of its contents. There are only three ways in which this can be done. First, in those rather rare cases in which the sphincter can be preserved and the lower end of the bowel sutured to the upper, *i. e.*, a resection rather than an amputation of the rectum we restore the natural function of the bowel through the normal anus. Second, if the anus and sphincter have had to be removed, we can suture the sacral end of the rectum at the end of the resected sacrum, pass it through the gluteal fibers and make an artificial sphincter, or rotate it to such an extent as to make a sort of supplementary sphincter. I have not tried bringing the end of the rectum out through the fibers of the gluteus maximus muscle. Both of the other methods I have tried, but



Figure 1.—The inguinal anus in Case 1.

neither has proved satisfactory. Rotation of the bowel has been followed by infection in the folds of the rectum and not very satisfactory results as to retention of feces. The sacral anus has not been satisfactory, first because it necessitates the patient's wearing for the remainder of his life, day and night, a napkin, partly on account of the constant escape of mucus, and partly on account of the want of control of the feces. In addition to this, there has always followed a greater or less prolapse of the bowel, which in some cases even reached six inches. No perineal napkin can be worn tight enough to produce pressure sufficient to prevent either of these annoyances.

Besides the annoyance of wearing a napkin, the involuntary escape of mucus and feces and prolapse of the bowel, the sacral anus has another danger at

the time of operation and afterward, namely, infection of the wound. This infection is due partly to the fact that the bowel can not be suitably evacuated, nor can it be disinfected before the operation by means of the natural anus. The cancer forms such an obstruction that neither can the feces escape downward, nor can satisfactory cleansing of the bowel be accomplished by means of enemata. After the operation also the danger of infection from the escaping feces is a constant menace to the success of the operation. I have therefore in my later operations always made a preliminary colostomy by Maydl's method. At the end of about a week, I have excised all of the protruding portion of the bowel, leaving a permanent artificial anus. The advantages of this are, first, that before the operation one can empty the upper bowel completely, and disinfect the lower bowel partly through the natural and partly through the artificial

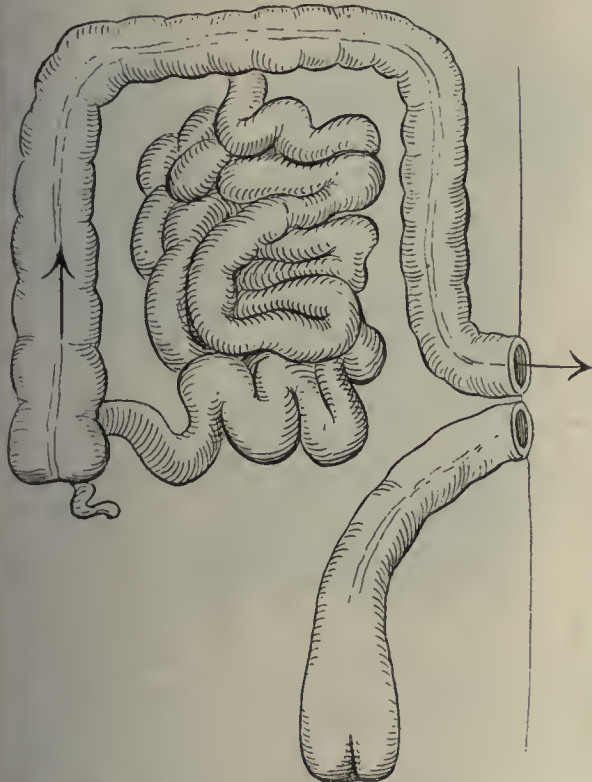


Figure 2.—Showing the preliminary colostomy and the complete closure of the sacral end of the rectum after amputation.

anus. In the paper already alluded to, I have shown the impossibility of disinfecting or even of unloading the bowel prior to amputation of the rectum, even after days or weeks of effort. Secondly, an abdominal artificial anus is very much more under control, and can be cleansed very much better than a sacral anus. One can wear a belt or girdle as tight as is necessary, both to prevent undue protrusion and to prevent the escape of the feces. Figure 1 shows the result in one of my recent cases. Prolapse is present to a slight degree, but does not annoy the patient. He is a blacksmith and does his work perfectly well. Most of the cases with such an artificial anus have the bowel emptied spontaneously, once, or more commonly twice, a day, and at almost as regular hours as by the normal rectum. Of course when there is diarrhea no control over the evacuation remains, but as I have shown in my previous paper, by means of a suitable dressing, the contents of the colon, as they

escape, are caught and are prevented from becoming a source of annoyance to the patient or those about him.

In the last two cases upon which I have operated, I have taken a further step which I think is a distinct improvement in rectal surgery, namely: after amputation of the rectum, I have completely closed the sacral end of the rectum, just as one closes the end of the intestine before making a lateral anastomosis (Figure 2). The first advantage of this is that if the closure is a success, neither fecal matter nor infected mucus can reach the wound, and we are much more likely to obtain primary union, which greatly lessens the danger of life. Secondly, as the perineal wound is entirely closed, no escape of either feces or mucus occurs after recovery and the patient is relieved of the necessity of wearing a napkin. Thirdly, for the same reasons, we avoid any prolapse.

I have carried out this plan in two cases. I was not able to avoid infection, because in the first cases there was slight leakage, and in the second there was an unavoidable dead space left at the end of the



Figure 3.—Complete closure of the perineum without any sacral anus after amputation of the rectum.

sacrum, and a slight reactionary hemorrhage. But both of these cases suffered far less from febrile reaction than I have seen after the more severe infection by ordinary methods; and both have made excellent recoveries. The second case is too recent to express an opinion as to the functional results. These, in the first case, could not be better. Seven months have passed since this operation and his physician, Dr. Bashore of Bachmansville, Pa., has recently written me that the patient is working hard at his trade as a blacksmith, and can shoe as many as six horses in a day. When one remembers that in shoeing horses a blacksmith bends far over and almost constantly, one can see the great advantage that this man has in being free from the discharge and the prolapse of a sacral anus, and the necessity of wearing a napkin. Figure 3 shows the present condition of his perineum.

I would like also to call attention to the ease with which in case 2 the upper and lower colon were exam-

ined by Kelly's tube from the artificial anus as far as the sigmoid and the transverse colon. In doubtful cases, as this was, the method will prove of great use in determining whether any operation should be done.

A brief account of these cases is as follows:

Case 1.—Mr. H. H., age 55. Has had bloody passages from the rectum for three years, and has lost 29 pounds in weight, although still weighing 175 lbs. A thick, nodular mass entirely surrounds the rectum; no adhesions. Nov. 3, 1897, preliminary colostomy, Maydl's method. Bowel opened on second day, and entire protruding portion cut off flush with the abdominal wall at the end of a week. Disinfection of the lower bowel by boric acid through the natural and the artificial anus. Nov. 17, resection of rectum and coccyx, and sacrum removed to 3rd sacral foramen; 13 cm. (5 in.) of the bowel amputated, without opening the peritoneum, but exposing the prostate, vesiculæ seminales, and a large part of posterior wall of bladder (Fig. 4). Fifty ligatures. Invagination and closure by Lembert sutures of lower end of rectum. Closure of perineal wound. On the fifth day, probably as a result of slight leakage, temperature 103 degrees. Small amount of pus evacuated, when temperature immediately fell. Out of bed on 18th day, and went home a few days after. Dr.



Figure 4.—Specimens removed in Case 1. Rectum, coccyx and part of sacrum.

Bashore writes: "The artificial anus answers admirably and has no disadvantages whatever. The mucus that collects in the rectum and lower colon is expelled upward. In the patient's own words: 'I feel as I formerly felt before stool; then, on bending forward, a sensation as if I had a stool, and the mucus is expelled on the bandage.' This happens about once in two days. He is in splendid physical health and has resumed active work as a blacksmith."

Case 2.—E. T., age 50. Pain in the rectum for a year and a half, with occasional blood. Was admitted to the Jefferson Hospital Dec. 20, 1897. A week before his admission I had examined the rectum in the out-patient department, by Kelly's proctoscopic tubes, and found a number of small polypi. Three of these were twisted off and examined by Prof. Coplin, who reported that they were tubulated adenomata, which in a patient of his age usually developed rapidly into cylindrical carcinomata. Dec. 22, 1897, I re-examined the rectum with the patient in the knee chest position and found a larger number of even larger growths than were discovered at the first examination. The larger ones were sessile. As it was evident that it would not be possible completely to extirpate these growths, and in view of their probable development into carcinomata, I advised amputation of the rectum.

Operation, March 19, 1898. Colostomy by Maydl's method. After packing the colon with iodoform gauze, I opened it immediately in the long axis and inserted Kelley's proctoscope, 22 mm. in diameter, 9 cm. downward and 8 cm. upward from the colostomy wound. I therefore was able to examine the rectum into the sigmoid flexure and into the transverse colon. Had I found that the adenomata extended upward into the colon to any great distance, I should have closed the bowel

and abandoned further operation. As nothing abnormal was seen in either direction I decided later to amputate the rectum. The wound in the colon was therefore closed with glover sutures temporarily and was permanently opened at the end of a week.

Rectal operation, April 6, 1898. The ordinary Kraske operation was done, the sacrum being divided at the level of the third foramen. The prostate urethra and bulb of the corpus spongiosum and a portion of the wall of the bladder were exposed. Thirteen cm. of the rectum were removed (Fig. 5). A small rent was made in the peritoneum, but was immediately sewed up. Immediately above the growth the rectum narrowed very sharply to a calibre scarcely larger than the forefinger. Owing to the height and small size of the rectum, there was great difficulty in invaginating the lower end. At the end of the sacrum it was not possible to draw the soft parts together, and in consequence a considerable dead space was left, which I packed with iodoform gauze. A certain amount of reactionary hemorrhage took place that night, which required several sutures to be cut and a repacking with gauze. The day after the operation his temperature was 101.8 but on

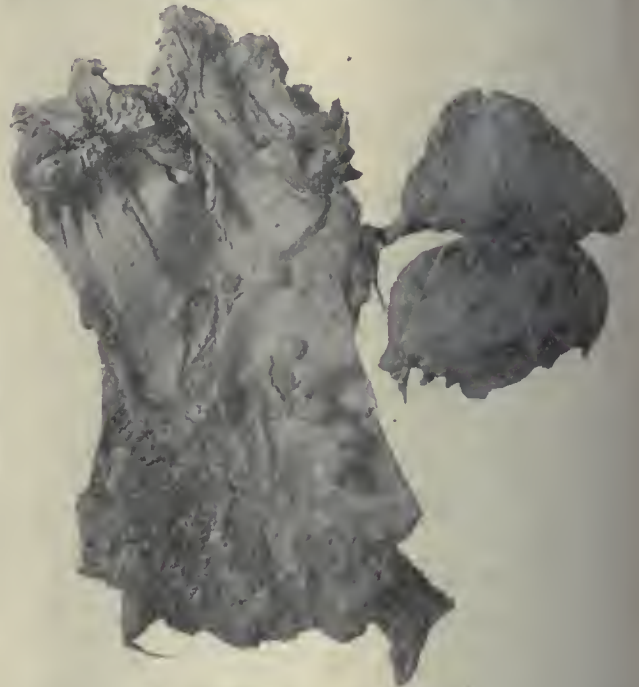


Figure 5.—Specimens removed in Case 2. Rectum and coccyx and part of sacrum, removed in two pieces.

the second day had fallen to 99 degrees. From then until the tenth day it fluctuated between normal and 100 degrees, but after that was entirely normal. The dead space left had slowly filled up, but was not quite cicatrized when he left the hospital, early in June. Since then it has entirely closed and he is in excellent health.

THE MEDICAL ASPECTS OF APPENDICITIS.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY H. A. HARE, M.D.

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In reading this paper on the medical aspects of appendicitis I am well aware that in view of the beliefs of some surgeons I am ordered to lead a hopeless cause. I hope to show, however, that this is not the case, although it is necessary for us to arrive at a definite idea as to what this title means. If it refers to the medical treatment in distinction to the surgical treatment and in the sense of the use of medicines in place of operative interference, then I am the wrong one to have asked to write on it, not that I believe that all cases are operative, but because I believe some are and some are not. If the diagnosis of the appendicitis is at issue other lines of experience must

be followed out, and if the pathologic aspect of the case is before us, still other thoughts must be expressed. Taking up for consideration the diagnosis of appendicitis, I may first point out that he who asserts that diagnosis is always easy has not seen many cases and probably mistakes other maladies for this one, and that it is the experience of active practitioners that cases continually occur in which the very gravest doubt as to the character of the case must arise. The extraordinary variation in the severity and locality of the pain as it occurs without palpation and with it, the difference in its character in various patients, and finally the extraordinary dislocations of the viscus anteriorly, posteriorly, above and below and behind the liver, make us think of the disease whenever a disturbance occurs in the abdomen, for cases have been recorded in which the appendix has been found almost anywhere and there is in the current number of the JOURNAL (June 4) an instance recorded in which the appendix was found under the left clavicle. Nor are we to expect to find the morbid lesions alike in any two cases. In some there is pus in excess, in others a small gangrenous tip with no pus or but little, in a third class a large indurated mass surrounding the appendix as a nut-shell surrounds its kernel, and it is an unfortunate fact that the more fulminating the inflammation, the more dangerous the condition and the fewer the physical signs. Indeed, aside from pain and general systemic symptoms, no signs are to be found. In the gangrenous type pain is often but a fleeting symptom and the speedy development of septic painless peritonitis misleads the physician, who can not elicit it even on pressure. Nor are we to regard appendicitis as being always an acute process. It is often subacute or chronic, insidious and provocative of aberrant symptoms which mask the real trouble. Lately I have seen a lad of nine years who was seized while at the sea-shore with indefinite pain in the belly occurring in paroxysms. He had fever, and the local physician gave him quinin and frankly said he knew not the cause of the fever. His fever disappeared and he returned home only to go to bed in a few days with fever persistently remaining about 104 degrees and no other symptoms. Finally repeated examination revealed right iliac pain, referred to the epigastrium on deep pressure, and the diagnosis of appendicitis of a subacute variety was made. Some days later he developed well-marked typhoid fever, the local appendicular signs disappearing under the local use of cold. I believe that this patient had a typhoid infection of the appendix. Another case seen by me and afterward by Dr. Keen is instructive.

A man 43 years of age suffered from what was apparently a violent attack of appendicitis, in the summer of 1896. At that time he suffered from one attack of severe pain which he believed to be due to cholera morbus, and a few days later suffered from another attack of much less severe pain, with, however, a general sensation of illness which forced him to go to his bed. An examination by his physician revealed the fact that he had a marked swelling in the right iliac region, which was not only to be felt but which could be readily seen. From that time until the first of March, 1898, he was entirely free from any symptoms in connection with his appendix, the swelling disappearing within a week after it was first noticed, upon the application of counter-irritation, cold, and absolute rest in bed. In March of this year he presented himself to me complaining of ach-

ing pains through the bones and through his entire body and a general feeling of illness. The symptoms were more characteristic of influenza than of any other ailment, but no fever was present. Two days later I was sent for to see him at his house. I found him dressed and in an arm chair, feeling quite wretched, and with general diffused pains as before. His temperature at this time was 102½. I had already examined the right iliac region when he was at my office, because of his history of appendicitis, and I now made another thorough examination with negative result. His temperature continued to rise higher from day to day and he gradually developed, as his fever progressed more and more, pain in the right side of the abdomen until finally it hurt him to extend his leg or to raise his arm above his head. There were, however, at no time any signs of induration or very great tenderness on pressure in the neighborhood of his appendix. At this time he developed the rash of typhoid fever, his liver and spleen were found to be slightly enlarged, he had the curious odor of typhoid fever and presented a typical picture of enteric fever. At the end of his second week of typhoid, the pain in the right iliac region having increased, daily examination gradually revealed slight swelling in the right flank, which finally extended from the border of the last rib to the anterior superior spine of the ilium, but the tenderness was very moderate. He was seen in consultation with me on two occasions by a well-known physician, the second occasion being due to the fact that I had insisted upon the family allowing me to call in a surgeon and, owing to their fear of the knife, they asked for a medical opinion as to the wisdom of calling in a surgeon. This physician entirely agreed with me as to the necessity of interference. Dr. Keen, being called, also agreed and made an incision in the neighborhood of McBurney's point, from which escaped a pint and a half of exceedingly fetid pus having the characteristic odor of typhoid stools, but containing no fecal matter. A bacteriologic examination of this pus showed no typhoid bacilli, but the bacillus coli communis, and, floating free in the pus was a large mass which we thought, at first glance, to be a sloughed-off appendix, but which Dr. Keen asserted, upon dissection, was sloughed-off omentum. After the operation the patient, who of course was desperately ill, gradually progressed to a complete convalescence. We have then a case of typhoid fever, complicated by a recurring appendicitis perhaps due to impaired nutrition of the patient, in which the symptoms of typhoid and appendicitis were so complicated, and so masked one another that a diagnosis was most difficult, and had the peritoneal cavity not been walled off by a wall of lymph, there is no doubt that my patient would have died of septic peritonitis, complicating typhoid fever.

There are other cases in which the typhoid symptoms are due to septic absorption from the appendicitis and the diagnosis is that of typhoid fever first and appendicitis afterward.

As to the diagnostic symptoms of acute cases, rigidity is certainly of great importance. Its presence always makes one call the surgeon at once for his opinion, and I do not call a surgeon who believes that every case should be operated on, rather one who will be broad enough to know that judgment and expediency are to be applied to the decision of every case. I call a surgeon not as I would call a servant to do as I tell him, not as a master to direct what I shall do,

but as a colleague who will present the surgical aspects to me as I will the medical ones to him. He is to take part in my joys and sorrows and not to be weak and indecisive nor dictatorial and ambitious.

I have recently published in the *Medical News* some interesting cases of appendicitis which show how one may be harassed by conflicting experiences. In one case I implored, besought, pleaded and insisted that a young fellow with a history of nine attacks in six months should have an operation. He had an immense mass of inflammatory material about his appendix. He finally consented. One of the most eminent surgeons living operated. Stercoraceous vomiting speedily ensued with collapse and death. I forced this man to an early death. In another instance I advised delay, because after this experience I had lost my nerve, for it came to my hands a few days after. Death met me again. Another case had a sharp attack of pain with every classical sign of the disease. A surgeon said operate. The weather was excessively hot, the patient a feeble woman of 50 and I felt sure the operation would kill her. I called a medical consultant who agreed with me. No operation was done and the patient is now well and has had no attack since. I could go on with such cases indefinitely and reach no clearer ideas as to the subject.

As a matter of fact we can divide all cases into three sets: those which undoubtedly should be operated on at once, those about which doubt exists and those that get well of moderate attacks and have no more. One man injures his knee-joint, it must be opened; another injures it and the question arises, shall we save it; a third gets well without the knife with good sensible external treatment. There are no cases to be met with in practice which need identical routine treatment, for individuals differ, infections differ and circumstances differ. When the profession recognizes that appendicitis is a disease in which medical and surgical opinions are always to be married and when dogmatic operators cease to combat dogmatic physicians then will these cases present the best statistics of recovery.

Finally a word as to opium. It will not cure the disease, nor will it limit it. If it is used to excess it is harmful in more ways than one; but used with judgment it is of value to take the edge off the excessive pain and to support the system. If it is used in such amounts as to remove the pain and produce sleep, it is abused. The question is not opium or no opium, it is whether it is needed as a palliative of pain until the diagnosis is clear or the surgeon is ready.

THE EARLY TREATMENT AND INDICATIONS FOR OPERATION IN APPENDICITIS.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM M. HARSHA, M.D.,

PROFESSOR OF OPERATIVE AND CLINICAL SURGERY, MEDICAL SCHOOL OF UNIVERSITY OF ILLINOIS, CHICAGO.

Although appendicitis is more than ever regarded as a surgical disease, a majority of cases are first treated by medical men. To one trying to follow the drift of opinion on its various phases as expressed by those best informed, it is clear that there is yet a great lack of agreement on many important points.

In view of the importance of the history of any given attack a precise diagnosis is indispensable at the earliest possible time. Physicians should therefore carefully examine every case, beginning with or attended by abdominal pain. The diagnosis established, the next step will be either medical treatment or surgical operation. The number of those who favor immediate operation, except in fulminant cases, is small, as compared with the advocates of an observation period of from twenty-four to thirty-six hours. It is the general belief, in which the writer shares, that a considerable number of cases seen in the beginning of the first attack are either aborted by medical treatment or subside spontaneously by the end of twenty-four hours, and of these a majority have no recurrence. The advocates of immediate operation have to figure on a degree of danger, from operation or sequelæ, which equals, if it does not exceed, the slightly increased danger of the smaller number that will require operation at the end of twenty-four or thirty hours. The advantage and the weight of opinion, if we may judge from the reports during the past year, are on the side of waiting this short period, except in fulminant cases. In this class there is a general agreement in favor of immediate operation.

In moderate cases the early medical treatment will be considered. Absolute rest in bed, abstinence from food, hot or cold applications locally are agreed upon as of the first importance. Hospital care, or that of a trained nurse, is almost as uniformly considered essential. In directing the local applications, antiseptics should be used with a view to possible operation. The pulse, temperature, degree of pain, general distress and appearance should be carefully noted. Failure to relieve pain or to render it endurable by these means will suggest anodynes in some form. With reference to the use of opium there is the greatest difference of opinion expressed by the best of physicians and surgeons. Prof. William E. Quine, from whom I heard a clinical lecture on appendicitis fifteen years ago, recently expressed in his most impressive and explicit terms the same endorsement of the use of this drug when indicated, which characterized the lecture to which I have referred. Herzog¹ says that those practitioners who use it have the satisfaction that their cases recover as often, if not oftener than those in which it is not used, and, if so, they probably remain more comfortable during the painful stages of the disease. Many surgeons deplore its use because, as it is said, "it puts out some of the danger signals." Judging from a majority of opinions and from my own experience in a considerable number of cases, it is my firm belief that there are distinct advantages in its use in certain cases and stages, if used with proper precautions. The influence on pulse and temperature of opiates in quantity just sufficient to promote the comfort of the patient should not confuse the observing physician, especially if the patient is under the observation of a competent nurse. The amount required will further indicate the severity of symptoms. Codeine hypodermically is probably the best form in which to administer anodyne, causing less gastric disturbance and interfering less with catharsis, should that be indicated at the same time. Should vomiting be present and further stomach evacuation desired, warm water to facilitate emesis, either as a drink or by stomach tube, is indicated before the opiate is

¹ Deutsche Zeit. Chirurgie, 1897, p. 214-230.

given. The coal-tar products, owing to their greater interference with pulse and temperature and their less efficiency as pain-killers, should not be used. It is scarcely believed by anyone now that opium shall be the mainstay or sheet-anchor in the management of appendicitis, as was formerly taught, but a majority justify or recommend its use in a cautious manner. It relieves the shock of pain, is humane and palliative, and sometimes curative by relieving inflammatory spasm, quieting and favoring limitation of the inflamed area and resting the nervous system.

The use of cathartics is the next mooted question in the medical treatment. McBurney² says: "Cathartics are not indicated at the beginning of an attack, as they tend to increase gastric, intestinal and general unrest." A majority of recently expressed opinions, however, favor prompt and free catharsis at the earliest possible time, provided the attack has not been attended by a profuse diarrhea. A majority of cases probably are preceded by constipation; many cases follow the ingestion of a generous meal; and many cases, approximately 25 per cent., are either cut short or spontaneously subside after thorough evacuation of the bowels. Stenosis of some part of the appendix plays an important part in the evolution of an attack, and free serous depletion is indicated to eliminate the congestive element of the stenosis; with the safety-valve free and fecal circulation re-established, the danger of explosion or perforation must be lessened, although infective inflammation may go on to the destruction of the appendix.

During the first twenty-four hours in moderate cases in the first attack there is no material impairment of the appendix wall; there is, therefore, slight danger of perforation; while the hope of aborting the attack or securing a better condition for operation lies in early and free intestinal clearance. With this, as in other phases, the indications must be observed at the bedside and every case considered by itself. Opiates or cathartics should not be advised nor interdicted because the patient has *appendicitis*, but because of special indications.

As to the best means to catharsis, we may consult the taste or idiosyncrasy of the patient. Enemata will relieve the colon, small doses of mild chloride of mercury alternated with some acceptable saline will answer best for the intestinal tract generally. Epsom salts causes serous depletion with little peristalsis. In some cases where there is persistent vomiting, and medicines cannot be given by the stomach, I would suggest the use of hypodermic medication with the same purpose in view, viz., catharsis. This suggestion of hypodermic purgative administration is not new, but so far as I know it has not been applied to appendicitis, although recommended in general abdominal surgery as indicated. In 1893 a paper was read by Rohe and Wade before the Pan-American Congress, detailing the results in one hundred injections of 2 per cent. solution of sulphate of magnesia in doses of 1.86 gr. to 4.5 gr. Injection was made in the arm. The results were positive in 67 per cent. of cases, average time for effects seven hours, forty-five of sixty-seven times produced watery evacuations. Inquiry as to other drugs by which the purgative action might be hastened developed the knowledge of the veterinary practice of hypodermic use of eserine, or what is known officinally as sulphate of physostigmine. This drug increases intestinal

peristalsis very promptly and markedly, and intestinal secretion somewhat less. The writer has tried hypodermic tablets, prepared by Sharp & Dohme (one-fiftieth gr.), and suggests as worthy of further trial a combination of sulphate of magnesia, as recommended by Rohe and Wade, with sulphate of physostigmine hypodermically as a means of prompt catharsis in stages where increased peristalsis may not be considered dangerous. Other indications for use of the combination are obvious and where oral administration is impossible or difficult.

In cases preceded by violent catarrhal diarrhea, no doubt the congestive stenosis is a most important factor, whatever may have excited the local inflammation. Treatment directed to this condition is then indicated; rest, abstinence from food, warm fomentations as detailed. If evacuation has not been complete, a saline or castor oil will aid in its accomplishment, or the hypodermic method mentioned, after which a hypodermic of codeine will aid in quieting the intestinal tract. If evacuation has been complete, rest alone or with codeine may answer. With the subsidence of the catarrh of intestines the local appendicular trouble may disappear. As much in the way of treatment has probably been named as will occupy the first day; in this early period great pains should be taken to locate accurately the seat of trouble, as the future may develop urgent need of accurate location and tympany may obscure it. Should there be recession of symptoms at the end of twenty-four hours with return of patient to comfort and normal condition, he will probably go on to recovery without abscess or other serious trouble. The means named, together with any safe minor symptomatic treatment that may be clearly indicated, extending over the first twenty-four hours, will aid in cutting short many attacks if the writer can judge from his own experience. Should these fail or the attack not subside in the time named, or show marked tendency thereto, an operation should be done in every case, as a complete and safe procedure can at this time be confidently undertaken. Failure to act at this time subjects the patient to dangers that no one can estimate. This does not mean that operation is to be undertaken at any time after twenty-four hours. Richardson's opinion that there is a time too late for safe early operation and too early for safe late operation, I believe to be sound, although that time cannot always be determined. Most fatal operated cases are either due to delay until this intermediate period or until general peritonitis has set in.

In fulminant cases, the earlier the operation is done the better, and no medical treatment except rest, fomentations and opiates to make life endurable until operation can be done are here advised. If the surgeon takes this view of the subject and is called within the first twenty-four hours, in all cases the mortality will be reduced to a minimum, and the operative treatment will become established beyond a question in fulminant or progressive cases.

The trouble with the prevailing practice is that the surgeon is not called in time. In the later stages of the disease is where the indications for operation are not so clear, and unfortunately this later time is when the surgeon is often called. The uncertainty as to intra-abdominal conditions in appendicitis is one of the best established facts in surgery. Dr. Murphy wisely enjoins those who may expect his services to call him early.

² Dennis, System of Surgery, Vol. IV, p. 415.

Those who favor awaiting abscess formation should bear in mind that such occurrence is uncertain, and that general peritonitis may set in; that should abscess form, it may be deep-seated and central, and present insurmountable obstacles to drainage; further, that in event of abscess favorably located, the appendix may not always be removed with safety, and finally that hernia is likely to result after drainage cases.

In the intermediate inflammatory stage, characterized by serious systemic disturbance, where the process is still limited but not circumscribed by safe adhesions, it is probably better to use opiates to quiet peristalsis and await the walling off process. Here the patient is in imminent peril with or without operation, but the testimony of a limited experience and considerable observation convinces the writer that the least danger attends delay. It is the large mortality attending operations in this stage (and in general peritonitis) that discredits surgical intervention. It is in this stage that decision as to operation is most difficult. The great systemic disturbance many times determines the operation when it should favor delay. No other phase of the disease except approaching or present collapse of the diffuse suppurative period is so dreaded by the surgeon, and it would be a wonderful relief to him, as well as a great boon to the patient, if he could forestall that condition by early operation. If an abscess has formed when the surgeon is called, and the more acute symptoms have subsided, operation is indicated except when such abscess is centrally and deeply placed. In such cases, owing to the great difficulty of draining, it may be better to take the chance of spontaneous evacuation through safe channels. By operation in the abscess period the weight of opinion is overwhelming in favor of leaving the appendix rather than to break up protective adhesions. Should the appendix be present or be found within the cavity, it should, of course, be removed. Should the patient suffer a recurrence from the non-removal, which occasionally happens, the rule of early operation applicable to that condition will yet work out his salvation. Who of us would not rather submit to the knife twice and recover, than have one *complete* operation and die?

In recurrent cases or those in which chronic inflammatory process is present, operation should be done. In the second attack too early operation can not be done. If the patient is seen after the second attack, interval operation is agreed upon as best, the safest time being two weeks or more after the attack. In chronic cases we are in constant danger of immediate or precipitate perforation, which adds greatly to the danger of operation, and still more danger to delay; it is therefore safer to remove the appendix and forestall imminent danger.

In considering the principles that should govern the operative treatment of appendicitis, we should not be influenced by the fact that their practice in the hands of inexperienced operators may result in a greater death rate than if left to nature. Van Hook³ expresses the belief that cases of acute perforative appendicitis will show a higher percentage of recoveries under medical treatment with incision of presenting abscess than when operated by surgeons who are gaining their first experience. The inference that novices should not attempt appendicitis operations is obvious, but that should not weaken the position of

those who believe in early operation by competent surgeons. Morris' well says, "The teaching of a correct surgical principle should not be abrogated on the ground that many improperly prepared men will try to carry it into effect."

Grieg Smith says in reference to the mooted questions arising in consideration of this subject, "It is impossible to be definite and wrong to be dogmatic." The surgeon can only decide in any given case at the bedside. There is a considerable number of writers on the subject who advise operation as the safer plan in case of doubt. Although American surgeons are charged with too great readiness to operate, I believe the encouragement in this direction has come from those with the largest experience and are therefore best able to estimate the advantages of early operation. I believe the mortality can be reduced to less than 5 per cent. if competent surgeons apply these principles.

Columbus Memorial Building.

PENETRATING WOUNDS OF THE POPLITEAL ARTERY.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY GEORGE W. MIEL,
DENVER.

Though of small experience in dealing with penetrating wounds of the popliteal artery, the especial gravity of this accident itself, or because complicated with other injury, and vice versa, has impressed me with the desire to look well into the subject, and giving my deduction, ask the criticism of this society.

By carefully investigating a deep external wound in the vicinity of the popliteal artery, extended if need be by dissection, we exchange uncertainty for certainty. Should such a wound communicate with the artery, we should remember a small puncture, even if occluded, may ulcerate and occasion secondary hemorrhage, which should at least put us on our guard. An incised wound of more than an eighth of an inch requires ligation with complete division of the vessel between. A penetrating laceration of even less extent calls for the same procedure. A considerable laceration, and an uncomplicated gunshot division of the popliteal artery, requires double ligation away from the wound in a sound portion of the artery, with extirpation of the intervening wounded portion, and ligation of considerable branches given off. A true puncture wound from without and communicating with the popliteal artery seldom occurs. The artery is occasionally divided from within by pointed or edged exostosis. *Procedure.*—Intermittent digital or shot-bag compression at the pubis, unless distension by thrombus or diffuse traumatic aneurism is so great as to threaten the collateral circulation, when, with provision against hemorrhage, dissection must be made to turn out clot and tie ends of artery.

In dealing with complicated wounds of the popliteal artery we take up one of the most difficult problems the surgeon is required to solve: When to amputate, when not to amputate, with his patient's life, deformity and impaired usefulness, weighing in the balance against extra hazard—but life, limb and perhaps unimpaired usefulness. While justified in

³ Jour. Am. Med. Association, Feb. 20, 1897.

⁴ Jour. Amer. Med. Association, May 8, 1898.

taking chances to save limbs, we must well consider the possibility of greater loss through complication, and of life itself. Our first consideration should be for life.

A wounded vessel of great importance, a fractured bone, even badly comminuted as from gunshot injury, a perforated joint, a considerable separation or loss of integument, in themselves do not necessitate amputation. In combination, however, they may call for it as the wisest procedure, or may necessitate it for the preservation of life, or as offering the better chance for life. Gangrene supervening upon injury dividing the popliteal artery is in the large proportion of instances fatal. The popliteal artery must perform its function or the collateral circulation must take up its work partially or wholly, besides its own, or the parts below perish.

As complicated division of the popliteal artery, because of its protected position, is usually the result of extreme violence, which these structures quickly resent, the resulting inflammation has a most serious effect upon the collateral arterial supply to the leg. The tissues already held nicely taut by the tough, resisting and closely attached enveloping deep fascia, leave only the popliteal space relaxed. Tightened then by effusion without, and within the joint, inflammatory deposits, and perhaps thrombus, the collateral vessels, instead of accommodating themselves to the increased amount of work, are actually, I should think, in most instances unable to perform their accustomed work. In our effort then to save a leg, it seems plain that our own wound in dealing with rupture of this artery, or the communicating wound of violence, should be never more than loosely closed; but preferably dealt with by nice grouping of the deep structures and neat tamponade; in some cases using, if thought best, provisional, or loose deep suture below the fascia latta and integumentary structures overlying. The life of the leg depends upon relaxation of the enveloping covering, and avoidance as far as possible of harmful constricting pressure.

Too often, unfortunately, when the popliteal artery or vein is ruptured, in our unsuccessful effort to save a leg, a life is lost. Gangrene supervening is moist, and of the quickly spreading or fulminating type; and in vitiated subjects it may spread from the wound. Demarkation is absent; and decomposing fluids pass readily into the general circulation. Amputation then, a last resort, occurs at the worst possible time and must be done far above. It is then at the time primary amputation can be practiced, that modern reliable, and properly classified statistics would be of invaluable service in this desperate emergency.

In our present text books, so far as I have seen in a considerable search, statistics upon injuries invading the knee are grouped in a general way with injuries involving the great articulations, which is unfortunate and misleading. The serious injuries involving the knee, and which raise the question of amputation, necessitate separate, definite, and full statistics. The nearest approach to such compilation is available to us in the separate instances, and small collection of cases, of division or rupture of the popliteal artery, reported from year to year in the Annual of the Universal Medical Sciences: in aggregate few, and by far the larger proportion are instances of ligation and various procedure for completely ruptured popliteal aneurysm.

Our available statistics attending double ligation of

the popliteal artery in uncomplicated cases would indicate at present a mortality of some ten per cent. While each case of complicated perforation of the popliteal artery must be judged separately, something approaching definite action may be applied in accordance with carefully compiled statistics based upon the antiseptic system. Primary major amputation, while always a grave emergency operation, other conditions being equal, differs in degree. Amputation, of necessity, is accompanied with more shock than that which attends what might be termed amputation of seeming necessity, or expediency. Considerable loss of blood naturally adds seriously to the issue of ligation or amputation, notwithstanding auto, mediate arterial, or saline transfusion.

If then we can have available statistics of complicated penetrating injury—division or rupture—of the popliteal artery in their several combinations, with result of effort at saving the leg—"waiting"—in contrast to statistics of amputation, we can proceed more definitely in our patient's better interest. And if it shall be shown that primary amputation offers unquestionably the better chance for life, the patient concurring, and other circumstances being equal, that should be our procedure. In the words of Connor, "Final judgment as to the necessity of amputation in any given case must be sustained by the latest surgical experience."

Today the telephone and better hospital facilities and appointments permit us to take greater chance than formerly. Taking the chance, the patient must be under frequent scrutiny that at the first sign of approaching gangrene—cold leg and marked stasis, or erysipelas—we can, and should, resort to proper amputation above the knee.

DISCUSSION.

Dr. B. MERRILL RICKETS of Cincinnati—This subject should receive more attention in the future. I desire to refer to Dr. Crile's paper in connection with this subject, as he has demonstrated that the common carotid artery may be obstructed by pressure from twelve to twenty-four hours without injurious effects, and has shown that there is no danger in such obstructions. The carotid has been clamped in a human being during an operation for a removal of a tumor of the neck. Within the last ten days I have torn off the external iliac vein in removing a tumor from the iliac fossa, and no serious consequences have resulted after ligation. I believe it impossible to suture or make anastomoses by any of the methods so far devised, but in future it looks as if we should be able to do something for penetrating the wounds of these vessels. My brother had a case fourteen years ago where the deep profunda was shot off close to the femur, and extensive hemorrhage followed. The leg was cold, and an amputation was performed at the hip joint, but the patient died forty-eight hours later. Today we would doubtless adopt other measures and be more energetic in trying to save the limb. It might be better to divide the artery rather than sew it up.

Dr. OLIVER of Cincinnati—I recently had a case bearing upon this subject in a boy 12 years of age, whose foot had been caught in the wheel of a carriage, producing a compound fracture of the femur at the epiphyseal line. The lower end of the upper fragment projected through the popliteal space, and there was a large ragged wound corresponding to the point of exit of the femur. When I saw the case three hours later, pulsation of the popliteal artery could be plainly felt in the wound. The fracture was reduced by extension and pressure, and the foot appeared normal the next morning, but on the second morning symptoms of obstructed circulation were present, and on the ninth day amputation had to be performed. In a dissection of the leg, after amputation, considerable effusion was present in the deep fascia, which was probably the cause of the obstruction to the collateral circulation and the resulting gangrene. Two inches of the popliteal artery were found to have been destroyed, and I was very much impressed with the fact that the unyielding dense fascia had been responsible for the gangrene of the limb. In future cases I shall open the deep fascia thoroughly, as I do not see any reason

why we should not save these legs and convert the operation into a simple ligation of the popliteal artery.

Dr. TINKER of Philadelphia—Experimentally the descending aorta has been divided in an ass and the animal recovered perfectly. When it was killed several months later, firm union was found to have taken place between the divided ends.

Dr. B. MERRILL RICKETTS—As to the size of the artery, anastomosis seems to be more successful in the larger arteries, and the experimental work referred to by Dr. Tinker would seem to prove this, the artery in the ass being very large.

Dr. MIEL, in closing—As to the temporary closure of the vessels, this is especially desirable in dealing with wounds about the mouth, and if this can be successfully accomplished we shall have a much better method than in permanently ligating the common carotid for conditions about the throat and tonsils.

Dr. Oliver's case is one of the kind which prompted me to read this paper. I had a case of a man in whom amputation of the foot had been performed, and although I believed good circulation was present, gangrene supervened and the leg had to be amputated, the man subsequently dying from septic infection.

I remember another case of compound fracture of the knee where amputation had been deferred. I knew nothing of the involvement of the popliteal artery in the case, but subsequently ascertained that a spurting of blood had been noticed at the time of the injury. The brother of this patient objected to operation, and unfortunately very often in these cases these objections cannot be removed until it is too late to operate. I believe that compression of the vessels had much to do with causing the gangrene.

As to end-to-end anastomoses, if they can be successfully accomplished, we are rid of a very formidable operation which has carried away many individuals.

ANEURYSM OF THE AORTIC ARCH.

LIGATION OF RIGHT SUBCLAVIAN AND COMMON CAROTID ARTERIES.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY B. MERRILL RICKETTS, Ph.B., M.D.
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While any point throughout the arterial system may become aneurysmal, it is aneurysm of the aortic arch to which special attention will be given in this paper. The pathology, which is fairly well understood, will not occupy much space, but give place for more thought upon the treatment, which has, from the time of the great masters—Antyllus (fourth century), Anel (1710) and John Hunter, baffled the skill of all. Its successful treatment at the present time is practically *nil* in ways other than surgical. Even this method has been of but little consequence until within the last few years, when by accident Christopher Heath (1865) discovered the beneficial results to be obtained from ligation of the right subclavian and common carotid arteries, supposedly for aneurysm of the innominate. Death four years later revealed aneurysm of the arch and much new tissue within the sac. Nine additional operations have been made since then by as many different operators, with most brilliant results in the seven which survived the operation, and had not the mortality before the days of asepsis been so great, many more cases would no doubt have been subjected to such surgical measures. Even at this late date, the ligation of these arteries, for this condition, does not receive its merited attention.

Thus it is, perhaps, that the obstruction of these vessels for many conditions have been made fewer, but now that more perfect methods have been inaugurated—methods which enable the work to be done with slight, if any, mortality—much more will be

accomplished in this direction. There is no form of aneurysm, except those intracranial, which has heretofore offered so little encouragement in the way of treatment.

The methods of Tueffnell and Schott have been followed by favorable results in a few cases. In point of fact, recumbency and diet are to be advised in all cases of aneurysm, as are occasionally baths and graduated exercises. These, in conjunction with mercury and the iodids, should, as a rule, be resorted to in all forms of aneurysm, especially of the arch and innominate, before surgical intervention. They should also be applied after the ligation of aneurysmal vessels; especially are they beneficial in those of syphilitic origin.

The interesting demonstrations of Draste (1895) upon the dog, by injecting a solution of gelatin into the veins, have warranted its introduction into the first portion of the arch in man, where aneurysm of the arch existed, with, however, negative results. Macewen's method of introducing, first needles, and then wire, into the sac, both with and without galvanism, has proven itself of great value, the most marked beneficial results having been obtained by Hare some fourteen weeks ago. He introduced ten feet of gold wire into an aortic aneurysm through a hollow needle, to which galvanism was applied, gradually increasing from three to seventy milliamperes. Indeed, this seems to be a most rational method of dealing with a limited number of these cases, and while the object of any method is to produce coagulum, it would seem that fragments of it produced in this way (especially if the opening into the main vessel should be large) would be more likely to become detached and enter the general circulatory system.

At present, there is absolutely no means of determining the character of the opening into the sac. The method would seem to be applicable in those cases with one or more small openings. Even then the wire might pass from the sac into the artery; thus it is that this method is attended with great risk and mortality. It would seem to be the extremely large opening that would preclude the possibility of beneficial results from any method.

While the autopsy in Dr. Hill's case three months after ligation (*Cincinnati Lancet and Clinic*, March 19, 1898) showed it to be one of the most unfavorable for either ligation or the introduction of wire, large quantities of fibrous tissue had been deposited within the sac since operation. He was greatly benefited, so much so that he was enabled to return to his duties—those of a policeman—after a few weeks. He died suddenly from rupture of the right auricle, while sitting at the table eating breakfast. About twelve pounds had been added to his weight, and he was comparatively comfortable.

It may be argued that the ligation of the subclavian and common carotid arteries in this case superinduced the heart rupture. Had the left auricle subsequently ruptured, one might indulge in such belief. Of the 412 recorded ruptures of the heart (Hill) from all causes, but one of the right auricle occurred. It must therefore be presumed to be an exceedingly rare condition, and one not due to obstructing these important vessels. Diagnosis of aneurysm of the arch is not certain, as it may exist without detection of murmur or other symptoms. If discovered, its character must be absolutely unknown, except by autopsy. This, therefore, must necessarily make more uncertain

the proper course to adopt, and much speculation must ensue. The following classification might not be amiss: 1, those in which the right subclavian and common carotid arteries should be ligated; 2, those into which wire should be introduced; 3, those in which nothing should be done.

It may be that those in the first and second would be equally benefited by either procedure. That each has been beneficial to a very high degree there can be no question; in fact, greater benefit has been obtained by these two methods than any other.

The *modus operandi* of the second is more easily understood than that of the first, even though the first has been followed by more permanent and universal results. But the great underlying principle upon which rests the method of ligating the subclavian and common carotid arteries does not seem to have been discovered until the time of Wardrop. He it was who demonstrated that less resistance was necessary to produce consolidation of the contents of the sac than was formerly thought to be. It is, therefore, to be supposed that the obstruction of the innominate, or its branches, would be sufficient to more or less retard the rate of blood-flow through the sac. This retardation would necessarily seem to correspond with the opening into the sac, hence the amount of lymph deposit would be influenced. Now, it is not necessary to close a vessel that complete consolidation of an aneurysmal tumor may ensue. So it is that lymph may be deposited within the sac, first in the depression of its wall, and especially at the opening of the innominate.

The case herein reported was first referred by Dr. H. A. Beeson of Leesburg, Ohio, in the spring of 1897. Male; white; age, 40; family history negative. He complained of pain in right infra-clavicular region, extending beyond sternum, and in right arm, especially exaggerated on movement of arm, incapacitating him for his work—that of a blacksmith and wagonmaker. On examination, a swelling was found extending from middle third of right clavicle, slightly beyond median line, and extending over two or three intercostal spaces. No bruit could be found at this time. On questioning him, found that twenty-two years previous he had a suspicious sore upon the genitals. The diagnosis of aortic aneurysm due to syphilis was made, and the patient put on anti-syphilitic treatment. The few reports from him after were that he was improving, being at the end of three months able to resume his work. On the 15th of February last, Dr. Beeson again brought the patient to me. The pain complained of at his previous visit was even now not so severe; but he was becoming more and more short of breath, and was gradually losing flesh. Examination again showed swelling, slightly greater than before, and now a very decided bruit was found in medial line near junction of second and third portions of sternum. The bruit was especially distinct on the introduction of stethoscope into patient's mouth. The pulse was about eighty—full and strong. It is to be regretted that the sphygmograph was not used. An operation was advised and made. The patient was chloroformed, and under as nearly aseptic conditions as possible, the subclavian and common carotid arteries of the right side were ligated with kangaroo tendons; the former requiring seven, and the latter five minutes. The wounds were dressed with collodion. The patient made an uneventful recovery, and returned home at the end of twenty-one

days. After the third day, the bruit was less marked, growing gradually less as time progressed, until now no bruit is to be heard, but there appears to be great commotion within the dust walls on auscultation. The operation caused no appreciable change in the circulation, and the temperature was only slightly elevated for a few days, on the second day reaching 100. The chest prominence at time of patient's dismissal from hospital was much less than before operation, and pulsation that was distinct three weeks before almost gone, showing the rapid progress of probable consolidation. He has gained about twelve pounds, and now reports that he feels better than at any time for eighteen months.

The following conclusions are submitted:

1. The remedy lies within the domain of surgery.
2. There are but two such methods at the present time to be considered: (a) Obstruction of the right subclavian and common carotid arteries; (b) Introduction of wire or needles into the sac, with or without galvanism.
3. Either one or both of the operations should be applied in all cases after a thorough saturation with the iodids.
4. Ligation is attended by less danger, less mortality, greater and more permanent and universal benefit.
5. Ligation of the subclavian and common carotid arteries is less dangerous than ligation of the innominate. In point of fact, the latter should not be done.
6. The iodids should always precede and follow any surgical interference.
7. Extreme atheroma might contraindicate ligation.
8. Extreme atheroma might possibly indicate the introduction of needles, or wire, with or without galvanism.
9. Atheroma to some degree is present in the majority of arch aneurysms.
10. It is impossible to technically classify arch aneurysms.
11. The results of ligation in the case herein contained have been far more beneficial than was ever anticipated.

REMOVAL OF THE EPITHELIOMATOUS TONSIL, BY THE EXTERNAL ROUTE (PHARYNGOTOMY), WITH A REPORT OF TWO SUCCESSFUL CASES.

Presented to the Section on Surgery and Anatomy at the Forty-ninth
Annual Meeting of the American Medical Association, held at
Denver, Colo., June 7-10, 1898.

BY A. F. JONAS, M.D.,
OMAHA.

It is not our purpose today to discuss epithelioma from an etiologic or pathologic standpoint: these subjects belong to those who are more competent, and should receive consideration only from those whose authority is based on experimental research. As practical surgeons we are chiefly concerned in the clinical and operative aspects of this insidious, relentless and fatal disease.

We will direct our attention to the tonsil when affected by epithelioma. This, on first thought, does not seem to be the place for discussing diseases of the tonsil, but nearly every special field that is more or less surgical, will have in it more or less work for the

general surgeon. The field of laryngology and rhinology, in common with others, contains many diseases whose surgical magnitude and responsibility seem to require a general surgeon for their management. The cases which will serve to illustrate our theme today were referred by the specialist to the surgeon, therefore the cases were transferred from the department of laryngology to that of general surgery, and hence their presentation at this time and place.

The results from operative and other treatment of malignant disease of the tonsil have been so unsatisfactory, perhaps more unsatisfactory than when located in any other accessible cavity, that Butlin, after very careful research, exclaims: "The prospect of permanent relief by operation in any case of malignant disease of the tonsil is very small, even if there can be said to be any. Removal of the disease through an external incision (pharyngotomy) has hitherto proved a dangerous proceeding, and has not yielded as good results as operations through the open mouth." In future cases, pharyngotomy cannot be recommended and, unless the results produced by it are far better for the next series of cases than those which it has yielded hitherto, it must be condemned as an unjustifiable proceeding." This is certainly emphatic language by an eminent authority. And yet we cannot stand idly by without an attempt to remedy the existing condition.

With improved technique, increased experience and a more thorough knowledge of the dissemination of epithelioma and the more encouraging results from extirpation of epithelioma in other glandular organs, more especially epithelioma of the breast, as operated according to the painstaking and minute attention to detail as taught us by Halstead, we have been prompted to renewed efforts when the disease has attacked the tonsil. Fortunately, primary epithelioma of the tonsil is a rare disease, so infrequent indeed that those of large experience have seen very few cases.

I desire to place on record two cases of epithelioma removed by the external route, by the operation known as pharyngotomy.

Case 1.—M. H., mechanic, aged 40, American, married, has always enjoyed good health, except for recurrent attacks of tonsillitis extending over a period of five or six years, the attacks recurring at least once a year, and often ending in suppuration. During the intervals his throat was sensitive, much accumulation of mucus and frequent hacking cough. His family history was negative, none of his immediate relatives having been affected with carcinoma or tuberculosis.

During the last year, and since his last attack of tonsillitis, he has had increased tenderness and sensitiveness in the right tonsillar region, with occasional expectoration of blood, which he believed to have come from the right tonsil. Deglutition became difficult and painful. He had lost in weight, which he believed to be due to his inability to swallow proper food, his diet during the last three months having consisted largely of fluids. On inspection, the right tonsil was found to be enlarged, ulcerated on its median side. It was found to be very sensitive to the touch, bleeding easily. On palpation with the finger it was found to be hard and irregular over its entire surface. It was slightly movable. The pillars of the fauces were not involved, and the entire process, from the mouth seemed to be confined to the tonsil itself. The pharynx and naso-pharynx were reddened and slightly edematous. The opposite tonsil was moderately enlarged, but to the touch with the finger, as well as in appearance, presented nothing that would suggest malignancy. Beneath and slightly posterior to the angle of the right lower jaw was found an enlargement, the size of a hickory nut, which was painful and tender on pressure. The diagnosis of epithelioma of the tonsil was made. It now became a question whether this mass should be removed through the mouth by excision, galvano-caustic snare, or by the external route through the submaxillary triangle. On

further examination it was found that the entire growth could not with certainty be removed through the mouth. A pharyngotomy was then decided upon.

Under chloroform anesthesia, a triangular flap was reflected forward, the lines of incision extending along the lower margin of the lower jaw, beginning about midway on the horizontal ramus and extending to the mastoid process, and thence downward along the anterior margin of the sterno cleido mastoid muscle, to a point opposite the cricoid cartilage; the submaxillary and superior carotid triangles were exposed. The enlarged and affected gland was situated within the submaxillary triangle; by means of blunt dissection the surrounding structures were separated without much hemorrhage. The sterno cleido mastoid, together with the carotid artery, the internal jugular vein and pneumogastric nerve were retracted posteriorly with blunt hooks. The diaphragm, mylo hyoid, hyo glossus were likewise retracted. The tongue now became unmanageable, interfering with respiration, so it was drawn forward and held by means of a vulsellum forceps. The left index finger was now introduced into the mouth and pressure made outward against the tonsil. The head was drawn strongly to the left side, and by means of a blunt dissector the tonsil was gradually separated, and the growth removed. The pharynx and larynx could now be inspected. With curved scissors and pincette the ragged margins of the wound were trimmed. No blood seemed to have entered the larynx. The pillars of the fauces were drawn together with catgut and the external wound closed with deep interrupted silk sutures. No drain. The healing process was uneventful. The patient was nourished with a feeding tube nearly two weeks, after which time deglutition gradually improved. The patient was last seen nearly four years after the operation, with no trace of recurrence.

Case 2.—H. M., farmer, aged 56, married, muscular, well nourished. He was always well until eighteen years ago, when he suffered from pneumonia, from which he completely recovered. He has been of constipated habit for nearly twenty-five years; has had hemorrhoids in mild form. His digestion has been imperfect, eructations of gas and occasionally of fluids, which he described as being at times sour, at other times bitter and again salty in taste. For many years he has had chronic pharyngitis, always greatly aggravated on exposure to cold, producing hoarseness and much tenderness during deglutition. About one year ago he began to experience pain, sometimes of a lancing character, and tenderness in the left side of the throat when swallowing. He coughed much, expectorating a muco sanguinolent substance, and occasionally clear blood in considerable quantity, which temporarily gave relief from pain. His medical attendant, believing that he had to deal with an hypertrophied tonsil, attempted its removal, and did remove the larger part with a tonsillotome. Within a short time the pain increased, the muco-purulent expectoration appearing in augmenting quantities, until in a few weeks he was unable to sleep without opiates. He consulted Dr. Kinsler, who diagnosed epithelioma of the tonsil and referred the case to the writer for operation.

On inspection a hard, nodular, ulcerating, easily bleeding mass, occupying the site of the left tonsil, projecting toward the uvula and extending upward along the anterior and posterior pillars of the fauces to the soft palate, and downward to the margin of the epiglottis. This mass was lightly movable, very tender, and bled easily. On external palpation was found, immediately beneath the horizontal ramus of the jaw at its angle and extending forward nearly one third of its length, a hard ovoid mass the size of an English walnut, immediately adherent to the soft sublingual gland. Below this mass could be felt three hazelnut-sized nodules.

The diagnosis of epithelioma of the left tonsil with involvement of the submaxillary lymphatics and the sublingual gland was confirmed.

Excision of the affected structures by an external route was determined and was done April 26, 1898. A strong silk suture was passed through the point of the tongue for the purpose of controlling this organ. A tracheotomy tube was at hand in case of necessity.

An incision was made, beginning at the mastoid process and extending downward to a point opposite the lower margin of the thyroid cartilage, and a second, beginning at the point of commencement of the first and extending forward along the lower margin of the horizontal ramus of the inferior maxillary to its middle point. This flap was, by rapid dissection, turned downward and forward, giving ample room for all manipulations. The external jugular vein was ligated between two ligatures and divided. On palpation a number of distinctly infiltrated glands were felt beneath the sterno-cleido-mastoid. This muscle was divided diagonally and its ends reflected, giving

easy access to the involved structures. By blunt dissection it was found that the glandular enlargements were intimately and firmly attached to the internal jugular and both internal and external carotids. The pneumogastric nerve was isolated and the vein and arteries ligated, greatly facilitating the extirpation of all the nodes, together with the sublingual gland, which was plainly involved. After an exact hemostasis the head was drawn toward the right, the tonsillar mass was seized from the wound with a four-pronged vulsellum forceps and pressure from the throat outward with the index finger of an assistant; the pharynx was opened with curved scissors and the mass rapidly clipped away. It was now possible to inspect the pharynx, and several remaining masses were easily clipped away. The hemorrhage was slight and easily controlled. No blood had entered the larynx. After copious flushing and swabbing an attempt was made to approximate the buccal and pharyngeal mucous membranes with strong catgut, but with only partial success. The deeper soft structures were coaptated with same suture material and the integument with a subcuticular silkworm gut. A gauze drain was placed in the lower angle of the wound. The external wound, except where the drain was placed, united *per primum*. Feeding through a stomach tube began the day following the operation. The gauze drain was removed on the third day. It soon became evident that a communication with the pharynx had formed by way of the drainage canal, air and fluids escaping through it, making deglutition impossible, necessitating an unusually long period of artificial feeding through the feeding-tube, about six weeks. The fistula gradually closed. The pharyngeal wound granulated slowly but completely.

During the first ten days after the operation, a great difficulty was experienced in preventing the insufflation of mucus and the secretions from the pharyngeal wound; several severe attacks of laryngeal spasm were exceedingly alarming. On the third day the patient suddenly discovered that his vision in the left eye was abolished. On examination by Dr. Harold Clifford, he found a choked optic disc, which he believed to be due to an embolus. The central retinal artery was blocked by an embolus or thrombus, more probably the latter, as the extreme edema of the disc made it probable that the postciliary arteries also were blocked. It was also interesting to note that the tongue became atrophied on its left side, interfering somewhat with articulation. He continued to improve for nearly three months after his operation, when he was attacked with catarrhal pneumonia and died. No evidences of recurrence in the throat. He never, however, regained the power to swallow solid food; only thin liquids could be taken without the feeding tube.

In reviewing the technic present in our cases, it would seem that ample access to the diseased structures was obtained. The procedure is at best a severe and mutilating one. In the main the method followed in our cases was that of Cheever of Boston, who first removed a malignant tonsil by pharyngotomy. It seems that so extensive an operation as proposed and carried out by Czerny is hardly necessary. After a tracheotomy he made an incision, beginning at the angle of the mouth, extending downward to the anterior margin of the masseter muscle and thence to the level of the hyoid bone. The jaw was exposed and divided between the second and third molar teeth; the fragments were separated and the tumor removed, after requiring a section of the glosso-pharyngeal, hypoglossus, styloglossus and stylohyoid muscles and gustatory nerve. The bone fragments were reunited with silver wire. Nor does the method of Mikulicz seem necessary. He reflected a triangular flap as in our cases, the incision being very long. The jaw, after being exposed above its angle, was divided, and the ascending ramus resected, in order that better access to the gland might be had. We found that, after a thorough and extensive enucleation of all the cervical glands, whether visibly infected or not, after a division of the sterno-cleido-mastoid and its divided ends were reflected and hemorrhage carefully controlled, with a wide separation of the wound margins by retractors, and the head being strongly drawn to the opposite side, and strong traction downward of

the arm and shoulder on the affected side being made, sufficient room was obtained for all necessary manipulations. In both of our cases the entire larynx and naso-pharynx could be inspected, so that a thorough removal of all affected tissues could be made under direct ocular inspection.

In neither of our cases was a preliminary tracheotomy necessary, chiefly because all hemorrhage was controlled and the dissection made to the mucous membrane before the pharynx was opened.

The loss of vision in the left eye of our second case was undoubtedly due to an embolus, but to state just how an embolus could reach the eye is not easy to solve. It is the first observation of this kind made by us, after many ligations of the common, internal and external carotids and jugular veins, in the removal of nearly every variety of neoplasms in the region of the neck.

THE WAX-PARAFFIN DRESSING.

Presented to the Section on Surgery and Anatomy at the Forti-ninth Annual meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY SAMUEL H. FRIEND, M.D.

MILWAUKEE.

The wax paraffin dressing, as announced in the *Medical News* of October 23, 1897, is a mixture of equal parts of unpurified yellow beeswax and hard paraffin.

Composition: Equal parts, by weight, of unpurified yellow beeswax and hard paraffin.

Preparation: Melt these substances together, preferably over a sand bath (though a water bath will also answer), and after melting keep them liquified for one-half hour to complete mixture. The specific gravity of yellow wax is between .955 and .967; the melting point 63 degrees to 64 degrees C. (145.4 degrees to 147.2 degrees F.) Hard paraffin has a specific gravity of .900, and a melting point at 43 to 65 degrees C. (109 to 151 degrees F.) The object of boiling the two substances together for one-half hour is to diffuse them as much as possible. By covering the mouth of the bottle with wire gauze or absorbent cotton the mixture will attain a higher temperature and produce a more equal diffusion. Ehrlenmeyer's flask is useful to hold the dressing, as the glass of this flask is thin and offers a large base to melt the mixture quickly, although any bottle may be used. Forty to fifty grams of the dressing will melt within four to six minutes. As already detailed, the specific gravities and the melting points of the wax and paraffin are not the same, and as the substances are never equally diffused, the paraffin melts first, so that the mixture should not be used until the entire mass is melted. Another point worthy of note is that immediately after the mixture is melted its temperature at the bottom of the bottle is 105 C., while the top is 122 C. This difference of the temperature lasts but two minutes, at the end of which time the bottom layer registers two to three degrees higher than the top. The dressing is either directly spread upon wounded surfaces or upon dressings of absorbent cotton or gauze.

Properties: This mixture is sterile. It is light in weight, cohesive, rigid, ductile, tenacious, adhesive, air, water and germ proof, and has an agreeable odor, and solidifies instantly. As it is a perfect non-conductor it retains an even temperature about the

wound and hastens regeneration. Never irritating the skin, it can be easily removed. Upon the slightest pressure from below it allows free drainage. It will hold in suspension almost all of the well-known antiseptic powders. It will cover and retain in contact with the skin and other surfaces all medication. It will adjust itself to any part of the body and form a rigid splint in conformity with the part. If used as a splint it will be easily and quickly cast and cut. It can be used upon gauze and absorbent cotton, increasing their usefulness. It adheres equally well to dry and to wet surfaces, and even to very wet surfaces. The heat retained in it is hemostatic and quickly forms a dry wound.

Physiologic action: When the mixture in the bottle registers between 121 and 160 degrees C. (250 to 320 degrees F.) and is quickly removed and applied by means of a swab or brush, it will burn tissue and so produce contraction. The thickness of the layer of dressing depends upon the temperature of the mixture when applied. The hotter it is, the thinner is the layer. This temperature of 121 to 160 degrees C. (250 to 320 degrees F.) should then be used only on bleeding points and when cauterization is required. When the temperature of the dressing in the bottle registers 122 degrees C. (252.6 F.), which temperature is reached when the mixture is completely melted, its action is desiccating and hemostatic, and there is produced within a few hours a dry wound with a firm scab. As the mixture cools rapidly in transferring, the heat of it is hardly felt. When the mixture in the bottle registers 88 degrees C. (190 degrees F.) it produces no sensation and can be used as a weak hemostatic and to protect the parts. After the first layer has been spread the temperature of the mixture is immaterial. Layer after layer can be added. At 65 to 75 degrees C. (149 to 167 degrees F.) it is still adhesive, but not hemostatic, and begins to harden on the side of the bottle.

Usage. Its usage is as follows: On operative and accidental wounds. I have used it after operating for abscesses on the neck, circumcision, after removal of small tumors on the cheek, and in cases of eczema. I have applied it after accidental cuts over the head and face, in cases of crushed and fractured fingers, using it both as a dressing and a splint; on contused wounds of the scalp, on burns, upon indolent ulcers of the legs, wounds to the ears; after operations for the removal of epithelioma of the lip.

WET DRESSINGS IN SURGERY.

Presented in Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY THOMAS OSMOND SUMMERS, M.A., M.D.,
F.S.Sc., LOND.

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This may well be called the *dressing period* in the evolution of surgery. Time was when the scalpel alone was emblazoned on the escutcheon of the surgeon and with the skillful incision his responsibility ended, nor did the dignity of his office admit of his performing what then were held as the minor and menial offices of *after treatment* which then was supposed to cover everything that followed upon the first brilliant sweep of the surgeon's glittering steel. There are no doubt some who hear me today who remember

the dramatic toss of the knife behind him of the elder Gross when completing his incision and the autocratic delivery of the case to his assistants for the dressing and treatment of the wound.

Even to this day the red, white and blue stripes of the barber pole tell of surgery's humble origin and the bandagers and bone-setters still roam through the villages of England and the barber surgeons still apply the leech and cup for the more dignified practitioner. It remained for Sir Joseph Lister to break the spell of *otium cum digitate*, which was the bane of all surgical progress, and teach the autocrats of the scalpel that surgery meant much more to the organism than the mere solution of continuity along anatomical lines—that this indeed was the *avant courier* of the real principle from which all the almost miraculous achievements of modern surgery had been evolved.

It was my privilege to be present at the presentation to the British Association at Edinburgh in 1875, by Professor Lister, for the first time, of a clinical demonstration of his mode of surgical dressing, which opened to surgery new worlds to conquer. The case was one of ligation of the external iliac, and the elaborate dressings being removed proved the triumph of his principle, though his venerable colleague, Professor Spence, almost on the verge of eternity, threw a well-poised Parthian lance at the rising genius of modern surgery. Since that day every operation, however simple in itself, has been one in which the surgeon "earned his bread by the sweat of his brow." No turning over the case to the unwashed student, for he whose records of success are proclaimed today is the operator who leaves not his patient until the last jot and tittle of aseptic dressing has been fulfilled, for so exacting is this principle that *falsus in uno, falsus in omni* is the inflexible law of its operation.

As a matter of course with the increase of such labor, necessary as it has proved to be to insure surgical success, the ingenuity of man was set to work at once to simplify the methods without impairing the efficiency of aseptic surgery. So active has been the work in this field that apparatus of every device and design has been offered to the profession until its name is legion, and of making of dressings as the patriarch said of books, "there is no end." As in everything else the element of "fadism" or surgical "fashion" has been dominant even in this unesthetic field, and the very men who pretend above all others to condemn the follies of feminine fashion are themselves afraid to say their soul is their own when it comes to operating and dressing of wounds before their lynx-eyed professional rivals. For years past, for example, it had been almost as much as a surgeon's name was worth to apply oleaginous preparations to surface lesions, although the very first treatment of wounds of which we read recommends the "pouring of oil," and in the case of the good Samaritan received the endorsement of the Great Physician himself.

There are some things however that fashion can not forbid, and this is one of them; like Banquo's ghost "it will not down." Long before science had thrown its searchlights over the dark field of biogenesis, experience had taught the steel-clad warrior the virtues of Gilead's balm, and from the shades of Olivet, where fell the tears of Him who came for the healing of the nations, man had learned to gather the oil for his wounded body. Since the discovery of the bacteriologic processes of infection in open wounds there has been a gradually growing tendency to return

to the ancient remedial agents which experience dogmatically taught were rationally indicated. In the last edition of that eminently practical work upon surgery, by Wyeth of New York, we find this positive and significant utterance upon the use of oil and balsam, the first surgical dressings known to humanity: "I know of nothing equal to this valuable preparation. The oil acts in a two-fold way; the surface of the wound is moistened by it, while the liquid excretion from the wounded surface is carried off in the dressing by capillary attraction. The removal of moisture cripples the proliferation of the bacteria and in this way aids in antiseptis."

In the process of repair all the structural elements must be supplied from beneath the surface of the lesions so that the constructive metabolism would not be injured by the mechanical interference of the oil globules which, as intimated in the quotation just made, would "cripple the proliferation of bacteria," which comes from without. There are many wet dressings, which if frequently renewed show excellent results, but there are few cases which come before us in which disturbance of dressing does not do mechanical injury to the process of repair, besides exposing the wound to the entrance of pyogenic and other cocci while the dressing is being changed, while the retention of material which has expended its aseptic influence is a constant menace to the integrity of the organism at large. Lister was working to the overcoming of these difficulties when he devised his "paste" dressing, which however failed to meet the desired ends in many cases. The use of animal and vegetal oils is also open to the objection offered to solutions in dressings—the necessity of changing the dressings too often—but for a different reason, the tendency of the oils to become rancid: and this applies also to the keeping of such dressings prepared for use. Wyeth recommends in his oil and balsam dressing the sterilization of the oil before using, but admits that this is often impracticable and recommends in this case the use of plain, cold castor oil of the shops.

It is therefore clear that to carry out the idea of a practical dressing it must be:

1. Antiseptic. This applies not only to the effect of the application to the part affected, but to the corporate substance itself, thus insuring it against auto-infection before applying.

2. Permanent. This is necessary in order to avoid too frequent removals as well as to preserve itself from deterioration.

3. Non-irritating. There is nothing more delicate, more easily disturbed than the formative principles of tissue, so that care must be taken in the dressing of all lesions of surface lest the agents used should arrest the tender process of repair, as well as protect it from the invasion of destructive germs.

4. Constructive. While the majority of lesions, especially those of traumatic origin, if not interfered with by destructive germs, will heal rapidly of themselves, there are very many which require not only this negative condition but also a positive stimulation of function in the constructive elements of the part. Stimulation of cell growth however must not go to the extent of irritation, in which case there will be destruction instead of construction of tissue.

The fulfilment of these conditions has been the aim of the surgical pharmacist from the time when the first coccus wriggled across the field of the microscope and gave its first exhibition to the scientific investi-

gator of its dance of death within the organism of man. But amid all this elaboration of apparatus it was to Sir Astley Cooper, after all, that the credit is due for his foreseeing therapy, leaping over as it were the dark chasm which separated the triumphs of his surgical pathology. It was he, who without the knowledge of the bacteriologic factor in the great problem of surgical treatment, by the intuition of genius gave to us the essential principles of external dressing for surface lesions. His formula, however, was open to the objection of violating one of the conditions herein laid down, that of permanence, in that lard was used instead of petrolatum, which has been since discovered, and is now substituted in the preparation known as unguentine, which is an ideal formula constructed along the lines of that suggested by Sir Astley Cooper but altered to the conditions of modern aseptic surgery. The irritating effects of the ordinary alum has also in some way been obviated, furnishing thus a typical dressing for surface lesions. For internal lesions that are to be immediately and permanently closed beneath the sutured integument, there are many valuable aseptic liquid preparations which we prefer to the too indiscriminate use of iodoform, *aristol et id omne genus*, but we are free to admit that for all external dressings we have found the highest fulfillment of modern aseptic or antiseptic surgery in the preparation just mentioned.

I am not sure whether this is a proprietary preparation or not, but this I do know, its formula is an ideal one and its results are certainly very satisfactory. It is about time we were looking around after labor-saving methods when we have to employ at the simplest incisive operations an extra attendant to wipe the sweat from our brows, as the houri fans the Sultan's heated cheek, though our attendants are not all houris nor are our cheeks fired with the congestion of a lazy passion. We are glad to see this unholy war against oleaginous applications coming to an end, just as we should be also glad to see the phlebotomy pendulum point to the nadir. In surgical politics I am a middle of the road man—in *medio tutissimus ibis*.

SURGERY OF THE LUNG.

The Oration in Surgery Delivered at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Col., June 7-10, 1898.

BY J. B. MURPHY, M.D.

CHICAGO, ILL.

(Concluded from page 297.)

Carron proposed to compress the lung over tubercular cavities with the hope that the collapse of the lung would be followed by an obliteration of the cavities. MacEwen favors resection of the ribs to allow the contraction of the chest over small cavities and the drainage and even curettement of large ones. Coromilas, Greece, favors pneumotomy and early surgical interference in tubercular processes.

If the adhesions be firm and the parietal and visceral layers can not be separated, then the parietal layer should be separated from its costal attachments and allowed to sink in with the lung, or it should be held compressed by a tampon beneath the flap for forty-eight to seventy-two hours. Will found that in thirty-six cases of tuberculosis in the early stage, thirty-two admitted of complete collapse of the lung and four only partial. If on examination it be found that the lung is free from adhesions, or that circum-

scribed adhesions exist, then the treatment is entirely different; the lung may be forced to collapse by the injection of a fluid which is slowly absorbed, as the mineral oils, alboline, etc., or better still, it may be compressed and retained compressed by the injection of nitrogen gas, after the method described for the determination of pleuritic adhesions. That this method is practicable, as far as its technique is concerned, I have demonstrated in the following cases. It can be given with little more pain than a hypodermic injection. The patients suffering from tuberculosis of the lung on whom I used this treatment are progressing favorably. We have had no postmortems to show the reparative effect upon the tubercular process. The radiographs show distinctly that the lungs remain compressed. The X-ray is of inestimable value in studying pathologic processes of the lung, particularly in the localization of cavities (see radiographs Nos. 5, 6 and 7). The degree of compression of the lung can be photographed and the rapidity of absorption of gas estimated by comparison of pictures (see radiographs Nos. 8 and 9). The outline of adhesions when gas is injected is pictured on the plate (see right side of radiograph No. 10). The following histories illustrate the method of injection and its effect:

Case 1.—Charles K., age 23, Cook County Infirmary, was admitted to the hospital April 30. He had suffered from tuberculosis of the right apex since November, 1897. Physical signs showed that it extended down to the lower margin of the third rib; there was no evidence of a cavity; tubercle bacilli were found in the sputum; patient had been coughing for three months; this was so frequent and persistent that he could not sleep. His temperature on the evening of his admission was 102 degrees. He had been having night sweats, was somewhat emaciated, and his appetite was poor. It was decided to immobilize the lung. One hundred and twenty cubic inches of nitrogen gas was injected in the sixth interspace after the method described above. The lung collapsed and he presented all of the signs of pneumothorax. The heart was displaced to the left five-eighths of an inch. The patient's breathing while on the table was a little rapid and the effort somewhat labored. He was up and about the room in five minutes and stated that he felt no distress whatever from the treatment. His cough was almost immediately relieved; he slept the following night without a coughing spell; during the day there was a superficial coughing effort to "clear the throat," as he expressed it. Eight days after the injection he came to my office and I examined him and found that the pneumothorax still existed. There was a small area of emphysematous crackling in the neighborhood of the puncture; distant tubular breathing could be heard; the patient's temperature had lowered to 99.7 degrees in the evening and was usually below normal in the morning. I had a radiograph of his chest made at this time. (See radiograph No. 8. Left side of plate was defective.) I have seen this patient every week since and his condition continues good. The last radiograph shows that but a very small quantity of the gas had disappeared, which I believe has escaped into the cellular tissue of the chest wall, as the area of the emphysema has increased.

Examination July 8. The pneumothorax had not diminished in the least. There was not a respiratory sound on the right half of the chest. The hepatic dulness was down almost to the margin of the ribs; the intercostal spaces bulged; there was a tympanic percussion note over the right half of the thorax; the pulmonary quiescence was still complete. The patient had not coughed or expectorated a particle in five weeks; eats and sleeps well. He had had no fever and his temperature at 4:30 today is 98.2 degrees. He had not been weighed, although he feels that he has gained in weight. It is two months and a half since the injection was made and the quantity of gas is practically the same, showing that the absorption of the nitrogen is extremely slow indeed, if any of it is removed by that process.

Dr. Alexander C. Weiner and Dr. James G. Berry examined this patient with me.

Case 2.—E. L., male, age 34, Cook County Infirmary, was in the second stage of phthisis, with cavity in right upper lobe. Endeavor was made to fill the right pleural cavity with gas, but as adhesions were found it could not be accomplished.

He was not in condition to withstand operation for compression of the chest wall. The gas entered the cellular tissue of the chest and remained there three weeks, showing how slowly it is absorbed.

Case 3.—H. A. E., male, age 30, Alexian Brothers' Hospital, admitted May 10, 1898. Family history shows several cases of tuberculosis. His cough and fever began about Oct. 1, 1897. Cough very severe, expectoration limited. Night sweats since January, 1898. There were physical signs of apical tuberculosis on the right side; patient gave no history of pre-existing pleurisy; he was placed on the table, trocar inserted in the sixth intercostal space, anterior axillary line and two hundred cubic inches of nitrogen gas was injected after method described above. It was found when the trocar entered the pleura that it required no pressure to force the gas into the pleural cavity. It produced very slight coughing and but little anxiety to the patient from shortness of breath; the pulse was increased in frequency 66 and the lips were discolored a light blue; the apex beat was displaced one inch to the left, the hepatic dulness three inches downward; the respiratory sounds entirely disappeared on the right side; respirations were increased to 26. Patient was removed to his bed; thirty minutes later was sitting up in bed eating his dinner; he said "he felt a binding in the chest and a tickling sensation in the throat;" he remained in bed for two days, as his respirations were a little increased in frequency and he complained of some discomfort in the epi-sternal region. Radiograph No. 11 shows the compression of the right lung. Examined May 20. The respiratory sounds still absent; the cardiac displacement continues; there is still absence of the hepatic chest dulness; his respirations are normal and his cough has disappeared; no expectoration.

June 30 patient presented himself again for examination; he thought his breathing was still a little short. Cough has entirely ceased; he has had no night sweats; has gained ten and one-half pounds in three weeks; his appetite is excellent.

Physical examination: The respiratory sounds are returning, though still distant; there are no rales; the percussion note shows that the chest has still a considerable quantity of gas, the liver dulness is absent down to the margin of the eighth rib and the apex beat is in about the normal position. The mediastinal dulness is to the left of the margin of the sternum; there is some bulging of the intercostal spaces, though not so marked as in previous examinations.

Case 4.—P. C., male, age 23. Admitted to Alexian Brothers' Hospital six weeks ago. Patient was in second stage of tuberculosis of the right lung. May 12 an effort was made to inject the gas in the usual manner, but adhesions prevented the admission of the gas.

Case 5.—Alexian Brothers' Hospital, E. D., May 12. Patient in first stage of tuberculosis in the right apex; has had cough, expectoration, night sweats and fever since August, 1897; bacilli in the sputum; had frequent attacks of pleurisy. Method of injection of gas the same as in case 1. Puncture made in sixth intercostal space, mid-axillary line. When parietal pleura was penetrated the gas readily passed into pleural cavity; seventy cubic inches were injected. Physical signs of pneumothorax rapidly appeared; liver dulness displaced downward one and one-half inches; apex beat displaced one-half inch to the left. Patient said he felt "his breath was shorter." The opening was sealed. In one-half hour the patient said he felt no inconvenience whatever from the injection, and was walking about the ward. He left the hospital a few days following his injection on May 12. I did not see him again until he presented himself for examination June 30. He was greatly improved in appearance; there was a slight cough, but no expectoration; he had gained in weight; his appetite was excellent.

Physical examination showed that there had been some absorption of gas, although a tympanic sound was distinctly present over the former area of liver dulness. The respiratory sounds were feeble; there were no rales. Seventy cubic inches of gas was injected in the usual manner. It did not produce the slightest discomfort. After the injection the liver dulness was displaced almost to the costal arch. There was no displacement of the heart. There was some bulging of the intercostal spaces. Patient left the hospital immediately for his home.

July 7, at Alexian Brothers' Hospital two cases of apical tuberculosis were injected; in one 75 and in the other 80 cubic inches of gas was used; in neither was there the least discomfort from the insertion of gas; in a third case adhesions were found, making it impossible to succeed in the injection. The cases in which I believe this method

most practicable are apical or monolobar tuberculosis in the early stage, as the pathologic conditions are such that the compression of the lung can be accomplished and adhesions are not likely to be found. I do not consider that it is indicated nor practical in advanced nor chronic tuberculosis, as the fibrous tissue deposited in the lung will not permit compression of the lung, nor will the pleuritic adhesions allow of gas injection. So far no conclusion can be drawn as to the ultimate result of this treatment. Theoretically its dangers may be: *a*, hemorrhage from wounding the intercostal vessels; *b*, injecting gas into the intercostal vein, the possibility of which I question; *c*, infection by the use of impure gas, infected trocar or improper antiseptic preparation of chest; *d*, rupture of infected foci into the pleural cavity through compression of lung and separation of pleuritic adhesions; *e*, dyspnea from the use of too large quantity of gas: this can be readily relieved by changing the direction of the current in the siphon; *f*, puncture of the lung with the canula. This will not take place unless adhesions are present, and if the lung should be punctured it is a matter of no consequence, as experiments and clinical experience show that the lung can suffer great traumatism without danger. While these possibilities of danger are mentioned, none of them occurred in my experiments. I believe the gas should be reinjected every six to ten weeks as might be deemed necessary in the individual case depending upon the amount of absorption. If the respiratory sounds return the injection should be repeated. So far I have repeated the injection in but one case.

Technic of injection.—The point of insertion of the trocar varies somewhat in the individual case. If the apex of the lung be the seat of the lesion, the trocar should be inserted below the fourth interspace and back of the mid-axillary line. The best point is in the fifth interspace at the anterior axillary line. If it be a middle or lower lobed tuberculosis, the injection should be made over the upper lobe, preferably in the third interspace just outside the mammary line. The chest wall should be thoroughly cleansed and rendered aseptic. Chlorid of ethyl should be used for local anesthesia. A tenotome puncture should be made through the derma; this allows the trocar to be easily inserted. The stilette in the trocar should be withdrawn when the rib is reached; the gas should now be turned on; the trocar should then be pushed inward, hugging the margin of the rib. When the parietal pleura is punctured the trocar advances rapidly and the gas begins to flow freely into the cavity unless adhesions exist. If adhesions be present the gas will not flow. The trocar should be taken out and inserted in the same manner in another position.

The quantity of gas to be injected will vary considerably and should range from 50 to 200 cu. in.; the amount to be given in each case will be regulated by the symptoms—distress, dyspnea and the displacement of the mediastinal contents and diaphragm. The respiratory sounds on that side should be suppressed unless too great dyspnea is produced. If the patient's discomfort is great the current of gas can be reversed until relief is obtained. The trocar should then be withdrawn, the wound sealed with collodion and a moderately firm cotton compress placed over the puncture. The compress is to prevent the escape of gas from the pleura into the subcutaneous cellular tissue. The lung should be kept quiescent from three

to six months or even longer, depending upon the symptoms. When the lung re-expands, if there be evidence of active tuberculosis, the injection should be repeated; also when the respiratory sounds return the injection should be repeated, that is, the quiescence must be maintained to have the treatment effectual. During the treatment the hygienic surroundings of the patient should be the most favorable; his diet should be wholesome and nutritious.

Preparation of the nitrogen gas.—The nitrogen gas used on my patients was prepared by Prof. John A. Wesener of the Columbus Medical Laboratory, in the following manner: Compressed air was allowed to pass slowly through a solution containing pyrogallio acid and potash; this solution absorbed the oxygen, the nitrogen thus obtained was purified by washing it through potash and then through sulphuric acid; it was then collected in a rubber gas bag which had been sterilized with a 5 per cent. carbolic acid solution. It may be retained in the gas bag or stored in a small metallic cylinder.

APPARATUS.

A properly constructed apparatus should provide means for noting the escaping gas and measuring its volume in cubic inches. The appliance shown in the accompanying illustration consists of a gas bag for storing the gas, a graduated bottle in which the passing gas may be measured, and a reservoir for securing hydrostatic pressure by means of which the gas may be forced into the pleural cavity.

The measuring bottle is supplied with a three-way stop-cock, one to connect with the gas bag, one with the reservoir, and a third with the trocar. One of these stop-cocks terminates in a tube extending to the bottom of the bottle, this cock being connected with the reservoir. It will thus be seen that if the measuring bottle be filled with water and the reservoir bottle be placed slightly above it, the water may be forced into the latter by slight pressure on the nitrogen bag. After replacing the water with the gas, the former may be used as hydrostatic pressure to force the gas into the cavity.

The trocar selected is of the Emmett type, one that may be attached to the bottle before its introduction. It consists of a straight canula to which is joined at a point near its proximal end a side tube, with which the connection is made with the bottle. This tube forms a bifurcation in the lumen of the main canula. A suitable packing is closely pressed around the trocar shaft, so that when the perforator is withdrawn the point will rest within the chamber at its proximal end, forming an airtight joint. The one I prefer is No. 7, French scale.

Directions.—Fill the graduated bottle with sterilized water and close it with the three-way stop-cock, securely fastening the latter in place and closing all the cocks.

Place the reservoir or douche bottle on a box or shelf at such a height that the bottom of it will be on a level with the three-way cock in the graduated bottle. This height may be varied according to the pressure desired. Connect this bottle with that branch of the three-way cock that terminates in the rubber tube leading to the bottom of the graduated bottle.

Fill the gas bag with nitrogen gas and connect it with one of the other stop-cocks. Attach the trocar to the longest of the three pieces of rubber tubing and connect it with the remaining stop-cock. Open the two stop-cocks leading to the upper bottle and gas bag. Slight pressure on the latter will force the gas into the graduated bottle and the water from the latter into the reservoir. Continue this pressure until the gas fills the bottle down to the zero mark. Close the stop-cock leading to the gas bag and open the stop-cock leading to the trocar until a small quantity of gas has escaped, thus displacing the air within the tube. Close the stop-cock and introduce the trocar, after which open the stop-cock permitting the gas to pass through the trocar. The water pressure in the reservoir, if the trocar be properly introduced, should force the gas into the pleural cavity, the water gradually replacing the escaping gas. By watching the graduated scale the amount of gas indicated may be accurately noted.

Incision and drainage of tubercular cavities.—Phthical cavities have been recognized for centuries. Two very interesting accidental drainages of tubercular cavities are referred to by many writers on diseases of the lungs. One is the case of Pheracus, who was

suffering with disease of the lung, and believing he was beyond cure placed himself in the front of battle and received a spear thrust which opened his pulmonary cavity and restored his health. Another was a case by De Bligny, 1679: the son of M. de la Genevraye, who was suffering from phthisis, received in a duel a sword wound in the right side between the fourth and fifth ribs; there was an abundant purulent evacuation from the wound; after the accident he completely recovered. In both of these cases, which appear mythical though true, there is nothing definite known of the nature of the abscesses, Paget has placed them as tubercular. The operation for drainage of tubercular cavities received its greatest impetus shortly after the introduction of the Koch lymph, 1890, when it was considered desirable to drain the cavity to favor the exfoliation and elimination of the sequestrum sup-

may be removed over the site of the cavity and the cavity opened; this I do not consider the best practice; four to six inches of at least three ribs in the neighborhood should be removed to allow collapse of the chest wall as cicatrization and contraction of the cavity take place after drainage. The parietal pleura should be separated from the ribs before incising it. Palpation of the area aids materially in the location of the cavity; digital exploration after incision of the lung should be favored in tuberculosis. As early as September, 1873, Mosler incised the pleura and worked his way through the lung to a cavity by dilating the tissue with an artery forceps. The patient improved very much after the operation; subsequently he died of Bright's disease.⁷³ When the location of the cavity has been determined incision should be made with the scalpel: small cavities will probably be opened



Apparatus for injection of the gas.



Trocac—No. 7, French scale.

posed to be produced by the Koch lymph. Cases in extremis, as far as the tuberculosis was concerned, were operated at that time; but the operation has gradually fallen into disuse so that it is resorted to now only in particularly favorable cases. Eward, 1884, considered the drainage of tubercular cavities curative as well as palliative, but cited no cases. The greatest barrier to surgical treatment is the difficulty of diagnosis and localization of the cavity. Physical signs, as auscultation and percussion, usually indicate the cavity at a greater distance from the hilum than it really is; this is particularly true of cavities in the lower lobe. The radiograph is of great assistance in determining the location of the cavity, as can be seen in those herewith reproduced; accurate pictures should be taken before every operation. (See Radiographs v, vi, vii.) The cavity having been located and if the drainage is all that is intended a small portion of the rib

before the large one is reached; the lung can be gently retracted until the large cavity is freely incised; the hemorrhage may be controlled with a catgut suture or the surface seared with the Paquelin cautery. The cautery should not be used to divide the lung, as it prevents inspection of the divided tissues and makes it uncertain when the cavity is reached. The entire cavity should be packed with iodoform gauze, which should be allowed to remain for several days. A drainage tube may then be inserted or the gauze packing repeated. Failure to find the cavity has frequently occurred. The ultimate result of drainage of tubercular cavities has been very unsatisfactory, which might be expected from a knowledge of the pathology of the diseased stage of cavern formation. The cavities are often multiple and only one is drained by the operation, and the tuberculosis continues its usual

⁷³ Berliner Klin. Woch., 1873, xliii, p. 509.

course in the other portions of the lung. The rapidity of amyloid degeneration of other organs may be somewhat retarded by the drainage; in a number of cases pulmonary fistulae remain. In 1890 I saw Hahn do a number of these operations and subsequently use the Koch lymph; at that time he reported that from his observations the results would not be satisfactory. Sonnenberg, in 1891, reported good results from this treatment. Kecke opposed the operation and quoted six cases of tuberculosis operated by Corenville⁷⁴ with five deaths. His personal cases were anything but satisfactory. Jaenfert⁷⁵ named certain conditions contraindicating operations on tubercular cavities: 1, tendency to hemorrhage; 2, the danger of pneumothorax; 3, drainage does not remove the original disease, and operations under these conditions give a great mortality. Truc reports 18 cases with 6 deaths within three months after the operation. Poissier and Jannesco collected 29 cases and showed 10 deaths, 15 improvements and only 4 recoveries. Hofmohl reports 5 cures after treatment of tubercular cavities by operation. Douglas Powell opposes the drainage of tubercular cavities on the grounds: 1, that the cavities are fairly well drained, situated as they are in the apex; 2, the cavities are not often single with an activity of symptoms; 3, that excavation in phthisis is a conservative process. The latter statement is misleading; true, the excavation is a conservative process, but the absorption of the products of mixed infection subsequently retained in the cavity is distinctly injurious to the entire organism; this is the principal reason for the drainage of the cavity. Patients rarely ever die from simple tuberculosis of any part of the body, and particularly from simple tuberculosis of the lung, it is the mixed infection which causes the great fatality. Tubercular cavities in the lower lobes are more easily drained, should give better results after drainage, and are more fatal when not drained than cavities in the upper lobes. The former points are emphasized by the case reported by N. Pendleton Dandridge⁷⁶ in his able article on the treatment of pulmonary cavities. While drainage of large tubercular cavities has not given satisfactory results as far as cure is concerned, I feel it is the surgeon's duty to resort to this operation very frequently as a palliative measure, as it relieves these great sufferers of their most distressing symptoms, viz.: cough and expectoration.

The following case illustrates the operation and course of cases after drainage of tubercular cavities:

J. M. C., aged 46, Cook County Infirmary, has been suffering from symptoms of tuberculosis for 10 months. He has emaciated to a great degree; has had severe night sweats, afternoon hectic flushes; he expectorates large quantities of purulent material with spasmodic attacks of coughing; one or two hours may pass without coughing, then he will get a severe spell and an ounce or more of pus will be expectorated, the odor of which is not particularly offensive. Examination reveals rales over upper lobe of right lung, extending down to the fourth rib; bronchial breathing, absence of normal respiratory sounds; a cavity can be located under the second rib, two inches to the right of the sternum, and extends from upper margin of the second to upper margin of the third rib; its transverse diameter appears to be about one and one-half inches.

Operation Dec. 12, 1897. It was decided to open and drain the cavity; a U-shaped incision was made extending from the first to the middle of the third rib, one inch to the right of the sternum. The incision was then curved upward and outward to the anterior axillary border; sub-periosteal resection of

about three inches of the second and third ribs was made; the parietal pleura was separated from the chest wall to the extent of about an inch around the field of operation; the exploratory puncture was now made for the first time and pus withdrawn. A horizontal incision was made in the pleura over the center of the cavity; adhesions were present, and the incision continued about one and one-half inches in length, until the cavity was reached, which was opened at a depth of about one inch; the hemorrhage was not profuse, and was readily controlled by pressure; a digital examination of the cavity showed that it was about two inches in diameter with an irregular surface; it was packed with iodoform gauze; there were a number of smaller bronchiectatic cavities opened in making the incision and a few caseous bronchial glands were removed from the mediastinal margin; the packing was removed in fifteen minutes; there was still some oozing, which was controlled by the Paquelin cautery. The cavity was repacked with iodoform gauze, and the flap was accurately sutured around the gauze drain; chloroform narcosis. The patient was not in the least shocked by the operation; the highest pulse rate following was 92; the temperature on the third day was 100.6 degrees; after the fifth day it did not exceed 99 degrees. He expectorated a bloody mucus for the first three days. He had no "fits of coughing" after the operation; the packing was removed on the fifth day and a soft rubber drain inserted; he was allowed to be up and about. There was a primary union of the flap except at the point of drainage. The drain was allowed to remain in for five weeks; it was then removed, as a fistulous canal had been established. His cough is reduced to a minimum, the discharge from the fistula is of a non-purulent mucous character, and while the fistulous opening is large the quantity of discharge is small. He has gained in weight, his night sweats have ceased, and his general condition is greatly improved. May 30, Dr. Johnson, Medical Director of the Infirmary, reports that the communication of the sinus with the cavity has closed, and that a small granulating surface remains at the external opening.

I have collected reports from the literature as follows: Tuberculosis of lung operated, 47; incision and drainage, 34; pneumectomy, 2; thoracoplasty, 5; puncture and drainage, 2; opening of superficial abscess, 4; recoveries, 26; recovery with fistula, 2; deaths, 19; 12 from undetermined causes; 1 multiple gangrenous foci; 1 acute miliary tuberculosis; 3 hemoptysis; 1 hemorrhage; 1 cachexia.

Pneumectomy for the removal of a part or a complete lobe of the lung for a tuberculous disease has been one of the triumphs of surgical technique, but so far the clinical results have been unsatisfactory. From the experiments of Gluck, Schmid, Bloch and Biondi,⁷⁷ we were led to believe that pneumectomy as a curative method for tuberculous lesions of the lung would become an accepted surgical procedure; however, our hopes have not been realized. While the operation of removal of a complete lobe of a lung has been successfully performed the number of deaths following pneumectomy has been so large that the operation has been practically abandoned. The technique of pneumectomy will be given under the heading of Pneumectomy for Neoplasms.

Kronlein in 1884 operated on two cases of apical tuberculosis; one lived but a few hours after the operation, the other but a few days. Ruggi, 1885, operated on two cases; one died on the ninth day from carbolic poisoning, and the other thirty-six hours after the operation. In 1891 Tuffier removed a small portion of the right apex through the intercostal space for tuberculosis; the patient made a good recovery and four years later was enjoying excellent health. In 1893 Mr. D. Lowson operated successfully on a woman 34 years of age for tubercular disease of the right apex. Doyen, 1895, also successfully removed a small portion of a lung for tuberculosis. Kronlein and Lowson give definite rules for the operation, the latter favoring the H or U-shaped incision, removing the second, third and fourth ribs from the sternum to the axillary line; this gives a large opening

⁷⁴ Muench. Med. Woch., 1891, xxxviii, p. 399.

⁷⁵ Muench. Med. Woch., 1891, xxxviii, p. 6.

⁷⁶ Ann. Surgery, xix, p. 134.

⁷⁷ Ber. Med. Woch., Vol. xviii, p. 645, 1881.

TUBERCULAR CAVITIES—1878 TO 1898.

No.	Bibliography.	Sex, Age.	Nature of Disease.	Duration	Etiology.	Location.	Signs of Cavity.
1878 1	Williams, B., Med. J. R., 1878, Vol. 101	M. 28 yrs.	Pulmonary tuberculosis, many cavities, 6 mos.	6 mos.	Fever, much expectoration, vomiting fetid sputum.	Left side, predominating at base.	Signs of cavity.
1879 2	Sadler, Lancet, 1879, Vol. 1, p. 81.	M. 38 yrs.	Tubercular cavity.	4 yrs.	Fever cachexia.	Left base.	Signs of cavity.
1882 3	Sommerfeld, Hosp. Studende, 1882, No. 17, p. 257.	M. 31 yrs.	Progressive phthisis.	.....	.....	.....	Large cavity in right upper lobe.
1882 4	Bull. M. World Med. Archives, 1882, Vol. 1, No. 26.	M. 29 yrs.	Circumscribed pneumothorax with underline tubercular cavity.	.....	.....	.....	.....
1883 5	Bull. Centr. F. Chirurgie, 1883, p. 104	M. 29 yrs.	Tuberculosis of left apex. 3d stage.	.....	Cough, expectoration, hectic fever.	In 1st and 2d intercostal space anteriorly.	Signs of cavity.
1884 6	Spencer Wells, Brit. Med. Jour., 1884, Vol. 1, p. 1117.	M.	Tubercular cavity with axillary abscess.	.....	Axillary abscess with signs of cavity of right apex.	Right apex.	Signs of cavity.
1885 7	De Trerville, Revue Medicale de la Suisse Romande, 1885, p. 463, Obs. 4.	F. 15 yrs.	Advanced tuberculosis of both apices.	2 or 3 years.	Hectic fever.	Left apex, clavicle to 4th rib.	Signs of cavity.
1885 8	Frankel in Truc these de Lyon, 1885, p. 78.	M.	Advanced pulmonary tuberculosis.	.....	Hectic fever.	Apex 2d intercostal space.	Signs of cavity.
1885 9	Truc th. de Lyon, 1885, p. 79.	M. 38 yrs.	Pulmonary tuberculosis.	.....	Sudden and severe pains under the right clavicle.	Right apex anteriorly.	.....
1885 10	De Cereville, Rev. Med. de la Suisse Romande, 1885, p. 463, Obs. 3.	F. 40 yrs.	Pulmonary tuberculosis, 3d period.	.....	Hectic fever, cachexia.	Left base.	Signs of cavity.
1887 11	Breen, proc. of Phil. Co. Med. Soc. 1887, Vol. 8, p. 203.	M. 27 yrs.	Tuberculosis with cavity.	.....	Cough, expectorated much sputa and pus. T. B. C. present, a septic temperature.	Lower left pulmonary lobe.	Signs of cavity.
1887 12	De Cerruille, Archive Gen. de Med., 1887, Vol. 20, p. 477.	F. 40 yrs.	Abdominal phthisis with large cavity.	.....	.....	Left summit.	.....
1887 13	De Cerruille, Obs. 5	F. 25 yrs.	Tubercular infiltration of left upper lobe.	4 yrs.	.....	Left apex.	Signs of cavity.
1887 14	Sczary et vicent Revue de Medicine, 1887, p. 675.	M. 48 yrs.	Pulmonary cavity, probably tubercular.	.....	Pleuro-pneumonia. Hemoptysis.	Right base posteriorly.	Signs of cavity.
1890 15	Denison, L., period. of Am. Med. Ass'n, 1890, in Centralblatt f. Chir., 1890, p. 791.	M. 26 yrs.	Pulmonary tuberculosis.	.....	.....	Base.	.....
1890 16	Tillman's. Brit. Med. Jour., 1890, Vol. 1, p. 1363.	M. 28 yrs.	Tuberculosis of left lung, especially empyema in lower two-thirds of left lung, several fistuli in left chest wall, heart displaced to right side, right lung comparatively healthy left sided empyema began Oct. 15, 1885.	.....	.....	Left side.	.....
1890 17	Spengler, Verhand. d. gesellsch. d. Naturforsch. Aeuztz. bremen, 1890, Vol. 1, p. 237, in Quinke, loc. cit. obs. 2, p. 241.	F. No age.	Bilateral pulmonary tuberculosis.	Several years.	Cavity of left apex, partial pyo-pneumothorax.	Left apex.	Signs of cavity.
1891 18	Caselli baceoglitose medic., 1891, T. 11, 5th series, p. 235.	M. 31 yrs.	Tubercular broncho pneumonia cavity of right apex.	.....	.....	Second intercostal space anteriorly.	Signs of cavity.
1891 19	Krecke, Mun. Med. Woch., Vol. 38, p. 400, 1891.	33 yrs.	Tuberculous cavity.	.....	Septic fever chills.	Right lower lobe.	Signs of cavity.
1891 20	Kurz, Wiener Med. Presse, 1891, p. 1389.	M. 30 yrs.	Tuberculosis of lungs, large cavities.	.....	Expectoration, fever, cachexia.	Left apex, anteriorly.	Signs of cavity.
1891 21	Krecke, Munchen Med. Wochensche, 1891, p. 390.	M. 57 yrs.	.....	.....	.....	Right base.	Signs of cavity.
1891 22	Hahn, 20th Cong. of German Society of Surgeons.	F. 22 yrs.	Cavity of left apex size of an apple.	.....	Purulent and fetid expectoration.	Apex anteriorly.	Signs of cavity.
23	Lesser, Munch. Woch., Feb. 24, 1891.	F. 43 yrs.	Tuberculosis with cavity at left apex symptoms had existed 4 years.	4 yrs.	.....	Left apex.	Signs of cavity.
1891 24	Lesser.	Same as 23	except cavity was smaller.	.....	.....	.....	.....

TUBERCULAR CAVITIES—1878 to 1898.

Pleural Adhesions.	Puncture.	Incision.	RESULTS.		Necropsy.
			Immediate.	Final.	
No adhesions.	Puncture in the 7th interspace, pneumothorax and subcutaneous emphysema, 2 pints of fetid pus, lavage.		Considerable amelioration 6 mos. later.		
Adhesions.		Incision in 10th interspace without resection of rib opening of a small cavity with the finger. Drainage.	Death 14th day.		Large cavity in left base not opened.
		Puncture of cavity with trochar coarse, drainage.	No influence on general condition.	Death in 28 days after operation.	
		Thorocotomy and with forceps bored into lung, cavity was reached.	Patient died 7 days after operation.		
Adhesions.	Puncture made, blood.	Pneumotomy.	Death on 6th day.		Partial pneumothorax, a large superficial cavity in left lung.
		Incision of axillary abscess, issue of pus and gas. The liquid discharged is similar to the expectorate of the patient.	Recovery.	Recovery without fistula.	
Adhesions.		Resection of 8 cm. of 2d left rib, exploratory puncture, removal of purulent and bloody fluid. Pneumotomy, opening of cavity.	Recovery. Observation 15 days after recovery.		
		Pneumotomy, drainage, insufflation, iodine and phenol.	Death, Hemoptysis.		Purulent cavity with granulations wall.
Adhesions.		Pneumotomy, discharge of pus, air and gangrenous debris, drainage.	Death 15th day. Pains increased after operation.		Bilateral tuberculosis, cavity opened.
		Thorocoplasty, resection of 5th rib to obliterate cavity which was not opened.	Death 14 days later.		No necropsy.
Pleural adhesions.	Negative puncture. Incision, trochar introduced into cavity.	Resection of 1 and 1½ in. of 9th rib just within a line drawn from angle of scapula, small drainage introduced, next day 1 oz. of pus escaped, opening dilated and several oz. of pus escaped.	Recovery.	Steady improvement since operation.	Temperature normal.
		Resection of 3d rib.	Death 15 days after.		
Adhesions.		Resection of 3 cm. of 2d and 3d ribs. Pneumotomy opening of a cavity situated behind the clavicle.	Death 45th day.		Acute general miliary tuberculosis.
Pleural adhesions.	Exploratory puncture, positive.	Resection of 2 cm. of 9th rib. Pneumotomy, a cavity the size of an orange, opened and drained.	Death 7th day.		Single cavity opened, tuberculosis of right apex more recent, tubercles in left lung.
		Resection of 6th and 7th ribs. Pneumotomy, injection of vaselin and salol.	Recovery, amelioration 4 months later.		
Left pleural firmly adherent in upper one-third.	Puncture 1 month after onset of empyema.	Thorocotomy Sept., 1886, and Jan., 1888, with resection of piece of rib in lower and hind part of thorax. In April, 1888, extensive rib resection from 2d to 6th rib on left side in front, and 7th to 9th rib, left side behind. On May 27, 1888, front of chest wall resected from 2d to 6th rib, close to the sternal border. Breadth of resection 5 cm. above and 12 cm. below, left pleura tuberculous and right lung phthisical, large as man's fist, firmly adherent at 1st rib, left lung partly covered by pedunculated skin flap.	Organs shrank after last operation and tuberculosis of lung underwent process of spontaneous cure as a result of shrinkage.	Patient discharged as cured July 23, 1888.	
No adhesions.		Thorocoplasty, cavity not opened.	Recovery.	Cured 7 mos., disappearance of signs of cavity of left apex, the right apex not operated upon, healed equally well.	
Adhesions.		Resection of 8 cm. of the 2d left rib. Exploratory puncture, removal purulent and bloody fluid. Pneumotomy, opening of cavity.	Recovery 15 days after operation.		
Pleural adhesions present.		Resection of ribs. Pleura opened with blunt instrument, lung over cavity was punctured, free opening made, cavity packed with iodoform gauze.	Fever fell after operation, considerable secretion, improvement after operation so patient could leave bed, sudden hemoptysis set in and caused death.		
No adhesions.		Incision in the 2d intercostal space, pneumothorax. Pneumotomy, injection of iodoform.	Pneumothorax absorbed in 6 days, recovery without fistula, cavity measured 12 p. m. in diameter.	Death 3 years later, general tuberculosis.	
		Rib resection. Pneumotomy, iodoform tamponade.	Death. Hemoptysis.		
		Incision at level of upper border at 3d rib. Pneumotomy without rib resection, amelioration. Injections of Koch's tuberculin.			
Pleural adhesions.		Incision in 1st interspace 7 cm. long, trochar introduced, cantery used to penetrate lung cavity size of apple, walls curetted and packed with antiseptic gauze, Koch's tuberculin injected and caused increased discharge.		Patient was much improved in general health, cavity dwindled down to 1½ its normal size.	

TUBERCULAR CAVITIES—1878 TO 1898.

No.	Bibliography.	Sex. Age.	Nature of Disease.	Duration.	Etiology.	Location.	Signs of Cavity.
1891 25	Sonnenburg, 21st Congress of German Surg. Soc., April, 1891, and in Quinke and trenzgelhet, 1896, Vol. 1, p. 240, Obs. 4.	M. 56 yrs.	Bilateral pulmonary tuberculosis more marked upon right side, lesions far advanced in right lung, less so in left, numerous bacilli.	.....	.....	Right apex anteriorly.	Signs of cavity.
1891 26	Sonnenburg, Quinke, loc. cit., Obs. 5.	M. 43 yrs.	Tuberculosis of both apices, predominating in left. Two lesions in right.	.....	Emaciation and fever.	Left apex anteriorly.	Signs of cavity.
1891 27	Sonnenburg, loc. cit., Obs. 6.	M. 44 yrs.	Tuberculosis of both apices, predominating in left.	21 mos.	.....	Left apex anteriorly.	In left apex only.
1891 28	Sonnenburg, loc. cit., Obs. 7.	M. 35 yrs.	Bilateral pulmonary tuberculosis, predominating in right lung.	18 mos.	.....	Right apex anteriorly.	Signs of cavity.
1892 29	Roux, Revue Med. de la Suisse romande, 1892, p. 567.	.....	Tubercular cavity located posteriorly under the scapula and inaccessible from behind.	.....	.....	Right lung under scapula.	Signs of cavity.
1892 30	Roux, <i>ibid.</i> , 1892, p. 567.	F.	Large tubercular cavity.	.....	.....	Right base.	.....
1893 31	Lowson, Brit. Med. J. In N. Y. Rec., April 15, 1893, Vol. 43, p. 668. Brit. Med. J. June 3, 1893.	F. 34 yrs.	Tuberculosis of right apex.	.....	Dyspepsia, night sweats. Pain over top of right lung to back, cough.	Apex of right lung.	.....
1893 32	Shurly, J. of M. M. Ass'n, 1893, 21, p. 297, Obs. 1.	M. 48 yrs.	Tuberculosis of both apices. Hepatization in left, cavities in right. Duration several years.	Several years.	Fever, emaciation, abundant expectoration.	Right apex.	Signs of cavity.
1893 33	Shurly, <i>ibid.</i> , 1893, 21, p. 297, Obs. 2.	M. 27 yrs.	Bilateral pulmonary tuberculosis, 3d period, cavity in left lung.	.....	.....	.....	Hectic fever, multiple cavities, one large cavity in the left lung and disseminated.
1893 34	Voge, Med. and Surg. Rep. Phila., Dec. 31, 1893.	F. 28 yrs.	Pulmonary tuberculosis.	.....	Superficial abscess beneath scapula.	Base posteriorly.	.....
1894 35	Dandridge, D. P., Ann. of Surg., Vol. 19, 1894, p. 129.	M. 29 yrs.	Tuberculosis of lungs.	.....	.....	Right lower lobe.	No posterior signs.
1894 36	Parrier, Soc. de Chirurgie, 1894, p. 630.	.....	Abscess of thoracic wall communicating with lung cavities in a tubercular subject.	.....	.....	.....	.....
1894 37	Truc th. de Lyon.....	M. 47 yrs.	Pulmonary tuberculosis and fistulous tract opening, 4 fingers' breadth outside of nipple.	2 yrs.	Suppurating fistula.	Right apex.	.....
1895 38	Doyen, Cong. de Chirurgie, 1895, p. 105.	.....	Pulmonary tuberculosis, 3d stage.	.....	.....	.....	Signs of cavity.
1895 39	Michaux, Congres Francais de chirurgie, 1895, p. 94.	F. 26 yrs.	Tuberculosis of right lung, multiple foci.	.....	.....	Right base behind.	Signs of cavity.
1895 40	Michaux, Congres Francais de Chirurgie, 1895, p. 94.	F. 28 yrs.	Tubercular cavities.	.....	Profuse expectoration.	Right base behind.	Signs of cavity.
1895 41	Salmoni, Clinica Chirurgica Milano, 1895, p. 65.	M. 34 yrs.	Pulmonary tuberculosis following, upon an old pleurisy.	.....	Cough, expectoration, hectic fever, retraction of thorax.	Left base.	No signs of cavity.
1895 42	Tuffier, L'Abeille, Med. Par., Oct. 28, 1895.	M. 20 yrs.	Tuberculosis of apex of right lung.	.....	Tubercle bacilli found in sputum.	.....	.....
1896 43	Quinke, Mittheilungen, A. D. Greuz's biete der med. in Chir., 1896, 1, p. 240.	M. 46 yrs.	Tubercular infiltration of right lung.	2 yrs.	Hectic fever.	Right apex anteriorly.	Signs of cavity.
1896 44	Quinke, Mittheilungen in Quingeliche, 1896, 1, p. 263.	M. 26 yrs.	Cavity of the right apex.	.....	Frequent hæmoptysis, retraction of thorax.	Right apex.	Signs of cavity.
1896 45	Maffert, Brit. Med. Jour., 1896, p. 392.	M. 19 yrs.	Chondro-sterno-costal tuberculosis and pulmonary tuberculosis.	.....	Symptoms of purulent pleurisy.	Left base.	No signs of cavity.
1898 46	New York Med. News, D. Trait and Abrams, Feb. 26, 1878, p. 263.	M. 7 yrs.	Acute tuberculosis.	.....	Previous croupous pneumonia, night sweats, progressive emaciation.	Lower lobe of left lung, upper portion.	.....

TUBERCULAR CAVITIES—1878 TO 1898.

Pleural Adhesions.	Punctura.	Incision.	RESULTS.		Necropsy.
			Immediate.	Final.	
Adhesions.	Incision parallel with clavicle, resection of a fragment of 1st rib, exploratory puncture. Pneumotomy, opening of a cavity the size of hazel nut, iodoform tamponade.	Recovery. Cavity rapidly obliterated (2 mos.) Injection of Koch's tuberculin after the operation many bacilli in the sputum.	Recovery.	.....
Adhesions.	Parallel with clavicle, puncture. Pneumotomy, opening of a cavity the size of a walnut.	Recovery. Injection of Koch's tuberculin after operation.	No amelioration.	.....
Adhesions.	Parallel with clavicle, puncture. Pneumotomy opening of a cavity the size of a hazel nut, 1 cm. deep.	Recovery. Injection of tuberculin after operation.	No amelioration.	.....
No adhesions.	Resection of 4th rib. Incision of pleura. Partial pneumothorax. Pneumotomy injection of tuberculin.	Death 7th week. Cavity opened spontaneously on 11th day through scar.	.....	.....
No adhesions.	Pneumotomy after suture of pleura. Opening of a small cavity. Drainage, incision made in anterior wall of thorax.	Recovery. A large cavity which could not be opened, discharged into the inside cavity 3 weeks later. Patient much improved.	.....	.....
Adhesions.	Pneumotomy drainage.	Recovery.	Marked improvement, drainage maintained until complete closure of cavity.	.....
Pleural adhesions.	Anterior 1/4 of 2d and 3d ribs, removed parietal layer of pleura opened, apex of lung pulled out after transfixed with needle, tied with strong silk and removed.	Pneumothorax developed suddenly but gave no trouble.	Wound was healed by end of 3d week.	.....
Pleural adhesions.	Level of 2d intercostal space. Pneumotomy, opening of a cavity located 2 cm. deep. Hemorrhage at the moment of incision, drainage, injection of chlorin gas next day.	Death on 8th day from hemorrhage.	.....	No necropsy.
Adhesions.	Incision in 3d interspace. Pneumotomy, opening of a cavity, drainage, injection of chlorin gas.	Death 24th day, cachexia.	.....	No necropsy.
.....	Superficial incision, issue of pus, of gangrenous debris and gas. Iodin injected into the wound appeared in the sputum.	Recovery.	.....	.....
Pleural adhesions.	Positive puncture, bloody fluid.	3 inches of 8th and 9th ribs removed in axillary line underlying cavity freely opened, 1/2 pint bloody purulent fluid, caseous material evacuated, irrigations with boric acid and sal, skin incision partly closed, double drainage tube, tube taken out after several days. Incision healed.	Immediate improvement.	Was soon up and about house. Area of dullness diminished. Respiratory sounds heard at a lower level than before.	.....
.....	Incision and drainage.	Recovery.	.....	.....
.....	Puncture and dilatation of tract, drainage of 1/2 liter pus.	.....	Recovery.	Condition satisfactory 6 1/2 mos. later, tuberculosis still exists.	.....
.....	Pneumectomy, resection of the 3d rib.	Death occurring the night following the operation. Death in one month.	.....	Tuber. right apex without cavity, small cavity at base not opened.
.....	Resection of 10 cm. of 7th and 8th ribs, exploratory pneumotomy, upon opening a series of dilated bronchi were found.	.....	.....	Disseminated tuberculosis in entire right lung.
.....	Resection of 7.8 cm. of 8th and 9th ribs. Pneumotomy, incision 4 to 5 cm. in depth without opening cavity.	Temporary amelioration.	Death 3 months later.	.....
Pleural adhesions.	Thoracoplasty, 3th, 6th, 7th, 8th and 9th ribs resected. Pneumotomy.	Recovery.	Much improved 3 months later.	.....
.....	Incision in 2d interspace and ant. axilla pleural pneumo chorax by attaching parietal to viscera pleura. Piece of lung 2 cm. in all directions was excised, wound closed without drainage.	Patient up 9th day.	4 yrs. after operation patient was healthy.	.....
No adhesions.	Incision and application of a paste of chlorid of zinc in the first intercostal space. Pneumotomy after exploratory puncture, resection of 2d rib 16 days later, many small cavities opened.	Recovery.	Death 3 yrs. later from progress of the tuberculosis.	.....
Adhesions.	Thoracoplasty, resection of 2d and 3d ribs without opening.	Recovery.	See foot note.	Cicatrized cavity right apex, sclerotic lung cavity open'd during 2d operation is recent. Sclerosis of left apex.
.....	Incision and resection of 6th rib in axillary line. Puncture, discharge of pus containing bacilli, lavage, drainage.	Death 1 month later,	.....	Enorm's sternocostal cold abscess, communicating with the cavity opened by a narrow orifice. Right lung almost completely destroyed. Left lung studded with tubercles.
Adhesions present.	Puncture at lower dull area, negative, a 2d puncture at higher and deeper point revealed pus.	Pneumotomy. U-shaped incision 3 1/4 inches between 7th and 8th ribs and anterior axillary and scapula lines resected, pleura opened. Pleural cavity shut off with gauze, lung incised with cautery to depth of 1 and 1 1/4 inches, 75 cubic cm. of thick non-fetid pus escaped, opening enlarged and cavity swabbed and packed with gauze. Gauze removed from pleural cavity skin and muscle flap sutured.	Improvement, temperature lowered.	.....	.....

Cure maintained 1 year. Closure of cavity, relapse and reappearance of the signs of cavity in right apex. 2d operation, resection of 2d, 3d, 4th and 5th ribs. Pneumotomy, dressing compression. Death 28 days later from emphysema and accidents produced by the chloroform.

through which to work. After the chest has been opened the lung is to be drawn out, transfixed, ligated and amputated with the cautery. The cavity should then be drained and only partially closed. Tuffier in his operation deviated from this by producing an extra-pleural pneumothorax before opening the parietal pleura; he then divided the pleura and drew the diseased portion out through the opening. He closed the wound completely; his patient was about in twelve days. He places particular stress upon the advantage of preliminary extra-pleural pneumothorax. The pathologic conditions which render this operation necessary are such that at a time most favorable for the performance of the operation the patients will not submit, and when they desire the operation the pathologic changes are so far advanced that they are not in condition to withstand its severity. In one attempt at this operation adhesions were found so firm and resisting that the operation had to be abandoned. The dangers of separating an adherent apex on the mediastinal side should be borne in mind; 1, the mediastinal septum in front is thin and easily lacerated; 2, there is danger of tearing the azygos veins and the subclavian artery or vein at the extreme apex; 3, lower down there is danger of tearing the right cardiac auricle; this accident happened to me in an operation on the cadaver. When the lung is in an advanced stage of tuberculosis its infiltration is so extensive that it is not compressible, and estimates on its removal must be based on the principles governing removal of a solid tumor of equal size. I have found when placing the forceps or ligature on the lungs of cadavers in this condition, that many times the tissue lacerated with the pressure. It must therefore be understood that the ligature must be placed on the base of the lobe, including only the arteries, veins and bronchi, and that the opening must be sufficiently large to admit of the extraction of a solid mass the size of the lobe to be removed. The removal of a complete lung for tuberculosis has not to my knowledge been attempted. In advanced tuberculosis the pathologic changes produce insurmountable barriers against the operation of pneumectomy, and while occasional success in partial resection may be achieved it can never become a practical method for the treatment of tuberculosis. I believe the trend of surgery in tuberculosis of the lung will be the utilization of surgical means for placing the lung in better condition for repair, as quiescence, compression, drainage, etc., rather than extirpation of the tubercular focus.

Hydatid cysts.—The surgery of hydatid disease of the lung is well established and exact lines are drawn as to its operative treatment. The results have been very flattering to the surgeon. It is variously estimated that from 11 to 16 per cent. of hydatids of the body occur either in the pleura or in the lung, these situations being the most frequent next to the liver. Many of the cases are secondary to disease of the liver, as the following case illustrates:

J. L., male, aged 46, came under my observation November, 1884. Six weeks previous he complained of a sudden pain in the right side, followed by dyspnea and a dry hacking cough; the distress was severe for three days; a diagnosis of pleurisy had been made and he was placed under medical treatment; when he presented himself at my office the following conditions were found: Respirations 36, temperature 99.2 degrees, pulse 110; he complained of great compression in the right side; dulness extended to the spine of the scapula behind and to the second interspace in front; respiratory sounds were absent; there was a bulging of the intercostal spaces and the apex beat

was displaced one inch to the left; the liver margin extended one and one-half inches below the costal arch. The edge of the liver was soft and pliable and of regular anatomic formation.

Diagnosis.—Hydrothorax; aspiration of a large quantity of clear fluid; microscopic examination revealed hooklets. Patient had temporary relief, but in three weeks the distress was as great as before, when an operation was advised.

Operation.—Resection of two inches of the ninth rib in the anterior axillary line; a large quantity of fluid escaped; an opening in the diaphragm could be felt about two and one-half inches from the costal margin. A perforated drain was inserted through this opening and brought out through the chest wall. The patient improved rapidly in his general condition. Four weeks later there was a free discharge of bile through the tube. The pleural cavity rapidly contracted and at the end of three months there was nothing but a sinus into the liver, which was discharging bile freely; the tube was removed in five months; bile continued to discharge in enormous quantities; the sinus closed nine months from the time of the operation; the patient has remained well up to the present time.

In the United States hydatid is infrequent; it is often met with in the Canadian provinces and particularly among the Finlanders (A. H. Ferguson). The mortality from the disease treated medicinally or without treatment has been variously estimated; Niesser places it at 58.7 per cent; Devaine, 66 $\frac{2}{3}$ per cent.; Thomas, 54 per cent. The great majority of cases that recovered without surgical aid ruptured into the bronchi, and a few externally.

There are three methods of external treatment: 1, puncture; 2, free incision; 3, removal. Maydl collected sixteen cases treated by puncture, of which 69 per cent. died. The dangers of puncture are: 1, drowning during operation by opening into bronchus; 2, emphysema; 3, dyspnea from pneumo- and hydrothorax; 4, albuminous edema of the lung. The fatal accidents of puncture of hydatids must be borne in mind, and in hydrothorax when hydatid is even suspected exploratory puncture must not be performed; as an incision has no more dangers than puncture in simple hydrothorax and is so very much less dangerous in hydatid cyst, it should be adopted in place of puncture in doubtful cases. Puncture with canula is curative in only 25 per cent. (Tuffier); as the canula becomes occluded the multiple cysts are not drained, infection takes place and the incision will eventually have to be resorted to. Tuffier gives the immediate mortality of puncture with canula as 50 per cent. Thomas, 1885, gives the following comparison of results: Hydatids of the lung and pleura not interfered with had a mortality of 54 per cent.; treated by puncture, 27 per cent.; treated by incision and resection, 16 per cent. Schwalbe (l. c.) states that hydatids of the lung without operation have a mortality of 60 per cent. Lopez collected thirty-six cases treated by pneumotomy; the mortality was 14 per cent.

Suppurating hydatids communicating with the bronchus, if not progressing favorably, should be treated as pulmonary abscesses, opened and drained, after fixation of the lung to the thoracic wall. Roswell Park collected thirty-two cases with four deaths, a mortality of 12.5 per cent. It is claimed by Tuffier that 90 per cent. of the cases recover after pneumotomy.

Tumors, from 1884 to 1896.

Case 1, 1884. Kronlein Berliner Clin. Chir. Woch., 1884, p. 199, and 1886, p. 185. Correspondenzblatt Schweizer Aerzte 1887, xvii, p. 696, et in Mueller Deutsche Zeith. für Chirurg., 1893, Vol. 67, p. 41. Female, 18 years. Diagnosis: sarcoma of lung secondary to costal sarcoma of eight months' standing, in sixth rib, left axillary line. Operation in thorax pleura: incision from second to fifth rib, resection of thoracic wall, fifth, sixth, seventh and eighth ribs being found adherent to tumor; once adhesions are separated there is produced an alarming thorax; anesthetic had to be stopped. Operation on lung extirpation of secondary sarcomatous nodule the size of a walnut; resection done in healthy pulmonary tissue, lung sutured with catgut, drainage of pleural cavity; recovery without incidents. Results: recurrence without scar three years and three months

after extirpation and pneumectomy, recurrence six months after in thoracic wall, new operation but no pneumectomy; died seven years after first operation; general metastasis.

Case 2, 1887. Sedelot, quot. Baldus in 1887, Bown, p. 16, et Par. Mayer-wang, dissetato, 1889, p. 13. Diagnosis: sarcoma of lung secondary to sarcoma of thoracic wall. Operation in thorax pleura: resection of two ribs and all of thoracic wall, including pleura. Operation on lung: resection of portion of lung adherent to thoracic wall. Recovery.

Case 3, 1893. Mueller, Deutsche Zeitsch. für Chirurg., 1893, Vol. 37, p. 42, Male. Diagnosis: chondroma of lung secondary to costal osteo-sarcoma, four years; base of right lung and anterior portion of thorax from sixth to seventh ribs and from sternum to axillary line. Operation in thorax pleura: resection of thoracic wall from third to sixth ribs, inclusive, adhesions of lung to pleura being separated there is produced a complete pneumothorax with cessation of respiration; these symptoms ceased on lung being drawn to thoracic wound. Operation on lung: extirpation of neoplastic nodule, double ligature of pulmonary pedicle and suture of lung wound, which measures 9 by 13 cm.; drainage of pleural cavity. Rapid recovery in three weeks; superficial recurrence in scar two years and three months after extirpation; patient is still cured, four years and eight months after first operation.

Case 4, 1894. Weinlechner in Mueller Deutsche Chirurgief., xl, 2, p. 269, in Mueller Deutsche Zeitsch. Chirurg., 1895, xlvii, p. 41. Diagnosis: myxocongroma of lung second to myxocongroma of thoracic wall. Operation in thorax pleura: resection of three ribs and of all thoracic walls, including pleura, resection of portion of lung as large as the palm of the hand adherent to tumor, resection of two pulmonary metastatic nodules in inferior lobe. Death twenty-four hours after. Necropsy: purulent pleurisy, excision of thoracic walls had not allowed union of soft parts.

Case 5, 1896. Koenig, Berlin Woch., 1896, p. 132. Diagnosis: sarcomatous nodule secondary to sarcoma of sternum. Operation on thorax pleura: resection of sternum. Operation on lung: resection of small sarcomatous nodule without suturing pulmonary wound. Died on night following operation of a pneumothorax.

Case 6, 1896. Williams, quot. by Zegari, p. 143. Male, 37 years. Diagnosis: myxocondroma of median lobe of right lung, secondary tube costal myxocondroma; duration four years; from second to seventh ribs in neighborhood of nipple. Operation in thorax pleura: resection of thorax of third, fourth and fifth ribs, pneumothorax, collapse of lung. Operation on lung: resection of a voluminous nodule of small volume in superior lobe; death due to collapse.

Actinomyces of the lung.—Actinomyces of the respiratory organs is next in frequency to actinomyces of the digestive tract. It may appear as a primary lesion of the lung, or the lung may be secondarily attacked from an actinomyces of the bony framework of the chest or from an actinomyces penetrating the diaphragm. A detail of the history of the disease, while it might be very interesting, will not be considered here. Langenbeck in 1845 first described the disease. Ponfick, Israel and Bollinger made a very extensive study of the subject. Israel collected nine cases of actinomyces of the air passages. When it occurs primarily in the lung it may have been inhaled. When the lung is infected the tendency is to a rapid infiltration and extension of the disease. It is not so likely to be overlooked now as in former years; the sputum of every patient with chronic pulmonary lesions is repeatedly examined, and while the ray fungi are not sought, they are not often overlooked. The medical treatment of actinomyces is becoming more satisfactory as time advances; iodid of potassium has proved most useful. We find in the literature a number of cases in which it was used with curative effect; it should be administered in increasing doses until iodism is produced. This is now being supplemented by the internal use and external application of nitrate of silver, suggested by Dr. Poore (Paget). He bases his recommendation on his experience in one case of actinomyces of the right pleura and the specific fatal effect of nitrate of silver upon the aspergillus niger noted by Raullins; one part in a million and a half in culture media would prohibit the growth of the latter. When the lung is infected with actinomyces it produces no specific symptoms in its early stage; later the chest wall is attacked and external sinuses may develop, when the true character of the lung lesion can be readily recognized if it has not already been detected in the sputum. If treated surgically the indication is a radical extirpation of the disease; if this can not be accomplished, careful and thorough curettement and packing with a nitrate of silver gauze is indicated. Godlee favors radical surgical treatment when iodid of potassium has failed, and while I agree with him in this *dernier ressort*,

from my experience with surgical treatment of actinomyces in other parts of the body, I would consider that the lung is a very unpromising field for surgical treatment. A very interesting case was reported by Dr. Karewski at the recent meeting of the Berlin Medical Society.⁷⁸ Fraenkel made the diagnosis from the physical appearance without the aid of the microscope; extensive resection of the ribs and chest wall was made; the patient recovered and only a small sinus remained.

Dermoid cysts will not be considered in this article, as they are always mediastinal tumors and not true tumors of the lung, although they frequently rupture into the trachea or bronchi and their contents are expectorated (see Clotta's case, also a very interesting case reported by Dr. Ogle;⁷⁹ another by Rickman J. Godlee).⁸⁰ These tumors are all of mediastinal origin (Bland Sutton).

Neoplasms of the chest wall and lung requiring pneumectomy.—Of the neoplasms occurring primarily in the chest wall and involving secondarily the pleura and lung we may mention, 1, the sarcomata of the ribs and sternum; 2, the enchondromata (varieties); 3, the carcinomata, occurring first in the mammary gland and involving the muscle, bone and pleura of the chest wall by continuity of the process or by secondary glandular infection. The following tumors in the lungs are pathologic curiosities: Fibromata, lipomata, angiomas, dermoids (Clotta) and gummata of the chest wall. When these neoplasms invade the pleura, adhesions are not infrequently formed; the lung may also be involved at the time of operation, necessitating excision of a greater or lesser portion of it with the tumor. Primary malignant neoplasms of the lung are rare; secondary involvement of the lung by carcinoma and sarcoma is not uncommon. Wilson Fox, who collected 112 cases of tumors, showed that the disease was primary in 38, secondary in 64 and indetermined in 10. Primary cancerous growths usually originate in the mucous glands, and as these are lined with cylinder cells they are frequently cylindrical epithelioma. An alveolus may be the initial seat of the disease. Primary sarcoma may occur in the lung and is usually of the round-celled variety; spindle-celled and myeloid growths have been observed; they very closely resemble aneurysm and the greatest care must be exercised in making a differential diagnosis. In many cases it is difficult to say whether the malignant disease is primary or secondary in the lung; the surgeon is rarely called upon to operate on these cases, as they are not diagnosed. The class of malignant disorders of the lung which comes to the surgeon for operation is that in which the disease is secondary to disease of the chest wall. This leads us to the consideration of the subject of pneumectomy in general.

Pneumectomy was performed first for the cure of hernia of the lung; one case was published by Rolandus, 1492. The cases of amputation of a protruding lung do not clinically come under the heading of pneumectomy, as they do not involve the dangers and difficulties of technique associated with intra-thoracic pneumectomy. The first pneumectomy was made by Péan in 1861; he was resecting a tumor involving the third, fourth and fifth ribs; the pleural cavity was opened, the ribs mentioned excised and the lung was

⁷⁸ Allgem. Med. Centr. Zeit., Vol xxlii, xxiv, p. 298.

⁷⁹ Medical Week, Paris, March 5, 1897, p. 101.

⁸⁰ Ibid.

found adherent and involved in the tumor. The visceral and parietal pleura were sutured and the Paquelin cautery was used to remove the diseased portion of the lung. The first scientific experimental investigation was made by Gluck, 1881 (l. c.). He performed pneumectomy on 6 dogs and 14 rabbits; two of the latter lived for three months; all of the dogs died; in one, in which he ligated the stump of the lung without a pneumectomy, he found that the portion of the lung on the distal side of the ligature did not mummify, but lived. There was primary union of the vessels. There was always immediate cyanosis after the operation. He arrived at the following conclusions: Ligature with pneumectomy is tolerated well by rabbits; if the operation be aseptically and well performed recovery is permanent; primary adhesion of vessels takes place; no cardiac thrombosis; the stump lives and forms part of the cicatrix; the fatality is caused by pneumothorax, pericarditis, infective pleurisy of the same and opposite sides. Milton Antony⁸¹ of Augusta, Ga., reports that in 1821 he was called to a patient in the western frontier suffering from a growth of the lung pressing out the fifth and sixth ribs. He made a resection of these, scooped out the degenerated tissue or tumor of the lung and plugged the cavity; the patient recovered. While this case antedates Péan's it should not be considered a pneumectomy. From his report there is some doubt that any lung tissue was removed, as the patient had no cough nor expectoration and there was no mention made of air escaping through the wound. Be that as it may, he deserves credit for having suggested and practiced sub-periosteal resection of the rib to allow the wall of the chest to fall in and fill the space; an operation which subsequently added much to the fame of Estlander and Schéde. Marcus, in 1881, removed one entire lung from two dogs and three rabbits. One dog died from the anesthetic, the other from purulent pleurisy; the rabbits died on the third, sixth and twenty-seventh days respectively. These experiments were rapidly followed by those of Hans Schmid,⁸² which were made independent of a knowledge of Gluck's. He used morphin and ether for narcosis; hemostasis of the excised portion was secured by transfixion and ligation with catgut; he made exact suture of the edges. In eight partial resections in dogs there were five deaths and three recoveries; the deaths were caused in four by suppurative pleuritis, in one by carbolic acid poisoning. In partial resections a V-shaped incision was made with accurate suture of edge. He removed both apices successfully in the same dog, six weeks intervening between the operations; there was no secondary hemorrhage; he expressed the belief that partial excision was applicable to local tuberculosis, injuries, abscesses and tumors of the lung and rib.

In May, 1881, Bloch performed nine experiments for the removal of the lung on five rabbits and four dogs; all of the former died immediately after the operation; one of the latter lived fourteen days; the other dogs all died shortly after the operation. In July, 1881, he performed sixteen experiments with resection of the rib on rabbits; all died a few days after from hemorrhagic pleurisy; the time required for operation was forty-five minutes. He changed his method to an intercostal incision with the removal of single lobes and reduced his time to ten minutes.

With this method two dogs recovered, one from a lower and the other from a middle lobe amputation; when the dogs were killed no pneumothorax, exudate, nor displacement of organs was found. He noted the anatomic communications of both pleural cavities in some dogs; all with this communication terminated fatally; he advised against drainage. He removed infiltrated lobes through intercostal spaces and favored that plan very much.⁸³ Bloch's experiments were very discouraging, but the profession was soon relieved from their depressing effect by the more extensive, scientific and fruitful researches of Biondi which carried the profession too far in the opposite direction. In 1882 Biondi made the following experiments: Extirpation of right lung, healthy animals, 23 experiments, 12 recoveries; extirpation of left lung, healthy animals, 34, 18 recoveries; extirpation of both apices, 3 experiments, 3 recoveries; middle lobe, 1, 1 recovery.⁸⁴ His experiments were exact as to details and his results were the best obtained. He found that the great majority of animals infected artificially with tuberculosis in the lung and not treated died of the tuberculosis; on the other hand, he found that a timely resection of the apex of the lung saved a goodly number. The success of these experiments stimulated surgeons to operations for removal of the lung. Zakhar-witch made a minute study of the technique of these operations experimentally on cadavers and on animals. His results almost equalled those of Biondi. He laid down definite rules for pneumectomy. W. LeMoyné Wills⁸⁵ reports some very interesting and instructive experiments of pneumotomy and pneumectomy.

Weinlechner, in 1882, removed three ribs for malignant disease and excised two nodules from the lung; the opening in the pleura was so large that he found it impossible to obtain a sufficient flap to cover it; closed with packing; patient died in twenty-four hours from acute pleuritis.

Kroenlein, in 1884, operated on two cases; one ended fatally a few hours after operation and the other lived but a few days. Ruggi, in 1885, performed two operations; in one he succeeded in removing the apex, and the patient died on the ninth day from carbolic acid poisoning; in the other he found it impossible to detach the lung from the pleura; the patient died thirty-six hours after the attempt.

Sedillot, in 1887, removed a portion of a lung which was adherent to and involved in a sarcoma of the chest wall. Patient recovered. W. Miller, 1888, removed a portion of lung and chest wall successfully for enchondroma.

In 1891 Tuffier removed successfully a tubercular nodule from the apex of the right lung. He first separated the parietal pleura from the ribs all around the field of operation; when this was accomplished he palpated the tumor, divided the pleura, grasped the lung with the forceps and drew it out through the slit in the pleura, producing a hernia of the lung. A tubercular nodule the size of a hazel-nut was excised and the lung was allowed to drop back. The incision was completely closed; the patient was reported well four years later. This was certainly an ideal case for excision.

D. Lowson, 1893, excised the apex of the right lung for tuberculosis. He made an angular incision and resected the second and third ribs. A small opening

⁸¹ Phil. Med. Jour. 1823, p. 108.

⁸² Berlin. Med. Woch., No. 57, Dec., 1881.

⁸³ Deutsch. Med. Woch., Berlin, 1881, vii, p. 684.

⁸⁴ Glor. Internaz. d. So. Med., Napoli, 1882, N. S. iv, 759-1883; N. S.

⁸⁵ Southern Calif. Prac., Los Angeles, 1892, vii, 167.

was made in the pleura; he filled the pleural cavity with sterilized air to force collapse of the lung. This caused no dyspnea or cyanosis; he then opened the pleura, freed the adhesions and brought the lung out through the fissure, transfixed it, ligated and excised the infiltrated portion; he replaced the lung and closed the chest cavity without drain. It had to be opened two weeks later for the removal of some pus and blood; the patient was discharged from the hospital in eighty days; she had gained rapidly in flesh and the wall was closed to a small sinus. This operation shows the most praiseworthy preparation and execution, and the result was well deserved.

These operations were rapidly followed by those of Miller, Koenig, Mikulicz, Albert, Tillmanns and others; but the hope of success that was born from the results of Biondi's experiments has never been realized. In 1887 Roswell Park, in an able article, reviewed the cases treated up to that time. E. Willys Andrews⁵⁶ advocates removal of upper lobe of lung, and has confidence in its success; he emphasizes the dangers and difficulties caused by adhesions; he believes large incision in the axillary line is most advantageous for operation. Pneumectomy for primary tumor of the lung has never been performed. Schlepfer collected 16 cases of enchondroma in which the chest was opened, with 8 recoveries and 8 deaths. Tillmanns considers that the greatest danger in the removal of these tumors is in the opening of the pleura and mediastinum; not from the pneumothorax but from the infection of the pleura. Terrier advises the free opening of the pleura, regardless of the pneumothorax, for the excision of these tumors. For hernia he favors the reduction without rib resection.

My experiments were made to familiarize myself with the technique and feasibility of the various operations; the manipulation and exposure for observation of certain phenomena were excessive and were not conducive to the recovery of the animals. The following is the report on pneumectomy:

Experiment 2.—Oct. 24, 1897: small brown dog; ether anesthesia; the same antiseptic precautions were used as in experiment 1. Osteoplastic resection of fourth and fifth ribs on right side was made; parietal pleura retained on flap; action of mediastinal septum observed as in experiment 1. Lower lobe of right lung was brought out through and plugged the opening; this relieved all respiratory difficulty; the lobe was transfixed, ligated with heavy silk and two-thirds of the lobe excised; there was no hemorrhage and the lung was returned; a subcutaneous buried suture of catgut entirely closed the wound; time consumed in operation, twenty-one minutes. By a mistake in orders the dog received nothing but water for three days; when the error was discovered he was very weak; he died on October 29, five days after the operation.

Postmortem.—Perfect primary healing of external wound had taken place; there was a slight edema of deep tissues; periosteal flap in good position; on opening the pleural cavity the lung was found to be entirely free from adhesions; the pleural cavity contained no pus or serous fluid; the ligature was in position; pressure necrosis had liberated a small portion of the lung on the side nearest the base; there was no odor from the stump; the remaining one-third of the lobe was normal; there was no pneumonic infiltration; thrombosis had not advanced in the ligated arteries or veins; the bronchi were closed; there was no pericarditis or pleuritis on the opposite side; there was no pathologic cause of death and it was probably due to the error in orders mentioned.

Experiment 3.—Oct. 24, 1897; small black dog; ether anesthesia; an osteoplastic flap of second and third ribs on right side was made; movements of mediastinal septum observed as in previous experiments; the septum was thicker than in the last dog; there was marked cyanosis after opening the pleura; when the hilum of the lung was grasped with forceps so as to prevent the vibration of the septum respirations were rapid,

but the cyanosis and collapse disappeared; the upper lobe was drawn out through the opening and ligated at the hilum on masse with silk ligature; the wound was closed with catgut as before; time consumed in operation, sixteen minutes. The dog left the operating table in good condition but became quite sick the same evening, and continued so until death forty-eight hours after operation.

Postmortem.—Accumulation of pus present between skin and osteoplastic flap; the latter was held fairly well in position by sutures; the pleural cavity was found full of sero purulent fluid; numerous adhesions had formed between the diaphragm and the parietal wall; the lower lobe was partially consolidated with pneumonia; ligature was buried in exudation; pleuritis on left side; pericardium free from inflammation.

Experiment 4.—Nov. 8, 1897; small black dog, weight about thirty-eight pounds. A U-shaped incision with resection of one and one-half inches of the fourth rib on right side was made; osteoplastic flap; the lung was immediately drawn out and three lobes ligated at hilum with catgut without transfixion. The opening in the chest was closed by a deep catgut suture and a continuous silkworm-gut cutaneous suture; time for operation, twelve minutes; November 9 dog in good condition; November 10 dog in good condition, wound looks well;



Fig. 20a.—Shows empyemic cavity after partial contraction has taken place following drainage.

November 11 dog playful but breathing rapidly; November 12 dog in excellent condition; the silkworm-gut suture had been bitten out and there was a slight gaping of the flap; air entered and escaped through the skin wound in small quantity; it is believed that this passed in and out of a subcutaneous cavity only and that the pleura was still closed; November 20, dog in good condition, external wound almost closed; no air passing through the opening; the dog became fat and appeared to suffer no discomfort except a slight increase in frequency of respirations; he was killed on March 14, eighteen weeks after the operation.

Postmortem.—A heavy clamp was placed on the trachea to prevent collapse of the lung when the chest was opened; the organs were thus retained in the same position as during life; the external wound had cicatrized and contracted; there was a defect in the bony thoracic wall about one inch in diameter where the rib had been resected; the edges of this defect were covered with shreds of connective tissue. The ends of the rib were smooth and covered with connective tissue. The thyroid gland was much enlarged; the right pleural cavity was small and had in it a few drams of serous fluid; the heart and mediastinal contents were displaced markedly to the right; the delicate mediastinal septum was intact; the pulmonary stump could not be recognized; a mass of connective tissue, firm and glistening, about the size of a hen's egg, occupied its supposed

⁵⁶ Chicago Med. Recorder, 1892, p. 537.

location. Shreds of adhesive bands existed between the diaphragm and chest wall; a few vascular villous shreds projected from the pleural surfaces in various places; the left pleura was smooth and non-adherent; pericardium was normal. The esophagus, larynx, thyroid, trachea, heart, entire left lung, the lower lobe of the right, the anterior thoracic wall and the diaphragm were removed en masse and submitted to Dr. W. A. Evans for pathologic examination, report of which is as follows: The right side of the diaphragm was elevated and attached to the mediastinum and the chest wall. A line drawn through the center of the trachea and continued downward passes through the center of the heart, cleaving its tip exactly in the middle. The entire heart had been drawn to the right, but the most marked displacement was in the swinging of the tip with the base fixed. The sternum was bent to the right, as shown in the diagram (Fig. 20 b.) outlines for which were measured. The bend was most marked at the fourth rib. Two cm. to the right of the sternum and 13 cm. above its tip is an opening 4.5 cm. long, by 2 cm. wide. This opening is covered by a flap in which is a piece of rib 2.5 cm. long; this piece is entirely separated from other bony structure. The space between the



Fig. 20.—Deviation curve in sternum, Experiment 4.

ragged ends of the rib and this piece is scant 3 cm.; all of the surfaces of these pieces show slight nodular periosteal thickening. The soft tissue flap which contains this piece of bone bellows out into a hernial sac, measuring approximately 5 cm. across and 4 cm. in height. Its internal surface is smooth and glistening except for bands of yellow-colored fibrous tissue which run here and there; these blend into the connective tissue of the wall.

Left lung: The lowest lobe is large, fully expanded and has no adhesions to the wall; the middle lobe also no adhesions to the wall; these two lobes are bound together by firm adhesions. Upper lobe; this measures $6 \times 4\frac{1}{2} \times 4$ cm., is heart shaped, and is covered by firm, thick pleura .8 to .5 cm. in thickness. The pleura has a smooth glistening surface. There are no pleuritic adhesions. The bands of fibrous tissue in this lung run parallel to its surface. The outer layers of the pleura are the densest. The upper lobe of the lung is not attached to the others. The appearance of this lobe is that of a cyst. The bronchial tubes are patulous to the smallest. The lung substance is firmly compressed.

Right lung: The upper lobes of this lung are gone. A

stump containing a small amount of lung is to be seen. (See Figs. 21 and 22). This was excised for microscopic examination. The lower lobe has attachments to the diaphragm which are hard and ligamentous. Its attachments to the pericardium and to the mediastinum are equally as firm. The pleura measures .3 to .5 cm. in thickness, and is firm and dense on its outer surface; is free except at the attachments noted. On incision the lung substance is firmly compressed and the bronchioles are patulous.

Microscopic examination of the stump of the upper lobe shows the following: The end of the bronchus is plugged with fibrous tissue, the bands of which run in every direction. In this mass of tissue are a few bronchial glands. Besides this there is no trace of epithelium. The connective tissue has grown from the mucosa and the inner fibrous coat. The islands of cartilage run in every direction, but the general disposition is to form a triangle. The cartilage plates do not show degeneration phenomena. The vessel wall interior to the inner elastic lamina is thicker than the balance of the wall. The fibers of the wall all run in the same direction. The blood vessels are closed by growths of connective tissue which are mostly inside of the inner elastic lamina. Sections from higher up in the bronchial tree show a small lumen with the mucosa thrown into the usual folds. The epithelium is falling away and much of it is loose in the lumen.

This detailed report is submitted to show the histology of the closure of the vessels and bronchus of the stump; it will be noted that this dog had three lobes in his left lung, and

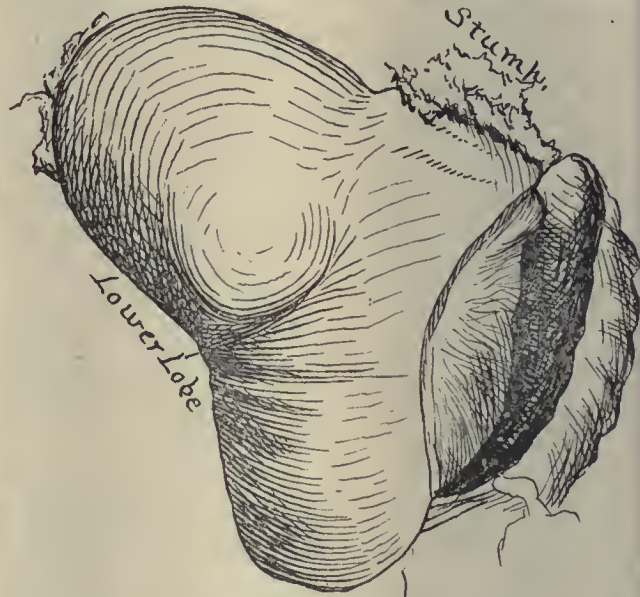


Fig. 21.—Right lower lobe and stump.

while we had removed three on the right side there was still another left, showing an anomaly of development. Quénu observed that the dog's lung is occasionally divided into as many as six distinct lobes by fissures extending to the hilum.

Experiment 5.—Nov. 8, 1897; large black and white dog; thorax opened on right side, as in previous operations; the mediastinum ruptured and the dog ceased to breathe; after the lungs had collapsed the chest was compressed and the aperture closed with the hand; then the dog began to breathe but with considerable difficulty; on account of rupture of the mediastinum no further attempt was made at operation; the chest was compressed and the muscular flap rapidly closed over the opening with a firm catgut suture and buried catgut subcutaneous suture. November 9, dog in fair condition; November 10, dog sick, breathing rapidly; November 11, dog died.

Postmortem—incision in chest wall adhered per primum; right lung was collapsed; left lung was dilated apparently to normal size; it was slightly emphysematous; there were a number of hemorrhagic patches in the lower lobe; no evidence of hemorrhage or suppuration; cause of death could not be ascertained, but I believe it was due to the rupture of the mediastinum, which impaired his respiration after the closure of the chest.

Experiment 6.—Nov. 25, 1887; large white bull dog; there was the usual preparation and anesthetic; incision was made the same as in previous experiments; the entire right lung

was drawn out through the opening; there was considerable pressure on the hilum to produce this result; a catgut ligature was thrown completely around the hilum; the lung was excised and the stump sutured with catgut in the opening close to the sternal border; there was considerable tension on the stump; time of operation, twenty-minutes. I had hoped by this method to produce an extra-pleural treatment of the stump, but in the dog I could not use the hysterectomy retention needles to hold the stump extra-thoracic; the external wound was closed with buried catgut suture; November 26, dog was very sick; on the morning of the 27th he was found dead.

Postmortem—Incision firmly agglutinated; the stump of lung was found partially adherent in the incision; there was some blood in the pleural cavity, and a septic pleuritis on both sides; the catgut ligature on the stump had given way.

The difficulty encountered in this case in drawing the stump of the lung forward for extra-pleural treatment should not be experienced in the human, as the longest diameter in the dog is the antero-posterior, while in the human it is the shortest.



Fig. 22.—Posterior view of lobe and stump.

In the cadaver I found it easy to draw the lung out through an opening on the side of the sternum, and believe that in pneumectomy the stump can be treated in this position; it appears from the results in pneumectomy for pulmonary hernia that this treatment of the stump will be the most favorable.

Experiment 7.—Nov. 25, 1897; small black dog; resection of third rib, right side; osteoplastic flap was made; ligation of the hilum of the entire lung above the bifurcation of the large bronchus; stump top sewed. I endeavored to secure a pleuritic flap from the mediastinum and chest wall to cover the stump, but did not succeed; the chest was closed as in previous cases; an aspirating needle was then inserted into the right side and the air in the chest cavity pumped out for the purpose of drawing the mediastinal septum to the side operated, and assisting the expansion of the left lung; this improved the dog's respiration materially; time consumed in operation, thirty minutes: the dog when removed from the table was in poor condition; November 26, dog improving; November 27, in fair condition; November 28, not so well; drowsy; November 29, very sick; November 30, dog died.

Postmortem.—Incision healed per primum; when the pleural cavity was opened air entered with considerable force; there was no bad odor; point of ligation presented a hard nodule of granulation tissue which seemed to be aseptic; the bronchus was closed; left pleural cavity normal; pericardium normal; examination of specimen showed closure of artery and vein with small clot near point of ligation; mucous surface of bronchus granulating; cartilage unchanged; cause of death not ascertained.

Experiment 8.—March 26, 1898; large female dog; an osteoplastic flap of second and third ribs was made; two upper lobes of right lung were ligated at base with chromicized catgut and excised; the stump was covered by suturing the base of the lower lobe over with chromicized catgut to form a cap; this left no abraded surface within the pleura; the dog died on the third day.

Postmortem was made fifteen hours after death; external wound found clean; there was emphysema of chest wall in neighborhood of wound with slight discharge of sero-sanguinous fluid through deep line of sutures; right pleural cavity contained about 500 c.c. of fluid blood with few coagula which were adherent to the stump; the stump was found in good condition, the lower lobe covering about two-thirds of it; the ligatures were in position; the entire parietal and the remaining portion of the visceral pleurae were covered with a thick, hemorrhagic membrane; when this was peeled off the underlying pleura was injected but smooth and glossy; heart normal; pericardium and pleura of opposite side normal. Cause of death, septic pleuritis.

Experiment 9.—April 24; large female dog, 45 pounds; ether anesthesia; an osteoplastic flap of four inches of fifth rib (right) was elevated. This rib I find is the best to resect in dogs, as it permits easy access to the hilum of the lung; on the admission of air respiration ceased; the thin mediastinal septum flapped to and fro and soon became emphysematous from the admission of air between its layers; for two minutes the respiratory efforts continued and then suddenly subsided; the heart continued its regular action; the right lung collapsed, contracted around its hilum and the diaphragm receded; the entire lung was grasped with the fingers and drawn out through the opening; as soon as it plugged the orifice the dog began a rapid gasping respiratory movement which soon became regular and full; the upper and middle lobes were separated from the lower, ligated at the base with chromicized catgut and excised; with three continuous catgut stitches the base of the remaining lobe was sewed over the stump of the excised lobes, forming a cap or covering; the stump was allowed to recede into the chest; there was no hemorrhage; the mediastinal septum was now very emphysematous and bulged greatly to the left side; the left lung could be seen through the delicate septum; a deep row of catgut sutures approximated the muscle wall and pleura and a superficial buried subdermal catgut suture approximated the skin; I used the buried suture as I found it would materially lessen the danger of superficial wound infection; an aspirating needle was then introduced into the fourth interspace and the air aspirated from the right side; this was for the purpose of re-expanding the lower lobe of the right lung and putting the mediastinal septum on tension so as to aid the respiration of the left lung. April 25, the dog had been very quiet and apparently comfortable; she took her food freely this morning; her respirations were, however, rapid; in the evening her respirations were still more rapid but she partook of food; April 26, dog panting and very sick; died at 9 o'clock A.M.

Postmortem.—There was primary adhesion of skin and muscle; when the chest wall was opened there was neither entrance nor exit of air; thirty-four ounces of fluid, sero-sanguinolent, flowed out of the wound; on the left side there was a sero-purulent pleurisy with edema of the lung; the lung was greatly compressed; the mediastinal septum bulged far to the left of the median line; the right pleura was covered with a fibrinous exudate about one-eighth of an inch in thickness; it was divided into many compartments by trabeculae of this material extending from the mediastinal septum to the chest wall; lower lobe of right lung collapsed and hidden from view by the fibrinous exudate; the stump was completely covered by the adherent lobe; the death was caused by the large accumulation of fluid shutting off her respiration, there had been no hemorrhage.

Experiment 10.—May 1, 1898; large male dog difficult to anesthetize; when finally overcome was very cyanotic; respired feebly; when the chest was opened respiration ceased; artificial respiration resorted to with no effect; the heart ceased to beat; tracheotomy was then performed and a rubber drainage tube inserted into the trachea; the upper air passages were closed; the lung could be easily made to expand and protrude many inches through the opening, illustrating beautifully the

practical application of Tuffier's method of artificial respiration; it was however too late for restoration.

It was my intention before publishing these experiments to produce a number of herniæ of the lung subcutaneously and later amputate the protruding portions, but time did not permit. This should from clinical experience, be the most favorable method of pneumectomy as Coubey collected fourteen cases of hernia treated by pneumectomy, with twelve recoveries.

I wish to express my appreciation and thanks to Drs. W. A. Evans and George W. Johnson for the assistance rendered me in this work.

SELECTION.

Suture of the Patella.—Macdonald (*Medical News* for July 30) describes a method of treatment of the fracture of the patella, for which he claims uniformly good results, shortened convalescence, freedom from the dangers of sepsis, simplicity, continuance of the encysted silver wire suture, maintaining position of the fragments, and bony union possible in all. He describes his method as follows: "After the usual preparations to secure asepsis have been completed, the limb is fully extended, the surgeon draws the lower fragment of the patella as high as possible, enters the point of the scalpel close to the apex of the bone, and carries it directly inward and upward through the ligamentum patellæ into the synovial sac above the ligamentum mucosum. The scalpel is now withdrawn, leaving a puncture of the joint at its dependent part one-half of an inch in length. This puncture is now covered with sterilized absorbent gauze, and by massage and flexion the joint is practically emptied of effusion through the puncture. Should any difficulty be experienced in removing the effusion, always fluid for several hours after the injury, the metal cannula may be introduced to facilitate the flow. After the removal of the fluid, the fragments can usually be brought in apposition. By a little coaxing, bits of membrane or bursa can be removed from between the fragments, and distinct bone crepitus obtained. An assistant now holds the fragments. . . The point of the needle is introduced into the puncture close to the apex of the patella, carried through its tendon laterally, through the aponeurosis at the side into the tendon of the extensor femoris, keeping close to the patella all the time, and is made to present underneath the skin. A touch with the scalpel permits the point of the needle to be reached, and one loop of silk withdrawn. The needle is then removed, and another loop passed in a similar manner on the opposite side. By means of these two loops of silk the silver wire is drawn into position. The relation of the fragments is now re-examined to determine the absence of tissues between them, and that no tilting exists. When properly adjusted they are steadied by an assistant, while the surgeon, by strong traction on the silver wire, using forceps on each end, buries it in the tissues around the patella and twists it close to the apex. The wire is cut short and buried in the wound. If the process has been carefully followed the fragments will be found in absolute approximation, surrounded and supported by this suture or subcutaneous splint." After dressing the limb in plaster of Paris, "the patient is kept in bed with the foot elevated, for a week, and carefully watched for any reaction. Afterward he is allowed to sit up, and after two weeks go about on crutches. The dressing is removed at the end of six weeks, and a molded posterior splint adjusted. At the end of twelve weeks all dressings are removed and full use of the limb allowed."

PRACTICAL NOTES.

Gangrenous Phlegmons are arrested at once and cured with injections of antidiphtheria serum, according to the experience of Dr. E. Monti in thirty-one cases at Pavia. His previous mortality had been from 45 to 80 per cent.—*Semaine Méd.*, July 6.

Sero-diagnosis of Tuberculous Effusions.—Courmont has found that the serous fluid from local tuberculous lesions has a pronounced bactericidal and agglutinating power (17 out of 18 cases), while the fluid from non-tuberculous lesions of the kind has none (6 cases).—*Presse Méd.*, June 11.

Calcium Carbide in Carcinoma.—In the *Kansas Medical Journal* of July 9, Leslie reports two cases of carcinoma of the cervix with calcium carbide (*vide JOURNAL*, July 9, 1898, pp. 63-68), and one case of carcinoma of both cervix and vagina with calcium carbide and Coley's mixture.

To Disinfect the Stools in Contagious Diseases the following mixture is very highly recommended: zinc sulphate, 100 grams; sulphuric acid, 5 to 10 grams; nitrobenzol, 2 centigrams and 15 centigrams indigo. Five grams in a vessel before using will prevent any odor and putrefaction for twenty-four hours.—*Progrès Méd.*, June 25.

Early Diagnosis of Pregnancy.—G. Reusner supplements Noble's two signs (contrast between the enlarged uterus and small neck and sensation of partial fluctuation) by calling attention to the characteristic pulsation of the lateral uterine arteries in the posterior vaginal vault. The pulsation is so strong and distinct with commencing pregnancy that he establishes his diagnosis upon it as early as the fourth week. It resembles the pulse near inflammatory processes.—*St. Petersburg Med. Woch.*, June 25.

Nervous Pseudo-Appendicitis proceeds from the ovary or neuralgia of the twelfth intercostal nerve, in hysterics with exaggerated reactions. The anterior perforating point of this nerve simulates McBurney's point, but the two other points, vertebral and lateral, confirm the hysteric stigmata. It is curable by therapeutic suggestion. A case is described in the *Presse Méd.*, of June 4; a young man who was laparotomized twice and a macroscopically sound appendix removed, returned with the same syndrome of appendicitis for the third time.

Moderate Treatment of Burns. Absorbent Compresses.—The *Semaine Méd.* of June 15, calls attention to the following simple and effective treatment of burns, employed by C. Calliano of Turin, with which he has been very successful and which corresponds to the latest theories in regard to burns and intoxications. The part is first cleansed with cold sterile water or a weak antiseptic, using vinegar water for a burn from lime and slightly soapy water in case of corrosion from a mineral acid, after which cold compresses are applied, renewing or moistening with fresh cold water every fifteen minutes. These cold applications relieve the pain at once and abolish it completely in twelve to fifteen hours, after which a compress of sterile gauze or clean cloth is dipped in boricated water at 40 degrees C. and wrung out until only slightly moist but still hot and absorbent, and applied to the burn with an air-tight covering. If there is suppuration this hot compress should be renewed twice a day, cleansing the parts with a stream of boricated water under gentle pressure. If the skin is very red and painful he applies the salve: lead carbonate and lead oxid *aa* 2 grams in 15 grams vaselin; or this liniment: limewater, 100 grams; linseed oil, 50 grams, and thymol, 1 gram. As suppuration diminishes, smaller and lighter compresses are applied. The patient must remain in bed during the entire time of treatment to avoid pressure on the wound, and the part must be raised if possible to favor the reflux of venous blood. Simple diuretics and saline purgatives should be given to promote the elimination of the toxins. If there are evidences of auto-intoxication, inject a tenth of a milligram of atropin or a centigram of extract of belladonna, watching the pupils; or else some simple tonic. The urins should be watched, and if the albuminuria increases, showing progressing auto-intoxication, injections of physiologic salt solution are required.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, AUGUST 13, 1898.

HEMOGLOBIN ESTIMATION AND ITS PROGNOSTIC VALUE.

The amount of hemoglobin, estimated upon a percentage basis, is the true index to the richness of the blood. Other ingredients, notably albumin, may aid somewhat; but while the latter may be increased in the blood of fairly healthy subjects with considerable rapidity, hemoglobin increase is comparatively slow, and for that reason is a better indicator, regardless of the time of examination. Another point: we can, as a clinical test, quickly determine hemoglobin percentage, while with the remaining blood ingredients a well-equipped laboratory becomes a necessity for such work. The count of the number of red corpuscles, aside from the specific diseases of the blood itself, can not be regarded as of such value as formerly; for instance, in neurasthenic states, it has lately been demonstrated that counts of six or seven millions per cubic centimeter are not infrequent, yet the physical condition of the patient, together with his hemoglobin, is below par. The determination of hemoglobin is of little value from a prognostic standpoint in the various blood affections proper, but in the simple anemias, from whatever cause, it possesses decided importance. It is the consideration of these latter states that we propose to take up here.

In very few diseases, if any, does anemia occur with such rapidity as in malarial fevers. Nor is this a matter of surprise when we reflect upon the enormous number of spores set free with each paroxysm. Many of these spores penetrate a red corpuscle, and eventually the result is a destruction of their hosts. The

hemoglobin is transferred during the growth of the parasites into minute pigment granules, and these latter are disposed of in various ways; some are deposited in the solid organs, notably the liver and spleen; others become changed into urinary and bile pigments, and as such are for the most part thrown off from the system. The effect of this would become almost a mathematical problem were it not that other factors come into play. Many of the organisms fail to mature extracorporeal parasites; many are destroyed before sporulation; immense numbers are taken up by the leucocytes in the spore stage. Were it not for these facts an attack of malaria would invariably be attended with fatal results after a few paroxysms. With the exhibition of quinin, the majority of cases (the intermittents at any rate) become not cured but convalescent, and the problem now changes to that of improving the nutrition, in other words the abolition of an anemia necessarily present. The usual tonic treatment, iron, quinin, strychnia, Fowler's solution, is instituted, and it becomes necessary to note the effect, if any, of our drugs, especially iron, that the dosage may be regulated and the patient not given more than can be utilized. This can be best done and in a truly scientific manner by determining the hemoglobin percentage. It need not be done oftener than once a week, and even a slight increase during that time will show to the physician that his patient is progressing in the right direction. The estimation is easily and quickly made with the hemometer of Fleischl, but where that instrument is not available another simple and exact method can be substituted. This method of Hammerschlag, as it is called, depends for its working principle on the difference in specific gravity of two fluids, the one heavy and the other light, neither of which will mix with fresh blood. Chloroform and benzol are the ones usually employed. They are thoroughly mixed in sufficient quantities of each to make the united specific gravity 1059, that of the normal blood. A drop of blood is allowed to fall into this mixture, which has been poured into a wide-mouthed test tube. As said before, the blood will not mix with either of the two fluids, and if the specific gravity of the blood is less than that of the mixture the drop will float. Benzol must then be added until the blood remains stationary in the surrounding medium. If the drop sinks, add chloroform until it rises and becomes stationary as before. The specific gravity of the mixture when the drop becomes stationary indicates the specific gravity of the blood under inspection. The specific gravity of the blood bears a definite parallel ratio to the amount of hemoglobin, so that the normal specific gravity, 1059, corresponds to the normal amount of hemoglobin, 100 per-cent. With this as a working basis, a number of tables have been formulated—which can be found in any work on the blood—illustrating the amount of

hemoglobin and the corresponding specific gravity. The most suitable of these tables is that of Schmaltz, in which a specific gravity of 1030 represents 20 per cent. of hemoglobin and a specific gravity of 1045.5, 50 per cent, from which figures alone the ratio can be arrived at approximately. The only contra-indication to the efficacy of this test is a pathologic condition which will increase individual corpuscular weight without increasing the amount of hemoglobin. This occurs in dropsies of all kinds and from whatever cause, and in this class of diseases reliance must be placed on the hemometer. Any of the simple anemias, and the causes producing them are legion, may be readily studied by the above method, and the value of the treatment demonstrated, so that often a favorable prognosis can be given, where without this aid the attendant must be in grave doubt. One other caution must be observed. In syphilis there is always, in the active stage of the disease, more or less anemia. If, to a syphilitic who has not been treated with inunctions or injections, such treatment is instituted, a rapid fall in the percentage of hemoglobin usually takes place, often as high as 10 to 20 per cent. Under active treatment, if not pushed to a great degree, the hemoglobin will return to its original percentage, and under a careful administration of mercurials even increase, so that by estimating the hemoglobin at frequent intervals, and changing the dose to suit the condition of the hemoglobin, we may soon be able to so regulate our dosage as to bring about continuous improvement in our patient. It may be well to add that this peculiar behavior of the hemoglobin to mercurials does not occur except in syphilis, and in such a case is a valuable diagnostic as well as prognostic point.

THE HISTOLOGIC CHANGES PRODUCED BY THE VENOM OF POISONOUS SNAKES AND LIZARDS.

There is quite a remarkable resemblance, in many respects, between the toxic substances produced by microbes, by certain plants, as well as by certain animals. It has been well established that animals can be made immune, not only against microbic toxins, but also against venoms of different origin. Thus, EHRlich has immunized animals against ricin and abrin, and CALMETTE against the poison of venomous snakes.

There are also certain chemie resemblances between the toxins of various origin, especially in their feeble resistance to heat. There has also been found a certain similarity between the lesions produced in the animals killed by these various poisons. The changes produced in the tissues by the poisons of serpents and lizards have, however, not received very much attention, if any. NOWAK's¹ recent experimental study of the histologic alterations produced by snake

venom and by the poison of lizards is therefore especially interesting.

The effect of these poisons upon the body depends not only upon the toxicity and quantity of the venom, but also upon the manner in which they are introduced. The subcutaneous inoculation does not produce rapid death. On the contrary, if the most minute quantity of the venom of the cobra is inserted into the marginal vein of the rabbit's ear, instantaneous death follows. In this respect the toxic substances from snakes and lizards differ very much from the microbic and certain vegetable toxins. It is well known that the toxins of tetanus and diphtheria require a certain length of time after the introduction before the first symptoms of poisoning leading to death develop. If the poisons of snakes and lizards are injected subcutaneously, the dose may be so arranged that some of the animals die very soon after the injection, others after a few hours up to several days.

NOWAK experimented with guinea-pigs, mice, rabbits and dogs. Macroscopically it was especially noticeable that after death caused by snake or lizard poison, the parenchyma of the liver was friable, yellowish and congested. Similar changes were also present in the kidneys. The microscopic changes were more striking. Their principal seat was the liver, kidneys, and the lungs.

In the liver the change consisted in a typical fatty degeneration of the liver cells, which in some cases resulted in total disintegration of the cell. When the deaths followed very soon after the injection, the protoplasm of the cells was swollen and granular. After a few hours vacuoles and other changes of a degenerative character occurred in the interior of the cells. The quantity of chromatic substance diminished, and the nuclei would lose their affinity for stains. These degenerative changes often lead to total disintegration of the structure of the liver (necrobiosis).

In the kidney there occurred a fatty degeneration of the epithelium, but not to such a degree as in the liver. It was generally confined to the convoluted tubules. Occasionally some fatty changes occurred in the endothelial cells of the glomeruli. Swelling and granular disintegration of the epithelium also took place.

In the lungs, areas of congestion developed, together with desquamation of the epithelial cells of the alveoli and migration of blood corpuscles. At times the number of white corpuscles would be so great that the pneumonia presented a purulent character. The inflammatory changes in the lungs were most marked in the animals that lived for some hours after the injection.

NOWAK calls attention to the similarity of some of these changes to those produced in yellow fever. This fact has already been emphasized by SANARELLI in his work on this disease. NOWAK failed, however,

¹ Annales de l'Institute Pasteur, Juin, 1898.

to find any lesions in the digestive tract as characteristic as those which occur in yellow fever. The inflammatory changes in the lungs are also less marked in yellow fever.

The results of the study of the effects of the poisons upon the nervous system are to be published later.

IMMIGRATION AND INSANITY.

It is now many years since Dr. FOSTER PRATT in a notable study of the United States census statistics showed that the foreign born furnished an altogether undue proportion of the insane and criminals in this country and drew the inference from this fact that, to some extent at least, we were being burdened with more than our reasonable share of European defectives by immigration. Notwithstanding the lapse of time since his publication, something of the same state of affairs still exists, and the opinion has become widespread that it is due, at least in part, to a deliberate unloading of foreign insane and criminals upon our shores. It is well known that this has been done to a certain extent, but whether this goes far to account for the excessive proportion of foreign born in our asylums and prisons is another question. In New York City, the great gateway of immigration, the admissions to the Manhattan State Hospital, which comprises all the public institutions for the insane in that vicinity, the foreign-born admissions for the past ten years are nearly twice as many as those of the native born. This may perhaps be credited to the assumption that, as New York is the chief port of immigration, the defectives have a tendency to be sifted out on the spot, only the more vigorous mentally and physically passing on to the interior or Western States. Allowing this to be partially true, we have, however, still another fact to explain, that is that in the interior or Western States where there is a large proportion of immigrant foreigners in the population they furnish more than half the admissions to the asylums. This is still true in Minnesota and California, and probably also in Wisconsin, and was until quite recent years also the case in large sections of other States such as Illinois. The proportion of immigration to population has decreased, but the disproportion of foreign-born asylum inmates still exists.

When we consider the numbers of these foreign-born insane, and especially when we observe them as they are found in our public institutions, it is impossible to assume that any very large number of these were deliberately unloaded upon us as defectives. A few have certainly been assisted emigrants, but the great mass are unquestionably from the average of their countrymen and not originally more defective than them, so far as any apparent probability and available evidence can show. It would appear therefore that immigration has directly promoted and increased insanity.

Mr F. B. SANBORN, the Massachusetts philanthropist, discusses this subject at some length in a paper read before the Conference of Charities at its last meeting. While he admits that many facts seem to indicate that immigration has furnished us with a class of persons more liable to insanity than are the native born, he calls attention to another fact that, at first sight might seem somewhat contradictory to such a view, namely, the increase of insanity whence the immigrants come. In Ireland, for example, while the population has steadily decreased since 1851 to the amount of nearly 30 per cent., the number of insane has nearly trebled. To come down to more recent times, the same steady decrease of population has continued; the population, which in 1880 was 5,202,648, was in 1896 only 4,560,378. But the total number of insane, which in 1880 was 12,982, had risen in 1896 to 18,966, an increase of nearly 50 per cent. At the same time the Irish immigrants to this country were furnishing an altogether undue proportion of the insane in our hospitals, thus producing the apparent paradox of a country getting rid of its insane by emigration and at the same time and *pari passu* with its decrease of population increasing its home contingent of insanity.

Mr. SANBORN'S method of accounting for these facts is not altogether a satisfactory one. He assumes that the emigration, while it carried off the most vigorous and younger class, also included the majority of those at the ages in which mental disease is most likely to occur, while it left in the home country the aged and infirm, those who actually furnish the greater number of mental breakdowns. This last fact would be undoubtedly a valid cause for a proportional increase of insanity in Ireland, for example, but it gives no good excuse for this actual excessive increase with a decreased population. And while we may admit that most cases of insanity occur among the young or middle-aged, it is so because they furnish the bulk of the population, and it does not by any means account for any existing excess of Irish insane in Massachusetts asylums as Mr. SANBORN seems to think. It is a common saying "that it is a poor rule that won't work both ways," but his application of it here appears to have its defects.

Mr. SANBORN'S observations would seem to have been more restricted than one would suppose when he says that the Germans and Scandinavians in this country appear to be less liable to insanity than the native born. If he would consult the statistics of the asylums in the States where these nationalities abound and compare them with those of the general population of the United States census he would see the fallacy of such a generalization. It certainly is hardly correct to say that "the German and Scandinavian settlers in the rural States of the northwest seem to show fewer cases of insanity than the native born;" the fact that over 50 per cent. of the insane in a State like Minnesota are of foreign birth and

largely of these races, is sufficient evidence to the contrary.

One cause adduced is possibly effective to a certain extent, but will hardly suffice to account for the whole of the excess of foreign-born insane in this country. The personal habits as to intemperance are unquestionably not so good amongst the foreigners as amongst the native stock, but the difference is more comparative than absolute.

We are forced to fall back on one great general cause for the increase of insanity here and elsewhere, viz., the stress of modern civilization, the greater demands of modern life upon the brain and nervous system. In Europe with its more crystalized social systems, so to speak, large sections of the population, the lower classes especially, have been living under conditions in which the rapid progress of the century has had little effect upon them, and these have furnished a large proportion of the immigrants to this country. Transplanted here and placed on the very advance crest of the nineteenth century, as regards practical life, it is little wonder that many more of them break down, especially when we consider the hardships, disappointments and other trials that many of them must undergo. If this is not alone sufficient to account for the excess of foreign born in our asylums, something may be attributed to the effects of climate as bearing upon habits of drinking, etc., and there are doubtless still other causes efficiently acting of which we may as yet know little or nothing.

The increase of insanity in this country is only an incident to its increase throughout the civilized world. Civilization has altered and redirected the ordinary processes of social evolution and we are here even more than elsewhere in transition, and immigration is one of the active elements in the process.

Mr. SANBORN'S conclusion that immigration of itself is not one of the factors in the increase of insanity in the United States is not supported by the facts.

AN ARRAIGNMENT OF THE ARMY MEDICAL DEPARTMENT.

Since all the particulars of the battles near Santiago, Cuba, and the conditions prevailing among the sick and wounded at Siboney and on homeward bound transports have become known to the country, the daily press has been urging the necessity of an investigation to fix the responsibility for these distressing conditions. Editorials have appeared charging the Major-General commanding the expedition with reckless neglect of the welfare of those disabled by the exposures and exhausting labors of the campaign. Other writers have imputed the status to incompetency on the part of the Quartermaster's Department; but by most the Surgeon-General's Office at Washington and the Medical Department at the front have been arraigned as responsible for needless suffering by their inability to realize and meet the necessities

of the occasion. It is claimed, 1, that the expedition sailed from Tampa, Florida, to Santiago, unprovided with the field supplies which would manifestly be required in the event of a battle; 2, that owing to the inefficiency of the medical officers accompanying the expedition even those supplies which had been shipped from Tampa were not available when required; 3, that notwithstanding these deficiencies army medical officers declined the proffered assistance of the American National Red Cross to help remedy them, and lastly, that the shipment of soldiers, wounded and prostrated with fever, on transports which, from their construction and grossly insanitary condition, were unfit for hospital purposes, showed a culpable carelessness on the part of the Medical Department which was aggravated many fold by a failure to provide medical attendance and suitable medical and subsistence supplies for use while en route.

As to the first charge, we learn from medical officers that SHAFER'S army, while at Tampa, was provided with everything necessary for efficient medical and surgical service in the field, and that medicines, dressings, instruments, hospital tents and supplies, were loaded on the transports in quantities more than sufficient to meet the needs of the Santiago campaign. The bulk of the supplies were shipped in connection with the field division hospitals, but accompanying each regiment were regimental supplies largely in excess of the regimental needs, as these supplies were intended, in case of necessity, to supplement the division hospital equipment.

To appreciate the groundlessness of the second charge we must understand some of the conditions pertaining to the disembarkation in Cuba. The troops were immediately marched in the direction of Santiago, and the medical officers serving with regiments, having no means of transporting their medical supplies, had to leave these behind on the transports, and were bereft of all resources except such as were to be found in the orderly and hospital corps pouches of their attendants and in the first-aid packets carried by the soldiers. The partially unloaded transports were ordered to lie to ten or fifteen miles off the landing to be out of the way of the unloading of other transports. Those carrying the equipment of the First Division Hospital and of the Reserve Hospital of the Army joined the naval blockading squadron off Morro Castle and were not permitted to return to land their supplies until five or six days later, the fight at Guasima having taken place meanwhile. The difficulties and delays experienced by medical officers in getting supplies to the front were very great, in view of the fact that no wagon transportation up to this time had been landed. Hospital tents were much needed, but there was no possibility of getting them from the transports. Even much later, when the Hospital Ship *Relief* arrived, it was found impossible

for several days to land her supplies on account of the heavy surf and the want of proper facilities. At the landing-place there was but one lighter, which was constantly in use by the Subsistence Department in getting rations ashore. By the energy and untiring efforts of the officers of the Medical Department their supplies were ultimately landed, although such work is no more their special duty than is the building of an ambulance wagon or the manufacture of a hospital tent.

As to the third charge, the proffer of Red Cross supplies was of no value unless associated with the means of landing and transporting them to the front. What was lacking to the Medical Department at the time was not supplies—for there were supplies on every transport in sight as well as on the *State of Texas*—but the means of getting these supplies to the points where they were required.

In considering the reported condition of the *Concho* and other transports used in bringing home sick and wounded soldiers it is to be remembered that the Medical Department can do no more than recommend. Its officers may inspect and suggest needful alterations to fit the vessel for its proposed voyage, but commanding officers can overrule their suggestions. Were the outfitting of extemporized hospital transports in the hands of the Medical Department we may be sure that they would be as excellent in their way as the Hospital Ship *Relief*, which was fitted out under medical officers concerned in the despatch of the sick and wounded, but we feel confident that when the facts are learned it will be found that what was considered to be an imperative military necessity occasioned the use of unfit and unprovided vessels, just as it occasioned the landing of the troops and their advance to an engagement with the enemy without any consideration save that of the military purpose in view. Opinions may differ as to whether the accomplishment of the purpose justified the method of its accomplishment.

NOSTRUM MANUFACTURERS AS FRENCH "STATESMEN."

The decadence of the French Republic under the sway of speculative commercialism is most ominously evident in the fact that an opulent nostrum vendor now occupies the position in the recently appointed BRISSON Ministry which was refused a decade and a half ago by the distinguished physiologist, PAUL BERT. Dr. BERT (like Dr. OLIVER WOLLCOTT, one of the medical signers of the Declaration of Independence, who long remained an authority on finance) was a man of admitted skill in political economy. The recently accepted French minister of finance (M. PEYTRAL) owes his reputation chiefly to his success as a manufacturer and promoter of patent medicines.

M. PEYTRAL, after attempting to form a ministry of his own, lately accepted at the hands of BRISSON the

portfolio of finance. He is the first patent medicine "fakir" who has ever held a cabinet position in France. His fortune was made in the manufacture and sale of quack nostrums and the promotion of quack nostrum companies. He pretends to be a representative "business" man of the radical stripe which panders to the bourgeois ideals of supposed thrift (or rather parsimony) of the speculative commercial classes. Until he secured his election as senator, he distinguished himself by puerile poses of the following type: On one occasion, on the eve of a general election, when stumping Marseilles he blatantly pointed out that his rival had come from Paris in a sleeper, whereas he, like a true democratic bourgeois, had traveled in a third-class carriage. The fact, however, was that he also had journeyed in the sleeper and had only quitted this for the third-class car at the last station before Marseilles.

Nostrum-vending is in France even more disreputable than in the English-speaking countries. The *Code Républicaine* nominally prohibits the traffic, and only by evasions of the law, such as FLAUBERT pointed out in "Madame Bovary," can it be carried on. The patent medicine vendor is in France, for this reason, a species of confidence operator in a traffic without the pale of the law. The fact that such an individual should be allowed to juggle with French finance is most significant evidence that the "business" quacks (who caused the downfall of France at Sedan) are again in the saddle. Furthermore, it demonstrates that the welfare of the country is again being sacrificed to "business" interests as represented by avaricious contractors. Meanwhile the question naturally arises, what has become of that sturdy element of the French medical profession which so often exercised such a potent influence for good during all three of the French republics, and especially during the first decade of the present one? Great Britain has significantly elevated the deservedly criticised social status of her medical profession by creating LISTER a Peer for services to medical science. France, once foremost in her reverence for science, has of late fallen so far behind in this particular, that the downfall of even the present pretense of republican forms seems foreshadowed by this triumph of a most degrading form of illegal charlatanism over the once politically potent French medical profession.

CORRESPONDENCE.

WAR CORRESPONDENCE.

THE MEDICAL DEPARTMENT OF THE ARMY IN THE CUBAN
CAMPAIGN.

BY LIEUT.-COL. NICHOLAS SENN, U. S. VOLS.,
CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

NEW YORK, Aug. 1, 1898.

DEAR DR. HAMILTON—

In an editorial of last week's *Record* Dr. Shradly made an unwarranted attack on General Sternberg. The General tele-

graphed me to reply to it. I have done so, and send you original copy, for which I ask a very early publication in your journal in justice to the General and his Department.

I leave for Porto Rico tomorrow on the steamer *Relief*. On the way down I shall have something to say on the reorganization of the Army. I will send you paper from Ponce. Hoping that you are well, I am, with kindest regards,

Yours sincerely, N. SENN.

ON BOARD THE HOSPITAL SHIP "RELIEF," July 31, 1898.

In an editorial of the *Medical Record* of July 30, suspicions are thrown out reflecting on the efficiency, foresight and proper management of the Medical Department of the Army during the Cuban Campaign. The remarks made by the editor are based, as he himself asserts, almost exclusively on a correspondence which appeared in a recent issue of the *Sun*. In commenting on this article the editorial states: "If the report is true, and there seems to be no good reason for doubting it, the Army Medical Department appears in a very unenviable light. It is said that there was a total lack of everything necessary for the proper care of the stricken soldiers. Why this was so it is hard to explain, especially in view of the fact that the war department has constantly declared, in declining voluntary assistance from charitable organizations, that it was abundantly able to cope with any possible emergency in the field, and yet this is the result." The correspondent of the *Sun* made bold in saying: "It was evident that the Medical Department of the Army had failed absolutely to send hospital supplies, or by this time they would have been landed. On the one hand it was pitiful. On the other, it was negligence that could have been the result only of incompetence." I am sure if the editor of the *Medical Record* had been better informed he would not have been so willing to lend his ear to a newspaper correspondent whose success nowadays consists largely in tinging facts with more or less imagination and sensationalism. The medical men inside and outside the army have little, if any, influence over the lay press, but the editor of a medical journal of such high standing with the medical profession throughout the entire country as has been willingly accorded the *Medical Record*, should take the necessary pains to investigate more thoroughly the circumstances which dictated the editorial before casting any reflections whatsoever on the chief of the medical department. Dr. George M. Sternberg is no stranger to the medical profession and the American people. He occupies the exalted position of Surgeon-General of the United States Army, not by political preferment or gradual ascent by promotion, but by merit. President Cleveland made a wise selection when he made the appointment. It was a selection that met with the heartiest approval on all sides. General Sternberg knows from long and actual experience what it is to be a soldier in the field. He has been there. He served with distinction during the War of the Rebellion. He has followed the unruly and wily Indians over plains and mountains during many a campaign. He has investigated yellow fever at home and abroad, regardless of his own health and life. Since he has been placed in charge of the Medical Department of the Army he has been tireless in making many much-needed improvements.

The Army Medical School is one of the many fruits of his labors. He has taken special interest and pride in promoting the intellectual and professional advancement of his young army surgeons, assigning them for temporary duty in large cities, where they could enjoy clinical instruction and laboratory work. He has taken a deep and active interest in the organization and usefulness of the Association of Military Surgeons of the United States, and served most acceptably as president. Last year he was honored by the profession by election to the Presidency of the AMERICAN MEDICAL ASSOCIATION. The earnest devotion to his duties made it impossible

for him, to his great regret, to attend the Denver meeting. The name of General Sternberg is often seen on the programs of scientific societies from the Atlantic to the Pacific and from Labrador to the Gulf. He crossed the Atlantic, last summer, to represent his Government at the International Congress, held in Moscow, Russia, and his work there added much to the luster of American medicine. The Surgeon-General, now so unjustly accused of incompetency, not only is accorded a well-deserved place in the front rank of the profession, but his administration shows executive talents which have served him well during the present campaign. He has shown good judgment in the selection of his advisers. Colonels Alden, Greenleaf and Smart, are all men of large experience and admirable executive abilities, as all can testify who have been brought in contact with them. The charge of incompetence and ignorance certainly lacks foundation in the case of General Sternberg and his administration. Now, as to facts. The correspondent of the *Sun* who furnished all the material for the editorial referred to goes on to say: "The wounded were carried back from the fighting line on stretchers, and laid on the ground to wait until the surgeons could reach them. Many were soon beyond the need of surgical treatment. There were four divisions of the army, and each division was supposed to have its hospital; but as a matter of fact there was but one, the division hospital of the Fifth Army Corps, under Major Wood. There were five surgeons, a hospital steward, and



Brigadier-General George M. Sternberg, Surgeon-General of the Army.

twenty assistants, to care for the wounded—several hundred. They had a number of operating tables, a small supply of medicines, but few bandages, and no food for sick or wounded men. It was comparatively easy to get supplies from the *State of Texas* ashore to the hospital here (Siboney), but there was no transportation to the front." In the opinion of the editor of the *Medical Record* and the correspondent of the *Sun* the Red Cross Association's work was the only redeeming feature of the whole campaign, to judge from the language of the latter: "God knows what we should have done here without the help of the Red Cross—your ship, your surgeons, and your nurses! and there is no other help for us at the front. Our wounded up there must have food, bandages, anything you can let us have in the line of hospital supplies." The editorial in the *Medical Record* brings matters to a focus in the closing extract: "It is right and proper that the Surgeon-General should resent any interference with his prerogatives, but he should not directly invite it by making possible such

a condition of affairs as here described." This inference is entirely unwarranted by facts as they existed during and after the battle of Santiago.

The correspondent and editorial do not even mention the steamer *Olivette* we found July 7 anchored close to the shore before Siboney. This steamer, in command of Major Appel, U. S. A., was used as a hospital ship. This ship was in place and ready to receive the wounded during the battle. The steamer, at the time mentioned, had on board 300 wounded, who received the best surgical attention and nursing. The next day the steamer left for the United States, the medical staff being reinforced by the addition of Acting Assistant-Surgeon Brown of Chicago from the *Relief*. General Sternberg at an early date recognized the importance of hospital ships during this war. The *Olivette* was chartered for this special purpose, was well equipped and reached the seat of war in time. The hospital ship *Relief*, formerly the *John Englis*, under the supervision of its commander, Major Torrey, was transformed into an ideal floating hospital in less than six weeks and reached Siboney July 7, a day before the *Olivette* left for its home port. Do these things show either negligence or ignorance? Do they not rather demonstrate foresight and an earnest endeavor to better care for the sick and wounded in a way creditable to our country and the chief of the Medical Department? This question can safely be left for the wounded to answer. The Surgeon-General accepted the legitimate services of the Red Cross Association and had reason to expect aid from this source, should pressing emergencies present themselves. The medical officers, the wounded and the sick have every reason to be grateful to Miss Clara Barton, for what she did in furnishing ice, delicacies and medical supplies. The *State of Texas* did excellent work in aiding the Medical Department, but that is no reason why those connected with the Red Cross Association should claim all the credit and undertake to criticize a department of the government which has done all it possibly could in anticipating the requirements of a sudden emergency. It is a source of great regret that there should be any friction whatever between the Medical Department and the friends and supporters of the Red Cross Association. It must be clear to every unprejudiced mind that the treatment of the sick and wounded must remain under the direct care, control and management of the Medical Department, and that the function of Red Cross is rather auxiliary to it than as an independent organization if the greatest amount of good is to be realized from it. The hospital ship *Relief* brought an immense amount of medical supplies, delicacies, cots, pillows and blankets. When we arrived at Siboney we knew our presence was much needed, and looked in vain for some one to inform us where and how to land. The precipitous and rocky nature of the shore and the great depth of the ocean made it unfavorable to secure anchorage for several days. A single lighter attended to the demands of numerous transport ships. I am sure no one could blame the Medical Department for the unavoidable delay in unloading the supplies. The little steam launches did what could be done in bringing to the shore what was most needed. Major Torrey worked night and day in supplying the requisitions made by the surgeons in the field and hospitals. There was no red tape here, all they had to do was to inform him what was wanted and it was delivered as soon as it could be brought to the shore. The lack of proper transportation facilities from the landing to the front can not be charged to the Medical Department. It took more than a week of the hardest kind of work to land all of the supplies, and, considering the limited facilities available, it is and always must be regarded as a source of satisfaction that it was made possible at all. The *Relief* brought 1000 cots and an ample supply of blankets, which reached the hospitals with as little delay as possible.

Lieut. Crabbs of the 8th Cavalry, showed a creditable degree of ingenuity, energy and often of courage in landing the supplies. The complaint that the sick and wounded lacked medicines and dressing materials is true only to a certain extent. Some of the medicines were exhausted, owing to the unexpected enormous demand, but they were supplied as quickly as could be done under the existing circumstances. The writer had the privilege to operate in all of the hospitals and was always able to find the essential antiseptics and dressing materials required in military practice, and this was at a time when the supplies were at the lowest. There was no lack at any time of stimulants and anesthetics. There is no use in denying the fact that immediately after the battle the tentage and blanket supply were inadequate, but these defects were corrected promptly. War always has had its hardships and discomforts; it can not be prosecuted in parlor cars and clubhouses. Or soldiers expected deprivations and unavoidable discomforts, but on the whole they were subjected to less actual suffering than they had reason to look for. To the credit of the medical officers it must be said they shared the inevitable hardships with the soldiers. They lived on the same food, drank the same water and made the moist ground their beds. The writer will always cherish the memory of the hardships incident to a campaign in a foreign country, a tropical climate and among a strange people. The Cuban campaign was planned and executed so quickly that some omissions and defects had to be expected. It is a source of gratification to know that the complaints made against the medical department have come from newspaper correspondents and camp followers more than from the soldiers themselves. Among the thousands of sick and wounded with whom I have been brought in contact during the Cuban campaign I have seldom heard a complaint; on the contrary, I have heard nothing but words of praise for the hard working, self-sacrificing medical officers and the department they represent in the field.

Ice-Water Enteroclysis in Typhoid Fever.

TOLEDO, OHIO, Aug. 1, 1898.

To the Editor:—After having had favorable results with ice-water flushings of the bowels in the lowering of high temperatures in typhoid fever, I have wondered that greater stress is not laid upon the use of the measure by those who write upon the treatment of that disease.

The cases are few in number in which I have had the opportunity to test the practice, and it may be that these few cases were such as would have done well under the Brand method, the wet pack, or any other plan of refrigeration; indeed, such is doubtless true.

For several reasons though, my practice, limited as it is, leads me to look upon ice-water enteroclysis as superior to any other method of lowering the temperature which I have seen used.

In the first place, fever patients need much more water than they in their semiconscious condition are likely to ask for, or than they will drink when it is offered them, and it is always the fact that there is less water passed into the bedpan than was forced into the bowel.

I place this reason first because I believe it is important that these patients take into the system more water than they are accustomed to drink even in health, and sterilized water to which has been added common salt, thrown into the bowels, is a rational way of meeting a vital requirement.

I do not know how high the water ascends in the bowels, but that it does hasten the removal of poisonous material from the bowels there can be no doubt. I believe, too, that subsequent injections ascend higher than the first ones did, the bowels becoming more accustomed to the water. The formation of intestinal gases is diminished by the cleansing of the bowel, and the soft rubber rectal tube frequently reaches an

accumulation of gas, thereby relieving a troublesome tympanitis as well.

Patients are not frightened or fatigued by the operation, but, on the contrary, so far as can be told by the expression of countenance, and by their general condition, are made more comfortable by it.

When the temperature is low, nervous manifestations are usually quiet, but whether this quiet is caused by a direct influence upon the nervous system or whether the nervousness is secondary to high temperature is a matter for individual speculation, but I believe that the heat centers are quite as apt to be influenced for good by the abstraction of heat from the interior of the abdominal cavity as they are by radiation from the surface of the body.

Enteroclysis is much easier to administer than is any kind of bath, and hence is much surer of being properly attended to. The technic is simple.

A long, soft, rubber catheter is slipped upon the ordinary hard tip, a napkin is tightly wound around the tip until a hard ball is formed which is to be pressed against the anus to prevent the ejection of the enema. The catheter is oiled with petrolatum and as soon as the tip has entered the anus the water is permitted to flow and, by rotating the catheter to and fro with the fingers, it floats upward as the water expands the intestine, and used in this way it does not double upon itself, or cause rectal irritation. The instrument is retained in the bowel for twenty minutes, the nurse maintaining pressure upon the anus during the time, and when the water is allowed to come away it is found to have the temperature of the bowel. The fountain should not be higher than a foot above the patient's body.

The patient weighs 150 pounds and his temperature is 105 degrees, $150 \times 105 = 15,750$. Water, four pounds, at 32 degrees, is introduced. The heat which this abstracts from the body is the difference between 32 degrees and 105 degrees $\times 4 = 292$. The original heat units, $15,750 - 292 = 15,458$; $15,458 \div 150 = 103$; and it has been my experience that the axillary temperature a half hour after the enema could be predicted with almost the above mathematic exactness.

J. S. TRACY, M. D.

306 W. Woodruff Ave.

Flannel Underclothing for Soldiers.

CLINTON, ILL., Aug. 6, 1898.

To the Editor:—There has been a good deal said of late about our soldiers in Cuba wearing abdominal bandages, "cholera pads" to protect them from diseases of hot climates. I do not think much of the pad. I think it would be better protection and more sensible to furnish each man with two pairs of flannel drawers, which would protect the soldier's legs as well as his abdomen. The extra pair could be kept dry and clean ready for a change and would make but little additional weight or bulk to carry.

I agree with Surgeon-General Sternberg that the field is no place for female nurses. They are all right in the local hospitals, but the battle-field and on the march is not their place. It was so during the Civil War and it can not be otherwise in the war with Spain.

JOHN WRIGHT, M.D.

Proposed New Designation.

SAN DIEGO, CAL., Aug. 3, 1898.

To the Editor:—With the advent of a new century the time is propitious for dropping such meaningless appellations as "Old School," "Regular," "Allopath," etc. Why not, henceforth adopt the eminently distinctive and appropriate title, "New School of Scientific Medicine," suggested by Surgeon-General Sternberg in his recent address at Denver?

Faithfully yours,

C. M. FENN, M.D.

ASSOCIATION NEWS.

Comment on Association Proceedings.—In connection with the proceedings of the Association of American Medical Colleges, published in this number, it is well to note a resolution adopted by the AMERICAN MEDICAL ASSOCIATION, which is far-reaching in its effects. The resolution was introduced by Dr. Dudley S. Reynolds of Louisville, the president of the Judicial Council of the College Association; it was referred to the business committee, approved by it, and adopted with no opposition. (For resolution *vide* JOURNAL, July 9, p. 83.) This resolution practically makes a new qualification for membership for every County society in affiliation with the AMERICAN MEDICAL ASSOCIATION, since one cannot enjoy the full privileges of membership unless he is eligible to serving his society as a delegate to the AMERICAN MEDICAL ASSOCIATION, and it is a question whether the Association was competent to adopt it in this form, for it is, in effect, an amendment to the constitution. It is not to call attention to this structural weakness but rather to its dynamics. That a resolution of this character could be presented to two successive general sessions of the AMERICAN MEDICAL ASSOCIATION and not be adversely discussed, even by the benevolent advocate of the poor young man who must struggle to enter the profession at all, and therefore should receive a training making many of his class monuments of ignorance and incompetency, seems almost too wonderful to be true. Whatever may have been the private opinion of many who kept silent, public sentiment is in favor of a fitting educational period for the intending physician. We congratulate the College Association on their having the stamp of approval set upon their own standard, and, which is a source of greater gratulation, the decision of condemnation upon any course less thorough than their own.—*Bulletin Am. Acad. Med.*, August, 1898.

Politics in the American Medical Association.—If one may judge by the tone of a recent editorial in the *Ohio Medical Journal*, in spite of the fact that Columbus is the meeting-place of the AMERICAN MEDICAL ASSOCIATION for next year, there is not an abiding peace in the minds of the profession of that State. There is a good deal of truth in the statement of the *Ohio Medical Journal* that "the political part of the convention continues to be managed by medical politicians; these gentlemen constitute a sect apart, come chiefly from St. Louis and Louisville, and come with everything cut and dried," but granting it, there are many who will not give the matter the prominence which it evidently receives at the hands of our contemporary. Most of the members attend the sessions of the AMERICAN MEDICAL ASSOCIATION for other reasons and with other purposes than to engage in political hickerings, and are only too glad that there are some who are willing to do this work for them. If they think they are running the show, let them think so as long as the performance continues; they get but an empty honor, forgotten before the next session, and have a great deal of labor for their pains. While they are doing this work the rest of us can meet and chat with friends, attend Sections, visit places of interest and enjoy ourselves. The men who are so unfortunate as to be elected to office will earn all they get from the honor, scores of times over, before next June.—*Allantic Med. Weekly*, August 6.

Resolutions Submitted to the American Medical Association at the Denver Meeting, June 8, 1898, by W. H. Sanders, M.D., Health Officer of Alabama. (*Vide* JOURNAL, No. 2, Vol. xxxi, pp. 85 and 95, July 19, 1898). Finally referred to the Business Committee:

WHEREAS, The protection of the public health is one of the duties and functions of all well-organized and progressive governments; and therefore, be it

Resolved, 1. That it is the sense of this body that a public health system correct in principle, complete in detail and appli-

cable alike to every part of the country, should at the earliest time possible be created and put into vigorous operation.

2. That in order for such a system to be constitutional, coherent and permanent, it should logically conform to the genius and plan of our concentric systems of government, that is to say, its roots should be deeply planted among the people, the recognized source of governmental power under our constitution, and its branches should reach up through, and be sustained by, every political division of our State governments to one central and resourceful power, the Nation.

3. That to lay the foundations for such a system the States should formulate their policies of public health with sufficient uniformity as to render them susceptible of being united into one symmetric and harmonious whole, and to lead up to, and terminate in, one central and co-operative head, viz., the general government acting through a bureau of public health.

4. That while the officials for actively conducting a public health system should be of local origin and authority, and therefore directly and proximately responsible to the people, the States and the Nation should co-operate with the local authorities in furnishing the expert skill and financial aid necessary for suppressing dangerous contagious and epidemic diseases when they appear in any given locality, and for preventing their spread from one part of a State to another part of the same State, or from one State to another State.

5. That the principles herein announced should apply to the theory and practice of quarantine, which, although an important part and function of a public health system, is not the only one of its numerous and beneficent powers. To divorce the exercise of quarantine power from a public health system, and to confer it upon a separate organization which derives its existence and vitality from the general government, and not from the people of the States, would be to emasculate and ultimately to destroy said system, as well as to overthrow one of the most sacred and valued principles upon which our government is founded.

6. That an earnest appeal is hereby made to the Congress of the United States to recognize the principles herein proclaimed as constitutional and unassailable, and as in thorough accord with the generic truths out of which our political fabric has been evolved.

SOCIETY NEWS.

American Public Health Association.—The Twenty-sixth Annual Meeting of this Association will be held at Ottawa, Ontario, Sept. 27-30, 1898. The executive committee has selected the following topics for consideration:

- "The Pollution of Water Supplies."
- "The Disposal of Garbage and Refuse."
- "Animal Diseases and Animal Food."
- "Car Sanitation."
- "Steamship and Steamboat Sanitation."
- "The Etiology of Yellow Fever."
- "The Relation of Forestry to Public Health."
- "Demography and Statistics in their Sanitary Relations."
- "The Cause and Prevention of Infectious Diseases."
- "Public Health Legislation."
- "The Cause and Prevention of Infant Mortality."
- "Transportation of Diseased Tissues by Mail."
- "The Period During which each Contagious Disease is Transmissible and the Length of Time for which each Patient is Dangerous to the Community."
- "Sanitation, with Special Reference to Drainage, Plumbing and Ventilation of Public and Private Buildings."
- "Report upon some Method of International Arrangement for Protection Against the Transmission of Infectious Diseases."
- "Disinfectants."
- "To Examine into the Existing Sanitary Municipal Organizations of the Countries Belonging to the Association, with a View to Report upon those most Successful in Practical Results."
- "The Duties and Responsibilities of the Healthy Man for his own and others' Health."

Upon all the above subjects special committees have been appointed. Papers will be received upon other sanitary and hygienic subjects.

Southern Indiana Medical Society.—The Annual Meeting will be held at Indian Springs, Ind., Aug. 11 and 12, 1898. George Knapp, M.D., President, Vincennes, Ind.; T. A. Hays, M.D., Secretary, Burns City, Ind.

PUBLIC HEALTH.

The Sale and Importation of Saccharin and other similar sweetening substances; dulcin, crystallin, etc., have been forbidden in Austria to all but druggists.

"To see Ourselves as Others see us" has been recently applied in the campaign against alcoholism in Germany. Drunken men are followed home from the saloon and photographs taken of their most disgusting and humiliating poses. The photographs are then presented to the subject when sober, with a warning circular.

Health in Michigan.—The report of the State Board of Health for July cites rheumatism, diarrhea, neuralgia, bronchitis and tonsillitis as the five most prevalent diseases of the month. Compared with the preceding month, dysentery, cholera infantum, cholera morbus, diarrhea, inflammation of the bowels and intermittent fever increased, while influenza, pleuritis and measles decreased in area of prevalence. The Board celebrated its quarter centenary August 9, 10 and 11.

Health in Indiana.—The diseases most prevalent throughout the State for July were typhoid fever, diarrhea, intermittent fever, dysentery and cholera morbus. As compared with June, the diseases which increased in prevalence were mostly water-borne diseases, as typhoid, dysentery, cholera infantum, inflammation of the bowels, diarrhea, intermittent fever and puerperal fever; those showing decrease were "house diseases," i. e., such as are due to bad ventilation, e. g., rheumatism, tonsillitis, bronchitis, whooping-cough, etc.

Bubonic Plague on the Island of Formosa.—The Japanese physicians have been making a careful study of the small epidemic of fifty cases, which is summarized in the *Arch. Klin. de Bordeaux* for June. There were 22 deaths: 4 natives, 4 Japanese soldiers and 42 laborers. Constipation was the rule in three-fourths of the cases; the rest had a yellow diarrhea, but there was no albuminuria nor pneumonic expectoration. The blood contained, besides the bacilli, an exaggerated number of white corpuscles. The prognosis depended upon the condition of the heart, which grew weaker and weaker until final collapse about the fourth day. Camphor and quinin proved absolutely ineffectual. An abrasion of the skin was only discovered in six cases. The liver was hypertrophied in six, and the spleen in nearly every case, but these conditions were ascribed to preceding malaria or beriberi. If the patient survived five days recovery was probable.

Prophylaxis of Gonorrhoea.—The recent German Dermatologic Congress concluded its long discussion of gonorrhoea with the recommendation that in view of the present unsatisfactory results of treatment it is important to educate the public, especially young men, to realize the dangers and far-reaching results of gonorrhoeal infection. As prophylactic measures, instillations of silver nitrate or of 20 per cent. solution of protargol and glycerin immediately after coitus, were advised, and especially the use of a condom. Neisser and others confirmed their previous endorsement of protargol as the most effective and least irritating of the silver salts, but for chronic cases the stronger argentamin is desirable. For women Neisser prefers ichthyol and urethral pencils. The importance of commencing treatment as soon as possible after infection was strongly urged. Neisser and others consider matrimony allowable when repeated examination fails to show any gonococci, but a few take the ground that marriage is impossible as long as any urethritis persists.

Osteopathy in Indiana.—An interesting contest between the Indiana State Board of Health and the osteopathic school of physicians has just come to a close in Lafayette (July 30). Some weeks ago Dr. Gott of Crawfordsville, a member of the Board, called the Board's attention to the fact that the osteo-

paths practicing in the State had not taken out either State or county license, as required by the new State medical law. The osteopaths stated that they were not engaged in the practice of medicine and were not required, therefore, to take out license. They furthermore urged that even should they apply for license, the State Board would refuse it. The State Board is made up of representatives of the allopathic, homeopathic and eclectic schools, and it has been its policy to refuse the application of all who are not regular graduates of one of the three schools. When the osteopaths defied the Board, it was decided to make a test case, so Dr. Woodruff, who had recently come from the Institute of Osteopathy at Kirksville, Mo., and located at Lafayette, was arrested for not taking out a license before engaging in the practice of medicine. The trial of the case was bitterly contested, both sides being represented by the best counsel in the State. The court found Dr. Woodruff guilty as charged, and fined him \$40. Woodruff has taken an appeal to the supreme court, and will endeavor to have the law declared unconstitutional. The State Board will cause the arrest of all other osteopaths practicing in Indiana.—*Globe-Democrat*, St. Louis.

The New York Quarantine Station has imposed upon it a stupendous task, which it barely meets, owing to the arrival of the various army hospital vessels from southern latitudes where yellow fever is a constant menace. The *N. Y. Tribune* gives a cut of the disinfecting boat, the *James W. Wadsworth*, on duty alongside a newly arrived steamer. Dr. Alvah H. Doty, the health officer of the port, has long since discarded alleged disinfections by sulphur and substituted steam in lieu thereof, a method first suggested by Dr. Edward R. Squibb of Brooklyn, N. Y. At first there were many obstacles to be overcome, but finally the present apparatus, in use for two years, fulfilled all expectations. The *Harvard*, the largest vessel disinfected, underwent the process in two days' time, and thus saved to the Government hundreds of dollars a day in the speedy release to her duties. Under the old process two or perhaps three weeks would have been consumed. The vessel in question, it must be remembered, according to Dr. Doty's account, had about 500 men aboard, every one of whom had clothing and bundles by no means above suspicion. The steam used had a temperature of 230 degrees F. or over, but formaldehyde gas is also resorted to in instances where injury by steam to fabrics, such as silk, laces, leather goods, etc., would result. Other devices for the prevention of communication by the development of incubative cases are used.

NECROLOGY.

CHARLES S. WARD, M.D., Yale, 1863, formerly of New York City, died July 31, aged 55 years. He was a member of many associations, among which were the University Club, the St. Nicholas Society and the Society of Colonial Wars. Having retired from a very active practice several years ago, he took up his residence in Bridgeport, Conn., where he died. He was noted for his quiet charities and benefactions.

CHARLES MORRIS FISCHER, M.D., Oakland, Cal., professor of histology of Cooper Medical College, San Francisco, Cal., died July 29. Dr. Fisher was taken sick about five weeks ago and his illness rapidly developed into typhoid fever. He was a native of Pennsylvania, 32 years of age, went to the Coast several years ago and soon after his arrival was made assistant city superintendent of schools. During his college days he became deeply interested in the study of histology and about four years ago, when the chair of assistant professor of histology became vacant, was chosen to fill the vacancy. Later, he was made professor, with the retirement of the former incumbent of the chair.

EDWARD LEWIS STURTEVANT, M.D., Harvard, 1866, died at

his home in Framingham, Mass., July '30. He was born in Boston, Mass., Jan. 23, 1842, was graduated from Bowdoin College in 1863, served as a captain in the Twenty-fourth Maine Volunteers during the latter year, but left the army for a medical career. As an expert in scientific agriculture he was connected with the United States government for many years and in 1881 took charge of the New York State Experimental Station at Geneva, where he remained for six years. Besides his many contributions to agricultural papers he edited *The Scientific Farmer*, 1876-79; *The North American Ayrshire Register*, and, with Joseph N. Sturtevant, published "The Dairy Cow," a monograph on the Ayrshire breed of cattle.

GEORGE C. HUBBARD, M.D., New York University Medical College, 1857, died August 3, at his home in Tottenville, Staten Island, N. Y., of which town he had been a resident for forty years. On January 1 he was appointed assistant sanitary superintendent of the health board, which placed him in charge of the Staten Island branch. After serving in the Civil War as assistant surgeon and subsequently as surgeon of the One Hundred and Sixty-fifth Volunteer Infantry, he returned to Tottenville and resumed practice, succeeding his father. He was for many years physician at the Mount Loretto Mission of the Immaculate Virgin, where there are from 800 to 1000 boys. In 1890 he was appointed a member of the Richmond County Police Board and continued in that place until 1896. From 1893 until 1895 he was president of the County Board of Excise. He also served as health officer of the town of Westfield and of Tottenville during its village history.

JOSEPH M. COCKRILL, M.D., Baltimore, Md., July 23, aged 50 years.—Joseph B. F. Fuller, M.D., Norwich, Conn., July 31, aged 87 years.—Theodore H. E. Gruel, M.D., Philadelphia, July 31, aged 52 years.—Joseph M. Klecfus, M. D., Detroit, Mich., July 30, aged 40 years.—E. T. Long, M.D., Bethlehem, Ky., July 21, aged 78 years.—Henry Mullen, M.D., Philadelphia, July 31, aged 64 years.—Thomas Murray, M.D., Beaver, Pa., July 31, aged 89 years.—Ed. B. Oatman, M.D., O'Fallon, Ill., July 30, aged 51 years.—Jacob S. Shimer, M.D., Philadelphia, July 27, aged 62 years.—T. R. Odell, M.D., Spokane, Wash., July 1, aged 82 years.—W. D. Boker, M. D., Astoria, Ore., July 1, aged 53 years.

DEATHS ABROAD.—Dr. Carlo Giacomini, professor of anatomy in the University of Turin, aged 57 years.—Dr. Victor Michaux, surgeon to the Civil Hospitals of Metz, aged 70 years.—Dr. C. Dufay, formerly senator for the Loir et Cher, president of the Medical Association of that Department.—Dr. Ernest Cadèze, medical superintendent of the Lunatic Asylum of Liège and a very distinguished entomologist, aged 71 years.

BOOK NOTICES.

Exiled for Lese Majesté. By J. T. WHITAKER, M.D. Cloth. Cincinnati: Curtis & Jennings, 1898.

A little love story endeavors to hide the true purpose—a series of remarks on literature, art, medicine, astronomy and kindred topics, chiefly in the form of conversation between the three leading characters. Their talks and readings are blended with apt quotations, in the handling of which the distinguished author is an acknowledged master. In his remarks on medicine he has woven many neat sentences that will soon be "familiar quotations." "Medicine must be a fascinating study." "The science of it is. Practice is very different." Again: "The redeeming element in practice is the diagnosis; that is the knowledge of the nature of disease." "I should think it would be the cure." "The people judge a physician by the results of his treatment; but physicians judge each other by the correctness of the diagnosis." "What is the objection to the practice of medicine? It must be one of the highest of arts." "So it is; but as an art it is subject to

debasement, and still more so as a trade. The charlatan is of all creatures the vilest. He is the vampire who sucks the blood of the sick; but the people at large do not know it, and they rarely draw the lines. Regular, irregular or defective, they are all doctors." A physician when pressed for a more favorable prognosis is made to say: "Only the charlatan is always certain." Again: "The physician does not pretend to still the storm; he is simply a pilot, who is satisfied to steer the ship through." "But the pilot sinks with his ship," said the librarian. "The physician's reputation goes down, too," replied the doctor, "and often under the decrees of Heaven, over which he has no control." In speaking of the death of a famous emperor, "He had the fatal consultation of the whole faculty." "If there was as much difference of opinion among medical men with regard to the treatment of disease as among bankers concerning the remedy for financial distress, or among scholars as to the interpretation of a difficult passage, the human race would long since have become extinct. But it is good to know that the medical men have their day, if it is only the last day." "But why don't you teach your patients?" "They want to be cured only; they don't want to be taught." "There is more in the blood than we have dreamed of in our therapy."

Atlas of Syphilis and Venereal Diseases, including a Brief Treatise on the Pathology and Treatment. By Prof. Dr. FRANZ MRACEK of Vienna. Authorized translation from the German. Edited by L. BOLTON BANGS, M.D. Pp. 122. Philadelphia: W. B. Sanders. 1898. (From W. T. Keener, Chicago Agent.) Price \$3.50 net.

The clinical material figured in this book is drawn from the service of Dr. Mracek in the Rudolfo Hospital in Vienna; this will be recalled as the hospital made famous by the lamented Billroth. The plates are lifelike and the material comprising the clinical cases quoted is such as to be very instructive. The careful study of the clinical statements and the examination of the plates will amply repay students and practitioners. The glance through the book is almost like actual attendance upon a famous clinic.

Handbook of Materia Medica for Trained Nurses, including the sections on Therapeutics and Toxicology and a Glossary of terms with dose and use of each drug. By JOHN E. GROFF, Ph. G. Pp. 235. Philadelphia: P. Blakiston's Son & Company, 1898. Price \$1.25 net.

The text of this book presents an abridgment of the subject of materia medica and there are questions appended to each chapter. There is an extensive glossary at the end. The work is intended primarily for students and trained nurses, but any medical man can read it with advantage.

Lectures on Tumors. By JOHN B. HAMILTON, M.D., LL.D., etc. Third Edition. 21 Illustrations. Pp. 143. Philadelphia: P. Blakiston's Son & Company. 1898. Price \$1.25 net.

The last edition of this book was published in 1892, and many changes have taken place in the pathology of tumors, which have been mentioned in this volume, not included in its predecessors. The work has been greatly enlarged; almost rewritten.

The illustrations are mostly original, and the classification followed by the author is the last revision of the nomenclature of the Royal College of Physicians. Of considerable interest is the latest theory of the origin of the dermoid cyst by parthenogenesis, and Ruffer's description of his microbe of carcinoma.

The publisher has apparently spared no pains to secure the typographic excellence of the volume.

The Retrospect of Medicine. Edited by JAS. BRAITHWAITE, M.D., London. Assisted by E. F. TREVELYAN, M.D., B. Sc., M.R.C.P. Cloth. Pp. 436. Vol. 117, January-June, 1898. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.

This half-yearly volume contains the usual retrospective view of discoveries and improvements in the medical sciences during the period covered. The abstracts from articles appear-

ing in medical journals during the half year are arranged under the heads of "General Medicine and Therapeutics," "Diseases of the Nervous System," "Diseases of the Organs of Circulation," "Diseases of the Organs of Respiration," "Diseases of the Organs of Digestion," "Diseases of the Urinary Organs," "General Surgery and Therapeutics," "Nervous System," "Alimentary Canal," "Affections of the Eye and Ear," "Affections of the Skin," and "Obstetrics and Gynecology." The volume is up to its usual standard of excellence.

The Mental Affections of Children; Idiocy, Imbecility and Insanity. By WILLIAM W. IRELAND, M.D. Pp. 442. London: J. & A. Churchill. Edinburgh: Jas. Thin, 1898. Price, \$4.00, net.

Those who read the author's former book on idiocy and imbecility will recognize a great deal that was in that work, but the present work is more elaborate and treats more exhaustively of the condition.

The pages on the development of the brain in childhood, the pathology of genitous and paralytic idiocy, sclerotic and syphilitic idiocy and that on insanity of children are new and not contained in the former.

This work deals with statistic causes of idiocy, and takes up at length the question of hereditary and, indeed, idiocy in all the phases.

The author strenuously objects, as do most philanthropists of the present day, to the practice of placing idiots in wards with the insane, and takes up the question of their careful treatment and final restoration to the body politic. The neglect of the States and failure to provide sufficient accommodations for this unfortunate class, is as a rule, owing to the absence of accurate knowledge as the exact amount of benefit that can be secured for them. Such books as this have therefore an important mission in popular education.

A Manual of Bacteriology, Clinical and Applied, with an appendix on bacterial remedies, etc. By RICHARD T. HEWLETT, D.D., M.R.C.P., D.P.H. Pp. 439. Philadelphia: P. Blakiston's Son & Company, 1898.

In this manual the author has endeavored to give some account of those portions of bacteriology which are of special interest in clinical medicine and hygiene. The preparation of tissue, methods of culture, description of pathogenic organisms and their detection, the examination of water, etc., have therefore been given at some length. The direction for staining and preparation of cultures, in the examination of air, water, blood, etc., are fully discussed.

This book will be very useful for those whose laboratory facilities are limited.

Thirty-Seventh Annual Report of the Cincinnati Hospital. Paper. Pp. 178. Illustrated. Cincinnati: Commercial Gazette, 1898.

This report covers the year ending Dec. 31, 1897, contains a description of the Cincinnati Hospital, reports of the various officials and the branch hospital with detailed tabulations concerning various cases of typhoid fever, acute rheumatism, pneumonia, hernia, etc., occurring in the hospital.

Twelfth Annual Report of the State Board of Health of Ohio. Cloth. Pp. 508. Illustrated. Norwalk, Ohio: Laning Printing Co., 1898.

Besides the usual matter pertaining to sanitary questions, this report contains a number of papers of interest. Among others we note "A Report on the Treatment of Diphtheria with Antitoxin," "What Can be Done for the Prevention of Consumption," "Evil Results of Present Educational Methods," "Present Position of Formaldehyde as a Disinfectant," and "Tuberculin Test for Tuberculosis in Milch Cows."

Handbook for the Hospital Corps of the U. S. Army and State Military Forces. By CHARLES SMART, Deputy Surgeon-General, U. S. A. Approved by the Surgeon-General of the Army. Second Revised Edition. 12mo. pp. 338, illustrated, blue muslin, \$2.25 net. New York: William Wood and Company.

This is the third revision of the well-known handbook of

Colonel Smart and deserves a place in the library of every military surgeon. As its author is an accomplished chemist, it is natural to expect that the chapters on sanitary care of camp, etc., would be of the highest order.

The appearance of the book is timely and it will be found of great use to the medical corps in the field.

A Compend of Diseases of the Skin. By J. F. SCHAMBERG, M.D. Pp. 137. Philadelphia: P. Blakiston's Son & Company. 1898.

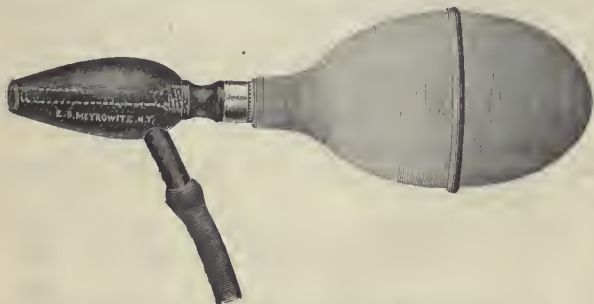
There are ninety-nine illustrations in this volume. The illustrations are excellent and the text up-to-date. The student will find this as useful as any of its much derided but nevertheless very necessary class.

NEW INSTRUMENTS.

A COMBINED EUSTACHIAN INFLATOR AND EAR AND NOSE DOUCHE.

BY WILL WALTER, M.D.
CHICAGO, ILL.

The use of the Politzer air-bag in Eustachian inflation is decidedly clumsy and not entirely satisfactory for several reasons. It is necessary to hold the nasal tip in one nostril and to exclude the other with one hand, that the other may be free from pressure upon the air-containing bag; while, too, the shape of the bag is awkward and the whole instrument unduly large and hence difficult to carry when emergency requires. In addition there is great variability in the volume and force of the air through difficulties of compression and through the kinking, softening or hardening of the rubber tubing. These apparent defects led me to try a small bulb with a nasal tip directly attached for this purpose. Subsequently, in view of the usual demands for intranasal and postnasal treatment in connection with inflation, and frequently with this douching of the external auditory meatus, I thought to substitute for the simple nasal tip a reflex tip of special shape, hoping thus to meet all the demands in one instrument.



The instrument shown in the cut thus consists of an ovoid rubber bulb, specially shaped and sized to be easily compressed by the hand, attached to a hard rubber reflex tip, to the return flow portion of which is applied a piece of small tubing. The latter may be in length according to the desire of the patient. The tip is adapted as well as possible to meet the needs of both nose and ear, fitting the average external orifices as well as may be done by one instrument. The instrument should prove of value for Eustachian inflation, as it may easily be held to the nostril and compressed by one hand, while the other hand holds the opposite nostril, the exit tube being closed.

As an ear douche, its simplicity, convenience and cleanliness of application would commend it for hot douching of the external meatus.

As a nasal douche it may be used for douching the nares in cases where there is pathologic or post-operative occlusion and it is desired to cleanse the parts, and this it will do much more readily than the spray. By entirely compressing the exit tube a nasal douche, easily regulated in force and area of

application by variation in pressure, may be attained. Few physicians do not, at times, need to restore the normal pressure to the middle ear, and this is most advantageous when early employed. The compactness of this instrument, together with its varied uses, would seem to commend it for routine use in practice.

103 State Street.

MISCELLANY.

Globulicidal Properties of the Tapeworm.—Schauman and Tallqvist report that the bothriocephalus latus, whether derived from an anemic or non-anemic person, contains a true blood toxin.—*Deutsche Med. Woch.*, May 19.

The Fifth International Congress for the Study of Potable and Mineral Waters, Climatology and Geology, will be held at Liège, Belgium, from September 25 to October 3. Secretary, Dr. Joris-ene, Boulevard de la Sauvenière, 130, Liège.

Prof. William H. Welch has resigned as dean of the Johns Hopkins Medical School. Dr. Welch does not sever his connection with that institution, for he will retain his position as professor of pathology.

Consolidation of Colleges.—The consolidation of the Atlanta Medical College and the Southern Medical College under the name of the Atlanta College of Physicians and Surgeons, is announced. This will be the only regular medical college in Atlanta.

From a Study of the Agglutinating Power of Cholera Vibrios, Ransom and Kitaehima have demonstrated that the agglutinating power of a cholera culture can be modified at will without appreciably affecting its virulence or other characteristics, by varying the specific cholera serum.—*Deutsche Med. Woch.*, May 12.

Inflammable Stomach Gases.—Dr. Drouet relates that he was recently examining the throat of his three-year-old child with a tongue-depressor, by the light of a candle, when the gases rising from the stomach caught fire and burned for a moment with a bluish flame, slightly singeing the doctor's mustache and the child's lips.—*Jour. de Méd. de Paris*, July 3.

Pus in the Pelvis.—Johnson (*Am. Jour. of Obstet.*, July) believes that the majority of bad pelvic pus cases, etc., could be more quickly evacuated through the vagina than through the abdomen, and at the same time done more easily, completely and safely. He reports twelve cases tending to emphasize this conviction.

Bile Not Secreted by the Liver.—Barbera concludes from numerous tests on dogs with biliary fistulas that the bile is not a secretion of the liver; the functions of the liver do not include the secretion of bile, which is merely an excretion of the liver cells, its production depending upon the work of the cells.—*Munch. Med. Woch.*, May 24.

In 104 Total Extirpations of the Uterus for carcinoma at the Landau Clinic, 27 per cent. have shown no signs of recurrence during the five years since; 32 per cent. have relapsed. Neither youth nor extreme age seems to be absolute counter-indications for an operation. He has had three fistulas persist. He recommends completing the operation at one sitting and removing both ovaries every time.—*Munch. Med. Woch.*, May 17.

Congenital Pelvic Kidney.—Cragin (*Am. Jour. of Obstet.*, July) reviews the literature on this subject and adds one case to the few already reported, obstruction of the parturient canal resulting. His conclusions are: Pelvic kidneys may cause dystocia; induction of premature labor is indicated as a rule; in rare cases, where the pelvic kidney is in a condition of hydronephrosis, vaginal nephrectomy may be advisable. In the writer's case vaginal nephrectomy was performed.

Official Privileges Extended to Women Physicians.—A recent decree places women occupying official medical positions in Russia on the same footing as men, with the exception of promotions, wearing uniforms and decorations. They do not lose their right to a pension if they marry, and their orphan children inherit it. The decree only refers to a limited number who completed their medical course under certain circumstances. Woman has long been legally on an equality with man in Russia.

Pride Before a Fall.—Pedagogic father is trying to show off his supposed precocious boy before company.—“My son, who would you rather be, Shakespeare or Dewey?” Little son meditates awhile and says, “I’d rather be Dewey.” “What, my son; and why?” “Cause he ain’t dead.”—*New York Weekly*.

The Importance of the Role of the Phagocytes is much enhanced by the new discoveries in regard to their action in tetanus intoxication. They not only destroy the bacteria, but owing to their property of absorbing all the solid particles they encounter, they absorb and render harmless the tetanus toxin if it is combined with a solid substance, such as brain matter. These facts show that the leucocyte is capable of destroying a microbe even when it is secreting a virulent toxin.

The Absorption of Calomel by Leucocytes after injections into the tissues proceeds very rapidly where the circulating current is rapid and where they reach it before its transformation into mercuric chlorid. In the subcutaneous and muscular tissue the leucocytes merely surround the calomel without absorbing it or carrying it away. The transformation, therefore, only occurs at the point injected, and is promoted by the fluids of the organism. Vaseline holds the calomel in suspension longest and is absorbed by the subcutaneous connective tissue in one minute.—G. Piccardi, *Derm. Cbl.*, April.

Stricture of Small Intestine.—In the *Phila. Med. Jour.* of July 9, Matas presents an illustrative case of multiple stricture of probable tubercular origin, within thirteen inches of the jejunum. He performed enterectomy by Maunsell’s method, not applicable in all cases, *e. g.*, contraindicated in case of very thick or inflamed mesentery, where he considers Czerny-Lembert or other simple suture methods preferable. The case is of interest from the almost innumerable difficulties of diagnosis before operation, the high position of the lesions, the period of evolution of the stenotic process, twenty years, and the apparent cure.

Porro Operation vs. Total Hysterectomy.—Boldt writes on this subject in the *American Journal of Obstetrics* for July. He believes total hysterectomy should be performed in preference to supravaginal hysterectomy with extraperitoneal treatment of the pedicle; never be performed unless absolute indications are present, and the child being dead *in utero*, the uterus should be removed *in toto* unopened. He considers the advantages of total hysterectomy over the Porro operation as less danger of infection, no danger from secondary hemorrhage, less danger from intestinal obstruction, shorter convalescence and less danger of ventral hernia.

Sharp Practice.—Lady V. (At office of fashionable Harley Street consultant.) “I have called, Doctor, to ask if there is any cure for sleep-walking of several years standing. Lately it has become worse.”

Dr. Hy Pryce: “It can be cured, madam. Take this prescription and have it filled at Cold, Steele & Co’s.”

Lady V.—“Cold Steele & Co.? why, that is not a drug store; it is a hardware firm.”

Dr. Hy Pryce.—“Yes, madam. The prescription calls for a paper of tacks. Dose, 2 table-spoonfuls scattered about the floor before retiring.”—*Vanity Fair*.

This was for the purpose of puncturing her tire.

The Central Nervous System in Acute Anæmia shows the effect of

the intoxication from an insufficient supply of oxygen, as the red corpuscles decrease in number. In a case Scagliosi has recently studied, uterine hemorrhages persisting thirty-four days in an otherwise healthy woman in the eighth month of pregnancy, the evidences of the lack of nutrition were very pronounced. In the brain cells the Nissl cell-corpuscles had crumbled into fine granules, and the accessory nucleus had a hole in or near the center, close to the wall. The atrophy and chromatolysis of the ganglia cells of the spinal cord were accompanied by diminished staining power on the part of the crumbled Nissl corpuscles. He adds that it would be impossible for cells thus degenerated to take up the oxygen, even if it could then be supplied them.—*Deutsche Med. Woch.*, May 19.

La Societe d’Autopsie is an offshoot of the Paris School and Laboratory of Anthropology and it is difficult to overestimate the importance of its work in the study of the organs of men who were prominent and widely known in science, art, literature, politics, etc. Gambetta is the subject of the latest report issued by the society. It contains his “psychologic biography; the brain and the function, with the authentic history of his disease and death,” and throws a remarkable light on the organic substratum of Gambetta’s superiority as an orator and extemporaneous speaker, as it shows that the foot or “cape” of the third left frontal convolution, the verbal motor par excellence, was double in him.—*Bull. de l’Acad. de Méd.* June 21

Unorganized Charity.—The medical profession is about the only calling in life that is not, or need not be, dependent upon organization to enable it to give safely, wisely and quickly. The needy are always with us, and all that is needed is a plenty of this world’s goods and a kindly temperament, for, as the poet says:

So many gods, so many creeds,
So many paths that twist and wind,
While just the art of being kind
Leaves all the other arts behind.

Orthoform in the Organism.—It has been demonstrated in Leyden’s clinic that besides its local anesthetic effect, orthoform is absorbed in the stomach and eliminated (not pure) through the kidneys, relieving pain in the urinary passages in acute gonorrhœa and cystitis; dose 1 to 1.5 grams a day, preferably in a solution. In the urine it responds to the same tests as the amido-phenol group, most marked with chromic acid, and also produces the ring characteristic of pyramidon. The amido-phenol leaves the organism paired with sulphuric acid, shown by the much increased amount of “ether sulphates.” Orthoform also has the property of preventing the putrefaction of albumin. After the ingestion of orthoform the urine can stand for days without ammoniac putrefaction.—*Deutsche Med. Woch.*, June 30.

A Waiver of Privilege.—The first appellate division of the supreme court of New York holds, in the personal injury case of Rauh vs. The Deutscher Verein, that the plaintiff, having submitted evidence, whether it be the testimony of the plaintiff herself or of another witness present, of the transaction between the patient and physician, waived the privilege of excluding the physician’s testimony; and the truth of what happened, and what was ascertained by the physician in his examination and the treatment of the patient, can be testified to by the physician. A different rule, it thinks, would work the greatest injustice, and would expose the defendant to danger on account of the fact that the rule would prevent him from examining into the truth of the plaintiff’s statements.

A Colossal Roentgen Plant.—Professor Trowbridge of Harvard University has completed a vastly powerful apparatus for experiments in electric force, his principal object being to test further the penetrating power of the X-ray. The apparatus consists of a series of 120 Franklin plates, or leyden jars, supplied with power by a storage-battery containing 10,000 plant

cells. The voltage necessary for experiments is 2,500,000. It is reported that he has already made experiments which prove that with an apparatus as powerful as this the X-rays can be made to penetrate not only human flesh but bones and tendons, thus probably making possible still more remarkable attainments in surgery by their aid.

Enforced Higher Education.—The Association of American Medical Colleges, which is an organization first brought into actual existence by Dr. Eugene F. Cordell of Baltimore, has done a noble work in raising the standard of medical education in the United States, and in gaining for our country the respect and admiration of foreign medical schools and physicians. There are some schools in this country, however, which did not join this association, and which still "cut rates," so to speak, and by shortened courses and various tricks carefully omitted from mention in the annual catalogues and announcements, help to lower the standard of medical education in this country. In order to force these schools into the association and make them the equals of all the good schools, the AMERICAN MEDICAL ASSOCIATION has passed very practical resolutions declining to register as delegate or permanent member any physician who shall hold the position of teacher or professor in these low-grade schools, or who shall be a graduate of such schools. If the AMERICAN MEDICAL ASSOCIATION has the grit to stick to this resolution, and will not be overpowered by the political members of the association, the effects of this rule will have a very salutary effect on the poorer schools.—*Maryland Med. Jour.*, July 23.

Removal of Health Officers at Pleasure.—Physicians appointed as health officers for cities, towns and counties "may be removed at any time by the local boards appointing them," under section 2060 of the Kentucky Statutes. This, the court of appeals of that State construes, in *Riffe vs. Finsby*, to be equivalent to power of removal at pleasure or discretion, though the general rule is that a person appointed or elected to an office, the term of which is prescribed, cannot be removed therefrom, by even the appointing power, except upon trial of charges preferred, and of which he has notice. Nor does it consider that the case is altered by a city ordinance fixing the term of office of the health officer, whether valid or not, though it is suggested the ordinance would be beyond the power of the city to pass, the State statute not fixing any term of the office in question, and it being plainly the policy of the legislature that there should be no term of such office, and the incumbent should be, for manifest reasons, removed at the pleasure of the board of health.

Fibroma of the Nasopharynx.—Woodson (*Laryngoscope* for August) believes that few, if any, cases of nasopharyngeal fibromata occur which cannot be successfully extirpated or destroyed without endangering the patient's life. He says: "The mode of operation has little or no influence in preventing symptoms, because the tendency to recurrence is marked during the period of active development; the arrest of development follows adolescence, but absorption frequently takes place, when total extirpation of the growth is rarely followed by recurrence." He considers hemorrhage a great danger in operating, and that the galvanocautery loop, while exceedingly rapid, fails to absolutely prevent serious hemorrhage. On the other hand, the cold-wire *decraseur* is bloodless, painless and easily manipulated, and the instrument *par excellence*. He does not advise the injection of escharotics, on account of the density of the growth requiring considerable time for the separation of the slough and also causing offensive odor.

The Sequel of a Druggist's Revenge.—The London *Lancet* cites a case before a provincial police court, in which a small boy who had been swinging on the supports to the blinds of a druggist's shop, after capture had been liberally dosed with an infusion of quassia. The druggist was fined properly, says the

Lancet, on the following grounds: the next mode of punishment might not be so harmless as quassia and the executioner might be less instructed in therapeutics. Again, an element in this way might be imported into the punishment of children which should never be tolerated, to wit, the element of nervous terror. "We know and the druggist knows," says our contemporary, "that the solution of quassia was as harmless as, say, many sorts of table beer, but the boy did not know it. He might easily believe that his disagreeable sensations were the prelude to impending death from poisoning, and a fond mother might possibly support the view, with the result that much more pain, and of a different sort, would be caused than was intended." Although there is a dash of casuistry mingled with the heavy humor of the bar we hope that the controversy is now at an end, especially since the deterrent factors of stronger blinds or increasing weight of years may be the safeguards.

Hemorrhagic internal Pachymeningitis.—In the *American Journal of Medical Sciences* for August, Herter writes on this affection as it occurs in children, believing that the lesion is sufficiently frequent to deserve more attention than it has hitherto received. From his own observations he says: "I do not feel certain that there is any symptom or combination of symptoms which we meet in hemorrhagic internal pachymeningitis which we may not occasionally encounter in the course of a severe acute infection without the presence of any cerebral lesion whatever. At the same time hemorrhagic pachymeningitis is a lesion which we should think of as a possibility whenever we meet with unilateral rigidity and convulsions, with deepening stupor, in a cachectic or rachitic child under one year of age. In the absence of the signs of pneumonia and tuberculosis, I think this diagnosis gains distinctly in probability." Another aspect to which he calls attention is the probability of slight traumatism to the head, causing rupture of vessels in a highly vascular membrane, giving these cases thus a medico-legal importance.

Puerperal Sepsis.—Mundé, in his presidential address recently delivered before the Am. Gyn. Society (*Am. Jour. of Obstet.*, July), said: "Unquestionably in the large majority of cases of puerperal sepsis in private practice the infection comes from the fingers or instruments of the physician or the nurse; and this statement applies not only to the poorer classes, but to a certain extent to those in better circumstances. It has been frequently stated that the women in well-conducted lying-in asylums are far safer from puerperal infection than those who are attended in their own houses, even though they be brown-stone fronts. This is not as it should be. It is not only the hands and instruments which may introduce infection, but also the clothing of the attendants, which may have been in contact with some infectious case and which have not been thoroughly cleansed and disinfected. . . . Naturally the denuded endometrium, the more or less bruised and lacerated cervix, vagina and perineum are by far more susceptible to the entrance of septic germs than the more or less intact sexual organs during pregnancy. Retention of portions or clots or membranes does not necessarily mean their decomposition and a septic infection. In some cases he believes the septic germs, "wherever they came from and however they got there, were sucked into the gaping vagina during change of position of the patient, say from the back to the side, or *vice versa*, or after a fecal evacuation, when the relations between the pelvic viscera and intra-abdominal pressure changed so that the gaping vulva was placed in a favorable condition for the entrance of air by suction."

Value of Gratuitous Medical Treatment can not be Recovered.—That he had been put to great expense for medicines and doctor's bills, was averred by the plaintiff in a personal injury case as one of the elements of damage which he had sustained for which he should be allowed to recover compensation. But

the evidence was that he had been taken to a hospital and treated there, without incurring any liability for the medicine and medical attendance. Could the value of such medical treatment, what would have been charged for it, if charged for, be made the foundation of such a claim as that stated? The supreme court of Missouri holds, in the recent case of *Morris vs. the Grand Avenue Railway Company*, that it could not. The proof of the value of the gratuity exerted in one's behalf in relief of an injury inflicted, it maintains, is in no sense the proof of the expense to which one had been put, or the liability incurred, in the relief from that injury, and that there is no warrant in law or logic for holding to the view that the proof of the one state of facts justifies the finding of the existence of the other, or that proof of one raises the presumption of the existence of the other. To authorize a recovery on part of the injured plaintiff, there must have been an actual loss to him, or a liability that same may or will occur, and when loss has not or can not occur, by reason of the action of others, gratuitously exercised in behalf of the party injured, or when no legal liability has arisen, by reason of restrictions of law against the intervening third party performing the needful services, it quotes cases to show, no action can be maintained. Nor does it consider that it is any answer to the denial of the defendant that the plaintiff has been put to expense for medical treatment to say that "the defendant in an action for personal injuries caused by his or its negligence ought not to profit by the generosity, charity, or indulgence extended to plaintiff by a third party."

Pregnancy Following Ventrofixation.—A. Laphthorn Smith of Montreal (*Am. Jour. of Obstet.*, July) reports that in his 111 cases pregnancy has taken place in six, one or both ovaries and tubes having been left in four and both ovaries and tubes in the other two. He cites replies to 100 inquiries addressed in May, 1898, to the leading physicians in America as to whether they knew of any cases of pregnancy following ventrofixation. Of seventy-three replies received, thirty-two knew of no such cases, and the experience of forty-one aggregated 148 cases. From the evidence he concludes: 1. That as far as curing retrodisplacement, either retroflexion or retroversion or anteversion with retroversion is concerned, ventrofixation with two buried silk stitches through the peritoneum and fascia gives the most reliable results. Failures are unknown when the operation is performed in this way. 2. Ventrofixation should be reserved for cases in which abdominal section is necessary for other reasons. . . . When it is expected that pregnancy may follow some other operation should be chosen; because, 3, when the uterus is firmly attached to the abdominal wall and pregnancy follows, trouble of some kind, either pain, miscarriage, or difficult labor requiring obstetric operations, takes place in about 30 per cent. of the cases. . . . 4. When *suspensio uteri* was performed, that is, the uterus attached to the peritoneum of the abdominal wall, a few relapses occurred. . . . 5. A third method, it is claimed by some, namely, the intra-abdominal shortening of the round ligaments, is preferable to either fixation, ventrofixation or *suspensio uteri*. After the menopause, it may be added, none of the objections urged are tenable.

Cholelithiasis of Typhoidal Causation (*vide* JOURNAL, June 11, p. 1415).—The London *Lancet*, July 9, refers to the work done by Dr. H. W. Cushing, at the Johns Hopkins Hospital, in elucidating the interoccurrence of gall-bladder trouble with the presence of the bacillus of typhoid fever in the human economy. Dr. Cushing, *in primis*, has confirmed the view that the gall-bladder, like Peyer's patches, is a site of election for the typhoid bacilli. In 1891 Blachstein noticed their constant occurrence in the gall-bladder of rabbits after experimental inoculation. Later, Professor Welch discovered that they persisted in this situation; in one animal they were found 128 days after inoculation, when they had disappeared from every other organ. Acute cholecystitis may appear in the late stage

of typhoid fever, but there is a group of cases in which it appears some months after the attack and always in association with cholelithiasis. The connection between typhoid fever and cholelithiasis was first pointed out in 1889 by Bernheim and has been confirmed by several writers. In professor Halsted's clinique in Johns Hopkins Hospital, ten out of thirty-one cases of cholecystitis with cholelithiasis, which were operated on, gave a history of typhoid fever, the interval varying from a few months to twenty years. Such a long interval by no means negatives the connection, for the bacillus has been found in a case of cholecystitis as late as fourteen years after an attack of typhoid fever. Similarly, abscesses of bone may follow typhoid after long intervals; in a case recorded by Buschke the interval was forty-six years and yet the bacillus was cultivated from the pus. These cases well illustrate that the germs of disease may remain latent in the body for an indefinite period, a doctrine which is only beginning to be appreciated and which has far-reaching possibilities. Dr. Cushing reports a remarkable case of cholecystitis and cholelithiasis in which cholecystotomy was performed and the typhoid bacillus found in the gall bladder, although there was no history of previous typhoid fever. The blood serum gave the typhoid reaction. The wide-spread recurrence of the typhoid bacillus has only been lately recognized. In 1892 Guarnieri first described an infection of the biliary passages, liver and spleen without intestinal lesions.

Foreign Bodies in the Ear and Nose.—In the *Medical Record* of June 11, Barret urges more careful knowledge on the part of the general practitioner as to the removal of foreign bodies from the ear and nose. He advocates the use of as few instruments as possible—a head mirror, one serrated and one rat-toothed forceps, foreign body forceps, a flexible tube, a "nest" each of aural and nasal specula, and a cotton carrier, being the essential instruments. In case of the nose he has "the mother or nurse take her seat upon a straight-backed, steady chair, with her back to the table or stand, on which the lamp is placed in such a position that the light shines over her right shoulder. Then she should take the child on her lap, clasp its limbs between her knees, and with her right arm thrown across its body secure its arms, while with the left hand on its forehead she holds its head firmly and steadily against her right shoulder. The operator then places himself in front of the patient, seating himself upon a straight chair or stool (never use a rocking chair), and with the thumb of the left hand slightly tips up the end of the nose, while the right hand so adjusts the head mirror as to throw a flood of reflected light into the nostrils. Having located the foreign body, proceed as quickly as possible to remove it before the child becomes frightened or the nervous strain upon the mother becomes too great. No force should be used under any circumstances, lest the delicate parts be seriously injured. If possible, grasp the offending body with a pair of forceps, and by gentle traction withdraw it; or very often, as in the case appended, the flexible probe may be bent in the form of a hook of suitable size and slipped past the obstruction, then turned, and the foreign body rolled along the floor of the nasal fossa, until it either drops out or can be grasped by the fingers. Sometimes it is necessary to use a nasal speculum and dilate the nares considerably before we can locate a foreign body or effect its removal. The procedure is much the same in case of the ears, but usually more difficult and great care must be taken to avoid laceration of the walls of the auditory canal. The child's head should be turned so as to bring the affected ear toward the operator, and held as directed above. A syringe and warm water may be tried, taking care, however, not to use too much force and thereby rupture the drumhead, and also to dry the ear thoroughly afterward with a little absorbent cotton on a cotton carrier. In examining the ear the lobule is grasped between the index and middle fingers and gentle traction made upward and backward,

while the thumb and index finger insinuate the speculum into the orifice with a slight rolling motion. The speculum most generally used resembles the one for the nose, except it is longer and pointed."

The Mortality of the Medical Profession.—The report of Dr. Tatham, the medical officer of the local government board, on the mortality of occupations during the three years 1890-92 has recently been issued by the Registrar-General as a supplement to the report of the Registrar-General for the ten years 1881-90. The report is one which demands careful examination, and we hope to refer to it at greater length on a future occasion. We will now only observe that Dr. Tatham reports that the number of members of the medical profession recorded in the last census of England and Wales was 18,936, an increase of 25 per cent. as compared with less than 3 per cent., which had been the rate of increase in the previous ten years. The comparative mortality figure for medical men is 966, as against 821 for lawyers, 533 for the clergy and 953 for occupied males in the aggregate. The mortality among them is higher than that of lawyers at all ages up to the 55th year. Dr. Tatham, however, has some grins of comfort, for he finds that in the three years with which he deals the diminution in the death rate of ages under 45 noticed by Dr. Ogle has continued, while at ages from 45 to 65 there has been a decrease from the high rate of 1880-82, although the mortality still remains somewhat higher than in 1871. At ages above 65 there has been a further increase in the mortality. As on the whole the increase has been at ages above 55, Dr. Tatham suggests that it may be partly due to the influenza epidemic, which was at its height in 1891, and is known to have been especially fatal to persons beyond the prime of life. It is a remarkable fact that the most frequent of all causes of death, not only in the medical but also in the cleric and legal professions, are diseases of the heart. Pulmonary tuberculosis and diseases of the respiratory system, which, in most other occupations, stand higher than any others in the scale of mortality, occupy much less important places, the mortality from bronchitis in the medical profession being not more than one-seventh of that to which the general male population is subject. The causes of death to which medical men appear to be especially liable are gout, diabetes, urinary disease and suicide. It appears, indeed, that the tendency to the commission of suicide has notably increased among medical men. The number of deaths attributed to diseases of the liver, of the urinary organs and to alcoholism has decreased. On the whole, if we omit the increase in suicide, it would appear that the death rate from causes which may be classed as preventable shows a decided tendency to decline in the medical profession.—*British Medical Journal*.

The United States Army Field-Hospital System.—The hospital-corps of an army is divided into two detachments, one of them being for service in the field hospitals, the other for manning the litters and ambulances for the removal of the wounded from the field. The laying out of the field hospital proceeds on four lines, separated by intervals that must be determined by the nature of the battlefield. The first line of hospital service is coincidental with the line of battle, and includes regimental surgeons, orderlies and company bearers. On the second line are the first dressing stations, at the nearest point beyond range of the enemy's fire. Here ambulance surgeons attend the wounds, and ambulances and litter-bearers of the hospital corps convey the wounded to the third line. This is called the ambulance station. Reception, operating and dressing tents are erected, where the wounded can be attended until they can be removed to the division hospital at the base of supplies. None of the hospital corps serves in the line of battle. The wounded are conveyed to the first dressing stations by privates from the ranks. The army regulations provide

that four privates from each company shall be designated as company bearers. They are taught how to handle wounded men and in first aid, in addition to their regular duties as armed combatants. They fight in the line until their services are required to attend the wounded, whom they convey to the first dressing places. There the injured are turned over to the hospital corps, and the company bearers return to their places. They are under the direction of their own officers and have nothing to do with the dressing of wounds. Their only care is to convey the wounded beyond the reach of the enemy's fire. At the first dressing stations, where the wounded receive their first attention, aside from such hasty bandaging as the regimental surgeons may be able to provide, there is a completely equipped field hospital in miniature. In the United States Army the main medical stores are carried in army wagons, but as these can not keep up with the line of battle, it is proposed that pack mules be employed to carry such supplies to these dressing stations. A medical case or pannier, so built as to fit the back of a mule, contains all the materials required, a variety of antiseptics, medicines for the relief of pain, bandages, splints, plasters and operating instruments. A cook accompanies each of the divisions, carrying a case of portable cooking utensils. As soon as this detachment reaches its station tents are put up, the medical cases are opened and their contents placed in readiness for use; an operating table is improvised by placing two of the folding panniers together, so that they will afford a place on which to lay the wounded while the surgeon is working over them, while the cook sets up his tent and makes ready to prepare light nourishment.

Not Liable for Leaving Fragment of Needle in Perineum.—A surgeon and physician, who holds himself out as such to the public, and accepts employment as such for pay, does so under obligations which are imposed upon him by law. He takes upon himself the obligation when he accepts such employment that he will exercise fair, reasonable and ordinary skill in the conduct and discharge of that employment. The highest possible skill is not to be expected of him, but it is expected, and the law demands of a person holding himself out as a professional man, that he shall have such knowledge, such skill, and shall exercise such care as are ordinarily exercised by men in his profession in good standing in the community in which he resides. This is the rule which the court of common pleas of Hamilton county, Ohio, took for its guidance, in the case of Eislein against Palmer, where it held, June, 1898, that, according to the evidence offered by both parties, it was manifest that the surgeon sued for malpractice had exercised all reasonable care and skill, and there was no negligence on his part. In performing an operation to remove some cicatricial tissue from the perineum, the needle used in passing the suture was broken, and the surgeon could not find the fragment by touch or sight, and speedily closed the operation, on account of the patient having become very weak under the influence of the anesthetic. Two days before the date set for the patient to receive final instructions and leave the hospital, the surgeon's horse ran away, throwing him out of his buggy upon his head, so that he was not able for months thereafter, either mentally or physically, to attend to any business. Other doctors took the case from that point, and about a year later performed an operation, finding the fragment of needle embedded in cicatricial tissue which had formed all about it, in the perineum, apparently just where it was left when it was originally broken off. Such being the case, the court holds that a verdict in favor of the surgeon was not against the weight of the evidence or the law. It also particularly holds that the surgeon was under no obligation to tell his patient or her husband, while she was his patient, that a needle had been broken and part left in her body, but that it was his duty to tell her when he should discharge her as his patient from his care as such surgeon or physician; because to tell her would only be to endanger the success of the operation. He did not have to anticipate dangerous and unavoidable accidents, continues the court, but he had a right to expect that he would be able to attend his patient until she got well.

The Cause of Death From Electric Shocks.—In these days in which electricity is coming more and more into everyday use; in which after an accident the first thought is frequently, if not usually, as to who is responsible and from whom may financial compensation be received; and in which the association of electricity and civil suits is of common occurrence, the results of the experiments of Oliver and Bolan, carried on during the past year, and published in the *British Medical Journal* are of considerable interest. These experiments have been made with a view of ascertaining the cause of death after electric shocks, and the report includes a large amount of research into the effect upon animals of the alternating current in varying doses. The paper is illustrated by a number of records of the blood pressure, pulse and respiration of animals; before, during and after the application of the alternating current of varying voltage. They conclude as follows: "When an animal is exposed to electric currents of sufficiently high potential, death is, practically speaking, instantaneous. The animal is thrown into opisthotonos, during which breathing is suspended and the heart's action momentarily quickened and then arrested; if the current is strong enough it is stopped at once. On shutting off the current there occurs a deep inspiration usually followed by an expiratory cry. This has often been noted by workmen when one of their number has suffered a serious accident, and by it their attention is called to one who is found dead as the result of electric shock. Dogs through which an electric current has been passed, may on breaking the current, not only breathe spontaneously and rhythmically for several seconds, even a minute or two, but bark loudly; and yet all the time the heart has ceased to beat. In a few experiments death has been due to contemporaneous cessation of the action of the heart and lungs. Primary cessation of the heart's beat is without doubt the general rule; while under no circumstances have we succeeded in causing primary arrest of respiration followed by a failure of the heart. They also report the testimony of workmen employed in electric generating stations; who say that it is usual for men killed by electric shock to breathe a few times after life is otherwise apparently extinct. From the facts within their knowledge they conclude that death in the electric 'chair' must be instantaneous and without pain."

Cincinnati.

DRS. LAWRENCE CARE and WALLACE NEFF, have been appointed surgeons-in-chief of brigade with the rank of major.

THE following Cincinnati physicians attended the late meeting of the AMERICAN MEDICAL ASSOCIATION held at Denver: DRs. Holmes, E. W. Mitchell, Ransohoff, Zinke, Bruhl, Conner, H. M. Brown, Hilkowitz, French, Oliver, Wenning, Bonifield, Malebury.

DR. J. T. WHITAKER, professor of theory and practice of the Medical College of Ohio, has written a book on a non-medical subject, entitled "Exiled for Lése Majesté," elsewhere noted.

DR. H. I. WOODBURN has been appointed professor of physiology and histology of the Miami Dental College.

San Francisco.

THE buildings of the Affiliated Colleges of the University of California are about completed and the moving in of the laboratory apparatus is now in process. The coming term of the Medical Department will open with the customary lectures at the old building, but the work will be transferred to the new quarters about the first of October. That this is to be the case, and that the work of completing the buildings and finishing the laboratories will not be dragged over many months unnecessarily, is entirely owing to the persistence of Dr. R. R. Beverly Cole, president of the Medical School and a former president of the AMERICAN MEDICAL ASSOCIATION. He has devoted almost all his time to the superintendence of the work on these buildings for the past two years, and in addition to this by no means trifling physical work, has expended a good

deal of his own money upon the buildings. Dr. Cole suffered from an attack of partial hemiplegia, about nine months ago, but as soon as he could be out of the house he was again at the college buildings seeing that the work was pushed rapidly ahead, and that all particulars of the contracts were lived up to; indeed, it is probable that this work has kept him alive for more than a year, for his health has been failing rapidly during the last two or three years. It has been the hope of every one of the faculty that Dr. Cole might live to see his heart's desire, these magnificent college buildings, finished, and the Medical School installed therein. The move to the new quarters will probably have a most beneficial effect upon the college, for it has already shown some promise of this in the added interest in the laboratories and laboratory work. The recently created Electrical Department (established a little over a year ago) will be provided with a laboratory quite unequalled for its apparatus and facilities in this country, and it is anticipated that a very large amount of original research will be done therein. One somewhat novel feature will be a course of lectures on the most recent discoveries in the line of animal electricity, which will be delivered to all the classes and will also be attended by a goodly number of physicians as well. It is quite probable that the City and County Hospital will be located near the new building of the Medical School, in which event advantages of this department of the State University will be materially enhanced.

Philadelphia.

ABUSE OF CHARITY IN HOSPITALS.—As in all cities, the abuse of charity in Philadelphia has reached such a stage that the word "flagrant" may be properly applied, but one society after another has devised ways and means for its correction. Probably that one which will eventually prove successful is the one recently approved, which provides that persons applying for treatment shall give a statement as to their financial condition, income, etc., and having a statute enacted by the legislature making it a heavy penalty for any one guilty of making false statements. At the meeting of the Medico-Legal Society recently held here, and of which Dr. Samuel Wolfe is chairman, this subject was commented on at some length, and a plan is being formed by which an aggressive campaign will be waged along these lines in the early fall. It is then hoped to secure the indorsement of the County Medical Society and afterward have the co-operation of all medical bodies in presenting the subject properly before members of the State legislature.

PHYSICIAN AT HAHNEMANN HOSPITAL IN TROUBLE.—On June 29, a boy 14 years of age, while descending a ladder accidentally stepped on a nail, which ran into the center of his foot below the arch. He was taken to the Hahnemann Hospital, where the foot was dressed under an anesthetic. It is reported that he went again on two or three succeeding days and was told to come again at a certain hour July 5. On July 4 the boy received a wound of the limb by the accidental discharge of a cartridge and was taken to the Samaritan Hospital, where the part was dressed. The boy's limb was again dressed the following day, and as he informed those in charge of his engagement at the Hahnemann Hospital at 1 o'clock, he received attention early. In the lad's last statement it is reported that he reached the latter institution at a quarter to 2 o'clock, when the curator said to him, "My boy, you are too late, you were told distinctly to be here at 1 o'clock." It is said that other patients were being treated at the time, but the boy was sent away, and when he reached home was suffering great pain and had a high fever. A few days later he died of tetanus. After the boy was sent away from the Hahnemann, Dr. Cornelius, the family physician, was called in, but refused to accept the responsibility of the case and advised that Hahnemann physicians be notified. The father (a minister), on arriving at the institution, met one of the resident physicians in charge, who,

according to the father's testimony, became abusive. He stated that the object of his visit was to get some one from the hospital to attend his son, as other physicians would not take charge of the case. This the resident physician refused to do. All of these facts have been elicited before Coroner Ashbridge, and on asking the father, "Why did not the Samaritan Hospital doctors treat the wounded foot?" he was told that he did not know, but was under the impression that medical ethics prevented it being done. At the inquest the coroner stated to the jury "that the question to determine was from which wound the lockjaw had developed, but unfortunately, no autopsy could ever reveal that fact. While the evidence may point to the wounded foot as the cause, we can not determine that." On account of the connection of the resident physician in the case and of his abusive language toward preachers, the coroner censured him quite severely and thought that the hospital should take some action in the matter. The last accounts stated that the resident had resigned.

DR. GUITÉRAS PROSTRATED.—It is reported that owing to the excessive labors forced upon him on account of the campaign in Cuba, Dr. John Guitéras has been prostrated with fever and overwork. He reported 250 cases of yellow fever in the hospital at Siboney on July 16, and up to that time there had only been five deaths from that cause, thus proving the mildness of that disease. In the epidemic of yellow fever last year in the South, Dr. Guitéras also attributed the low death rate to the fact that, owing to a better understanding of that disease and of its symptoms than was formerly the case, many cases were recognized earlier and consequently received appropriate treatment before alarming complications arose, thus reducing the mortality.

BEQUEST.—By the will of Mrs. Eliza H. Frailey, widow of Commodore Frailey of this city, \$17,000 has been left to the Hospital of the Protestant Episcopal Church of Philadelphia.

A CASE OF SUSPENDED ANIMATION AT ST. MARY'S HOSPITAL.—On account of the death of his mother, Louis Holyworth, a young man of highly nervous temperament, fell into a state of unconsciousness when he lay in a trance for a period of about forty eight hours.

STAMPING OUT TUBERCULOSIS AMONG CATTLE.—According to the investigations of Dr. Leonard Pearson of Philadelphia, State Veterinarian, tuberculosis in cattle is rapidly disappearing and in many sections of the State the disease is very uncommon. It is stated that the older sections of the State suffered most, from the fact that more cattle were affected and, according to the provisions of the law, these had to be destroyed. About 30,000 cattle have been tested with tuberculin and in a larger number physical examinations have been made, and of these three thousand have been destroyed, thus getting rid of this many foci of infection.

STRANGE BEQUEST TO THE UNIVERSITY OF PENNSYLVANIA.—Edwin P. Kelly, an eccentric tailor who recently died in Philadelphia, inserted a clause in his will providing that after death a sufficient sum of money be set aside for converting his body into a mummy for the benefit of science, and that the same be presented to the University Museum. Owing, however, to the fact that the University would not receive the bequest, and to the fact that decomposition of the body had begun, this provision of the will can not be carried out.

THE PUBLIC SERVICE.

Assignments of Army Medical Officers.—To the 2d Army Corps, General Wm. M. Graham, Camp Alger, Va.: Acting Asst. Surgeons Isaac W. Brewer from Watkins, N. Y.; Frank W. Ross from Elmira, N. Y.; Joseph E. R. Ellis and Fred W. Palmer from Washington, D. C.; John C. Orr from Chambersburg, Pa.; Chas. V. Butler from Norwich, Conn.; John T. H. Slayter from Cambridge, Mass., and Jeremiah E. Leahy from Washington, D. C. To the 3d Army Corps, General James F. Wade, Chickamauga Park, Ga.: Major John P. Dodge, brigade sur-

geon; Major D. Appel, Surgeon U. S. A., relieved from the 1st division, 7th Corps, and the following acting assistant surgeons: John J. Repetti and Clark I. Wertenbaker from Washington, D. C.; Harry E. Geeler from Littletown, Pa.; John E. Bacon from Buffalo, N. Y.; John Mason Williams from Louisville, Ky.; H. L. Gilchrist from Cleveland, Ohio; D. R. Dewey from North Adams, Mass.; Chas. F. Craig from Danbury, Conn.; Chas. E. V. Kennon from North Easton, Mass., and A. E. Smith from Freeport, Ill. To troops at Tampa, Fla.: Acting Asst. Surgeons Urban S. Bird and Paul T. Déssez from Washington, D. C.; Jos. F. Chmeltsek from New York; Geo. H. Fox from Downingtown, Pa., and Hermann B. Gessner from New Orleans, La. To the 5th Army Corps at Santiago, Cuba, via New York City: Major Lawrence C. Carr, brigade surgeon, and the following acting assistant surgeons: Wm. T. Hamilton from Ironton, Ala.; Jas. T. Persons and H. B. Mohr from Mobile, Ala.; J. M. Newell, Ricardo Gaston, Jos. M. Pena, Clarence S. Perry, Wiley L. Atkey and E. Van Hood, all from Washington, D. C.; W. Edson Apple from Philadelphia, Pa., and John A. Lowner from Boston, Mass. Via Tampa, Fla.: Major Seaton Norman, Surgeon, 3d Volunteer Infantry; Capt. R. S. Woodson, Asst. Surgeon U. S. A., and the following acting assistant surgeons: J. R. Shannon from Washington, D. C.; Randall R. Hunter from Fulton, Kan.; George H. Fonde from Mobile, Ala.; Geo. E. Lawrason from Macon, Ga.; Frank R. Maura from Pensacola, Fla.; Milton Vaughan from Little Rock, Ark., and C. H. Tebault, Jr., from New Orleans, La. To the 7th Army Corps, General Fitzhugh Lee, Jacksonville, Fla.: Major W. S. Bryant, brigade surgeon, late Asst. Surgeon 1st Massachusetts Artillery; Capt. Benjamin Munday, Asst. Surgeon U. S. A., and Acting Asst. Surgeons Slids B. Post and John K. Railey. To the U. S. general hospital, Ft. McPherson, Ga.: Major Wallace Neff, brigade surgeon, from Cincinnati, Ohio, and Major Wm. J. Wakeman, brigade surgeon, from duty at Camp George H. Thomas, Chickamauga Park, Ga. To the 1st general hospital, Chickamauga Park, Ga.: Acting Asst. Surgeons Chas. C. Marbury from New York City, Julius Ullman from Buffalo, N. Y., and Thaddeus Walker from Detroit, Mich. To the U. S. general hospital at Ft. Monroe, Va.: Acting Asst. Surgeon John R. Hicks from the steamship *Manitoba*. To the U. S. general hospital, Ft. Myer, Va.: First Lieut. Albert E. Truby, Asst. Surgeon U. S. A., recently appointed, from Otto, N. Y. To the U. S. general hospital at Montauk Point, Long Island, N. Y.: Acting Asst. Surgeon T. G. Holmes from Detroit, Mich.: To the hospital ship *Missouri* at New York City: Capt. Alex. N. Stark, Asst. Surgeon U. S. A. Resigned: Majors Charles E. Ruth and Willis G. McDonald, brigade surgeons, and First Lieut. R. Mark, Asst. Surgeon, 3d North Carolina Infantry.

CHANGE OF ADDRESS.

Chance, B. K., from 1610 Christian to 118 South 17th Street, Philadelphia, Pa.
Corbell, R. L., from Chuckatuck to Port Norfolk, Va.
Caldwell, W. S., from Freeport, Ill. to Sioux Falls, S. D.
Freeman, B. F., from New Palestine to Ridgeville, Ind.
Golf, J. V., from Tuscon to Ashfork, Ariz.
Hodges, F. J., from Anderson, Ind. to Ashland, Wis.
Holland, J. W., from Holderness, N. H. to care The Cheekley, Prouts Neck, Maine.
Zeller, J. O., from Ann Arbor to Skaneec, Mich.

LETTERS RECEIVED.

Bremner, H. A., Merritt, Ill.; Burnett, Swan M. (2) Washington, D. C.; Bruner, W. A., Cleveland, Ohio.
Coley, W. B., New York, N. Y.; Clark, C. F., Columbus, Ohio; Cokenower, J. W., Des Moines, Iowa.
Dewar, J. B., Cedar Springs, Mich.
Egbert, J. Hobart, Holyoke, Mass.; Engels, E. Fletcher, Chicago, Ill.
Fairchild, D. S., Clinton, Iowa.
Gihon, A. L., Sykesville, Md.; Gould, Geo. M., (2) Westfield, N. Y.; Green, C. C., Beaver City, Neb.
Huffman, G. W., Defiance, Ohio; Hall, A. D. Book Binding Co., Appleton, Wis.; Hughes, D. L., Keokuk, Iowa; Harrah, W. S., Washington, D. C.; Harris, Geo. T., Falls of Rough, Ky.
Irving, W. T., Dark's Mills, Tenn.
Johnston, Geo. W., Washington, D. C.
Kreider, Geo. N., Springfield, Ill.; Klepinger, J. C., Union, Ohio; Karger, S., Berlin, Germany.
Labbé, D., Paris, France; Levers, E. E., Red Canon, Wyo.; Link, J. A., Springfield, Ohio.
Moore, C. R., Chicago, Ill.; Moore, J. S., Grant's Pass, Ore.; McIsaac, Isabel, Chicago, Ill.; Murphy, T. C., Manito, Ill.; Marcy, H. O., Boston, Mass.; Millbury, F. S., Brooklyn, N. Y.; Magruder, G. L., Washington, D. C.; Matthews & Swartz, Pine Bluff, Ark.; May, J. M., Meridian, Miss.; Markley, P. L., Rockford, Ill.
Noland, C. C., Rockwell City, Iowa; Norstrow, H., Boone, Iowa; Nichols, H. B., Putney, N. Y.; Norwich Pharmacal Co., Norwich, N. Y.
Pynchon, E., Chicago, Ill.; Parker, W. T., Asylum Station, Mass.; Philadelphia Medical Journal, Philadelphia, Pa.; Pease, F. P., Buffalo, N. Y.; Reedy, E. S., Colorado City, Colo.; Raymond, J. H., Brooklyn, N. Y.; Senn, N., New York, N. Y.; Smart, Chas. (2) Washington, D. C.; Smith, W. T., Hanover, N. H.; Seeley, W. K., Dubuque, Iowa; Spalding, J. S., Chicago, Ill.; Stevens, A. M., Ann Arbor, Mich.; Spivak, C. D., (2) Denver, Colo.; Short, J. L., Rolla, Mo.
Thomson, G. K., Halifax, N. S.; Times Publishing Co., Bethlehem, Pa.; Tuley, H. E., Louisville, Ky.; Tyree, J. S., Washington, D. C.
Ward, Montgomery & Co., Chicago, Ill.; Wisman, J. L., Frontier, Mich.; White, F., Elwyn, Pa.; West, H. A., Galveston, Tex.; Wyckoff, R. M., Brooklyn, N. Y.; Wood & Co., Wm., New York, N. Y.; Whitford, W., (2) Chicago, Ill.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, AUGUST 20, 1898.

No. 8.

ORIGINAL ARTICLES.

PNEUMATURIA.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. A. KELLY, AND W. G. MACCALLUM.

BALTIMORE, M.D.

During the last two centuries observations of the passage of gas with the urine have been made from time to time by various authors, and lately a number of very detailed accounts of this phenomenon have appeared. Brierre de Boismont in 1825 mentioned the spontaneous production of gas in the bladder and considered it due to a sort of flatulence or secretion of gas by the bladder mucosa. Roche confirmed this and Chomel added to the suggestion of gaseous secretion from the membrane, the idea that the gas might be due to fermentation. But up to 1860 practically all the instances were in cases of fistulous communication between the bladder and intestine, and when in that year Raciborski was called to treat a man who passed bubbles of gas from the urethra he first satisfied himself that there was no vesico-enteric fistula, before describing the case as one of spontaneous development of gas in the bladder.

The cases of pneumaturia may be roughly divided into three groups:

1. Those in which air is mechanically introduced into the bladder from without.
2. Those in which gas develops in the urinary tract through the agency of some fermenting organism.
3. Those in which there is a communication between the bladder and an air-holding viscus.

The first group is of little practical importance, as the discomfort is transient and the phenomenon has no pathologic significance. The introduction of air may occur during irrigation of the bladder if the apparatus used is not emptied of air before the fluid is allowed to flow. More commonly is the condition brought about by the knee-breast position occupied by the patient during the cytosopic examination as practiced by Dr. Kelly, when it forms the basis of the method of examination—the sagging of the viscera produces a negative pressure on the bladder walls which is neutralized as far as possible by the amount of air distending the bladder. After such examination when the patient is replaced in the dorsal position the air should be pressed out through a catheter, as otherwise the distention may cause considerable pain. The operation of lithotomy and the vesical operations are also sometimes followed by passage of gas into and out of bladder.

The second group of cases depends on the invasion of the urinary tract by some organism which by its action on the urine produces gas. In most of these cases the gas was produced in the urinary bladder, but in a few the kidney was evidently the seat of the

infection, and in one there was a general distention of the whole tract.

Since as yet we know so little of the etiologic factors in these cases we can hardly attempt any division of the cases on such a basis. Up to the time of Favre, who isolated an organism in 1888, no attempt was made to recognize the causative agent. Most of the cases described occurred in middle-aged or old men, where there had been for some time some obstruction to the flow of urine—such as an enlargement of the prostate or gonorrhoeal stricture—in others there were vesical calculi. In two cases there was paralysis following myelitis. Of the sixteen cases described nine were found to have glycosuria. The data are not sufficient to determine the reaction of the urine in all cases but the majority were acid up to the time when the determining factor of the pneumaturia appeared—that is the catheterization, sounding, lithotripsy, lithotomy, etc., one of which was performed in practically all the cases and was very quickly followed by the passage of gas. The reaction of the urine after the introduction of the organism by the catheter varies with the nature of the infection.

In three cases (those of Heyse, Guiard, and Pére) there is no definite history of catheterization before the emission of gas, but there was an increase in the amount of gas after such instrumentation, and it is now practically universally recognized that such introduction of the infection by means of instruments passed into the bladder is the essential factor in the production of pneumaturia of this type.

The various conditions described as existing previous to catheterization or sounding are predisposing causes. The residual urine present in the bladder when there is some obstruction to free egress forms a favorable medium for the growth of organisms and other slight infections, associated with the presence of an obstruction and atony of the bladder, or with the presence of vesical calculi, are often favorable to the invasion of the gas-forming organism. Further, stress has been laid by Guiard and others on the importance of the presence of sugar in the urine in the production of pneumaturia, and indeed in the sixteen recorded cases there was glycosuria in nine, with one more doubtful case. Guiard himself reports four such cases. Dumesnil, Ralfe, Müller, Senator and Pére report others. Of these cases the organism was recognized in only two, that of Senator, where there was a yeast, and that of Pére, where a bacillus resembling the bacillus coli communis was the gas-producer.

In sugar-free urines the formation of gas has been observed in several cases, and from the number Favre, Schow and Heyse have made detailed bacteriologic studies. The organisms described by these authors are almost identical, differing only in details, in which there is always some variation. They all belong to the group of which the bacillus coli communis is the type, and Heyse has identified the organism in his case

with the bacillus lactis aërogenes. Schow names the one found in his case coccobacillus aërogenes vesicæ. The following are the main characteristics of the three organisms; they are plump, short rodlets sometimes occurring in pairs: they grow aërobically on the various media, forming gas in the gelatin stab cultures and not liquefying the gelatin. Favre's bacillus is motile, Schow's slightly so and Heyse's non-motile. Favre's form shows an inequality in staining, suggesting the formation of spores. Urine media become alkaline after the growth of the organisms excepting Favre's, which produces acid. Heyse's bacillus is said to produce acid also by changing lactose into lactic acid. The organisms are pathogenic to rabbits. Heyse's also to guinea-pigs and mice. The gases produced are carbon dioxide, oxygen, nitrogen, hydrogen and marsh gas.

One of the cases in which the bladder was found distended with gas is described by Welch and Flexner. In this case the organism was the bacillus aërogenes capsulatus (Welch) which is distinguished by its size and aërobic growth. The gas produced was chiefly hydrogen and burned with blue flame.

As to the actual mode of formation of the gas we have various ideas. Guiard upholding his claim that glycosuria is the basis of all such pneumaturias, considers it an alcoholic fermentation, with the liberation of CO₂, and thinks we should find alcohol in the urine, and this has been actually done by Senator, who found in the case where a yeast was the aërogenic factor alcohol in the urine and CO₂ as the gas.

Obviously this is the explanation of the decrease in the sugar in the urine of diabetics after the beginning of a cystitis, and the formation of the fatty acids as an extension of the process explains the acidity of the urine in such a case.

In the cases where the urine is sugar-free the analyses of the gas produced have showed the presence of CO₂, and H₂N, O, and CH₄, have also occurred, but it is suggested by Senator that these are absorbed merely from the blood. Just what is decomposed in sugar-free urine by the organisms is still doubtful.

The quantitative analyses vary so much that it is difficult to draw any general conclusions from them. In all, however, hydrogen forms the main bulk.

Other suggestions are offered as to the formation of the gas. Ralfe thinks that during the formation of acetone from aceto-acetic acid in the urine of diabetics gas might be developed. Kehler, indescring a case of hydronephrosis in which the hydronephrotic sac was distended with gas, suggests that from the remains of the kidney tissue normal acid urine was secreted at intervals and that this set free the CO₂ from the carbonates in solution in the stagnating urine in the sac.

The symptoms in these cases are not very striking. There may be continual desire to urinate, but it is rather a result of the cystitis than of the presence of the gas, which collects in rather small amounts. The passage of the gas per urethra causes no pain, but rather a tickling sensation, and is accompanied by a souffle or even by a distinct explosive report, or a musical sound. The bladder tympany may extend almost into the umbilical region at times, but unless the patient be actually inverted, the curve and situation of the urethra is such that no gas passes until after most of the urine has been passed. The gas may pass in such large bubbles as to give rise to intermissions in the flow of the urine, or if in very small

quantity it may merely form froth at the end of micturition.

Recovery occurred in practically all of the cases, the urine clearing up and again becoming acid; treatment with antiseptic lavage often greatly hastened this. The fatal termination of a few of the cases was due rather to infection of other organs than the bladder—pyonephritis with uremia.

Rather distinct from this class of cases is the group forming perhaps part two of the second division—those cases where the gas is produced in the kidney and ureter rather than in the bladder itself. Of such cases three have been reported, and a fourth has occurred during the last year at the Johns Hopkins Hospital in my own clinic. LeDentu in his textbooks cites a case observed by Lannelongue in a child aged 8, where there was a voluminous tumor in the right flank, at first mistaken for the liver. On aspiration 500 c.c. of a greenish fluid was obtained, together with a gas composed of oxygen, nitrogen and carbon dioxide. At autopsy the tumor was shown to be a renal cyst. LeDentu himself performed nephrectomy in a case where there was a renal calculus and an accumulation of gas in the kidney. This gas, as in the case of Lannelongue, was composed of oxygen, nitrogen and carbon dioxide, and he gives it as his opinion that the gas was absorbed from the blood. In the case of Tisné there was pyonephritis, with formation of a perinephritic abscess following obstruction from an enlarged prostate; evacuation of the abscess put an end to the discharge of gas from the bladder. The history of the case observed at the Johns Hopkins Hospital is briefly as follows:

Mrs. J. H., aged 36, married fifteen years, II-para, normal labors. About four months after marriage noted pain on urination. Two years later began to pass minute white calculi and during the next four years passed three larger calculi with much pain. At present has pain and swelling in left lumbar region and constant pain in bladder, especially just before urination; the urine always contains pus; for one year has passed gas from urethra in large amounts. Left kidney is felt as a hard tumor the size of two fists.

Cystoscopic examination. No. 10 cystoscope. Bladder mucosa normal. Right ureteral orifice easily found and normal in appearance and the urine clear issuing from it. The left ureteral orifice found by seeing issuing from it pus and gas bubbles. This was wiped away and the ureter easily discovered surrounded by a reddish area. On pressure over the kidney pus could be squeezed out of the ureter, and mixed with the pus were numerous air bubbles. On attempting to pass a metal catheter, a stricture of the lower portion of the ureter was discovered. A flexible, wax-tipped one and one-half mm. catheter was easily passed on first attempt and entered to the kidney; no scratch marks on the wax. Pus withdrawn was thick, viscid and of a foul odor.

Nephrotomy was done and a drainage tube inserted into the kidney, after evacuating the gas and washing out the pus which was found in its cavity. The patient made an uninterrupted recovery.

Cultures from the kidney were not definitely successful in isolating a single organism. Coverslips from the pus showed various forms, slender bacilli in chains, stout bacilli in chains and groups of cocci or short bacilli beside diplococci resembling the pneumococcus. The cultures showed mainly coccus-like organisms which did not liquefy gelatine, although the growth was here, as on agar, abundant; litmus milk decolorized and coagulated with the formation of acid; no formation in lactose agar nor in urine lactose agar. Scant growth on potato and in bouillon, the bouillon becoming clouded.

In the last group of cases the gas reaches the bladder through a fistulous communication with some air-holding viscus, which is in the great majority of the cases the intestine. Observations on such fistulas have been rather numerous, and the literature has grown to a considerable extent, especially in the last

fifty years. Among the most important publications are those of Blanquinque and Harrison Cripps, the latter of whom reviewed sixty-three cases in the literature. Chavannaz within the last few months has written very fully on the subject, considering, however, only such fistulas as occur in men.

Communication between the bladder and intestine may originate in the most various ways, and the cases may be roughly divided as follows: 1, congenital fistulas; 2, cases of traumatic origin; 3, cases in which the fistula results from necrosis of tissue between the cavity of the bladder and that of the intestine.

Savoy and Minich have described cases of atresia ani in very young children, in which the intestinal contents were evacuated through the bladder by way of a fistulous connection between the bladder and the rectum. This was probably a congenital malformation rather than the result of the accumulation of the feces. Treatment by the restoration of the natural anal orifice resulted in the cure of the condition.

Traumatism plays a relatively small part in the production of vesico-enteric fistulas, and the fistulas so formed are much more amenable to treatment than those in which the formation is associated with a diseased condition of the adjoining tissues. Billroth and Fischer have reported cases in which passage of gas through the bladder followed wounding of the rectum in lithotomy and in the cases reported by Dittel, Johnstone and Canton the fistulous perforation was due to violent catheterism. Gunshot wounds, stabs, protracted labors and retention catheters have been the cause in other cases, but by far the most common, traumatic origin seems to be in wounds of the rectum caused by falling on some sharp object, which, entering the rectum, passes through the intervening tissues into the bladder.

The tissues being in good condition, healing often takes place if the patient is merely kept at rest and the bladder and rectum kept as free as possible. In most of the cases frequent catheterization or the introduction of a retention catheter has been resorted to. Chavannaz states that the traumatic cases form 13.86 per cent. of all cases in men, but if we consider the fistulas in women, also, this is a rather too high estimate, and the figures approach more nearly to 11.4 per cent. of all cases.

The non-traumatic fistulas are produced by the necrosis of tissue between the cavity of the bladder and that of the intestine, after these organs have become adherent or by the necrosis of the walls of these organs, so that communication is established through an intervening cavity, such as an abscess cavity.

The old division of these cases into cancerous, tuberculous and inflammatory is adopted by Chavannaz, but it is sometimes rather misleading and the dividing lines can never be sharp. In almost half of the cancerous cases the cancer is only indirectly the cause of the fistula in that it forms a stricture of the intestine, the fistula being produced at a higher level. Chavannaz in his statement that the cancerous cases form more than 20 per cent. of all the cases seems to overlook this—the percentage of fistulas actually due to the breaking down of a cancer, involving both bladder and intestine, is probably under 10 per cent. Several English authors, Hunter, Blizzard, Heuston, Richardson and others have described such cases where the fistula was directly due to the invasion of the bladder wall by the carcinoma, and the subsequent

breaking down of the mass. Tavignot, Peron and Czerny have also described similar cases.

Stricture of the rectum seems to have a very important influence in the production of fistulas, whatever may be the origin of the stricture, although no writer has laid especial stress on this point. The intestine above the stricture becomes distended and feces stagnate there; indeed a complete lining of feces may be formed with a secondary lumen through which the liquid stools pass, and such stasis, combined with the severe straining at stool to produce an inflamed condition of the intestinal wall and peritoneal adhesion, are followed by ulceration through the wall into the adjoining bladder. Foreign bodies which have become lodged above the stricture often aid in this process.

From the side of the bladder the causation of fistula is very doubtful. Stricture of the urethra has probably only a predisposing influence in causing cystitis, etc. Mercier describes two cases in which the autopsy showed that ulceration had occurred at the bottom of several of the sacculations or cellules in the bladder wall, and that communication with the intestine had originated in this way.

Calculi have been said to ulcerate through the walls, especially if they have become lodged in depressions, but as Chavannaz remarks, they are more probably the result than the cause of intestino-vesical fistulas. Further, fistulas have been ascribed to the long-continued use of stiff retention catheters and sounds, necrosis of the vesical wall occurring where the beak of the sound pressed upon it: also to the presence in the bladder of long, hard, foreign bodies introduced from without for various purposes.

Probably the largest group is formed by those cases where at autopsy there is no stricture of the intestine nor any carcinomatous mass, but instead peritoneal adhesions between one or more loops of intestine and the fundus of the bladder, with perforation at the point of adhesion. These adhesions may be limited to a very small area, merely forming a thick wall for the fistulous tract, or they may be very extensive, matting the intestines. Flanner describes such a case where the matting was due to a tuberculous peritonitis and Robouam another where, among the coils of adherent intestine, there was a large abscess cavity communicating with the intestine and with the bladder. Frequently the communication is not direct, but through a space walled up by adhesions from the peritoneal cavity in which there is a collection of intestinal contents, urine and pus, and sometimes foreign bodies. Chavannaz has found such a *foyer intermediaire* in 22.10 per cent. of the cases. The course of the fistulous tract is thus not always direct; in some cases the openings are directly opposed, in others the canal is long and tortuous after running for some distance between the coats of the intestine and bladder. This disposition may result in a valvular action of the fistula so that materials can pass only one way.

Fistulas have resulted in various other ways. Rupture of abscesses in the pelvis, into the bladder and intestine, has occurred in a considerable number of cases. This is especially frequent in women, where tubal abscesses and other suppurative processes in the pelvis are common. In men, somewhat similar conditions have occurred, sometimes originating in inflammation of the appendix, although when we consider the number of appendix abscesses that are seen

it is somewhat remarkable that in Chavannaz's statistics the appendix is concerned in the formation of such fistulas in only one case or 1.85 per cent. Very recently Fowler of New York has reported a case in which an appendix abscess was probably the cause of the fistula.

Connection of the two organs by means of an adherent cystic ovary has been described by Simpson, and in an inaugural dissertation Giessler described the formation of communication between the bladder and intestine after the rupture of an extrauterine pregnancy, with discharge of fetal parts through the various channels. Finally, Schoepffer relates the case of a child in which the breaking down of a small-celled sarcoma of the intestine, which had become adherent to the bladder, gave rise to the passage of intestinal contents into the bladder.

Another class of cases originates in tuberculous and suppurative processes in the tissues between the rectum and the bladder. Tuberculosis of the prostate passing into cheesy degeneration with discharge both ways is the basis of several cases; while gonorrhoeal abscess of the prostate and neighboring tissues may have a similar result.

The situation of the orifice of the fistula is rather important in determining the symptoms and governing the treatment. Chavannaz's statistics are as follows, in the cases in which the point was determined by autopsy: In 44.44 per cent. the communication was with the rectum; in 24.07 per cent. the communication was with the sigmoid; in 11.11 per cent. the communication was with the colon; in 7.40 per cent. the communication was with the colon and ileum; in 1.85 per cent. the communication was with the appendix.

The intestinal as well as the vesical orifices may be multiple and may be situated in different sections of the intestinal canal. This of course complicates greatly the operative treatment, and in the intraperitoneal treatment of such cases the question arises as to whether it is better to resect the intestine or to perform a number of lateral sutures. It will be readily seen that since the rectovesical fistulas form such a large percentage of the cases we may expect to find the majority of all the cases in men, and indeed Chavannaz's statistics uphold this in showing that 70 per cent. of all the cases were in men.

Affection of the kidneys is relatively uncommon, the bladder seeming to act as a protection against the passage of the infection up the ureters. Purulent and ammoniacal cystitides may, however, occur, and obstruction, due to the blocking of the urethra by the fecal matter is not infrequent.

The symptoms vary with the nature and origin of the lesion. There may be no symptoms whatever previous to the passage of gas, and later of feces, from the urethra, or frequent and painful micturition may occur during the formation of adhesions and the general signs of a local inflammatory process may be present. Passage of gas is always the most constant symptom and may precede the passage of fecal matter through the urethra. Of course pneumaturia is not an invariable accompaniment of vesico-enteric fistula; all the material transmitted by the fistula may pass the other way and we may have clear urine and urinous stools. Indeed, the passage of urine per rectum is very common, and especially noticeable when the intestinal orifice is low in the large intestine. The urine in the intestine may cause a diphtheritic inflammation of the mucosa, giving rise to a constant

diarrhea. The passage of gas into the bladder is rarely perceived, but in some cases it may give rise to an immediate desire to urinate. From the urethra it may be passed with wheezy or even with a loud noise; indeed, one patient described by Wegscheider, was nicknamed "die Luftschifferin" on that account. The quantity is variable, but the odor is generally fecal, unless, as in the case of Jewett, the opening into the intestine is very high. It generally appears at the end of micturition and is sometimes affected by the position of the patient, being passed only when he is in the erect position, etc. Fecal material passes with the urine in variable amounts, sometimes enough to form a slight granular sediment, sometimes in such mass that the urine has the appearance of thick soup. At other times the fecal material may form more solid masses or be forced through the urethra in cylindrical moulded lengths. Foreign bodies, such as bones, seeds, etc., sometimes pass through the urethra, causing great pain. Ascarides have been passed at intervals in some cases, notably that of Krachowizer, and thought to have been the cause of the fistula, but other authors have suggested that it is more probable that the ascarides merely took advantage of the already formed fistula. When the opening is high up in the intestine the intestinal contents, as they reach the bladder, may, as in the case of Jewett above referred to, be so little changed that the whole food of the patient can be recognized. The discharge of fecal matter through the bladder may be intermittent, ceasing for days at a time, or appearing only when the intestinal contents are fluid, as for example after a purge. The gas is, however, rather more constantly passed. Micturition may be frequent and painful although many patients have no pain whatever.

The stools are very frequently affected by the connection of the intestine with the bladder, there often being a continual diarrhea. In some cases a formed stool may be followed by a completely liquid one, the sphincter being able to retain the fluid which has reached the intestine, so that a large amount passes at once at stool, instead of a continual dribbling. The symptoms are fairly well illustrated by the following cases, which occurred lately at the Johns Hopkins Hospital:

Case 1.—Mrs C. A., aged 60, came complaining of the passage of gas and feces through the bladder. Her family history and early personal history throw no light on the present illness. In February, 1896, she began to have a pain in the lower abdomen; urine was thick, with a brown sediment, and very offensive for the first two months. Gas began to appear with the urine in June. In July, being constipated, she took licorice powder and the resulting movement passed through the bladder; was better then for a time. In October she submitted to an operation for the cure of a suburethral abscess. For several months the passage of feces ceased. In April, 1897, it grew worse and she passed a great deal of feces and gas with the urine. In July the discharge ceased a little, gas occasionally present. In November had severe attacks of intestinal pain and passed from the bladder what she thought was its lining. Since November the discharge has been rather less up to January, 1898, when it grew worse again. The presence of gas in the bladder was associated with a continual desire to urinate—never was there any pain from distension, however. The gas was discharged with a loud sound easily heard by those in the room or even in the next room. It had a fecal odor. Sometimes some pain in the abdomen on passage of gas. Not much pain in urethra except when the suburethral abscess was present. Controlled the gas as she did the urine. Since January has passed a great deal of feces through the bladder, the amount being increased when the bowels do not move with sufficient frequency. The urine showed the presence of a brownish sediment containing striped muscle tissue, partly

digested vegetable shreds, starch, an egg of trichocephalus dispar, pus, granular and hyaline casts. Cultures and cover-slips showed the intestinal bacteria. The urine contained albumin and an increased amount of indican.

On administration of bismuth subnitrate by mouth the characteristic black crystals of bismuth sulphid appeared in the urine. So also injection of a blue solution per rectum colored the urine blue.

Cystoscopic examination of the bladder gave the following: A No. 11 speculum introduced and bladder expanded to 63 cm. from internal urethral orifice to posterior wall.

In the posterior hemisphere the capillaries are much increased, this increased capillary vascularity becoming more marked toward the base of the bladder, where there is a uniform rosy injection.

Irregular deposits of pus over the base of the bladder, which is deeply injected. A No. 13 speculum introduced and a calculus extracted with mouse-tooth forceps, together with two small bits. In posterior hemisphere on the left, at the junction of the upper and lower quadrants, is a puckered surface extending slightly crescentic upward (knee-chest position) with its canal directed upward and backward about 8x3 mm. The borders are deeply injected over an area about 3 to 5 mm., but beyond this the surrounding tissue is comparatively normal.

Right ureter is deeply injected around its orifice and almost exactly in the median line; the left ureter is displaced to the left. There is around the right ureteral orifice a membranous deposit almost pure white, and cover-slip from this showed it made up of short bacilli and pus cells.

Rectal mucosa normal.

At operation the sigmoid flexure of the colon was found adherent to the bladder at the vertex on the left side. Area of adhesion 2.5 mm. in diameter, free on all sides so that the finger can be hooked under it, lifting it from the pelvis.

The two organs carefully dissected apart, protecting the peritoneal cavity with gauze; fistula 2 mm. in diameter cut through. Vesical orifice brought together by means of interrupted catgut sutures making a line from above down and to the left 4 cm. long. Dense fibrous tissue was then cut off the rectum, and mucosa lining the fistula cut out, making the opening into the bowel about 2 cm. long, with shelving sides in healthy tissue, this also closed with interrupted silk sutures about 2 mm. apart. Salt solution irrigation of the peritoneal cavity. Abdomen closed without drainage. Bladder drained by retention catheter and occasionally washed out.

The patient made a perfect recovery, the urine clearing up at once and the passage of gas ceasing immediately. Convalescence has been uninterrupted.

Case 2.—Miss J., aged 57; admitted to the Johns Hopkins Hospital in November, 1890. Menses regular up to age of 48. At 42 had swelling of legs with vaginal hemorrhages; since age of 50 these have occurred at intervals. Have grown worse lately.

Right and left tubo-ovarian masses made out. Celiotomy was performed and the tubo-ovarian cyst on left side dug out of adhesions in lower part of pelvis. Cyst ruptured, discharging 30 c.c. of thick, sticky, mud-like substance. Right tube and ovary also removed; foul odor suggested an opening into bowel. Pus discharged from uterine cavity came from a tumor in the body of the uterus.

Patient recovered. In March, 1896, she was readmitted, complaining of general pelvic pain. Vaginal puncture was performed, evacuating dark fluid blood and clots from a sac between uterus and bladder, puncture being performed in front of the cervix.

She was then passing bubbles of air at the end of micturition and there was pus in the urine. Cystoscopic examination showed an orifice 1.5 mm. in diameter in the left lower quadrant of the posterior bladder wall, from which pus exuded; a sound was introduced about 1 cm. into this. In March, 1898, at age of 64, she consulted Dr. Cullen, who found on examining the bladder a slight injection around the trigone and a marked reddening above and to the left side; no opening could be made out, although bubbles of gas and particles of feces could be seen coming from the injected area. Injection of milk into the rectum appeared at once in the bladder. March 23 the abdomen was opened and the upper left side of the bladder found firmly attached to the rectum just at the pelvic brim. The adhesions were gradually separated and a firm cord 1.1 mm. in diameter found connecting the gut with the bladder. This was cut through at the expense of the bladder wall. The edges of the rectal opening were then turned in and the wound closed by two rows of mattress sutures. Vesical opening similarly closed. The patient did well for twenty-four hours, but her weakness was such that she succumbed. There was no peritonitis nor hemorrhage.

In this case it is probable that the stump of the left tube had become adherent to the rectum after the removal of the appendages eight years before, and that in this way the bladder was drawn up snugly against the rectum. Adhesions soon formed, and the fistulous opening followed in the same way that a dermoid cyst may become infected from the intestine after adhesions have formed.

The diagnosis of the condition is generally easy. Passage of gas, together with fecal material, is practically pathognomonic of the existence of fistula, although the passage of gas alone is not so. The blackening of a silver sound in the bladder occurs also in those cases of hydro-thionuria described by Rosenstein, Scott and others, so that that test in showing the presence of sulphuretted hydrogen, does not necessarily demonstrate the presence of a fistula. Colored injections into the rectum or into the bladder have been used very frequently, and when they give positive results are important. The most useful of these solutions are those in which the coloring matter is in suspension, rather than solution, as some materials such as methylene blue are readily absorbed and secreted in the urine. Milk, suspension of carmine, prussian blue, etc., have been used. In other cases solution of some easily recognized chemical such as the salts of iron, have been injected and the urine appropriately tested. Exploration of the bladder by means of a sound does not give the certain results ascribed by some authors, but rectal examination is of extreme value in many cases. Chavannaz lays stress on the bimanual recto-abdominal palpation. Perhaps the most important of all is the direct cystoscopic examination either by means of the Nitze-Leiter cystoscope, or better by inflation of the bladder with air and direct examination with the vesical speculum, as was carried out in the cases just reported.

The gravity of the prognosis depends, to a great extent, on the etiology, position and size of the fistula. Generally speaking, those of traumatic origin much oftener terminate favorably than those of inflammatory origin; indeed, there are reported several cases of healing after a mere rest treatment. In the carcinomatous and tuberculous cases the mechanical results of the fistula are superadded to the effects of the primary disease. In the cases of intestinal stricture the prognosis is modified by the presence of the stricture, which limits the operative measures for the cure of the fistula. In many of the cases where the fistula is small and does not transmit a great deal of material to the bladder, the patient may live years in comfort; the passage of gas alone with the urine may go on for a very long while without any inconvenience, but when the opening is larger there is constant danger of obstruction of the urethra and choking of the bladder with feces; uremic symptoms may develop followed by death. Renal symptoms are comparatively rare when we consider the condition of the bladder. The formation of a sac in the course of the fistula between the bladder and intestine adds greatly to the gravity of the prognosis, as there is an accumulation with absorption of toxic substances.

Apart from the mechanical results the general health may be disturbed. When the fistula is high up nutrition is interfered with in so far as the contents of the upper intestine pass through the bladder instead of through the remaining intestine. Vomiting, fever, insomnia, symptoms of intoxication may appear and death may result from general exhaustion or from acute peritonitis.

Treatment is palliative or curative. Palliative

treatment consists in such general measures as promote the comfort of the patient by decreasing the amount of fecal discharge in the urine, and keeping the rectum and bladder washed clean. A rigid régime of food producing but little feces should be observed; the patient may be kept in a position such that gas only passes into the bladder. Iliac colostomy may be considered palliative; like enteroanastomosis, it has in some cases proved curative, as reported by Pennell, Holmes, Bryant and others.

Curative treatment is in most cases operative. The operations that may be performed in cases of vesico-rectal fistula are more numerous naturally than those suitable for fistulas into the intestine higher up. Briefly these methods are, as described by Chavannaz:

1. The rectal method in which the edges of the fistula are freshened and sutured through a speculum inserted into the rectum.

2. The transvesical, in which an extensive suprapubic cystotomy is done and the vesical orifice sewed up after freshening the edges, the sutures being knotted inside the bladder.

3. In the perineal method a dissection is made through a perineal wound, separating the rectum from the prostate and reaching the cul-de-sac; freshening and suture of the fistula is then carried out if practicable.

4. Resection of the sacrum with a gradual separation of the rectum has been advised.

5. The transpelvic operation with an incision through the pubes, or symphyseotomy and subsequent dissection backward.

6. Most satisfactory of all, both for intestinal and rectal fistulas in the hands of an experienced surgeon, is the transperitoneal method described in detailing the case of Mrs. A., although there are some cases where the fistulous tract is deeply sunk in the pelvis, where this method would be very difficult to apply.

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THE ASEPTIC ANIMAL SUTURE: ITS PLACE IN SURGERY.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Modern surgical technic differs in such a marked degree from the methods of even a recent period, that it is not a wonder that great differences of opinion still exist in regard to many questions pertaining to the treatment of wounds. For the present, at least, certain conditions of fundamental type may be accepted as settled, so far as the theory, or ideal, aimed at is concerned; for example, a wound made in aseptic, well-vitalized tissues, and maintained aseptic will be followed by primary union. It is not my present purpose to discuss the methods for maintaining a wound aseptic only so far as pertains to its closure and subsequent protection.

In any considerable wound it is necessary to occlude blood vessels and rejoin the separated structures. This must be done by the use of ligatures and sutures. The material best adapted for this purpose is the subject of the present inquiry. The materials in use are, thread made from hemp, linen or silk, almost exclusively the latter; metallic sutures, iron, gold and silver; silkworm-gut, catgut, and the tendon of animals, especially that from the tail of the kangaroo.

The silk fiber, spun, twisted or braided in various sizes, is so manifestly superior to the vegetable fibers

of cotton, hemp and linen, that only silk merits discussion. Silk has continued in more general use as a ligature for the following reasons: It is strong, is manufactured into a thread that is very smooth and even, can be readily sterilized by wet and dry heat, is comparatively cheap and easily obtained in any desired size. Until it was found possible to close and seal wounds without drainage, silk seemed the ideal material for ligatures and sutures. Then it was supposed necessary to remove both ligatures and sutures, no matter how applied. When it was shown to be unnecessary and even harmful to drain aseptic wounds, the inquiry naturally arose, can not some material be found for sutures which will remain in the tissues sufficiently long to serve the purpose of constriction or coaptation, and ultimately disappear under the influences of the vital processes of the surrounding structures?

So far as the ligation of the larger arteries is concerned the problem thus presented is by no means new. The most important of the original studies in this direction of an early type were conducted by Dr. H. G. Jameson of Baltimore, and his prize essay published in 1829, upon the closure of arteries in continuity by the use of the animal ligature is worthy of commendation as a contribution of the highest scientific importance. It is singular to note that many of the leading surgeons of this period accepted his teachings as of great value, and ligated arteries as Dr. Jameson directed, using for material, more commonly, carefully prepared strips of buckskin. These were experimented with, somewhat, by English surgeons and met the approval of even Sir Astley Cooper. The directions were explicit, to ligate so as to occlude, but not to devitalize the artery, cut short and leave the ligature in the deep part of the wound.

The list of experimental studies published by Dr. Jameson demonstrated that the result of such ligation in the calf, dog and sheep caused a permanent occlusion of the artery, that the foreign material was encapsulated by living cells, and that ultimately the ligature entirely disappeared, leaving in its place a permanent reinforcement of connective tissue.

However, all this valuable experience was lost and forgotten in the heated controversy over the so-called inflammatory processes in wounds, which promised a fruitless and endless discussion, until the masterly studies of Lord Lister demonstrated the cause of the same to be vital and extraneous. He naturally arrived at the theoretic conclusion that, in a non-infected wound, the vital processes would be ample to permit of the safe application of an absorbable ligature for the constriction of an artery. So far as I know, Mr. Lister was utterly ignorant of the demonstrations of Dr. Jameson referred to above, and as the laws of England at that time were so framed that studies upon the lower animals, even of such an important character, were not permitted, this great master was obliged to resort to France for the privilege of pursuing his investigations. His conclusions are almost identical with those of Dr. Jameson. He used for ligature material, however, catgut as furnished for musical instruments, steeping it in a strong carbolic solution in order to render it antiseptic.

So far as I am aware it had not occurred to any to make use of sutures deeply implanted in wounds, buried, until in 1870, when it became very evident to me that it was necessary for the purpose of curing hernia to close separately the different structures of

the abdominal wall and to restore the inguinal canal to its normal oblique direction.

Based upon the knowledge of the animal ligature left *in situ* about an artery, it seemed a logical deduction that this could be safely effected. I instituted at once a series of comparative studies in order to ascertain if such suturing was safe and trustworthy. My investigations proved conclusively that aseptic animal structures buried in well-vitalized tissues were surrounded by leucocytes, which, little by little, invaded the material used and *pari-passu* were themselves transformed into connective tissue-cells, taking in a considerable degree the shape and direction of the suture material. So noteworthy was this, that at first I was constrained to believe that the material itself became revitalized as a sort of graft, but more careful observations demonstrated that the foreign material disappeared by a process of absorption, leaving in its place a vitalized band of connective tissue, the resulting product of which, in certain conditions, proves to be of the greatest value, to-wit, where the integrity of the parts are liable to damage because of tension, e. g., as in hernia and all wounded structures subject to special mobility. It gradually became evident that a careful coaptation of wounded tissues could be safely made, thus avoiding pockets of blood or serum, and, as a consequence, do away with the use of drainage-tubes, then supposed absolutely essential.

The drainage-tube in *aseptic* wounds can be only a damage and used as the least of two evils, since so much of the wound as is occupied by the tube must necessarily be left open, and closed by processes of a much slower character, so-called secondary union. Again, too, it was soon demonstrated that, notwithstanding the extraordinary precautions taken in the use of antiseptic dressings, a considerable percentage of wounds in which the drainage-tube was used, although aseptic so far as operative measures were concerned, became septic from the introduction of infection along the canal of the drainage-tube, more commonly due to the ever-present bacteria pertaining to the skin.

One of the most interesting and profitable original studies made in the Johns Hopkins Hospital was the demonstration of the micrococcus *pyogenes albus* as the normal habitant of the dying epithelium of the skin and their causation of so-called stitch abscesses, when the suture included the skin. Now the deduction seemed clear that an aseptic wound to remain aseptic must be coaptated so that pockets can not develop for the undue accumulation of fluids; that the drainage-tube should be abandoned, and that even the skin itself should be closed by a sub-cuticular suture in order to avoid skin infection. Then it was apparent that in the devising of the sub-cuticular suture in order to avoid stitch abscesses I had acted wiser than I then knew, and that the ideal dressing should consist of an hermetic seal so absolute as to prevent the possibility of extraneous infection. This is found in collodion, the contractile preferred, to which is added a small percentage of iodoform, reinforced by a few fibers of absorbent cotton, which admirably accomplishes the purpose while it still further fixes and holds at rest the evenly coapted edges of the skin and minimizes the cicatricial line of repair. Oftentimes a cicatrix is traced with difficulty some weeks after the union of such a wound, a result, which upon certain parts of the body, for esthetic purposes is of the highest importance. Having worked out, by slow process of

detail, the above conclusions and published¹ the results from time to time, I now thought it was of the first importance to demonstrate the kind of suture material best adapted for this purpose, viz., buried sutures.

Material.—Silk is manifestly unfitted, since, to say the least, when aseptically implanted in the tissues, it rarely, if ever, disappears by a process of absorption, and not seldom after a long period of discomfort, the structures rid themselves of it, attended with a considerable amount of suffering, with injury to the surrounding parts.

When silk sutures are buried, it is unquestionably better that the thread should be as fine as can be used with advantage. The sutures should be interrupted and few in number. Even thus carefully applied, it often happens that weeks or months afterward these sutures are thrown off by a process of proliferation, although the wound has been made and maintained aseptic.

Silk buried in portions of the body called into special activity is most likely to give trouble. So well established are the foregoing objections to buried silk sutures that a general inquiry has arisen, is it not possible to substitute something better in its place? Although metallic sutures were at one time in very general use, for manifest reasons they have been discarded, until now they are limited to a very narrow range of possibilities. (Where it is necessary to make a permanent fixation of the osseous structures, the wire suture has an advantage, and here it is intended to be permanently left. Even under these conditions, when cut short and buried beneath the soft tissues, wire is very likely to be a source of subsequent irritation.) Silk-worm gut is absorbable in such a slow degree that it can be classed as belonging to the non-absorbable material used for ligatures and sutures, and for this reason is almost as objectionable as wire. The use of wire and silk-worm gut as a buried suture has its advocates for the most part among those who do not feel that animal sutures have a durability sufficient to be trustworthy.

I am indebted to Dr. Charles P. Noble of Philadelphia for a recent reprint of an article entitled, "Remarks upon the Use of the Buried Permanent Suture in Abdominal Surgery," published December, 1896. In it he states, "the original and simple method of a through-and-through suture for the closure of the wound in celiotomy has been tried and found wanting, because of suppuration and subsequent hernia. That he has had no experience with the use of catgut or other absorbable material in the closure of the celiotomy wound, because of the unfortunate results reported from Germany." He quotes Winter, who reports 8 per cent. of hernias following the use of the buried catgut suture. He also refers to the experience of Dr. Schede of Hamburg, who has employed silver wire as a buried permanent suture in the closure of celiotomy wounds since May, 1887. He thinks the favorable opinion of Schede is borne out by the experience in the Johns Hopkins Hospital where silver wire has been in general use for a number of years, with a low percentage of suppuration

¹ A New Use of Carbolized Catgut Ligatures, Applied for the Cure of Hernia. Henry O. Marcy, M.D., Boston Med. Surg. Journal, November, 1871, p. 315.
The Radical Cure of Hernia by the Use of Carbolized Catgut Ligatures. Trans. Amer. Med. Association, Vol. 29, pp. 295-305, 1878.
Animal Ligatures, Annals of Anatomy and Surgery, 1881, p. 282.
The Animal Suture, New England Medical Monthly, June 15, 1883.
The Surgical Advantages of the Buried Animal Suture, Journal of the American Medical Association, July 2, 1885. Reprint.

and few subsequent removals of the buried sutures. He also refers to the experience of Dr. Edebohls of New York, who for a considerable period used silk-worm gut as a buried suture in the closure of the abdominal wall. Dr. Edebohls reports that from 5 to 10 per cent. of all his sutures thus employed caused suppuration and were either discharged spontaneously or required removal in order to secure closure of the wound or suppurating sinuses. In his aseptic wounds where primary union had taken place, suppuration followed in some cases in a few weeks, in others after some months, and in one after two years and a half. On this account Dr. Edebohls now uses chromicised catgut instead of silk-worm gut.

Dr. Nobe's object in writing his article is to show that in his experience silk-worm gut has proved a safe and reliable means of closing celiotomy wounds. He states, "that he has closed two hundred and ninety-seven celiotomy wounds by the use of buried silk-worm gut sutures with only seven cases of suppuration and with satisfactory results in preventing hernia." He emphasizes the selection of fine gut which is boiled for half an hour before each operation. The sutures are not tied too tightly and the ends are cut as short as possible. He used catgut for the closure of the peritoneum, the fatty structures and the skin as a continuous suture.

Dr. William B. Coley of New York reports² in detail sixteen cases where silk, silk-worm gut and silver wire were used as buried sutures for the cure of hernia. In these not alone was the hernia not cured, but suppuration supervened, and the sutures had to be removed. Of the number, five were closed with silk-worm gut sutures. He reports from the recent work of Schimmellbusch, page 121: "It has more than once been observed that in primary closure of wounds by silk or silver wire, the ligature, at the beginning well imbedded in the tissues, after a long period of time becomes repelled and suppurates out. The imbedded silk or silver wire simply remains as a foreign body in the tissues, of which the organism endeavors to free itself as soon as a favorable opportunity presents." He also reports: "In two hundred and fifty cases of hernia operations in which I have used kangaroo tendon for buried sutures I have not had a single instance of sinus formation, and the percentage of primary union has been ninety-six per cent." "The ideal suture, then, would be one that would hold the parts in apposition for eight or ten weeks and then disappear by absorption. In kangaroo tendon we have these conditions perfectly fulfilled. There has never been observed at the Hospital for Ruptured and Crippled a single case of delayed healing sinus when tendon or absorbable suture was used. Unless those who use and advocate silk, silk-worm gut or silver wire in hernia operations are able to present some advantages to offset the serious disadvantages that have been demonstrated, I believe these non-absorbable sutures should be entirely abandoned."

Chance furnished me the opportunity of being Lord Lister's first American pupil, and so great was my enthusiasm for the master that I accepted unquestionably his teachings of the value of catgut as a ligature. I prepared my own catgut ligatures for some years, according to his directions, and they were undoubtedly aseptic. It was not long, however, before infection followed the use of commercial catgut

suture material which was obtained from the most reliable sources. This led me to investigate anew with painstaking care the animal structures which might be better suited for this purpose. I soon ascertained that catgut is necessarily faulty for two reasons, first, as the connective tissue sheath of the small intestine of the sheep, it must necessarily be separated from the other coats of intestine by maceration. This is in reality a process of bacterial putrefaction. The connective tissue sheath being more resistant to the putrefactive bacteria, remains less injured by it, and as a consequence can be removed entire, but it is necessarily damaged by the processes involved. When thus separated and cleaned, although appearing as a white sheath of uninjured connective tissue, it is everywhere teeming with bacteria, and the cement substance which holds the connective tissue cells in fixation has been damaged by their action and by the necessarily long-continued maceration. So far as I am able to learn, at this stage of the process in the manufacture of catgut no thought of the value of sterilization has been entertained and no effort made for its accomplishment. The second objection to catgut as a suture material is the disposition of the connective tissue fibers themselves. For the physiologic necessity of dilatation and contraction of the intestine these fibers cross each other in a direction oblique to its long axis. The intestinal sheath is divided into strips more or less narrow in order to produce the desired sizes. When wet, it is an elastic, flat band with irregular edges. This is twisted upon itself into a cord and dried and thus is manufactured the catgut of commerce (strings originally designed for musical instruments).

Such is the extraordinary strength of the connective tissue that even thus disposed, when dry, catgut is very strong, but every musician knows the great care he must exercise in keeping it dry and keyed to the proper tension point. When damp it soon becomes soft, elastic and unreliable. When catgut is compared with the connective tissue found in the tendons of animals, the illustration is not overdrawn to say that the differences are as great as would result from weaving silk into the finest fabric, cutting it diagonally into strips and twisting it for use as a fishing line. When dry, it is comparatively strong, but when wet, a soft, elastic, flat band takes the place of the well-made fishing line. The surgeon must remember that his buried suture is ever wet since it is immersed in the fluids of the body. This is the reason that catgut swells so extraordinarily upon being soaked, that knots in catgut are unreliable, and the yielding of the ligature may be sufficient to prevent the closure of the enclosed artery. In the tendons of animals the connective tissue cells are disposed parallel to each other and held firmly in contact by the cement substance, which in the preparation of sutures should be injured as little as possible. Tendons should be taken from freshly killed animals and prepared so that infective decomposition never ensues. Their use as ligatures is not new. Paul Eve, the great surgeon of Tennessee, employed them in the ligation of vessels many years before Mr. Lister's study of the subject. He used the tendons of the deer, taken directly from the freshly killed animal.

However, the knowledge of the use of tendons for ligatures was unknown to me until after my first publications upon the subject. As the result of my investigation and research for good suture materials, I was

² New York Medical Journal, Feb. 29, 1891.

so convinced of their superiority that I contributed a paper upon the subject at the International Congress held in London in 1881. Tendons from the whale, the broad fascia of the back of the buffalo and moose (Indian thread) proved of about the same value as the long tendons from the leg of the moose, deer and caribou. Although less fatty they were little to be preferred to the tendons from the domestic animals. Good ligatures are comparatively easy to obtain from these sources, but suture material must be smooth, even, strong, fine and for a continuous suture, of considerable length to be of service.

After a prolonged research, I found that the tendons from the tail of a medium-sized kangaroo furnished a material which possessed all these requisites. The entire family of marsupials have the psoas muscle divided into fasciculi, each of which has its independent tendon, extending to the very extremity of the tail. These lie parallel to each other and are easily separated. In the larger kangaroo these tendons are not infrequently thirty inches long, but entirely too large for sutures. Many of them will split readily, but are never as strong or satisfactory as the whole tendon from a smaller animal. Much the larger amount of kangaroo tendon shipped for commercial purposes is naturally obtained from the larger species, since it is sold by the pound, and by far the greater portion of tendon in the market is consequently less valuable.

Good tendon is smooth, even, and of a tensile strength greater than silver wire of the same weight. It should be taken from freshly killed animals, quickly sun-dried, and kept dry during the period of shipment, and as a consequence, its sterilization is effected with much greater certainty and with less damage to the intercellular cement substance. The tendon from the variety called the Wallaby furnishes the best suture material, but so difficult is it to obtain first-class tendons, that out of a lot of one hundred and forty pounds recently sent me, scarcely twenty were of first quality.

Preparation and sterilization of catgut—The recognition of the advantages attendant upon the use of absorbable suture material has been so universal that a very great many different methods have been experimentally tried in order to furnish from catgut the so-called ideal suture. The very fact that so many different methods of preparation have been employed is an evidence that none of them have proved entirely satisfactory. Only recently Dr. Nicholas Senn³ of Chicago, has given his experience in the preparation of catgut. He approves Hofmeister's method of preparing catgut by the use of formalin. With this the profession is already familiar. The catgut is rendered tense by winding it upon a glass plate and immersed from twelve to forty-eight hours in a 2 to 4 per cent. aqueous solution of formalin; then immersed in flowing water for twelve hours to free the gut of the formalin, boiled in water from fifteen to twenty minutes, hardened and preserved in absolute alcohol containing 5 per cent. of glycerin and 1/10 of 1 per cent. of bichlorid of mercury.

Dr. Senn modifies the foregoing method by preserving the formalin gut, after boiling it, in absolute alcohol 950 parts, glycerin 50, finely pulverized iodoform 100 parts. He considers the iodoform of value as a mild antiseptic, and that it diminishes the amount of primary wound secretion. He speaks of it only as a

ligature, but I infer that he also uses it as a buried suture. He quotes from Nusbaum approvingly, "Catgut is without doubt Lister's greatest discovery," and states that he considers "the aseptic absorbable ligature as one of the greatest achievements of modern surgery." Dr. Ralph C. Larrabee of Boston in a recent article⁴ gives an interesting review of the sterilization of catgut by boiling in alcohol. He quotes Lauenstein's investigations,⁵ where, in a large series of cultures made for the purpose, he demonstrated quite a variety of micro-organisms as commonly present in catgut. Dr. Larrabee shows from his own experimental studies that boiling in 95 per cent. alcohol for one hour did not render the catgut sterile, and in each case he obtained cultures of a bacillus. Chemically, catgut contains water (23 per cent.) and fat (7.5 per cent.). By most of the recent processes of sterilization these substances must be removed. The remainder consists chiefly of collagen, which under the continued action of hot water is transformed into gelatin. Dr. Larrabee quotes the experiments of Saul, who found that if catgut was boiled in a 5 per cent. solution of carbolic acid in absolute alcohol, three hours were not enough to kill anthrax bacilli dried upon it. The addition of a small quantity of water gave much better results, since by using a 90 per cent. solution, instead of absolute alcohol, the bacilli were killed in ten minutes. Hofmeister has, however, found gut, after such boiling, contained staphylococci, which developed in proper culture media. As a result of Dr. Larrabee's investigations, he found that boiling the gut after Saul's method for fifteen minutes was sufficient to sterilize the smaller sizes, but, in forty experiments from the larger sizes, boiled from fifteen to thirty minutes, he obtained six cultures. He therefore concludes that it is necessary, in order to be absolutely sure of sterility, to boil the smaller sizes thirty minutes, the medium forty-five minutes; the largest sizes are safer boiled one hour. "Catgut thus prepared deteriorates by age, and whether preserved wet or dry, a certain per cent. of the actual strength is certainly lost."

Dr. R. M. Pearce reports⁶ a series of careful studies of sterilization of catgut with formaldehyde. This he applied by vaporizing small amounts of the 40 per cent. solution (formalin) into a glass chamber in which the catgut was exposed. In every experiment sterilization was satisfactory, but the gut became so brittle that it was ruined. He shows that the injury occurred largely from the moisture necessarily contained in the vaporized formalin. He found that the gas in a dry condition gave a much better result and this he recommends as a practical method of sterilization: "Nothing is required but a wide-mouthed jar, some paraform pastilles, a piece of wire gauze or open-meshed cloth and a wide-mouthed bottle. A dozen pastilles are put in the bottom of the jar and covered with a piece of wire gauze to prevent actual contact with the gut. The pastilles yield a sufficient amount of gas for complete sterilization."

Dr. A. Goldspohn⁷ of Chicago has contributed an interesting article upon the preparation of catgut by formalin and boiling. From a careful review of the experimental studies of a number of reliable investigators and a series of his own he deduces the follow-

⁴ Boston Medical and Surgical Journal, Jan. 28, 1897.

⁵ Archiv. f. klin. Chirurg., 50, 323, 1895.

⁶ Boston Medical and Surgical Journal, April 19, 1898.

⁷ Reprint, Chicago Medical Recorder, Vol. xiii.

³ Journal of the American Medical Association, Dec. 12, 1896.

ing: "These facts being known we must not depend on formalin to sterilize catgut but simply to harden it so that it may be boiled *ad maximum*. That this maximum boiling of twenty minutes may be possible it is necessary to remove all excess of formalin from the gut by prolonged washing in running water previously. But the vexatious question is now settled that catgut can be certainly sterilized, for we can now boil it in water, the ideal menstruum, as long as the adherents of silk need or usually care to boil that, and the advantages of absorbable ligatures are too obvious to require further comment. However, there is one slight objection to catgut remaining, which arises from the ptomains which it may sometimes contain. On this subject Dr. Edmondo Orlandi in Turin published researches in 1895, and Professor Papfert of Giessen likewise toward the close of 1896. Both affirm the occurrence of slight or non-virulent suppuration limited to the immediate vicinity of the gut, not producing any systemic disturbance, and usually subsiding without any marked detriment locally. However, to avoid this objection partly, I am now having all catgut soaked in ether previously for forty-eight hours or more, to extract the fat, hoping also to get rid of some of the ptomains that may be present."

"My reasons for preferring catgut so prepared are, first and chiefly, because it stands the crucial culture tests that have been applied to it by its founders, which is not true of any former method, that of von Bergman not excepted, for Braatz cultivated anthrax spores of only moderate resistance in abundance from catgut prepared by that method. Secondly, because of the immense satisfaction to a surgeon derived from a knowledge of the supreme germicidal capacity of water boiling for twenty minutes. Thirdly, because this catgut is hardened enough to answer the purposes of chromicized catgut reasonably well without being too hard. From clinical observations my impression is that the smaller sizes hold from seven to ten days, while the larger sizes, as No. 6, used on pedicles, etc., hold for about fourteen days."

Formalin acts upon connective tissue in a way to change its ultimate cells and cement substance into a homogeneous mass of gelatinous character. Deformalized in running water for twenty-four hours and boiled loosely coiled in water, the gut or tendon swells immensely and shortens to about one-third its former length. It is fibular, elastic, a homogeneous translucent mass. If wound tightly on a small test tube and boiled shrinkage does not take place, but the other changes ensue and the tensile strength is much lessened. If catgut thus heated remains in the tissues only as long as Dr. Goldspohn has determined, its durability is much too little to be trustworthy for many operative purposes.

In the present status of the question, the views of those who have, for a time at least, discarded the use of catgut as an unreliable suture material must be held to be justifiable.

In the *New York Medical Journal*, Feb. 18, 1897, is an interesting article upon slowly absorbable antiseptic catgut, prepared by a modification of Boeckmann's method, by C. W. Borden, M.D., U. S. Army. He believes that the chief merit of the method is in rendering the suture material much more slowly absorbable by boiling it for an hour and a half in a 1/500 solution of mercuric bichlorid in alcohol. This antiseptic catgut has given, in his experience, most excellent results. He does not think the small amount

of bichlorid of importance in producing irritation or wound secretion, and that it is readily disposed of in the tissues without injury. He believes there is as little danger of bichlorid irritation as of iodoform poisoning from using the formalized catgut soaked in an alcoholic solution of iodoform, recommended by Senn.

Dr. Borden thinks that it is of manifest advantage to add his method of making an antiseptic suture to that of Boeckmann, which consists in sterilization by dry heat. He considers that the formalin method of Hofmeister produces a catgut not in any way equal to that which he recommends. He thinks kangaroo tendon has been greatly overrated and attempts to show by an experimental study of a wound that it is far less resistant to the tissues than has been usually considered, and singularly believes it conclusive by giving a photograph of a frayed end of a kangaroo tendon suture emerging from the skin, "where it had been completely eaten through by leucocytes." Such examination teaches only the extraordinary rapidity with which the active proliferating processes supervene in the superficial layer of the skin, and this phenomenon has often been remarked upon in contradistinction to the processes which take place when the suture is buried in the tissues. The same process is observed uniformly, when the sutures are deeply taken through the mucous surfaces, as for example, the continuous over-and-over suture taken through the cervix of the uterus. Dr. Borden has taken the trouble to reproduce by micro-photographs the difference which followed the implantation of "unbichlorid kangaroo tendon and bichlorid catgut" in a septic wound, and shows that the tendon is less irritant than the catgut to disintegration changes. This should follow, if the bichlorid is of any value in preventing decomposition. He reports no attempt to show results where the catgut and kangaroo tendon, both of good quality and sterilized by the same method, have been aseptically buried in the same animal. Here, as I long since demonstrated, the contrast is most marked, and the results show that the tendon remains comparatively unchanged for a much longer period.

In the coaptation of the skin the subcuticular suture should be completely buried. The first end is fastened by a half knot, after the skin is penetrated. The stitch is taken parallel to the long axis of the wound, each succeeding stitch entering exactly opposite to the emergence of the previous one, and secured where the needle finally emerges through the skin by a half knot as at the beginning. This holds the edges in even, close coaptation. The ends of the suture are cut even with the skin, and slight tension in the long axis of the wound causes the ends to disappear below the surface (buried). It is then sealed with iodoform contractile collodion without drainage. The skin suture should be a fine one, and it is important to implant it only in the deeper layer of the skin, subcuticular; otherwise the skin may proliferate before absorption ensues and superficial abscesses follow.

Sterilization of tendon.—A small portion of the dried tendon is soaked for a considerable period in a warm solution of bichlorid of mercury (1-1000). When well softened the tendons are easily separable. Each individual tendon is laid straight upon a wet sublimated towel and allowed to dry. When dry they are assorted. In this state they may be used with comparative safety. I have never been able to

cultivate bacteria where culture tests have been made of tendons thus prepared. By reason of its histologic structure, as before explained, the tendon, when buried in the tissues, is much more slowly penetrated by the proliferative leucocytes than catgut. The effect of chromic acid upon the intercellular cement substance is extraordinary. It fixes it by a process of tanning and does not in any way interfere with its pliability, increases somewhat its tensile strength; causes it to absorb moisture more slowly and renders it much more resistant to the disintegrating influences, when buried in vitalized structures.

The tanning of certain grades of leather has been much improved by a somewhat similar use of chromic acid. The process is not only much shortened and cheapened, but the resultant product is very much more valuable. Recently, a large manufacturer showed me a goat skin thus tanned. It was not fine leather, but he said it would make a durable shoe, whereas under the old processes of tanning it would hardly be worth manufacturing. These methods are protected by patents and have already earned the owners over two millions of dollars. Chromic acid may be applied to the suture material in a strength which renders it unfit for use and makes it almost as slowly absorbable as silkworm gut. When properly chromicized, the suture should be of a light golden color and slightly translucent. It may be well preserved for an indefinite period in the dry state, but, as Lord Lister long ago pointed out, preserved in light-colored boiled linseed oil, to which 5 per cent. of carbolic acid has been added, it seems to keep indefinitely, and for a certain period, I think, is improved by age. When only partially immersed, as in a bottle half full of oil, the tendon becomes sticky and is greatly damaged. If replaced, after being removed, in a wet state, in the carbolized oil, the water in the tendon forms a sort of emulsion which speedily ruins it. It may be preserved in many of the different ways which have been recommended for catgut, and so far as I am aware I have tried them all. By none, however, has the product remained permanently as reliable as by the method just given. Kangaroo tendon prepared as above is objected to because of the trouble in preparation and its cost; trouble in that the oily product is difficult to seal after having been bottled, and the oil must be removed from the tendon before using. However, the latter is easily effected by immersing the sutures, just previous to use, in a warm sublimate solution for half an hour. I consider the antiseptic quality resulting from the remaining bichlorid beneficial rather than otherwise.

Is such tendon trustworthy and assuredly aseptic? Infective wounds, from a variety of causes, will follow in a small percentage of cases in the practice of every surgeon, but it is his imperative duty to exercise every possible care to prevent it. The sterilization by heat is considered absolute, hence instruments, towels, gauze, etc., may be assumed non-infective. The certainty of such knowledge, so far as suture material goes, is of equal importance, and hence the oft-repeated injunction, "trust no sutures that you have not personally prepared." By culture tests I have assured myself that the tendon is sterile and each of the various processes in its preparation is always conducted under my personal supervision. The query most often made is "What shall I do with the unused tendon that has been soaked in the bichlorid solution?" Wrapped in a sterilized towel, it should be

sun-dried, and when thoroughly dry, replaced it in the carbolic oil for future use. Repeated treatment in this way leaves the tendon undamaged. For the last two years I have soaked the tendon for a considerable period in a solution of formalin, prior to its chromicization. This is a still further guarantee of disinfection.

Boiling in alcohol has been a favorite method with many surgeons for the disinfection of catgut. Sterilization of tendon may be effected by this method, but it renders it brittle, hard, and is much less satisfactory in its application. Dry heat is less damaging than by any other, except the above-mentioned chemical processes, and leaves a product more satisfactory than when boiled in alcohol. It is also perfectly easy of application by the simplest of all methods. There are two requisites, however, which are essential, the tendon must be entirely freed of the *oil* and *moisture*. A simple means of drying is to retain it for some hours in the sunshine, or in a warm oven. A coil of the dry tendon is placed in a large test-tube, with a dry cotton plug; over the end of the tube a rubber cap is securely tied. This is put in the sterilizer as long as it may be deemed desirable and thereby is known to be trustworthy. If only a very slight degree of moisture remains in the tendon, the resultant will be a compact mass of ruined material.

Tendon will bear repeated heating in this way with comparatively little damage, and it may be recommended as a safe means of assurance to the surgeon that any possible subsequent infection of the wound is not caused by his suture material. Kangaroo tendon sutures should be obtained at a cost of ten dollars per hundred, and so great has been the demand for it that I have had it prepared in quantity, under my personal supervision, for general use, which I fully believe is absolutely trustworthy and reliable. These sutures are coming into general use. I am constantly in receipt of letters reporting the great satisfaction following their employment; I have already quoted Dr. Coley. Dr. F. W. Longyear of Detroit says: "My experience has been entirely with this material, and has extended over a period of more than four and one-half years, during which time I have used it for both ligature and suture in fifty-seven cases of celiotomy, with and without drainage, and I have yet to see my first case of post-operative hernia where this material was employed."

Kangaroo tendon ligatures, ten or twelve inches in length, should cost less, since in the preparation of sutures which are long, fine, smooth and even, the larger part of the gross material is rejected.

It is quite difficult to obtain really fine sutures, and much placed upon the market is not of first quality. I have written the above description in careful detail, since there can be no question but that the use of the buried animal suture marks the greatest advance in the development of aseptic surgery. When applied in closing the abdominal wound by suturing the different layers independently, the skin also closed by a subcuticular continuous suture and the wound sealed with iodoform collodion, hernia is practically avoided. In over eight hundred aseptic laparotomies thus closed I have had but once subsequent hernia, and that in an extremely thin abdominal wall after the removal of a large uterine myoma. The cure of hernia by any of the so-called modern methods is dependent absolutely upon the use of buried sutures in closing the neck of the sac, reinforcing the weakened struc-

tures and the reconstruction of the obliquity of the inguinal canal, and it was for this very purpose I first employed animal sutures in 1870. With all the emphasis of an earnest conviction, I commend to every aseptic surgeon familiarization with the methods of wound closure by means of buried absorbable sutures, preferably tendon, and not alone predict their general adoption, but believe that in importance they hold the first place in the technic of modern aseptic wound treatment.

180 Commonwealth Avenue.

THE THERAPEUTICS AND SURGERY OF THE CEREBRO-SPINAL AXIS.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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CHICAGO, ILL.

It is safe to assert that the cerebro-spinal axis is the master-wheel for man's animal machinery. If the mainspring of a watch becomes interrupted in its integrity, the gearing throughout the entire structure becomes disturbed, its functions as a chronometer cease, and it stops. If the drivewheel of a locomotive engine be impaired, the functional activity of the great iron drudge is interfered with, and the creature must rest and be repaired before activity in function can be regained. If the centerpiece of the complicated machinery of a large manufactory becomes deficient or inoperative, the whole concern must shut down for repairs at any cost. In consequence of the dangers besetting mainsprings, drivewheels and centerpieces, extra protective measures are adopted for their continuous functional activity and uninterrupted security. In most cases an alternate or duplicate is provided that functioning may be assured.

The careful student of this piece of workmanship will have observed early in his work that the law of protection and compensation has been strictly obeyed by encasing the central nervous system in the cranial and spinal cavities in two symmetric halves, the one incasement in bony pieces, enduringly immovable; the other in irregular blocks endowed with enduring possibilities, all lined with tough and resisting fibrous membrane of remarkable endurance, closely adherent to the inner surface of the bones and outer walls of the cavities, and for the most part furnishing protective sheaths to the outgoing nerve trunks—adherence most marked where dangers are most threatened at the sutures within the skull, but secure throughout the entire extent of both cavities. This is familiarly known to anatomists as the *dura mater*, from its enduring qualities. Immediately surrounding the medullary mass and intimately investing it, is a delicate membrane composed of vascular netting, threads of which, large and small, penetrate the mass and form plexuses on the walls of the cavity within. This webbing of blood-vessels becomes plainly the nutrient mother of the system, and is hence called *pia mater*. Between the two *maters* hangs another membrane, delicate in its fibrous structure and somewhat adherent to both. Its suspensory, lubricating and protective functions are plainly in evidence. This is the arachnoid membrane, and it serves in a triple capacity.

Epitomized, the membranous structures of the axis may properly be stated to be: the *dura mater*, for protection; the arachnoid, for suspension and the accommodation of movement, and the *pia mater*, for the

accomplishment of the essential act of life—its nutrition.

Between the *maters* is the arachnoidian space and membrane with communication throughout the entire extent of the axis. Another fact may be stated without argument. The cerebro-spinal axis is a hollow organ itself from end to end, and the vascular netting passes through and forms an anastomosis on the walls of the lumen. Schiff, Quincke, Leighton, Fuerbringer and others have clearly demonstrated that lumbar puncture can be practiced with more or less impunity, and that, as a diagnostic measure, the operation is of great value, enabling the diagnostician to locate with accuracy the approximate position of certain pathologic processes in meningeal affections. The admitted impunity with which the procedure may be accomplished lends assurance of safety in establishing permanent fistule in the lumbar, dorsal, cervical, or even in the cranial regions, as is done in the various abdominal localities for establishment of artificial anus, so efficient in many surgical measures for the relief of disorders of the intestines. Because of the dangers from infection by perverted natural discharges from the intestines, the abdomen would be the more critical field to invade.

No more vitalizing agent has been created than oxygen, and no more active and unerring antiseptic agency has been, or ever will be, devised than ozone, which is electrically condensed oxygen. In all diseases of the central nervous system the first indication is to remove the inevitable pressure, whether from the effusion of blood or of serum or from bony environment, either from deformity or depressed bony spiculæ of traumatism, infection or vitiated nutrition.

The next move in the process of therapeutic procedure is to correct by every means at command this disturbed nutrition, which is constantly in evidence in all morbid processes. Direct medication is the modern advance in therapeutic procedures as illustrated in antiseptis. Through a permanent fistulous opening at any point throughout the extent of the cerebro-spinal axis may be injected safely and with facility, a stream of oxygen or ozone into the interior of the mass, and therefore brought to bear directly on the plexuses, and thence into as intimate relation with the floating column of corpuscles as in the air cells of the lungs, and doubtless with the same vitalizing effect, or the gaseous current may be directed into the arachnoidian space and thus be brought to bear in the same way and with equal efficiency on the vascular structure of the *pia mater*.

With a tissue as highly endowed with facilities for a constant supply of nutritive fluid as in the central nervous system, and charged with the all-important functions in evidence in it, a theory consigning it to be hopeless destruction and irretrievable ruin on every occasion when circumstances of traumatism or infection present is phenomenally absurd. Any part of the cerebro-spinal axis whose special function may be suspended for a sufficient length of time to afford rest and opportunity for a correction of interrupted nutrition may be safely invaded by the surgeon's knife, and repair as confidently expected as from mutilations in any other part of the body, with liberal margins in favor of the nerve mass and the bones entering into its encasements.

At the beginning of a great war with a foreign foe, whose chief historical characteristic is cruelty, and shaking from our national policies the isolations and

conservatism of the past to become aggressively civilizing, if not, indeed, cosmopolitan or imperial, with all that these new national movements involve, I appeal to the science of surgery and the brilliant array of American operators on behalf of the human brain, the central nervous system, or the cerebro-spinal axis. I make this appeal the more earnestly, knowing as I do, that thousands of the flower and promise of our manhood must fall before the foes upon whom we must move in the sacred cause of humanity.

Modern warfare inflicts ten wounds about the head and face to one below the waist. The field for operative procedure and therapeutic study for the military surgeon is above the waist in large degree, and in this the head and face prevail over all others, and the reasons for this are plain, when we consider the manner of offense and defense. The military surgeon of today has opportunity long and wide for making himself an important factor in the march of the world in behalf of civilization and in the interests of humanity.

AN INQUIRY INTO THE NORMAL ANGLE OF JUNCTION OF THE NECK, WITH THE SHAFT OF THE FEMUR.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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In the examination of this subject, an effort has been made to confine the inquiry to specimens of the male bone fully developed, free from the results of injury or disease, and ranging in age as nearly as could be determined from twenty-five to forty years.

These extremes of age are selected arbitrarily, for between these periods of life the bone may be said to be at the height of its development—it has neither the deficiencies of incomplete growth or the defects of degeneration incident to age; it may be presumed therefore to be typical in all of its detail. As is well known, two angles are formed by the neck of the femur with the shaft of the bone, the upper being an acute angle, while the lower is an obtuse angle and gentle curve from the lower portions of the neck to the internal border of the shaft with which it becomes continuous. The arrangement of the bony fiber of the neck and the position of the neck itself upon the shaft is undoubtedly for minimizing the strain of the bodily weight above, in its transmission to the upper extremity of the bone below. These facts are now generally well recognized. It will also not have escaped the notice of the observer that the trochanter minor acts as an additional and powerful support to the neck of the femur upon its posterior and internal aspects, assisting greatly in transmitting the bodily weight. Again the perpendicular diameter of the base of the neck is greatly increased, as compared with the transverse measurements of the bone at the same place, also for the natural purpose, quite evidently of compensating for the change in direction of the strain of the bodily weight by increased strength and quantity of bony structure, the change in direction being from a perpendicular line to an angular line passing from the cup-shaped cotyloid cavity to

the globe-shaped hemispherical upper extremity of the femur.

These circumstances, different in minor degree in different individuals, alter the angle of junction at the neck with the shaft somewhat, but in a way that makes it quite evident that there is a maximum and minimum degree of angularity between which extremes the angle of junction presented by any given specimen of the bone may be said to be normal.

In order to arrive at conclusions worthy of credence some definite method of anatomic measurement dependent upon fixed anatomic relations should be devised. When these relations varied in any given specimen of the bone which I examined, it was noticed that the angle of junction also varied in a like proportional degree, but always within the extremes of angularity above alluded to as probably being normal. In selecting specimens of the bone from which measurements were made for the purposes of this paper; those bones were chosen which presented on the anterior surface a large venous foramen—usually much larger than its neighbors—which was placed immediately below the spiral line and in a position which seemed to be the anatomic center of the shaft. Through this opening a perpendicular line was projected, which was also parallel to the axis of the shaft as nearly as could be determined. The position of the foramen in the specimens selected seemed also to be placed about one-sixth of an inch below the anatomic center of the neck of the bone, for the reason that a line projected through the center of the neck and representing its axis—as nearly as could be determined—intersected the line of the axis of the shaft at one-sixth of an inch above the foramen, thus establishing perhaps the true angles by which a bone should be measured. The two angles established are an upper acute and a lower obtuse angle. After establishing these angles and marking them upon the several bones examined by use of ink, they were carefully examined and measured with an angleometer, an instrument of precision for exact measurements of this character. In some twenty-five or thirty specimens examined—a number not sufficient to establish fixed rules, however—the minimum acute angle measured was 38 degrees, while the maximum acute angle was 52 degrees, the average angle being 47 degrees and 30 minutes, there being a few minutes less or additional as the case might be in many of the bones examined. When the place of the foramen varied from the position of one-sixth of an inch below the spiral line, but still maintained what seemed to be the anatomic centers of the neck and shaft with reference to that line, it was noticed that the acuity of the angle became less, thus if the foramen was placed at one-fifth or one-fourth of an inch below the line, the acuity of the lesser angle approached the minimum angle of 38 degrees, which has been named as the minimum angle noticed in this series of specimens. It is, of course, unnecessary to remark that the greater or obtuse angle is to be found by subtracting the measurements of the acute angle from the measurement of the axis of the shaft of the femur, which was assumed to be 180 degrees.

As is indicated by the title of this brief paper, its purpose is to record merely the results of an inquiry. The method adopted to attain these results is offered to the Section upon its merit for what it is worth.

McPhee Building, Denver, Colo.

THE TREATMENT OF INOPERABLE SARCOMA WITH THE MIXED TOXINS OF ERYSIPELAS AND BACILLUS PRODIGIOSUS.

IMMEDIATE AND FINAL RESULTS IN ONE HUNDRED AND FORTY CASES.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Deuver, Colo., June 7-10, 1906.

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Three years ago, at a meeting of this body in Baltimore, a paper was read upon a similar subject by a distinguished surgeon. In that paper, based upon a personal experience of nine cases, three of which were carcinoma and a large proportion of the remainder types of sarcoma, which I had myself regarded as unfavorable, the broad generalization was made that the method was of no value, and the prophecy was ventured that in one year from that date it would be forgotten and buried in that oblivion that has furnished a quiet resting-place for so many of the brilliant cancer cures that have from time to time dotted the medical history of the past.

In the discussion of the paper I was rash enough to dissent from these conclusions, and in spite of the warnings and criticisms of the skeptics, I have steadily persevered along the same lines, and am here today to present the results of my work, leaving you to be the judges whether or not my labors have been in vain.

I have felt that the question was one that depended for its solution, not upon high authority or *a priori* arguments, but rather upon facts, derived from careful observation and large clinical experience. At that time I had treated eighty-four cases of inoperable malignant tumors with the mixed toxins; and no one could possibly have witnessed as I had, a considerable number of cases of hopelessly far advanced inoperable sarcoma, the diagnosis of which had been confirmed by the most skilled pathologists, entirely disappear under the injections of the mixed toxins, without being convinced that there was *something* of value in these toxins. It seemed to me that these successful cases, some of which at that time had remained well nearly three years, more than offset the many failures I myself as well as others had had. Moreover, it seemed reasonable to suppose that further investigation would enable us to improve the method as well as to ascertain just what types of tumor were most influenced by the toxins. Time will permit but a hasty review of the earlier cases already reported (*Am. Journal of Medical Sciences*, September, 1896), yet some review is of the utmost importance, since it is only by a study of the older cases that we are able to determine the permanence of the cure. With this end in view I have tabulated all of my cases of sarcoma, giving the final results as far as ascertainable.

I have decided in the present paper to confine my remarks almost entirely to sarcoma, and I have so decided for two reasons. The first and chief reason is to correct, if possible, the misunderstanding that I have found so common among men who have read the subject but casually, viz.: that the toxins are advised indiscriminately in all cases of inoperable cancer, whether sarcoma or carcinoma. Some excuse for this mistake may possibly be found in the titles of my

former papers, yet a careful reading of the papers themselves, and especially the conclusions, will show that I have advised the toxins practically only in sarcoma and have stated that their use in carcinoma was, up to the time in question, largely experimental. I did state that I believed good results, similar to those obtained in sarcoma, would in time be obtained in carcinoma. While that time has not yet come, I can claim, I think, some reason for my belief in a few cases of carcinomatous nature attended with marked results. However, until this number has considerably increased, I think it wise to restrict the toxins to sarcoma, and it is needless to say, to inoperable sarcoma. I have never advised the treatment in cases of sarcomas amenable to operation, unless it be in a few cases where a brief period of treatment was advised with the idea of avoiding amputation of a limb. If the tumor be in the soft parts, and especially if spindle-celled, I believe it justifiable and even strongly to be advised to try to save the limb. I have now a patient who has been well nearly two and one-half years with rapidly recurrent spindle-celled sarcoma of the right hand, in which amputation of the arm would have been done had not the growth disappeared under the injections. I do not consider her cured, and shall not until she has gone beyond three years. Dr. L. L. McArthur of St. Luke's Hospital, Chicago, has had a case of recurrent spindle-celled sarcoma of the leg and a three times recurrent sarcoma of forearm, which disappeared under the toxins and made amputation unnecessary. Dr. John E. Owens of Chicago has also had a similar result in a case of round-celled myeloid sarcoma of tibia. All of these cases are well three years after treatment, and in three the diagnosis was confirmed by microscopic examination. I do not believe the chances of a cure by amputation are jeopardized by the short time necessary to determine the success or failure of the toxins. In cases of rapidly growing, small, round-celled sarcoma of the bone I would not advise the toxins, but immediate amputation. I have used the toxins in a few cases after primary operation as a prophylactic measure to lessen the chances of recurrence. Theoretically, this use of the toxins has much to recommend it, but my cases are as yet too few in number to warrant me in making any positive statements as to its value.

Method of preparing the toxins and technic of administration.—The preparation I have used the past three years is the same as described in my last paper, viz.: the mixed, unfiltered toxins of the streptococcus of erysipelas and the bacillus prodigiosus, made from cultures grown together in the same bouillon and sterilized by heating to 58 degrees C.; in children and patients much reduced in strength I have used the filtered toxins prepared by passing the mixed living cultures through a porcelain filter. This preparation is much weaker than the unfiltered, the relative strength of the two being about 1:10 or 15. The effect of the filtered solution upon the tumor is less marked than that produced by the unfiltered. The toxins used during the last five years have been prepared by Dr. B. H. Buxton of the Loomis Laboratory, New York. In the earlier cases the toxins were made from cultures of streptococcus of erysipelas obtained from a fatal case, but during the last three years a sufficiently high degree of virulence has been obtained by frequently passing the cultures through rabbits. Some of these cultures that had been passed through upward of sixty rabbits were experimented

with by Drs. W. H. Park and Alexander Lambert of the Board of Health Laboratory, and it was found that 1 c.c. of a bouillon culture reduced to one millionth part of its strength by dilution, was capable of killing a rabbit within twenty-four hours. This increase in virulence has been, I am convinced, a direct factor in the success of the toxins, and in fact, it was to increase the virulence of the erysipelas cultures that, in 1892, I first combined the bacillus prodigiosus with the streptococcus of erysipelas, Roger of Paris having proved that the latter germ had the power of making the streptococcus more virulent in rabbits, though as far as I know, it had never been used in the human body, nor had the combination ever been suggested in connection with the treatment of malignant tumors. I have never claimed to be the first to suggest the idea of substituting the toxins of erysipelas for the living cultures. Lassar of Berlin was, I think, the first to do this, in 1891, and Spronck of Utrecht, in October, 1892 (*Annals de l'Institute Pasteur*), reported twenty-six cases of carcinoma and sarcoma treated with a preparation of toxins of erysipelas prepared in the same way as Koch's tuberculin, but neither observer obtained a single complete success. Previous to Spronck's paper I had experimented with bouillon cultures of erysipelas heated to 100 degrees C., having been led to this by the marked improvement I had observed to follow repeated injections of living cultures, even when no erysipelas was produced. Dec. 12, 1892, I presented to the Surgical Section of the Academy of Medicine the results of repeated injections of living bouillon cultures of the streptococcus of erysipelas in ten cases of inoperable malignant tumors, and in this paper I stated that "In view of these results (my own), as well as those of Spronck, it may be considered definitely proven that a portion, if not all, of the benign influence of the toxins of erysipelas, rests in the toxic products rather than in the germ itself. The fact that thus far the results from an attack of erysipelas have been by far more brilliant and permanent, proves that either the germ itself or its continued action plays an important rôle, or, what is quite as probable, we have not yet learned how best to isolate the toxic principles and to use them in the most efficacious doses."

However much difference of opinion there may be as to the part the bacillus prodigiosus plays in causing the disappearance of sarcoma, and I am conscious that some claim it has no value at all, the fact remains that all of my own successes, as well as those of other surgeons, have been obtained with the combined toxins, and as far as I know, no one has recorded a successful case treated with the erysipelas toxins alone.

I have experimented in a large number of cases with the erysipelas toxins, at first alone, and later in combination with the bacillus prodigiosus, and I am quite convinced that the process of degeneration of tumor tissue is greatly increased by the prodigiosus toxin. Many opinions have been expressed as to the nature of this process, by means of which a cure is effected in the successful cases. The opinion which has been most generally advanced, though usually resting on theoretical, rather than practical knowledge, is that it is a simple necrosis or sloughing process resembling that following the injection of any powerful escharotic like carbolic acid; consequently it has been regarded as an entirely local process. Nothing could be farther from the truth. While in some cases of

soft, round-celled sarcoma the rapid breaking down of the tumor would lend support to this view, there are many cases that absolutely disapprove its correctness. A number of cases of sarcoma have disappeared entirely by absorption with no breaking down, and furthermore, in several the injections were made remote from the tumor. This proves the action to be systemic as well as local. The toxins in some way, probably acting through the blood serum, cause a coagulation necrosis with fatty degeneration of tumor cells, the breaking down and formation of a slough depending entirely upon the preponderance of the cellular elements over the intercellular or fibrous stroma. In the spindle-celled variety, absorption without breaking down is the more common, while in the round-celled type, the reverse is true. Usually, when possible, I prefer to give the injections locally, for I have found the effect more rapid and more marked than when given subcutaneously and remote from the tumor. A much larger quantity can be safely given subcutaneously than when injected into the tumor, and this is a point of great practical importance. I have seen a severe chill and a temperature of 105½ follow the injection of one minim of the mixed unfiltered into a vascular sarcoma, when ten minims subcutaneously would have caused less reaction. In other words, the severity of the reaction depends largely upon the rapidity of absorption.

Dosage.—The rule should be to begin with a minimum dose and slowly increase each day until the desired reaction has been obtained. If this rule is carefully observed I believe the element of danger to be exceedingly small. It is evident that the dose depends largely upon the virulence of the cultures, and since it is extremely difficult to keep cultures of the same virulence the dose must vary within certain limits, and must be determined in the individual case by trial, the thermometer furnishing the guide. During the past two years the strength has been very uniform. Toxins produced from very virulent cultures, such as I am now using, mixed, unfiltered, should never be given in larger initial doses than one-half minim or 0.32 c.c. Boiled water may be added to each dose to obtain the proper dilution. Each day the dose should be increased by one-half minim until the reaction temperature reaches 102 degrees or 103 degrees. The toxins may be used undiluted in doses of one minim or more, as this quantity can be carefully estimated with a well-constructed hypodermic syringe. If the injections are given subcutaneously, remote from the tumor, larger doses are borne, and in that case one minim can be given as the initial dose, and increased one minim daily. The amount required to produce a chill and temperature of 102 degrees or 103 degrees, varies with the individual case; one to two minims injected into the tumor will generally be sufficient. If the reaction is severe, the chill usually occurs within fifteen to twenty minutes of the injection. If the temperature following chill reaches 104 or 105 degrees, which is higher than one should aim to obtain, some stimulation with whisky and strychnin may be indicated. Nausea and vomiting usually occur in the severe reactions, but they are of short duration, and after one or two hours the temperature begins to fall and should reach normal within twelve hours. Following small doses, headache, slight muscular pains, especially in back, and a feeling of general malaise are the only symptoms observed, and these soon pass. It is unnecessary to

produce a chill after every injection; in fact, some of my successful cases had no more than four to five chills during the whole course of treatment. The aim should be not to cause too much depression, for in that case the patient is unable, for some time, to stand even small doses. Many of the successful cases steadily gained weight during the treatment, which disproves the statement of some writers that the treatment is exceedingly depressing and causes rapid emaciation. This may be true if the doses are too large, but not when the method is judiciously carried out. Strychnin may cause speedy death or act as an excellent tonic, according to the dose administered.

Aseptic precautions.—Inasmuch as the administration of these as well as other toxins undoubtedly increases the liability to infection if pathogenic germs are present, too great caution can not be exercised in sterilizing the hypodermic needle and the skin. If a tumor be ulcerated or broken down, great efforts should be made to keep the parts aseptic. Lack of such precautions has certainly been the cause of death in a number of the fatal cases.

Duration of treatment.—Fortunately it is possible in most cases to tell in a comparatively short time whether or not the toxins are likely to be effective. If no beneficial results are apparent after three weeks' treatment, I believe it useless to continue the injections. In nearly all of my successful cases marked improvement was seen within a week after the first injection, though final cure required, in some cases, several months of treatment. In one case, one of inoperable spindle-celled sarcoma of the abdominal wall, the tumor entirely disappeared under thirty injections and the patient is now well, one and one-half years later. The question of danger of long-continued injections of the toxins is an important one. One patient with thrice recurrent rapidly growing carcinoma of breast and axilla had the toxins steadily for two and one-half years. The doses were moderate, seldom producing a chill, and averaged two a week. The tumor has disappeared. The patient gained ten pounds in weight and her general health was perfect. The tumor finally recurred, ran a rapid course, causing death in six months.

Another case, an eight-times recurrent spindle-celled sarcoma of the chest wall (soft parts), has had the toxins with occasional intervals of rest for nearly four years. The disease has been kept almost completely in check by small doses of the filtered toxins and the treatment has not interfered with the duties of the patient, who is a well-known physician.

Macroscopic changes in the tumor.—The changes in the tumor that are first detected are: marked decrease in vascularity, loss of the smooth, glossy appearance of the overlying skin and later the presence of small wrinkles in the skin; the tumor soon becomes much more mobile and loosely attached. Marked decrease in size is often noticed within three or four days after treatment. Cessation of pain is in many cases caused by the treatment and anodynes which, though indispensable, before are no longer needed.

REVIEW OF IMPORTANT CASES ALREADY REPORTED, WITH SUBSEQUENT HISTORY.

Case 1.—Recurrent inoperable spindle-celled sarcoma of neck and tonsil, treated with injections of living cultures of erysipelas for four months. Well six years. Although this case was treated with repeated injections of living bouillon cultures of erysipelas and not the toxins the result was so remarkable that I may be pardoned for referring to it. The tumors nearly dis-

appeared and the patient recovered his general health; well May 1897, six years later.

Case 2.—Recurrent sarcoma of back and groin, mixed-celled, round, oval and spindle. Male, aged 40. First treated on April, 1892, with repeated injections of living bouillon cultures of erysipelas. Entire disappearance; rapid recurrence two months later, final disappearance under the mixed toxins. Four more attacks of erysipelas artificially produced, and with less effect, in January 1893. The patient remained well three and one-fourth years, and in September, 1896, had an intra-abdominal recurrence in the retroperitoneal region. The tumor increased rapidly in size. In November, 1896, the patient became markedly jaundiced, but at the end of six weeks the jaundice disappeared and did not return. He gradually failed and died in April, 1897. Autopsy showed a large, hard tumor starting behind the posterior parietal peritoneum, pressing the viscera forward against the abdominal wall. The pathologic report of the original tumor made by Dr. Farquhar Ferguson of the New York Hospital was given in full in my last paper. It was a mixed-celled sarcoma, round, oval and spindle-celled.

Case 3.—Inoperable spindle-celled sarcoma of the abdominal wall and pelvis. Entire disappearance of the tumor under four months' treatment with the mixed filtered toxins; well at present, five years later. Patient male, aged 16, years, admitted to the New York Cancer Hospital in January, 1893, having been referred to me by Dr. L. Bolton Bangs as a totally inoperable sarcoma, the diagnosis having been confirmed by microscopic examination by Dr. H. T. Brooks, pathologist at the Post-Graduate Hospital. The entire tumor, 7 x 5 inches, completely disappeared and at my last examination made, May, 1898, the boy was in perfect health, free from recurrence, upward of five years.

Case 4.—Inoperable sarcoma of the abdominal wall. Entire disappearance under two and one-half months' treatment with the mixed toxins (filtered and unfiltered.) Patient is perfectly healthy at present, three and one-half years after treatment. The patient, a woman, aged 28 years, had had an exploratory laparotomy performed in August, 1893, at the Massachusetts General Hospital, by Dr. Maurice H. Richardson. A tumor was found involving such a large portion of the abdominal wall that removal was impossible; a portion was excised and pronounced spindle-celled sarcoma by the hospital pathologist, Dr. W. F. Whitney. She was referred to me in October, 1893, by Dr. Richardson. June 1, 1898, she was in perfect health with no sign of induration at the site of the tumor.

Case 5.—Spindle-celled sarcoma of the leg and popliteal region, three times recurrent; disappearance under the toxins; recurrence in the gluteal region after one and one-half years. Female aged 16 years. Further treatment with the toxins caused decrease in the size of the tumor until it was possible to remove it by operation. One year later signs of returning growth appeared in the popliteal space as well as in the stump of the leg. Amputation at the middle of the thigh was performed. Since the amputation the patient has been given injections from time to time with the filtered toxins with the idea of preventing a further recurrence. She is at present in good health, June 1, 1898.

Case 6.—Spindle-celled sarcoma of the scapula involving large part of left half of the thoracic wall. Entire disappearance of the tumor under three months treatment with the mixed unfiltered toxins; patient in perfect health, without recurrence, Jan. 22, 1898, four years later. As this is one of the most striking cases of success with the toxins, a brief abstract of the history will be given: The patient, a girl aged 16 years, was admitted to the New York Cancer Hospital June 20, 1894. The tumor had started in the left scapular region, four months before, and had grown very rapidly until the time of admission; the tumor measured 13 inches vertically behind and extended around beneath the axilla and to the sternum in front. The growth was fixed to the scapula and to the ribs, and probably originated in the soft parts over the scapula; it was about two inches in thickness in its most protuberant part, the skin over it being normal and perfectly movable. The left arm was bound down by the new growth so that it could scarcely be raised to a horizontal position. The mixed, unfiltered toxins were injected locally into the scapular portion of the tumor and continued with intervals of one to two days for nearly four months. Immediate and very striking improvement followed; at the end of three weeks the arm could be raised to a vertical position. After three months' treatment the tumor had entirely disappeared by absorption only, without breaking down. There was no evidence of inflammatory, tuberculous or specific disease. The diagnosis of spindle-celled sarcoma was moreover confirmed by careful microscopic examination by Dr. H. T. Brooks, pathologist to the Post-Graduate Hospital. This case was carefully examined by me June 23,

1898, and no evidence of return was found. General health perfect.

Case 7.—Intra-abdominal round-celled sarcoma, involving the omentum, colon and loop of small intestines and border of the liver. Exploratory laparotomy; diagnosis of round-celled sarcoma confirmed by microscopic examination by Dr. F. Schwyzer, pathologist to the German Hospital. This patient, a woman, aged 23 years, was operated upon by Dr. Willy Meyer at the German Hospital, August 16, 1894. Dr. Meyer stated that to remove the growth radically seemed impossible. He closed the abdominal wound and referred the patient to me for treatment with the mixed toxins. Treatment was begun in September, 1894; the injections were made sometimes into the abdomen, sometimes into the buttock. The treatment was kept up with occasional intervals until Feb. 7, 1895. The tumor mass which was distinctly felt at the time the treatment was begun, slowly decreased in size and June 25, 1896, no tumor could be felt. A sinus had persisted since Dr. Meyer's operation till March 4, 1896. Incision was made and the sinus traced into the gall bladder, and several calculi, one-half inch in diameter, tightly wedged in the cystic duct, were found; these were removed. The sinus still persists, but the condition of the patient when last seen, more than three years later, was that of perfect health.

Case 8.—Inoperable recurrent angiosarcoma of the breast, treated with erysipelas and prodigious serum, later by the mixed toxins. The patient, female, aged 59 years, had a three-times recurrent sarcoma of the left breast, of such size that operation was entirely out of question. She was admitted to the New York Cancer Hospital Jan. 20, 1895, and placed in the incurable ward. Physical examination showed a tumor occupying the region of the left breast extending from the anterior axillary line to the sternum, and from just below the clavicle nearly to the free border of the ribs; it was more or less fixed to the chest wall, and markedly protuberant. The patient's general condition was so bad that no attempt was made at first to give her the toxins; she was treated with small doses of erysipelas and prodigious serum, prepared by Dr. Buxton. The tumor slowly shrank in size and the patient's general condition improved; by September, 1895, the tumor had become so much reduced in size and was so loosely attached that it was easily excised under ether. Examination Jan. 30, 1896, showed the patient to be in good general condition with no evidence of recurrence. The diagnosis was confirmed by microscopic examination by Prof. T. M. Prudden of Columbia University, who pronounced it angiosarcoma round-celled.

Case 9.—Twice recurrent spindle-celled sarcoma of the palm of the hand; entire disappearance under two months' treatment. The patient, 20 years of age, had injured her right hand two years before. In July, 1895, a small swelling appeared in the palm of the right hand; in October, 1895, it had reached the size of a hickory nut and was removed. Speedy recurrence followed. A second operation was performed by Dr. Edward Martin of Philadelphia, on Jan. 2, 1896. Microscopic examination showed the tumor to be a spindle celled sarcoma. On Feb. 15, 1896, the patient was sent to me by Dr. Martin for trial with the toxins before resorting to amputation of the arm; the tumor had already recurred at that time at the site of the old cicatrix, 2½ inches long and 1½ inches wide; the mass was attached to the skin and firmly adherent to the tendons, but apparently did not involve the bony structures. The injections with the mixed toxins were begun on Feb. 15, 1896; the filtered preparation was used at first; later the unfiltered solution. The injections were made partly in the tumor itself, but the major portion were given subcutaneously in the arm. The treatment was given almost daily until March 30, when it was continued at her home by her brother, who is a physician. On May 15, 1896, the tumor had entirely disappeared and she was able to extend her fingers perfectly, 120 degrees having been the maximum extent to which she could straighten her fingers at the time the treatment was begun. She was presented to the New York Surgical Society for examination on May 27, 1896. The treatment with the filtered toxins has been kept up, with occasional intervals, to the present time, although in small doses, not sufficient to produce a chill. Not more than four chills were produced during the entire course of treatment. In October, 1896, there was a suspicion of glandular enlargement high up in the apex of the axilla. The patient was given ether, and a gland about the size of an olive was removed from the upper portion of the axilla near the clavicle. This gland was examined microscopically and was found to be distinctly sarcomatous, although it showed very marked degeneration. It may have been present when the treatment was begun, as it was very difficult to find it even at the time when removed. The patient at the present time, June 1, 1898, remains in perfect health. A slight thick-

ening was noticed in palm February, 1898. This has yielded to further use of the toxins administered chiefly in the arm.

Case 10.—Recurrent spindle-celled sarcoma of the thigh and groin, entire disappearance under the toxins. M. S., female, aged 48 years. Family history negative. Five years ago the patient slipped and strained the muscles of the left thigh; three years ago a lump appeared at the outer aspect of the left thigh about the junction of the middle and lower thirds. This grew slowly. March 7, 1896, operation at the New York Hospital by Dr. Wm. T. Bull. A tumor the size of a fist was removed; but the large mass in the inguinal region was not interfered with, inasmuch as it was impossible to remove the entire tumor in the thigh. There was much edema in the whole leg and thigh.

Pathologist's Report: Copy of the records of the New York Hospital Pathological Laboratory: "The material is a piece of skin and subcutaneous tissue and masses of voluntary muscular tissue. The skin is circular in outline and measures 10 cm. in diameter; there are two tumors alongside of each other; the one measures 5 cm. in diameter, the other 4½ x 3 cm. In the deeper relations the lines of incision have gone very close if not through the tumor tissue. The larger tumor is soft and brittle and vascular; the smaller one is firm in consistency and whitish in color. Microscopically the structure of the tumor is that of spindle-celled sarcoma; the smaller tumor contains much more fibrous tissue."

The injections with the mixed, unfiltered toxins were begun at the New York Hospital, May 30, 1896, by Dr. Le Fetra, the house surgeon under my direction, and continued until June 15, every other day. Temperature reaction ranged between 101 and 103 degrees. There was a considerable diminution in the swelling; pain was less and the patient was able to walk upon the leg, which she could not do before. Examination June 16, 1896, shows a recent cicatrix, five inches long at the lower, outer aspect of the left thigh. The middle of the cicatrix, about one and one-half inch in width, had not entirely healed. In the region of cicatrix and to the outer side was an indurated mass, apparently the remains of the new growth. Measurement of the left leg four inches above the patella, was twenty-one inches. Right leg at the same point, sixteen inches. There was an ill-defined tumor in the left inguinal region; nothing could be felt in the pelvis. The swelling of the leg and thigh was much less than at the time of the injections were begun. The patient was admitted to the New York Cancer Hospital, and the injections were continued with occasional intervals of rest until September. At this time the tumor in the thigh and groin had entirely disappeared and the left leg had become normal in size.

Examination in January, 1897, showed no recurrence; measurement of the left leg the same as that of the right. In April, 1897, the left leg had begun to swell again and a small tumor was detected in the groin; induration of the old cicatrix also seemed slightly greater. The patient was again admitted to the New York Cancer Hospital, and the treatment resumed. At the end of three weeks the swelling of the leg has decreased considerably and the tumor in the groin has disappeared. The old cicatrix was removed and examined microscopically but no evidence of recurrence was found.

Case 11.—Spindle-celled sarcoma of iliac fossa, probably starting in the ilium. Mrs. D, aged 40 years, with a good family history in the early part of 1895 began to have sharp, stinging pains in the right iliac region. In May, 1895, she discovered a tumor in this region. This steadily increased in size, and on October 19, 1895, Dr. Johnston of Boston, performed an exploratory laparotomy. A tumor was found in the right iliac fossa about the size of a cocoa-nut, attached to the ilium as well as to the abdominal wall and totally inoperable. Its exact point of origin could not be made out, but from the exploration and subsequent examination I am convinced that it started from the inner portion of the crest of the ilium. A part of the tumor was excised and examined by Dr. William F. Whitney, pathologist to the Massachusetts General Hospital, who pronounced it "spindle-celled sarcoma." In November, 1895, the patient was treated with injections of the mixed unfiltered toxins (Buxton) by Dr. Farrar Cobb of Boston. In a letter Dr. Cobb states: "At the end of six weeks' treatment the growth has entirely disappeared."

On May 17, 1896, the patient came to me with a recurrence and entered the New York Cancer Hospital. Examination at that date showed a hard mass on the right side, extending from the crest of the ilium nearly to the level of the umbilicus and as far to the left as the median line. The tumor was apparently located in the ilium and abdominal wall. Her general health was excellent. The toxins were at once begun and continued with intervals of rest for three months. The outline of the tumor gradually receded toward the crest of the ilium, and

when she was discharged from the hospital the tumor was not more than one-fifth its original size when I commenced the treatment. She left with the understanding that she was to return in the fall and resume the injections. She was readmitted to the Hospital in November.

Examination showed the tumor to have increased considerably in size during the interval of rest, but on beginning the treatment the tumor at once began to shrink. Whenever the injections were made the patient noticed a peculiar burning feeling in the tumor, and this was true whether the injections were made into the abdominal wall or into the thigh. The abdominal wall was so thick with fat that few of the injections were made into the tumor itself. This patient was one of the very few I have seen in whom the toxins always produced very severe irritation in the skin. After each puncture a hard, indurated and very painful area the size of a half dollar would appear, and this would not pass away entirely for several days. When she left the hospital, June, 1897, the tumor had remarkably decreased in size. When last heard from, December, 1897, she was still in good health.

Case 12.—Inoperable sarcoma of the sacrum; entire disappearance; perfect health three years later.—The patient, male, aged 38 years, enjoyed good health until February, 1895, when he began to lose flesh and strength. He suffered severe pain in the lower part of the spine over the region of the sacrum, shooting down to the legs, more marked upon the right. On April 1, 1895, he consulted Dr. W. C. Deming of Westchester. At that time he was beginning to be lame in the right leg; soon after the lameness extended to the left leg as well. These symptoms progressively increased; pain was acute. On May 2 he was sent by Dr. Deming to St. Luke's Hospital. His normal weight of 175 pounds had decreased to 134 pounds. He was so lame that it took him one hour to walk a distance of half a mile. He was admitted to Dr. Francis P. Kinnicut's service, who on careful examination of the rectum found a tumor attached to the anterior portion of the sacrum, the lower border of which could be reached with the index finger, but not the upper. The tumor was of firm consistence and apparently started in the sacrum. The patient was emaciated and cachectic; his general appearance was strongly suggestive of malignant disease. The diagnosis of Dr. Kinnicut and the other physicians and surgeons who saw him in consultation was: Inoperable sarcoma.

On May 10, the very day I returned from the meeting of this Association at Baltimore. I found a letter asking me to see the case in consultation with Dr. Kinnicut with reference to the toxin treatment. My diagnosis agreed with that of Dr. Kinnicut, but owing to the weakened condition of the patient and the inaccessibility of the tumor, making it necessary to give the injections remote from the tumor, I gave a bad prognosis, although I deemed it advisable to give the patient the benefit of a trial with the toxins for two or three weeks, advising, if no improvement occurred in that time, to discontinue the injections. The injections with the mixed, unfiltered toxins were begun at once, and made into the gluteal region; the treatment was repeated daily and at the end of one week the pain had almost entirely subsided and the lameness had markedly improved. The treatment was carried out at St. Luke's Hospital for six weeks and at the end of this time the improvement was so great that the patient returned to his home in Westchester and resumed his work. The injections were continued by Dr. Deming two or three times a week in the evening, after the patient had returned from his work. By the end of June, seven weeks after the treatment had been begun, the patient had gained twenty-eight pounds in weight, and stated that he felt as well as ever. Examination in the early part of July showed a decided decrease in the size of the tumor, and his lameness had entirely disappeared. On March 8, 1896, I again examined the patient and found him in perfect physical health and weighing 175 pounds. On rectal examination I was unable to detect any trace of the tumor remaining. October, 1897, I again examined this patient and found him absolutely well, without a trace of recurrence. Present weight, 175 pounds. He has had no treatment since the fall of 1895.

The report of this case I owe to the courtesy of Drs. Kinnicut and Deming, who had personal charge, although the treatment was begun by myself and carried out under my direction.

Case 13.—Inoperable sarcoma of the iliac fossa. E. S., male, aged 14; family history negative. History of injury: One and one-half years ago was dragged under a trolley car which caused some contusions about pelvis. In January, 1895, the patient began to feel a pain in the right groin. In February, 1897, he noticed pain in the right hip joint and groin which was at first thought to be rheumatism. He rapidly lost flesh and strength and the hip joint became less and less movable, and early in March, 1897, the attending physician, Dr. G. H.

Davis of Brooklyn, detected a tumor in the right iliac fossa, apparently starting from the ilium. The pain was exceedingly severe and constant. The tumor steadily increased in size and on March 27, 1897, he was taken to the Brooklyn Hospital and on March 29, exploratory laparotomy was performed by Dr. Geo. R. Fowler. A vascular tumor was found filling up the right iliac fossa, extending upwards about three inches above the crest of the ilium and Poupart's ligament. A diagnosis of sarcoma was made, and as it was clearly inoperable, the wound was closed and the parents were told that the case was entirely hopeless. The use of the erysipelas toxins was suggested as a last resort, but in view of the large size of the tumor and the weakened condition of the patient, little encouragement was given. The mixed, unfiltered toxins were begun in small doses on April 10, 1897. The injections were repeated daily with slowly increased doses; six minims were given before any decided reaction occurred. The injections were given in the gluteal region and not into the tumor. I first saw the patient in consultation with Dr. Davis on April 25, 1897. He had shown slight improvement since the injections were begun, but his condition at the time I saw him was so desperate that I gave a very bad prognosis. Physical examination at this time showed the patient extremely emaciated, with marked cachexia. His weight could not have been more than sixty pounds, his normal weight having been ninety pounds. The thigh was flexed on the abdomen to an angle of 120 degrees and motion was nearly absent; a hard tumor was felt in the right iliac fossa, extending upwards for about three inches above the crest of the ilium. The pulse was 130 and weak.

In spite of his apparently hopeless condition, I thought it wise for a short period to push the treatment to a point of obtaining marked reactions, and the dose was gradually increased up to 12 minims. At several times there was a well-marked chill with a temperature of 102-103 degrees following the injections. The improvement was immediate and rapid. I saw the patient again at the end of three weeks and to my astonishment found him walking about, able to straighten his leg and thigh completely. He had gained apparently no less than ten pounds and had a ravenous appetite. Examination of the abdomen showed that the tumor had almost entirely disappeared and now extended not more than a finger's breadth above Poupart's ligament. It is true that no microscopic examination was made by Dr. Fowler in this case, but the clinical history is so clear and striking that the diagnosis of sarcoma is scarcely open to reasonable doubt. The injections were not made into the tumor but into buttock and upper thigh. A few months later he developed a fluctuating swelling over the ilium behind. The skin became broken and slight infection occurred, causing some temperature. I incised the swelling, evacuating several ounces of degenerated tissue. No bare bone could be detected. The boy gained after the opening was made, but later the drainage became unsatisfactory and under ether I made a very free incision five inches long through the entire gluteal region down to the great trochanter; the original opening high up had not drained well and the discharge had produced an abscess cavity of some size lower down. The curettings and walls of cavity were most carefully examined by Dr. Buxton and not the slightest evidence of tuberculous disease could be found, practically verifying the diagnosis of sarcoma. The last operation was done April 10, 1898, and a few days ago (June 1, 1898) the patient's physician wrote me he had gained ten pounds and was feeling very well. The tumor in the iliac fossa has never recurred and the only probable explanation of the trouble in the gluteal region is, I think, that the softened and degenerated sarcomatous tissue worked backward along the line of least resistance and finally became infected. The primary tumor undoubtedly started in the ilium. This case has not yet been reported.

Case 14.—Recurrent round-celled sarcoma of the lip, treated with the mixed toxins.—A little girl, aged 5 years, daughter of a physician. Family history good. Personal history: First noticed a small spot, resembling a mosquito bite, on the right side of the lower lip, in September, 1896. About four weeks later it was removed by Dr. James R. Yocom of Tacoma, Wash. It was not regarded as malignant at that time, but the specimen was kept in alcohol. In October the growth began to reappear. Examination was then made of the specimen previously removed, and it was found to be round celled sarcoma. A much more extensive operation was immediately done, the entire thickness of the lip being removed, going widely beyond the scar and tumor. The tumor at that time was about the size of a pea and markedly indurated. A few weeks later it again occurred in the region of the scar. Feeling that further operation would be of little avail, the child was brought to me for treatment with the toxins. The tumor at that time involved the entire scar and extended from the mucous membrane of the lip downward

about one and one-half inches, and was increasing rapidly in size. The mixed toxins were begun Feb. 10, 1897, and injected into the tissues of the lip near the tumor and repeated in doses just sufficient to give her a slight reaction, but only once producing a chill. The filtered toxin was given except in two instances. The tumor tissue very soon lost its vascularity, began to shrink and to lose the glossy tense appearance. After four weeks' treatment, there was apparently very little of the tumor tissue remaining, but with a view of decreasing the chances of relapse, by removing any possible sarcomatous tissue that might be present, I decided to excise the entire scar tissue resulting from the previous operation. This was done by making the usual incision adopted in epithelioma of the lip, cutting about one-fourth inch beyond the scar tissue. The tissue removed was carefully examined microscopically by Dr. B. H. Buxton, assistant pathologist to the New York Cancer Hospital, and no sarcomatous elements could be found in any portion of the tissues removed. The child is still free from recurrence, August 1, 1898. The injections of the filtered toxins into the arm have been used with intervals of rest during the past year.

Case 15.—Spindle-celled sarcoma of the abdominal wall. Entire disappearance following thirty injections of the toxins. Patient well at present, one and one-half years afterward. M. S., female, aged 18 years, was admitted to the New York Cancer Hospital Dec. 29, 1896, with a tumor in the lower portion of the abdomen of several months' duration. Exploratory laparotomy was performed by Dr. Joseph Brettauer, assisted by Dr. George W. Jarmon, the attending gynecologist. A large mass was found in the abdominal wall, both intra- and extra-peritoneal, but it had no connection with any of the abdominal organs. It was regarded as inoperable and a portion was removed for examination and pronounced by the hospital pathologists, Drs. E. K. Dunham and B. H. Buxton, as a spindle-celled sarcoma. The case was transferred to my service in order to have the toxin treatment tried. The first injection was made Jan. 19, 1897. The toxins used were prepared by Dr. Buxton from cultures of streptococcus that had been passed through fifty-five rabbits, thus attaining a very high degree of virulence. After thirty injections, the largest dose being six minims of the filtered toxins, the tumor had entirely disappeared. Very little pain and discomfort resulted from the treatment, and but four chills occurred the entire time. This case was shown in April, 1897, before the New York Surgical Society. The patient was reported perfectly well May 10, 1898.

Case 16.—Spindle-celled sarcoma of the parotid, twice recurrent, inoperable, successfully treated with the toxins.—W. L., aged 40 years, male, carpenter by occupation. Maternal aunt died of malignant tumor of the breast, which had developed as a result of an injury. In September, 1896, the patient received a slight injury to the left parotid region; the swelling was first noticed early in 1897. It continued to increase in size and in March, 1897, was removed by Dr. J. W. Wright of Bridgeport, Conn. A second and a third operation were performed in April, but the growth was found too extensive to admit of removal. Before the first operation the sub-maxillary glands on the same side had become involved. In July, 1897, the patient was treated for three weeks at the Bridgeport Hospital with the mixed toxins of erysipelas and bacillus prodigiosus, with but little improvement. Physical examination showed the tumor to be four inches in diameter, occupying the entire left parotid region, extending from the angle of the jaw to the orbit, from the external auditory meatus nearly to the angle of the mouth. The tumor was hard, firmly fixed to the deeper structures, with an ulcerated area at the center two inches in diameter; there was a second tumor the size of an English walnut in the sub-maxillary region. August 10, the patient was sent to me by Dr. Wright for further advice. Previous microscopic examination had proved the growth to be spindle-celled sarcoma, and this fact led me to advise further treatment. The patient was treated from August 10 to October 15, at the Post-Graduate Hospital, and being in very good physical condition, much larger doses than usual were administered and the injections were made daily most of the time. Although a chill generally followed the injections the patient was up and about the ward the entire time and lost no weight. A marked improvement was noted at the end of two weeks' treatment. This improvement continued constantly until the middle of October, when there was no evidence of the disease remaining either in the face or neck. The patient was shown before the New York Surgical Society March 22, 1898, in perfect health, with no trace of the tumor remaining. He is still well, July 1, 1898. Two other successful cases (Dr. Johnson's and Dr. Storr's) of inoperable spindle-celled sarcoma, now well, one two and a half and the other four years, treated under my direction, will be found under cases of other surgeons.

Case 17.—Inoperable epithelioma of the chin, lower jaw and floor of mouth. The mixed toxins were used for four months. Entire disappearance. The patient well without recurrence four years afterward. This case has already been fully reported in a former paper. The patient was referred to me by Dr. Geo. R. Fowler of Brooklyn, who regarded it as entirely inoperable. Microscopic examination was made by Dr. William Belcher, pathologist of the Seney Hospital of Brooklyn. It is but fair to say that the microscopic examination was made from frozen sections and I wish to give due weight to whatever doubt there may be attached to the diagnosis. The fact remains that the operation proposed for the condition, by an eminent surgeon, was entire removal of the lower jaw, floor of mouth and portion of the tongue. In view of the dangers attached to this operation and the chances of a speedy recurrence, the surgeon advised against it. The tumor entirely disappeared under four months' treatment with the toxins and the patient continues well four years afterward.

Case 18.—Inoperable carcinoma of the breast. Three times recurrent. Constant treatment with the mixed toxins for two and one-fourth years. Disappearance of the tumor. Patient in good health until the end of this period when a local and general recurrence ensued. This case, although referred to in an earlier paper, has not yet been fully reported. The following is a brief history of it: Mrs. B., aged 40 years, first noticed a tumor in the right breast four years ago, developing shortly after an injury caused by a fall. First operation performed by Dr. Grupee of New York, in January, 1894. It consisted in a partial excision of the breast, the axilla not being opened. In the latter part of 1894 there was a well-marked recurrence, both in the breast and axilla. I operated upon the patient the second time at the New York Cancer Hospital in June, 1895. The conditions found being worse than I had expected, it was impossible to make a thorough removal of the diseased tissue. The glands were distinctly carcinomatous as far as the clavicle; the largest, the size of a large hickory nut, located high up in the axilla, completely surrounded the axillary vein and was so firmly adherent that it could not be removed without resecting the vein, which was not thought advisable. Hence only a palliative operation, consisting of the removal of the free glands and the remainder of the breast, was performed. Local recurrence took place in the center of the cicatrix before the wound had entirely healed and the disease progressed rapidly. The arm soon became swollen and the pectoral muscles showed marked infiltration. I decided to try the effects of the mixed toxins, expecting little more than a temporary retardation. Small doses seemed to have but little effect upon the tumor, but by larger doses the disease was controlled and even showed signs of retrogression; the swelling of the arm likewise improved. A few months later I gave the patient ether and excised the area of local recurrence in the neighborhood of the cicatrix, measuring two by three inches. This was firmly adherent to the periosteum of the ribs so that only a partial removal was possible. The disease quickly reappeared, but by increasing the doses of the toxins and the frequency of the injections, it was soon controlled and cicatrization of the carcinomatous ulcer slowly began to take place, and complete healing had occurred by January, 1896. The tumor in the axilla also decreased so much in size that it could no longer be felt. The infiltrated pectoral muscles became softer and practically normal to the touch. The right arm which, before the injections were begun, measured two inches more than the left, now showed a difference of but one-half inch. The patient had gained ten pounds in weight. The injections were continued in very small doses, one to three minims producing little or no reaction and in no way disturbing the patient in performing her ordinary duties. The patient continued well until the summer, 1897, when there was noticed a slight local recurrence in the pectoral region and shortly afterward an enlargement of the supra-clavicular glands. The toxins were left off for a period of five weeks, during which time the growth was most rapid. A few weeks later enlargement of the liver, jaundice, ascites and all the signs were noted. As early as July, 1897, slight twitchings of the left arm and face were noted; these gradually became more frequent and ended in partial paralysis. All the symptoms increased with great rapidity and the patient died in the early part of December, 1897. Microscopic examination of the tumor showed it to be a typical carcinoma.

The case is of much importance, since it shows that in certain cases at least the toxins do have a marked inhibitory action even upon carcinoma.

Case 19.—Recurrent double carcinoma of breast. This case is one of interest, as it shows that in certain conditions the toxins may be used to advantage in carcinoma, especially in conjunction with partial operation.

Mrs. W., aged 56 years, with decided family history of cancer, first noticed retraction of the left nipple three years ago. One year later she noticed a similar condition of the right breast. The first operation, double amputation of the breast, was performed by Dr. Maurice H. Richardson of Boston on Oct. 8, 1895. Recurrence was first noticed in June, 1896, in the form of small, pea like infiltrations in the skin. These increased in size until they formed a mass, three by four inches in diameter. Dr. Richardson advised against further operation and asked my opinion as to the use of the toxins. I stated that I believed the treatment would prove of only temporary value, and might have no effect. If the carcinomatous area could be removed surgically, I thought the toxins might have some influence in delaying a recurrence, although I did not believe they would prevent it altogether. With a clear understanding of these conditions, Dr. Richardson operated a second time on Nov. 27, 1896, and removed the area mentioned. On January 1, before the wound had entirely healed, new nodules appeared in the outlying skin near the anterior axillary line. The toxins, filtrate, were begun Jan. 10, 1897, and continued in small doses daily for one month. The small recurrence in the skin disappeared. The general condition of the patient, which was had at the beginning, remained about the same, but allowing a short interval of rest, her appetite improved and she felt much better than before the injections were given. The latter were resumed, this time by Dr. Richardson, and given three times a week, the dose being only 10 minims of the filtrate, which produced no chill, but only headache and slight malaise. The treatment has been continued in small doses with frequent intervals of rest up to the present time, June 1, 1898, or one and a half years. There have been four or five small sharply-localized skin infiltrations—the largest less than one-fourth of an inch in diameter. These have been removed under cocaine, and the patient is still well and in better health than at any time during the past year and a half.

(To be continued.)

A SURGICAL TREATMENT FOR HYPERTROPHIED PROSTATE AND HERNIA IN OLD MEN, WITH A REPORT OF TWENTY-EIGHT CASES.

Presented before the Section of Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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No class of patients is more worthy of the sympathy and careful attention of the physician than the unhappy victims of prostatic hypertrophy. To this malady is often added hernia, enterocele, with adhesions of the intestines, hernial sac and tunicae, and not infrequently there is chronic hydrocele of the cord and multilocular cystic degeneration of the testicle. Already declining from the general organic dissolution of senility, these complications make them a class of patients difficult and unsatisfactory to treat. The constant appeals from this class of sufferers for relief from vesical pain and burning, rectal and vesical tenesmus, frequent and painful urination, retention of urine and its concomitant misery, has demanded of me more than passing notice.

The diseases of the prostate and bladder and their adnexa have been studied by many scientific men, and their researches have done much to mitigate the suffering of this class of patients. That there are still conditions which find no relief from palliative means of treatment, there is no doubt. The failure on the part of medicine in this direction has of late attracted the attention of the surgeon, and his efforts have not been without success.

It is the purpose of this paper to report some experimental work in the surgical treatment of enlarged prostate, as well as the radical cure for hernia in old

men. I wish to impress upon your minds the fact that this radical means of treatment for these conditions was resorted to only after years of suffering and pauperism, and when all other sources of relief had repeatedly failed. I do not propose to discuss diseases of the prostate and bladder in general, and much of the clinical detail leading to a diagnosis calling for surgical treatment, is purposely omitted. The minutæ of examination and the detail technique of operations will be abbreviated as much as possible. An unusually large number of this class of patients have come under my observation the last two years, and I have made a careful study of each case, to try to determine the value of radical treatment, and the class of patients requiring it.

Frequency, Common Varieties and Results of Enlarged Prostate.—Sir Henry Thompson has observed that one-third of all men over fifty-five years of age have some enlargement of the prostate gland, and that a large per cent. of this number suffer from urinary disturbance as a consequence; that the onset is between the age of fifty-five and sixty years, and that it rarely comes on before this age, but may appear later. I am of the opinion that the onset, in many instances, is earlier than this, but does not manifest itself clinically until about this period, depending much upon the exciting cause.

The lateral lobes of the prostate may be greatly enlarged without evil consequences, but should they be so enlarged as to produce mechanical obstruction to the prostatic urethra, or the prostatic urethra itself be enlarged, however small, or as McGill has observed, a band of prostatic tissue be formed about the vesico-urethral portion, difficulty in urinating will result. These conditions, sooner or later, produce distortion of the prostatic urethra, elevation of the vesico-urethral orifice, and obstruction to the return of blood to the bladder. Later on, as a consequence of these changes, there will be dilatation of the bladder, fibroid degeneration of the prostatic sphincter, hypertrophy of the vesical walls, dilatation of the urethra, and renal pelvis, calculus formation and uremia. In some instances there may be prostatic enlargement without evil effects. But a slight pressure upon the prostatic urethra, or a slightly hypertrophied condition of this organ, may produce endless mischief, and yet be entirely overlooked by the physician.

Examination.—A digital examination per rectum should be made in every case where there is suspicion of prostatic disease, and a somewhat thorough knowledge of the diseases of the prostate and bladder is required. Strictures and vesical calculi must be constantly in mind. Palliative treatment should be faithfully tried, for many cases of supposed grave prostatic trouble yield readily to this form of treatment.

Symptoms.—In acute prostatitis there is frequent and painful urination, the pain and sometimes a few drops of blood coming at the close of the act. Distress in the perineum, radiating along the urethra and into the spermatic cords and sometimes down the thighs; rectal and vesical tenesmus and painful defecation. If there is a prostatic abscess forming there will be obstruction to the flow of urine, and, in extreme cases, retention, grave constitutional symptoms and throbbing pain in the perineum and bladder. Cystitis will be present, and on digital examination per rectum, pain and tenderness of the perineum and prostate will be elicited.

Chronic Prostatitis.—The symptoms are practically the same in this condition save in degree. There is usually a history of nocturnal pollutions, impairment of sexual function, pyuria and vague neuralgic pains in the pelvis.

Prostatic Hypertrophy.—In this condition there will be a history of difficulty in emptying the bladder, tardiness in the onset of the flow of urine, and lack of force. A sense of feeling that the bladder has not been emptied after urinating; fullness in the perineum and rectum, especially during and after stool, retention and enuresis, pain and prostration, cystitis and vesical and rectal tenesmus usually make up the clinical history. Stricture and vesical calculi call for a special examination. These symptoms are taken from the clinical history of the cases I shall report, and were commonly met with before a positive diagnosis was made. The patients making up the report have been inmates of the Cook County Infirmary for years, by reason of these infirmities, and represent but a fractional part of those still untreated among the fifteen hundred patients under my charge. I simply selected those suffering most, making a careful examination clinically, physically, and of the urine. They were then confined to bed, and a thorough line of palliative treatment, suitable to each, carried on for from two to three weeks, and sometimes much longer. I shall report them in classified groups, giving a detailed description of the first case of each group. This case will be illustrative of the group. The others are here reported but not read. The groups will be arranged according to the kind of hernia and the operations done. The treatment for all forms of enlarged prostate is the same, consisting of either gonangiectomy or orchidectomy.

GROUP I.

Group I represents cases in which there was bilateral hernia with orchiocele on one side, in which orchidectomy was done upon that side and herniotomy and gonangiectomy upon the other side. Two cases.

Case 1.—Aged 65, bed-ridden, emaciated, gastritis, constipation. Large direct inguinal hernia on right side, with an enormous orchiocele of thirty-six years' duration. On left side was also a hernia, which occupied the scrotum, but was not so large or of so long duration as the one on the right side. Prostate gland was greatly enlarged; had had trouble in urinating for fifteen years; was confined to bed on account of retention of urine; suffered from pain in bladder and rectum; had cystitis and a large amount of residual urine; catheter required and passed with difficulty; was filthy from enuresis; peevish and irritable.

Treatment.—Medicinal treatment consisted of hot vesical douches twice daily of boric acid, nitrate of silver, 1-3000, or bichlorid of mercury 1-10,000. Laxatives, medicated suppositories for pain in rectum. Hot sitz baths, hot fomentations to the perineum and bladder, counter-irritation to the perineum, diluents for the urine, and "milking" of the prostate. This treatment was continued for three weeks, with negative results.

Surgical.—Chloroform anesthesia; incision on right side after Bassini's method; cord, testicle and hernial sac removed from scrotum in mass; cord separated and ligated high up; testicle removed; sac dissected out high up and ligated and stump dropped back into peritoneal cavity. The upper and inner portion of Poupart's ligament and the under and outer surfaces of the conjoined tendon and margin of the internal oblique were freshened with a sharp curette and formalin catgut sutures, No. 3, introduced so as to draw the conjoined tendon and internal oblique above the conjoined tendon over Poupart's ligament, entirely closing the external ring and obliterating the canal. The external wound was closed with silkworm gut sutures and a wet bichlorid of mercury dressing of 1-2000 applied. Herniotomy, after Bassini, with resection of the vas deferens was done on the left side.

Subsequent history.—Recovery from operation uneventful.

Wounds dressed and superficial sutures removed on the sixth day. Union by primary intention. No relief from prostatic trouble for three weeks, when gradual improvement began and continued until complete recovery six months after operation, patient having perfect control of urine, with a gain of fifty pounds in weight.

Case 2.—Aged 72 years. Had been an invalid in Cook County Infirmary for years, with bilateral hernia and prostatic enlargement. On right side was a very large hernia, occupying the scrotum. Same condition on left side, except in degree. Prostate greatly enlarged, with a long history of urinary disturbance, and catheter life. Prolonged treatment gave negative result.

Chloroform anesthesia.—Orchidectomy on right side and herniotomy and gonangiectomy on left side. Recovery uneventful. Sutures removed on fifth day. Primary intention and relief from former distress in bladder after four weeks.

GROUP II.

Cases with bilateral hernia, with either bilateral chronic hydrocele of the cord, or bilateral cystic degeneration of the testicle, with bilateral orchidectomy. Three cases.

Case 1.—Aged 62. On right side was a hernia of fifty-nine years' duration, which was both congenital and acquired. On left side was a large scrotal hernia, of ten years duration. Prostatic urethra was plainly palpable and hard. Had enuresis and inability to empty bladder, excepting with catheter, for years. Had violent cystitis. Medical treatment negative.

Chloroform anesthesia.—Hernia on right side was found to be both congenital and acquired. The congenital sac—forming the tunica vaginalis was firmly adhered to the scrotum. There was hydrocele of the cord, and cystic degeneration of the testicle on left side, this testicle was also removed and the ordinary sutures and dressing applied. There being also chronic hydrocele of the cord and cystic degeneration of the testicle on left side, this testicle was also removed and the ordinary sutures and dressing applied. Wounds dressed and superficial sutures removed on the sixth day. Recovery entirely uneventful save for a slight attack of melancholia of one week's duration. No urinary symptoms after the fourteenth day. Has taken on flesh rapidly since operation, and is in good general health.

Case 2.—Aged 75. Had been an invalid in Cook County Infirmary since 1892. Had bilateral inguinal hernia with a very large orchiocele on right side. Had suffered for years from prostatic trouble. Had residual urine, and had to use catheter frequently. Medicinal treatment absolutely negative.

Chloroform anesthesia.—Owing to the thin abdominal wall on right side, and the very large opening, orchidectomy was done on this side. Left testicle was found to be cystic and was also removed. Sutures removed on the fourth day, and the patient began to get vesical relief in two weeks. Catheter was not passed after operation. Has had no mental symptoms. Is now entirely free from former prostatic trouble, and is a comfortable old man.

Case 3.—Aged 71. Right oblique inguinal hernia, and chronic bilateral hydrocele of the cord of twenty years' duration. There was bilateral cystic degeneration of the testicles. On right side covering of cord and hernial sac were firmly adherent. Prostate was very much enlarged, and the patient had suffered for years from urinary trouble. Had been an inmate of the Cook County Infirmary at various times for years, and required frequent use of catheter. No relief could be had from medicinal treatment. The hydrocele had been tapped a great many times. Palliative treatment negative.

Chloroform anesthesia.—Both testicles removed. Union by primary intention. Convalescence entirely uneventful. No mental disturbances. After one month is free from former prostatic trouble, and in splendid general health.

GROUP III.

Cases with hernia and large enterocele and cystic testicle on one side, with castration on that side and gonangiectomy on the other. Twelve cases.

Case 1.—Aged 82. Right inguinal hernia of fifteen years' duration. Hernia has been strangulated three times. Was filthy from enuresis. Prostate enormously enlarged and hard to the touch. Has had retention, at times requiring catheter. Chronic cystitis. Medical treatment negative.

Chloroform anesthesia.—Right testicle removed, and left was resected. Became confused mentally a few days after the operation, with delusion of wealth and power. Was exalted, sang and exhorted at night. Urinalysis showed albumin, for

which he was vigorously treated, resulting in almost instant relief from mental troubles. He began to improve at once, and made a splendid recovery. Three weeks after the operation he was taken by his daughter, at which time he was almost entirely free from his prostatic trouble.

Case 2.—Aged 64. Right complete inguinal hernia of thirty-nine years' duration. Right testicle was cystic. Hernial sac was divided into three pockets leading from a diverticulum. Sac was greatly adherent to tunica and scrotum. Prostate was enlarged and had trouble from his urine, from which he could get no relief. Catheter required to remove residual urins.

Chloroform anesthesia.—Right testicle was removed and gonangiectomy done of left side. Primary union. Sutures removed on fifth day. Nine weeks after operation has no urinary trouble whatever. Is entirely well.

Case 3.—Aged 68. Strangulated left inguinal hernia. Was a sufferer from prostatic hypertrophy, and during the operation for strangulated hernia, bilateral gonangiectomy was done. Fifteen days after operation patient was up, and since then has been very well, and working hard for a farmer near the Institution. He thinks his bladder trouble was due to the "rupture."

Case 4.—Aged 75. Right oblique inguinal hernia of but one and one-half years' duration. Right testicles very much enlarged and cystic. Gives a history of urinary disturbance for years. Enlarged prostate. Has to use catheter at times. Medicinal treatment negative.

Chloroform anesthesia.—Right testicle removed, and left was resected. Made an uneventful recovery, and is entirely free from prostatic trouble, three months after operation.

Case 5.—Aged 61. Enormous right side inguinal hernia occupying the scrotum, and of thirty-five years' duration. Prostate enlarged, with urinary disturbances of a number of years. Residual urine drawn by catheter. Medical treatment gave negative result.

Chloroform anesthesia.—On incision the hernia was found to be both congenital and acquired. The true hernial sac was dissected away from that which enclosed the testicle and cord. An incision was made into the congenital sac and the cord was ligated and cut off. The upper portion of this sac was ligated and dropped back into the peritoneal cavity, while the lower portion and testicle were removed. The true hernial sac was returned above the ring as a tampon. The left vas was resected and in this case braided silk was used for the deep sutures. The external wounds healed by primary intention, but after two weeks a fistulous opening formed and the silk sutures had to be removed. This delayed convalescence. Six months after the operation there is no recurrence and patient is entirely well and free from prostatic trouble.

Case 6.—Aged 75. Had a large inguinal hernia on right side which extended into the scrotum. Was of a great many years' duration. Could not remember how long. Was suffering from retention and enuresis. Required frequent use of catheter to draw off residual urine. Medical treatment negative.

Chloroform anesthesia. On incision the hernia was found to be congenital. An incision was made into the congenital sac and cord ligated and cut away. Testicle removed. Acquired sac returned as tampon. Left vas resected. Recovery uneventful. Prostatic disturbance gradually disappeared, and is now in splendid general health five months after operation.

Case 7.—Aged 76. Right inguinal hernia of twenty-six years' duration. Prostatic urethra plainly palpable and very hard. Was suffering great agony from retention. Had had enuresis and general urinary wretchedness for years. Cystitis; catheter required. Medical treatment absolutely negative.

Chloroform anesthesia. Right testicle being cystic was removed. Left vas was resected. Recovery entirely uneventful and complete in one month.

Case 8.—Aged 61. Very large scrotal hernia of fourteen years' duration. Could not be reduced, owing to adhesion to scrotum, and of the intestines to the hernial sac. Was a good tailor, but was unable to work on account of pain from hernia and bladder trouble. Faithful palliative treatment negative.

Chloroform anesthesia. Incision down upon the sac. Adhesion between sac and scrotum broken up. Incision into the sac, and the intestines carefully separated, though leaving many raw surfaces. Intestines returned to peritoneal cavity and sac tied off. Cord ligated and testicles removed. The opening through the abdominal wall being so large three rows of sutures were put in, beginning with peritoneum, Poupart's ligament, internal oblique and conjoined tendon. Fascia of external oblique to margin of Poupart's ligament. Left vas was resected. The bowels were kept active with salines and the patient made a beautiful and uneventful recovery. Three weeks after operation was perfectly free from any of his former trouble and has resumed his work.

Case 9.—Aged 55. Incomplete right inguinal hernia, seven years' duration. Has had urinary disturbance for ten years. Large amount of residual urine, requiring use of catheter.

Chloroform anesthesia. Orchidectomy on right and gonangiectomy on left side. Temperature normal after sixth day. Sutures removed on fifth day. Did not require catheter after operation and in two weeks began to get relief from urinary trouble. Recovery complete.

Case 10.—Aged 68 years. Right complete inguinal hernia and large enterocele, of forty years' duration. Has had urinary disturbance for almost forty years. Had attacks of retention. Is constantly affected with enuresis, pain in bladder and rectum. Had cystitis. Had been under medical treatment at times, for a year, and under special palliative treatment for three weeks, with negative result.

Chloroform anesthesia. Incision as after Bassini's method. An enormous sac was found to occupy the scrotum. There was also varicocele. Testicle removed. Sac dissected out high up and tied off. External inguinal opening completely closed with formalin catgut sutures. Gonangiectomy was done on left side. Union by primary intention. Sutures removed on fifth day. Six days after operation improvement in urinary trouble began, but even after this, there were times when patient was filthy. Temperature normal after fifth day, and six weeks after operation is entirely free from former trouble. Prostate atrophied and feels soft to touch. Left testicle also seems smaller.

Case 11.—Aged 72. Bilateral inguinal hernia, but much larger on the left side. Prostate enlarged. Urinary disturbance.

Chloroform anesthesia. Bassini's method was done on right side with gonangiectomy. On left side there was found to be a large enterocele with intestines matted together and firmly adherent to sac and tunica. Testicles was cystic. Adhesions were broken up and intestines reduced. Orchidectomy was done. Recovery uneventful and seven weeks after operation is entirely well. Prostate is smaller and testicle on right side is also diminishing in size.

Case 12.—Aged 75. Left complete inguinal hernia of thirty years' duration. Enterocele, cystic testicle and chronic hydrocele. Enuresis. Prostate enlarged, residual urine and catheter.

Chloroform anesthesia. Orchidectomy on left side and gonangiectomy on right. Convalescence entirely uneventful and one month after operation appears perfectly well. Taken from institution by his son five weeks after operation.

GROUP IV.

Cases in which herniotomy was done on one side, with bilateral gonangiectomy, Fowler's method for hernia being used. Five cases.

Case 1.—Aged 60. Left inguinal hernia. Prostate greatly enlarged. Enuresis. Inability to control urine. Residual urine, requiring catheter. Burning pain in penis and bladder. Rectal tenesmus. Medicinal treatment negative.

Chloroform anesthesia.—Incision down upon the sac. Hernia found to be congenital. A circular incision was made around the sac and an incision laterally on upper portion of sac to internal ring. Cord drawn out of the sac through lateral incision and the sac ligated. Lower portion of sac left to form tunica for testicle. Then, after Fowler's method, an incision was made through the transversalis fascia up to the deep epigastric vein and artery. These were ligated and cut through. The cord with the vas was resected and cut ends touched with 95 per cent. carbolic acid; was dropped below the transversalis fascia and this fascia sutured over it. The remainder of the operation was done after the usual method. The right vas was resected. The time consumed in this operation was more than I generally take, owing to the herniotomy being done after Fowler's method, which is equivalent to doing a laparotomy. The patient made a good recovery, and was entirely relieved from his distressing urinary symptoms after three weeks.

Case 2.—Aged 66. Right inguinal, scrotal hernia of seven-teen years' duration. Vesical and rectal distress from obstruction to prostatic urethra. Residual urine, requiring catheter. Medicinal treatment negative.

Chloroform anesthesia.—Fowler's operation and gonangiectomy on right side, with gonangiectomy on left side. Operation and subsequent condition a success. No urinary disturbance after six weeks.

Case 3.—Aged 65. Left inguinal hernia with a tendency to become strangulated. Was of three years' duration. Prostate greatly enlarged and nodular to touch. Was filthy and offensive from enuresis. Was a great sufferer from retention and residual urine, and cystitis. Had to be catheterized, which was difficult. Medical treatment was persisted in, but brought no relief.

Chloroform and ether anesthesia.—Herniotomy after Fowler's method was done, with bilateral gonangeiectomy. Patient became confused mentally after operation, and was very filthy and hard to manage. But after three weeks his mind cleared up somewhat and he was allowed to get up, after which he improved and, though suffering from senile dementia, is greatly improved as to urinary disturbance.

Case 4.—Aged 62. Right complete inguinal hernia of three years' duration. Suffered a great deal from prostatic trouble. Had cystitis and enuresis and at times retention. Catheter had to be used. Herniotomy after Fowler was done, with bilateral gonangeiectomy. Was up three weeks after operation, and is now entirely free from any of his former prostatic trouble.

Case 5.—Left direct inguinal hernia, of three years' duration. Prostatic hypertrophy with clinical history of two years' trouble, more aggravated at times. After failure from palliative treatment, Fowler's operation for hernia with bilateral gonangeiectomy was done. Result entirely satisfactory as to operation, and relief from vesical distress complete in nine weeks.

GROUP V.

Cases in which there was ventral and femoral hernia, with bilateral gonangeiectomy. Two cases.

Case 1.—Aged 63. Had a large ventral hernia in median line, about midway between umbilicus and symphysis pubis, of three years' duration. The tumor was pedunculated and could not be reduced. It made pressure upon the bladder, and was a constant source of irritation. The patient has been a long sufferer from prostatic hypertrophy, and was a constant sufferer from retention and use of catheter. An endless amount of treatment brought no relief.

Chloroform anesthesia.—An incision through the integument over the right lateral portion of the tumor revealed that the tumor was made up of omentum. The omentum was ligated off in sections and removed. The wound was closed by suturing separately the layers of the structures of the abdominal wall. Bilateral gonangeiectomy was done. The patient, being a syphilitic, made a tedious recovery. The wound suppurated, and patient was removed from surgical ward four days after operation. Eventually, however, he made a good recovery and became much more comfortable than before the operation. The result was not so satisfactory to me, from a surgical point of view, as the others I have done.

Case 2.—Aged 67. Had a large ventral hernia over site of former appendicitis operation; also a large femoral hernia on same side. He was anemic and despondent through failure to get relief from distressing symptoms of long duration, caused by enlarged prostatic urethra, which had always been diagnosed as a deep-seated stricture.

Chloroform anesthesia.—A long incision was made along outer surface of old cicatrix down to femoral opening. The hernial sac was then dissected out, beginning at the neck of the sac, which was ligated high up as possible and cut away. The falciform, crural and pectineal fascia, Poupart's and Gimbernat's ligaments were accurately approximated with No. 3 formalin catgut sutures. The ventral opening was also closed by carefully suturing the respective layers of the fascia and muscles with the same kind of sutures. The cicatrix was cut away, and the external wound closed with interrupted silk-worm gut sutures. The result of this operation was perfect, the patient is greatly improved in every respect, as there was resection of both vas deferens.

GROUP VI.

Cases in which there was either bi- or unilateral hernia, with herniotomy and bilateral gonangeiectomy. Three cases.

Case 1.—Aged 66 years. Bilateral hernia of twenty years' duration. Left hernia appeared first; had been strangulated; has had enuresis and vesical distress for three years.

Chloroform anesthesia.—Bassini's operation and gonangeiectomy on right side. On left side was an enormous enterocele with intestines firmly knotted together and to the hernial sac. The adhesions were separated and intestines reduced. Sac tied off high up and cut away. Gonangeiectomy was done on this side also. Patient took the anesthetic badly, requiring rapid operation. Sutures removed on fifth day after operating and temperature was normal at this time. Was up in three weeks, and five weeks after operation seems entirely well. Prostate diminished in size and testicle smaller.

Case 2.—Aged 64 years. Incomplete right inguinal hernia of eight years' duration. Has had urinary disturbance for

seven years; enuresia, vesical pain and burning. Never had to use catheter.

Chloroform anesthesia.—Bassini's operation on right side with resection of two inches of vas. Gonangeiectomy on left side also. Recovery uneventful. Remained in bed four weeks, as his abdomen was pendulous and recurrence more liable. Five weeks after operation is entirely well. In this case, where the vas deferens was resected on left side, there has appeared a hard mass at each cut end of the vas the size of an acorn; is not painful and is easily movable.

Case 3.—Aged 73 years. Left side inguinal hernia of four months' duration. Has had enuresia and vesical distress for three years, also pain in the back, rectum and perineum. Residual urine, requiring use of catheter at times.

Chloroform anesthesia.—Bassini's operation on left side with bilateral gonangeiectomy. Six weeks after operation still complains of pain in the back, but is entirely free from urinary disturbance, except for slight burning after urination. Testicle somewhat smaller than at time of operation.

GROUP VII.

Case in which there was simple bilateral gonangeiectomy. One case.

Case 1.—History of difficult urination for three years, with enuresia, retention, frequent and painful urination, rectal and vesical tenesmus, residual urine and enlarged prostate. Catheter passed with the greatest difficulty and then with only the smallest size, the obstruction being in the prostatic urethra. Medical treatment negative.

Chloroform anesthesia.—Bilateral gonangeiectomy of one and one-half inches of the vas deferens and patient walked from the operating room. There was no rise of temperature. Catheter was not required after operation, and in ten days patient began to get relief from former urinary disturbances.

1. All these cases were confined to bed, and a thorough line of palliative treatment carried on for from three to four weeks. If no benefit resulted from the palliative treatment, the patient was transferred to the surgical ward, when for two weeks before operation a stimulating diet with plenty of whisky and large doses of strychnia were administered. During this time the field of operation was carefully prepared with green soap, alcohol and bichlorid of mercury compress. The most rigid asepsis was followed through the preparation of the patient and the operation, with magnificent results in every case but one. The superficial sutures were always removed on from the fourth to the sixth day after the operation, and two dressings were all that were required.

2. Bassin's method for hernia was used in all but five cases. These were done after Fowler's method, which seems very surgical to me.

3. In cases where a large mass of the intestines occupied the scrotum, I returned them to the abdominal cavity three or four days prior to the operation. In some cases there were adhesions preventing the reduction.

4. No incisions were made into the scrotum in any case except into a small portion of the upper third, and even in cases of orchidectomy no drainage whatever was used. Hot sterilized salt solution of one dram of salt to a pint of water was used to control all oozings.

5. Chloroform anesthesia was used in all but one of these cases, and in this ether was substituted. Though old men with sclerotic arteries, and in many instances very feeble, no evil consequences resulted from operation.

6. Mental symptoms appeared in only three cases, and in these instances I believe they were due to the presence of albumin in the urine, as albumin was found which was not present before the operation, and when treated gave immediate relief to mental symptoms. I would caution all operators to look well to this suggestion, as in some reported cases acute

mania developed after bilateral gonangiectomy. In a case related to me the mental trouble disappeared as soon as the albuminuria was treated.

7. No recurrence has taken place in any case of this series, and they have been followed up to this time.

8. In every one of these cases there has been complete relief from all former urinary disturbances, and the herniotomy has rendered the patient very much less helpless. Most of the operated cases were kept in bed for from a month to six weeks, with the hope that better organic union would result, and thereby lessen the liability to a recurrence.

9. From my experience I have no hesitancy in giving out the opinion that with proper study of the case for diagnosis, good preparation and rapid operating, this class of patients can be successfully treated for these grave maladies, with but little risk to life. And although it is a heroic treatment, it must be admitted by all who have had any experience with the treatment of this class of patients, it is warranted, in that it renders old men comfortable and less helpless than any other method of treatment. All of this series were grave cases of long duration, and although the best of preparation was made, the extreme age and feeble condition of many made it seem almost impossible for them to survive the operation. Yet not a single accident has occurred; and the results have been more than could be hoped for. The relief from distressing urinary disturbance has not been as immediate in any of these cases as in some reported; but no case has failed to be benefited, and in the most obstinate cases relief began to appear not later than the third week after operation. In cases where bilateral orchidectomy was done, the patient became almost obese and greatly improved in general health. In every case there was a diminution in the size of the prostate, and in the cases where gonangiectomy was done, the testicle also became much diminished in size.

10. *Urinalysis.* In all the cases here reported pus was present in considerable quantity, and the reaction was alkaline, the reaction being taken as soon as the urine was voided. On standing, the pus settled in a sticky, viscid mass, which showed the cystitis to be of a chronic character. Blood and albumin were usually present in small quantities. The staphylococcus pyogenes aureus, albus and citreus, and the streptococcus pyogenes, as well as the bacillus coli communis were usually present. Vesical epithelium was also always found. The appearance of the urine was turbid and the odor ammoniacal, the sediment sticking to the graduate on standing. Previous to my service these patients had been in the habit of catheterizing themselves, and I have no doubt that this made their cases very much more aggravated.

11. In no case was the *libido sexualis* retained that I am aware of.

12. All cases should be given a thorough line of palliative treatment with confinement to bed. In this series, of those so treated, one in four required no surgical treatment.

RÉSUMÉ OF THE LITERATURE OF CASES OF ORCHIDECTOMY OR GONANGIECTOMY IN CASES OF HYPERTROPHY OF THE PROSTATE.

Ramm,¹ of Christiania, Norway, was the first (?) to

¹ There is now no doubt that D. Francis L. Hayers was the first operator to do orchidectomy or gonangiectomy for hypertrophied conditions of the prostate.

perform the operation of castration for the relief of hypertrophy of the prostate. He did the operation in April, 1893, and reported two cases.

Case 1.—Aged 73. Dysuria for fifteen years. Prostate was the size of an apple. The patient was catheterized for two years; urinated every hour, did not empty the bladder, and prostate was only over-ridden by catheter when two fingers were introduced into the rectum. The patient had advanced chronic cystitis. The urine was foul and contained blood. Three days after the operation the size of the prostate was diminished very materially, and at the end of some months the patient passed water twice at night, and three or four times during the day.

Case 2.—Aged 67. Sixteen years previously the patient was treated for retention of urine. Ten years later a suprapubic puncture was made for the relief of the retention. Before the operation the patient's bladder was distended nearly to the umbilicus, and catheter was passed with much difficulty. The night after operation he passed eighty c.c. of urine in a jet. Prostate diminished rapidly in size. Ten days after the patient passed water seventeen times in twenty-four hours, while two months after the operation he was compelled to urinate about five times a day, and once at night. The prostate felt soft.

Dr. Ramm summarizes his views as follows:

1. After castration of adults the prostate shrinks.
2. Hypertrophic prostate shrinks after castration, beginning a few days after operation.
3. Shrinkage of volume of the prostate can be used after double castration as a means of removing the mechanical obstacle to urination. (*Centralblatt für Chirurgie*, Vol. 21, pp. 387-388.)

Haynes was the first in America to perform castration for the relief of hypertrophied prostate.

Case 1.—Double castration in a case of prostatic hypertrophy where the symptoms lasted for two years. Eighty-four days after operation "the patient was actually cured."

Case 2.—Complicated by acute cystitis and morphin habit. Catheter inserted every two hours. Double castration. After operation cystitis disappeared and patient passed urine spontaneously. Use of catheter every five hours. Morphin habit also cured.

Case 3.—Patient operated on fourteen days prior to the time the case was reported. Catheterization was almost impossible owing to the abnormal development of the prostate. Result not stated. (*New York Med. Journ.*, 1895, Vol. 61, p. 584.)

M. Rochet remarks that castration for hypertrophy of the prostate may be considered as a barbarous method, and that deferent resection, simple or double, is far from having established proofs. (*Lyons Médical*, Janvier 2, 1898.)

Sir Henry Thompson says that one man of every three over 55 years of age, examined after death, showed some enlargement of the prostate; one out of every seven had some degree of obstruction present; while one in fifteen had sufficient enlargement to demand some form of treatment. In this country, according to the last census, there are more than three million men over 54 years, and of those, according to Thompson's estimate, about two hundred thousand are sufferers from hypertrophy of this gland. The classification of the remainder White arranges as follows:

1. The condition of the prostate as to size and density.
2. The amount of pain.
3. The amount and character of residual urine.
4. The frequency of catheterism and its ease or difficulty.

As secondary conditions, he notes: 1, the age; 2, the sexual power; 3, the conditions of the kidneys; 4, the general condition.

White divides the 200,000 cases into groups.

Group A, patients with moderate enlargement; little or no pain; clear residual urine to the extent of

three or four ounces, and who never use catheter. If patient is not old, he retains sexual power; sound kidney; castration should not be considered.

Group B includes patients with large prostate the size of a lemon, with eight or ten ounces of residual urine, and with difficulty in the introduction of catheter. Then the choice lies between vasectomy, castration and prostatectomy.

Group C includes patients with prostate from the size of an orange to that of a base-ball. Cystitis is marked and the catheter introduced with difficulty. In these cases castration is preferred; also vasectomy may be first tried.

Group D, desperate cases, those in which the prostate is enormous, the cystitis excessive, the bladder dilated and atonied; retention; catheterization difficult, and occasionally impossible. Such patients are generally of advanced age and suffer from toxemia—a combination of uremia and sapremia.

Castration under these circumstances offers far more hope of benefit and less risk than any other operative procedure. In this class of cases the mortality is high.

As to the prospects of cure after operation, White says that in every thirteen cases of recovery, we should count upon eleven being complete cures. He states that clinical experience justifies the assertion that in a large proportion of cases (thus far in approximately 87.2 per cent.) rapid atrophy of the prostatic enlargement follows the operation; and that disappearance or lessening in degree of long standing cystitis (52 per cent.), more or less return of vesical contractility (66 per cent.), amelioration of the most troublesome symptoms (83 per cent.), and a return to local conditions not very far removed from normal (46.4 per cent.) may be expected in a considerable number of cases.

The mortality in castration is 18 per cent.; in vasectomy, 12 per cent. But it must be remembered that the patients in Class D, or worse, patients actually dying from uremia or sepsis, have been subjected to these operations. It is important to note that even in the desperate cases which make up the series of deaths, 75 per cent. showed improvement of symptoms or of shrinkage of the prostate before death (*University Medical Magazine*, 1897, Vol. ix, p. 469).

(To be continued.)

SOME RECENT OBSERVATIONS UPON ACUTE INFLAMMATION OF THE PROSTATE GLAND.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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I selected my topic, even at the risk of promulgating but few new ideas and as well, no doubt, of going over much ground that you are already familiar with.

Anatomy of the gland.—In brief, the prostate gland in structure as well as in function is rather a muscle than a gland, composed chiefly of unstripped muscular fibers, and has an inner or circular layer which is continuous in front with those surrounding the membranous urethra and behind with the muscular coat of the bladder. The outer layer beneath the fibrous capsule forms a sheath for the gland, while beneath them the glandular structure is imbedded, or, accord-

ing to Park, the prostate, its utricle; the dilated extremities of the vasa deferentia (called ampulla), and the seminal vesicles are, like the uterus and tubes of the female, enclosed in a thin fibrous sheath, which he has called the broad ligament of the male. The gland is divided into two lateral lobes by a deep sulcus or notch posteriorly and by a furrow at the upper and lower surfaces, while the so-called middle or third lobe, is the portion situated between the two lateral lobes at the under side and the weight of posterior part of the gland, adjacent to and beneath the neck of the bladder. The prostate in normal health is one-half ounce in weight and is about the size of an ordinary horse chestnut.

Varieties of inflammation.—There are two varieties of acute prostatitis—the follicular and the parenchymatous, either of which may be partial or complete as well as acute or chronic. Discussion of the latter grade of this disorder, however, does not come within the purview of this paper.

The follicular forms when resulting in abscess are rarely large, and almost invariably discharge themselves into the urethra, while the acute parenchymatous variety is more serious, because the entire substance of the gland is inflamed (as in a sort of cellulitis) and great disorganization may occur, involving the entire glandular and connective structures of this complex organ.

Etiology.—Acute prostatitis, whether it results in abscess of the gland or not, as is well known, may be due to trauma, or it may occur as an abscess—frequently does—elsewhere in the human economy, due to a probable remote predisposing cause, or due to causes wholly idiopathic in character. Among the latter may be enumerated a natural tendency toward a delicate constitution, which, when produced in an idiopathic manner, is not frequently seen.

The causes regarded as traumatic which may induce this disease not only include the incautious introduction of instruments; a contusion to the perineum, vesical and rectal tenesmus, obstinate constipation, formation of scybali and hemorrhoids with their incidental phenomena may also be a direct cause to bring on the disease. Gonorrhoeal infection, when unchecked and extending to the prostate, is almost invariably regarded as one of the most frequent exciting causes of the disease, as the tissues about the gland are a formidable soil for the growth of pus bacteria and its sequelæ.

The disease has been known as a complication in certain forms of acute febrile disease. It has been reported also as a sequel of smallpox, scarlet fever, typhoid and typhus fever. The various toxemias of infectious fevers produce venous stasis, which endangers the endothelium of the organ, or where there is a transudation in the blood vessels, as osmosis, or an altered condition of the blood which involves a malnutrition with nerve disturbances in the gland, or an altered blood plasma that results in congestion of the gland and prostatic plexus of veins may all be regarded as excitants to induce the disease; particularly is this true in old persons. Although doubtless extremely rare, infection from various forms of rectal disease, due to the propinquity or proximity of those parts, may be regarded as a possible exciting cause, notwithstanding the firm capsule of the gland. It would seemingly offer a sufficient obstacle and prevent the entrance of germs through that channel. On the theory of using instruments,

strong injections, horseback riding and, I have excellent reasons for believing that too much bicycle-riding will produce the disease, due to the rider assuming a false position on the saddle, or attributed to some possible faulty construction of the saddle, producing jolting, jarring, over-exertion, etc., resulting in irritation, congestion and disease of these vital structures. Sudden shocks about the perineum, induced in whatever manner, may be an exciting cause of this difficulty. Purulent or putrid cystitis, or pyelonephritis may also induce the follicular variety of the disease, although as has been stated hematogenous prostatitis is comparatively a rare disease. Should it occur, however, it would be expected to be due to a deficiency or reduction of oxyhemoglobin in the red corpuscles throughout the body.

Stricture of the urethra when long neglected may well be regarded as an active factor in exciting this disease, and some authors have said that a contracted meatus and phimosis are causes. If this be true, it is doubtless due on the same theory as stricture, namely, that at times of micturition a free exit of urine is not voided with the facility in which this act should be performed. Syphilis is said to be an exciting cause, and calculi, especially when retained in the bladder in the vicinity of the gland, is another exciting cause to produce inflammation of it.

Taking cold, which first induces congestion and subsequently is followed by inflammation of the gland, is also an exciting cause. Too frequent indulgence in alcoholic beverages and other causes that induce a sexual hyperemia followed by irritation or excitation of the gland, are doubtless true causes of a certain proportion of this distressing and sometimes serious malady. Excessive purgation is mentioned by Bumstead as a cause. Cantharides and other irritant drugs are cited as a cause by Loomis and Thompson. Senility doubtless is a contributory cause in a certain proportion of cases.

Urinary infiltration and frequent retention of the renal secretion, whether it is of an abnormally acid or alkaline reaction, may induce the trouble. On the other hand, the stream of urine is greatly diminished in size, or retention may occur and be due to the inflamed gland, or to an edematous condition of the gland or to infiltration of exudative matter around it (as will be stated later), to the formation of purulent matter within the prostate. Vasomotor disturbances that induce edema and hyperemia may cause inflammation of this gland; cellular exudation or serous exudation, especially in a neurotic subject, may induce either form of the disease in persons whom for want of a better term, I have denominated those who are prone to "idiopathic prostatic neurosis."

And lastly, I may mention that vague cause, "due to reflex disturbances," as a possible or probable one under certain conditions that would be likely to excite inflammatory action of the gland. Hypertrophy, atrophy, tubercle, malignant disease, etc., will not be considered as exciting causes of the disease in the strict sense and literary construction of the title of this paper.

Age.—Recent observation has led me to believe (according to my experience) that it is most frequently met with between the ages of 25 and 40 years, although as per the foregoing remarks, idiopathic or traumatic cases may supervene at any period of time after this limit, the former particularly; when the person afflicted is of a rheumatic or gouty diathesis.

Symptoms.—The symptoms that lead the surgeon to suspect inflammation of the prostate gland are the following: After eliciting a personal history of the case, and if the premonitory symptoms do not subside there is increased pain about the gland. There will be some difficulty in micturition and great pain experienced in bowel movement, often spasmodic in character when the patient tries to void his urine, accompanied by great distress and irritability of the neck of the bladder. Nervous chills followed by fever will give rise to strangury, and symptoms of a septic nature may supervene, in addition to which there will be nausea and restlessness. One of the early symptoms of the process of suppuration is a throbbing sensation accompanied by a dragging down weight and feeling of distention about the rectum, perineum, sacral region and neck of the bladder; this may extend to the lower part of the abdomen and suprapubic region as well as to the distal end of the glans penis and scrotum. There is also loss of appetite, constipation, a furred tongue, emaciation, anxious facies, despondency and dread of an operation.

Diagnosis.—In this it may be difficult to decide whether the disease is circumscribed and wholly of the gland, or whether it be periprostatic in character.

Wyman says that "this affection is one which is entirely overlooked until it manifests itself by a gush of pus from the urethra or rectum, and rarely into the cavity of the perineum." Ziegler says "inflammation of the prostate gland is often associated with inflammation of other parts of the urogenital system, such as gonorrhoeal urethritis, purulent or putrid cystitis, etc., and that hematogenous prostatitis is rare." A digital examination (*tactus eruditus*) per rectum or manipulation bi-manually, will disclose that the gland is excessively sensitive and much enlarged. The anterior wall of the gland or its corporeal portion projects or is pushed into the bowel. If the feces are inspissated, defecation is most distressing, and so acute is this that the pain radiates along the hypogastric plexus of nerves.

Prognosis is usually favorable, as the disease in the majority of cases will result in recovery, either as a result of resolution or suppurative process with spontaneous discharge into the urethra or rectum, or in a few instances that I have seen, by both of these channels. Occasionally death will ensue through the intervention of sepsis, subsequently, if a morbid condition of the gland remain. Such defect must be ascertained, then, if possible, corrected.

Treatment.—In general the patient should be confined to bed and placed upon a milk diet; early application of leeches to unload the engorged prostatic plexus of veins, and hot fomentations to the perineum followed by free evacuations of the bowels with saline aperients. Copious draughts of demulcent drinks to dilute the urine should be administered. Hot hip baths, twice or thrice daily, should be given, although Wyeth recommends that "ice bags applied to the perineum will be found agreeable and of value," and that "suprapubic aspiration may be demanded in severe cases."

On the other hand, DaCosta says, "adjust hot sand-bags to the perineum and hypogastrium." If the abscess has burst into the urethra and the stream of urine is very small, it may be necessary to introduce by most gentle methods a soft india rubber catheter, well oiled. Do not use metallic catheters if you can avoid doing so, and at as early a period as possible

dispense with all kind of catheterization. A gentle massage process to favor the discharge of pus is indicated in certain cases. If shreds of mucus casts collect, compared to croupous exudation as stated by Van Buren and Keys, and are cast off per uretheram, do not mistake these for spermatorrhea.

Enough anodyne and hypnotic remedies should be administered per orem or in suppositories to assuage pain, and if a soft catheter should have to be resorted to and the pain is excruciating, this can be facilitated under local anesthesia, and in a few instances if stricture is present, electrolysis to dilate the urethra may be found necessary.

My plan consists primarily, after ascertaining by examination, if suppuration has occurred, if possible, in washing out the abscess cavity with hydrogen peroxid to favor the exit of discharge. In no instance do I retain a drainage tube *in situ*, as it retards the closure of the fistulous opening. This is followed by a copious enema of as hot water as can be well borne and injected into the rectum. Hot hip baths at a temperature of 105 degrees F. to 110 degrees F. should be given as frequently as seem agreeable to the feelings of the patient. Avoid administering morphin internally if you can. Do not permit the patient to strain at stool nor while he is voiding his urine, as this will surely aggravate the symptoms.

On the theory, as above stated, that toxins are retained in the circulation and within the gland, and the disease, when it continues, acts on the nervous system, intricate microscopic changes having occurred, and with the view of preventing degeneration in the gland substance, I administer freely *tritricum repens* or fluid extract of tritipalm as a genito-urinary tonic in combination with infusion of gum arabic or flaxseed. Along with these remedies the mineral waters, particularly Vichy and citrate of potash, go well together. Hydrate of chloral or this salt combined with the alkalines of antikamnia and the bromids are the very best anodyne remedies to control pain and spasms of the neck of the bladder. These pharmacologic or medicinal remedies are the most logical to use in my judgment, while externally, applications of antiphlogistine, inunctions of a 10 or 20 per cent. of iodoform, lanoline preparation, as well as of mercury, are also of much value.

I have also resorted to the internal administration of fluid extract *secale cornuti*, alternated with iodid of potash, with the view to restore contractility of the gland and to favor absorption of the plastic material deposited in it. The application of electricity and of the galvano-faradic current to the prostatic urethra may be tried to obtain similar results.

Secondly and lastly; a cheerful prognosis should be given to the patient, as well as substantial general tonics that are readily assimilated and will be most likely to produce metabolic action, are indicated to bring about complete convalescence.

If time permitted, I would recite the histories of several interesting cases in detail, but I am well aware that the Section know these general ideas find characteristics without my taking further time to do so.

VENTRAL HERNIA AFTER APPENDECTOMY.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY M. M. JOHNSON, M.D.

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The immediate consideration in appendectomy is the saving of life and the restoration to health of the individual patient. Many operations with a faulty technique have accomplished this. The remote consideration is the integrity of the abdominal wall. This necessitates a careful consideration of the operative technique and the avoidance of many unnecessary procedures in the after-treatment which interfere with the closing of the wound.

The frequency of ventral hernia after appendectomy is inferred from the fact that fifty cases referable to this cause, were observed at the Hospital for the Ruptured and Crippled, in New York City, in two years. (Coley.) A still greater evidence is the great demand for trusses and supporters of the various kinds by those upon whom the operation has been performed.

Incisions.—There are seven well-recognized incisions: The V-shaped; the L-shaped; the T-shaped; the obtuse angle; the long straight; the short straight; and McBerney's well-known incision, where the different layers are cut at different angles. These may be classified as the *long* and *short* incisions. When considering the relation these incisions bear to ventral hernia, we are confronted with the following facts:

1. Nerve supply, according to Woolsey (*Annals of Surgery*, Jan. 1898, p. 3), who points out the most important element in abdominal surgery as the nerve supply, comprising the six lower dorsal, the ilio-hypogastric and the ilio-inguinal nerves. Their motor portions pass, for the most part, between the internal oblique and the transversalis muscles, which, together with the external oblique, they supply, and then they pierce the sheath of the rectus muscle to furnish its motor nerve supply. "Their division causes paresis and atrophy of the muscles, weakens the abdominal wall and predisposes to hernia." Therefore, the longer the incision the more nerve fibers will be severed, thus increasing the chances of ventral hernia.

2. The making of the incision as much as possible through muscular tissue, according to Woolsey and McBerney, is open to well-founded objections. When the contracting and relaxing function of the muscles is taken into account, it is evident that the cicatricial tissue is constantly subject to a powerful tension, followed by relaxation, which when long continued has a tendency to weaken the cicatrix, and in time it gives way and is a factor in the causation of hernia.

3. The after-treatment should be as free as possible from undue irritation. The packing of the abdominal wound with gauze should be mentioned only to be condemned. It is not only unnecessary but decidedly harmful. It is a great source of irritation and discomfort to the patient. The pressure on the inflamed intestine may cause perforation, or intersuspension. The theory upon which the wound is packed with gauze is: first, to prevent the pus from passing into and infecting the abdominal cavity; second to secure free drainage. Experience teaches us that the former condition is not secured; on the contrary the distention of the wound and separation of the parts is favorable to abdominal infection. The latter

Weighing in Tuberculosis.—Wolf-Immermann calls attention to the benefits to be derived from systematic, accurate weighing in the treatment of tuberculosis. He considers the scales as important as the thermometer. The average gain in weight in his sanitarium, Reiboldsgrün, is 360 grams a week, without over-feeding or remaining in bed. He advocates appropriate exercise.—*Munich Med. Woch.*, June 21 and 28.

condition—good drainage—is rendered difficult or impossible when the wound is pressed full of gauze. Leave the pus cavity and abdominal wound free from unnecessary interference, and nature will in a few hours shut off the septic region, by building a firm wall of protective adhesions around it. The healing process will not be delayed, and in a great percentage of the cases there will be no trouble from a future ventral hernia.

While it is hard to lay down any hard and fast rules, as the incision must conform to the particular conditions in each case, yet an operator has a characteristic method which he follows. The incision which combines conditions most favorable is a straight incision, not more than one and one-half inches in length, just external and parallel to the rectus muscles in the fibrous tissue of the linea semilunaris. In this location an easy and bloodless passage can be made to the cavity, and it is the only safe place one can be made in a pus case. The incision is closed in three layers: first, the deep aponeurosis and peritoneum are closed with a continuous catgut or kangaroo tendon suture; second the superficial fasciæ are closed in a similar way. Third the skin is united with a number zero catgut suture. When thus properly united it gives a firm cicatrix and is not liable to give way.

I have had four cases of women who have borne children after an appendectomy without injury to the abdominal wall: two were operated upon during pregnancy. With the short incision the nerve-supply is not cut off from the abdominal muscles.

In pus cases, the incision is seldom more than an inch and a half. After the abscess is cleansed with pyrozone, and washed out with the saline solution, a wick drainage is placed in the lower angle of the incision and the wound is closed, except for the drainage. The wound is never packed with gauze, for reasons previously stated. The following case came into my hands for operation for the radical cure of ventral hernia following an operation for appendicitis:

M. R., a boy aged 4 years, was operated upon for suppurative appendicitis by Dr. S., July 17, 1895, at the Hartford Hospital. Later a fecal fistula occurred, for the closure of which four operations were performed, the last and successful one by Dr. Wiggin of New York. During the treatment a rubber drainage tube was lost in the cavity. The patient returned home Aug. 19, 1896. In December following, an abscess formed on his back just above the brim of the pelvis. Jan. 2, 1897, the abscess broke and discharged, and the rubber drainage tube was drawn out through the opening. He was taken to St. Francis Hospital in October, 1897, to be operated upon for ventral hernia, where the following measurements were made by Dr. Geo. C. Bailey: The opening in the abdominal wall was three inches wide and three and a half inches long. The prospect for a successful operation was so uncertain that the members of the surgical staff were opposed to having the operation performed in the hospital. The patient was taken to my private hospital, where the operation was performed Nov. 27, 1897.

An incision was made the entire length of the opening in the abdominal wall, adhesions were broken up so as to free the intestines from their attachment to the abdominal wall. The tissues were dissected back so as to expose the free border of the rectus muscle. Four silver wire sutures were inserted an inch from the free border of the incision. The mus-

cles were brought together by a continuous kangaroo tendon suture, passed through all the subcutaneous tissues, including the border of the rectus muscle, as they could not be separated, owing to the long-continued and inflammatory and suppurative process. The skin was then closed by a continuous kangaroo tendon. The silver wire sutures were drawn firmly together, so as to relieve the tension on the stitches through the muscles. At the end of one week the wire sutures at the end of the incision were removed, one of the remaining was removed in ten days and the last in two weeks. A liquid animal diet was given to prevent the distention of the abdomen until a good union had taken place. The patient made an excellent recovery. At the present time there is no sign of the return of the hernia.

As a result of tracing two hundred consecutive cases following appendectomy in reference to ventral hernia, while not absolutely complete yet nearly so, my statistics are as follows:

Class 1. Cases without extensive adhesions—infected exudate masses of pus, 52; hernia, 0.

Class 2. Cases with extensive adhesions—without infected exudate masses of pus, 54; hernia, 0.

Class 3. Cases with infected exudate masses or pus, 48; hernia, 6.

Class 4. Cases with infected exudate masses and pus—with perforation and gangrene, 46; hernia, 4.

Total number of cases 200; hernia 10, or 5 per cent.

CONCLUSIONS.

The factors in the production of hernia, following appendectomy, are, 1. Long incision. 2. Cutting off nerve supply to muscles. 3. Incision made through muscular tissue. 4. Closing the incision with a single set of sutures in one layer. 5. Packing the wound with gauze. 6. It is a question if the length of the incision is not more important than the tissues through which it is made.

ADRENAL TUMORS OF THE KIDNEY.

[ABSTRACT.]

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY BAYARD HOLMES, M.D.

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Grawitz first described a group of tumors of the kidney which resembled the adrenal tissue in histologic elements. He named these tumors or this condition *struma supra-renal is aberrata*, and from that time on a war has been waged over these forms under various names, all of which are more or less significant. We may say, however, that at present, a tumor of the kidney is recognized, growing out of remnants of the embryonal adrenal gland left behind in the kidney substance itself. Similar tumors are found throughout the whole genito-urinary tract. These tumors are sometimes malignant, but more often benign. They sometimes produce constitutional symptoms, but usually they come to the notice of the physician or surgeon solely on account of their size and location.

The case which I wish to present to you very imperfectly and briefly is an illustration of that form of adrenal tumor which produces on the one hand constitutional symptoms of a most marked character, and on the other hand, shows the malignancy of metastasis.

Mr John C., 56 years old, came into the care of

Dr. Edgar Hawley of Chicago in March, 1897. He had been a healthy, temperate man, and suffered no disease worthy of mention during his whole life. He had always led a moderate life, and been occupied most of the time in active office work, but during the past six or eight years has been confined for a reasonable number of hours each day to book-keeping. During the week preceding his illness he had lost in strength and appetite, but had slept well, complaining only of occasional loss of breath.

Dr. Hawley was called on the second day of the patient's absence from work. The patient was lying upon his right side; his breathing was rapid and he complained of excessive pain in the region of the right thorax. His pulse was slow, 72, and his temperature low, 99. He coughed frequently, and expectorated a bloody mucus resembling the rusty sputa of pneumonia. The patient's face was blanched, his lips red, but turgid, and an examination of the thorax revealed dulness over the whole lower half of the right lung, accompanied in places by complete absence of vocal transmission; while in other places, especially in the upper front part of the chest, there were many spots of bronchial breathing and crepitant râles. The area of cardiac dulness was greatly increased, and the area of hepatic dulness projected $2\frac{1}{2}$ to 4 centimeters below the border of the ribs. The patient's digestive functions were carefully examined without disclosing any significant fact. Urinalysis showed that it contained no abnormal constituent, except an increased quantity of indican and an increased quantity of all the normal constituents. The patient was able to rise and sit up to drink and for stool. Symptomatic treatment was instituted. On the third day of observation the pleuritic effusion was so great and the dyspnea so severe that Dr. Hawley removed three pints of bloody serum with the aspirator. The temperature remained about 99 and the pulse varied between 70 and 80. Two days later it was necessary to remove another quart of effusion, and a week after the beginning of treatment I was called in consultation on account of the gravity of the symptoms and the failure of the consolidated lung to show any symptoms of resolution.

When I saw the patient he was suffering from terrible dyspnea. His face was full, but blanched. His lips were a bright red. His eyes were bright and expressive. He seemed to weigh about a hundred and seventy pounds. There were no symptoms of emaciation. His hands were thin and white. His whole appearance reminded me of sclerosis of the kidney, and I instinctively uncovered his legs, expecting to find them greatly swollen with edema. I was surprised to find the legs and feet solid, but well-formed and excessively pale. The pulse at this time was hard and full, and very slow, 70 to the minute. The temperature was not quite 100, and it had never been above 100.5 at any time. My examination confirmed the examination of Dr. Hawley. There was a considerable effusion in the right pleural cavity, with a large mass of atelectatic tissue above it. The liver was depressed about 4 centimeters, but did not extend abnormally to the left. The heart's apex was $3\frac{1}{2}$ inches from the median line, but the area of cardiac dulness extended at least 2 cm. farther to the left and 3 cm. lower than normal. The heart's apex was readily recognized on account of the fierce stroke which it made on the wall of the thorax. A careful examination of the left lung detected bronchial breathing and cogwheel respiration in two or three places in the upper

lobe; but on account of frequent coughing, these observations were not considered significant. The patient frequently expectorated a tenacious mucus which was once in a while tinged with blood. No very satisfactory examination of the abdomen could be made, because the patient could not lie down on account of the dyspnea. I assisted Dr. Hawley to remove the effusion. We succeeded in aspirating three pints of bloody serum. The character of this effusion resembled that which I had observed in cancer of the lung. A microscopic examination of this serum did not reveal any bacteria, but showed the presence of red blood corpuscles, white blood corpuscles and a few epithelial cells of uncertain origin. The examination of the sputa did not disclose the presence of the pneumococcus. After the removal of the effusion, the liver came back to its normal position under the border of the ribs.

With the absence of the evidence of pneumonia, with the absence of cachexia, with the sudden onset of the disease and its rapid course, I was only able to make an unfavorable prognosis, leaving the diagnosis entirely to the postmortem. The subsequent course was similar to the preceding. The dyspnea continued, the pulse remained very slow and hard and full. The patient complained of no pain, and the temperature never rose above 100.5.

The postmortem was made three weeks after the beginning of the disease and twelve hours after death. It was made by Dr. Henry D. Galloway and Dr. Edgar Hawley in the presence of the house staff and nurses of the Baptist Hospital.

The body was that of a well-nourished man, apparently fifty years old. Postmortem rigidity had begun. There were no marks of swelling or edema and only a small puncture where the last aspiration had been made between the fifth and sixth ribs in the right axillary line. The right thorax was dull on percussion, the left resonant. On opening the right pleural cavity, a large quantity, probably a quart, of bloody serum without flakes or clots was removed. The right lung was a mass of solid tissue, which on section showed it was composed of light, reddish masses, contrasting sharply with the bluish-black and mottled appearance of the intervening edematous lung. These masses were hard and firm, and did not subside under pressure. They were of a uniform texture, and seemed to be the outgrowth of multiple centers. The left pleural cavity contained three or four ounces of clear serum. The left lung presented a normal, but highly pigmented appearance. The lymph glands at the root of the lung were filled apparently with years of accumulated coal dust. Three foci similar to those in the right lung, but no larger than hazel nuts, were found in the lower part of the upper lobe of the left lung. The pericardium was filled with six ounces of clear serum. The heart muscle was firm, and the ventricles contracted. The coronary arteries were markedly sclerotic. The valves of the heart were competent, but showed marked sclerosis, and in places calcification. The abdominal cavity was free from fluid. The liver and spleen were normal, excepting for a general arterio-sclerosis. The stomach and intestines presented no marked abnormality. The right kidney was of normal size and shape and position, and was connected with the bladder by a normal ureter. The right adrenal body was of normal size and shape and location. The left kidney was surmounted on its upper end by a firm, hard tumor,

the size and much the shape of a small clenched fist. Like the right kidney, it was surrounded with fat. On section the kidney itself seemed perfectly normal, except that it was encroached upon in its upper part by the tumor, but separated sharply from it by a wall of connective tissue. This kidney was connected with the bladder by a normal ureter, and there is no reason to believe it in anything but a healthy condition. The cut section of the tumor showed that it was composed of various nodules, the center of each of which was in a more or less advanced stage of apparently fatty degeneration. In a few places masses apparently of old extravasated blood were to be found. The growing portions of the tumor were nodules the size of peas, and at the periphery of the tumor. The blood supply of the tumor seemed to be rich, and on carefully dissecting up the renal vein, the tumor was found to have invaded it so as to actually hang into its caliber.

Microscopic examination of this tumor showed that it was a typical struma suprarenalis aberrata of Grawitz. Microscopic examination of the tumors found in the lungs showed that they were of the same character.

A study of the literature of this subject may be summarized in the following conclusions:

1. Remnants of the adrenal body are found in various parts of the genito-urinary tract in a large per cent. of all postmortems (90 per cent.)

2. The suprarenal capsule or adrenal body is a ductless gland essential to life. It secretes a substance which slows the pulse, contracts the capillaries, and removes the pigment from the skin. When it is destroyed or removed, the patient dies, or if partially destroyed, he takes on the condition recognized in Addison's disease. When the adrenal body is greatly increased in its function, the skin is blanched, the heart's action is increased in power, but slowed, and the capillaries are contracted, and the whole vascular system undergoes the degeneration of arterio-sclerosis.

3. About one-third of all the tumors of the kidney appearing in adult life are of adrenal origin, but only a small proportion of these show a tendency to metastasis, and these metastatic foci are usually confined to the lungs or to the bones, and only rarely are they found in both places.

4. A few of the adrenal tumors produce the symptoms of poisoning with the adrenal extract. The poisoning does not always seem to be proportionate to the size of the tumor.

5. The removal of the tumor before metastasis takes place results in subsidence of the symptoms of poisoning. The tumors may be removed without loss of kidney substance, or by a complete nephrectomy.

CLINICAL RESULTS OBTAINED BY THE USE OF MY INSTRUMENT FOR COL- LECTING THE URINE SEPAR- ATELY FROM THE TWO KIDNEYS.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY M. L. HARRIS, M.D.

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A description of my instrument for obtaining the urine separately from the two kidneys was published first in the JOURNAL OF THE AMERICAN MEDICAL

ASSOCIATION, Jan. 29, 1898, and again in *Medicine* in April, 1898. The object of the present paper is to present a few clinical facts obtained by the use of the instrument, which demonstrate its advantages, applicability and reliability.

Case 1.—Mrs. D., age 31 years, American, without particular hereditary tendency. Except for present trouble she has always been a strong, active, healthy woman. About four years ago she began to have pain in the lumbar region. The pain was dull and intermittent and increased by violent exercise such as dancing, driving or riding in the cars. The attacks of pain increased in frequency and severity and in a year or two the urine after exercise, particularly dancing, was very dark in color and there would be a desire to urinate frequently. Twice she had attacks of severe pain in the left lumbar region followed by the passage of a small calculus. The pain in the back became almost constant and she was obliged to discontinue all exercise on account of the great increase of pain and hematuria excited thereby. The urine contained blood almost constantly, although, except following exercise, it was so slight in amount as to require the microscope for its detection.

On Feb. 14, 1898, by means of my instrument I collected the urine separately from the two kidneys. An analysis of the urine thus collected is as follows:

	Right kidney.	Left kidney.
Amount collected in 20 minutes . . .	12 c.c.	10 c.c.
Color	Clear amber.	Cloudy, very light brown.
Reaction	Neutral.	Strongly acid.
Urea	0.7 per cent.	1.2 per cent.
Albumin	Slightest possible trace.	Small amount.
Microscope	Negative.	Red blood cells abundant; numerous flat epithelial cells, singly and in masses of several hexagonal cells; few leucocytes.

This analysis pointed very conclusively to the left kidney as the seat of the trouble, and taken in connection with the history made a diagnosis of renal calculus certain. One very interesting point shown by the analysis is the marked difference in the reaction of the urine of the two kidneys secreted at the same time. That from the right side being *neutral* while that from the left side was *strongly acid*. As the reaction was taken at once before secondary changes could take place an interesting point is thus brought up, namely, to what extent local conditions within the kidney may influence the reaction of the urine. It may be mentioned here, as adding to the interest and importance of this point, that the calculus found in the left kidney was composed of almost pure uric acid. As the patient had received prolonged medical treatment without benefit surgical measures were decided upon and on March 8, 1898, an incision parallel with and one centimeter below the twelfth rib was made, exposing the left kidney, which was cleared of its surrounding fat. Nothing abnormal could be detected by sight or palpation of the kidney. The pelvis of the kidney was then opened by an incision along the convex border. In passing through the substance of the kidney a small abscess containing six to eight cubic centimeters of thin light brown pus, was evacuated. A calculus was found lodged in one of the calyces and removed. It was only with considerable difficulty that the calculus was found and removed even after the finger had free access to the pelvis. The pelvis of the kidney was washed with hot sterilized water, the kidney sutured with catgut and the incision closed in layers, except at the angle, where a small iodoform gauze packing extended down to the kidney. This was removed on the second day. Healing followed *per primam* with perfect recovery.

Case 2.—Mr. H., American, age 37 years, family history good, never had any illness prior to present trouble, except gonorrhoea, which he had had several times. About two years ago, following shortly after an acute attack of gonorrhoea he

had a severe illness, lasting about six weeks. It was attended by fever, pain in the right side of the abdomen and right lumbar region. During this illness there was a sudden discharge of a large quantity of pus with the urine. He has never been well since this acute attack although he has been around and able to do some work. He has suffered almost constantly from pain in the right lumbar region, frequent urination, which is better and worse at times, and occasionally has spells of fever with chills, sweats, etc. There is pus in the urine constantly. Is pale, anemic, considerably reduced in flesh, and quite weak. His temperature varies from 100 to 103.5 degrees F. He sleeps poorly and has frequent night sweats; appetite poor; no cough. He urinates frequently, without difficulty. The urine contains considerable pus, although he says it is now what he calls quite clear, not containing as much pus as it does at times. Upon examination a large, rather firm, quite fixed tumor is easily felt in the region of the right kidney. All other organs appear to be normal. A clinical diagnosis could be made of cystitis with pyonephrosis of right kidney, probably of gonorrhoeal origin.

The main questions to be determined were: Is the left kidney already involved, and is it able to do the work alone, provided the right kidney be removed? To determine these points, on Feb 19, 1898, I collected the urine with my instrument. Owing to the presence of the cystitis, the bladder was thoroughly irrigated with sterilized water after the instrument was introduced and fixed in position. The urine all came from the left side, not a drop was found to come from the right kidney. The analysis of the urine thus obtained showed: amount in twenty minutes 14 c.c.; perfectly clear, dark amber, acid; urea 2.3 per cent.; albumin, very slight trace; very few flat epithelial cells, scattering leucocytes and a few cylindroids. The value and efficiency of the instrument are clearly demonstrated in this case.

Notwithstanding the existence of cystitis and a large amount of pus in the urine, we were enabled by the instrument to attain perfectly clear, practically normal urine from the left kidney. It demonstrated to us that the left kidney was normal and that it was doing all of the work. The amount collected, 14 c.c. in twenty minutes, is equivalent to 1008 c.c. in twenty-four hours. By actual measurement the amount passed in twenty-four hours was 1057 c.c. This again shows that the left kidney was doing all the work, and demonstrates how perfectly the septum is formed by the instrument in the bladder. It being satisfactorily shown that the left kidney was normal and able to carry on the work alone the patient was operated on Feb, 21, 1898. A long oblique incision was made beginning near the outer end of the twelfth rib and extending downward and forward internal to the anterior superior spine of the ileum. The kidney was found embedded in an immense mass of thickened, firm, connective and adipose tissue containing numerous foci of suppuration. One large perinephritic abscess containing from 100 to 200 c.c. of thick yellow pus was evacuated. It lay between the superior pole of the kidney and the inferior surface of the liver. The kidney was found to be a mass of innumerable small abscesses. There was no dilatation of the pelvis. The whole kidney was so involved in a dense connective tissue mass that no pedicle composing the vessels for ligation could be formed. Two large angular clamps were therefore applied to grasp the renal vessels, and the kidney with considerable of the connective adipose mass removed. The clamps were left in place and the wound packed with plain sterilized gauze. Considerable shock followed the operation and for forty-eight hours the patient was quite low. At the end of this time the clamps were removed. He

now began to improve rapidly, temperature became normal, and he left the hospital March 12, less than three weeks from the date of operation, with the wound almost healed. The cystitis improved remarkably, the urine, which he was passing freely, contained but very little pus when he was discharged.

Inoculations made from the perinephritic abscess on blood serum agar developed a diplococcus resembling the gonococcus, which died out in the second generation. The kidney upon examination was found to be tuberculous and the secreting portion practically destroyed.

Case 3.—Mrs. S., age 39 years, American, has been suffering many years with what was supposed to be cystitis. She had painful and frequent urination with pyuria, the frequency becoming so great that she was obliged to wear a urinal constantly. She also suffered with a burning pain in the sacral region, which frequently extended into the thighs. She had some pain in the lumbar region, which was always referred to the left side and no pain on the right side. She was treated for years for bladder trouble, receiving all manner of irrigations, local application, etc., without benefit. She then came into Dr. J. Frank's hands, who, upon cystoscopic examination, decided for the first time that her trouble was not located in the bladder. Dr. Frank tried cauterization of the ureters, after Kelly's method, and, although he succeeded repeatedly in catheterizing the left side could never succeed on the right side. There was no tumor to be felt in the region of the kidney on either side, but some pain was always referred to the left side. Through the kindness of Dr. Frank I was asked to examine her with my instrument. This was done, March 10, 1898, with the following result:

	Right.	Left.
Amount collected in 20 minutes.	8 c.c.	10 c.c.
Color	Pale, milky, cloudy.	Clear, light amber.
Reaction	Neutral.	Acid.
Urea	0.05 per cent.	1.05 per cent.
Albumin	Well marked quantity.	Small amount.
Microscope	Pus-scattered cells and in large clumps or masses. Few red blood cells.	Few flat cells and an occasional leucocyte.

No bacteriologic examination was made.

The examination demonstrated conclusively that the disease was located in the kidney and in the right one alone; the left kidney was secreting practically normal, healthy urine notwithstanding the fact that the pain had always been referred to the left side. The character of the fluid obtained from the right side, thin, purulent, albuminous, neutral, 0.05 per cent. urea, showed that the secreting portion of the kidneys must be almost entirely destroyed with little else than a pyocystic condition remaining.

Upon the results of this examination Dr. Frank removed the right kidney March 19, 1898. He found the kidney practically destroyed, nothing but a multiple, cystic, purulent, tuberculous mass remaining. The ureter was much thickened and dilated. The patient recovered. This case illustrates a very important point which has been observed before, namely, the pain is not always referred to the diseased side. This patient never complained of pain in the right kidney, the diseased one, but always in the left kidney, the apparently healthy one.

Case 4.—Mr. S., age 30 years, decorator, good family history, never seriously ill and no sequelae to the usual diseases of childhood. States he had a serious and continuous hematuria eight years ago, which persisted for eighteen months, then ceased. Four years ago he had a severe fall on the walk, but noticed no trouble from it. Two years since he again noticed the hematuria for which he consulted an eminent specialist who made a cystoscopic examination, thought he saw a papilloma of the bladder and advised exploration. The patient drifted away and after two years consulted Dr. Whitfield who referred him to Dr. L. L. McArthur for diagnosis.

Examination revealed a somewhat anemic condition of a

young man of good physical development without a subjective complaint. Blood examination showed lowered blood count, relative proportion normal. No plasmodium. The urine was constantly bloody, although the amount of blood present varied somewhat from time to time. It was always intimately mixed and unaccompanied by clots of any dimension. The amount of urine in twenty-four hours was 543, sp. gr. 1020, and albumin; no sugar; no pus. Microscopic examination showed no elements except the blood and an occasional blood cast.

Through the kindness of Dr. McArthur, I had an opportunity to use my instrument on the patient. The result was most satisfactory and very striking. The urine from the right kidney was perfectly clear, and normal in every respect while that from the left kidney contained all of the blood, demonstrating absolutely the left kidney as the source of the hematuria.

These four cases are by no means all that have been examined as I have made now some forty examinations. Each of the four cases mentioned, however, illustrates some particular point and taken together they demonstrate the wide range of applicability of the instrument.

Case 4 is an absolute demonstration of the completeness and perfectness of the septum or watershed formed in the bladder. A more beautiful demonstration could scarcely be imagined; in one vial the red, bloody urine, while in the other perfectly clear, normal urine.

Case 2 demonstrates the fact that clear normal urine can be obtained from the kidney notwithstanding the presence of a purulent cystitis.

In Case 3 the use of the instrument led at once to a correct localization of the disease and the side involved, when the symptoms all pointed to the opposite side as the one probably diseased. This much for the clinical aspect of the subject. Concerning the mechanical use of the instrument it may be said that this is not difficult. A few simple rules that have been sufficiently detailed elsewhere are all that are necessary to follow. Most of these are such as would naturally suggest themselves to any intelligent physician attempting to use such an instrument. Some may appear trivial but all of them have been found by actual experience to be necessary in order to guard against a possible error or to facilitate the use of the instrument. By following these simple rules I feel certain the results will be most gratifying and the necessity of laying both kidneys free on the back to determine the presence and extent of disease in them as recently recommended by Edebohls (*Annals of Surg.*, 1898, xxvii, 425) will no longer exist.

DISCUSSION.

Dr. McARTHUR of Chicago—I have used this instrument and bear willing testimony to the excellent results. Very few of us who have attempted ureteral catheterization have done so without experiencing great difficulty, but it is now easy to obtain the urine in two separate bottles, and I have been charmed with the result. Take the case of a man who has passed bloody urine for years without any symptoms clinically or any evidence microscopically of a disease, and you have a case that will at first puzzle you. In such a case, to have two bottles of urine side by side will convince you that the blood is coming from above, and that the trouble is in the kidneys. In the same way an enormous tumor of the right side, which needs to be diagnosed from a cyst of the gall-bladder or a cystic kidney of the right side, will be proven—although previous examination of the urine has shown nothing of interest—to be a cystic kidney, and not a cyst of the gall-bladder, by the total absence of any urine from that side. An incision can be made and the diagnosis confirmed.

INJURY TO PERIPHERAL NERVES AND THEIR SURGICAL TREATMENT.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY A. H. LEVINGS, M.D.
MILWAUKEE.

It may be stated without fear of successful contradiction that the subject of injury to peripheral nerves is one which has not received any very extensive consideration from surgeons. It is indeed true that the frequency of nerve injury is not great when compared with injury to bone, muscle, artery or vein, but when such an injury does occur, especially if to a principal nerve, the importance of the injury is unquestioned. If a motor nerve be divided, its function throughout the area of its distribution is at once arrested, and this loss of function, excepting some slight restoration which may come from anastomosing branches, remains until the continuity of the nerve fibers has been re-established.

The opinion almost universally held by pathologists and surgeons is that certain characteristic changes occur in a peripheral nerve after division, these changes being more pronounced in the terminal than in the central portion of the divided nerve. The changes consist in the breaking up of the medullary sheath into fat drops, and their absorption with a disappearance of the axis cylinder, the neurilemma sheaths alone remaining. It is also generally accepted that following the section of a nerve, if it be properly sutured, regeneration commences in the central end by a splitting up and growth of the axis cylinders which are projected to and through the neurilemma sheaths to the very peripheral portion of the nerve; following this medullary sheaths are formed around the axis cylinders. Some hold that regeneration is effected through the nuclei of the neurilemma.

It was for the purpose of determining, as far as possible the extent of nerve degeneration after section, and the manner of the regenerative changes, as well as the best method of surgical procedure in divided nerves, that I undertook a large number of experiments upon the sciatic nerve of different animals. Eighty-five sections of the sciatic were made, and seventy specimens were taken and examined, both macroscopically and microscopically. So far as my experimental work goes it seems to demonstrate that the presence or absence of degenerative changes in a divided nerve depends very largely upon the treatment instituted, and also, to some extent, upon the state of health of the animal operated upon.

If a divided nerve be immediately sutured, or if a gap caused by resection be immediately bridged with some suitable material, and the work be done aseptically and properly, but slight degenerative changes will take place either in the distal or proximal portion of the nerve; and the nerve's function will, in the great majority of cases, be quickly re-established.

On the other hand, if the nerve ends be not approximated, if an interval caused by resection be not bridged, or if suppuration occur in the wound, then pronounced degenerative changes will occur in the nerve, more especially in the terminal portion, and a restoration of function will not occur. In opposition to the oft-repeated statement that "a divided nerve will first degenerate throughout its entire peripheral extent, and be absorbed and following this, regenera-

tion will take place through a branching and shooting of the axis cylinders before function can be restored," stands the clinical fact so often observed, that after section of a nerve and immediate suture, function, both motor and sensory, has been established in a few hours or days, confessedly too soon for the complicated process of degeneration to have occurred.

Neither in analogy nor in physiology am I aware that there is anything which would bear out such a statement. It is supposed by Howell and Huber that in the normal nerve fiber the nutrition of each internode is directly controlled by the internodal nucleus; and that the metabolic activity of the nucleus in turn is influenced by trophic impulses received through the axis cylinder from the nerve centers. When the flow of these impulses is interrupted, the metabolisms of the nucleus and its dependent structures, myelin and internodal protoplasm, are altered, and the degenerative changes in the myelin and axis cylinders take place. After division of a nerve, anything which connects the two ends, whether it be by immediate suture or by filling up a gap between the separated ends with some suitable material, seems to render possible the continuance of these trophic impulses to the peripheral portion of the nerve; thereby sustaining metabolic activity, preventing degenerative changes and favoring repair and the early restoration of function.

An examination of my specimens convinces me that the neurilemma with its nuclei plays an important part in the restoration of a divided nerve. If a longitudinal section of a nerve be examined shortly after function has been restored, one will find at some distance from the place of union the nerve fiber in a normal condition. As one approaches the line of union the nerve fibers grow smaller, thinner and fewer, and when at the line of junction there will be seen a leasch of fine neurilemma strands crossing the field and coming from both directions. Some of the fibers have a medullary sheath, while the major part have none. Both the central and distal portions of the nerve seem to take an active part in the projection of the neurilemma threads across the line of section.

Essentials to a successful operation.—1, absolute asepsis, for without this we cannot hope to succeed; 2, the nerve should not be separated from its connective tissue surroundings; 3, the nerve ends should be approximated squarely and evenly, and without tension; 4, if an inch or more of the continuity of a nerve be lost the gap should be bridged with some material having longitudinal strands or fibers; 5, contrary to the common belief, absolute rest of the limb is not an essential to success. The methods of operating may be divided into immediate suture, bridging a gap and secondary suture. A divided nerve should be united at the earliest possible moment, as this will lessen degenerative changes and will favor the early restoration of function. Where there has been a simple section of the nerve, or a resection of less than an inch, the nerve ends may be approximated by slight stretching and held by two sutures placed at right angles to each other; the nerve ends should be allowed to just touch each other. If the stitches are drawn tighter than this, the nerve fibers will be bent at a considerable angle near the ends, and the restoration of function will be much hindered.

Restoration of function.—In nine resections of the sciatic of less than an inch, and in thirteen sections with immediate suture, function was restored in one case

in five days, in one in nine, in two in ten, and in one each in thirteen, seventeen and twenty-six days respectively. Three of the animals died, and of the remainder function was imperfect at the end of thirty days. The results in a few are not stated. The success of the operation depends very much upon the technique; and in dogs upon their condition. Operations done upon unhealthy dogs, or during the summer when they may be pestered with flies or fleas, give poor results.

Filling a gap.—In cases where an inch or more of the continuity of the nerve has been lost, one of several methods may be resorted to for the purpose of supplying the deficiency. The nerve may often be stretched sufficiently to approximate its ends. Forcible stretching of a nerve in order to approximate its ends has not, in my experience, been productive of good results, and I do not believe it is desirable. Forcible stretching produces degeneration and favors paralysis. Splitting of one or both ends of the nerve and turning a flap or flaps, has been and is practiced. This method does great injury to the nerve and has nothing to recommend it. The flap does not remain as a vitalized part of the nerve, but simply acts as a bridge through which the nerve fiber must grow, and the bridge is badly situated for the purpose. The flap method was practiced three times in my experiments; in one case some slight restoration of function made its appearance upon the fifteenth day. There had been in this case resection of one inch of nerve. The other two experiments were failures.

Bridging the gap with a piece of nerve taken from another animal is an excellent method, and has but one objection; the technique is complicated, requiring an animal and two operations instead of one. In a dog, after resection of one inch of the sciatic, I introduced a like piece of the sciatic from a rabbit. After fifty days there was no return of function; but of course this single experiment proves nothing. In three instances I brought the ends of the resected nerve inside of a piece of decalcified bone, running threads from one end of the nerve to the other. The results in these experiments were not as successful as by some other methods.

Bridging the gap with silk threads.—Auger, Assaky and Glück had used this method for bridging gaps in tendons, and Assaky applied it to bridge defects in nerves, using catgut. Abundant experience has shown that when a portion of nerve up to three inches has been resected and the gap filled with some suitable material having longitudinal fibers or strands, and thus indirectly connecting the nerve ends, this bridge will act as a scaffolding through and upon which nerve fibers will be projected, filling the gap and re-establishing the nerve function. Experience has shown that silk strands, preferably six in number, stretched from one end of the nerve to the other, act as such a scaffolding and fulfill the indication extremely well. Seven experiments were made with the silk bridge, having resected from one to two and one-half inches of the nerve. In one case function was restored in twelve days, in others in twenty-one, twenty-two, twenty-five and forty-six days, respectively; one animal escaped, and of one there is no record.

Bridging the gap with muscle.—While making these experiments it occurred to me that a piece of the adjacent muscle might be used to advantage to fill the gap, as it was always at hand, was porous, and had

longitudinal fibers, and having the additional advantage of affording a vitalized bridge. Thirty-eight experiments were made with a bridge of muscle. In my earlier experiments the small piece of muscle was detached entire with its fascia. In the latter experiments, the piece was detached only at the ends, leaving it connected in the middle and thus insuring the continuance of its vitality, and giving more uniform and better results. In these experiments the extent of nerve resected varied from one to three inches. In two cases function was restored in 10 days, and in others in 12, 17, 22, 26, 28, 29, 30, 31, 35, 40, 42, 50, 51, 52, 75, 90 days, respectively. Some of these operations were secondary. In one case, after resection and prevention of union, the bulbs were after a few weeks resected and a three-inch piece of muscle introduced. Function was restored in forty-two days.

I am able to report the following case in which a secondary operation was done and pieces of muscle were used to bridge the gaps: Mr. J. B., aged 46, consulted me in January last on account of an injury which he had received in 1869 by falling upon a sharp scythe and cutting the ulna and median nerves in his right wrist. In the closing of the wound no attempt was made to unite the nerves, and there occurred at once complete loss of sensation in the area and paralysis of the muscles supplied by these nerves beyond the site of division. At the time the patient presented himself to me there was partial restoration of sensation in the hand, but paralysis was still complete with great muscular wasting. On February 5 I cut down upon the nerves and resected the bulbs. In the case of the median these were indirectly connected by a band of connective tissue. There was absolutely no connection between the bulbs on the ulnar. There was a gap of more than an inch in the ulnar and of three inches in the median. These gaps were bridged with pieces of muscle taken from the superficial flexors. After the operation there was absolute loss of sensation in the hand. In six weeks sensation was fairly well restored excepting in the terminal phalanges; and now after four months, sensation is almost normal. Muscular function has not up to the present time been much improved, although there is a seeming gain, especially in size and control of the muscles of the little finger, and to some very slight extent, also, in the thumb.

I would submit the following conclusions:

1. That immediate suture, or immediately filling a gap after resection, prevents marked degenerative changes in a nerve.
2. In gaps of one inch or more it is preferable to put in a bridge rather than approximate the nerve ends by stretching.
3. That the new nerve fibers are formed by the nuclei of the neurilemma, and that both the terminal and the central ends take a prominent part.
4. That the operation, to succeed, must be done aseptically.
5. That in approximating the nerve ends, or putting in a bridge, the sutures must only allow the abutting ends to touch.
6. That for the purpose of filling a gap there is no material in use at the present time which compares with muscle.

DISCUSSION.

Dr. CHARLES A. POWERS of Denver—I would like to relate a case which occurred in my own practice, of a somewhat similar nature. It was the result of a railroad accident causing a lac-

eration of the external popliteal nerve. The wound was cleaned out and in six weeks I united the ends of the nerve by bridging with a piece from the sciatic nerve of a dog. Before uniting the ends were about four inches apart. I used fine black silk thread, passing it merely through the sheath of the nerve, simply allowing the cut ends to come in contact, and the wound healed by first intention. Sensation began to return on the sixth day and was complete in four weeks, but function has never returned. As to the choice of material to employ in bridging a nerve, I think, perhaps nerve tissue itself is as good as anything. Dr. Levings seems to have gotten excellent results from muscle tissue, but both are easy to get.

Dr. R. H. REED of Rock Springs, Mont.—The question is one of great interest to all of us, as we are constantly coming in contact with emergency work of this kind and it is necessary for us to give our patients the best possible results. If the function of the nerve is destroyed and the ends can not be brought together, the distance being so great that bridging would be of considerable length, it is often necessary to find some other method of restoration. It has been shown that the proximal end of the nerve is the one where regeneration commences, which is modified by the amount of nutrition at the distal end. By using neural infixation in the way I illustrate on the blackboard, the function of the injured nerve is readily restored. Galbraith first demonstrated this in a case of injury to the musculo spiral nerve, and I have secured very good results in a number of cases where I have employed it, motion and sensation being restored. As to the time being several months before regeneration takes place, this is a mistake, as in several cases in which infixation has been employed, the function of the nerve has been restored in ten days. I have seen it show itself in five days, and in thirty days the use of the arm has been complete.

Dr. LEVINGS, in closing—As to Dr. Powers' case, in which sensation was restored but not function, this is often the case and has occurred in my own practice, I believe, owing to an anastomosis of collateral branches. Concerning the material to be used, I believe silk is the best. I have employed catgut, but it fails. As to the bridging of a nerve, there is nothing that can be said against it except that it requires an animal and two operations. The nerve does not retain its vitality as a nerve, but simply as a scaffolding. It used to be thought the two ends of the nerve were healed and the integrity of the axis cylinder retained, but this is incorrect. I seldom make a bridge of more than three or four inches in length. Dr. Reed's method is one that is well recognized and it is all right where it can be accomplished, but the nerves are often widely separated. In a case where the ulna and median have been divided, you only have the radial left, so that the method could not be employed under such circumstances.

SURGICAL TREATMENT OF PERITONEAL TUBERCULOSIS.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY BYRON B. DAVIS, M.D.

OMAHA, NEB.

With one exception the recent writers I have consulted are in full accord in the assertion that laparotomy is a potential factor in the cure of peritoneal tuberculosis. Curtis (Twentieth Century Practice, Vol. viii), says that he is of the opinion that the disease is not so fatal after all has been supposed, and that many of the cases of recovery after laparotomy are instances of spontaneous involution. On the other hand, from Koenig, who in 1884, first brought this mode of treatment forward and proposed it as a formal measure, reporting three cases cured, to the latest writer on the subject, most of those who have had experience with the method have been in accord in asserting its value. The early dissenters from Koenig's doctrine were men who had not tried the treatment. A few trials usually convinced the most skeptical. The percentage of cases cured by laparotomy is variously stated at from 35 to 80 per cent. The former figure is probably too small and the latter too large. Unfortunately there seems to have been

very little account taken of the stage of the disease at which operative interference was undertaken, or of the organs, other than the peritoneum, involved.

Though in the majority of instances simple incision through the abdominal wall has been sufficient to produce the desired result, there are frequent cases in which more than this must be done if the best results are to follow. If, for instance, tuberculosis of the tubes or ovaries antedates the peritoneal infection, permanent cure following simple abdominal incision could not be counted upon with any degree of certainty. Temporarily the desired object might be obtained, but with a tube or ovary centrally diseased, a second infection of the peritoneum would be imminent. In such a case the operator serves his patient best if he removes the tube and ovary in order to guard the peritoneum against a reinfection. In the same way, if a tuberculosis of the intestines, of the appendix or of the mesenteric glands is the source of the peritoneal infection, and the disease at the original focus is still active, to expect permanent immunity—the primary focus being untouched—would be scarcely reasonable. The omission of the removal of the primary focus of the disease is undoubtedly frequent, and it is also believed that late relapses—really new infections from the original source—are much more numerous than is generally supposed. The late relapse is a proof of the incompleteness of the operation.

An operation may be incomplete because the operator fails to recognize the primary focus of the disease; because such focus cannot be removed without too great risk to the life of the patient, or because the operator fails to recognize the menace of a second infection. So important do I consider this, that it is my practice, when not readily apparent, to make a careful search among the abdominal viscera when operating for this disease, in order to find and remove everything which seems suspicious or threatening. The only contra-indication to the removal of the primary focus is when it cannot be done without too great risk to the immediate life of the patient. The question of how extensively to remove the diseased tissue must be decided on the merits of each individual case. In deciding how much the patient can safely endure, the surgical judgment of the experienced operator will seldom lead him astray. If no primary focus of disease is found, we are to conclude that it is so slight that it has been overlooked, that the disease originated from a distant part of the body, that it is of the so-called hematogenous type of infection, or that the primary source of infection has undergone spontaneous involution.

Shall we irrigate or not irrigate? The question of irrigation may safely be left to the taste, choice or habit of the operator. Unless there is found in an individual case a special reason for irrigation, as broken down caseous masses, pus or flocculent serum, nothing is to be gained by the use of irrigation. In 308 cases collected by Aldibert the most favorable results were found among those in which the abdomen was merely opened. Perhaps a tendency to irrigate the worst cases, and to omit the measure in the less severe, will account for this discrepancy.

Shall drainage be used or primary suture be employed? For reasons which I hope to make plain when speaking of the manner in which the cure is produced, it is my opinion that drainage is a real detriment to cure, and that where it is safe to omit

drainage and close the wound at once the best results will be secured.

The question of the breaking up of adhesions is also one to which it is not best to attach any hard and fast rules. If old and firm and extensive, little will be gained and much risk will be run, if one is too diligent in this direction. The fact that new adhesions will almost immediately form, that the integrity of the bowel is likely to be compromised, and the additional shock which too much energy in this direction entails, all speak for conservatism in dealing with adhesions. The curative ratio is fully as high, as far as it has been possible to ascertain the results, where dense adhesions have been allowed to remain. On the other hand, if any adhesions threaten to produce intestinal obstruction by causing angulation or constriction, if they are new and easily separated, or if they prevent access to a supposed primary focus which it is desired to remove, they should be carefully separated.

Why does the performance of abdominal section cure these cases? This question is approached with a great deal of hesitation. That it does cure is abundantly proven by hundreds of recorded cases. A recent experience in two cases, in which I had the privilege of doing secondary laparotomy for other purposes, and in which I found perfect cure of the peritoneal tuberculosis, has brought this subject before me with renewed interest. A variety of ingenious theories have been brought forward, most of them entirely unsatisfactory, a few which look reasonable. In order to study the phenomenon advantageously it may be well to consider the histological changes which occur in the tubercle during the process of healing. Recall for a moment the histological elements of the tubercle. First, there is an accumulation of round cells (lymphocytes) about the group of vessels at the point of infection; next, some of the round cells in the center of this mass are transformed into epithelioid cells rich in protoplasm; multiplication and growth of same; one or two giant cells formed by nuclear proliferation of epithelioid cells; the next step is the formation of the connective tissue framework; tubercle bacilli are also present. In the young tubercle the round cells predominate; then the epithelioid cells gain the ascendancy, these last slowly enlarging by the swelling of their protoplasm. In the completed tubercle the connective tissue takes a concentric form at the periphery; it is sometimes very delicate, scarcely perceptible, sometimes strongly developed, forming a sort of capsule for the tubercle, and is endowed with fibroblasts. In the center of the tubercle the connective tissue forms a very delicate stroma. Only very seldom is the central framework strongly pronounced, and in old tubercles it is scarcely perceptible between the closely packed epithelioid cells. Later in the history of the tubercles caseation occurs in the center, and then the connective tissue framework at the center disappears. Gatti of Turin, to whom I am indebted for much of the material used in the preparation of this paper, has carefully studied the development and decadence of the tubercle, and divides its life into three stages:

1. The fibrous stage, which includes histologically the miliary tubercle, the diffuse and the first beginning of the nodular form.

2. The mixed fibrous and caseous stage (præcaseous), which makes the transformation from the fibrous to the caseous tubercle.

3. The caseous stage, after this transformation has been completed.

Having in mind now the specific elements of the developed tubercle, an effort will be made to trace its involution after a curative laparotomy. It is to be noted that it has been proven by Gatti's numerous experiments upon guinea pigs, rabbits and dogs, that if the operation is performed before the fibrous tubercle has reached its full development it is without effect.

To Osler seems to be due the credit of making the first histologic study of the process of healing after an abdominal incision. He found fibrous tissue holding in its meshes a few giant cells and isolated tubercle bacilli.

Pichini made a microscopic study of peritoneal tissue from a cured case, and concluded that after operation the tubercle underwent a connective tissue transformation.

Riva also found a growth of connective tissue, but observed that the process of transformation, instead of advancing from the periphery toward the center, had its beginning in the center of the tubercle.

Kischewsky, who was the first to experiment with the lower animals, concluded that the disappearance of the tubercle was due to leucocytic infiltration, followed by an active development of connective tissue. Up to this time, 1894, observers had been in accord in the belief that healing of the peritoneal tubercle is due to a fibrous transformation of the cellular elements to sclerosis. The most noteworthy work in opposition to this teaching is that of Gatti, of Turin, who in March, 1894, and again in March, 1896, reported the results of carefully conducted experiments upon animals. The abdominal sections were made at all stages, from a few days to many months after the inoculation. The tubercles, in process of healing, were examined at every stage from twenty-four hours after the operation until complete repair had occurred. A brief abstract of Gatti's findings will be of interest: During the first week after the operation an amount of reddish serous fluid exudes into the free peritoneal cavity and gradually diminishes in quantity from the first to the seventh day. The first to third days showed the peritoneum slightly reddened; the third to seventh days showed the tuberculous tissue slightly increased in volume. The vascular congestion was very slight and restricted to the periphery of the tubercles and to the normal peritoneum between them. The connective tissue showed no changes, its cellular elements being in the same ratio as before, and above all there was no proliferation of the fibro-blasts. The round cells were neither more numerous nor changed in appearance. The epithelioid cells appeared unchanged and the phagocytosis was no greater than before. Twelve days after the operation beginning hydropic degeneration of the epithelioid cells was observed, drops and rings of fluid occurring in the cells. The entire protoplasm was here and there changed into a fluid containing the floating nucleus. No increase of the fibro-blasts was present. The tubercle bacilli were somewhat more numerous; phagocytosis was not increased. Gatti further asserts that connective tissue proliferation after laparotomy seldom occurs, and only to a limited extent, and that it is not occasioned by the operation. "In general," he says, "it may be absolutely observed that the increase of the stroma goes hand in hand with the development of the tubercle. If the tubercle is really influ-

enced by the laparotomy, and the specific irritation which has occasioned the development of the epithelioid, lymphoid, endothelial and connective tissue cells is arrested or diminished, so is the further growth of all these kinds of cells at the same time checked."

Continuing the description of the involution of the tubercle Gatti shows that, as the epithelioid cells degenerate and the fluid is absorbed, vacuoles are formed and the surrounding zone of connective tissue simply presses in to fill the space occupied by the vacuoles. Where the tubercles were already rich in connective tissue before the operation, this will be present in tolerable abundance in advanced healing; but it is only the connective tissue already existing before the process of repair began.

By the time the epithelioid cells have undergone hydropic degeneration all tubercle bacilli have disappeared from the tubercle. The reparative stages in the caseous tubercle are much the same except that the caseous masses are not absorbed, they being merely surrounded by connective tissue capsules. Cure by operation in this stage is less sure than before caseation has occurred. But even when healing does not follow, the development of the disease is usually slowed or completely checked.

The conclusion is reached that healing is not brought about by connective tissue growth, and that this error was made by the examination of cases that had fully healed. Connective tissue masses were found and the conclusion formed that healing occurred by pressure upon the specific elements of the tubercle by proliferating connective tissue. Only by examining animals at all stages after the operation can the process of healing be correctly studied.

Mazzoni asserts that the healing process consists partly of increase of connective tissue and partly of a cystic degeneration. This cystic degeneration doubtless corresponds to Gatti's vacuolization due to hydropic degeneration of the epithelioid cells.

I would suggest that it is probable that tubercles can heal by either of the processes given, depending upon what force is acting, to produce disappearance of the tubercle. If the process is set up by causes extrinsic to the tubercle itself, as by an improvement of the nutrition of the patient, causing greater powers of resistance to the inroads of the disease; in other words, if the protective power of nature to wall off against danger asserts itself, as occurs in spontaneous healing, the histologic process is probably a connective tissue proliferation, with pressure upon the central specific elements of the tubercle, causing their degeneration and absorption.

If, on the other hand, the force at work is intrinsic, something that destroys the activity of the tubercle bacilli, the process would probably be a degeneration of the epithelioid cells, the consequent formation of vacuoles, and the collapse of the enveloping tissue. A moment can now be profitably given to speculation upon the force at work which brings about the healing of a peritoneal tuberculosis after an abdominal incision. Many theories have been exploited, but time does not permit even mention of all of them.

Nannotti and Baciocchi think that the operation sets up an inflammatory reaction of the peritoneum, accompanied by a noteworthy increase of its absorbing power, phagocytosis, degeneration of the cellular elements, connective tissue growth and vascularization of the tuberculous nodules, with successive fibrous transformation.

Stechegoleff attributes the curative effect of a laparotomy to a combination of traumatism of the peritoneum, thermic influence, penetration of air into the abdominal cavity, and perhaps the action of light, causing irritation followed by an inflammatory deposit.

R. T. Morris of New York concludes from experiments, that recovery after operation occurs because putrefactive bacteria produce a toxalbumen in the peritoneal fluid which is fatal to tubercle bacilli in the peritoneum. The reason it is more effective in tuberculosis of the peritoneum than in the knee-joint and elsewhere is because of the exceeding abundance of the lymphatics in the peritoneum, bringing toxic agents, which are absorbed, into close contact with the bacilli.

The theory formulated by Gatti is that the serum of the blood of a person suffering from peritoneal tuberculosis is a true antitoxin. The serum which pours into the peritoneal cavity after laparotomy comes into close contact for several days with the tubercles, destroys or inhibits the tubercle bacilli and thus is set up the chain of events which leads to complete healing.

If Gatti's description of the process of involution of the tubercle is the correct one, his theory seems the more reasonable. How much antitoxic power the serum of the blood of a person suffering with tuberculosis possesses I am not in a position to determine. Granted that it does possess potent antitoxic powers, its presence in the peritoneal cavity and its absorption by the lymphatics bringing it into intimate contact with the tubercle bacilli, would seem to explain very fully the curative effects of laparotomy.

The fact that cure does not occur if the laparotomy is done very early, before the completed fibrous tubercles have formed, Gatti attempts to explain by the fact that in the formative stage the tubercle bacilli are more resistant than they are later. I would suggest that it can very reasonably be supposed to be due to the fact that up to that time the antitoxic serum has not yet attained sufficient potency to be effective.

The fact that, in cases in which drainage is used the results are less favorable, is understood, if the cure is due to an antitoxin, for, with drainage, the antitoxin is drained away instead of being absorbed by the lymphatics of the peritoneum. The increased amount of serum thrown into the peritoneal cavity, with the greatly stimulated powers of absorption which a laparotomy produces, would cause a very large quantity of antitoxin to be brought rapidly into intimate relationship with the tubercle bacilli, causing their destruction.

In conclusion, although I do not for a moment claim that Gatti's hypothesis has been proven, it has been brought forward because it seems rational, and because it does not seem as if his work has received the recognition it deserves.

TREATMENT OF PURULENT TUBERCULAR PERITONITIS BY INCISION, WITH AN ILLUSTRATIVE CASE.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ROBERT REYBURN, A.M., M.D.

WASHINGTON, D. C.

Modern aseptic surgery has of late years achieved many magnificent results, but in no field have these

successes been so striking and wonderful as in that of abdominal surgery.

Among the later and by no means the least important of the triumphs of abdominal surgery, is the treatment of purulent tubercular peritonitis by free incision into the abdominal cavity, with thorough evacuation of all pus or septic material. Tubercular peritonitis we believe to be always a secondary infection from the tubercular bacillus, which has obtained entrance into the system, either through the digestive or respiratory organs. The following case, which recently came under the observation of the writer, is herewith given.

Was called in consultation with Dr. Wilder on Feb. 28, 1898, to see E. S. K.; mulatto; aged about 14 years. He was fairly well nourished and weighed about 110 pounds. He gave a history of exposure to inclement weather some ten days before I saw him, which was followed by symptoms of peritonitis. For four or five days he had suffered from irregular hectic fever, temperature ranging from 100 degrees to 102 degrees. On examination his abdomen was found enormously swollen, tense, and dull on percussion, and evidently filled with a large amount of purulent material. Operation by incision was advised and somewhat reluctantly acceded to. March 2, 1898, an incision one and a half inches in length was made one inch below and two inches to the right of umbilicus. Over a gallon of offensive, purulent material was thus removed from the cavity of the abdomen, and by means of an ordinary fountain syringe sterilized warm water was injected into the abdominal cavity, until it ran away again clear and without odor. A perforated rubber drainage tube was inserted in the wound. The patient experienced almost immediate relief from the operation. The abdominal cavity was washed out every twenty-four hours with sterilized warm water containing a little boric acid. After a few days this was done every forty-eight hours. His recovery was rapid and complete. His temperature in a few days fell to normal, and in three weeks he had entirely recovered.

He was carefully examined previous to the operation, and the only evidence he presented of tuberculosis was a limited dullness over the posterior surfaces of the apices of both lungs, with slight dullness on percussion and slight crackling on auscultation over the affected area. After he was convalescent, he was placed on cod liver oil and syrup of the iodid of iron, and I am informed that he is now (five months after the operation) in excellent health.

As has been well said by M. Watson Cheyne in his address delivered before the Section of Pathology, British Medical Association, at Montreal, September 1, 1897, tuberculosis, in the varying methods in which it attacks different portions of the body, presents some puzzling phenomena. As we all know, tuberculosis (the white death) in its various forms, causes about one-seventh of the entire number of deaths that occur annually from all diseases. Yet how varying is the progress and fatality of tuberculosis when it occurs superficially upon the skin as in lupus, when it occurs in the cervical glands, when it occurs in the lungs in the form we too well know as phthisis pulmonalis, or when it attacks the serous membranes of the abdomen and causes the disease known as tubercular peritonitis.

The life history of the bacillus tuberculosis as it is found in cases of lupus of the skin, would seem to indicate that it is not as virulent as many other pathogenic organisms. Cases of lupus are slow in progress, often exist for many years; and frequently only cause death when the patient's lungs become infected with the bacillus, thus causing phthisis pulmonalis. Why does this slow progress and fatality exist in lupus when contrasted with the acute and rapid infection of the system that we find in acute phthisis, or as it is often called, galloping consumption?

We believe that the true explanation of this is the nature of the tissues involved. When these bacilli

infect the skin, the irritation produced by them produces a layer of tissues around the bacilli through which they are often unable to pass, and the system is this way protected from their inroads. The same phenomena are often seen in postmortem examinations, on examining the lungs of persons who have died from other diseases than pulmonary consumption. In fact it has been conclusively shown that the vast majority of all persons, who die from any cause, after the age of 60 years, at some period or other of their lives have had deposits of tubercle in their lungs. These deposits of tubercle in the lungs often become surrounded or encapsulated by fibrous tissue, or may undergo calcareous degeneration and remain dormant during the lifetime of the individual. Unfortunately, however, this is not the usual history of tuberculosis of the lungs. The final destructive series of changes occurring in the lungs in phthisis pulmonalis, are due, not so much to the destruction caused by the bacillus tuberculosis, as to the infection of the system caused by the development and growth of myriads of pus-producing organisms, which attack the pulmonary tissues already weakened by the inroads of the tubercle bacilli.

The hectic fever with the debilitating sweats which



Lymphatic glands of peritoneum (rabbit).

accompany the later stages of phthisis pulmonalis, is evidently a septic infection by pus organisms. Tubercular infection of the peritoneum, however, in its rapidity of progress presents a marked contrast to most other forms of tuberculosis. As much damage may be done to the organism in a few days during the course of a case of tubercular infection of the peritoneum, as may be done in months or even years by other forms of tubercular disease. Why is this? The explanation of this is easily given by taking a look at the illustration accompanying this article, which is copied from J. Burdon Sanderson's *Hand-Book for the Physiological Laboratory*. The peritoneum, in fact in man and all higher animals, contains an immense mass of lymphatic glands and vessels, which probably comprise nearly one-half its area.

Absorption then from a structure of this composition goes on with immense rapidity, and putrid material of whatever kind, when it reaches the peritoneum, soon accomplishes its deadly work. Every physician knows how rapidly patients sink and die from the deadly peritonitis which follows perforation of the intestine in typhoid fever. Cases of abdominal surgery also where blood or serous exudation have escaped into the cavity of the peritoneum, and

have not been removed at the time of the operation, rapidly prove fatal from the same cause.

The treatment of purulent tubercular peritonitis by incision, either with or without drainage, is now thoroughly established by the record of such a large number of successful cases, that it is almost universally admitted by surgeons to be the proper procedure. An interesting query arises, how does the simple operation of incision cure? Many explanations of this have been given; some have believed that the entrance of air during the operation carried in at the same time other micro-organisms, which waged war upon and destroyed, by the formation of toxins, the tubercle bacilli. Other fanciful explanations have been given, which it is needless to repeat, but the true explanation is believed by the writer to be simply the bactericidal power of the lymph and blood serum which continually bedews the surfaces of the peritoneum.

As soon as the purulent material is evacuated from the abdominal cavity by drainage and thorough washing with sterilized water, the number of tubercular and other pathogenic bacilli present on the surface of the peritoneum, is reduced to a minimum. Nuttall has shown that the blood serum powerfully attacks and destroys all pathogenic bacteria and other harmful micro-organisms with which it comes in contact, and the living organisms become the victor in the fight, provided that the number of the invading micro-organisms is not too great. The battle between the hostile micro-organisms and the blood is just like that between two opposing armies. If the host of micro-organisms is not too numerous, the blood by the bactericidal power of its serum, vanquishes, and the result is the restoration to health, but if the powers of the system be weakened by any cause, or the number and virulence of the invaders are too great to be overcome, the pathogenic micro-organisms become victorious and the result is death.

SOCIETY PROCEEDINGS.

Michigan State Board of Health Quadri-Centennial and Conference of State and Provincial Boards of Health of North America.

Held at Detroit, Mich., Aug. 9, 10 and 11, 1898.

FIRST DAY.

The sessions of the first day were devoted entirely to the quadri-centennial of the Michigan State Board of Health.

The session was opened with prayer by Rev. JOHN MCCARROL, the delegates joining in the recitation of the apostles' creed.

The president of the State's health board, FRANK WELLS, then made his annual address. Among other things he said:

"The last quarter of the century has been notable for the development of two sciences, biology and sanitation. The application of this knowledge to the saving of human life and the prevention of human suffering has kept misery and despair from entering countless homes. The honor and applause which everywhere greet the warrior who is moved by patriotism and duty to noble deeds is justly due to Dewey, to Shafter, to Sampson, to Schley and to Hobson. Shall we not place, side by side with these worthies, to be equally remembered with gratitude the names of Pasteur, of Lister, of Koch?"

Mayor MAYBURY welcomed the delegates and remarked that they had come to a city where the doctors do not live by curing diseases, but by making the healthy healthier. Residents of Detroit, affirmed the mayor, have on an average from ten to fifteen pounds more advoirdupois than the inhabitants of other cities.

Dr. GIBBS, Detroit's health officer, spoke for Gov. Pingree. In lauding the beauty of the city, Dr. Gibbs feelingly averred

that for him there was only one more removal to make, and that was from Detroit to heaven.

The first paper on the program, entitled "A Quarter-Century of Sanitary Work," was by A. N. BELL of Brooklyn, N. Y., but in his absence was read by Dr. Henry B. Baker.

This was followed by an address from Chicago's health commissioner, ARTHUR R. REYNOLDS, on

PUBLIC HEALTH WORK IN MICHIGAN.

His address showed how readily a naturally dry subject might be made exceeding attractive to the public. A summary of his remarks is as follows: What God hath wrought through this Board is told in the statement that between 1890 and 1896 nearly 150,000 cases of sickness were prevented and more than 7000 lives were saved from premature death through the advice, instructions and supervision of the Board. It is not too much to say that the State Board of Health of Michigan has, in the language of our great classic in hygiene, Edmund Parkes, made growth more perfect, decay less rapid, life more vigorous, death more remote for every citizen within the boundaries of this fair State. At first blush it may seem that the field of usefulness of a State board of health is a narrow one. On reflection, however, we will discover that its function is as broad as civilization itself. It follows the citizen in all his dealings, through all his days. It begins at his birth, it has him under observation, whatever his mission, through all his life to its close, and it keeps careful vigil at his grave until the last vestige of his remains is crumbled into the dust whence it came. Every incident that lowers the vitality, that depraves the mind or that whets an abnormal appetite calls for its interference. It holds no despot's sway to club mankind along paths that are hard. It only asks that he be normal. It teaches no abstruse philosophy, but offers hope and regeneration to the weak.

In this work of sanitation there is nothing of the spectacular. There is none of the inspiration and the glory that reckon with a nation saved or a foe repulsed by feats of arms. Nevertheless, those who study understand that the proper appreciation of sanitary science defeats man's most relentless foes, and that neglect or defiance of her laws has brought destruction to nations in all time. If unhappy Spain had no other sin than that of having maintained at our doors a preventable breeding-place for yellow fever, she richly deserves the wrath that has been visited upon her. The greatest number of deaths in the centers of population is caused by diseases of the nervous system, the worry diseases. The number is steadily increasing year by year, and this increase is due to the keenness of commercial competition and the fierceness of the struggle, not alone for existence, but for wealth. It is an almost universal rule that those who have labored and worried beyond their endurance leave a generation of weaklings to fritter away their substance and ultimately to pass from history forever. The lesson to be learned and the lesson that must be learned, is to stop fretting and stewing one's self into the grave, to leave a pitiful physical and mental inheritance to one's children. Natural law intends that man shall live and be useful, and not that he shall be degenerate or dependent, or that he shall prematurely die. The world is for man and his upbuilding, for the developing of his mental, moral and physical stature. The future sanitarian will broaden out upon this basis. He must educate the masses upon the known laws of reproduction and enable human beings to improve their breeding as the farmer improves all domestic animals by proper mating.

The remedy for the social evil that leaves such human wrecks in its wake must come through a thorough dissemination among the public of knowledge now chiefly held by those of the medical profession. Let parents and their daughters once fully understand the jeopardy girls are placed in by marriage with men who have lived reckless and impure lives, and there will be less need for surgeons to practice their art upon women in future. Let all understand that much of this danger and disease has its incentive in the semi-delirium caused by intoxicating drinks. When this is generally understood the young man who is known to be a rounder will not be hailed as a jolly good fellow, but as an evil thing to be shunned, as was the leper in the days of old.

But neither the sanitary millennium nor the social and economic millennium, nor the millennium of peace has yet arrived. Hellish war is still waged by civilized people and in the name of both God and the law, men are still legally marshalled out for slaughter. Sanitary science believes in war; but its warfare does not tend either to brutalize or to destroy life, but to save it, and to elevate it. Sanitarians believe in the war that regenerates and refines; the war for the defeat of Satan and the enthronement of Immanuel; a war whose weapons are reason, sweetness and light. To all who serve in such

warfare in this State, and to those who have brought sanitary work to its present perfection, I offer my most respectful homage. It is the Master's work, and I bid you Gode speed.

SANITARY WORK TWENTY-FIVE YEARS AGO

was then presented by Prof. R. C. KEDZIE, M.D. It was also put entertainingly.

At the afternoon session papers were read on the "Educational Work of the Michigan State Board of Health," by Prof. A. C. Lindsey, dean of Yale's medical faculty; on "Sanitary Conventions," by Benjamin Lee, M.D.; on "Annual Conferences of Local Health Officers," by C. O. Probst, M. D.; on "State Work for the Restriction and Prevention of Diseases," by John S. Fulton, M.D., and on "Municipal Restriction of Diseases," by Ernest Wende, M.D., Buffalo's Health Commissioner.

The evening session was occupied in five-minute addresses by various prominent sanitarians, among them Felix Formento of New Orleans, Hon. Le Roy Parker of Buffalo, Hon. John Avery of Greenville, Mich., Peter H. Bryce of Toronto, D. E. Salmon of Washington, J. N. McCormack of Bowling Green, Ky., C. L. Wilbur of Lansing, and J. N. Hurty of Indianapolis, and was followed by a reception and banquet.

SECOND DAY.

The morning session was occupied with the annual reports of the officers of the organization, presented by Benjamin Lee of Pennsylvania, president; Felix Formento of Louisiana, vice-president; Eleazar Pelletier of Quebec, treasurer, and J. N. Hurty of Indiana, secretary.

The report of the Secretary, Dr. J. N. HURTY of Indiana, showed an increase in membership for the year of three, one from Mexico and two from Canada. Secretary Hurty recommended that the conference adopt the old constitution of the national conference of boards of health, whose title was changed to the present one at the Nashville meeting last year. This was done with the exception of the annual dues clause, which is left to be prorated according to expenses.

The treasurer, Dr. ELEAZAR PELLETIER of Montreal, reported the reduction of debts left from the Nashville meeting of last year from \$357 to \$100.

The conference adopted a resolution asking compilers of vital statistics in the United States, Canada and Mexico to use the Bertillon system of making mortality census returns.

A by-law was adopted making it mandatory that on each alternate year the conference meet in Washington, on the ground that the attendance would be greater if a regular meeting-place were adopted.

After these business matters had been disposed of the convention settled down to the discussion of three questions suggested by the session yesterday, viz.: What are the principal lines of work of your board? How is each accomplished? What modification, if any, does the experience of your State suggest?

Dr. E. D. CROWLEY of Oakland, Cal., stated that the work of the State's health board is being vigorously pushed along three lines: The prevention of the spread of tuberculosis; the prevention of Texas fever in cattle, carried in from outside by the tick, and lastly, sanitary control over the State's harbors. In their efforts to stamp out tuberculosis in cattle, proposed legislative measures have been defeated again and again by a combine of wealthy cattle owners.

Professor LINDSLEY of Yale University spoke for Connecticut. The State Board there, he stated, had only advisory powers. The law governing sanitary measures in his legislature, he said, was to follow, never to lead, while the work of enlightening the public mind on sanitary reforms was like teaching a school where there were more truants than teachers. However, after twenty years' persistent work, the board is endeavoring to secure thorough sanitary administration in every town; to tabulate and publish vital statistics and have a thorough microscopic examination made of all water used for drinking and boiling purposes. One system of sanitary rules prevails in every town, and a county health officer is clothed with administrative power to see to their enforcement.

Delaware was represented by Dr. E. W. COOPER, who said his State Board was clothed with absolute power on its own inspection or on notice of grievance. It meets semi-annually and provides for a sanitary inspection throughout the State twice a year. Local boards are clothed with the same power as State boards, and education of the public along sanitary lines is carried on by means of circulars and public meetings held frequently.

Dr. J. A. EGAN, who represented Illinois, drew a picture of the State's sanitary condition. There is no mandatory statute enforcing the creation of local boards, and the business of the

State Board seems to be mainly the examination of doctors and midwives. No State Board of examining physicians is provided for. In one city of 15,000 population there is no health board, only a sanitary policeman, and disease runs rampant.

Dr. J. N. HURTY, for Indiana, said that the work of its State Board was hampered by defective legislative mechanism. Sanitary work is all crowded upon the secretary, who already has petitions from 250 towns asking him to come and investigate deplorable conditions.

At noon the delegates, with their ladies and guests, took cars for Parke, Davis & Co.'s laboratory, where luncheon was served. After a tour of inspection, the party were transferred to a steamer in waiting and given a ride to St. Clair Flats.

At the evening session the conference listened to a paper by GARDNER S. WILLIAMS, engineer of the Detroit water-works, on

PURIFICATION OF SURFACE WATER,

the opening wedge for a lengthy discussion. The paper was of necessity somewhat technical, dealing with experiments made with various purifying processes in relation to sewerage and bacteria, especially the typhoid bacillus. Mr. Williams stated at the outset that Detroit had never gone into the matter of purifying its water to any great extent, and he was therefore unable to give any extended local experiments. He referred to the development of purification of water in various countries, with copious explanations of the different processes. One of the points he made was that chemic analysis alone is not sufficient to show all the impurities of any certain water, but must be taken in connection with all available data concerning the source of supply, so as to establish a standard from which deductions can be made with any degree of certainty.

The question of filtration came up in connection with the main topic, and Dr. HURTY of Indianapolis, presented a number of stereopticon views of filtering plants, the most important of which was the sand filter in operation at Lawrence, Mass.

Mr. WILLIAMS did not commend the efficiency of mechanical filters, on the ground that they have not yet reached a stage of perfection rendering them thoroughly reliable, but they were championed by several physicians, who held that they not only gave satisfactory results, but were a necessity in small cities, where the first cost of the plant was the main question to be determined.

Dr. BRYCE of Toronto, said that one of the greatest factors for good water was the keeping of water in its state of natural purity.

THIRD DAY.

The Conference of State and Provincial Boards of Health closed its sessions with discussions on tuberculosis in all its phases. The walls of the convention were hung with maps showing that this insidious disease has killed more people than any other. Dr. Hurty of Indiana said one-seventh of all the deaths are caused by it. William Bailey of Kentucky declared that 1,200,000 people annually died from tuberculosis, and said that if sanitarians were but given the opportunity to fight the disease the saving would easily pay the country's pensions; that in two or three months the interruptions to commerce from the disease represented at least \$100,000,000.

After tracing the tubercle bacilli from its origin to the height of its growth in man, the conference discussed means of prevention. Discussions on this point ranged from "Care of Expectoration" to "State and Municipal Care of Consumptives."

The conference elected the following officers: President, of Toronto; secretary, J. N. Hurty of Indianapolis; treasurer, Felix Formento of New Orleans; vice-president, P. H. Bryce Eleazar Pelletier of Quebec.

PRACTICAL NOTES.

To Remove a Foreign Body from Under the Nail.—Alternately soften the nail with the end of a match dipped in caustic potash and scrape with a piece of glass until the object is reached.—*Journal de Méd. de Paris*, July 3.

Vesical Asthma.—One of the manifestations of autointoxication consequent upon hypertrophied prostate, is distress in breathing, which can only be relieved by emptying the bladder.—*Semaine Méd.*, July 6.

Salt as an Antiseptic.—According to the *Cronica de Ciencias Médicas de Filipinas*, the insurgents dress wounds with dry

salt or strong brine, from lack of the usual antiseptics, and wounds from firearms heal under it in four to five days.—*Semana Médica*.

For the Disinfection of Sponges.—Sponges can be boiled without injury in 30 per cent. prophylactic alcohol, Saul announces in the *Munich Med. Woch.* of June 14. He boils them two hours the first time; afterward thirty minutes. Anthrax spores are killed in ten.

Jequirity in Ozena.—Jequirity proved effective in a number of cases observed by Dr. C. Uriarte, that had resisted all other treatment. The after-effects vary with the individual and are transient, never serious. He uses it in a powder or salve, or in a 10 per cent. solution.—*Semana Méd.*, June 16.

Foreign Bodies in the Air-Passages.—Heller reports a number of serious cases in which prompt irrigation of the naso-pharyngeal space produced such efforts at expectorating or coughing, that the foreign body was expelled at once and life saved. He urges all to try this simple measure before resorting to tracheotomy.—*Munich Med. Woch.*, June 28.

Camphor Bromid in Chorea.—Bourneville and Katz describe a severe typical case of Sydenham's chorea rapidly cured with camphor bromid, increasing from 2 to 9 grams a day, March 9 to 22, again decreasing to 2 by April 6, confirming their previous announcements of its remarkable efficacy. The *Progrès Méd.*, July 16, contains cuts of the handwriting, during treatment and after it had become quite normal again, the final evidence of cure.

The Toxicity of Camphorated Beta Naphthol.—This has been established by Le Gendre and Deesquelle, who announce that the stomach will bear quite a large amount, if diluted in an inert liquid. The maximum for an adult is 1 c.c. a day. Injected into the peritoneum the daily maximum for an adult is 5 c.c. It can be incorporated with cocoa-butter for a suppository; maximum 35 centigrams a day. The absorption is always slow, and as the camphor is most soluble, the toxic accidents that have been observed were probably due to the camphor.—*Presse Méd.*, June 22.

Abrashanov's Method of Amputatio Femoris laterocaudyllica.—This method consists in sawing off the rear half of the patella, leaving the tendon still attached to the front, and after sawing off the lower end of the femur, cutting an oblong piece out of the posterior upper end of the tibia. The lower edge of this piece is then brought up to fit against the patella, while the long front edge fits the whole length across the stump of the femur. All the sawed surfaces are thus brought into juxtaposition, and the natural posterior surface of the upper end of the tibia, which has no bursa, forms the stump.—*Cbl. f. Chir.*, July 2.

Echinococcus of the Liver.—R. Lennhoff describes some observations (*Deutsche Med. Woch.*, June 30) which prove that an echinococcus can be differentiated by a peculiar furrow that accompanies each deep inspiration when the patient lies on his back. The abdomen rounds up smooth below the sternum except during inspiration, when the characteristic furrow between the sternum and the tumor attracts attention. A test puncture confirms the diagnosis. The patient should lie on his face a while before the removal of the cyst to dislodge the heavier contents from the rear.

Ox-gall in Biliary Lithiasis.—L. Gautier of Geneva has found that the prolonged administration of beef gall in small doses increases the solubility of the cholesterol and hence prevents the formation of gall-stones. He uses an extract reduced to one-tenth, decolorized, sterilized at 104 to 105 degrees C., combined with an inert powder, to make a pill containing 10 centigrams, one pill at the two principal meals. Patients formerly tormented with hepatic colic have no return of their attacks with this medication, which he continues or suspends according to indications.—*Semaine Méd.*, June 29.

Cosulating Injections for Erectile Tumors.—T. Anger has been using the following solution for this purpose for thirty years, with most satisfactory results: Water, 60 grams; sodium chlorid, 15 grams, and ferric chlorid, 25 grams, at 30 degrees C. He injects two to twenty drops in a small angioma and twenty to forty in larger ones, proceeding very gradually and limiting the injection to the part infected by peripheric compression of the tumor, left undisturbed for fifteen minutes afterward. The tumor subsides very slowly. If it has not all disappeared in three to six months he repeats the injection.—*Sem. Méd.*, July 6.

Success of Artificial Serum in Lead Colic.—The first indication is to purge and carry off the accumulated metal, but this is extremely difficult to accomplish, as purgatives usually refuse to act for several days. Prof. A. Delearde now announces that he has found that one injection of artificial serum will produce a copious diarrhea at once when there is lead intoxication, although in all other conditions it affects the kidneys, not the bowels. He considers it probable that the chlorid of sodium combines with the lead to form a soluble chlorid of lead, to which the prompt purging action is to be ascribed, which at once cures the pain, vomiting and headache. Paralysis is not affected.—*Nord Med.*, July 15.

Treatment of Strabismus.—At the July meeting of the Paris Academy of Medicine, Dr. Panas communicated some observations on this subject. He said that the squinting eye was the one which deviated most from the line of vision. Nevertheless strabismus was only apparently unilateral. If the phenomena accompanying this condition were analyzed in detail it would be found that the strabismus was always bilateral, and if it appeared unilateral that was because the patient only used the eye which was least affected, and in overcoming the deviation of this one exaggerated the obliquity of the other. As for therapeutic measures, Dr. Panas held that as the affection was bilateral there must be a bilateral operation. In 230 cases Dr. Panas performed tenotomy of both internal recti, and stretched them in addition, thus lessening their tendency to overaction. Dr. Panas never performs advancement, finding a simple tenotomy sufficient. In 220 cases he had never seen any overcorrection, or if there were a little it was only temporary. Of 220 convergent cases of strabismus, he had 190 in which the result was immediately successful. In those which were unsuccessful the result was not overcorrection but undercorrection. In ten cases Dr. Panas rectified this by advancement of the antagonistic muscles and in every case with success.—*London Lancet*.

The Laborde Treatment of Chloroform Asphyxia.—Herzog of Charkov has recently published in the *Deutsche Zeitschrift für Chirurgie* some experiments made according to Dr. Laborde's method (*vide JOURNAL*, Vol. xxx, p. 361, Feb. 12, 1898) of producing resuscitation in cases of chloroform and ether asphyxia by rhythmic traction of the tongue. The effect of making traction on the tongue is to stimulate its sensory nerves, and to bring about reflex contraction of the respiratory muscles through the medium of the central nervous system. Dr. Laborde recommends that the tongue should be seized firmly, and traction be made about twenty times in a minute. Up to the present time twelve cases have been recorded in which this method proved successful in asphyxia from anesthetics. For the purpose of testing Dr. Laborde's conclusions, Herzog made a series of experiments on dogs partially asphyxiated by means of large doses of chloroform and ether and found that, in nineteen cases, respiration was restored spontaneously in six, but that traction of the tongue was only successful in resuscitating three of the remaining thirteen. In these three instances the animals began to breathe again after traction had been made twelve times, and their recovery was complete; in two other cases respiration was restored, but the

cardiac action nevertheless failed, and although the respiration was kept up for sixteen and six minutes respectively the pulse did not rally and the animals died. The results obtained by Herzog are thus at variance with those of Dr. Laborde, who obtained resuscitation in the great majority of cases. It is probable that Dr. Laborde commenced to make traction of the tongue at an early stage, when the animals were still capable of recovering spontaneously. The asphyxia obtained in Dr. Herzog's experiments always occurred in the last stage of the narcosis. Asphyxia in the early stage of the narcosis, while it is so frequent in the human subject, could not be obtained in the experiments on animals. Herzog concludes that Dr. Laborde's method is not reliable in the asphyxia of the last stage of narcosis, but that it may be tried as an auxiliary to other methods in the primary steps.—*London Lancet*, July 9.

Ureteral Surgery.—A recent editorial in the *London Lancet* treats of the above subject especially on the lines indicated in the last Hunterian Lectures on "The Surgery of the Kidney," delivered by Mr. Henry Morris. If the recent advances in the surgery of the kidney have surprised those accustomed to the old order of things, the modern surgery of the ureter excites still more astonishment. Numerous operations are now performed on the ureter, a structure which was quite recently considered to be wholly beyond the possibility of surgical interference. The first, and probably the most important, operation performed was ureterotomy for calculus, and though the operation is still rare, it has been done by several surgeons, and stones have been successfully removed from all parts of the ureter, from the pelvis of the kidney to the opening into the bladder. Strictures of the ureter have been relieved by ureterotomy, and in some cases a portion of the tube has been excised, with results which fully justify the operation. Ureteral anastomosis and ureteral grafting have received much attention in consequence of the frequency with which the ureter is involved in the operation of vaginal hysterectomy. Formerly the only hope which could be held out to a patient suffering from ureteral fistula after such an operation was nephrectomy, but ureteral anastomosis and grafting bid fair to entirely replace this severe procedure. A still more extensive operation on the ureter is excision. It is only called for in cases of widespread and persistent disease, but it has been successfully performed for tuberculosis and other conditions of the ureter. Another subject closely allied to the above is that of obstructive anuria. It is very rarely indeed that both ureters are simultaneously blocked by calculi. In most cases one kidney has been destroyed or rendered functionally useless by a stone, and then later, when the other kidney has taken on the double duty, it too, has had its ureter blocked by the impaction of a renal calculus. The symptoms which follow are identical with those met with after experimental ligation of both ureters in animals, and usually the symptoms which are commonly called "uremic" are absent. The patient survives a few days, perhaps as many as ten, and then dies. The fatal ending is inevitable unless the obstruction is removed. It has taken many years for it to be generally recognized that obstruction of the intestines can not be cured by the lavish administration of purgatives and that the obstructing cause must be removed or the bowel opened above the obstruction. In the precisely analogous case of obstructive anuria, diuretics and exercises are still only too often relied on for treatment, and a patient is allowed to succumb when an operation would have saved him. It is true that the percentage of spontaneous removal of the obstruction is greater in the case of the ureter than in the case of the intestine, but the principles involved are the same, and an operation should be performed as soon as the diagnosis is established. The lectures were illustrated by an elaborate set of tables of operations on the kidney, which must prove of great value in the preparation of statistics on this subject.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, AUGUST 20, 1898.

BLASTOMYCETIC DERMATITIS.

In July, 1896, Dr. GILCHRIST¹ described a case of skin disease, in which he found yeast fungi or blastomycetes. In March, 1898,² he published an extensive report of an additional case, and in the same month Dr. H. G. WELLS³ of Chicago, published a case from the surgical clinic and pathologic laboratory of Rush Medical College.

The *Indiana Medical Journal* for August, 1898, contains a report of a case by ROBERT HESSLER of Indianapolis. This concerns a thoroughly healthy man who, in October, 1897, received a slight cut while being shaved. This was situated in the neck, just under the chin, and on a line with the right angle of the mouth. Healing took place, but was followed by the development of an oval-shaped papule as large as a half-grain of wheat. This nodule was freely movable, hard, and remained stationary until January 10, this year, when it was noticed that it had become larger and was surrounded by an inflamed, slightly elevated area. Shortly after this it "came to a head." The surface was then cleansed, opened aseptically, culture-tubes inoculated and smear preparations made.

With EHRlich's neutrophile stain there were found, in the interior of the leucocytes, characteristic yeast cells of a brownish color and slightly oval outline. Many of the organisms were in the budding stage. The agar tubes which were inoculated presented in a few days pure cultures in the form of small, bright, white colonies. The course of formation of daughter cells by means of budding could be followed readily in hanging drop preparations. When the organism

was cultivated on solid media for a longer time, Dr. HESSLER speaks of the appearance of characteristic fungus threads. As seen in stained preparations the single organisms are slightly oval, with a clear outer envelope and with differentiated contents.

Although the micro-organism is smaller than those described by GILCHRIST, Dr. HESSLER has concluded that it concerns a blastomycetes, and in this opinion he is confirmed by Professor WELCH of Baltimore, who has seen the cover-glass preparations.

The scar that formed after opening the abscess was much greater in extent than is ordinarily the case with similar abscesses due to the common pus microbes, and of late it has been noticed that a new papule about three-fourths of an inch from the site of the first one has appeared.

Now that the attention of the dermatologists and physicians in general has been called to the fact that blastomycetes may cause extensive lesions of the skin in various parts of the body, which, speaking generally, often resemble certain forms of tuberculosis of the skin, and which have therefore in some quarters been called instances of pseudo-tuberculosis, it is to be expected that many cases of this kind, which have heretofore been erroneously diagnosed, will be placed in their proper category.

NEUROLOGIC NOMENCLATURE.

It is a question for psychologists how far thought is possible without words, but it is a matter of common every-day experience that words are an essential in the conveyance of thought. They are tools, however, of varying convenience and value, according as they are properly chosen and fitted to the idea which they are intended to convey. The amount of extra labor that is involved in the expression of our thoughts by the lack of a suitable intelligible terminology is not readily calculated, but nearly every one has felt the mental strain of labored circumlocution when the proper terms were unknown or did not readily come to hand. It would be an interesting problem, if it were a possible one, to figure in terms of horse-power, let us say, the extra amount of energy required to express the daily range of ideas in a language like the German over that required in a less involved and complicated one, the English for example. With equal populations using the two it is easy to believe that the extra work could be translated into motor power would be very real and appreciable by every ordinary intellect. When we consider the other methods of conveying ideas, we can still further magnify our estimate of wasted labor and add to it the oceans of ink that it is almost a justifiable exaggeration to say have been expended over and above the increased manual labor of writing, itself a tremendous strain in the aggregate.

It may be there is some compensation for this, that a clumsy language only affords a healthful gymnastics

¹ Johns Hopkins Hospital Bulletin, 1896. Johns Hopkins Hospital Reports, Vol. 1.

² Journal of Experimental Medicine, 1898.

³ New York Medical Journal, March 26, 1898.

for robust intellect, but it does not after all speak well for the intelligence that rests satisfied with imperfect methods or appliances when better ones are available. Sometimes it is an inert conservatism that perpetuates them, sometimes a sentimentalism that in its best aspect is only halfway respectable keeps them in vogue. It seems also to many people a small matter to continue to endure abuses to which they have grown accustomed, and utterly needless to try to rectify them. When the evils are only a few extra and ill-adapted words or clumsy constructions of speech, the average man hardly thinks enough to feel their inconvenience.

How far science has suffered from the want of a convenient, economic and accurate terminology it is hard to say, but that it has suffered is not a matter for dispute. Our scientific terms, especially in medicine, have developed haphazard by accretion, and a really scientific system of nomenclature appears to have been about the last thing thought of. When the attempt has been made to make the terms descriptive the result has been mainly to make them cumbersome, and, in fact, it is impossible to have it otherwise. What is needed is a practical, brief, concise and easily adapted and utilized nomenclature, and this should be the aim.

The terminology of what may be called the finer gross anatomy of the central nervous system is the creation of the last thirty or thirty-five years at the most, but it has at present most of the defects of older systems, and it is safe to say is unintelligible to a large extent to the great mass of practicing physicians. Even the students that annually go out from our medical colleges have a very inadequate acquaintance with it as a whole, and probably soon forget a large part of that they have. Many of the terms in use are duplicated or triplicated, many more are needlessly cumbersome; as a whole there is no uniform plan or system. To read understandingly an elaborate anatomic paper on the nervous centers requires sometimes, nowadays, a knowledge of the terminology of the subject in two or three languages, so varied are usages of authors.

In the nomenclature of the Royal College of Physicians, which was adopted many years ago by the AMERICAN MEDICAL ASSOCIATION, and which is subject to decennial revision, the Latin, French and German equivalents are given.

For a number of years Dr. B. G. WILDER of Cornell University has been endeavoring to bring into use a simplified and consistent system of neurologic nomenclature, and the terms he has proposed have in many instances been adopted by prominent neurologists and seem likely to come into general use. A recent and exceedingly meritorious work, that of Dr. MILLS, adopts his system throughout, with the result that it affords almost the only consistently systematic nomenclature in any treatise of its kind on the disorders of the nervous system. For this reason, however,

it has been severely criticised, the average conservatism of the time reacting against what seems to it an innovation. Dr. WILDER'S nomenclature has in it much that may seem novel, but its terms have the merit of brevity, are fully as descriptive or locative as those hitherto in general use, and the charge of cumbersomeness that has been thoughtlessly made against them in some of these criticisms has least of all a valid basis. Its adoption by Dr. MILLS is to be considered as an advance and an advantage rather than a disadvantage to his book, for even if the terms do not all of them come into general use, most of them probably will, and the work will be therefore all the more in the front rank of medical literature.

The need of a uniform and improved system of medical nomenclature generally is shown by the appointment of committees of anatomic societies here and abroad for its better regulation. That this is a favorable sign of the times will be admitted, and each movement of the kind has its influence in bringing about the desired result. The final perfected nomenclature will probably be to some extent an evolution, but all these preliminary attempts will have their influence in bringing it about, and probably none of them will be more influential in regard to nervous terminology than the elaborated and consistent system of Dr. WILDER, however much objectors may criticise and temporarily prevail. It is only an extreme conservative who will not desire something better and more consistent than the cumbersome, arbitrary and poly-nomial nomenclature now in use.

THE URINE OF THE MALARIAL FEVERS.

Even when no specific action of the causal factor of this disease is exerted upon the kidneys, the urine of malarial subjects varies somewhat with the type of infection, whether regularly intermittent or estivo-autumnal, as well as remaining to a certain degree subservient to physiologic influences, as amount of fluid ingested, season, climate, time of day, and the other usual considerations. In not a few cases, however, and it must be confessed that these are almost universally of the estivo-autumnal variety, the kidneys suffer severely, either in the production of an acute nephritis, or in the hemoglobinuria of pernicious ague, or both. Again, a former attack or attacks of ague may have gradually produced a chronic nephritis, upon which an attack of pernicious estivo-autumnal fever has engrafted an hemoglobinuria, as in the case reported by BROWN ("Malaria;" report of twenty-eight cases), in which granular and epithelial casts were found in addition to red corpuscles and "shadows;" the specific gravity in this case averaged 1010:

Let us first take up the urinary changes present in the average number of ordinarily severe cases. The daily amount varies as to whether a paroxysm has occurred on the day in question or not, for at the beginning of a paroxysm it frequently happens that a considerable amount of urine is passed. The quan-

tity also varies with the type of infection; in the regularly intermittents it is somewhat increased, while in the estivo-autumnal infections, when they cause a fever almost continuous in its action, the urine, as in all continued fevers, becomes diminished. When convalescence is established, usually several days after the last chill, a slight polyuria is often manifest; this rarely exceeds four pints and may last a few days or weeks, depending as a rule on the severity of the attack. As regards acidity, one would naturally expect that in fevers, concentration of the urine, other things being equal, would increase the acidity. This is true in the malarial fevers, except in cases of the estivo-autumnal type, where the urine is not altered in this regard. The color varies greatly; where fever is present it is high, and the higher the fever the deeper the color. This fact depends upon two causes: the concentration that occurs in all febrile processes; the chill with subsequent fever is coincident with the destruction of large numbers of red corpuscles, and at that time a large amount of pigment, transferred hemoglobin, is set free in the blood, to be immediately taken up by the leucocytes; while a part of this pigment is deposited in the various organs, especially the liver, no inconsiderable amount finds its way to the kidneys and appears in the urine as urobilin, which substance itself would lend deep coloring to the urine. Some cases of malaria show a jaundice more or less marked; this may vary from the slightest perceptible tingeing of the conjunctivæ to a deep yellow, the very dark colors so characteristic of obstruction never occurring in uncomplicated cases. This jaundice is always remotely hematogenous, a greater number of red corpuscles being destroyed than can be elaborated by the excreting organs; it occurs as a rule only in the severer cases, usually estivo-autumnal in character, cases in which not infrequently hemoglobinuria has supervened. In such instances bile coloring matter may be proved to be present in the urine by means of the ordinary nitric acid contact test.

As stated above, the jaundice is only remotely hematogenous; that is to say, it only primarily depends upon the destruction of the red corpuscles. The pigment is in large part carried to the liver and a great increase in the secretion of the bile occurs so as to rid the overcharged system of as much deleterious matter as possible. Indeed, the secretion is often so great that all cannot be disposed of through the excretory ducts; a backward pressure then occurs and reabsorption, with the production of jaundice, readily follows. In the icteric attacks, bile is not very apt to be in the urine, as the kidneys very probably are able to transfer into urobilin some of the biliary compounds. It is only when the latter are in great excess that the presence of bile can be proven. As in other febrile affections, with a diminished excretion of fluid from the kidneys, there is a normal or increased amount of solids, so that during

the paroxysms the specific gravity is increased, while in the intervals it is diminished, so that the total amount passed maintains a fairly good average, from 1045 to 1018. When infection is from the estivo-autumnal parasite, and the attack of sufficient severity to cause a continuous fever, the specific gravity, of course, remains permanently high. As concerns the various normal ingredients of the urine, urea and uric acid are increased as are the various salts, phosphates, chlorids and sulphates. The striking feature about this increase is that it is especially manifest during the post-malarial stage, the period of polyuria.

Another point of interest in the solid constituents of the urine is the increase in the amount of iron. This is augmented in any febrile disease, but more so in malaria than in any other. The increase is particularly liable to be noticed after a paroxysm, and is undoubtedly dependent upon the excessive destruction of red corpuscles. The sediment of malaria is unusual from but one standpoint and that is best brought out by the use of the centrifuge; the presence of black pigment occasionally of such quantity as to produce a heavy deposit in the bottom of the tube as in the case reported by Forchheimer. Among abnormal ingredients that might appear the first place must be allotted to albumen. In all febrile affections a varying proportion of kidneys suffer, some from temporary changes, as manifested by the presence of albumin and casts which gradually disappear after the cessation of the original disease; while others are the subjects of acute inflammatory processes which do not answer readily to treatment and which finally become chronic. In such a disease as the one under consideration, where specific organisms are present in the blood, naturally the delicate epithelial structure of the kidney would be almost certain to sustain some damage. Such indeed is the case here, and a large proportion of malarial infections show a slight amount of albumin with an occasional cast, usually hyalin. It is rather remarkable that under the provocation present an acute nephritis is of such uncommon occurrence. Probably of more consequence than the parasites in the production of inflammatory nephritic changes, is the irritation of the large amount of pigment set free in the blood and excreted, at least to some extent by the kidneys, as shown by its appearance as a sediment and chemically by the increase in iron salts. A well-known law of pathology tells us that slight irritation continued over a considerable length of time will inevitably result in the presence of new-formed connective tissue, which new-formed tissue will in the course of time most surely undergo cicatricial contraction. Many cases of malaria, especially in the more southern latitudes where the estivo-autumnal parasite plays the leading rôle, are the subjects of changes in the kidneys of a chronic inflammatory type, interstitial nephritis, as evidenced by increased secretion of urine, pale color,

low specific gravity, and the presence of a small amount of albumin with granular casts, even when the blood at the time of examination shows the patient to be free from active infection. This change is possibly due to the constant irritation of the pigment, and has been demonstrated in individuals, the victims of paludism, in whom a possible alcoholic etiologic factor can be positively excluded. The subject of malarial hemoglobinuria, while of great practical importance, is of not common occurrence, and is more properly treated under a separate heading.

THE TYPHOID FEVER OF THE ARMY CAMPS.

Sanitary men tell us that with our present knowledge of the causation of typhoid fever every death from that disease is an unnecessary death. This is an excellent principle to hold in view for the guidance of municipal health officers who have some control over the insanitary factors concerned in the spread of the disease and of military medical men serving with well disciplined troops, but we can hardly expect regimental surgeons serving with our volunteer troops at the present time to subscribe to it. Most of our hygienic authorities agree that hastily organized levies have to undergo a typhoid seasoning before they can be considered fit for active service, for every new regiment includes many young men who are susceptible to the disease and their number gives a corresponding susceptibility to the regiment, while the difficulties in the way of controlling the disease are very great. This was our own experience in the Civil War. In the first eighteen months of that war typhoid fever may be said to have been epidemic among the troops that were concentrated around Washington, D. C. In July, 1861, 2.20 cases occurred in every thousand of the 17,709 soldiers camped near the national capital; in August, 6.14 in every thousand of 50,608 men; in September a rate of 5.90 was recorded among 55,408 troops; in October, 7.23 among 113,204, and in November the highest rate of the year was reached, 10.89 cases in every thousand of 133,669 men, or a total of 1456 cases taken sick during that one month. In October and November of the following year, on account of new levies camping on old and infected grounds, the recorded rates rose to 14.49 and 17.84, while the actual rates were really much higher, as most of the cases reported as common continued fever were cases of typhoid infection not included in the statistics of typhoid.

In the JOURNAL of June 4, 1898, we pointed out the danger to our troops from this deadly camp fever as being greater than that from yellow fever, which at the time was exercising a depressing influence on the public mind. We held that unless special care were given to the sanitary condition of our camps, typhoid infection would be introduced and spread with disastrous results similar to those that followed the insani-

tary conditions of 1861-62. The first circular issued by Surgeon-General STERNBERG on April 25, four days after war was declared, urged on medical and commanding officers the importance of sanitary precautions for the prevention of disease in camps, and its publication was followed by arrangements for the supply of germ-proof filters to troops in the field. These measures, however, were insufficient to counteract the many opposing influences that were brought into operation by the sudden aggregation of large bodies of raw troops and inexperienced officers, medical as well as line. Typhoid fever infection, usually imported from state camping grounds, made its appearance in the large national camps and spread, but much less rapidly than during the concentrations of the civil war. At Camp Alger, Va., at the close of the second month of its recent occupancy, there had occurred in all only thirty-nine cases of fever among the 20,000 or more men on the ground, while at the corresponding period of 1861, the troops near Washington had already sent 8.34 out of every thousand men to hospital with typhoid fever. Toward the middle of July, however, reports from Alger, Chickamauga Park and other camps indicated a rapid increase in the prevalence of the disease, and special inspectors were sent to inquire into the conditions which occasioned the increase. These were found, in general, to be, not impurity of the water supply, but insanitary conditions due to want of knowledge on the part of the volunteer troops of how to take care of themselves in camp. At Camp Alger the water supply from driven wells was organically pure and protected from surface drainage by a thick stratum of impermeable clay; but the tents were crowded against each other and all were overcrowded with men. Regiments were cramped into an area insufficient for battalions, and, as a consequence, there was not room for a sufficiency of sink accommodation on the front or flanks of any of the commands. These sinks necessarily became infected and the disease in some regiments began to assume the proportions of an epidemic. Similar conditions prevailed in Chickamauga Park, Ga., where, in addition, sinks of suitable depth could not be dug owing to the underlying rock being so near the surface. At Tampa, Fla., the height of the subsoil water level necessitated the use of sinks so shallow that when heavy rains fell the infected contents were flushed out of them over the camp surface. These and other insanitary conditions due to continued occupancy led to prompt action by the War Department. Boards of officers were sent to inspect and select new sites for camping grounds and many of the troops are now under orders to march from the old to the new grounds. During a march of ten days or two weeks the cases of fever due to infection in the old camp will be developed and removed to hospital, so that the command on reaching its new site will be free from the disease, and its protection thereafter

will depend on the care given by officers to the sanitation of their camps. The chapter hereafter to be written in the medical history of the Spanish-American War on the development and suppression of the typhoid fever outbreak will be one of much interest to medical men and military sanitarians. It may do much to emphasize the fact that a death from typhoid fever is an unnecessary death. The War Department, meanwhile, has urged upon all officers, from the commanding general to the company commander, the exercise of the utmost vigilance to enforce proper sanitary conditions in camp, that the armies may profit by their recent experiences. We print the sanitary orders of the Department on another page of the JOURNAL.

THE RETURN OF SHAFTER'S ARMY.

Three months ago, that is when the invasion of Cuba was the subject of general interest, few medical men expected that our troops operating in that island would escape visitation from yellow fever. The profession was therefore not surprised when, about the middle of July, the announcement was made of the presence of the disease in the lines around Santiago. Fortunately the capture of the city and the removal of all armed resistance from its front enabled the army to devote the whole of its much exhausted energies to taking care of itself. Two methods of campaign, as it might be called, against this insidious foe were open to the military commanders. One was that of moving from camp to camp on the high grounds back of Santiago and removing the febrile cases and suspects until each regiment was free from the disease, when it could be embarked for Porto Rico or a United States port without danger to itself or to others. Medical men would probably have considered this the better course, but in view of the exhausted condition of the troops a call was made by the military authorities in Cuba for the adoption of the other, the immediate return of the troops to some locality in the United States where the danger of propagating infection would be reduced to a minimum. This involved the danger of a disastrous outbreak on some of the transports while en route, with quarantine detentions at the home port and the possibility of infection finding a landing and transmission to some part of the United States where the conditions were favorable for its development. Prior to this call, however, arrangements had been made by the President and the Secretary of War, after consultation with the Surgeon-General of the Army as to their feasibility, for the return of the troops that are not sick with yellow fever or with suspected yellow fever. Telegraphic instructions approved by the Surgeon-General were sent to Santiago to ensure the best sanitary conditions of the transports and of the troops and their baggage at the time of embarkation. These instructions read as follows:

1. Hold troops assigned to a transport under observation three to five days in separate camp not infected by fever.
2. Surgeons to inspect same twice daily, isolating promptly suspected cases.
3. Bathe and freshly clothe or sterilize old clothing of troops at the beginning of period of observation.
4. When not possible to detain troops in camps under observation, bathe them and freshly clothe or sterilize old clothing before embarkation, excluding, after searching inspection, suspected cases.
5. Yellow fever convalescents or suspects should not accompany healthy troops.
6. No equipage nor personal effects capable of conveying infection should accompany troops unless disinfected by steam or otherwise.
7. Arrange to embark by daylight under a careful supervision of surgeons, who will control sanitary conditions of troop-ships en route.

In the meantime a camp was laid out at Montauk Point, L. I., for the accommodation of the troops, and provision was made for hospitals for the sick and wounded, for hospitals and isolation camps for yellow fever patients and suspects, and for the careful inspection of each transport and the troops brought by her prior to their disembarkation, with thorough disinfection of persons, clothing and other personal effects. Colonel WM. H. FORWOOD, Assistant Surgeon-General, U. S. A., is in charge of the medical department at the new camp. Passed Assistant-Surgeon G. M. MAGRUDER and Sanitary Inspector W. F. BRUNER, formerly inspector for this Government at the Port of Havana, are on quarantine duty as boarding and inspecting officers, and Drs. KINYOUN and HASTINGS have charge of the arrangements for disinfection. In view of these precautionary measures, we may expect to learn of the transfer of the army without mishap to itself or to the country.

CORRESPONDENCE.

The Medical Department of the Army.

CHICAGO, Aug. 9, 1898.

To the Editor:—Apropos of your editorial on the Medical Department of the U. S. Army and Navy, permit me to make a few suggestions.

My experience as Major and Surgeon of the First Ill. Cavalry, U. S. Vol., convinces me that the Medical Department of the Army, as at present constituted, is all wrong. My opinion of the Department as it exists at present is that it is both incompetent and inefficient, and I think this charge will be borne out by others of the volunteer surgeons in the service.

This condition of affairs is not to be wondered at when we take into consideration the various ranks of the medical officers. The Surgeon-General only ranks as Brigadier-General; the Deputy Surgeon-General as Lieutenant Colonel, and so on down the line. It goes without saying that men who are sufficiently endowed by nature with brains and ability to enable them to take an elevated position in this profession can not be induced to enter the army service when the highest position they can attain is that of Brigadier-General. We have seen

the melancholy spectacle of beardless boys among the combatants ranking men who had grown gray in the medical service. The experiences of the present war have proved that the Medical Department is of equal importance to the Field and Staff. We have seen that sickness and disease kill more men than do bullets; hence the demand for medical officers that will be fully equal to any requirements occasion may demand.

How can this be accomplished? It can be done by raising the rank of the Medical Department, so that the Surgeon-General of the Army will be a Major-General; a Deputy Surgeon-General a Brigadier-General, and so on all the way down. If this were done the Army Medical Department would be a desirable service, and would attract men of large ability.

Again, it is my opinion that the Medical Department should be made entirely separate. It should be cut loose from the line, the Quartermaster's and all other departments, and only in the matter of issuing rations should the Commissary be drawn upon. The Medical Department should provide its own transportation in the way of cars, hospital ships, and if necessary, transports. The commanding general should be required to notify the surgeon in charge when a movement was going to be made, what regiments were included, and when an engagement was to take place. Then the medical officers could make full provision for the care of the sick and wounded, and their transportation from the field of battle. Under these conditions there could be no shirking of responsibility, and the shameful sight of an altercation between the Commanding General and the Surgeon-General, such as we are now being treated to over the Santiago campaign, would be an impossibility.

If the Surgeon-General had been instructed to purchase all supplies required for the Medical Department, and if those instructions had been carried out in a competent and efficient manner, there could have been none of the horrors, such as our men had to endure during the present Santiago campaign, which were totally unnecessary and uncalled for. If the regimental and division hospitals at Santiago were no better equipped than those at Chickamauga, I feel sorry for them.

And now for the charges of incompetency and inefficiency. On my arrival at Chickamauga I reported to the Medical Director of the Department and asked for supplies for my hospital. I was asked what I had brought with me, and when I replied, "nothing," I was told that "that's the way with you volunteers, you come down with nothing and expect us to equip you." I said that I certainly expected to be equipped, as the State authorities told us to leave everything and we would be supplied by the U. S. authorities at Chickamauga. To make a long story short, it took me three or four days before I could get a drug supply, and that entirely inadequate.

Upon my arrival in Chickamauga I made requisition on the quartermaster for a hospital tent. It was nearly a week before I got that. Up to the time of my leaving Camp Thomas, every regimental hospital was most poorly supplied with even the necessaries for daily use.

Under these circumstances what would we have done had we been suddenly ordered to the front? It would simply have been a repetition of Santiago.

The excuse for not equipping us properly was that we were to send all our sick to the division hospital. As my regiment was not attached to any division, I was told that I could not be supplied because they did not have the things I asked for supplied from Washington.

There were lots of cots at department headquarters, but it was days before I could get any. There were ambulances down there by the dozens, but up to the time of my departure I could not get a regimental ambulance, when I was entitled to two. Every day or so it was impressed on me that I must use the most extreme economy in the prescribing of drugs and medical supplies. As if I was going to wantonly waste the

property! Instead of being asked by the proper authorities what drugs and supplies I was in need of, and having this proper authority see to it that not only my regiment, but all other regiments were properly and thoroughly equipped with everything necessary to properly care for the sick and wounded, I was compelled to find out for myself to what my regiment was entitled, and then fight for everything I received. To cite an instance, I sent in a requisition and told them it was emergent. As I did not hear anything from it for two days, I went after the things personally, and was told by the Medical Director to go over to the first division hospital for the supplies. Among other things applied for was one gallon of castor oil and a pound of laudanum, with which to treat camp diarrhea, which was prevalent at that time. In response to my requisition the division hospital sent me twelve ounces of castor oil and one ounce of laudanum; the other articles were ignored.

These, Mr. Editor, are some instances of how the Medical Department was administered at Camp G. H. Thomas. If regimental hospitals were well supplied and equipped, then it would have been a very easy matter to have properly organized brigade or division hospitals when the troops were ordered to the front. All the regiments could have transferred their supplies to the general hospitals before an action came on, and have left them there as long as that division remained intact.

On the requisition list of the U. S. Army, which was handed me, there were no such articles as condensed milk, malted milk, nor canned soups of any kind. We were not supplied with sheets, pillows, pillow cases, nor any such articles of absolute necessity for a hospital. If I had not drawn upon my lady friends in Chicago, Springfield and elsewhere, for money to buy ice and milk, and for sheets, pillow slips and night shirts, I would have had a sorry looking hospital. If the Red Cross Society can supply all these things, why can not the Medical Department of the U. S. Army, with a rich, powerful Government behind it, equip its army hospitals beyond reproach? If numbers of medical men whom I could name had been placed at the head of affairs, our whole army would have been completely equipped with every medical and surgical necessity they could require, in *three days*.

I trust, Mr. Editor, that the horrible condition of things which existed at Santiago, as well as the disgraceful sanitary conditions of the various camps, will be investigated, and the whole Army Medical Department reorganized. To refer to requisitions: In one of my applications for supplies I asked for carbolic acid and boric acid. The carbolic acid was struck off my list, as the Medical Purveyor was instructed not to issue it. As I did not receive the boric acid I made inquiries as to why it was not issued, and was told there was none in the camp, as it was not supplied to the army. These are two of the most efficient and cheap antiseptics, which I had to do without. As I had a large number of infected arms, caused by men interfering with their vaccination dressings, it can easily be imagined what a fix I was in. As a result I had a number of axillary abscesses, and some of the men had fearfully swollen arms, which confined them to the hospitals or "quarters."

At Chickamauga there were thousands of men camped for months, during extremely hot weather, yet there were no ice-machines provided to furnish ice for the troops, nor were any provisions made to supply the men with ice, till Dr. Gill of the Red Cross Society made his appearance.

The foregoing are a few of the glaring instances of incompetency and inefficiency which occurred during my stay at the camp.

And now a few words as the water-supply. A number of the wells were drilled throughout the camp to supply water for drinking purposes. A pipe-line was run from the Chickamauga River to supply water for the horses and for washing purposes. The Chickamauga is a dirty, sluggish stream, which drains the greater part of that country. All the ditches

which drained the camp empty into that stream. The men were told not to drink that water, but when a lot of men are tired, hot and thirsty, injunctions of that kind are not heeded, and many of them drank frequently of the water. Not more than two miles farther on, a clear, pure, limpid stream issued from the rock at Crawfish Springs, in volume sufficient to have furnished the camp with water for all purposes. Why was this water-supply not secured instead of the Chickamauga River? The result is that typhoid fever is epidemic at Camp George H. Thomas, and the troops remaining there will, in all probability, have to be removed to other locations.

Trusting you will give this letter publication, in the hope that it may help to correct the glaring defects which exist in the army today, I am, sir, Very truly yours,

WM. CUTHBERTSON,

Late Major and Surgeon First Illinois Vol. Cavalry.

Condition of Santiago.

SANTIAGO, CUBA, July 15, 1898.

To the Editor:—I have just been through the city of Santiago de Cuba. The terms of capitulation will be published before this reaches you. I found the city full of stench and disease; no sanitation. Dead horses, dogs, cats and other animals that starvation had deprived of life are lying bloated and decomposing in the rough, dirty, narrow streets. Thermal fever, dysentery, acute diarrhea and yellow fever are disseminated through the city. The city water supply comes through an eight-inch main which is inadequate for a city of 60,000. The sewerage is almost *nil*. The refuse from the kitchen, such as starvation will give, is strewn into the streets to decompose in the hot sun and daily showers. The streets are full of deep holes, four or five feet wide by one to three feet deep, which speedily become receptacles for the decomposing animal matter and are so many cesspools of nauseating odor. General Shafter has wisely refused to let any of our troops pass into the city. More of Santiago in my next.

There are 26 cases and 3 deaths from yellow fever in the camp near Santiago, 146 cases at Sibone (pronounced Siboney). The number of deaths has not been received today. Of 140 cases of malarial, bilious and thermal fevers in four hospitals, 65 have been discharged for duty. Thirty-two wounded are still in the division hospital. The yellow fever hospital is three-fourths of a mile from the main camp on a hill. The fever hospital and division hospital for wounded are one-quarter of a mile apart.

Sanitation is improving and all doing well. Dr. Pope has worked heroically and deserves the thanks of the American people for his untiring efforts, although often unsuccessful.

Drs. Combs and Jones are in charge of the yellow fever hospital near Santiago; Dr. Wood in charge of the division hospital, and Dr. La Garde of the general hospital at Sibone.

Recapitulation: 1342 wounded in all of the battles since landing in Cuba; 100 deaths so far from wounds, killed and missing; 163 yellow fever cases and 28 deaths from the same cause.

ORLANDO DUCKER, M.D., U. S. V.

Malingering.

UNIONVILLE, N. Y., Aug. 10, 1898.

To the Editor:—I read the JOURNAL with great interest and profit every week. Your editorial on "Malingering" (p. 247, July 30) has just been read with keen interest and suggests that I give you an outline of a case in point.

Mrs. E. V. C., married, one child, aged 35 years, is of an extremely nervous temperament, light weight mentally, but with a glib tongue that elicits the sympathy of similarly constituted persons. Both parents are weak mentally, although father has brilliant spells, but lacks balance and judgment. In January and February, 1894, Mrs. C. had attacks of hys-

teria and believed she had a cancer of her uterus, which I told her she did not have, but she did not believe it. Every day or two she would have attacks of pelvic pain, a little diarrhea and a slight uterine discharge. During these months she had frequent hysteric convulsions with which she impressed her sympathizers that she had almost died, and it seemed to give her encouragement to have another if she could make her attendants believe she was nearly dead during her spell. She had some time before had an operation for lacerated cervix. Nothing would satisfy her but that nearly every day I must make some kind of an application to the uterus for treatment, and insert a tampon. This I did more to satisfy her than for any good it did. I urged cotton tampons soaked in glycerin and tannic acid and occasionally sprinkled a little powdered opium where it would come in contact with a slightly abraded cervix. I occasionally applied to the inside of cervix tincture of iodine, weak solution carbolic acid, etc. Two or three times I made an application of a weak solution of nitrate of silver (3 gr. to ʒi) in the usual way with the applicator wound with cotton. Using silver nitrate was done more for its mental effect than for any good I hoped to accomplish, for I knew she would try to find out all about nitrate of silver, and finding it to be a strong drug it would satisfy her intense desire that I should use powerful remedies to "kill her cancer." I reckoned wrongly for she soon fell into the hands of a clairvoyant and he told her that she had no cancer, which she promptly believed, but told her that her doctor had "burned her insides all out with nitrate of silver." He easily convinced her that she had no cancer, which I was unable to do, and as easily convinced her that I had ruined her health under the use of nitrate of silver. She soon wanted me to pay her damages for "ruining her health and burning her insides all out."

Physically she is a strong, robust and healthy woman, and is on the go all the time and has been since I quit attending her, Feb. 27, 1894. But most of the time she has been malingering and now and then would work herself up to that pitch where she would either write me a letter or get a lawyer to, demanding damages. These I never paid any attention to except to send them back to her. She has now within the last few days gotten a reputable firm of lawyers to sue me for malpractice. I am interested to know what kind of a case they can work up. It is my candid opinion that she has, with the sympathy of her few mental equals, worked herself up to a belief that I will pay her several hundred dollars rather than have the matter come in the courts.

Are not physicians constantly in danger of expense and trouble from these people, if they treat them, and of annoyance and criticisms if they do not? Truly,

F. W. DENNIS, M.D.

Objects to New Designation.

SHELBYVILLE, IND., Aug. 15, 1898.

To the Editor:—I object to the proposed new designation for our profession, suggested by Dr. Fenn in the JOURNAL of August 13. Dr. Sternberg, in his address at Denver, did not recommend the adoption of the title "New School of Scientific Medicine," but merely said, "If we are to be characterized by any distinctive name, this would be the only one applicable."

From the days of Hippocrates to the present, we have always been the scientific school of medicine according to the best light we had. The celebrated John Hunter one day said to a member of his class whom he noticed taking notes during one of his masterly lectures on inflammation, "Don't take any notes of what I say today on this subject; I may not think next year as I think today." He was always a member of the "new school of scientific medicine," and kept abreast of the times.

We should always object to the titles "old school" or "allopath," names given to us by the eclectics and homeo-

paths, and simply call ourselves physicians, without any annex or prefix. It almost seemed a necessity for us to semi-officially adopt the word "regular," which, in my opinion, is the only designation we should ever use, and only using this for the information and benefit of the laity. The word "regular" has been the subject of more criticism than any ten sentences in our "Code of Ethics." In the old "Army Regulations," in paragraph 1544, when describing the essential qualifications of one who aspires to an appointment in the medical department of the army, among other requirements is found this very emphatic one, "And he *must* be a graduate of a *regular* medical college."

During the war of the rebellion, a committee was appointed from the eclectic and homeopathic medical schools of New York and Philadelphia to correspond with Surgeon-General Hammond and inquire of him as to the meaning of the word "regular" as used by the Government. His reply was dated from the War Department, Surgeon-General's Office, Washington, D. C., June 1, 1863, and was as follows: "The term 'regular' is used in its most comprehensive sense, as indicating that a college is well-equipped and prepared to cover the *whole* ground of the science and art of medicine and surgery in its teaching."

Then, if we are to be designated by any distinctive name, I think that the only one that is applicable is the word "regular," which has been officially defined by the medical department of the United States, and more than fifty years ago was adopted by our "Code of Ethics," and which always represents progressive scientific medicine throughout the civilized world.

Respectfully,
W. GASTON MCFADDEN, M.D.

Wounds Requiring Operation.

RESERVE AMBULANCE COMPANY, TAMPA, FLA., Aug. 10, 1898.

To the Editor:—In your issue of July 30, I notice that an official report, rendered by me on returning with wounded from the fracas near Santiago, serves as a basis for editorial comment. Permit me to correct the statement there credited to me that "surgical operations were required only in shell wounds," a rather more sweeping assertion than I should care to be responsible for. It is, however, true that shell wounds were invariably serious and almost always accompanied by such extensive laceration and comminution as to render grave operative interference necessary. Mauser wounds, on the contrary, were usually humane and, with the undeformed bullet, were quite free from the so-called explosive effect anticipated by the theorists, but they nevertheless occasionally required surgical operations of a more or less serious character. "Key-hole" wounds and those produced by deformed bullets sometimes presented such extensive destruction as to necessitate operation, but the proportion of such operations was surprisingly small. Mauser wounds were "trivial" as compared with those produced by large caliber bullets, on account of the greatly lessened destruction of tissue and the almost total absence of wound infection.

Very respectfully,
EDWARD L. MUNSON, Capt. and Asst. Surg. U. S. A.

Precocious Pregnancy; Twin Births.

MONTEVALLO, ALA., Aug. 6, 1898.

To the Editor:—I wish to mention the case of a negro girl whom I delivered of twins, Feb. 5, 1897. This girl was born and raised in Bolling, Ala. At 11 years of age, she began to menstruate regularly; became a prostitute soon afterward, and was delivered of twins at the age of 13 years, 9 months and 5 days. Both children were females. One is living; the other was accidentally smothered when five days old. The first child presented feet foremost; the second came "head

first." The afterbirth was adherent. I administered chloroform and, after introducing the hand, detached it. There was some hemorrhage, but a hot douche controlled it. The mother was exceedingly well developed for her age and made a speedy recovery. I inclose a copy of the birth certificate.

Very truly yours,
D. L. WILKINSON, A.B., M.D.

Antitoxin.

PHILADELPHIA, PA., Aug. 8, 1898.

To the Editor:—We beg to inform you that the validity of Letters Patent on Antitoxin recently granted by the U. S. Patent will be duly tested in the proper courts. We write to authorize you to make the public statement that we will protect to the utmost, purchasers and users of Mulford's concentrated antitoxic serum and other antitoxins. We hasten to make this in order that the demand for the remedy, which increases as the season advances, may be supplied without delay or hesitancy.

We have secured the services of W. Horace Hepburn, Esq., and Howson & Howson, competent attorneys of this city, to represent us, and have no doubt but that the claim will be disallowed, in justice to our country in general, and each family in particular.

Thanking you for your interest in the matter, we remain
Yours very truly,
H. K. MULFORD COMPANY,
By H. K. Mulford, Vice-president.

ASSOCIATION NEWS.

Rush Monument Fund.—To the Editor:—The following subscriptions to the Rush Monument Fund have been received:

June 21, Maine Medical Association (through Dr. Chas. D. Smith, Secretary)	\$ 100.00
June 20, Committee of Arrangements, Philadelphia Meeting American Medical Association (through Dr. Thos. G. Ashton, Treasurer)	185.68
July 20, Subscriptions at Denver Meeting American Medical Association (through Medical Director Albert L. Gihon, Chairman):	
From Colorado	2,000.00
From New York	2,000.00
From Ohio	336.25
From Indiana	320.90
From Tennessee	130.00
From California	110.50
From Wisconsin	78.00
From Texas	36.50
From Med. Director Albert S. Gihon, U. S. N.	25.00
Total	\$5,322.83
Reported to American Med. Association at Denver	4,424.27
Total expenditures	\$9,747.27
Total funds in hand	112.25
	\$9,635.02

The above sum, in cash and secured investments, has this day been transferred to Dr. Henry D. Holton of Brattleboro, Vt., who was elected Treasurer of the Committee by vote of the ASSOCIATION at the Denver meeting. Dr. Holton will be glad to receive and acknowledge further subscriptions to the fund.

GEORGE H. ROHÉ,
Secretary Rush Monument Committee.

BALTIMORE, Aug. 9; 1898.

Rush vs. Hahnemann Monument Fund.—Every visitor to the AMERICAN MEDICAL ASSOCIATION remembers the difficulties encountered by the Rush Monument Fund Committee in its work. The statement has been made at these meetings that the Homeopathic fraternity, with a much smaller membership, had raised a much larger fund, and were having executed a much finer monument to Hahnemann than the one contemplated to Benjamin Rush. Now cometh the statement that the Hahnemann monument is finished, but that it is not in place and will not be until the profession comes forward with the sum necessary to pay for it. What the delinquency amounts to is not stated further than that "three dollars from each

homeopathic physician in America would liquidate all claims and place the monument in Washington."—*Columbus* (Ohio) *Med. Jour.*, August 2.

SOCIETY NEWS.

New York State Medical Association.—The regular annual meeting of the New York State Medical Association will be held at 64 Madison Avenue, New York City, on Oct. 18, 19 and 20, 1898. The following is the preliminary program:

A Practical Demonstration in the Reduction of Infantile Mortality, by Dr. E. F. Brush of Mount Vernon.

The Pneumogastric Nerve in the Production of Stomach Disease, by Dr. Julius Pohlman of Buffalo.

The Coccyx, by Dr. J. E. Walker of Hornellsville.

Drugs versus Cardiac Insufficiency, by Dr. C. T. Osborne of New Haven.

The Passing of Alcohol, by Dr. J. M. Farrington of Binghamton.

A New Method of Amputation at the Knee-Joint Applicable in Cases of Senile Gangrene of the Foot, by Dr. Stephen Smith of New York.

Anthropologic Rambles in the Orient, Especially in the Island of Java, profusely illustrated with stereopticon views, by Dr. H. Ernst Schmidt of White Plains.

Dental Pathology in its Relationship to General Health, by Dr. Dwight L. Hubbard of New York.

Subnormal Temperature, by Dr. Leroy J. Brooks of Norwich.

Ancient and Modern Animal Products Used as Medicines, by Dr. T. J. Acker of Croton-on-Hudson.

The Treatment of Cases of Pulmonary Tuberculosis that Cannot go Away from Home, by Dr. Delancey Rochester of Buffalo.

Some Observations of General Interest Regarding the Course and Management of Cataract, by Dr. J. H. Woodward of New York.

Technic and Use of Saline Infusion, by Dr. Thomas F. Reilly of New York.

What to Do to be Saved, being the Conclusion of the Inquiry into the Abuse of Medical Charity, by Dr. Thomas J. Hillis of New York.

True and False Medical and Other Charities, by Dr. Wickes Washburn of New York.

A paper by Dr. Charles Phelps of New York, title not yet announced.

Genital Neuralgia and the Genito-reflex Pains, by Dr. F. P. Hammond of New York.

Lantern Slide Exhibition, by Dr. S. Alexander of New York.

A Case of Attempted Obliteration of the Deformity in Pott's Disease, by Dr. Charles Alling Tuttle of New Haven.

Notes on Neuralgic Affections of the Head, by Dr. Gustavus Eliot of New Haven.

The Use of Catgut Sutures in Ventrofixation of the Uterus, by Dr. J. E. Janvrin of New York.

Traumatic Tetanus; Report of a Case Following an Attempted Operation, Treatment, etc., by Dr. Z. G. Luek of Warsaw.

Some Thoughts on Rational Treatment of Disease, by Dr. Chauncey P. Briggs of Ithaca.

Senility, by Dr. F. W. Higgins of Cortland.

A Case of Extrauterine Pregnancy Operated Upon at Term, by Dr. Eli Van de Warker of Syracuse.

Memoranda, by Dr. H. D. Didama of Syracuse.

Diagnosis and Surgical Treatment of Renal Calculus, by Dr. N. Jacobson of Syracuse.

Eye Lesions in Some Diseases of the Kidney, by Dr. H. S. Oppenheimer of New York.

Insanity Following Surgical Operations, by Dr. W. D. Gran-ger of Bronxville.

Dermoid Cysts of the Ovary, by Dr. C. E. Fritts of Hudson.

The Operative Cure of Inguinal Hernia in Men, by Dr. E. D. Ferguson of Troy.

Urethral Stricture, by Dr. J. W. S. Gouley of New York.

A Discussion on Intestinal Obstruction, comprising the following papers:

Introduction, by Dr. Parker Syms of New York.

The Causes of Acute Intestinal Obstruction, with a Description of Their Mechanism, by Dr. E. D. Ferguson.

The Causes of Chronic Intestinal Obstruction, with a Description of Their Mechanism, by Dr. J. D. Bryant of New York.

Intestinal Obstruction Due to Impaction of Feces, Gall Stones, Foreign Bodies, etc., by Dr. J. W. S. Gouley.

The Diagnosis and Indications for Treatment of Acute Intestinal Obstruction, by Dr. J. D. Rushmore of Brooklyn.

The Diagnosis and Indications for Treatment of Chronic Intestinal Obstruction, by Dr. Leroy J. Brooks.

Intestinal Obstruction Due to Intussusception and Volvulus, by Dr. John F. Erdmann of New York.

The Technique of Operative Treatment of Intestinal Obstruction, by Dr. Frederick Holme Wiggin of New York.

PUBLIC HEALTH.

Transmission of Typhoid Fever Through the Air.—Germano has published the results of experiments made at the suggestion and under the direction of M. Kruse, and having for their object to study the possibility of the transmission of typhoid fever through the air. These experiments, made with different specimens of earth and substances infected by Eberth's bacillus, demonstrate that these organisms do not long resist complete desiccation. For this reason the author claims that the spread of typhoid fever by means of dry dust is impossible, and that the assertion of certain authors, Troidboise among others, that the infection may spread several meters through the air is scarcely probable. On the other hand, the experiments of Germano, as well as of other writers, appear to prove that, in certain conditions of humidity, the pathogenic agent of typhoid fever not only remains alive for a rather long period, but may even preserve its vitality when in a condition of apparent desiccation. Conditions favorable to transmission are produced, above all, when typhoid bacilli adhere to subjects which easily retain moisture, such as linen, cloth, earth, dust and fecal matter. Even in these circumstances, however, the microbes generally perish after desiccation although some of the most resistant survive. The danger consists not so much in particles of these substances being carried through the air, since, when the mechanical fragmentation is carried to an extreme degree, the microbes perish, as in the fact that such particles may gain access to the mouth of susceptible subjects. The essential danger of propagation of the typhoid bacillus lies in the power of the organism to live for a long time when desiccation is incomplete. This property may explain the spread of many epidemics. — *Health.*

Aerial Convection of Smallpox.—That a smallpox hospital in a poor and crowded locality may be, and usually is, a source of infection to the surrounding neighborhood is not denied; it is when we come to inquire for the causes of the spread in its vicinity that doubt and difficulty arise, and it is impossible to agree with Dr. Priestly that so long as a smallpox hospital is allowed to be a source of danger, whether it be by aerial infection or by maladministration, it does not concern a medical officer of health as a matter of fact, for the question is not merely of academic interest, seeing that its solution must be of some importance, not as an argument for or against placing smallpox hospitals in crowded localities, but in view of the selection of a site within a mile of any human dwelling. In every smallpox epidemic it is found that a certain percentage of cases around a hospital can be traced, apart from any question of maladministration, to ordinary known channels of infection, such as the incomings and outgoings of nurses, staff, tradesmen, patients, and friends of patients, and these are and must invariably be intensified as we approach such a center as a smallpox hospital; but even after the most searching inquiry a residuum remains to which no clue has been discovered, and of these it is said that they diminish in number as we get farther from the hospital, which is not invariably the case, and that they are not in excess along the main approaches, which we should have no right to expect, for the people who walk in a street are not always those who dwell in it. The elimination of this residuum is always a matter of extreme difficulty, as has been shown even when the investigation has taken place dur-

ing the progress of an epidemic, much more after a lapse of weeks or months, yet it is upon the complete elimination of these cases that the theory of distal aerial infection is based. That the theory has never been disproved is no argument in its favor, for the same might be said of the wonders worked by the diviner's rod. The main question is whether the theory fits in with the facts; if it does not, then it has not come to stay, but must make way for some other that will. Observations are wanted, especially in the country, where facts can be ascertained with much more precision than in a populous center. There must be many available from medical officers of health and medical practitioners throughout the country if only they could be collected. The chief difficulty, however, in accepting the distal infection theory remains to be noticed, viz., the startling immunity which has over and over again been observed in large bodies of presumably susceptible individuals living near to smallpox hospitals and among whom, according to the distal aerial theory, smallpox should have appeared with an intensity proportioned to their nearness to the center of infection. No explanation is offered for these remarkable exemptions from the incidence of a disease which (within limits still undefined) is acknowledged to be infectious above all others, and when it is borne in mind that by the chance discovery of its origin in a single case a clue might be given which would sweep away the better part or even the whole of the residuum on which the "circle argument" is based, the conclusion is irresistible that the theory of distal aerial infection rests on a very imperfect basis and that much more evidence is required before it can meet with general acceptance.—*London Lancet*.

Vital Statistics for June, 1898, in the State of New York.—June is always, next to November, the month of least mortality in this State; with an average daily mortality of 320 for the entire year, for the past ten years, that of June has been 294. The daily average for the past month reported has been 288, that of the five months preceding having been 325. Compared with the preceding month of May there were 1100 fewer deaths reported, of which decrease 300 occurred in the maritime district; the death-rate has lessened from 17.15 per 1000 population to 16.00. Aside from diarrheal diseases there were 100 fewer deaths from zymotic diseases this month. Diarrheal diseases caused 250 more deaths than in May. From acute respiratory diseases there were hardly more than half as many deaths, there having been about 700 fewer than in May, and there were 120 fewer deaths from consumption. Diseases of the digestive organs caused more deaths than in May, but other local diseases show a considerable decrease. Accidental deaths, many of which were from drowning, caused an increase of 100 over May. Fewer deaths from old age occurred this month. Compared with June, 1897, there were fewer deaths in all of the sanitary districts, the maritime district reporting 150 fewer, and in the entire State the reported mortality is less by 400, and by nearly as many is it less than the average of June for the past ten years. A large part of this decrease is in the mortality of early life, and one-half of it is in zymotic diseases. There is also a considerable decrease in acute respiratory diseases. Diarrheal diseases caused 375 deaths, half the usual mortality for June. Diphtheria caused 175 deaths, or 50 less than in May, and one-half that of June, 1897. Whooping-cough caused 111 deaths, the same number as in May and double that of last June. Cerebrospinal meningitis is also very much more prevalent than a year ago, 110 deaths being reported from it, which is excessive, all the sanitary districts reporting it, but the increase is mainly in the maritime district. Consumption shows the usual June mortality, about 1000 deaths. Smallpox has developed in no new localities since the report of last month. All of the ten reported localities, except Fredonia and Moravia, are believed to be free from the disease

and these are probably soon to be relieved. Of the 50 cases in all, 8 occurred in the troupe importing it; the cases have been generally very mild, no fatality occurring. The mean temperature for the month was 1 degree above the normal of 66 degrees, the average highest being 90 degrees, lowest 43 degrees; there were ten clear days and a slight deficiency for the State in rain-fall, although this was excessive in the eastern part of the State; winds southwesterly.—*Bulletin of the State Board of Health, New York*.

Health in Chicago.—The report of the Department of Health for July gives the total deaths for the month as 1938, a rate of 1.20 per 1000 as compared with 1.44 for July, 1897, and 1.52 for July, 1896. Of these deaths, 614 were of persons under one year of age, and 241 between one and five years. The principal causes were: Diseases of the nervous system, 246; diarrheal diseases, 247; other acute intestinal diseases, 208; consumption, 163; heart diseases, 119; pneumonia, 77; typhoid fever, 55; diphtheria and membranous croup, 48; cancer, 48; bronchitis, 34.

Circular No. 5.—

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, Aug. 8, 1898.

The attention of medical officers is invited to Circular No. 1 from this office dated Washington, April 25, 1898.

The extensive prevalence of typhoid fever in camps of instruction indicates that the sanitary recommendations made in this circular have not been carried out. If medical officers have failed to make the proper recommendations as indicated, the responsibility rests with them. If the recommendations have been made and not acted upon by those having authority in the various camps, the responsibility is not with the Medical Department, but these recommendations should be repeated and commanding officers urged to move their camps at frequent intervals and to maintain a strict sanitary police.

GEO. M. STERNBERG, Surgeon-General, U. S. Army.

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, April 25, 1898.

Circular No. 1.

In time of war a great responsibility rests upon medical officers of the Army, for the result of a campaign may depend upon the sanitary measures adopted or neglected by commanding generals of armies in the field. The medical officer is responsible for proper recommendations relating to the protection of the health of troops in camp or in garrison, and it is believed that, as a rule, medical officers of the United States Army are well informed as to the necessary measures of prophylaxis and the serious results which infallibly follow a neglect of these measures, especially when unacclimated troops are called upon for service in a tropical or semitropical country during the sickly season. In Cuba our armies will have to contend not only with malarial fevers and the usual camp diseases—typhoid fever, diarrhea, and dysentery—but they will be more or less exposed in localities where yellow fever is endemic, and under conditions extremely favorable for the development of an epidemic among unacclimated troops. In view of this danger, the attention of medical officers, and of all others responsible for the health of our troops in the field, is invited to the following recommendations:

When practicable, camps should be established on high and well-drained ground not previously occupied.

Sinks should be dug before a camp is occupied, or as soon after as practicable. The surface of fecal matter should be covered with fresh earth or quicklime or ashes three times a day.

New sinks should be dug and old ones filled when contents of old ones are two feet from surface of ground.

Every man should be punished who fails to make use of the sinks.

All kitchen refuse should be promptly buried and perfect sanitary police maintained.

Troops should drink only boiled or filtered water and coffee or tea (hot or cold), except where spring water can be obtained which is pronounced to be wholesome by a medical officer.

Every case of fever should receive prompt attention. If albumin is found in the urine of a patient with fever it should be considered suspicious (of yellow fever) and he should be placed in an isolated tent. The discharges of patients with fever should always be disinfected at once with a solution of carbolic acid (5 per cent.) or of chloride of lime (6 oz. to a gal-

lon of water), or with milk of lime, made from fresh quicklime.

Whenever a case of yellow fever occurs in camp the troops should be promptly moved to a fresh camping ground, located a mile or more from infected camp.

No doubt typhoid fever, camp diarrhea, and probably yellow fever are frequently communicated to soldiers in camp through the agency of flies, which swarm about fecal matter and filth of all kinds deposited upon the ground or in shallow pits, and directly convey infectious material, attached to their feet or contained in their excreta, to the food which is exposed while being prepared at the company kitchens, or while being served in the mess tent. It is for this reason that a strict sanitary police is so important. Also because the water-supply may be contaminated in the same way, or by surface drainage.

If it can be avoided, marches should not be made in the hottest part of the day—from 10 A.M. to 5 P.M.

When called upon for duty at night or early in the morning, a cup of hot coffee should be taken.

It is unsafe to eat heartily or drink freely when greatly fatigued or overheated.

Ripe fruit may be eaten in moderation, but green or over-ripe fruit will give rise to bowel complaints. Food should be thoroughly cooked and free from fermentation or putrefactive changes.

In decidedly malarious localities, from 3 to 5 grains of quinin may be taken in the early morning, as a prophylactic, but the taking of quinin as a routine practice should only be recommended under exceptional circumstances.

Light woolen underclothing should be worn, and when a soldier's clothing or bedding becomes damp from exposure to rain or heavy dews the first opportunity should be taken to dry it in the sun or by fires.

GEO. M. STERNBERG,
Surgeon-General U. S. Army.

[NOTE.—Circular No. 3 is the last of the series of 1897.]

NECROLOGY.

JOHN B. HATTON, M.D., Des Moines, Iowa, died August 7. Dr. Hatton was born in an Indian camp in Monroe county, Mo., July 7, 1839, the last of thirteen children. When 17 years of age he entered a subscription school, paying his tuition with money earned from working on a farm. Later he began the study of medicine under the instruction of his brother. Afterward, in the winter of 1859-60 he secured the advantages of a lecture course in the College of Physicians and Surgeons at Keokuk, Iowa. While thus preparing himself the Civil War occurred and he enlisted in Company F, Thirty-fourth Iowa volunteers, and was elected first lieutenant of the company. Oct. 15, 1862, he was mustered into the service and commissioned as first lieutenant. The regiment took a prominent part in the 'three days' fight at Chickasaw Bluffs, Miss., under Sherman, later in the great battles about Vicksburg, and was present at the surrender of Pemberton and his army, July 4, 1863. Afterward the regiment participated in the battles which ended in the capture of Forts Gaines and Fisher. Dr. Hatton was made assistant-surgeon, and when the captain of his company, being wounded and unable to retain command, resigned, he was appointed to the place in November, 1864. He located in Des Moines in 1890.

RICHARD M. SWEARINGEN, M.D., New Orleans School of Medicine 1867, and Louisville Medical College 1886, died at his home in Austin, Texas, August 7, in his 60th year. He was State Health Officer of Texas for twelve years. For his efficient service during the yellow fever outbreak on the Gulf coast in 1897, he will be long remembered, notwithstanding his unmerited unpopularity with the business community.

JOHN H. PICKETT, M.D., Buffalo, N. Y., 1865, died August 9, in Elizabeth, N. J., of which city in 1884 he was a defeated candidate for the mayoralty. He was a war veteran, prominent in temperance circles and until his health failed was a surgeon of the N. J. Central Railroad. His wife died several years ago, and so far as known he has no living relatives.

CARL E. ELSNER, M.D., Halle, 1874, died at his home in New York City, August 8, after a lingering illness. He was a surgeon in the German army and received the Iron Cross for skill and bravery during a campaign. A resident of this country for the past twenty years, he achieved more than an average success.

THOMAS J. DOUGHTY, M.D., University of Michigan 1896, Health Officer of Fishkill and Matteawan, N. Y., died at the home of his father, Dr. John H. Doughty, August 2. He was aged about 31 years.

WARREN KEMBLE, M.D., College of Physicians and Surgeons, N. Y., 1868, of Saugerties, N. Y., died there August 10, aged 57 years.

E. GERTRUDE CRUM, M.D., Assistant Physician of the Binghamton (N. Y.) State Hospital for the Insane, died August 5, aged 31 years.

JOHN H. BAILEY, M.D., Sturgis, Ky., July 30, aged 28 years.—FRANK HAMER BRICKELL, M.D., New Orleans, La., August 8, aged 41 years.—WILLIAM MCGREGOR, M.D., of the McGregor Hospital, Sioux City, Iowa, August 5.—J. D. MARTIN, M.D., Savannah, Ga., August 3, aged 40 years.—E. G. MOORE, M.D., Spring Valley, Ill., August 11.—AMBROSE MORRISON, M.D., Nashville, Tenn., August 3.

BOOK NOTICES.

Wounds in War. The Mechanism of their Production and their Treatment. By Surgeon-Colonel W. E. STEVENSON, Professor of Military Surgery, Army Medical School, Netley, England. Pp. 588. Svo, profusely illustrated. New York: William Wood & Company. Muslin, \$4.00 net.

The author says truly in his preface "that no branch of surgery has undergone more important changes in consequence of the teachings of Lister and Pasteur than that of gunshot wounds."

There are fourteen chapters, divided as follows: 1. Introductory remarks on wounds by side arms, rifles, portable firearms and the mechanics of projectiles. 2. Characteristics of injuries produced by projectiles. 3. The primary phenomena and symptoms accompanying gunshot wounds (such as shock and hemorrhage). 4. Treatment of wounds in war. 5. General treatment of the bullet wounds. 6. Gunshot wounds of joints. 7. Gunshot wounds of hip-joints. 8. Gunshot wounds of the diaphyses of long bones. 9. Wounds of the head. 10. Wounds and injuries of the chest. 11. Wounds and injuries of the abdomen. 12. Injuries of the pelvis. 13. Defects and use of modern small arms in the wars of the future. 14. The Geneva Convention.

The illustrations in the volume comprise a good many photographs showing the effect of gunshots. The recognition of American authors is full and complete, the lamented Otis being frequently quoted and at length. Senn, Nancrede, McGraw, Marion-Simms and the late Charles T. Parkes are mentioned frequently. In regard to Otis the writer says: "I have frequently availed myself of that inexhaustible source of information on this subject, 'The Surgical History of the War of the Rebellion' in the United States, by G. A. Otis, a work which must continue to be a record of labor and research which may never be surpassed." Notwithstanding the generous praise given by the author to his predecessors, he has ample reason for having opinions of his own on most subjects and indeed does not hesitate to modestly express them.

The author points out the infrequency of amputations in these latter days, but our military brethren will see nothing about the effects of the Mauser bullet, although there is an abundance of material on others of the same class.

The work is of great value, not only to military but to civil surgeons as well.

Manual of the Diseases of Children. By JOHN MADISON TAYLOR, M.D., and WILLIAM H. WELLS, M.D. Illustrated. Pp. 473. Philadelphia: P. Blakiston's Sons & Company, 1898. Price \$4.00 net.

This is not claimed to be an exhaustive treatise on the dis-

eases of children, although if it had been so claimed, the claim would not have been far out of the way, as it seems to contain all the essentials, and the aim of the authors has been to present in a clear and precise manner the chief points. Pathology has been abbreviated, not because this most important division of the subject is not valuable, but for the reason that in so small a work there is not surface room to adequately describe the constantly increasing discoveries in this direction.

There are twenty chapters which cover in a general way the physiology of the infant in childhood; diseases occurring at or near birth; general hygiene of infants and children; feeding and food; the breeds of cows best adapted for infancy feeding; diet of children; artificial foods, recipes, etc.; diseases of the peritoneum; diseases of the liver, diseases of the genito-urinary system; diseases of the genital organs; diseases of the blood; diseases of heart, respiratory organs; nervous system; diseases of the acute infections; diseases of the skin; physical development; diseases and accidents requiring surgical procedures. The book is well written and up-to-date.

International Clinics. A Quarterly of Clinical Lectures. By JUDSON DALAND, M.D.; J. MITCHEL BRUCE, M.D.; DAVID W. FINLEY, M.D. Volume ii, 8th series. Pp. 363. Philadelphia: J. B. Lippincott Company. 1898.

These clinics are very useful and the present volume contains clinical lectures on subjects of current interest to the profession. The contributors to the volume are A. H. Freedland Barbour, M.D.; A. L. Benedict, M.D.; S. S. Bishop, M.D., B.S., LL.D.; William C. Boteler, M.D.; James Cantlie, M.B., F.R.C.S.; J. H. Claiborne, M.D.; Henry Clark Coe, M.D.; E. Treacher Collins, F.R.C.S.; Floyd M. Crandall, M.D.; Charles Green Cumston, M.D.; James Mackenzie Davidson, M.D.; Prof. C. A. Ewald; L. Webster Fox, A.M., M.D.; Louis Frank, M.D.; J. McFadden Gaston, M.D.; A. Pearce Gould, M.S., F.R.C.S.; Professor Grancher; J. N. Hall, M.D.; B. C. Mirst, M.D.; W. W. Keen, M.D.; John A. Larrabee, M.D.; Alexander McPhedran, M.D.; W. Milligan, M.D.; F. W. Mott, M.D.; T. Pickering Pike, F.R.C.S.; A. Pinard, M.D.; Prof. Albert Robin; A. D. Rockwell, M.D.; William L. Rodman, M.D.; J. T. Schamberg, M.D.; N. Senn, M.D.; John Lindsay Stevens, M.D.; Prof. R. Von Jaksch; W. Hale White, M.D.; Frank C. Wilson, M.D.; James K. Young, M.D.

It will be seen by the list of names and the special articles by each, that medicine, neurology, surgery, gynecology, obstetrics, ophthalmology, laryngology, pharyngology, rhinology, otology and dermatology have able representatives. As clinicians the ability of these teachers is well known, and the fortunate possessor of this book, if he draw on his imagination very little, can easily imagine himself once more in the amphitheater reviewing the scenes but not the teachings of his youth. The popularity of these volumes has been immense and it is not likely that there will be any falling off in the interest which attaches to them.

The Office Treatment of Hemorrhoids, Fistula, etc., without operation, together with remarks on the relation of diseases of the rectum to other diseases in both sexes, but especially in women, and the abuse of the operation of colostomy. By CHARLES B. KELSEY, A.M., M.D. 12mo, cl. 68 pages. Price 75 cents, net. New York. E. R. Peltou, 1898.

The contents of this volume are: The Cure of Hemorrhoids, Fistula, Fissure and other Affections of the Rectum by Office Treatment without Operation. On the Relation between Diseases of the Rectum and other Diseases in both Sexes, but especially in Women. On the Abuse of the Operation of Colostomy, or the Formation of an Artificial Anus.

Anything written by Doctor Kelsey on subjects with which he has been so many years identified will always receive attention. Doctor Kelsey has proved that a great many cases of hemorrhoids and fistula can be treated without surgical operation and this little book contains three lectures that set forth

his methods. The charlatan has too frequently had a monopoly of operations "without the knife or ligature," and the author has done well in giving the legitimate profession the means of accommodating those of their clients whose fear of operative measures is likely to lead them astray.

Electricity in the Diagnosis and Treatment of Diseases of the Nose, Throat and Ear. With 16 illustrations. By W. SCHEPPEGRELL, A.M., M.D. Pp. 403. New York and London: G. P. Putnam, Sons, 1898 [from A. C. McClurg & Company, Chicago]. Price \$4.50.

The illustrations in this book are fair, and the printing is well done. The book is printed on good paper.

The use and application of electricity has been retarded largely by reason of the extravagant claims made for it at the outset. These have now become circumscribed and the exact field of electro-therapeutics more clearly defined. In effect, while the claims have become more trustworthy, the use of electricity in medicine has become greatly extended and it is believed now by many, that, so far as electro-therapeutics is concerned, notwithstanding its occasional brilliant results, it is now only on the threshold of what it will become in the future.

Exercises in Practical Physiology. By AUGUSTUS D. WALLER, M.D., F.R.S. Part 3. Physiology of the Nervous System; Electro-Physiology. Pp. 80, 91, bds. London: Longmans, Green & Company. 1897.

We have already noticed the first and second parts of this physiology, and this volume is a continuation of the series and gives full directions for the carrying out of experiments in the physiologic laboratory on the physiology of the nervous system. There are sixty-eight demonstrations in this work.

Atlas and Epitome of Operative Surgery. By Dr. OTTO ZUCKERKANDL. Authorized translation from the German. Edited by J. CHALMERS DACOSTA, M.D. With 24 colored plates and 217 illustrations in the text. Pp. 395. Philadelphia: W. B. Saunders. 1898. Price \$3.00 net.

This Atlas is a valuable one. The selections are judicious. This book is a very fitting companion piece to the surgery of the translator, which was issued about the same time and which is elsewhere noticed.

Tropical Diseases, A Manual of the Diseases of Warm Climates. By PATRICK MANSON, M.D., LL.D. (Aberd.), London. Pp. 625. 12mo. Illustrated by 88 wood engravings and two colored plates. New York: William Wood & Company. Muslin, \$3.50 net.

Dr. Patrick Manson, the author of this book, has had a special opportunity for observation of the tropical diseases, especially in China, where his various papers have been published from time to time in the medical reports of the *Imperial Chinese Customs Gazette* and have been of great value and peculiar interest. To Manson is due, more than to any other, the establishment of the fact that the mosquito is the intermediate host of the *filaria nocturna*. Few have had better opportunities for observation of the filarial diseases than Dr. Manson, and he has made very good use of them.

A careful review is given, in the book, of the unclassified fevers of the tropics. Beriberi, leprosy and yaws receive full attention.

Just now, when the eyes of many medical men are turned toward the tropics, this volume will prove very interesting and instructive.

A Practical Treatise on the Diseases of Women and Their Treatment by Electricity. Third edition, revised, rewritten and greatly enlarged. By G. BETTON MASSEY, M.D. Illustrated with twelve full-page original chromo-lithographic plates in colors, numerous full-page original plates of photographs taken from nature, and many other engravings in the text. Royal octavo. 400 pages. Extra cloth, beveled edges, \$3.50 net. New York, Philadelphia and Chicago: The F. A. Davis Company. 1898.

The work of Dr. Massey as completed gives a fair résumé of the teachings of the day in regard to the use of electricity in gynecology. It will be especially welcomed by those who limit

the field of operative surgery in gynecologic cases, in some of which electricity sometimes exerts a wonderful influence. Heretofore the electricians have seemed to claim too much for their favorite agent. That it has a distinctly enlarging scope there is no doubt. The work under consideration is conservative and well written.

A Primer of Psychology and Mental Diseases for the Use of Training Schools for Attendants and Nurses and in Medical Classes. By C. B. BURR, M.D. Second edition, thoroughly revised. Pp. 116. Philadelphia, New York and Chicago: The F. A. Davis Company, 1898.

This book is a general guide to the management of cases of insanity, and contains also a valedictory address delivered to the class of 1895, Training School for Attendants of the Eastern Michigan Asylum. It is well adapted for the use of junior medical students as well. In the management of cases the author's advice is sound and judicious. Many of the precepts laid down by him are worthy to be engraved over the doors of the wards of asylums so that they might be ever present to the attendant.

A Manual of Surgery for Students and Practitioners. By WILLIAM ROSE, M.B., B.S. Lond., F.R.C.S., and ALBERT CARLESS, M.S. Lond., F.R.C.S. Pp. 1162. 8vo. Profusely illustrated by wood engravings. New York: William Wood & Co., Publishers. Extra muslin \$5.00 net, leather \$5.75 net.

This work is intended to be a complete treatise on surgery, in a single volume, and its principal author is well known in this country as a distinguished operator. We have examined this book with much pleasure and take pleasure in commending it. We recognize a number of old-timers among the illustrations, but for the most part they are new. We commend the work and predict for it considerable popularity in this country.

Manual of Physical Diagnosis, for the use of students and physicians, by JAMES TYSON, M.D. Third edition, revised and enlarged. Colored and other illustrations. Pp. 179. Philadelphia: P. Blakiston's Son & Company, 1898. Price \$1.50 net.

This manual has not been changed especially from the last edition except in the sections on examination of the blood and the chemic examination of gastric contents. A number of new illustrations have been introduced together with other additions of a minor character, all adding to the accuracy and usefulness of the book.

Prof. Tyson is too well known as a careful observer and skillful clinician for us to do more than mention his name in connection with a work, to give it sufficient praise.

Ovariectomy and Abdominal Surgery. By HARRISON CRIPPS, London; J. & A. Churchill, 1898. [Philadelphia: P. Blakiston's Son & Company. Price \$8.00 net.]

The author says, "the chief object of this work is to record only such operative details as I have found valuable in my experience, that without the book running into a larger scope than was intended, it is impossible to describe in detail the various methods adopted by other operators." Cripps has been known in this country many years, by reason of his bold and original methods of operating. Cases are given in the latter end of the book, and the operator who follows Cripps' methods will make few mistakes.

Manual of Modern Surgery. General and Operative. By JOHN CHALMERS DACOSTA, M.D. With 390 illustrations. Pp. 911. Philadelphia: W. B. Saunders. 1898 [From W. T. Keener, Chicago Agent].

This is a much better book than its predecessors. It will be found concise and entertaining, as the book is not padded, but contains the essentials of the practice of surgery. The methods recommended are up-to-date.

Accessory Nipples.—Accessory nipples were noted in 10,000 out of 115,000 recruits examined recently in Germany, according to a communication in the *Progrès Médical* of June 25.

MISCELLANY.

Inherited Tabes.—Kalischer reports simultaneous cases of tabes dorsalis in mother and son of 21 years, without a trace of syphilitic antecedents in either.—*Berlin Klin. Woch.*, No. 18.

Cholera in India.—Between Monday morning and Friday night, says a dispatch from Madras, August 13, there were fifty-five deaths from the disease, the fatalities prior to the day first mentioned having been 117.

The School of Medicine of Georgetown University, Washington, D. C., is now a full-fledged day-school, the last evening classes being held last year. On August 15 the new hospital, under the control of the school and having accommodations for thirty patients, was opened, in connection with which there is an emergency and dispensary service.

Moderate Bullet Wounds.—"The destructive character of the bullets when they strike a hard surface, was shown in the wounds treated during the recent riots in Milan," states the *Klin. Therap. Wochenschrift* of June 26. "Every arm or limb wounded had to be amputated; every person shot in the trunk died, and whenever the skull was struck, the top was lifted up like the cover of a box and the brain matter scattered around."

Creation of an Articulation.—Ollier reports unexpectedly successful functional results in a case in which the upper end of the humerus and scapula had already been removed. He created an articulation by fastening the clavicle to the floating upper end of the humeral diaphysis, modifying with a few stitches the points of insertion of the deltoid and scapula muscles to adapt them to the new articulation, which works remarkably well.—*Echo Méd. du Nord*, June 19.

An International Leprosy Archiv.—A leprosy archiv is to be established by a committee including E. Bevier, K. Dehio, A. Hansen, J. Hutchinson and A. Neisser. It is intended to contain all administrative and legislative measures in regard to leprosy as well as scientific communications in the three principal languages. The sympathy and cooperation of all interested in the subject are most cordially requested.

Traveling Professorships.—An anonymous benefactor has presented the Paris University with funds sufficient to endow for a term of years five of the professors "agrégés of secondary instruction" with 15,000 francs each for a trip around the world, a knowledge of English the only condition. Another endowment provides an income of 2,000 francs to be loaned to needy French or foreign students, the amount to be returned later without interest.

Cerebral Neoplasms.—Krauss in the *New York Medical Journal* for July 30, considers the classic symptoms of brain tumor in their order of importance as: 1, head pain; 2, optic neuritis; 3, mental apathy; 4, nausea and vomiting, and 5, paralysis as a special localizing symptom. The early symptoms are headache, incapacity for mental work, disordered digestion, nervous irritability, and a general malaise. Choked disc or optic neuritis he considers almost pathognomonic of cerebral tumor and a decisive symptom.

Alcohol Injections in Cancer.—In the *Philadelphia Medical Journal* of May 28, Kuh' makes a second contribution to this treatment. He reports cases and discusses the work of Hasse of Germany, in curing fifteen out of eighteen well authenticated breast cancers. He believes one may safely begin with 30 per cent. injections, increasing to 40 or 50 per cent., as the tolerance of the patient permits. He says that in cases in which the growth has become adherent to the pectoral muscle, Hasse always advised the operation, followed by alcohol injections, and again, all relapses should be treated or prevented by the injection method, as the pitiful insufficiency of surgery in relapse is too well known to be dwelt upon.

"**Journal of Tropical Medicine.**"—It is proposed, if enough support can be obtained for the scheme, to publish in London a monthly journal dealing with the diseases of warm climates, to be devoted to the publication of papers on tropic diseases and to the discussion of subjects scientific and practical affecting the interests of medical men in tropic and subtropic climates. The annual subscription, including postage, is to be 17s. We wish the promoters success in their new venture. They deserve it, for there is no country which has such a large interest in the tropics and the diseases common to them as our own.

Longevity and Wine.—According to *La Médecine Moderne*, red wines are preferable to white because the consumers of the former live longest. A viticulturist of the Gironde bethought himself to carry out an investigation as to human longevity in white and red wine districts respectively, taking as his basis the electoral lists in the various departments. Among 7738 electors domiciled in a red wine country he found 381 individuals who were more than 75 years old, whereas among 3029 electors belonging to a white wine country there were only eighty-one, an appreciable difference. Yet red wine is more easily adulterated than white wine.—*London Lancet*, July 16.

Recovery from Traumatic Tetanus.—Davis (*Annals of Surgery* for August) reports two cases of recovery from traumatic tetanus after the use of antitoxin. The first case received forty-two doses in eighteen days, the second twenty-eight in twelve days. Sedative drugs were used in addition to the antitoxin, but he believes that this does not destroy the value of the evidence for antitoxin. In the first case symptoms arose one week after its reception and during the next week had not progressed further than having pain in the cheek, throat, back and neck, with contraction of the facial muscles, difficulty in swallowing, inability to fully open the mouth and a slightly staggering gait. The second case on entering the hospital was having three to eight spasms hourly, the injury having been received three weeks previous to admission; and his symptoms had been present for a week.

Epilepsy.—According to the latest views, epilepsy is a complex of symptoms proceeding from a diseased condition of the cortex, induced by three factors; hereditary and personal tendency and a periodically-recurring, exciting cause, evidently toxic substances periodically accumulating in the organism from abnormal metabolic processes. The nature of these toxic substances is still undetermined; in certain cases it seems to be the ammonium carbamate derived from the urea. These views indicate the importance of dietetic and therapeutic measures to control the metabolism and promote the elimination of the toxic substances, while they still maintain the value of the bromids and quieting remedies. They also point out the lines for further research.—*Munich Med. Woch.*, June 28.

Endarteritis of the Renal Arteries.—Drs. Bradford and Lawrence have made a joint research on this subject and report an illustrative case in a hospital patient, a female, aged 36 years, suffering from anuria: history mainly negative; anemia and weakness, but no dropsy, headache, sickness or convulsions; intellect clear to the last. The cortex of each kidney was found bright buff-colored, and sharply defined from the pyramids; microscopically the convoluted tubules were seen to be necrotic. This necrosis was due to thrombosis of all those branches of the renal artery which had reached an approximate diameter of 100 μ evidently of the so-called "interlobular" arteries; all branches of the renal arteries were extensively diseased, the media and especially the intima being thickened and sclerosed. The interstitial tissues of the kidneys was not increased. The patient thus presented the typical clinical picture associated with "obstructive suppression," while the morbid appearances were such as should, according to

theory, have given rise to uremia. The authors hold that this case throws grave doubts on the view held by many, "that uremia is independent of the mere retention of normal but toxic products that ought to be excreted." The case also shows the independence of renal endarteritis and extensive renal cirrhosis.—*British Medical Journal*.

Gunshot Injuries of the Spine.—Prewitt (*Annals of Surgery* for August) divides gunshot injuries of the spine into three classes: 1. Those that simply fracture the arches. 2. Those that invade the canal, crushing the cord and damaging the vertebræ. 3. Those complicated by serious injury to abdominal or thoracic viscera. As to the first class, he advises immediate treatment by laying open the track of the wound under most rigid antiseptics, as do most surgeons. Although most of the second class cases are fatal sooner or later, he believes that the dangers of myelitis and meningitis, with a prolongation of the lives of some, even though paraplegic, will follow the cleaning and disinfecting of the wound. Of the third class he says: "The presence of complications due to the penetration of the great cavities and injury of the viscera will influence the question of operation, but not necessarily forbid it."

Hysterical Joints.—Moore (*Annals of Surgery* for August) writes on "Hysteria from a Surgical Standpoint" and says that it is in joint and spine ailments that the surgeon is most likely to meet with hysteria, and it is of so frequent occurrence here and often so closely resembles the real disease that he must ever be on his guard lest he mistake the shadow for the substance. These hysterical joint affections sometimes so closely resemble tubercular joints as to deceive very good diagnosticians, and usually follow an injury. While there may be slight atrophy, it is only that due to non-use or bandaging. There is no rise of temperature, though it may be subnormal, and while there may be slight puffiness about the joint, there is no marked swelling. The restriction of motion is different from that characteristic of tuberculosis, varying from one moment to another and even temporarily disappearing when the patient's attention is directed elsewhere. The muscular spasm is very different from that of tuberculosis, it being more marked and voluntary. The hysterical joint is usually deformed and the deformity often greatly exaggerated. The deformity is apt to be a flexion. As a treatment he has obtained the best results by reducing the deformity, holding the limb in proper position for a short time and insisting that a cure has been wrought, very little anesthetic being necessary.

Pulmonary Tuberculosis.—Stubbert (*New York Medical Journal* for July 30) in discussing "Sanitarium Treatment of Pulmonary Tuberculosis," says that the cured incipient cases are estimated at 59 per cent., statistics being compiled under the most favorable circumstances obtainable in properly conducted sanitariums. He considers the first essential in a sanitarium a routine examination in all details, basing treatment upon climatic, hygienic and dietetic influences. He considers diet an all-important factor and increase of weight a prognostic factor of great importance. At the Loomis Sanitarium all patients, unless temporarily excused, are required to remain out of doors eight hours a day, and within a month after arriving the majority of their patients are able to walk from one to seven miles a day and they do it. The room temperature is not allowed to be over 65 degrees during the day and all windows are left open at night. As to the advantages of serum treatment, he says: "1. It does not tax the function of digestion or produce gastritis, diarrhea or loss of appetite. 2. In cases wherein the bacilli have disappeared, they have been lost while sputa were still present, whereas in creosote cases the last specimen of sputa contained bacilli. 3. Up to the present time no relapses have occurred among our patients declared cured by serum treatment; they are occasion-

ally met with in creosots cases." The writer claims to treat about an equal number of patients with tuberculosis, in the sanitarium and out of it, and from his experience has found that all incipient cases do better within a sanitarium, *i. e.*, one built on the cottage plan; a smaller percentage do well outside. Statistics show that about 86 per cent. treated in a sanitarium improve, but only 58 per cent. outside, and that in 41 per cent. the disease is arrested and cured within, but in a less percentage outside. In far advanced cases he believes the patients are better off at home.

Defective Compensation in Heart Troubles.—Defective compensation in heart troubles is best remedied, according to the experiences of Prof. H. Eichhorst of Zurich, with a combination of digitalis and diuretin (double salicylate of sodium and theobromin). It is indicated in every case, he states, that is not cured by absolute repose. A course of thirty powders will completely cure the edema and concomitant disturbances in nearly every case. There is sometimes a peculiar somnolence, with dyspnea and psychic troubles, but these are caused by the absorption of the edema and not by the medication, and subside as the noxious substances are gradually eliminated through the kidneys. Formula: pulverized digitalis leaves, 10 centigrams; diuretin, 1 gram; sugar, 30 centigrams. For one powder. Make xii. Take three a day after meals.—*Semaine Méd.*, June 29.

Insomnia.—In the *Maryland Medical Journal* of July 23, Bond writes on "The Therapeutics of Insomnia," defining insomnia as "Any deficiency in sleep which threatens to interfere with health." He considers too shallow sleep with dreaming, or a sleep that leaves one tired on waking, forms of insomnia, and believes that testimonials of the sleeper as to how much he sleeps are necessarily questionable; therefore the first thing in the treatment is to find out whether insomnia is really present. In either case treatment must be given, in the former, tonics until the patient forgets his alleged insomnia, in the latter, hypnotic agencies. He says: "The physician's duty is not so much to compel as to secure permission for sleep. The hindrances to sleep proceed usually not from the brain itself, but from a disorder of the blood, and this usually from abnormal processes in the kidneys and other excretory organs and in the digestive tracts, or perhaps from the inhalation of impure air. . . . Although it is very dangerous to prophesy limitations to the progress of any science, yet I may venture to say that progress in hypnotic therapeutics will be along the line, not of a discovery of a universal ideal hypnotic drug, but of a more thorough study of the varying conditions in insomnia and of the circumstances which favor or hinder the effect of each drug."

Management of the Tuberculous Insane.—Dr. Bracken, Secretary of the State Board of Health of Minnesota, writes on the above subject warmly recommending a larger adoption of the principle of isolation at hospitals for the insane of tuberculous patients, and says further: "The greatest scourge of these institutions is tuberculosis, and there is a certain degree of apathy among physicians having charge. They do not recognize the etiologic relation between phthisis and insanity. I am convinced, however, that such causative conditions can be shown in not a few hospitals. The American Public Health Association has, by the report of its Committee on Restriction of Tuberculosis, pointed out the means of limiting the spread of this disease. By the adoption of these means the percentage of tuberculous deaths to the general death rate in one hospital has been reduced in the course of three years from an average of 25 per cent. to a fraction under 9 per cent. I was interested in this hospital report from Dr. Rohé of the Maryland hospital at Catonsville, and wrote to Dr. Wade, his successor, to learn the present condition of the tuberculous patients. He informs me that the death-rates from tuberculosis for 1896 was but 6.1

per cent. Dr. Wade describes the manner of caring for the tuberculous insane in this hospital as follows: "The sputa of the suspected case is examined, and if the bacilli are found the patient is placed in a single room, the walls of which are painted and can be easily disinfected. The furniture consists of an iron bedstead, which is readily cleaned. There are no curtains to the windows and no carpet upon the floor. The patient is persuaded, if possible, to expectorate into a vessel, which is disinfected with mercuric chlorid. If the patient expectorates about the room no harm can be done, however, as everything can be readily washed with a disinfectant. The bedding is properly cared for and is used for no other bed. After the death of the patient, the room and all of its contents are thoroughly disinfected."—Transactions Conference of State and Provincial Boards of Health.

Diet for the Sick in Army Hospitals.—So much has been published in the daily press about the unsuitability of the army ration as a dietary for sick soldiers, that the War Department has practically freed the kitchens of general hospitals from any need to rely on the coffee, hard bread and bacon of the ration. Up to this time the hospitals were entitled to one ration per day for each patient. Such articles of the ration as were required for use were drawn from the Subsistence Department in kind, and the money value of the articles not drawn was available as a hospital fund for the purchase of other articles of food from the Subsistence Department or from outside parties. General orders just published authorize surgeons in charge to expend 60 cents a day per patient for the subsistence of the sick in their wards. This is simply a commutation of the ration as a whole instead of the commutation of that part of it not drawn in kind; but as the new orders commute the ration at a much higher figure than its actual value, it gives ample facilities for providing all sorts of delicacies for the sick and for rendering them independent of the charity of the various relief associations. The orders are as follows: Medical officers in charge of general hospitals, hospital trains, hospital transports and the hospital at the camp at Pablo Beach, Florida, and at the hospital at the camp at Montauk Point, New York, will be allowed to expend from the appropriation "Subsistence of the Army," for the diet of the enlisted men undergoing medical treatment under their charge, at the rate of not exceeding 60 cents per man per day for the period each is undergoing treatment. The allowance so made will constitute a special fund in the hands of the medical officer in charge, from which will be purchased the entire diet of the enlisted men while undergoing medical treatment. These purchases will be restricted to articles of food, solid and liquid, the quantities and varieties of which will be determined by the medical officer in charge. Chief commissaries of departments will transfer to medical officers in charge such subsistence funds as may be estimated for by the latter for carrying out the objects of this order. There will be rendered monthly to the Commissary General of Subsistence, by the medical officers concerned, regular accounts current supported by vouchers showing the application of these funds, and regular returns of subsistence stores accounting for the articles of food purchased and issued. There will be submitted with each monthly return a tabular statement showing the number of patients present during the month as shown by the hospital records, and the money value of the articles issued to and consumed by them. The statement will be so arranged as to show the actual cost of subsistence per man per day for the month. Transfers of subsistence funds from one hospital, train or transport to another without authority of the Commissary General of Subsistence, and the purchase from subsistence funds of articles other than food intended for diet of the sick are prohibited. This order will go into effect at once, and all surplus funds in the hands of medical officers in charge, arising from the commutation of rations heretofore allowed to enlisted men undergoing treatment under their charge, will be taken up on their accounts current for the month of August, and all articles purchased from such commutation remaining on hand unconsumed on receipt hereof will be taken up on their return of subsistence stores for that month.

Medical Supplies Recommended to Regiments.—Memorandum of recommendation of Surgeon-General, April 15, 1898, to the Adjutant-General: Each regiment to take two ambulances, four extra litters, a field hospital for ten men, medical and surgical chests, field supplies for three months. Infantry regiments to have a steward or acting steward and ten privates of hospital corps. Cavalry regiments to have two stewards or acting stewards and fifteen hospital corps men. A light battery to have one ambulance, field hospital for five men (one hospital tent), an acting steward and five privates of the hospital corps.

April 20, 1898, the Surgeon-General sent instructions to Major B. F. Pope, chief surgeon, Tampa, Fla., directing him to inspect the medical department of each regiment upon its arrival, and report to him the deficiencies in medical supplies.

CONSOLIDATED LIST OF MORE IMPORTANT ARTICLES SENT TO TAMPA AND SANTIAGO.

First aid packets	No.	39,000
Alcohol	Qt. bottles	3,502
Bicarbonate of soda tablets	No.	237,200
Calomel and soda tablets	No.	40,000
Camphor and opium pills	No.	188,000
Castor oil	Qt. bottles	1,422
Chloroform	0.2 lb bottles	3,470
Compound cathartic pills	No.	259,200
Ether	0.2 lb tins	3,290
Fowler's solution	Oz. bottles	1,180
Morphine tablets	No.	17,300
Quinin pills	No.	4,678,000
Strychnin tablets	No.	50,000
Subnitrate of bismuth	lb bottles	657
Antiseptic tablets	No.	150,000
Carbolic acid	2 lb bottles	6,000
Iron, sulphate, commercial	20 lb boxes	500
Lime, chlorid	lb bottles	4,456
Sulphur, in rolls	lbs.	4,000
Formal gas generators, with supplies for same	No.	2
Beef extract	0.2 lb tins	5,790
Brandy	Qt. bottles	977
Condensed milk	tins	3,544
Soap, castile	lbs	974
Soups (Franco-American), 24 cans in case	Cases	981
Sugar, white	lbs	2,868
Tea	lbs	495
Whisky	Qt. bottles	1,621
Stationery, a large supply to cover needs		
Bandages, gauze, sterilized, 14 in box	Gross	839
Cotton, absorbent	lbs	1,240
Gauze, sublimated	Pkgs.	33,000
Gauze, iodoform	"	3,650
Ligatures, catgut, sterilized	"	18,600
Ligatures, silk, sterilized	"	18,600
Oakum	lbs.	1,260
Sponges, compressed cotton	Boxes	2,850
Thermometers, clinical	No.	211
Blankets, gray	"	5,440
Chairs, arm, folding	"	235
Chairs, small, folding	"	2,350
Cots, folding	"	4,250
Mattresses	"	2,500
Mosquito bars	"	3,750
Pillows, feather	"	850
Pillows, hair or cotton	"	4,250
Pillow cases, cotton	"	7,700
Sheets, cotton	"	10,000
Shirts, cotton	"	4,750
Tables, mess, folding	"	235
Tables, bedside, folding	"	2,350
Litters	"	630
Litter slings	"	975
Table and kitchen furniture, for field hospitals	for	3,000
Test tubes	No.	1,540
Medical sets, chests Nos. 1 and 2, each	"	29
Surgical sets, chests Nos. 1 and 2, sterilizer chest and filter, each	"	21

NOTE.—The regular regiments had each a medical and surgical chest, litters and other field supplies before the above articles were issued.

Societies.

The following recent meetings are noted:
Connecticut.—New Haven Medical Association, August 3.
Illinois.—Douglas County Medical Society, Tuscola, August 4; Stephenson County Society of Physicians and Surgeons, Freeport, August 4; Vermilion County Medical Association, Danville, August 9.
Indiana.—Shelby County Medical Society, Shelbyville, August 8; Vigo Medical Society, Terre Haute, August 4.
Iowa.—Council Bluffs Medical Society, August 10.
Kansas.—Topeka Academy of Medicine and Surgery, August 8.
Kentucky.—Union County Medical Society, Morganfield, August 1.
Massachusetts.—Berkshire Medical Society, Pittsfield, August 4.
Michigan.—Bay County Medical Society, Bay City, Aug. 15.
Minnesota.—Southern Minnesota Medical Association, Rochester, August 4.
Missouri.—Central District Medical Society of Missouri,

Sedalia, August 4; Jasper County Medical Society, Webb City, August 2; Linn County Medical Society, Meadville, July 26; Putnam County Medical Society, Unionville, August 3.
New York.—Steuben Medical Society, Addison, August 9.
Pennsylvania.—Bucks County Medical Society, Bristol, August 3; Lehigh Valley Medical Society, Allentown, August 9; Luzerne County Medical Society, Wilkes Barre, August 10; York County Medical Society, York City, August 4.
Texas.—Kaufman County Medical Society, Kaufman, Aug. 1.
Wisconsin.—Waupaca County Medical Society, Elwood, August 5.

Philadelphia.

OBSEQUIES OF DOCTOR PEPPER.—The body of Dr. Pepper reached Philadelphia from California August 5, and the remains viewed by only a few intimate friends. On Saturday simple services were held at St. James Episcopal church, the interment being strictly private. The honorary pallbearers were William Platt Pepper, General Isaac Wistar, Edward H. Clark of New York, William Latta, Mayor Charles F. Warwick, Dr. S. Weir Mitchell, representing the trustees of the University of Pennsylvania; Dr. Jonas Tyson, representing the medical faculty of the University; Frederick Fraley, representing the American Philosophical Society; Joseph G. Rosengarten, representing the Free Library; Ex-Senator George F. Edmunds, representing the Philadelphia Museums; P. A. B. Widener, representing the Philadelphia Exposition Association, and Hampton L. Carson, representing the general alumni of the University of Pennsylvania; Governor Hastings was unavoidably absent. Two provisions of Dr. Pepper's will have been complied with, one of which was that his body be cremated, the other that his brain be given the Anthropological Society of which he was a member, the latter clause being one of the agreements on becoming a member. Among others who have belonged to this society may be mentioned Dr. Joseph Leidy and Phillips Brooke.

SANITARIUM FOR CONSUMPTIVES.—Some time ago the Board of State Charities made a recommendation appropriating \$30,000 for the erection of a sanitarium for consumptives, with the proviso that a like sum be raised by private subscription. Unfortunately this measure never passed the legislative committee rooms. The overcrowded condition of the almshouse in Philadelphia would enlist the sentiment of the members if they would visit it, but this will not probably be done. The Pennsylvania Society for the Prevention of Tuberculosis is again bringing this subject to the front and giving many good explanations of the benefit which would arise from the erection of a building for this purpose. A location has been found in Lucerne County, and offered as a site for the proposed building. A city sanitarium for the treatment of cases of tuberculosis is also being agitated.

BRONZE STATUE TO DOCTOR PEPPER.—The many societies and public enterprises of this city to which Dr. Pepper belonged have all passed fitting testimonials to his memory. Among others may be mentioned the Philadelphia Club, trustees of the Department of Archaeology and Paleontology of the University of Pennsylvania, and a committee of the Philadelphia Museum. Some time before his death the Department of Archaeology and Paleontology of the University decided to erect a testimonial to his memory. This testimonial will now give way to a memorial bronze statue by Bitter of New York, who will also carve the granite foundation on which the statue will rest. The figure represents the doctor in a sitting posture and in a pensive and characteristic attitude.

DR. JOHN GUITÉRAS HOME.—The excessive duties imposed upon Dr. Guitéras while with the army in Cuba finally overcame him and after being in bed for several days with the prevailing fever in the army, he returned home greatly debilitated on August 5. Questioned as to the most serious diseases which threatened the army at the present time, he stated that typhoid and malarial fevers were the worst foes yet encountered. Up to the present time yellow fever had been of a mild

type and but comparatively few deaths had resulted. Regarding the report of differences between himself and the Red Cross Society, he dismissed it by stating that it was absolutely without foundation, and further remarked that "there was only one dispute of importance down there, and that occurred between the Spaniards and Americans."

AN INTERESTING CASE.—It is reported that George H. Wheaton, an employe of Cramp's shipyard, Philadelphia, recently fell from a scaffold, striking on his head and shoulder. Not thinking his injuries serious he remained around the factory for some time but, subsequently, complaining of vague pains, was given permission to go home. After crossing the Delaware river and reaching the opposite shore in Camden he walked for some distance, but became dizzy and was seen to suddenly fall. He died a few minutes later. On subsequent examination at the Cooper Hospital, Camden, there was found a fractured vertebra.

CHARITABLE BEQUESTS.—The following institutions have been made beneficiaries by the will of Jane K. Barclay, who recently died in this city: The Presbyterian Hospital, \$5,000; the Home for Widows and Single Women, \$5,000. By the will of Emily A. Lippincott the following bequests have been made: To the Hospital of the Protestant Episcopal church, \$5,000, an endowment for a free bed; to the Children's Hospital, \$2,500. In addition \$2,500 was also given as an endowment for a perpetual free bed.

STILL WATCHING FOR YELLOW FEVER.—If yellow fever enters this city it doubtless will come by means of railways. The State Board of Quarantine is keeping a strict watch on all lines of boats and steamships which come to this port. A recent resolution was passed to the effect "that on and after August 1, and until further notice, every vessel arriving here from Cape Henry shall be inspected at the Quarantine Station under a penalty of \$500." This city had enough of this disease in 1893.

HEALTH REPORT.—For the week ending August 6, 484 deaths have been reported to the Board of Health. Of these 217 were children under five years of age. Of the total number there is an increase of nineteen over the preceding week and an increase of seventy-two over the corresponding period of last year. Thirty deaths resulted from sunstroke. Infectious diseases: Diphtheria, 29 cases, 10 deaths; scarlet fever, 17 cases, 1 death; typhoid fever, 59 cases, 19 deaths.

SUNSTROKES ARE COMMON.—On July 30 there occurred in this city thirty cases of sunstroke. This is the second largest number recorded this summer, the highest being in the earlier weeks of the month, when forty prostrations occurred. It has been reported by the Weather Bureau that the past few months have been the hottest for thirty years. Two suicides have occurred during the past week, superinduced, it is believed, by the intense heat.

ST. JOSEPH'S HOSPITAL.—While the physicians are off on their vacation, improvements are going on at the St. Joseph's Hospital. New operating, sterilizing and anesthetizing rooms will take the place of the space formerly utilized for this purpose, and when finished it is hoped that the new accommodations will take rank with the best of this city.

Louisville.

KENTUCKY SCHOOL OF MEDICINE.—This college is once more before the public on account of internal dissensions. As recorded in these columns some months ago, the majority of the Faculty declared the chairs occupied by Drs. W. H. Wathen, M. F. Coomes and Henry Orendorf vacant, asking the Board of Regents to ratify its action. After a trial of the charges preferred, the Board refused to concur because of constitutional reasons, and the last session was taught with all three as members of the Faculty. After the conclusion of the term, the majority of the Faculty brought suit in the local court to dissolve the corporation and make the sale of the college property possible. Pending this suit, which was docketed for the October term, the three members, Drs. Wathen, Coomes and Orendorf, declared the chairs occupied by Drs. C. W. Kelly and Sam. E. Woody, also dean, vacant, and their action was

ratified by the Board of Regents, over the protest of the President of the Board, Mr. Jos. P. Helm. Drs. Wathen, Orendorf and Coomes, in the absence of Dr. J. M. Mathews and Dr. J. B. Marvin, who were out of the city, then elected Dr. Sam. Cochran, professor of anatomy, vice Dr. Kelly, and Dr. Arthur G. Boyd (*a graduate from the school in 1896*), as professor of chemistry, and proceeded to elect Dr. W. H. Wathen dean and Dr. H. Orendorf as secretary. Notice was served on the postmaster by both the factions, Dr. Woody, who claims to have been illegally deposed from the deanship, and Dr. Wathen, the new dean, to deliver all mail to them; but the postmaster, complying with the post-office regulations, is holding all mail and marking it "in dispute." Dr. C. W. Kelly is fishing in the northern lakes; Dr. J. B. Marvin and Dr. J. M. Holloway are in Europe, so it is not known what action will be taken.

MATHEWS.—Dr. J. M. Mathews, president-elect of the AMERICAN MEDICAL ASSOCIATION, has resigned the position of professor of surgery and lecturer on diseases of the rectum in the Kentucky School of Medicine, and has accepted the same chair in the Hospital College of Medicine, having been elected to the latter position very recently. He will divide the chair of surgery with Dr. H. H. Grant, holding the same title as before in the Kentucky School. His resignation also carries with it membership in the Board of Regents of the Kentucky School. Dr. Mathews states he was led to make the change because of his dislike for such disagreeable occurrences as are now taking place in his former school.

EXECUTIVE COMMITTEE.—The Executive Committee of the Mississippi Valley Medical Association met at the Louisville Hotel on the evening of the 15th, transacting much important business.

ANTHRAX.—Several cases of anthrax have been discovered in a herd of milch cows in the lower end of the city, which has been quarantined by the State Veterinarian. Some action will be taken by the State Board of Health against Indiana, where anthrax is said to be prevalent.

VACATIONS.—The following members of the local profession are away from the city: Drs. J. B. Marvin and J. M. Holloway, in Europe; Drs. L. S. S. McMurtry and C. W. Kelly, among the Canada lakes, fishing; Dr. Wm. Bailey, in Michigan; Dr. J. T. Dunn and Dr. P. B. Scott have just returned from a sojourn in New York City.

COCHRAN.—Dr. Sam Cochran, who recently resigned his position as local Marine Hospital Surgeon, is now lying critically ill with typhoid fever. Dr. Cochran has been making personal attacks upon Dr. C. W. Kelly through his journal, the *Louisville Medical Monthly*, and both he, as editor, and the publisher, have been enjoined by court to cease publication of personalities.

SMALLPOX.—Jackson, Ky., has another case of smallpox, on account of which the Teacher's Institute and the Circuit Court in session, were adjourned. The Board of Health was compelled to build a pest-house on a remote mountain point.

HEALTH BOARD.—The Quarterly report of the Indiana State Board of Health, just published, shows some queer facts. The total number of deaths for the quarter is 3368. Of these only six were caused by phthisis, one by pneumonia; and not a single death from typhoid fever. There were 7165 births, with 3660 males, a decrease in the total number of 667 for a corresponding date last year. There were 160 illegitimate births; 4952 marriages were recorded, 131 of the husbands being under 20 years of age.

NETTLEROTH.—Dr. Alexander W. Nettleroth has just received his commission as assistant-surgeon in the army and has been ordered on duty with the First Army Corps at Chickamauga. He was the second honor man of his class at the Louisville Medical College this year.

MEYERS.—Dr. Sidney J. Meyers has returned from Chickamauga on sick leave of fifteen days, having contracted malaria while on duty there.

FILTRATION.—The Louisville water company has advertised for bids for construction of a filtration plant, which will be opened September 1. This means that Louisville will have within the next year one of the largest filtration plants erected by any municipality. As recorded in these columns, the details of this plant are the results of experiments carried on by several patented methods at the waterworks pumping-station under the supervision of experts employed by the water company. This work consumed about two years, and the plan adopted is the American system, which has received the endorsement of many continental towns of Europe. It comprises the sand process with a quick coagulant; the exact process, however, has not been announced by the company. The new filtration plant will be 24 feet high, 392 feet long and 116 feet wide, built of stone and adorned. The bidders for the

work must give a bond of \$100,000 and they are limited to residents of Louisville and Jefferson County.

LAY OPINION.—The *Courier-Journal*, in commenting editorially on the death of Rear Admiral Kirkland, refers to the surgery in his case as "one of those delicate surgical operations which have become so common within the last few years;" the death of Admiral Kirkland "illustrating the fallibility of medical prognosis;" going on to state that after an apparently successful operation one of the surgeons was quoted as expressing the opinion that the operation was highly successful and most satisfactory, and had it been postponed twenty-four hours the illness would have proven fatal, yet in spite of this the patient sank rapidly and died two days later. It is stated that this is one of so many deaths following operations that eminent surgeons in this country and Europe are lifting their voices in warning against reckless practitioners whose anxiety to perform capital operations prompts them to take enormous risks. After this, and further condemnation of surgeons and surgical procedures, the article concludes with the following words: "That in Admiral Kirkland's case the work was done only upon the most mature deliberation and as a last resort does not alter the truth of all this." From such articles as these and they are by no means infrequent, the laity form their opinion of surgery and refuse any surgical interference even when absolutely demanded.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—Assigned to duty with the Second Army Corps, Camp Alger, Va.: Acting Assistant-Surgeons Wm. B. Summerall from Atlanta, Ga.; D. T. McKinney from New Brighton, Penn., and Alfred B. Giles from Baltimore, Md. To Ponce, Porto Rico, via Fort Monroe, Va.: Acting Assistant-Surgeon John N. Goltra from Buffalo, N. Y. To General James F. Wade as Chief Surgeon on his Staff: Major J. L. Powell, Surgeon U. S. Army. To duty with troops at Chickamauga Park, Ga., the following acting assistant-surgeons: Geo. G. Morris, Victor E. Watkins and Ernest W. Fowler from Washington, D. C.; O. C. Heiss from Nebraska City, Neb.; Robert L. Bartlett from New York City, N. Y.; Geo. H. Calkins from Tonawanda, N. Y.; Henry B. Stotter from Cleveland, Ohio; Frank E. Crossier from Lebanon, Ohio, and Robert C. Rind from Towson, Md. To duty with troops at Tampa, Fla.: Acting Assistant-Surgeons Thos. C. Avery from Washington, D. C., and Elbert E. Persons from Chicago, Ill. To General Shafter at Santiago, Cuba, via Tampa, Fla.: Acting Assistant-Surgeons Henry H. Bradley from Buffalo, N. Y., and Lewis B. Childs from Washington, D. C. To the Commanding General, camp at Montauk Point, Long Island, N. Y.: Major C. L. Heizmann, Surgeon U. S. Army, and Major Robert Burns, 1st New Hampshire Volunteer Infantry from Look-out Mountain, Tenn. To the General Hospital at Montauk Point, Long Island, N. Y.: Major Charles S. Nancrede, Brigade Surgeon from 1st Division, 2d Army Corps and Acting Assistant-Surgeons Frank C. Jones from Cleveland, Ohio, Harry C. More from New York City, N. Y., and A. R. Booth from Washington, D. C. To the General Hospital, Fort Thomas, Ky.: Major Wm. R. Hall, Surgeon U. S. Army, from the General Hospital, Key West, Fla., to take charge. To the Leiter General Hospital, Chickamauga Park, Ga.: Acting Assistant-Surgeons B. R. Shurly from Washington, D. C.; W. C. Berlin from Cleveland, Ohio and John B. Alwin from Athens, Ohio. To the General Hospital, Key West, Fla.: Captain Henry A. Shaw, Assistant-Surgeon U. S. Army, from Key West Barracks, Fla. To the General Hospital, Washington Barracks, Washington, D. C.: Acting Assistant-Surgeons Wm. J. Ashby from Alexandria, Va., and J. R. Shannon, whose former orders are revoked. To the Hospital Train at Tampa, Fla.: Capt. H. A. Shaw, Assistant-Surgeon U. S. Army. To the General Hospital at Fort Monroe, Va.: Lieut.-Colonel A. A. Woodhull, Deputy Surgeon-General U. S. Army. To the General Hospital, Fort Myer, Va.: Major Elmer E. Heg, Brigade Surgeon, and Acting Assistant-Surgeon Harold W. Copper from Buffalo, N. Y. To the General Hospital, Fort McPherson, Ga.: Acting Assistant-Surgeon James C. Ross from Salt Lake City, Utah. To the U. S. Hospital Ship *Missouri*: Major Wm. H. Arthur, Surgeon, U. S. Volunteers, to command. To proceed to their homes: Major Victor C. Vaughan, Surgeon 33d Michigan Vol. Infantry, and Acting Assistant-Surgeon Frank Donaldson. Resigned: Capt. John H. Dickerson, Assistant-Surgeon 9th Battalion Ohio Volunteers.

A Sanitary Order from the War Department.—The following was issued August 10 by the Adjutant-General of the Army:

In order to prevent as far as possible the diseases incident to encampments of large bodies of men, namely: typhoid and malarial fevers, diarrhea and dysentery, and the further spread thereof where these diseases have already gained more or less headway, all officers, from the commanding general to company commanders, will exercise the utmost vigilance to enforce proper sanitary conditions in camp and strict cleanliness of the person.

The speedy destruction or removal with safety of all decaying substances present and future, and the rendering innocuous the feculent matter of the camp, must be accomplished.

The Quartermaster's Department will furnish lumber for floors to all tents. The general commanding camp will at once provide ample hospital facilities by erecting barracks where there is a shortage of hospital tents.

No effort will be spared to carry this order into effect to the fullest extent, and to this end those concerned will not rest content with the issuance of orders upon the subject, but they or their representatives, duly impressed with this grava responsibility, will immediately see to the

commencement, continuance, superintendence and practical accomplishment, day by day, of the instructions imposed upon the command.

The attention of all concerned is called to Army Regulations concerning interior economy, police, and discipline of companies, to Circular No. 1, Surgeon-General's Office, April 25, 1898, to "Marches" and "Camping" in the authorized Drill Regulations, to "Soldier's Handbook" and the remarks therein compiled. From these easily accessible data, supplemented by his own practical experience and that of others, the commanding general of each camp will at once prepare and put into immediate execution a simple code of rules, of the daily practical accomplishment of which he will assure himself, rendering daily reports to the Adjutant-General of the Army.

By order of the Secretary of War.

H. C. CORBIN, Adjutant-General.

Promotions in the Marine-Hospital Service.—Passed Assistant-Surgeons to be Surgeons: Cyrus T. Peckham, Aug. 10, 1898; Arthur H. Glennan, Aug. 10, 1898; Eugene Wasdin, Aug. 10, 1898; Stephen D. Brooks, Aug. 10, 1898; Joseph H. White, Aug. 10, 1898.

CHANGE OF ADDRESS.

Bell, J. W., from 2361 S. Bryant Av., Minneapolis, Minn.
Bleeh, G., from 6236 Sangamon St. to 1443 Michigan Av., Chicago.
Behle, W. H., from Blackfoot, Idaho, to Summit Blk., Salt Lake City, Utah.
Campbell, T. F., from Springfield, Neb., to Fairfax, S. D.
Cleveland, C. C., from 1215 W. 23d St. to 1215 W. 33d St., Minneapolis.
Emmerson R., from Chicago to care of Mexican National R. R., San Luis Potosi, Mexico.
Gibben, J. H., from Philadelphia, Pa., to Jefferson Barracks, Mo.
Hatfield, M. P., from Col. Mem. Bldg., to R. 400 Reliance Bldg., Chicago.
Hodges, F. J., from Anderson, Ind., to Ashland, Ohio.
Huecker, J. J., from Ferguson Bldg. to 700 15th St., Denver, Colo.
Herr, A. W., from Woodburn, Iowa, to Battle Creek, Mich.
Hill, W. H., from New Castle, Mo., to Gentryville, Mo.
Hertzle, D., from 214 Montgomery, to 112 E. College St., Louisville, Ky.
Jaquith, W. A., from 1184 Wilcox Av., to 1375 W. Harrison St., Chicago.
Klasen, J. P., from Chicago to Huron, Ohio.
Kempker, J. F., from Des Moines to Houghton, Iowa.
Lesan, C. T., from Bedford to Mt. Ayr, Iowa.
Munson, S. E., from Mt. Pulaski to Rochester, Ill.
Morgan, R. G., from 234 N. Penn. to Ind. Med. Coll., Indianapolis, Ind.
Minard, E. J. C., from Brooklyn, N. Y., to Chicago, Ill.
McCreery, R. L., from University Park to 133 Grant Av., Denver, Colo.
Maclean, D., from Detroit, Mich., to Hotel Chamberlin, Fortress Monroe, Va.
Patterson, H. A., from Brayfield to Downing, Ill.
Pinto, A. S., from Omaha, Neb., to 3d Div., Hospital, Panama Park, Fla.
Prather, D. J., from Oakland to Gen. Del. Sacramento, Cal.
Plummer, R. W., from Mt. Vernon, Ill., to Tyrone, Pa.
Runde, F. W., from St. Louis, Mo., to Room 9 McClintock Blk., Denver.
Sandow, B. F., from Meihart, to Helena, Mont.
Schauffler, E. W., from 800 Main St. to 1220 Washington St., Kansas City, Mo.
Stevens, A. M., from Ann Arbor, Mich., to 143 E. Berry St., Ft. Wayne.
Southard, W. F., from 603 to 1220 Sutter St., San Francisco, Cal.
Stone, C. A., from Newton to Mason City, Ill.
Smolt, C. F., from Weldon to Ottawa, Kas.
Savage, G. H., from Nashville, Tenn., to Sherman, Texas.
Thoms, S. J., from Ann Arbor to Corey, Mich.
Van Tuyl, H. L., from Chicago to 103 Congress St., Ypsilanti, Mich.
Van Urk, T., from Ann Arbor, Mich., to 55 Hudson Av., Rochester, N. Y.
Williams, C. H., from Ann Arbor to Adrian, Mich.
Woodbridge, J. E., from Chicago Beach Hotel to Fort Myer, Va.

LETTERS RECEIVED.

Allen, D. P., Cleveland, Ohio; Alexander, A. J., Mayfield Ky.; American Therapeutic Co. (2), New York City; Ascher, J. A., Cherry Creek, Nev.; Bovining Co., The, New York City; Bundy, J. A., Iroquois, Ill.; Bredt & Co., J. M., Chicago; Billard, J. W., Pawnee City, Neb.
Clements, J., Kansas City, Mo.
Dagney, T. F., Philadelphia, Pa.; Ducker, Orlando, Santiago, Cuba.
Emmett, J. D., New York City.
Fairchild Bros. & Foster (2), New York City.
Goodhue, Geo., Dayton, Ohio; Guthrie, J. A., Portsmouth, Va.
Hare, H. A., Philadelphia, Pa.; Hirschwald'sche Buchandlung, Berlin, Germany; Hummel, A. L., Advertising Agency, New York City.
Judson, W. B., Chicago; Jenkins, D. J., Hnntsville, Ohio.
Kempson, J. F. & Co., New York City; Kegel, E. T., Walcott, Iowa; Klie, G. H., Chas., St. Louis, Mo.; Kress & Owen Company, New York City; Little, C. H., Piqua, Ohio; Lowder, R., Ledyard, Iowa; Lewis, Le Roy, Auburn, N. Y.
Merrick, M. B., Passaic, N. J.; Magruder, G. T., Washington, D. C.; Macdonald, Geo. C., San Francisco, Cal.; Massey, G. Belton, Philadelphia, Pa.; Moreland, W. H., Manitou, Colo.; Moss, H. C., Albion, Ill.; Mann, F. W., Detroit, Mich.; Mercer, A. Clifford, Syracuse, N. Y.; MacFarlane, R. F. (2), Queensboro L., N. Y.; Mitchell, T. E., Columbus, Ga.; Milbury, Frank S., Brooklyn, N. Y.; Mogk, W. A., Ann Arbor, Mich.; McDermith, S. T., Denver, Colo.; Montgomery, Liston H., Chicago; Moreland, W. H., Manitou, Colo.
Newberry Library, Chicago; Norstrom, Henry, Boone, Iowa.
Pagels, Geo. H., Columbus, Ohio; Physicians Outfitting Co., Kansas City, Mo.; Patton, F. W., St. Louis, Mo.; Payne, T. E., Philadelphia, Pa.; Parsons, J. W., Portsmouth, N. H.; Parker, Chas. A., Orange, N. J.
Roosa, D. B. St. John (2), New York City; Robertson, E. H., Boulder, Colo.; Rawlings, J. A., El Paso, Texas; Rutherford, C. W., Newman, Ill.; Reed, J. D., Topeka, Kas.
Sipe, W. P., Florence, Colo.; Sorby, Harold, Chicago; Stall, J. J., Chicago; Shafer, R. C., Wilgus, Ohio; Snyder, L. A., Chicago; Sprague, W. B., Eureka Springs, Ark.; Sanders, W. H., Montgomery, Ala.; Smith, W. E., Atlanta, Ohio; Swart Bros., Detroit, Mich.; Stone, R. French, Indianapolis, Ind.
Tate, S. A., Stronghurst, Ill.; Tyson, James, Philadelphia, Pa.; Twinch, Sidney A. (2), Newark, N. J.; Tracy, J. L. (2), Toledo, Ohio.
Waxham, F. E., Denver, Colo.; Woldert, E. A., Atlantic City, N. J.; Waters, G. M., Columbus, Ohio; Wiggin, F. H., New York City; Wagar, Chas. P., Toledo, Ohio; Whittaker, Jas. T., Cincinnati, Ohio; Woodruff, E. W., Columbus, Ohio; Wagner, Jas. H., Selma, Cal.; Wilbur, C. T., Kalamazoo, Mich.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, AUGUST 27, 1898.

No. 9.

ORIGINAL ARTICLES.

A CONTRIBUTION TO THE STUDY OF THE SYMPTOMS OF CHRONIC URETHRITIS.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo. June 7-10, 1898.

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The fact that a patient observes a persistent or occasional drop at the meatus, by no means proves that gonorrhoea exists. On the other hand, the absence of discharge does not exclude the presence of chronic gonorrhoea. This fact alone warrants a detailed study of the symptoms of this disease.

At the outset, it is well to say that no attempt at considering the urethrites in general is made. To extend this paper to the urethrites of a non-gonorrhoeal character would expand it beyond its intended dimensions. Moreover, the urethrites, other than gonorrhoeal, merit exhaustive study by themselves.

The separate consideration of gonorrhoea infecting the region before or behind the compressor is due, like the vast majority of other advances in the study and treatment of genito-urinary diseases, to the great master, Felix Guyon.¹ This division into anterior and posterior urethritis is not only rational, but also the most convenient.

In most cases the symptoms of this disease vary according to the region affected; an effort will here be made, in studying them, to place them where they belong. But while attempting this, it will be found that there are symptoms which may show affection of either urethra. To recite these separately would encumber us with a new division. It seems better to adhere to Guyon's classification and, while using it, to mention wherever applicable the local differentiation, so important in treatment.

SYMPTOMS OF CHRONIC ANTERIOR GONORRHEA.

1. *Agglutination of the meatus.*—Some cases present, as the sole symptom of urethral disease, a mere cohesion of the meatus, most frequent on arising from sleep. This may take the shape of a slight, transparent pellicle or a crust formed by the dried discharge. When the discharge is so copious as to prevent its drying, it takes the shape of the morning drop, to be discussed farther on. It is important to ascertain, microscopically, whether the substance that even but agglutinates the meatus is the result of a diseased condition, or whether it indicates merely an increased normal secretion, due to erection during sleep. A particle of the "glue," pellicle or crust, rubbed with a drop of distilled water upon a cover-

glass, will prepare it for examination. But one such microscopic examination by no means suffices for diagnostic purposes. For some reason the specimen taken one day may contain only mucus or perhaps urethral epithelium; while the substance that causes the lips of the meatus to adhere but slightly may after several examinations be found to contain gonococci.

2. *The discharge*, like the agglutination, is often the only symptom which the patient observes. Its appearance and persistent reappearance, even without any accompanying inconveniences, harass him. It is difficult, without detailed study, to reach conclusions which will justify the physician in assuring the patient regarding the danger or innocuousness of this discharge.

3. *Description of the discharges.*—With a view to systematizing the description of urethral discharges, I beg to submit the following classification. While it is by no means exhaustive, I think it has the advantage of carrying a definition in each title: 1, thick bloody discharge; 2, thick green discharge; 3, thick yellow discharge; 4, thick white (creamy) discharge; 5, thick rice-water (grayish, opaline) discharge; 6, thick watery discharge.

The above discharges may vary or be mixed as regards consistence. Any of them may be thin, carrying thicker drops; they may also be mixed as regards color; thus, there may be a greenish-yellow discharge, or a yellowish-white one, etc.

When the discharge does not flow freely from the meatus, it may be present as, *a*, the morning drop (small, medium or large), varying from a dirty gray even brownish tint to the colorless appearance of raw egg-albumin; *b*, an excess of moisture, easily expressible from the meatus by stripping the urethra; *c*, an excess of moisture expressible to the meatus; *d*, an excess that can not be expressed, but remains within the meatus and is visible only on opening its lips.

4. *The abundance of the discharge* may vary in the same individual. In most cases of chronic urethritis, it presents only in the morning before the first urination (*goutte militaire*). In others it becomes evident an hour or two after urination. In others still, it appears only occasionally, as after fatigue, dissipation, the abuse of stimulants, etc.

5. *Color of the discharge.*—The morning drop especially may be creamy or yellow, or it may be grayish or opaline, or colorless.

6. *Consistence of the discharge.*—The discharge, drop, or mere excess of moisture in chronic gonorrhoea may be as fluid as that of an acute specific urethritis; it may also be coherent, slimy and easily drawn out into long threads when taken between the fingers.

7. *Stains on garments.*—Very many patients see the sole evidence of disease in stains on their shirts. And indeed, when they or their physicians endeavor to strip from the urethra some more of the discharge

¹ Guyon: *Leçons Cliniques sur les Maladies des Voies Urinaires.*

that produces these stains, they succeed in bringing only a slight excess of transparent moisture to the meatus, but not expressible from it. Often these stains produce in the patient a greater disquietude than the discharge did, when it was evident. Such patients use all possible means to impress upon the physician the presence of the stains. It is nothing unusual to have a patient bring quite a laundry package for ocular demonstration. One of my cases wore his shirt a whole week, examined it almost hourly, and whenever he found a drop, encircled it with indelible pencil ring and marked it with the date and hour at which he discovered it. It is not rare to have a patient out the stained portion from the shirt and attach it to labels, giving the above data.

8. *Relation between stains and discharge.*—When drops are discharged from the urethra, the stains on the garments bear a color-relation to the urethral discharge. As Diday has shown, a colorless drop gives the shirt a starch-like stain; an opaline drop gives the shirt a grayish stain; a white drop gives the shirt a yellow stain; a yellow drop gives the shirt a green stain.

9. *Urine stains* are sometimes confounded with the stains from urethral discharge. To recall their gross differences, I tabulate them as follows:

URINE STAINS.	STAINS FROM URETHRAL DISCHARGE.
Irregularly shaped; diffuse.	Circular or ovoid.
Large, with undefined edges.	Small, with sharply defined edges.
Color of same shade throughout.	Center darker than periphery.

10. *Diagnostic value of stains from urethral discharge.*—While excellent authors, *inter alia* Guiard,³ do not attach very great importance to the stains from urethral discharge, these certainly merit attention. Thus the deeper in color and the greater in density a stain, the greater the likelihood of its containing gonococci; yet, a very light, starchy stain by no means excludes them.

11. *Microscopy of the stains on linen.*—When, for any reason, the patient can not be examined personally and it is necessary to prepare these stains for the microscope, it may be done by moistening the spot with distilled water, rubbing it upon a cover-glass and then drying, fixing, staining and mounting in the usual manner.

In many cases the discharge is so slight that it will not stain the linen. Then several hours must elapse before sufficient of the discharge accumulates to become at all evident in the meatus. Or it may be so small in quantity that stripping of the urethra is required to reveal its presence. In such cases the patient may not perceive it except after a night's rest, when it appears as the

12. *Morning drop (goutte militaire).*—This may show itself as a mere light drop of a pearly grey color, or through all the gradations to a very heavy, thick yellow drop. In some cases it does not take the form of a drop, but dries upon the lips of the meatus, slightly agglutinating them or, if the quantity be larger, may seal them with a thick crust. To obtain the drop for microscopic examination the patient must be examined before he has passed his first morning urine. When this can not be done, he must be provided with cover-glasses, and instructed in catching the drop.

13. *Absence of discharge* does not prove that the patient is cured. What is called "latent gonorrhoea" (Guiard, *Annales*, 1884) may exist, especially in the posterior urethra, with no symptoms whatever, except as manifested by filaments, flakes or granules in the urine. I believe "residual gonorrhoea" a more correct term for this condition. The "floaters" found in the first morning urine should be fished therefrom with a sterilized platinum loop and examined microscopically. If they can not be thus obtained, the urine may be centrifuged and the sediment examined.

14. *Absence of "floaters"* may not prove a cure either. *Ramonage* may then be advantageously employed with the other methods for determining the condition of the urethra, as described in another paper.³

15. *Itching or tickling* within the urethra, is one of the most annoying symptoms of chronic urethritis. It is especially aggravating when the symptom obtains in the posterior urethra. It is then often referred to the rectum. Such cases are subjected to all manner of treatment, even operations upon the anus and rectum, of course without relief. The reflex nervous symptoms resulting from this urethral itching or tickling, not infrequently drive the patient to desperation. In some cases the diseased area is so minute that its location is difficult even with the urethroscope. In extremely small infected spots, or perhaps a single one, it may not be found at all. Fortunately the vast majority of cases yield to dilatation and irrigations.⁴ In those few which persist, the urethra is prepared by this treatment, for more searching urethroscopy, until the diseased region can be brought to view.

16. *Painful urination* is not frequent in chronic gonorrhoea, except when the patient has rendered the urine abnormally irritating by dissipation, or increased the local disturbance in the same manner by coitus or over-exertion. These may also reproduce the discharge or aggravate it, if present. Equally a meatus agglutinated, or sealed with a dried discharge, may render urination painful. The inflamed canal is distended to a painful degree, until the agglutination is torn away by the force of the stream. The tearing of the incrustation from the meatus carries with it superficial and sometimes deeper epithelium, producing at first pain alone and later ulceration of the meatus, until every attempt at urination is as exquisitely painful as it was in the beginning of acute gonorrhoea. This can be avoided by teaching the patient to soak the meatus in a hot boric acid or very weak bichlorid solution, before urinating. The urine in chronic gonorrhoea presents symptoms of import in both anterior and posterior infection of the organ and may be considered with the latter.

17. *The urethroscopic symptoms* of chronic anterior and posterior gonorrhoea can not well be studied separately. And indeed they require, for their proper comprehension, an essay devoted to them. The only concise article on the subject that at present exists in English, as far as my knowledge goes, is the brilliant paper by H. R. Wossido.⁵

18. *The urethrometric findings* of chronic anterior gonorrhoea merit investigation in a paper limited to the diagnosis of the disease.

³ Valentine: "The Proofs of Cure in Gonorrhoea." *Clinical Recorder*, April, 1898.

⁴ Valentine: "Chronic Gonorrhoea; its Scientific Treatment." *Clinical Recorder*, January, 1898.

⁵ Wossido: "Practical Urethroscopy," *Medical Record*, September 7, 1895.

I have in the preceding endeavored to sketch the symptoms most frequent in chronic anterior gonorrhoea. In doing so, I hope that the statement be not taken too strictly, as almost any of the symptoms can be simulated by disease of the posterior urethra.

There are also a number of symptoms which can not be separately studied; these will therefore be associated with consideration of

THE SYMPTOMS OF CHRONIC POSTERIOR GONORRHEA.

Posner⁶ hopefully says that acute posterior urethritis can heal without any special, and particularly without any local, therapeutics. This is fortunately true. Still, in view of the fact that 33 per cent. (Guyon and Jamin) to 85 or 92 per cent. (Ambert, Erand, Hassler, Jadassohn Letzel, Audry) of anterior gonorrhoeas traverse the compressor and infect the posterior urethra, it will not be well to envelop ourselves too firmly in what too often proves fancied security. Indeed it seems not remote that many of the sad results of residual gonorrhoea are due to the fact of its lying unobserved in the posterior urethra, waiting, perhaps years, for the fitting occasion to become manifest. The comparative difficulty with which the posterior urethra ordinarily can be reached, may leave many cases unobserved until much later, when the most eccentric manifestations may suggest that it once was infected. Indeed, this infection in the acute stage may have been so insidious, as to be barely manifest, so that, to quote Guiard,⁷ it may have been chronic at the very outset (*chronique d'emblee*).

19. *Discharge*.—The discharge in chronic posterior gonorrhoea is exceedingly variable. It may be so slight as to escape detection. Indeed there are cases in which the only gross evidence of infection of the posterior urethra is shown by shreds in the urine. If the patient's attention has not been attracted to them, their presence may be learned only when the physician examines the urine in quest of explanation for some other disease.

20. *Sudden large stain*.—Guyon and Jamin were the first to describe this symptom. It appears as a sudden large drop, with or without partial sensations of a slight ejaculation. Its stain upon the linen differs from the spots made by chronic anterior urethritis, in being much larger; when dried it usually has a whitish-yellow center, and becomes lighter colored and starchy toward the margins. Sometimes a stain of this character becomes evident to the patient only from its moisture. Not long since I had a patient who could, perhaps as a result of training, expel such a drop at will.

The presence of a large stain upon the linen may be accompanied by smaller drops, as described before. They would then evidence both chronic anterior and posterior gonorrhoea, if on examination, the spots of both dimensions contain gonococci. There is no reason why another form of urethritis may not affect the anterior urethra, while the posterior is the seat of chronic gonorrhoea, and *vice versa*. The explanation of the sudden large staining drop, as it escapes from the posterior urethra, is not very simple. The compressor being the anterior boundary of the posterior urethra, is a much stronger muscle than the sphincter vesicæ, which barely separates the urethra from the bladder. It is perhaps the presence of a heavier, thicker accumulation than the urine, in the posterior urethra, that stimulates the compressor to relax and

the accelerator to expel the substance. This must be coincident with too little urine in the bladder to overcome the sphincter. But the absence of this large drop, for the reason above given, is more frequent than its presence. The sphincter is more apt to yield than the compressor. Consequently when the accumulation in the posterior urethra is sufficient to be appreciable by it, the contraction of the region is more likely to throw it into the bladder. It then may be ejected with the first urine and convey the erroneous impression that a healing anterior urethra is the site of the disease. To obviate such misapprehension, the anterior urethra should be carefully washed before allowing the patient to urinate. The first urine, after the washing, will then carry the pathologic secretion of the posterior urethra, provided it be not too small and tenacious to be dragged along with the stream.

21. *Stains as evidence of spermatorrhea*.—A considerable number of patients, misled mainly by the publications of quacks, interpret the spots of chronic anterior or posterior gonorrhoea as evidence of spermatorrhea, with all the horrors it is made to portend to them. In all cases, especially where the patient is threatened with sexual neurasthenia in consequence, it may be well to demonstrate microscopically the absence of spermatozoa from the harassing spots. Undeniably spermatorrhea may occasionally be coincident with chronic posterior urethritis and be provoked by it. But as the supposed spermatorrhea usually yields with the cessation of urethritis, or shortly thereafter, the patient may be safely reassured.

22. *A dry meatus*, as before indicated, may coexist with very copious pathologic secretion in the posterior urethra. Indeed, the entire anterior urethra may prove healthy, under urethroscopic examination, while large drops of discharge may be propelled from the posterior urethra, simulating a series of "*petites éjaculations*" as Guiard calls them.

23. *Supposed incontinence of urine*.—Some patients seek advice for inability to hold the urine, while they control it perfectly. They point to the stains on their shirts for confirmation of this diagnosis. It requires but little experience to distinguish the purulent circular stains from the diffuse stains of urine.

24. *Apparent defecation—or urination—spermatorrhea*.—A fairly large number of patients observe a thick, whitish drop either within or escaping from the meatus, during or after defecation, or at the end of urination. It is easy to understand how the final contractions of defecation or urination may force from the posterior urethra such secretion as was not carried off by the stream of urine. The microscope will decide whether the drop is due to chronic posterior urethritis, seminal vesiculitis, prostatorrhoea or spermatorrhea.

25. *Apparent anterior urethritis*.—Occasionally cases present simulating chronic anterior gonorrhoea, by an almost continual discharge, containing gonococci. If the anterior urethra is carefully washed and then examined with the urethroscope, it will be found in perfect health. Holding the tube's distal extremity close to the sphincter, pus will be seen welling into it, sometimes in sufficient quantity, if the Oberlaender urethroscope is used, to extinguish the light. I saw a case where the manifestations were so characteristic of anterior urethritis that the practitioner who brought him feared to use intravesical irrigations lest he might thereby infect the posterior urethra.

⁶ Posner; *Therapie der Harnkrankheiten*, Berlin, 1895.

⁷ Guiard; *Les Uréthrites Chroniques*, Paris, 1898.

Parenthetically I may say here, that this has never occurred. On urethroscoping the anterior urethra, it proved to be perfectly normal. The region of the compressor, however, bulged forward and slight pressure of the tube against it caused so large an extrusion of thick whitish discharge that it filled about one-third of the tube, suggesting a seminal emission. On examination this proved to be mainly pus, thoroughly loaded with gonococci. Under intravesical irrigations of potassic permanganate, this case soon recovered. The fact that such a chronic posterior gonorrhoea can exist without infecting the anterior urethra, is doubtless attributable to a species of perhaps temporary immunity acquired by the gonorrhoea, which was extended into the posterior urethra.

In view of the preceding, this manifestation of chronic posterior urethritis is not difficult of explanation. But when the discharge is very small in quantity and very tenacious, as in

26. *Chronic residual posterior gonorrhoea*, without even the characteristic pain after urination, the only evidence thereof may be found in the shreds, filaments, flakes, etc., in the urine.

27. *Disturbances of ejaculation* are not infrequent accompaniments of very prolonged chronic posterior urethritis. Among these those most often found are

28. *Apparent aspermia*.—The patients so affected experience only a very slight or no sensation of the flow of semen through the urethra. On withdrawal for visual confirmation of the sensation, they find that nothing comes from the meatus. In such cases, the semen, instead of being vigorously ejected from the urethra, flows into the bladder and is carried off with the next urine. In several cases of this kind the patients confessed to a former habit of digital compression of the urethra, at the moment of venereal spasm, to avoid impregnation. One of these (a physician) claimed that he had acquired the power of compelling the semen to flow into the bladder, but after a gonorrhoea had lost all ability to eject semen normally forward.

29. *Post-coital seminal dribbling*.—In some cases the semen is partially or entirely retained within the posterior urethra, and dribbles from the meatus upon cessation of the erection. This symptom is more frequent in urethritis ex libidine, than in chronic posterior urethritis.

30. *Painful ejaculations*.—In those not due to the ejaculatory spasm, drawing upon nerve terminals compressed in infiltrations of the anterior urethra, the pain may be due to irritation of the chronically inflamed posterior urethra, just as urine, the normal stimulant to vesical contraction, gives pain in cystitis, and as light, the normal visual stimulant, gives pain in iritis. These painful ejaculations, however, are by no means essentially of gonorrhoeal origin. In character, they may be lancinating, burning, extending from the meatus to the rectum, or radiating to the testicles and lasting some time after coitus, which may be followed by scalding on urination. They are most frequent in excesses, such as are likely to be committed by middle-aged men in sexual relations with very young women. The most aggravated case in which painful ejaculation was the exclusive symptom of chronic anterior and posterior gonorrhoea, was that of an otherwise normal man, who screamed at the moment of ejaculation and fainted before entire conclusion of the act. Usually the patients with chronic anterior urethritis complain of no pain during ejaculation, or

only a slight burning. When the pain is sharp, lancinating, stabbing and extends to the region of the anus or rectum, chronic posterior urethritis is probably associated with disturbance of the anterior urethra and with or without involvement of the seminal vesicles or prostate, or both.

31. *Painful erections*.—These are comparatively rare when accompanied by sufficient genic impulse to overshadow the pain. But there are cases in which erections without sexual desire are provoked by the presence of the chronic localized inflammation; they then stretch the tense areas or draw upon them, producing exquisite pain, while increasing the inflammation. Many a man has mere mechanical erections from an overfilled bladder. When the urethra harbors a chronic gonorrhoea, the erections are, as a rule, more or less painful. They subside, however, as soon as the bladder is emptied.

32. *Excessive sexual desire*.—Another symptom, which, however, does not belong solely to chronic urethritis, but to affections of the prostate and vesicle as well, is what some patients call a "teasing" or "nagging" of the genic apparatus. It urges a wish for coitus with partial erections, or only a slight swelling of the penis, or none at all. It is much akin to those localized troubles, as a long prepuce or tight meatus or other irritation which lead children to masturbation. These erections present mainly at night or on awakening. While the excessive sexual desire is evident principally during the day, it often disturbs sleep. In both conditions bromide of soda, bromide of potassium, or bromide of camphor in full doses will palliate the annoyance, but unless attention is paid to the patient's general condition, and unless his local affection is treated, they are of no avail.

33. *Premature ejaculations* frequently occur when chronic posterior urethritis has ceased to furnish other external manifestations. They may be so marked as to cause the patient to ejaculate, when his penis merely touches the external female genitalia. In extreme cases even accidental brushing against any part of a woman's garments, will cause an ejaculation, even without partial erection, or suggestion of sexual desire.

34. *Seminal emissions* are not infrequent in chronic posterior urethritis. In those cases due to abstinence from sexual intercourse they may occur once, twice, even thrice a week, and not be followed by any mental or physical disturbances. But if they recur several times in the same night, they are likely to become independent of sensual thoughts or dreams and then merit serious consideration.

35. *Urethral pains*, extending to the neighboring organs in some cases, even down the inner surface of the thighs, are not infrequently associated with chronic posterior gonorrhoea. They generally occur independent of urination, but may be aggravated during ejaculation.

36. *Sexual neurasthenia* not infrequently supervenes in cases affected with chronic posterior gonorrhoea. The seriousness of aggravated forms of what has grown into an essentially neuropathic condition merits separate study, such as has been given to it by Beard, who invented the term.

37. *The urine* yields symptoms of chronic gonorrhoea, which might more properly be considered in a study of urinalysis. But the macroscopic findings are such that the patients soon learn them and attach importance to them beyond their real merit.

I propose here to merely outline those which are useful in common, rapid office-work. Ordinarily the patient is asked to urinate into two glasses, usually conical, not unlike sherry glasses. Guyon⁸ directs attention to the need of a preliminary thorough cleaning of the meatus, lest the urine contain the results of balanitis or the abundance and diversity of foreign bodies, that may be carried with it. He enumerates mineral dust, coal, wool, silk, linen, hemp, cotton, threads, bits of hair, feathers, grains of starch, etc. The first and second urine obtained as above, is in a measure inconvenient, and liable to yield false impressions. To overcome these I suggested, some three years ago, that large test-tubes be used in place of the conical glasses. They proved too fragile, however, for rapid office and dispensary work. I therefore substituted 12-inch ignition tubes. These give a column of urine equal in all parts, easy to handle, especially in those macroscopic examinations that are most frequently employed. Moreover, they are very convenient for transference to centrifugal glasses, to test tubes and to microscopic cover-glasses. Guyon⁹ devotes 365 pages to pathologic modifications of the urine; other authors have written volumes upon the subject. Hence, to attempt to more than glance at the most superficial macroscopic evidences of disease would be impossible in a paper like this. And in doing so, heed will be given only to those symptoms which attract the patient's attention.

38. *Malodorous urine.*—This is frequently the first symptom which patients observe. It sometimes has a fishy odor in chronic posterior urethritis and in tumors of the bladder, an excessively aromatic odor after taking balsams (*e.g.*, santal oil); a violet-like odor—almost a perfume—after taking turpentine preparations, etc.

39. *Turbid urine.*—If the first urine is turbid it is generally accepted as evidence of anterior urethritis. This, however, is open to error, as mentioned in another portion of this paper, in connection with a consideration of posterior gonorrhoea simulating anterior gonorrhoea. If washing out the anterior urethra produces only clear wash-water and the first urine then passed is turbid, disease of the posterior urethra is fairly well established. If all the urine passed is turbid, it may be due to an inflammatory disease of any part of the urinary tract, except the anterior urethra, whose pus is generally washed away with the first 150 centigrams of urine.

40. *Dhomé's test.*—If the turbidity is caused by pus, the addition of a saturated solution of caustic potash and then twirling the tube, will soon provoke that rosy separation which Dhomé, who devised the test, called "snotty." This forcible term (*rotzig*) has, as far as I know, not yet found a more elegant and equally descriptive English substitute.

41. *If bacteruria* causes the turbidity, caustic potash will not separate the clear urine, as above described.

42. *Phosphaturia* can show the urine just as turbid as in either of the preceding conditions. A little nitric, hydrochloric or acetic acid will, especially after boiling the urine, clear it with the formation of bubbles, causing it to resemble champagne. This excess of phosphates may accompany the act of digestion, especially in dyspeptics; it may follow mental exertion, anger, fright or apprehension; it is almost always present in prostatic enlargement.

43. *Perfectly clear and brilliant urine* by no means proves absence of disease. Centrifuging the specimen may reveal slight but positive evidence that some part of the urinary apparatus is affected.

44. *Shreds, flakes, filaments, granules in the urine* are the symptoms which bring patients to us, long after other manifestations of disease have passed. Roughly these substances found in clear urine or in urine not so turbid as to conceal them, become smaller with the approach to restoration to health.¹⁰ With Guyon (*Maladies des Voies Urinaires*) and Guiard (*Les Uréthrites Chroniques*), I deem the following general classification of these substances carried in the urine the most convenient for general practical purposes:

PURULENT FILAMENTS.	MUCO-PURULENT FILAMENTS.	MUCOUS FILAMENTS.
Short. Multiple.	Very much longer. Less numerous, often have ends rolled into a ball, or are serpentine.	Uniformly transparent.
Opaque. Yellowish.	Not homogenous, but often consist of thicker spots, held together by a more transparent substance.	No opaque spots.
Fall rapidly to bottom; dissolve readily and increase turbidity.	Sink slowly and remain coherent a long time. By twirling the tube they can be made to rise from bottom.	Light; remain in the upper part or float on surface of the urine.
Easily removable from the urine with platinum loop.	More difficult to "fish" as proportion of pus diminishes.	Still more difficult to fish.
Easily spread upon cover-glass; no tendency to curl.	Tendency to roll into a thick slippery heap or serpentine mass upon cover-glass.	Tendency to roll into a clear, thick mass on cover-glass, where it dries very slowly and then is barely recognizable.
Microscopically: Large masses of leucocytes, few epithelial cells, no mucus.	Microscopically: Leucocytes, often with equal quantity of altered epithelial cells, englobed in a substratum of mucus.	Microscopically: Never exclusively mucus; always have some epithelial cells, often also a few leucocytes.

In the above comparative table, constructed for easy reference, I intentionally omit all mention of microbes. The coarsest shreds, which quickly drop to the bottom, may be free from gonococci, while the finest mucous filament may contain distinct groups.

In a general way, all that precedes applies to the urine in chronic anterior gonorrhoea; but it is mentioned here because it is most convenient to examine both the first and second urines together. When manifestations point beyond doubt to chronic anterior gonorrhoea alone, the first urine is usually considered without preliminary washing of the anterior urethra. But when doubt obtains, every effort should be made for proper differentiation.

45. *Washing the anterior urethra.*—Commonly, the patient having been instructed to come in the morning before he has urinated, the meatus is cleansed with cotton soaked in mercuric bichlorid 1-6000 and a sterilized, small soft catheter is introduced as far as the compressor. Hot boric acid 4 per cent. is injected through this catheter, until the solution that escapes along its sides is perfectly clear of even the finest granules. This washing with the catheter is perhaps the safest for those practitioners who have not much experience in the method which I find more convenient and efficacious. It consists in washing the anterior urethra without a catheter, as described elsewhere.¹¹ Naturally, in employing the irrigator, care must be taken that none of the wash-fluid

¹⁰ Valentine: "Chronic Gonorrhoea; Its Scientific Treatment." Clinical Recorder, January, 1898.

¹¹ Valentine: "Improvements in Urethral and Intravestical Irrigation," Medical Record, June 5, 1897.

⁸ Maladies des Voies Urinaires, Tome I, p. 298. ⁹ Op. cit.

be injected into the posterior urethra, whose contents may be diluted thereby or have added to them the abnormal secretions of the anterior urethra. This vitiation of the test is more easily obviated by employing the irrigator I now use and recommend. The anterior urethra being thoroughly washed, the patient is instructed to pass his first 50 c.c. of urine into one tube and the remainder into another or others. If the first urine so passed is turbid, has coarse or fine shreds, filaments, flakes or granules, and if the subsequent urine is clear, the diagnosis of posterior urethritis, in the majority of cases, may be considered established.

46. *Turbid second urine.*—Even when the first urine passed after the cleansing of the anterior urethra is clear, the absence of posterior gonorrhoea is by no means proven. The morbid secretion may be so slight and so adherent to the posterior urethra, as to render it not detachable by the urinary stream. The urethroscope is then the only means we have to determine the location of the disease.

Further consideration of these questions is relegated to a paper on the "Diagnosis of Chronic Gonorrhoea," now in preparation. Even cursory attention to the preceding shows that nothing beyond an elementary study of the most salient symptoms of chronic gonorrhoea has been contemplated. This may appear, at first, as an unwarrantable consumption of the time of this learned body. Yet, even among the best informed, symptoms are often hastily passed over as if familiarity with them had reduced their importance. My principal motive, I unhesitatingly confess, is to provoke a discussion which will doubtless be so instructive, as to fully repay me for the labor I devoted to this effort.

The large number of subjects touched upon makes it seem convenient to index them for rapid reference. The figures attached to the titles correspond to those in which they are mentioned.

Itching in urethra.	15	Urine, malodorous	38
Large stains, sudden	20	Urine, purulent	40
Malodorous urine.	38	Urine, second, turbid	46
Meatus, dry	22	Urine stains	9
Microscopy of stains	11	Urine, turbid	39
Morning drop	12	Washing urethra	45
Neurasthenia, sexual	36		

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CHRONIC PROSTATITIS AND ITS TREATMENT.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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So many mooted questions still envelop chronic prostatitis that its presentation, especially in a necessarily brief paper, is attended with considerable difficulty. The symptoms, too, are so readily confounded with those of other ailments, save by most searching study, that oftentimes a patient with chronic prostatitis is treated for all manner of other diseases, unsuccessfully. To contribute what I can, in the time at my disposal, to the better comprehension of the disease is the task I have set myself in this paper.

The more or less severe tickling and burning in the urethra or at the glans, either incessantly or at intervals, the often increased frequency of micturition, the aching and stabbing pains in the anus, sacrum or perineum, the pain in the suprapubic region as well as the radiating pain along the lumbar region and the legs are well-known manifestations of chronic prostatitis. I hardly need mention the often present uneasy feeling or even painful sensation along the inguinal canal and in the testes, nor will it be necessary to describe the various nervous symptoms of neurasthenic origin in consequence of a chronic prostatitis.

However, it may be useful to emphasize the fact that the variety of symptoms arising from chronic inflammation of the prostate do not in every case point directly to the local affection, but on the contrary very often obscure the real nature of the disease, and may cause the original trouble to be overlooked. Another cause of this error is the similarity of the symptoms of chronic prostatitis to those of posterior urethritis. This, in a great measure, explains the wide differences that prevail regarding the frequency of chronic prostatitis. While, for instance, Erraud observed prostatitis in 70 per cent. of all cases of gonorrhoea, and Posner as well as Finzer mentions the frequent occurrence of the disease, Fürbinger and others are of an opposite opinion. Lately, however, the attention of physicians has been drawn more closely to this question and observations of a larger number of cases are reported by Petersen, Neisser, Felecki, Fuller, Berkeley Hill, etc.

My own practice has convinced me that acute and chronic prostatitis could be diagnosed much more frequently if in every case of acute, subacute or chronic gonorrhoeal urethritis the patient's prostate were examined. Of course, I do not mean to say that in every case of acute or chronic gonorrhoea the prostate must be affected. Considering the close connection of the prostate with the posterior urethra and also that the ducts of the prostate open into the same, it is easily understood how an inflammation of the posterior urethra can extend into the prostatic gland. But we meet with cases of prostatitis and seminal vesiculitis without any apparent inflammation of the

Absence of discharge	13	Painful ejaculation.	30
Abundance of discharge	4	Painful erections	31
Agglutination of meatus	1	Painful urination	16
Anterior urethritis simulated by posterior urethritis	25	Pains, urethral	35
Apparent anterior urethritis	25	Phosphaturia	42
Apparent aspermia	28	Post-coital dribbling	29
Apparent urination—and defecation—spermatorrhoea	24	Posterior urethritis, discharge in	19
Bacteruria	41	Posterior urethritis, residual	26
Caustic potash test for pus in urine	40	Premature ejaculations	33
Chronic residual posterior gonorrhoea	26	Pus in urine	40
Clear urine does not prove absence of infection	43	Pyuria	40
Coitus, dribbling after	29	Second urine, turbid	46
Color of discharges	5	Semen, dribbling after coitus	29
Color relation between discharges and stains	8	Seminal emissions	34
Consistence of discharges	6	Sexual desire, excessive	32
Defecation—spermatorrhoea, apparent	24	Sexual neurasthenia	36
Desire, sexual, excessive	32	Shirt stains on	7
Dhomé's test for pus	40	Shreds in urine	44
Diagnostic value of stains	10	Spermatorrhoea, apparent defecation—and urination	24
Discharge, absence of	13	Spermatorrhoea, stains of	21
Discharge, abundance of	4	Stains, diagnostic value of	10
Discharge, color of	5	Stains on garments	7
Discharge, consistence of	6	Stains, microscopy of	11
Discharge in posterior urethritis	19	Stains of spermatorrhoea	21
Discharge often the only symptom	2	Stains, sudden large	20
Disturbances of ejaculation	27	Supposed urinary incontinence	23
Dribbling of semen after coitus	32	Test (Dhomé's for pus in urine.)	40
Dry meatus	22	Tickling in urethra	15
Ejaculation, disturbances of	27	Turbid second urine	46
Ejaculation, painful	30	Turbid urine	39
Ejaculation, premature	33	Urethra, tickling or itching in	15
Emissions, seminal	34	Urethra, washing out	45
Erections, painful	31	Urethral pains	35
Excessive sexual desire	32	Urethritis, anterior, simulated by posterior urethritis	25
Filaments, differentiation of	44	Urethritis, chronic residual posterior	26
Filaments in urine	44	Urethritis, posterior, discharge in	19
Flakes in urine	44	Urethritis, residual posterior	26
Floaters, absence of	14	Urethrometry	18
Garments, stains on	7	Urethroscopy	17
Gonorrhoea, chronic residual posterior	26	Urination, painful	16
Goutte militaire	12	Urination—spermatorrhoea, apparent	24
Granules in urine	44	Urine clear, does not prove health	43
Incontinence, apparent	23	Urine, filaments in, differentiation of	44
		Urine, first and second	37
		Urine, floaters in	44

posterior urethra. It is supposed that in such cases an accidentally discovered chronic prostatitis has been chronic from the very beginning without having passed through an acute stage. It seems more likely that in such cases the infecting agents, the gonococci, did not rest long enough in the deep urethra to produce inflammation thereof, or that they did not find a suitable medium in the posterior urethra to grow upon, but wandered directly into the prostate.

The beginning of the acute prostatitis may be so mild, in such cases, as to cause no particular trouble to the patient, whose whole attention is directed to the more intense suffering from his acute anterior urethritis. Only after subsidence of the acute anterior do the symptoms of posterior trouble make themselves felt. Small wonder then that the physician overlooks the latter disease, unless he make it a rule to examine the prostate in every case.

Bacteriologically, also, the nature of the prostatic inflammation has been questioned. Finger in 1893 declared it indicated whether acute or chronic prostatitis is caused by an infection, by gonococci or a mixed bacteria. Neisser (German Dermatological Congress at Breslau, 1894) published several examinations he and Putzler had made, in which they found gonococci in the prostatic secretion. This has been confirmed by several other authors, and I can but endorse it. Although not always present, and although it is by no means easy to discover gonococci in the prostatic secretion, especially in chronic prostatitis, yet now and then we can detect some, as demonstrated several times in my post-graduate courses.

The text-books give as causes of chronic prostatitis: sexual excess, masturbation, gout, the internal use of balsams and traumatism. I do not deny the existence of chronic prostatitis after such accidents, but I believe that that they are very rare, and that the principal etiologic factor is gonorrhoea. I am sure that in many fresh cases ascribed to one of the above mentioned causes, a still existing chronic urethritis could be detected if a urethroscopic examination had been made.

A symptom considered as being characteristic for chronic prostatitis is prostaticorrhea, that is an either constant or a periodical oozing of prostatic fluid from the urethra. We find this opinion in most of the text-books. In conformity with Felecki of Budapest¹, and with Groszlick of Warsaw², I found free prostaticorrhea, *i. e.* a continual flow of prostatic fluid very rarely in cases of chronic prostatitis. I believe that urethrorrhea—an innocuous mucoid secretion from the urethral glands—and spermatorrhea are in such cases mistaken for prostaticorrhea.

Defecation-prostaticorrhea and urination-prostaticorrhea, are terms employed to designate a flow of prostatic fluid following defecation or micturition. They are by no means as frequent as is generally supposed, still their existence can not be denied.

The general explanation for this symptom is in the pressure of hard feces against the prostatic gland and abdominal pressure in defecation or micturition. Another very probable view of its cause is given by Felecki. According to his opinion, the act of defecation and micturition, by providing an irritation to the inflamed and hypersensitive prostate, leads to the con-

traction of its muscular fibers, by which the prostatic fluid is expelled, as in coitus. It must, therefore, be borne in mind that chronic prostatitis may exist and often is present without prostaticorrhea.

Another symptom worth mentioning is not so generally known as being one of chronic prostatitis; it is the dribbling of urine after micturition. Several minutes after having urinated the patient feels drops of urine running from his urethra; this dribbling repeating after every micturition. Such patients have a sensation as if their bladder had not been entirely emptied; they shake the penis a long time after urination or try to squeeze the urine from the urethra by stripping the perineum to protect the clothes from the dribbling urine.

The same dribbling of urine (*harnachträufeln*) is observed in cases of urethral stricture and hypertrophy of the prostate. We must consequently exclude stricture before we make a chronic prostatitis responsible for it. This symptom must not be confounded with incontinence or with *ischuria paradoxa*. In incontinence the urine dribbles involuntarily, the bladder never being filled, while *ischuria paradoxa* designates the overflow of the bladder in cases of stricture or prostatic hypertrophy. In our cases the dribbling of the urine seems to be caused by impaired function of the musculus compressor urethrae. According to Ultzmann, the compressor, being irritated by the inflammation, remains for a time in contraction, which prevents the entire emptying of the last drops of urine. These flow off as soon as the spasm subsides. Peyer, on the contrary, explains this "*nachträufeln*" by a weakness of the compressor muscle preventing the timely shutting off of the urethral lumen at the end of micturition.

I mention the great frequency of nervous troubles as a sequel of chronic prostatitis. The more or less constant uneasy or painful sensations along the genitourinary tract constantly draw the patient's thoughts to this region. Should he then, in addition to his disagreeable sensations, observe a degree of sexual weakness, incomplete erection or premature seminal emission, our patient's spirit becomes depressed. He is constantly worrying over his illness and loses all capacity for mental or physical work. In the worst case a general nervous debility sets in, not infrequently increasing to more or less complete exhaustion. Our patients become more or less obstinate hypochondriacs. It would be impossible to go into the details of all the nervous troubles complicating chronic prostatitis; they belong to the large group of neurasthenia sexualis. However, it must be understood that a great many patients suffer from such nervous disturbances without any affection of the prostate, and that others again with pronounced chronic prostatitis never show any nervous symptoms at all. The physician should make it a rule to examine every neurasthenic for chronic gonorrhoea and chronic prostatitis.

We diagnose chronic prostatitis by examination of the prostate per rectum and by microscopic examination of the prostatic secretion. Rectal palpation of the prostate is done either in the recumbent position or by placing the patient with his abdomen over the head of a sofa or supported by pillows over the side of the bed with the shoulders depressed and the legs slightly apart. Care should be taken that the bladder is empty, otherwise an erroneous impression may easily be formed.

The patient being in the proper position, the index

¹ Felecki; Beiträge für Kenntniss und Therapie der Entzündung der Prostata und der Samenbläschen.—Cbl. für die Krank. der Harn- u. Sexualorgane, 1895, p. 468.

² Monats-berichte über die Gesammtleistungen auf dem Gebiete der Krankheiten der Harn- und Sexual-Apparates.—Bd. ii. 3, 4, 5,

finger is gently introduced into the rectum and first glides softly over each prostatic lobe, determining its size and the character of its surface. Gradually a slight pressure on the prostate is made with the object of expressing some prostatic secretion for microscopic examination. The prostate will be found more or less irregularly enlarged. In some cases both lobes are irregularly enlarged and more or less painful to the touch; as a rule, however, one lobe is more affected than the other. The enlarged lobe may appear to be hard and of a more or less even surface, or of an irregular shape, presenting distinct nodules. This we find mostly in cases of follicular prostatitis, while an even, hard and smooth surface of an enlarged lobe is mostly due to a chronic interstitial inflammation; either one entire lobe may be soft and uneven, permitting the finger to be pressed deep into it, or we detect soft, easily impressible patches in both lobes, surrounded by somewhat harder tissue. The pain produced by the examination varies in intensity, some patients bearing a strong pressure comparatively easy, others complaining bitterly at the slightest touch.

A diagnosis of prostatitis can not be considered complete unless the prostatic secretion is examined microscopically. In cases without urethral or vesical complication we examine the prostatic secretion obtained by a gentle massage of the gland immediately after the patient has emptied his bladder. If in such cases, however, the quantity of the prostatic fluid is too small to appear at the meatus, it will mostly remain in the posterior urethra or flow backward into the bladder. In such a case we let the patient urinate into two glasses and ask him to keep some of his urine in the bladder. After massage of the prostate, the patient is ordered to empty the rest of his urine, which will contain the prostatic fluid.

It is much more difficult to obtain prostatic fluid *per se* in cases still complicated with urethritis or cystitis. It will then be necessary to exclude all substances coming from the mucosa of these organs. In complicating urethritis anterior we therefore wash the urethra with a catheter introduced to the bulb, with sterilized water or a boracic acid solution until the water or the solution contains no more pus or filaments, etc. We then order the patient to urinate and squeeze out the prostate after he has emptied his bladder. In case of a coexisting posterior urethritis or cystitis, we first carefully wash the posterior urethra or bladder after urination until our solution passes off quite clear. After having filled the bladder again with our solution we let the patient urinate it out, either partly or all of it. This is followed by a massage of the prostate.

The prostatic fluid so obtained very often shows macroscopic changes indicating an existing prostatitis. The discharge is very profuse, turbid, mucopurulent or purulent; in other cases, its macroscopic aspect differs very little from normal prostatic secretion. The decision as to the nature of the secretion is given by the microscope. According to the severity of the inflammation pus cells are found in varying quantities in the secretion. The discovery of pus cells in the prostatic secretion places the diagnosis of a chronic prostatitis beyond all doubt. Besides leucocytes we find the microscopic specimens to contain cylindrical cells in large quantities. Some cases of chronic prostatitis, present but few leucocytes in the secretion; these cells may be very abundant,

indicating a desquamative catarrh of the prostate. Red blood corpuscles are also occasionally found. According to Fürbringer, the spontaneous formation of seminal crystals in the secretion, without previous addition of phosphate of ammonia, is of diagnostic value for chronic prostatitis.

It has been mentioned above that gonococci may be found in the prostatic secretion; their discovery in the microscopic specimens demonstrating the gonorrheal origin of the disease. With regard to a differential diagnosis between chronic prostatitis and other genito-urinary diseases, we must exclude the following: 1. Urethrorrhea ex libidine. 2. Spermatorrhea. 3. Chronic posterior urethritis. 4. Other diseases of the prostate itself, especially prostatic tuberculosis. Urethrorrhea ex libidine produces a mucoid secretion from the urethra, which the patients may often take to be prostatic fluid or spermatic juice. Microscopic examination will readily show the harmless nature of this secretion and its origin; consisting mostly of mucous containing only a few pavement epithelium or cells. The abundance of spermatozoa in the secretion will easily permit the diagnosis of spermatorrhea. The difficulty of a differential diagnosis arises only when we find pus cells are mixed with the sperma. In such cases the pus may come from a seminal vesiculitis or from a diseased prostate. An examination of the semen will assist us. The latter usually appears in the urine in the form of gelatinous globules resembling sago and consisting exclusively of spermatozoa and epithelial cells from the seminal vesicles. In seminal vesiculitis these gelatinous corpuscles contain leucocytes. If leucocytes are found in the prostatic secretion alone and not mixed with semen, we diagnose prostatitis; but if, on the other hand, leucocytes are found in both secretions, we diagnose a seminal vesiculitis and leave the diagnosis of prostatitis *in dubio*.

In such doubtful cases rectal examination will often materially assist us. We find the diseased vesiculæ seminalis as elongated swellings beyond the prostate, smooth, round, fluctuating and painful to the touch or more or less hardened and nodular. I refer for particulars to Fuller's paper on "Seminal Vesiculitis," read before the New York Academy of Medicine, Section on Genito-Urinary Diseases, meeting of May 9, 1893.

The differentiation of chronic posterior urethritis and chronic prostatitis can easily be made by following the above-described plan for obtaining the prostatic secretion, after irrigation of the posterior urethra. Furthermore, urethroscopic examination will readily set aside all doubt. The differentiation between chronic prostatitis and tubercular prostatitis is of the greatest importance. It is not always easy to distinguish between a tuberculosis of the prostate in its beginning and a chronic prostatitis, especially as the prostatic secretion obtained by pressure on the prostate may in both cases contain leucocytes. Sometimes we may be able to discover tubercle bacilli in the secretion and all doubts are then dispersed. But the absence of the bacilli in a microscopic specimen does not exclude tuberculosis. We, then, must rely upon rectal palpation. In tuberculosis we generally find the prostate studded with tubercular nodules. Prostatic tuberculosis being very rarely primary, the diagnosis is easily cleared up by the detection of tuberculosis in other organs.

The prognosis of chronic prostatitis in the early

stages is not unfavorable: in the advanced form, especially when the prostate on rectal examination gives the impression of being flabby and distended with secretion, a cure is more or less doubtful. Yet even in these cases we can afford a great deal of relief to our patient. Many a neurasthenic can be cured of his complaints, although a residuum of his prostatic affection remains. Careful and proper treatment can do much, even if it has to overcome many difficulties, and even if it leads to only partial success. But in the latter case also, the general condition of the patient will be materially improved. The treatment of the disease must not only be local but also constitutional. It should never be forgotten that most of our patients are neuropathic individuals, and we must therefore from the beginning endeavor to gain their full confidence. If local treatment relieves them of their principal annoyances we must impress upon them the curability of their disease, with the object to distract their minds from the hypochondriacal thoughts regarding their local affection. This general treatment will be essentially assisted by corroborative measures. For anemic or lymphatic individuals we provide tonics, fresh air, mild exercise. Carefully directed hydro-pathic treatment will often benefit materially. Our local therapeutics should, first of all, be prophylactic, that means we should do our very best to prevent the setting up of a prostatitis in all cases of gonorrhoeal urethritis. A careful treatment of the latter will in many cases enable us to avoid prostatic complications. If, however, acute prostatitis sets in, we should try to cure it as quickly and as completely as possible. An early detection of acute prostatitis before the inflammation has involved the whole gland, is the first step to a quick cure. I repeat, therefore, the necessity of examining every case of gonorrhoea on this score. As soon as an acute prostatitis is diagnosed, we should put our patient to bed and stop all urethral injections and endo-urethral treatment. I am in the habit of prescribing the following treatment for my patients with acute prostatitis: Twice a day, morning and night, a rectal injection of warm water of at least 35 degrees C., care being taken that the nozzle of the irrigator does not hurt when introduced into the rectum. At least one pint of warm water should be injected and retained as long as possible. Before making injection at night a hip bath should be given, as warm as can comfortably be borne. After the rectal injection has returned, which usually is followed by a mild stool, a suppository of one-third of a grain of iodoform to one grain, is inserted in the rectum. Should pain be severe, and should micturition be frequent and painful, I add half a grain to a grain of codeia phosphoricum to the suppository. Internally I give santal oil in capsules. By this simple treatment I generally succeed in relieving pain almost instantaneously. This is usually followed, in the course of one or two weeks, by a subsidence of acute prostatitis, the prostate generally becoming almost normal to the touch. Of course, abscesses of the prostate, when already formed, have to be opened. It is, however, very rare that suppuration leading to an abscess takes place if my plan of treatment is instituted at an early stage. When, after the acute stage is overcome, chronic enlargement with all symptoms of chronic prostatitis remains, massage of the prostate is recommended.

Cases of an established chronic prostatitis, especially very old cases, are much more difficult to treat. In

the great majority gentle massage of the prostate every second or third day will prove the most effective means of procuring, if not a complete cure, at least decided improvement. To hasten the reabsorption of the inflammatory exudations in the prostatic gland, I continue the warm rectal irrigations as prescribed for acute prostatitis, as well as the warm hip-bath and the iodoform suppositories. Lately I instituted another course of treatment besides massage of the prostate. An Arzberger rectal apparatus is introduced into the rectum and a stream of hot and cold water is conducted through it alternately. First a hot water stream runs three to five minutes through the double canula of the apparatus, and immediately after it a stream of cold water is passed through it. This is repeated until about 2 liters of each, hot and cold water, have made their circuit through the apparatus. By this alternate application of heat and cold in quick succession a rapid contraction and dilatation of the blood vessels of the prostate is produced, acting upon the gland almost like an electric current, only with less violence.

The first noticeable result of this treatment is that almost from very first application the patient experiences relief from the local pains, which in the course of a few weeks generally disappear entirely. All my patients are very fond of this kind of treatment, and I can strongly recommend it. I repeat that massage of the prostate is regularly done at the same time.

All the suppositories except those of iodoform, prescribed for chronic prostatitis, have yielded so little good in my practice that I have given them up entirely. Of course it is understood, that in treating chronic prostatitis, the patient should be cured of his chronic gonorrhoeal urethritis at the same time.

A NEW SIMPLEST PROCTOSCOPY.

Presented to the Section of Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY THOS. CHAS. MARTIN, M.D.

LECTURER ON DISEASES OF THE RECTUM IN THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS. CLEVELAND, OHIO.

It has been complained that the best methods proposed for the inspection of the rectum require so expensive an armamentarium and such an infinite degree of painstaking practice on the part of him who would see, that the busy general practitioner can not hope to invade with his keen glance this darkest continent of special surgery. This is an error. On the contrary, as we shall see, no artificial means whatsoever are required for a complete ocular inspection of the rectum.

The elevation of the hips which sets in operation that principle of physics which governs the methods of Marion Sims' vaginal inspection (1845), Van Buren's rectal inspection (1871), and the method of the senior Allingham (1882), of Walter J. Otis (1887), and of Howard Kelly (1895), which controls my own procto-colonoscopy (1896), and which suggested Trendelenburg's posture, is, also, the chief feature of this the simplest proctoscopy.

The essentials of this method are a patient, an assistant and an operator having at least one finger on each hand. The patient is to be put into the kneechest posture; the assistant is to put and to hold the patient; and the surgeon's fingers are to be used to open the anus, all in the following manner, to-wit:

1. The patient is to be completely anesthetized as

he lies on his back, and then turned toward the assistant and into Sims' posture.

2. The assistant is to station himself at the patient's knees. In his left hand he is to grasp the patient's feet. He is to lean himself against the patient's knees. He is to pass his right arm under the patient's hips. Now steadying the feet and bearing himself firmly against the patient's knees, with his right arm he is to lift the hips and pull the patient into the knee-chest posture.

Here, securely in the embrace of the assistant, the patient is to be balanced on his perpendicular right thigh. Exactly here, throughout the whole time of the surgeon's manipulations, steadily the patient must be held.

3. The surgeon is to close his hand and to point his index finger as shown in the accompanying illustration. (Plate 1.) So, likewise the other hand. The wrists are to be crossed, the hands placed back against



FIGURE 1.

back, and the nails of the index fingers placed one against the other, as shown in the accompanying illustration. (Plate 2.) The surgeon is to lubricate these fingers and gently insinuate them through the anus and place their ends beyond the borders of the levatores ani. This accomplished, the anus is to be divulsed in the direction of the ischial tuberosities, by the surgeon forcibly parting his fingers as is shown in the accompanying illustration. (Plate 1.) Under this manipulation the rectum becomes atmospherically inflated.

Now, provided the surgeon lower his head to the level of his fingers and then rise again, or stoop, or move a little from side to side, he may command under his eye a view of the atmospherically inflated rectum to the depth of six or eight inches (15.24 or 20.32 cm.) and in some instances he may behold even a part of the sigmoid flexure.

It is possible for the operator to manipulate his patient and to finish his inspection within two and a half or three minutes, provided the patient be in a state of complete anesthesia.

If this method be practiced, as I am persuaded it may be with facility by the general practitioner, I am convinced that the greater number of rectal diseases may be instantaneously diagnosed. But I must declare that here, at diagnosis, the achievement of the simplest proctoscopy ends, for the reason that the operator's hands are so full of his patient he can do nothing at all for the disease which he may have discovered.

Under some conditions and amid some circumstances the rectum will not inflate. If there be a close stricture of the rectum, if there be malignant growth or other diseases of the rectum by means of which the gut's coats have become extensively filled and fixed with an organized plastic exudate, if for some reason the intra-abdominal pressure be abnormally increased, as it may be by the voluntary bearing down of the patient, as it may be by enormous intestinal flatus, or by ascites, or if there be an impinging



FIGURE 2.

uterus, extra-rectal growth or extensive infiltrating disease of the contiguous textures, rectal inflation by this method or by any other which is governed by the same principle is a physical impossibility; but this need not baffle the man bent on seeing by instrumental aids.

Practiced as described, when not embarrassed by the exceptions specified, this method will achieve its purpose and reveal to the surgeon that the transverse diameter of the rectum is variable; while in some places it is not more than an inch (3.54 cm.), in others it is more than four times this diameter.

The rectum may present to the eye of the imaginative observer the appearance of a chain of urinary bladders, communicating one with another by means of irregularly elliptical openings set at varying axes, and bounded by the non-parallel borders of the semi-lunar valves. In the normal rectum the air pressure smooths the mucous membrane evenly over the entire surface of the gut. The normal mucous membrane of the so-called ampulla appears at first wet and of a

shining bluish gray. As it dries, under the influence of gravitation the blue venous tint fades out of the gray and the wall becomes pink tinged. Presently it assumes the appearance of parchment, and sometimes it appears painted at rare intervals with ramifying little arteries which are crowded and overlapped by the larger companion veins; the latter are less arborescent and more suddenly dive and disappear in the bowel wall. In time, over all there comes a sheen as of collodion varnish and the vascular pictures fade save that one beneath the promontory of the sacrum. These phenomena appear exactly as described only in the healthy rectum; in the diseased organ the color varies much.

Should the operator deviate from the prescribed directions for the manipulation of his fingers and so twist his hands as to divulge the anus in the antero-posterior direction instead of laterally he invites defeat upon himself; for in the male the fixation of the perineum and the immobility of the coccyx interfere with the requisite dilatation; while in the female, the extreme mobility of the perineum and particularly the backward displaceability of the coccyx will allow such traction to be made upon the levatores ani as to pull their inner borders parallel and almost together, and in consequence the wider the female's anus be opened antero-posteriorly the closer it shuts laterally to rob us of our view.

1077 Prospect Street.

PRIMARY CARCINOMA OF THE AXILLA.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY D. W. GRAHAM, M.D.

CHICAGO, ILL.

Carcinoma of the axilla consecutive to a primary focus of the disease in the mammary gland, or some other organ or structure, is a matter of almost daily occurrence in the experience of the surgeon. But primary carcinoma of the axillary region is rare enough to be worthy of discussion, especially as it raises some important questions in the fields of histologic anatomy and pathology, and of practice. There is no apparent reason why this region might not be the site of the squamous celled, or true skin carcinoma, as frequently as any other in the body. Primary cancer of the axillary skin is, however, exceedingly rare. Of 7297 primary cases of carcinoma analyzed by Williams 571 were of the skin, but of these latter only three were axillary.

There is no doubt but that occasionally a primary carcinoma of the breast will manifest itself clinically through the infection and enlargement of the axillary lymphatics. The primary nodule, small, slowly-growing and deeply seated, and the conditions present for quick invasion and rapid progress of the lymphatic infection would give a pathologically secondary, but a clinically primary tumor in the axilla. While this is the explanation usually given and generally accepted for most carcinomatous tumors first appearing in this region it is applicable only to a small number of such cases, and should not apply except when the axillary tumor shows an exclusively lymphatic histologic basis.

There are two structures found in the axillary space in which carcinoma is prone to originate, which will account for nearly all cases of true primary carcinoma

in this region. One of these is the supernumerary mammary gland tissue more or less perfect or rudimentary, found occasionally, and the other structure constitutes the large convoluted, tubular sweat glands, which are constantly present.

The most complete recent exposition of the subject of supernumerary mammary glands in the human subject is that by W. R. Williams in the *Journal of Anatomy and Physiology*, Vol. xxv, 1891. It is shown that there may be one, two, or three of these above the normal gland on a line diverging outward to the axilla—two on the border of the pectoral muscle, and one in the base of the axilla. The latter is the least frequent. Most frequently these supernumeraries are rudimentary masses lying wholly beneath the skin and neither visible nor palpable, resembling in gross appearance ordinary subcutaneous connective tissue, but microscopically they show some of the normal elements of the gland. These subcutaneous "mammary lumps," as they have been called, may be wholly detached from each other and from the normal mammary gland, or they may be joined to the latter by an isthmus of the same kind of rudimentary tissue. In 132 consecutive cases of carcinoma in the mammary region in females Williams found that 13 of them had their origin in supernumerary structures quite outside the normal glands. None of these, however, were located in the axilla proper.

The sweat glands of the human axilla have been specially described by such anatomists as Sappey, Koelliker and others, but it remained for C. H. Creighton to demonstrate their peculiarities and emphasize their significance from a pathologic standpoint. In the *Royal Medico-Chirurgical Society transactions of 1882*, Vol. lxx, page 53, he reports three cases of axillary carcinoma in dogs, originating in the large axillary sweat glands. Spencer Wells, in *Wood's Monographs*, Vol. iii, No. 1, 1889, reports a case of axillary carcinoma with the microscopic findings which seem to demonstrate that it originated in the large, tubular sweat glands in the manner described by Creighton. They are regarded as a kind of rudimentary organ of cutaneous secretion in the human when compared with similar structures in the lower animals, and, as Wells observes, are subject to all the risks of such survivals or rudiments. These glands, while also found in the groin and in the areola of the breast as well, are looked upon as midway in structure, with their large acini and amount of secreting surface, between the ordinary sweat glands and the mammary gland. They have their distinguishing histologic features by which they can be identified with ease. They are situated under the skin and not in the skin like other sweat glands and their ducts open into the hair follicles. They are large enough to be detected as firm, round bodies in the subcutaneous tissues in a dissection. It is quite probable that a more careful study of specimens of primary axillary tumors would show these glandular structures to be the point of departure for the morbid process in the majority of cases, rather than the supposed axillary supernumerary mass of mammary tissue. A study of the clinical histories also of those cases which have been put on record is suggestive in this same direction.

The two following cases have served as a basis for this brief paper on this subject:

Case 1.—Miss DeC., aged 50 years, came into my hospital service in June, 1898. The right axilla was filled with a hard mass which was already causing edema of the arm by pressure.

The history and physical characteristics all pointed to carcinoma. Nothing abnormal could be detected in the breast nor in the tissues intervening, between this and the tumor. Removal of the growth required an unusually difficult dissection, a section of the axillary vein being extirpated with the mass. Six months later the patient returned with a nodule not larger than the end of a finger, just beneath the skin, about the middle of the upper hemisphere of the mammary gland. The skin was involved and adherent to the nodule. The breast was amputated by my colleague and a microscopic examination was made by Dr. William E. Schroeder, who had already examined the tumor removed six months before from the axilla. Both specimens were demonstrated to be carcinoma.

Case 2.—Mrs. A. C., 30 years of age; had had acute mastitis with suppuration while nursing a child in 1895. The examination, December, 1897, revealed a hard tumor in the base of the right axilla as large as a hen's egg, and which had been developing for a number of months. There were several small nodules, which had developed later, extending along the border of the pectoral muscle toward the breast. The latter was equally consistent throughout and except that it was firmer and slightly larger than the left breast, it seemed to be perfectly normal. The main tumor was movable, and to all appearances did not involve the overlying integument. The several smaller nodules seemed to be enlarged lymphatic glands.

The operation consisted in removing both the tumor and the breast, together with the isthmus of intervening infected tissue. Dr. L. Hektoen made a careful microscopic examination of the specimens and reported there was no carcinoma of the breast proper, it being, however, in a state of chronic inflammation. The ducts were much enlarged and dilated, filled with semi-solid secretion, cheesy like and surrounded throughout the whole breast and nipple by hyaline connective tissue. The main tumor from the axilla was simple carcinoma with considerable fibrous tissue, and the intervening lymphatics were some of them carcinomatous, and the opinion was expressed that the nodule nearest the mammary gland was an outlying accessory portion of the gland, although before the operation there seemed to be a clear intervening space between them.

It is to be regretted that in neither of these cases did it seem possible to demonstrate by the microscopic examination the exact anatomic structure or characteristics of the tissue in which the carcinoma appeared.

After a thorough search of medical literature I have been unable to find but eighteen reported cases of primary carcinoma of the axilla which can be accepted as such. I have rejected a number of those that have been so reported, because the evidence shows that they were either sarcoma or secondary carcinoma. Even two or three of these eighteen, which follow, might prove to be sarcoma if fuller histories were obtainable or if the specimens had been microscopically examined since the time when there began to be histologic differentiation between sarcoma and carcinoma.

Case 1.—H. Snow, *London Lancet*, March 12, 1898, p. 717. Female, aged 47. Hard mass, filled whole axilla. One and a half years' duration. Skin adherent. Breast healthy, but removed with tumor because the disease seemed to be traveling toward the mammary gland, the normal direction of infection being cut off.

Case 2.—C. E. N. Kelly, *London Lancet*, March 26, 1898, p. 859. Female aged 80. Tumor size of pigeon's egg in middle of axilla at fourth rib. Hard and fixed to the chest wall. Skin ulcerated. No apparent connection with breast. No operation. Its course was watched and it extended gradually along the border of the pectoral muscle to the breast, which became involved. No lymphatic glandular enlargement. The opinion is expressed that the tumor did not originate in an outlying free nodule of mammary gland tissue.

Case 3.—F. P. Paul, *Transactions Pathological Society*, London, 1895, Vol. xli, p. 153. Female aged 29. Tumor appeared in axilla while nursing child, then disappeared, and reappeared when nursing next child and took on all the characteristics of typical scirrhus. Tumor excised. No connection with the mammary gland. Cut section exuded white secretion, like inspissated milk. Thinks it originated in sweat glands, but this opinion is controverted by Williams, who believed it arose from a detached axillary mammary lobule. (*British Medical Journal*, 1894, Vol. ii, p. 1405.)

Case 4.—H. Walton, *Medical Press and Circular*, London, 1895, Vol. ii, p. 45. Primary hard cancer in axilla. Operation.

Several recurrences. Subsequent operation. Immunity of the breast from cancer.

Case 5.—Spencer Wells, *Wood's Med. and Sur. Monographs*, 1889, Vol. iii, p. 18. "Cancer and Cancerous Diseases." A case of axillary tumor removed. Female aged 46. Microscopic examination showed origin in the sweat glands. Breast free from disease.

Case 6.—Bailly, *Le Progrès Médical*, Second Series, 1887, Vol. v, p. 53. Female aged 68. Tumor of right axilla. Three years' duration. No connection with mammary gland. Microscope showed hard carcinoma.

Case 7.—Pied, *Bulletin Société Méd. de la Tours*, 1886, Vol. xxvii, p. 62. Carcinomatous tumor of the axilla. Extirpation.

Case 8.—J. Congoureaux, *Gaz. Med. Chi.*, Toulouse, 1881, Vol. xiii, p. 137. Voluminous carcinoma developed spontaneously in the right axilla without morbid change of the breast.

Case 9.—J. Coates, *Glasgow Med. Jour.*, 1879, Vol. xi, p. 322. Melanotic cancer removed from the axilla by MacLeod.

Case 10.—Von Mosetig-Moorhof, *Ber. d. K. K. Kranken.*, Wieden, 1898, p. 190.

Case 11.—R. A. Cleemann, *Transactions Pathological Society*, Philadelphia, 1867, p. 151. Female aged 70. "Lump" in axilla $1\frac{1}{2}$ inches in diameter of four years duration. Excised. A year later another lump appeared between the cicatrix and the breast. Both tumors pronounced epithelioma, the latter described as composed of a half dozen hard, rounded bodies in size from a split pea to a marble, making a single mass. The appearance of the mass and the skin led to the suggestion that the origin was in the appendages of the skin—"the sweat glands."

Case 12.—C. F. Maunder, *Transactions Pathological Society*, London, 1862, Vol. xii, p. 229. Male aged 30. Open cancerous ulcer involving the axillary artery, not excised. Began as a lump in the axilla one year before, every clinical feature of carcinoma, but not demonstrated microscopically.

Case 13.—R. Alba, *Espana Med.*, Madrid, 1862, Vol. vii, p. 388. Axillary cancer. Extirpation by Prof. Natalis Cano. Reported cured.

Case 14.—S. Benavides, *Chron. d' I Hosp.*, Madrid, 1856, Vol. iv, p. 206. Occult cancer and scirrhus tumor in the right axilla. Extirpation.

Case 15.—H. Ohm, *Deutsche Klinek.*, 1854, Vol. vi, p. 288. Female aged 40. Tumor arose from birthmark in axilla which had been accidentally abraded and ulcerated a year previously. Other tumors developed in the axilla which proved to be of the lymphatics. The tumor was removed and it appears that the breast was not affected.

Case 16.—M. Marjolin, *Bulletin de la Société Chirurgie*, Paris, 1862, Vol. iii, p. 410. Female aged 57. Left axilla; small painless tumor several months duration. This was extirpated and consisted of three distinct nodules. The microscopic examination was made by M. Robin. He remarks that the tumors are of a very rare species. His report, together with the clinical evidence and gross appearances given is almost conclusive that the case was one of primary carcinoma of the large sweat glands if interpreted in the light of today.

Case 17.—R. W. Smith, *Dublin Medical Journal*, 1838, Vol. xii, p. 65. Female aged 30. A hard, movable, painless tumor appeared in right axilla. Afterward the axillary vessels and surrounding tissues became involved. One year and some months later a tumor was noticed in the breast. No operation. Autopsy showed carcinoma of the stomach and other viscera. The author reports the case as one of primary carcinoma of the axillary glands.

Case 18.—M. Marrotte, *Jour. de Méd. et Chirurgie*, Vol. iv, p. 107, 1831. Male aged 22. Tumor filled right axilla. Extirpated and examined microscopically. Report says several forms of cancer and cysts full of blackish fluid were found. It is questionable whether this was not a case of sarcoma.

In a given case of carcinoma, originating in and apparently confined to the axilla, established surgical principles imperatively require wide removal of integument, fat and lymphatic tissue from the axilla and of the latter two structures along the border of the pectoral muscles to the breast, whether apparently invaded by the disease or not, and in most cases some of the muscular tissue, as well. But it becomes a very important practical question whether the breast itself should or should not be included in the operation. It would be the safer course to remove the breast in all cases, but some exception can be made to this general rule consistent with good surgery, the question hinge-

ing on the age of the patient, the extent of the disease, and the length of time it has existed.

CONCLUSIONS.

1. Primary carcinoma of the axilla is probably more frequent than the small number of recorded cases would seem to indicate.

2. When present it originates, *a*, in the large tubular convoluted sweat glands peculiar to this region, *b*, in supernumerary mammary gland tissue more or less rudimentary, or *c*, in the true skin; and as to relative frequency in the order named.

3. When the disease appears first in the axilla and later in the mammary gland the most satisfactory and the most logical explanation is that there has been retrograde infection through the lymphatics from the axilla to the breast.

4. When the lymph glands and channels or other tissues between the axillary tumor and the mammary gland are at all infected, or suspected, the gland should be removed along with the tumor and the intervening infected tissues.

5. In any case in which the breast is not removed it should be carefully examined at short intervals for the first manifestations of disease.

DISCUSSION.

Dr. CHARLES A. POWERS of Denver—The practical importance of this subject can not be overestimated, and it shows that in addition to the removal of the primary neoplasms of the breast, those of the axilla should be subjected to the same management. The rule is absolutely established that no part of the mammary gland is to be allowed to remain without a most thorough and careful examination. It is well known by all surgeons and is becoming more and more appreciated by physicians and the laity. Our success lies in early recognition and extirpation. During the past year I have removed from the anterior axilla a nodule the size of a hen's egg. Clinically, differential diagnosis could not be made between a benign and a malignant growth, and the pathologist who examined this specimen called it a supernumerary mammary gland, which was the seat of the fibro-adenoma, although it might just as well have been malignant.

Dr. OCHSNER of Chicago—At the inner limits of the axilla, and the lower edge of the pectoralis major muscle, there is a point at which I have seen three carcinomatous growths, and in each one the nodule was first movable underneath the skin, consequently it could not have originated from the sweat glands in the skin, nor from anything except glandular tissue. The only glandular tissue there would be a portion of the mammary gland, and cancer in this region can originate precisely as could epitheliomatous growths elsewhere. In this particular location, if the points in its development are observed, it is perfectly plain that the cancer must come from a supernumerary mammary gland. I have frequently found extensions of the mammary gland a considerable distance from the gland proper, and I cannot see why there should not be extension in the axillary direction as well as in any other. Under these circumstances, the carcinoma would originate precisely the same as from any other lobule, only the lobule is slightly displaced.

Dr. A. D. BEVAN of Chicago—There are two possibilities that must be borne in mind, one of which is the occurrence of a small primary focus of carcinoma, which is overshadowed by the secondary growth. It may be that the primary growth is a very small nodule in the mammary gland, while the secondary mass may be in the axilla. In one of Dr. Hirschfelder's cases, there were extensive deposits of carcinomatous tissue in the prostate without any primary lesion. I recently had a case in which I amputated the entire outer end of the scapula and clavicle for supposed sarcoma, but postmortem examination showed it to be a case of carcinoma. In these cases we must imagine one of two possibilities; first, that there was a small primary focus overshadowed by the secondary mass, or second, the encapsulation of a piece of epiblastic tissue which has developed into carcinoma.

Dr. J. B. MURPHY of Chicago, Ill.—In the cases observed by the author, I would like to ask if the tumor was situated deep primarily or superficial primarily, that is to say, was the skin movable over it in the early stages? Dr. Ochener laid great stress on this point. We all know that we can find car-

cinomatous growths in the sweat glands which may or may not have originated in the mammary glands, and every surgeon has noticed that suppurative foci may be found in connection with the skin. Upon opening these tumors they will be found to contain a caseous material, and are largely made up of invaginated portions of the epiblast. These cysts are very common and frequently do not appear to be attached to the skin.

Dr. WILLIAM L. RODMAN of Louisville—I would like to report a case similar to Dr. Graham's, which occurred in a male about 60 years of age, living in Jeffersonville, Ky., who was by occupation a ship carpenter. The case was unquestionably one of scirrhus carcinoma of the axilla, which was removed, and as it was the first of the kind I had ever seen I followed it up until death. This case bears out the remarks of several of the speakers, and I am sure you will occasionally find primary carcinoma in the axilla, although most of these cases are doubtless sarcoma. Dr. Bevan makes a good point when he states that a very small lump in the breast may be overlooked and the growth in the axilla considered as primary when it is really secondary. All of us have seen cases of this kind, and I have had my attention drawn to it by patients. As to the treatment of these cases, I can add nothing to what has been said by the essayist, but would like to insist even more strongly on one point, and that is the danger of infection of the lesser pectoral, which should be removed. It seems to me that it is even more necessary in these cases to remove the glands than it would be the primary growth in the breast itself.

Dr. GRAHAM, in closing—Referring to the microscopic findings in Dr. Powers' case, it is stated that many cases of fibro-adenoma, so-called, originate in these sweat glands, as well as in the axilla and the mammary gland, and it is probable that most fibro-adenoma originate in these glands. Dr. Bevan's statement is exactly opposite to what I claim, and there is no reason to my mind why a focus in the prostate should not be secondary as well as primary. It is true we may have a primary focus in the axilla. I believe you will admit that we do have tissue in the axilla capable of giving rise to primary carcinoma, and one of my cases proves this. With regard to Dr. Murphy's questions, the integument in the second case I reported was movable over the tumor, while in the other case the mass was very large, and the skin was tense. It must be remembered that these sweat glands are under the skin and not in it. No doubt we can have a supernumerary mammary nodule in the male as well as in the female.

POST-OPERATIVE INSANITY.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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For want of a better term I have adopted this one to indicate certain mental aberrations following operations. That very slight operations are not infrequently followed by severe attacks of insanity is beyond a question; at the same time the most severe operations on those who are insane are frequently followed by the return of their normal mental faculties.

Why this unfortunate complication should follow certain operations in both male and female is a question which up to the present time has not been fully settled from a pathologic standpoint. Statistics on this important subject are severely wanting, and it is believed on the part of the writer, that notwithstanding a few cases of post-operative insanity have been reported from time to time in the journals, a great many more have not been reported, possibly for the want of knowledge as to their cause, or maybe a hesitancy on the part of the operator to announce to the world that he has operated a certain case which has been followed by some form of insanity. The fact that we do have these cases occurring and that their causes are illy understood is certainly a sufficient excuse for having selected this subject, the study of which we hope will throw more light upon this important clinical question.

Among the few cases which have been recorded, the following is the synopsis of a case operated by Dr. Sprague, published in the American Medico-Surgical Bulletin of May 2, 1896, in which he reports having operated a very nervous and hysterical case, which in childhood had been a subject of chorea. At the time of the operation the patient had reached the age of twenty-four, and had given birth to two children, having sustained a laceration of the cervix and perineum at the time of the first birth, but outside of this misfortune her health was practically normal. Without going into the details of the case, she was operated eight months after the second birth. On the eleventh day after the operation she was taken with mania, her temperature at that time being 101 and continued to rise until it reached 106, when she died. The writer states that during her entire illness she partook of a large amount of nourishment consisting of milk and eggs; that her urine was examined with negative results; that the patient never had a chill or chilly sensation, and that the only pus found was one drop about a very superficial suture; that she never had the appearance of a patient suffering from sepsis, the lips and skin being normal in color almost up to the time of her death. In closing his article he stated "now, was this a case of acute mania and meningitis due to her sensitive and nervous condition, or should we throw out entirely the nervous condition as a cause of her trouble and ascribe it to the results of sepsis? If the latter, was there sufficient pus to produce such violent results?"

In considering the main features of this case it is difficult to understand why this particular patient should have had an acute attack of mania with so small a quantity of pus, when other cases with large quantities of pus and often suffering from septicemia, do recover without any mental aberration.

In referring to the records of the Protestant Hospital I find that my colleague, Dr. J. F. Baldwin, operated a patient Sept. 19, 1895, removing a hematomata of the right broad ligament in a lady, age 28, with good habits, normal urine, bowels regular, appetite good. On the third day after the operation her temperature rose to 103; on the fourth day it dropped to 99½, at which time she became delirious, but happily responded to the use of bromids and finally recovered from the operation Oct. 9, 1895. The doctor informs me that he has had several cases of post-operative insanity but fortunately none of them had resulted fatally, and that in no case was he able to determine any particular cause for the mental aberration.

Through the courtesy of Dr. J. Collins Warren and Dr. G. W. Nicherson, the author was very kindly furnished with a report of the following case of "delirium nervosum." A German woman about 65 years of age, was operated Sept. 23, 1895, by Drs. Warren, Nickerson and Stone for cancer of the sigmoid flexure, producing intestinal obstruction. The operation consisted in making an artificial anus. The hospital reports show that on recovering from the anesthesia she seemed dull and drowsy, which was followed by restlessness and delirium continuing two days after the operation, when she became noisy, talking continually, but sleeping on an average of about eight hours a day. She partook plentifully of nourishment. Four days after the operation her mental condition changed from that of excitement to that of muttering delirium. The sutures were removed on the fifth day but the delirium continued. On the sixth day after

the operation she became very nervous and had hallucinations which consisted in seeing and hearing parties around her. On the thirty-second day she refused nourishment, on the thirty-ninth day she became hysterical and for a time was restless and sleepless. On the forty-fifth day she assumed a melancholy mood, subsequently she became violent, but at other times almost rational.

These extremes of mental aberration continued with little or no rise of temperature until she died, April 1, 1896, 190 days after the operation. This case is interesting from its prolongation and the variety of hallucinations manifested. When we realize the large number of cases that die from cancer without any hallucinations or mental aberration of any kind and on the other hand the large number of patients who suffer from fecal fistulas or an artificial anus, who likewise are free from any form of insanity, the question naturally arises, why should this particular case develop such marked conditions and what are the peculiarities that give rise to them?

The writer has had occasion to meet with several of these seemingly pathologic freaks, among which he might mention the following: Mrs. S. M. C., age 56, white, two children, the youngest about twenty-six years of age, was an unusually strong healthy woman, and with the exception of a laceration of the cervix and perineum was in normal health. Her family history was good, but owing to the long continued laceration of the perineum she became afflicted with prolapsus of the uterus. She was admitted to the Protestant Hospital of Columbus, Ohio, June 24, 1895, and operated June 26, 1895, the operation consisting in freshening the edges of the uterus and suturing them in place and the usual operation for lacerated perineum. The patient made an eventful recovery and was about ready to return home when she was seized with a violent attack of mania, which became so severe as to necessitate her removal to the Columbus State Hospital for the Insane. Her mental condition was so bad when taken there that Dr. Richardson, the superintendent, despaired of her recovery, and for weeks looked upon her case as an exceedingly grave one, although there was no physical evidence associated with the operation that would indicate any cause for her mental aberration. In the course of about three months she began to improve, and one day it dawned upon her that she had been insane, and she fully appreciated her surroundings, and remembered distinctly the hallucinations which had afflicted her during the three months previous, which consisted in imagining she was incarcerated in some jail in which she daily expected to be massacred. Notwithstanding all the delusions, she has fully recovered, and today is in the enjoyment of her normal health and attending to her household duties. As there was no pus infection in this case and no family history leading to insanity, it still remains a conundrum in my mind as to why such a severe attack of mania should have occurred after so trivial an operation, which was devoid of any complications.

I recall another case which was operated at the Protestant Hospital, May 21, 1895, in which I removed the uterus and ovaries. The patient made an uneventful recovery, but after returning home became melancholy, and for a time it seemed that it would be necessary to remove her to the insane-asylum, as her melancholy changed to mania of a vicious charac-

ter. The latter only lasted a few days, and in the course of a few weeks, I am reliably informed, her mental condition became normal, and at the present time she is in the enjoyment of good health. In studying the history of this case I find that fifteen years prior to her operation she had a very severe attack of uterine hemorrhage which was suddenly checked and was followed by an acute attack of insanity, making it necessary for her to be taken to the insane-asylum for treatment, where she remained some nine weeks, when she was dismissed in a convalescent condition. During all this time she had suppression of the menses; three weeks after her return home the menstrual period was regularly established and her normal health returned, and no symptoms of mental derangement manifested themselves until after the operation above referred to.

I will now report a case which is the reverse of those I have just mentioned. Mrs. N., aged 37, of German descent, was admitted to the Protestant Hospital, Nov. 15, 1896, suffering from dementia of twelve years standing, dating from the birth of her last child. At this time she sustained a laceration of the cervix, followed with fibroid degeneration of the uterus. During a part of this time she was cared for in the Columbus Hospital for the Insane, and in 1892 had convulsions in connection with her dementia. Three years prior to the operation, she received a fracture of the arm and immediately became a raving maniac. Her case being a chronic one, Dr. Richardson, the superintendent, advised operative interference, and on Nov. 18, 1896, I operated, removing both ovaries and the uterus. The latter I found very much degenerated, while the tubes were atrophied and the ovaries had undergone cystic degeneration. For a week the patient improved rapidly, her mental condition becoming very much better, the urine being passed through its normal channel, but at the expiration of this time a seepage of urine was discovered in the vagina, which aroused my suspicions lest I had by some mistake injured the ureter. By more careful examination I found that by catheterizing the right ureter the urine obtained was normal, but in catheterizing the left ureter through the fistulous opening, the urine was loaded not only with pus but with albumin, leading me to the conclusion that there was degeneration of the left kidney and ureter. Consequently on Dec. 13, 1896, I made a nephrectomy of the left kidney, which I found enlarged and located abnormally high. In order that no mistake might be made, assisted by my colleague, Dr. Means, I passed the urethral catheter through the fistulous opening into the ureter and allowed it to remain there until I made an exploratory incision into the abdominal cavity, which developed the existence of a diseased left kidney, which was then removed by the lumbar operation, and was found to contain numerous cysts, many of which contained pus. My patient made a rapid and uninterrupted recovery from this second major operation, and for a time the urine passed through its normal channel, but to my chagrin and surprise some three or four days after the operation I found the urine again seeping through the vagina, and on further examination discovered a calculus, which had evidently formed in the right ureter, producing necrosis and suppuration, and was finally broken up and removed through the vagina, thus leaving a fistulous opening. Excepting this my patient still continued to recover, but I found that the

continued irritation of the urine worried her, causing a return of the mental aberration.

I again called counsel, consisting of Drs. Baldwin, Means and Dunham, and it was decided that an effort would be made to implant the remaining ureter into the bladder. The patient was prepared accordingly, and assisted by Drs. Means and Baldwin, another abdominal section was made which not only developed the fact that the right kidney was abnormally small and located unusually high, and that the ureter was very large, with a fistulous opening at its lower end communicating with the vagina, but instead of the ureter passing over the psoas muscle and iliac artery immediately underneath the peritoneum, it passed under them, thus making operative interference doubly difficult. Notwithstanding this the ureter was dissected out, when I found that it lacked an inch and a half of being long enough to be inserted in the fundus of the bladder. I then proceeded to dissect the bladder loose from its moorings, but after having done that, the ureter was still too short, and I next proceeded to dissect the kidney loose and bring it down until I was enabled to implant it into the fundus of the bladder, after which the kidney was anchored, the bladder sutured as firmly as possible to the abdominal parietes, the toilet carefully looked after to avoid sepsis, and the patient returned to her room to await results.

Strange to say, notwithstanding that the patient was a debilitated, insane woman, she made a rapid recovery both physically and mentally, but in spite of all our care there was some leakage of the urine both through the abdominal and vaginal wound, which in the course of a few weeks ceased, and I am pleased to state that the patient is now reported doing her own housework, her mental condition normal and her physical condition very much improved.

Owing to the fact that the cases thus far referred to were all females, it might be misleading in the study of this very important and mysterious subject. In order that your minds may be disabused in this respect, I beg leave to briefly report one or two cases which occurred in the male.

J. D. S., age 35, referred to me by Dr. Hyde of Nelsonville, Ohio, suffering from a stellate fracture of the patella, in which the latter had been broken into five fragments. An operation was made at the Protestant Hospital in which the fragments were sutured together with heavy silk-worm gut and the knee joint thoroughly cleansed of blood-clots and fragments of bone. The patient made an uninterrupted recovery until the ninth day, when he was suddenly taken with an acute attack of mania, jumped out of bed and started through the ward, and it was only through the combined efforts of the nurses that they were enabled to get him into bed. From that time on he was deranged and it was only by putting on special apparatus that we were enabled to keep him in bed. At the time of his attack of insanity the wound looked perfectly healthy, but immediately following that it became inflamed and swollen; the exercise in walking through the ward and the efforts in getting him back into bed had evidently torn some of the fragments of the patella apart, which was followed by acute suppurative synovitis, septic infection, and in spite of free drainage and antiseptic treatment, resulted in death.

This case was one of a strong, healthy man whose family history was good, and up to the ninth day

after the operation no evidence whatever of mental aberration was observed, neither was there any physical condition indicating septic infection; hence the sudden attack of insanity which continued for several weeks before final dissolution closed the scene, is unaccounted for.

Mr. L., age about 50, referred to me by Dr. Kelly of Galion, Ohio, was suffering from tubercular osteomyelitis, necessitating an operation and the removal of a sequestra which extended nearly two-thirds of the length of the tibia. The ordinary operation was performed, the wound cleansed with bichlorid solution and packed with iodoform gauze. The patient did well for four weeks when he suffered from a sudden attack of insanity, which at first was of an intermitting character, but gradually became worse until he became a raving maniac, necessitating an apparatus to keep him in bed. During all this time, which covered a period of some two months, his wound continued to repair by granulation until complete recovery ensued so far as the operation was concerned, but his mental condition, although not so bad when he left the hospital, continued deranged and remained so after his removal home, and up to the last account the writer obtained regarding his condition.

It is needless to say that I was more or less chagrined when I was brought face to face from time to time with these cases of so-called "delirium nervosum," lest it were some fault of mine in operating or dressing the case, or some neglect on the part of those who cared for it in the hospital, but my mind was greatly relieved when I found that such a distinguished surgeon as Dr. John B. Hamilton, editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, was meeting with similar conditions, in which he informed me he had called in the best experts on mental and nervous diseases in the city of Chicago, who up to that time had failed to discover any particular cause for these mental disturbances. In order that I might have further information in regard to this very serious complication, I took the liberty of writing to several distinguished surgeons throughout the United States, making inquiry as to their experience in cases of this class. Among numerous answers which I received was one from Dr. John B. Deaver, of Philadelphia, in which he says, under date of March 28, 1896:

"The cases of post-operative insanity which have occurred in my practice have all presented a clear history, *i. e.*, perfectly sane all their lives up to time of operation. The patients who have been so affected have not had any febrile disturbance and the cause could not have been attributed to drugs. I have not had any deaths occur, yet I know that this sometimes happens."

On the other hand, Dr. Howard A. Kelly of Baltimore, in a letter received under date of March 17, 1896, said: "I will very gladly look up the matter and write you in a day or so," but up to date he has failed to report the results of his investigation, leaving us to speculate as to whether he ever had a case of this kind, or if he had, as to whether he was willing to report it.

Dr. John A. Wyeth of New York wrote me under date of March 15, 1896, in which he said: "In regard to your subject of post-operative insanity, I do not think I could contribute anything of interest. I do not now recall a single case of well-marked insanity resulting after an operation."

Dr. R. Stansbury Sutton of Alleghany, Pa., writes me under date of March 15, 1896, in which he says: "I have never seen a woman who was sane when operated, become insane afterwards. I have frequently operated insane women. Some of these have been cured by the operation and three have not been cured. I suspect that in some instances the excessive use of iodoform, at and after the operation, is conducive to, or rather productive of, insanity."

Under date of March 13, 1896, Dr. Rufus B. Hall of Cincinnati wrote me: "I have had five patients develop acute mania after sections and one after vaginal hysterectomy, the mania lasting from twelve to thirty days in four cases and three or four days in one case. The patients all recovered and are now well. Two of these patients had been insane before operation. One suffered several months but had been well a couple of years; the other had been in the asylum for a year at one time and two and a half years at another time. She was out of the asylum a year or more when she developed an ovarian tumor, for which the operation was made. The three others never had any mental trouble preceding the operation."

I will not take time to quote further from correspondence, which seems to be as varied as the cases that have fallen under my own observation. Certainly the cause ascribed by Dr. Sutton can not be attributed to any of the cases I have reported, except the one with the osteo-myelitis, for that was the only one in which I used iodoform, and yet I had a series of cases ranging over a period of years, no two of which were alike, and on the other hand, as has been stated by Dr. Sutton, I operated a case of chronic insanity which was submitted to several capital operations, which not only recovered from the operation but from the insanity.

My paper is already too long to enter into a discussion of the pathology of these anomalies, and if it were not, the clinical evidence obtained up to the present is so confusing that I doubt whether we could arrive at a satisfactory conclusion. I am aware that septicemia may produce a species of ptomaines followed by mental aberration, but the preponderance of evidence of the clinical cases which I have reported does not show the presence of septicemia, and hence I am compelled to eliminate this as the predominating cause, for in many cases the mental disturbance did not begin until after the patient had recovered, or only lasted a short time in cases where there was no evidence whatever of the existence of septicemia or pyemia.

Whether climatic influence has anything to do with it or not I am unable to say, but one thing I do know, that since I have been connected with the Wyoming General Hospital, which is located nearly a mile and a half above sea-level, in the heart of the Rocky Mountains, I have not seen a single case of post-operative insanity, notwithstanding we have had many severe accidents, saying nothing of the operations for lacerated cervix and other gynecological operations, while in Ohio a number of similar operations were followed by post-operative insanity, with and without the existence of pus.

I hope that my contemporaries will be free to report these very interesting and troublesome cases and that from these reports we may, in the near future, be able to determine their pathology and, if possible, avoid their occurrence.

QUESTIONS IN THE TREATMENT OF CONGENITAL DISLOCATIONS OF THE HIP.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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In the treatment of congenital dislocation of the hip by modern methods, reduction of the dislocation by manipulative or operative means, we must wait long for a success to become an assured one; we may not have to wait long for failure. Therefore any one reporting success can do so, at the present time, only with the qualification that the case is "successful up to date." Tomorrow, or the day after, may witness a relaxation, and the work will have to be finally counted a failure or will have to be done over.

I have practiced the operative and manipulative reduction only during the past two years, and my experience will let me speak of but the beginning of my cases which I would count successes; of my failures I can speak with more definiteness. I do not intend to detail methods or case histories *in extenso*. The literature of the operation is becoming very voluminous, and the main facts have been many times repeated. I shall suggest only a few points which specially interest me by reason of their difficulty, or because I do not fully understand them.

OPERATIVE REPOSITION.

I have done the reposition by operation nine times, and the first time I could not definitely locate the acetabulum, and in my endeavors there was considerable injury done to muscles and other tissues. The matter is, after all, simple enough if one bears in mind the point which has, I think, been properly made; that the femoral head is always within the capsule, and that the latter always has its original attachments to pelvis and femur. Therefore, if the femoral head be found (and this is an easy matter) and the capsule covering it be incised, the finger, slipped into this incision, will pass at once along the elongated capsule to the acetabulum. There is more importance in this early finding of the acetabulum than at first sight appears. The incision through the skin and fascia has done no injury to a part having an active function; the muscular covering of the head can be traversed by simply separating the fibers with a blunt instrument; the only other tissues that need cutting are the capsule and the floor of the acetabulum, the former to permit access to the latter and the latter for the hollowing out of a proper socket. Knowledge of this simple and obvious path to the joint may save a tedious time of search and much mutilation of muscles, and the preservation of the function of the latter is of definite practical importance. In addition to this, the shortening of the time of the operation directly lessens the danger of sepsis; and suppuration in one of these cases is, I chance to know, a very tiresome thing.

In one of my earlier cases I noted that when the plaster of Paris splint was first removed the joint was apparently freely movable, but in a limited range; later there was a rigid limitation of motion, the limb being held flexed and adducted; and still later, though there was no massage nor passive movements practiced, the rigid flexion and adduction ceased, and full extension and ample abduction became possible. I had compared the *mechanical* conditions in these

reduced congenital luxations to the conditions that pertain in an ordinary healed hip joint tuberculosis; in each there was some alteration in the shape of acetabulum which made it a less suitable socket for the femoral head; in each there was some irregularity of the femoral head which made it a less perfectly adapted mechanical part; and in each there was some shortening and distortion of the femoral neck which made it a shorter and less efficient lever for the action of the thigh abductors. Therefore it seemed quite natural that, in my little case, the limb should take the position of the third stage of hip joint tuberculosis; and later, it seemed plausible to argue that the increased range of motion was due to late absorption of the plastic effusions which had occurred immediately after the operation, just as we see a practically stiff tuberculous joint regain the great part of its function with the subsidence of the tuberculous process. Other cases have not followed the course of this one, and three hips, in two children, have gone on to practical ankylosis, the amount of motion permitted being too little to be of any use; and in each instance the stiffening has come on gradually, and while the child was using the limb with apparent perfect comfort. This is difficult for me to understand, unless it is due to cicatricial contraction. When the splint is first removed the cicatricial tissues in the joint are young, and there is then free motion through limited arcs; this motion is enough to be quite easily measured by the goniometer. Later, there has been gradual lessening of motion to practical joint rigidity; and this has come on during the period when the cicatricial tissues have been aging and contracting. Furthermore, the location of this cicatricial tissue must be inside the articulation, not in the tissues of the capsule nor in the muscles around the joint. I believe that for this reason: I operated early this year, for the reduction of an old irreducible traumatic dislocation of the hip in a child 4 years old. The operation was on the lines of a Lorenz operation for a congenital dislocation. I found that, at the time of this dislocation, the capsule had been torn entirely from the femoral neck, and I discovered it lying collapsed in the acetabulum, and quite firmly adherent there. To effect the reduction of the head it was necessary to cut all of the internal rotator group of muscles. Now, it was not practical to suture the capsule to the femur, so it was pulled into its place, as nearly as possible, and left; nor could all of the cut muscle be sutured, but only a part of it. Therefore, in this case, I had made more extensive sections of tissues than I have found necessary in congenital cases, and there was a very questionable arrangement of the capsule; and yet, after an uneventful healing, I had a joint with a very satisfactory range of motion in a useful arc, and a most gratifying functional result. But in this case the articular cartilage on the femoral head and in the acetabulum was quite normal, while in the congenital cases, the femoral head is put into a cavity hollowed out in the bone of the pelvis. It is true that this cavity has a floor that is made in part of cartilage, for in all these cases ossification is incomplete and the unossified triangular piece of cartilage between the three segments of the os innominatum is in the center of the floor; but this is not articular cartilage, rather cartilage that must eventually become bone, and all around it the cancellous tissue of the bone is exposed, and from this granulation tissue may grow, may become adherent to the femoral head

and neck and bind it closely, and more closely, in one position.

I have been obliged to come to this theoretic conclusion because I have been unable to find the records of a postmortem on one of these cases, made late enough after the operation to display exactly the final anatomic result in detail. Now, if this is so, the question of securing a freely movable joint, even in a limited range, is a most difficult one; for any forcible motion will only be a fresh trauma which will require more cicatricial tissue for its repair, and anything short of a motion that will make the head move freely within its socket, will be only the stretching of tissue today, which will contract tomorrow, to be stretched again the day after. This last is the method of Lorenz, and it is tedious, painful and it is reported to get but partially satisfactory results. I have not practiced it myself for the reason I have already given, that I thought the late absorption of plastic effusions, under the stimulus of the active motions of the child, would slowly free the joint; but the three stiff joints that I have, out of my little series, have shown me that this tiresome after-treatment of the operative cases may be necessary.

In my last case, a girl of 11 years, in whom the operation is not two and one-half months old, and whose hip was becoming progressively stiffer, I have, under an anesthetic, broken up adhesions and made sure of free motion. During this manipulation there was no tendency to relaxation and the head moved freely in the socket, with but a little crepitation at one place. From this operation I feel quite sure that it was the fastening of the head to the acetabular floor that limited motion, and that my task is to establish here a nearthrosis by the persistence of sufficient motion to prevent reattachment; to favor the development of a bursal sac and a pseudo-cartilaginous lining of the acetabulum similar to that in a true pseudo-arthritis sequent to a fracture of a long bone. A second manipulation, under anesthesia, a week after the first, found the joint, which had been treated by passive motion and massage in the interval, free to move from full extension through 90 degrees of flexion, and through 20 to 25 degrees of abduction from the usual position, and this with less joint crepitation than formerly. If this can be maintained a most satisfactory result will have been achieved. In all of the manipulation of this joint with its restricted motion, it is interesting to note that it never once has resembled the restricted motion of hip-joint tuberculosis. The two conditions, similar in the point of limitation of motion, have been otherwise markedly contra-distinguished.

In another case there has been relaxation of both hips. Just when this occurred I can not say. The child left the hospital in apparently good and satisfactory condition, and when I next saw her, a year later, the dislocation had recurred. I suppose that, in this case, I had neglected the advice Lorenz gave me, to make big acetabula; but as I am to be permitted to repeat the operation this coming fall I will not theorize, but will wait to find out the cause at that time.

In the last case of this series to be mentioned, but one of my comparatively early cases, I was quite unable to bring the femoral head down to the level of the acetabulum, and so I made an entirely new socket, the lower portion of which overlapped the upper portion of the real socket. This was done in a relatively thin part of the bone and opened through the ilium

into the pelvis, and into this hole the head was thrust. This case supplicated and was tedious. Under the patient and painstaking dressings and redressings of my associate in the case, Dr. C. M. Armistead, the child finally recovered, but with an ankylosis. The limb, however, is in a good position and is a thoroughly satisfactory means of support and progression.

MANIPULATIVE REPOSITION.

In this procedure the chief obstacle is in the disposition of the capsule at the acetabulum; for extending upward from the acetabular rim to the head in its luxated position, it lies directly over the hollow of the acetabulum and closes it except for a small and narrow slit at the upper part—a slit that is often so narrow that it will not, until it has been enlarged, permit the passage of the head. The manipulation endeavors to tear this slit larger, but this definite object can not always be definitely accomplished, and the head may be placed in the acetabulum, but with a double layer of the voluminous capsule interposed, the head having failed to pass through the slit and having pushed the folded capsule before it. If this occurs the disaster of relaxation is inevitable.

There were ten hips in eight children on which manipulative reposition was attempted, the first having been done about nine months ago, and in nine hips the fact of reposition was apparently accomplished. In one child, a girl 7 years old, who had bilateral dislocation, one hip was irreducible, the other was reducible, but its location in the acetabulum was so very insecure, probably because of the folded interposed capsule, that the idea of keeping it there was abandoned and the child reserved for operative reposition. This has not yet been done. In another case, a boy of 6 years, the reposition seemed to be accomplished, but the evidence was not satisfactory, and so an incision was made, the finger carried down to the capsule and the parts explored by direct palpation. Quite a large hematoma was found just outside the capsule, and it was demonstrated that the femoral head was really in the acetabulum. This was a simple incision with a finger thrust in it, but it supplicated, bacterioscopic examination showed the streptococcus and the child is yet under treatment. The reposition has, however, been maintained and there is a little "shake motion" in the joint, but ankylosis must be the inevitable result. Another case, comparatively easily replaced, became relaxed within six weeks, again probably because of interposed capsule, and in spite of being continually in apparatus—a plaster-of-Paris spica—and in bed. A second reposition seems, up to date, more successful, and the child has now begun to walk in her spica. Another went her whole six months of splint restraint and a month of freedom from splints, and then relaxation occurred. After a little interval of rest the reposition was repeated and splint restraint begun afresh. The final result is now many months off. In a small boy the reposition was accomplished and maintained for six months before the splint was entirely left off. When the splint was definitely removed the whole limb became swollen and congested and flexed at the hip and knee. The child was merely kept in bed and the condition gradually abated, but a certain amount of rigid flexion at the hip persisted, and motion was very much limited. Under anesthesia the joint was shown to be free of ankylosis and reposition was maintained, but the

long head of the rectus femoris and the neighboring fascia lata was very tense when joint extension was made. A subcutaneous section of these was done and a plaster-of-Paris spica put on, and this is still in place. In another little boy the present conditions seem to promise complete success and I have been much tempted to take off my splint—a little spica which does not reach below the knee—before my appointed time. In this little splint the child runs and jumps and climbs, with a hardly appreciable catch in his step, and with perfect freedom and comfort. He must, however, live out his predetermined time of splint restraint, and that will last another month. At the time of changing the splints the facts of maintenance of reposition and freedom of joint motion have been established.

I did not expect that the difficulty I had experienced in the operative cases with stiff joints, was to follow one in the manipulative reductions; but one joint, reduction having been done six months ago, comes out of splint treatment with the reduction stable, but the joint quite rigid in a position of slight flexion, slight abduction, and slight out rotation, and his gait is consequently very awkward. This is the only one that has, at any time, presented such very definite rigidity after manipulative reduction, and the causation is a little obscure. It is not unknown that exudations of lymph may take place in sprained joints, undergo organization and cripple joint motion. (Moulton on Sprains, 42. et seq., Klemm, *St. Peter. Med. Week*, 1897, No. 28, quoted by A. J. M. S. p. 224, 1898.) I found quite a hematoma just outside of one joint which I had replaced by manipulation, and then cut down on to verify my result. It may be that the stiffness of this particular joint is due to some such cause, and it is being properly massed and subjected to passive movements with the result that it is gradually becoming more movable. It is to be noted, however, that the shallow acetabulum throws the femoral head somewhat forward; and the outward rotators of the hip are adapted to the luxated position, and the reposition puts them on the stretch; and both of these conditions—in this case, at any rate—tend to cause an outward rotation of the limb.

Finally, one little girl with a bilateral dislocation was subjected to manipulative reposition with apparent success, but this proved to be of but temporary duration. A second attempt to reduce proved a failure on one side, and, while the head could be put into the socket on the other side, it could not be made to stay there. I decided to repeat the operation I had done for the traumatic dislocation; and so I cut down on the left hip and found that in the original manipulative reposition the head had been put into the acetabulum but the double layer of capsule had intervened. Section of this flap with a tenotome disclosed a very poor acetabulum, but one that could be used, and so the head was thrust in it, and the capsule overlapped at the point of section and the pelvic portion stitched to the femoral neck. On the other side the incision of the capsule gave vent to 6-8 c.c. of dark synovia, as if a synovitis had been set up by the previous manipulations. The acetabular pocket was more open but the slit needed to be enlarged for satisfactory reposition. In this instance the slit cut in the capsule was sutured, the stitches being inserted some way back from the margin, so as to draw considerable of the capsule into a thick fold, and so strengthen it and lessen its extent. In both cases

gauze drains were used and superficial sutures of silk-worm gut. By this means I know I have the femoral head properly in the acetabulum; I know there has been no injury to the acetabular articular cartilage, and no special invitation for granulation tissue to develop, and to cause ankylosis; and I know that the disposition of the capsule is such that the upward thrust of the femur in supporting the body, must drive the femoral head deeper into, rather than out of the acetabulum. These points are gained by neither the operative nor the manipulative reductions of Lorenz and Hoffa. What may be the final result I can not say, but it ought to be a good one, and to favor that, and lessen all unnecessary adhesions and stiffness, early manipulations and passive movements are to be begun; as soon as the superficial wounds are healed I shall turn the child over to a masseuse.

This recital of difficulties must not be taken as counting against the operation. The reports, as they have come to us from Europe, have recited brilliant successes, and I have related my incomplete cases and my failures to indicate the difficulties that must be overcome, and the disappointments that may meet us. Still, with the exception of one case where there is practical ankylosis of both hips, and the cases where relaxation occurred, each case treated has been markedly benefited, even though an ideal result has not been reached. As these children grow the new articulation should become firmer, and the limb more useful for support and progression, and this is in direct contrast to the unreduced cases, in which increasing body weight causes stretching of ligaments and muscles and lessens, progressively, joint stability. I have lately examined three women with unreduced dislocations, and their lives are being distinctly narrowed by the increasing difficulties in getting about. It is right that we should try to save the children of today from being overtaken by that fate.

DISCUSSION.

Dr. JAMES E. MOORE of Minneapolis—Although this is a deformity that we are not likely to meet with every day, it is present all over, and I personally know of at least twenty-five cases. Experience has taught us that mechanical treatment is unsatisfactory, and very few cases have been reported where mechanical treatment has yielded satisfactory results, so that we are compelled to look for other methods. Among the best are the operations of Lorenz and Hoffer; the former the bloodless, and the latter the bloody. I have had but little experience with the bloodless operation, but on one occasion started in to do the bloodless and wound up by doing the bloody. I had a very sad experience in this case, and the patient recovered with an ankylosed joint, so I would not advise trying to combine the two operations. The technique is very simple, although the Lorenz operation is more complicated than the present one. Dr. Bradford advises that you begin your incision just below the anterior superior spinous process of the ilium, and cut downward and outward, making a longitudinal incision through the fascia lata. The anterior margin of the tensor vagina femoris comes into view, and you cut right down upon the capsule at once. You then make an incision into the capsule and cut around until you can turn the head of the bone out, separating it absolutely. Failing to follow the proper point will cause much difficulty in finding the acetabulum. It is only by having such men as Dr. Sherman give us their results that we can begin to formulate our ideas.

Dr. SHERMAN, in closing—As to the substitution of the bloody for the bloodless operation, the injury that is done to the tissues in endeavoring to reduce the dislocation without incision is very great. I have found hematoma in one case at the end of a week, and in every case, ecchymosis results. If the laceration of the soft parts can be avoided, the bloodless operation will give a more satisfactory result. It is necessary to regard ankylosis of the limb in a good position as preferable to permanency of the dislocation, and the usefulness of the limb is so much greater that it is worth while, as unreduced dislocations become progressively worse.

THE TIME TO OPERATE IN APPENDICITIS.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

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For a long time the appendix and adjacent parts were distinguished as being the only structures in the human body where the known presence of pus was not an indication for its removal. Ignorant of the etiology and pathology of the inflammatory diseases of this region, restrained by exaggerated ideas of the hazards of intra-peritoneal surgery, few surgeons had the courage to oppose this violation of a generally recognized law; and for many years, under various names, appendicitis received only those treatments that were purely medicinal, symptomatic and palliative, while the results depended alone upon the unaided reparative efforts of nature.

But since the pathologist has conclusively proven that from the very nature of the disease, neither internal medications nor external applications *can* have any direct effect upon this disease, and that all clinical evidence to the contrary must of necessity be deceptive, and since modern methods and perfected skill have so nearly annihilated the dangers of intra-peritoneal surgery, the surgical conception of appendicitis, based upon the teachings of pathology, has gradually supplanted the old empiric treatment, which never has had any support, except unconfirmed clinical testimony.

In taking this all-important step toward the proper management of an infected appendix, some have hesitated and wavered and are still reluctant to rely entirely upon the principles of modern surgery to guide them in their treatment, for they maintain that there *are* times and there *are* cases where an infected appendix should be left within the body. Others regard this as a purely surgical disease, to be treated *always* in accordance with those surgical laws that hold good on other parts of the body. Hence, a consideration of the time to operate in appendicitis always includes a discussion of the following question: *Are experienced operators ever justified in recommending that an infected appendix be permitted to remain within the abdomen longer than is needed to make the necessary preparation for its removal?*

Arrayed on either side of this question are earnest, sincere men of the widest experience, whose opinions and judgment we all value and respect. So long as this uncertainty and marked difference of opinion exists in the treatment of this very frequent, acute and grave disease, we can not hope to command or merit the full confidence and trust of the laity nor to be quite free at all times from doubts and misgivings ourselves, as to our choice of plans. Until we are approximately in accord upon the main points of treatment, appendicitis will continue to be a proper subject for thoughtful consideration and reconsideration, alone and in discussion.

In this paper I shall express as clearly and as briefly as I can the line of reasoning and thought that has led me to believe that *the known presence of an infected appendix within the abdomen is always an indication for its removal.*

Appendicitis has its origin in an infection effectually imprisoned within the appendix, out of the possible reach of external or internal medication or natural

drainage, cut off from the cecum by inflammatory occlusion of the canal and separated from the nearest external outlet by the parietal peritoneum, several layers of muscles and fascia and the skin. This infection may be mild and limited, free from danger and causing but little distress; or it may be most acute and virulent, producing local and general changes most dangerous to life and health. We are, as yet, unacquainted with any signs or symptoms that enable us to distinguish positively one grade or stage of inflammation from another. This infection is in a useless organ that is easily and safely removable ordinarily, but which lies in dangerous proximity to tissues which are certain to be involved if the infection spreads. This extension of the infection we are absolutely powerless to arrest except by surgical removal of its source. Treated medicinally or left to nature, 10 per cent. of all cases end fatally in the primary attacks and more than 25 per cent. die ultimately. The causes of death are systemic infection, peritonitis or obstruction of the bowels, hence the surgeon's aim is to prevent, arrest or limit septic absorption and local and diffuse infection of the peritoneum. Local infection may occur either by direct extension of the inflammation or by sudden rupture of the distended or softened appendix, permitting the escape of its septic contents. Diffuse peritonitis may be produced by the same causes, or by leakage from an appendiceal abscess. A very large proportion of those who do not die suffer from recurrent or chronic appendicitis, or from the more or less remote effects of bowel or omental adhesions which occur to some extent in nearly every case.

These, I believe, will be accepted as fair statements outlining the conditions which confront us in every case of appendicitis.

In coping with these conditions those who retain their faith in modern surgical principles can not consistently recommend delay in operative measures, unless it can be satisfactorily explained just why—in this particular instance—they should deviate from a generally accepted law of surgery. I take it that the advantage of any departure from general principles should be clearly proven by abundant and substantial evidence before an exceptional plan be adopted, and that in the absence of such proof the safer plan would be to follow the rules of surgery that hold good in other parts of the body.

It is asserted by a majority of those who oppose immediate operation in all cases, that this infection had best be left within the abdominal cavity, unless it is apparent that the disease has not extended to or beyond the outer coat of the appendix; or that a local abscess has formed, with walls of requisite strength (in which case the abscess is opened, but the appendix is not removed if it form a portion of the abscess wall), or that all acute symptoms have subsided without pus formation, viz., between the attacks. They maintain that by thus limiting their operative procedures they lessen the danger of post-operative general peritonitis. They also claim that as for various good reasons they operate less frequently, they have fewer distressing post-operative sequelæ, less suffering and hospital expense, with equally as good results as those who operate promptly. Moreover, many assert that their experience and such clinical testimony as they can gather go to prove that 75 per cent. of all cases do as well as or better when trusted to nature than when treated surgically. The proofs offered in sup-

port of these opinions are largely made up from personal experiences, statistics, quotations from authorities and the testimony of patients.

The chief reasons for operating promptly in appendicitis, regardless of the stage, character or extent of the disease, presence of pus or tumor, or state of the pulse or temperature, may be briefly stated. First, such a course is in harmony with the generally recognized law that the presence of infected, devitalized tissue and pus in the human body is an indication for its removal by the most direct and safest route.

Second, as in this region nature's reparative methods involve the formation of more or less dense and extensive bands of adhesion which may impair or annul the functions of nearby vital organs, this mode of repair should not only be interrupted early, but should be followed by the breaking up of all adhesions and the removal, as far as possible, of all debris.

Third, if this course was pursued in all cases as soon as the diagnosis was made, experienced operators would not expect the mortality to exceed 2 per cent. Moreover, the 98 per cent. or 99 per cent. would be free from the apprehension of future attacks and the distressing effects of bowel, omental and mesenteric adhesions. Such results are believed to be infinitely better than those of any other plan of treatment.

Fourth, prompt operators believe that complete work is attended by less immediate danger and gives better ultimate results, while one of the rules of the delay operators is to leave the abscess wall intact, and frequently the gangrenous appendix is a part of this wall. Such incomplete work promises an imperfect result even if the patient lives.

Fifth, even if certain stages of the morbid process were known to present more favorable conditions for operative procedures we have no means, with our present knowledge, of recognizing these various stages or even of assuring ourselves that they will ever occur. *For it is impossible to accurately determine the exact pathologic changes taking place under a rigid or distended abdomen, by any combination of local or general signs or symptoms.* Few men of experience today would care to stake their professional reputation or their patients' lives upon their ability to discover a protruding enterolith about to escape into the peritoneal cavity, or to determine the exact strength of every part of an abscess wall. Yet those who wait accept for themselves and their patients these chances; for upon the safe imprisonment of this enterolith or other infection, and the maintained strength of this wall during their period of waiting depends the life of their patient.

In reply to the remaining statements of the oppositionists the prompt operators declare, first, to advise that operation be done before the disease has extended beyond the appendix is *equivalent* to operating at the earliest possible moment after a diagnosis is made; second, to operate between attacks is an admission that the patient has been unnecessarily exposed to the dangers of previous attacks, and to choose this time is only better than to wait for future attacks; third, it is unreasonable to suppose—if an operation is needed at all—that neglect, delay and incompleteness are the factors likely to eliminate post-operative or other complications and obtain better results than from prompt, complete work; fourth, their death rate can not be computed and must of necessity be a matter of guess work since many of their so-called cured patients still carry within their abdomens the rem-

nants of a disease which may light up at any moment; fifth, it is admitted that 75 per cent. of all cases of appendicitis do not die during an attack, even if not treated at all, but we are surely not justified in accepting a plan that results in the imperfect recovery of 75 per cent., when at our disposal is a plan that insures the complete recovery of 98 per cent.; sixth, it is inconsistent to expect that a mortality which is conceded to be due to "too late operation" will be reduced by a treatment that means further delay.

Furthermore, it is maintained that the evidence supporting the claims of those opposed to immediate operation, while not lacking in amount, is not of a character to lead us to depart from the general laws of pathology and surgery. The testimony of patients, the report of clinical observations by competent men, statistics, and even the unsupported opinions of honest, experienced men, have a relative value, but when in opposition to the teachings of pathology that value is very much less than when it is in confirmation of such teachings.

The testimony of patients, like that of all unqualified witnesses, is almost always unreliable. Then, too, we get only the testimony of the living, who naturally feel bound to testify to the efficiency of any treatment connected with their recovery. The fatal cases might tell a very different story if they could reappear upon earth. The clinical observations of competent men certainly deserve some consideration, but we should remember that these observations to be of much value must extend over a period of several years in each case, or be strengthened by the assurance that no remnants of diseased tissue remain in the abdominal cavity. Unless the appendix be removed, the fair way to report a recovery from one attack would be something like this: "This patient has survived an attack of appendicitis, but we have every reason for believing that he will always be in danger of future attacks until the appendix is removed, and each attack renders the next one more likely to occur and the operation more difficult." Let each of those who have faith in the teaching of clinical experience ask themselves the following questions: How many operations have I seen that in my own judgment were done too early? How many have I seen that proved to be too late? How many deaths and how much suffering has come under my observation that I honestly believe could have been prevented by timely and proper operations for appendicitis? Which of these chances shall I give my patient?

Statistics that include a large number of cases, with a description of the specimen removed, have a decided value, but no statistics, however voluminous, can be very convincing if they report under the head of recoveries, cases that still carry within their abdomens the original cause of the disease liable at any moment to light up a serious, perhaps fatal inflammation? The unsupported statements of so-called authorities are often quoted to bolster up this or that view of the treatment of appendicitis. But this question has been prominently before the profession for consideration a number of years and such arbitrary statements, unless they appeal to our reason and common sense, can not, or at least should not, materially influence us either for or against operative interference.

The above statements, to my mind, outline the chief points of this controversy that are deserving the consideration of those who are studying this question, not for the purpose of defending a pet theory, but in

the hope of deciding upon a treatment for appendicitis that shall promise the most for their patients in the saving of lives and suffering. It is customary, however, to introduce into these discussions other objections to the immediate operation, to which I will now make the briefest possible reference, for I believe that they should have little or no weight in influencing our conclusions. The assumption that a prompt operator advocates a laparotomy for any and all right-sided pains is as absurd as the belief that an infective inflammation can originate in the pericecal cellular tissue. It would appear to me quite immaterial whether what seems to us the best plan of treatment for a dangerous disease be named "radical" or "conservative," or whether those who propose or practice it be called "extremists" or "old fogies," "seekers after notoriety" or "arm-chair theorists." It can not concern the patient or doctor whether the plan of treatment be of ancient origin or the latest product of modern thought so long as it is effective. It can not be important whether it gives nature or surgery the leading or subordinate part in the cure so long as it promises the best results. Nor can I believe that we should be induced to advocate or practice an inferior treatment in order that poorly qualified and inexperienced men may safely employ it.

It has been said that to be known as one who always operates in appendicitis means to forfeit a certain amount of prestige and popularity with the public. This, if true, is the public's misfortune, I think, and it should rest with them to correct it. "Wholesale laparotomizing," "mutilating operations," "epidemic of ovariectomies" and other similar, meaningless and extravagant expressions are rarely found in any logical argument. Neither these nor any other unfair reflections upon our ability or sincerity should deter us from pursuing that course which our best judgment dictates. In appendicitis we have a condition, not a symptom nor a group of symptoms, to treat; this condition is an infection of the appendix and perhaps the surrounding structures, which when treated medically or left to nature has been shown to have a death rate in first attacks of 10 per cent. and an ultimate death rate of 25 per cent. The application of the same surgical principles that hold good in other parts of the body, viz., the prompt and complete removal of the infection promises a perfect recovery in 98 per cent. of all cases. The question is whether any treatment involving delay in the removal of this infection promises to reduce this 2 per cent. mortality. The waiting for a more favorable time to operate means, as I comprehend it, the subjecting our patients to ever-present real dangers while we wait for those fancied (at least unproven) favorable conditions which may never arise, and which, should they arise, we are unable to recognize, all for the purpose of doing a more or less incomplete operation that must promise a proportionately more or less imperfect result.

Eye-Strain.—Dr. Aaron Howell in the *Medical Bulletin* (Vol. xx, No. 4), gives the following as symptoms of eye-strain: Pain in the temporal region and in the back of the head and neck; red eyelids, also an inability to see at a great distance or to read at a long time; blurred vision, strabismus, a tendency to photophobia, twitching of the eyelid, along with sick-headache and dizziness when shopping, riding or attending places of amusement. He refers to chorea and other neuralgic symptoms as a possible outcome. The remedy lies in the proper adjustment of lenses by a painstaking and intelligent adviser.

THE TREATMENT OF INOPERABLE SARCOMA WITH THE MIXED TOXINS OF ERYSIPELAS AND BACILLUS PRODIGIOSUS.

IMMEDIATE AND FINAL RESULTS IN ONE HUNDRED AND FORTY CASES.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1908.

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(Concluded from page 395.)

The remaining personal cases worthy of special note will be found in tabulated form.

HISTORY OF THE MORE IMPORTANT CASES SUCCESSFULLY TREATED BY OTHER SURGEONS.

Case 1.—Inoperable sarcoma of pectoral region and axilla. Entire disappearance after seventy-eight injections. Patient perfectly well two and one-half years later.

This case is of the greatest interest, for it alone, unsupported by a single other case, would prove the specific action of the toxins.

This case, female, aged 42 years, was a patient of Drs. M. Storrs and R. H. Griswold of Hartford, Conn., and was treated by them under my direction. Her paternal grandmother died of cancer of the breast. There was no specific or tubercular history. The patient had been well up to October, 1895, when she noticed a lump in the left pectoral region. It grew rapidly and soon extended into the axilla. On Dec. 15, 1895, it had become so large and adherent to the axillary vessels that after a consultation of several prominent surgeons it was considered inoperable. A portion was removed and examined microscopically by Dr. R. Griswold, and the diagnosis of spindle-celled sarcoma was made. The diagnosis was further confirmed by Drs. Dunham and Buxton, pathologists to the New York Cancer Hospital, and finally by Prof. Wm. Welch of Johns Hopkins University. Seventy-eight injections of the mixed unfiltered toxins were given during the next three months, and at the end of this time the tumor in the pectoral region and axilla had entirely disappeared and the patient had regained her normal weight, having lost twenty-four pounds since the appearance of the disease. The patient was presented by me before the New York Surgical Society in November, 1896, in perfect health without a trace of tumor or induration in breast or axilla. She is still perfectly well, with no sign of recurrence, two and one-half years later.

Here we have a rapidly developing and hence highly malignant sarcoma, pronounced inoperable by four surgeons, the diagnosis confirmed by three pathologists of the highest reputation, and moreover, the type of tumor, one that Professor Welch states cannot be mistaken for anything else, entirely disappear under nothing but the injections of these toxins, and, more than all, remain well for nearly three years.

Case 2.—Inoperable spindle-celled sarcoma, involving the palate and fauces; entire disappearance under the mixed filtered toxins, the patient well and free from recurrence four and a half years later. This case was treated by Dr. Walter B. Johnson of Paterson, N. J. I saw the patient, in consultation, before the treatment was begun, in October, 1893, and can bear witness to the desperate condition that existed. The diagnosis of spindle-celled sarcoma was confirmed by careful microscopic examination, although the condition was so typical of malignant disease that the clinical diagnosis was practically certain. Improvement was at once evident, and the growth steadily disappeared until no trace remained. The patient has continued in perfect health up to the present time, four and a half years after the treatment.

A full report of this case, with illustrations, may be found in the *Medical Record* of Nov. 17, 1894.

Case 3.—Spindle celled sarcoma of the calf of the leg; entire disappearance under twelve weeks' treatment with the mixed toxins. Case No. 1, of Dr. L. L. McArthur, Attending Surgeon, St. Luke's Hospital, Chicago, Ill. The patient, female, aged 40 years, entered St. Luke's Hospital in the spring of 1894, for a removal of a tumor of the leg. Operation showed the tumor to spring from the dense fascia covering the muscles and calf. Although a very radical operation was performed, recurrence was regarded as probable, in the event

Table of personal cases in which the sarcoma disappeared, entirely or nearly, with final result.

No.	Sex, age.	Date.	Nature of Disease.	Treatment.	Result.	Remarks.
1	M., 35	May 4, 1891.	Recurrent spindle-celled; neck and tonsil (inoperable).	Repeated injections; living bouillon cultures, erysipelas, four months.	Tumors nearly disappeared; general health restored.	Well six years later.
2	M., 40	April, 1892.	Round, oval- and spindle-celled; back and groin (inoperable).	Living cultures; later, mixed toxins. (L.)	Entire disappearance; well three and one-fourth years.	Recurred in abdomen; fatal.
3	M., 17	Jan., 1893.	Spindle-celled; abdominal; wall and pelvis (inoperable).	Mixed toxins, filtered. (L.)	Entire disappearance.	Well May, 1898, five years.
4	F., 29	Oct., 1893.	Spindle-celled; abdominal wall (inoperable).	Mixed toxins, filtered and unfiltered. (B.)	Entire disappearance.	Well June 1, 1898, four and one-half years.
5	F., 17	Jan., 1894.	Recurrent spindle-celled; popliteal space and leg.	Toxins, unfiltered and filtered. (B.)	Entire disappearance, 1½ years; recurred later; amputation; further recurrence in gluteal region; treated with toxina up to present time.	Well June 15, 1898.
6	F., 34	June, 1894.	Inoperable epithelioma of chin, lower jaw, floor of mouth.	Toxins, unfiltered, three months.	Disappearance.	Well four years.
7	F., 16	June 23, 1894.	Inoperable spindle-celled sarcoma of chest wall.	Toxins, unfiltered, four months. [B.]	Entire disappearance.	Perfectly well June 23, 1898.
8	M., 24	March, 1894.	Very large chondro-sarcoma; ilium.	Toxins, unfiltered, six weeks. (B.)	Disappearance; recovered general health.	Recurred, 7 months; died one year later.
9	F., 27	Oct., 1894.	Round-celled sarcoma; mesentery and gall bladder.	Toxins, unfiltered, five months. (B.)	Disappearance.	Well three years later.
10	M., 38	May 11, 1895.	Inoperable sarcoma; sacrum (clin. diagnosis).	Toxina, unfiltered, six months. (B.)	Entire disappearance.	Well three years later.
11	F., 20	Feb. 18, 1896.	Recurrent spindle-celled sarcoma of hand.	Toxins, unfiltered and filtered, two months. (B.)	Disappeared two months.	Slight recurrence two years later; yielded to further treatm't. Well May, 1898.
12	F., 18	Jan. 17, 1897.	Inoperable spindle celled, of abdominal wall.	Toxins, unfiltered, six weeks. (B.)	Entire disappearance.	Well June 1, 1898.
13	F., 5	Feb., 1897.	Recurrent round-celled; lower lip.	Toxins, unfiltered, six weeks. (B.)	Disappearance.	Well June 1, 1898.
14	M., 40	Aug., 1897.	Recurrent spindle-celled; parotid and neck.	Toxins, unfiltered, three months. (B.)	Entire disappearance.	Well June 1, 1898.
15	F., 40	Nov., 1895.	Spindle-celled; intra-abdominal.	Toxins, unfiltered, 6 weeks; 2 months; 2 months. (B.)	Entire disappearance; recurrence; later nearly disappeared.	Well November, 1897.
16	M., 14	Apr. 10, 1897.	Rapidly growing inoperable sarcoma of iliac fossa (clin. diag.).	Toxina, unfiltered, several months. (B.)	Very rapid improvement; tumor disappeared.	Well June 1, 1898.
17	F., 32	Jan., 1897.	Three recurrent sarcoma of the parotid; mixed-celled.	Toxins, unfiltered and filtered; several doses; six months. (B.)	Marked decrease in size; nodule excluded.	Well June 23, 1898.
18	F., 59	Jan. 20, 1895.	Angio-sarcoma; recurrent; inoperable; breast.	Erysipelas and B. prodigious; serum 6 mos.; toxins filtered, few weeks. (B.)	Decrease in size; excision.	Well May, 1896.
19	M., 37	Nov. 4, 1894.	Eight times recurrent; spindle-celled sarcoma of chest wall (soft parts).	Toxins, unfiltered and filtered, with introductory small doses; 3½ yrs. (B.)	Marked inhibitory action; two or three small nodules removed.	Well June 1, 1898.
20	M., 55	June, 1893.	Large inoperable round-celled sarcoma of iliac fossa.	Toxins, unfiltered and filtered; at intervals; nearly one year. (B.)	Tumor nearly disappeared.	Well one year later, when lost sight of.
21	M., 32	Nov., 1895.	Large, inoperable, recurrent, tumor of upper lip. Diagnosis: Fibro-angelioma.	Toxins, unfiltered, one month. (B.)	Tumor disappeared.	Well two years later.

(B.)—Prepared by Dr. B. H. Buxton. (L.)—Prepared by Dr. Alexander Lambert.

of which amputation was advised. Seven months later, September, 1894, the patient returned to the hospital with a local recurrence the size of half an egg bulging from the calf of the leg. Inasmuch as the patient was several months pregnant, it was thought best to try the effects of the mixed toxins before resorting to amputation. The treatment was continued for twelve weeks with the result that the tumor entirely disappeared. Microscopic examination showed the tumor to be a spindle-celled sarcoma. The patient remains well at present, three years afterward.

Case 4.—Osteo-sarcoma of the lower end of the radius, three times recurrent; entire disappearance of the tumor under three months' treatment with the mixed toxins. Case No. 2 of Dr. L. L. McArthur. This patient, adult, male, was admitted to the Michael Reese Hospital for recurrence in the cicatrix of a bony tumor situated in the lower end of the radius. The patient stated the growth had been pronounced sarcoma by Dr. C. Fenger. Amputation having been refused, the tumor had been removed as thoroughly as possible. Four months later recurrence followed and a second operation was performed by Dr. Edmund Andrews of Chicago. The original diagnosis was confirmed. Rapid recurrence followed. A third surgeon, Dr. D. A. K. Steele, was consulted, and again amputation was advised and refused. The patient then consulted Dr. McArthur, who regarded the diagnosis as undoubtedly correct and also advised amputation. The patient absolutely refused operation, and under these conditions Dr. McArthur agreed to try the effect of the mixed toxins. The treatment was begun in April, 1895, and the injections were kept up for three months, with the result that the tumor had entirely disappeared at the end of this time. The patient has remained well up the present time, June, 1898; Dr. McArthur states there has been no recurrence. Although no microscopic examination was made in this case, the fact that the tumor promptly recurred after several operations, renders the clinical diagnosis of such well-known surgeons scarcely open to doubt.

Case 5.—Osteo-sarcoma of tibia, round-celled (giant); three months; treatment with the mixed toxins; entire disappearance; well three years afterward. Dr. John E. Owens of Chicago reported the following successful case before the Illinois

State Medical Society, May 1, 1897: The patient, a boy aged 7 years, received an injury to his leg in July, 1894. In December, 1894, a tumor appeared at the site of the injury in the upper portion of the tibia. In March, 1895, an exploratory operation was performed showing a tumor involving the medullary canal. Microscopic examination was made by Dr. E. R. LeCount, Pathologist to Rush Medical College. His report showed the tumor to be a round-celled myeloid or giant-celled sarcoma. "On account of the very high vascularity," he stated, in his report, "judging this to be a rapidly growing tumor, its malignancy is unquestioned." Amputation of the thigh was advised and, in fact, everything was prepared for operation, when Dr. Owens, at my suggestion, decided to try the toxins for a brief period. The treatment was begun April 10, 1895, and continued until July 10 at intervals of one to two days. The affected leg gradually returned to its normal size, the tumor disappeared; and in a recent letter, dated June 10, Dr. Owen states that the patient is still in good health, free from recurrence, more than three years afterward.

Case 6.—Extensive inoperable, intra-abdominal sarcoma, successfully treated with the mixed toxins. Case of Dr. Herman Mynter of Buffalo; a full report of which may be found in the *New York Medical Record* of February, 1895. The patient was a girl, 12 years of age. There was a history of local injury two or three months prior to the development of the tumor in the abdomen. The condition of the patient when the treatment was begun was desperate. Diagnosis was confirmed by exploratory laparotomy, and microscopic examination of a portion of the tumor showed the growth to be a spindle-celled sarcoma. The tumor entirely disappeared and the patient, according to a letter from Dr. Mynter, dated May 25, 1898, is in good health at present. It is very important to note that this cure was effected through the systemic action of the toxins, all of the injections having been made in the thighs. The duration of treatment was six weeks; large portions sloughed off and came away through the abdominal incision.

Case 7.—Inoperable spindle-celled sarcoma of the uterus, successfully treated with the toxins. Case of Dr. R. M. Stone, Omaha, Neb. My former paper contained a brief reference to this case, which was subsequently published in full in the

TABLE OF CASES TREATED BY THIS METHOD BY OTHER SURGEONS WITH COMPLETE OR PARTIAL SUCCESS.

No.	Reference.	Sex, age.	Date.	Nature of Disease.	Treatment.	Results.	Remarks.
1	Johnson, W. B., N. Y. Medical Record, Nov. 17, 1894.	M., 16	Oct. 31, 1893.	Very extensive spindle-celled sarcoma of palate and pharynx, extending to vocal cords.	Toxins filtered; 3 months' treatment. (local). (B.)	Entire disappearance . .	Well May, 1898, 4 1/4 years later.
2	Mynter, Herman, N. Y. Medical Record, Feb. 1895.	F., 12	July 22, 1894.	Very extensive inoperable, spindle-celled intra-abdom. sarcoma, involving mesentery, omentum and cecum.	Toxins filtered; 2 months; in thigh.	Entire disappearance . .	Well June 1898, 4 years later.
3	McArthur, L. L., Chicago Med. Record, 1895, p. 120, and personal communication.	F., 40	Sept., 1894.	Recurrent spindle-celled sarcoma, calf and leg.	Toxins unfiltered, 12 weeks. (B.)	Entire disappearance . .	Well May, 1898, 8 1/2 years.
4	Ibid. Personal com.	M., adult	May, 1895.	Three times recurrent sarcoma of radius; clin. diag., amputation advised by Dr. Christian Fenger.	Toxins unfiltered. (B.)	Entire disappearance . .	Well, 3 years
5	Ibid. Personal com.	F. 5 1/2	1895.	Round celled sarcoma of antrum and pharynx and neck.	Toxins unfiltered. (B.)	Gained in weight from 37 to 69 pounds; tumors disappeared.	Later, fatal recurrence.
6	Owens, J. E., Prof. Surg. N. W. Univ., Chicago; New Orleans Medical and Surg. Journal, July, 1897.	M., 7	Apr. 10, 1895.	Typic (round) giant-celled sarcoma dept pathology, Rush Med. College.	Toxins unfiltered. 63 injections. (B.)	Entire disappearance; gen. health improved.	Well May, 1898, 3 years.
7	Barber, C. R., Syracuse. Personal communication.	M., 35	1894.	Very extensive intra-abdominal sarcoma, recurrent, inoperable; mesentery and omentum; no microscopic examination.	Toxins unfiltered.	Immediate and rapid improvement; entire disappearance of tumors; gained 40 lbs. in weight.	Well 4 years later.
8	Storrs, M., pers'l communication, N. Y. Surg. Soc. Report Annals Surg., 1897.	F., 42	Dec., 1895.	Inoperable spindle-celled sarcoma of pectoral region and axilla.	Toxins unfiltered, seventy-eight injections. (B.)	Entire Disappearance . .	Well June 1, 1898, 2 1/2 years later.
9	Czerny, Heidelberg, Munch Med. Woch., 1895.	M., adult	1895.	Round-celled inoperable sarcoma of parotid, size of fist.	Toxins unfiltered, 18 injections.	Tumor reduced to insignificant nodule, easily excised.	No recurrence, nearly one year later.
10	Stone, R. M., Med. Record, November, 1896.	F., 40	Dec., 1895.	Spindle-celled sarcoma, uterus; recurrent.	Toxins unfiltered, 3 months. (B.)	Entire disappearance . .	Patient well 2 1/2 years later.
11	Packard, Horace, Prof. Surg. Boston Unl., "Five Years In Surgery," also personal com.	F., 39	Aug., 1895.	Recurrent spindle-celled sarcoma of parotid.	Toxins unfiltered, 8 months. (B.)	Almost entirely disappeared, remaining small nodule excised Oct. 16, '95.	Well May, 1898, 2 3/4 years.
12	Ibid.	F., 15	May 4, 1896.	Inoperable endothelial sarcoma of pelvis.	Toxins unfiltered, several wks. (B.)	Entire disappearance . .	Well May, 1898, 2 years.
13	Ibid.	F., 55	May, 1896.	Inoperable intra-abdominal sarcoma, spindle-celled.	Toxins unfiltered. (B.)	Entire disappearance . .	Well May, 1898, 2 years.
14	Warren, I. C., Prof. Surg. Harvard Med. School, Boston Med. and Surg. Jour., Dec. 26, 1896.	M., adult	1896.	Round-celled sarcoma of neck, recurrent.	Toxins unfiltered, twenty-eight injections. (B.)	Entire disappearance . .	Slight return 6 mos. April, '98, recurrent tumor in neck.
15	Matague, H., Gaz. Méd. de Liège, May 14, 1896.	1	1895.	Recurrent sarcoma of neck. . . .	Toxins unfiltered, 8 1/2 months.	Disappeared entirely . .	Slight return in six months.
16	Ibid. Gaz. Méd. de Liège, May 14, 1896.	. . .	1895.	Recurrent sarcoma of neck size fetal head.	Toxins unfiltered, 3 months.	Decreased 2/3 in size. . . .	Died of shock following removal of rest of growth.
17	Moullin, Mansell (London), Lancet, Feb. 5, 1898.	M., 28	Dec., 1895.	Inoperable tumor of iliac fossa; clin. diag., sarcoma.	Toxins unfiltered, 2 months. (B.)	Disappearance.	Well 2 years later.
18	Moullin, Mansell (London), Lancet, Feb. 5, 1898.	M., 58	Nov., 1896.	Large tumor, left iliac fossa and flank; sarcoma, clin. diag.	Toxins unfiltered, 2 months.	Disappearance.	Well 2 years later.
19	Moullin, Mansell, (London), Lancet, Feb. 5, 1898.	M., 28	Oct., 1895.	Large inoperable tumor of hlp. four months' duration, severe pain.	Toxins unfiltered, several weeks.	Disappearance.	Well 1 year later.
20	Wilcox, Sydney, N. W. Journ. Homeopathy, Jan. 1896.	F., 30	June 1, 1895.	Myxo sarcoma, round-celled, left forearm.	Toxins unfiltered, 2 months. (B.)	Tumor disappeared . . .	Well Nov. 3, 1895.
21	Sited, A. Marmaduke, British Med. Journal, Jan. 23, 1897.	F., 44	April 3, 1896.	Inoperable round-celled sarcoma of breast, myeloid recurrent 6 mos. after operation.	Toxins unfiltered, 17 days.	Nodules disappeared, breaking down, slough.	Died of pyemia, ataphylococcus infection, fluid sterile.
22	Williams, D. H. L., Rochester, N. Y. Personal communication.	F., 37	April, 1896.	Inoperable intra-abdominal sarcoma, involving abdominal wall, spindle-celled.	Toxins unfiltered, 1 month. (B.)	Tumor disappeared, partly by slough, partly by absorption.	Well 2 years.
23	Tilly, R., Chicago. Personal communication.	M., adult	Aug., 1894.	Sarcoma orbit, round-celled. . .	Toxins unfiltered, 3 weeks. (B.)	Entire disappearance . .	Died suddenly few weeks later.
24	Moore, J. A., Helena, Mont. Personal communication.	M., 31	April 4, 1894.	Sarcoma mastoid, size goose egg.	Toxins unfiltered, 2-3 months. (B.)	Entire disappearance . .	Slight recurrence 2 years later.
25	Moore, J. A., Helena, Mont. Personal communication.	F., 31	Jan., 1894.	Supra-clavicular multiple round-celled sarcoma, recurrent.	Toxins unfiltered, 1 month. (B.)	Entire disappearance . .	Return soon.
26	Jackson, J. A., F. L. Lewis, Central Wisconsin Med. Soc. Transactions, 1897.	F., 36	Sept. 1896.	Inoperable sarcoma of breast; clin. diagnosis, Dr. Christian Fenger.	Toxins unfiltered. (B.)	Disappearance.	Died 1 year later, metastatic tumor of rectum.
27	Battle, W. H., St. Thomas' Hospital, London, Lancet, April 9, 1898.	M., 30	June, 1897.	Fibla sarcoma, multiple, arm, axilla, supra- and infra-clavicular pectoral region; micro. exam. by Shattock.	Toxins unfiltered, 4 months.	Entire disappearance of all except two, and these mostly disappeared.	Case shown Medical Society of London April 4, 1898.
28	Rumbold, T. H., San Francisco Personal communication.	F., adult	Aug. 14, 1894.	Recurrent round-celled, breast.	Toxins unfiltered, 1 month. (B.)	Tumor disappeared . . .	Died of internal metastasis; confirmed by autopsy.
29	Kocher, quoted by Glickmann	F., adult	1895.	Large recurrent sarcoma, pelvis.	Toxins unfiltered. (Tavel Berne.)	Marked decrease in size.	Increase again within a year.
30	Ferguson, H. A., Chicago. Personal communication	M., adult	. . . .	Sarcoma of tibia, round-celled. .	Toxins unfiltered.	Entire disappearance . .	Well June, 1898.
31	Hardenbeagh, D. B., Middletown, N. Y. Personal communication.	M., 48	May 28, 1897.	Inoperable tumor of iliac fossa, attached to ilium; no microscopic examination.	Toxins unfiltered, 3 weeks.	Entire disappearance . .	Well May 15, 1898.
32	Harris, M. L., Chicago. Personal communication.	F., 31	Oct., 1897.	Recurrent inoperable round-celled sarcoma of ovary, involving rectum; very rapid growth.	Toxins unfiltered, 4 weeks; ml to xl in arm.	Very marked improvement; decrease in size of tumor; final sloughing of entire tumor.	Died Nov. 17 from septic absorption of sloughing tumor.
33	Walton, J. C., Reidville, N. C., Charlotte Medical Journal, May, 1898.	F., adult	May 18, 1895.	Large sarcoma of fibula, amputation of thigh advised but refused by patient.	Toxins unfiltered, 2 1/2 months. (B.)	Entire disappearance . .	Well 3 years later.
34	Moullin, Lancet, Feb. 5, 1898.	F., 29	Oct. 9, 1896.	Recurrent round- and spindle-celled sarcoma of superior maxilla, involving orbit.	Toxins unfiltered, 5 weeks, daily; local.	Tumor sloughed away; apparent cure of local disease, but possible recurrence in tibia.	Dec., 1897, no local recurrence.
35	Zabriskle, F. H., Greenfield, Mass. Personal com.	F., 40	1896.	Recurrent spindle-celled sarcoma, intra-abdominal.	Toxins unfiltered, with intervals of rest, 1 year + (B.)	Tumor almost entirely disappeared.	Patient well July, 1898, nearly 2 years.
36	Roe, John O., President Med. Soc. State of New York. Personal communication.	M., adult	May, 1894.	Recurrent sarcoma of neck and tonsil; "adeno-sarcoma;" in operable.	Toxins unfiltered. (B.)	Improved rapidly; tumor almost entirely disappeared.	Six months later developed erysipelas of scalp; proved fatal in a few days.

(B.)—Prepared by Dr. B. H. Buxton.

NOTE.—I have incomplete notes of another case of carcinoma of superior maxilla successfully treated.

New York Medical Record, 1896. The patient Mrs. B., aged 46 years, had lost fifteen pounds in weight, the right broad ligament was markedly infiltrated. The disease had progressed so far that hysterectomy was not to be considered—three surgeons who had seen her in consultation, regarding the case as absolutely hopeless. The toxins were begun on Dec. 6, 1895, and continued for two months with the result that the tumor as well as the infiltration of the broad ligament disappeared. The patient regained her usual health. She is at present, June 15, 1898 (two and a half years afterward), in perfect health without any evidence of recurrence. Upward of one hundred sections of the tumor were examined by Dr. W. R. Lavender, Professor of pathology to the Omaha Medical College, who made the diagnosis of spindle-celled sarcoma.

Case 8.—Inoperable sarcoma of the parotid successfully treated with the toxins, Case No. 3 of Dr. Packard. This case has been briefly reported by Dr. Packard in his "Five Years Work in Surgery," published in 1896. The tumor had recurred one year after previous operation. Further operation seeming hopeless, the injections of the mixed toxins were begun in May, 1895, and continued for several months. The tumor gradually decreased in size until only a small nodule remained. This was excised, and without further treatment the patient has remained in perfect health up to the present time, upward of three years.

Case 9.—Intra-abdominal sarcoma successfully treated with the toxins.—Dr. Packard's case No. 2, Mrs. W., aged 55 years, was admitted to Newton Hospital on April 14, 1896. Five years previously an abdominal hysterectomy had been performed. The stump was treated externally. Several weeks before her admission to the hospital in April, 1896, a sinus formed in the region of the old scar. On May 13 an exploratory operation was performed under ether, and a large, friable mass was discovered in the pelvis, suggesting malignant disease. Portions were removed and examined by Dr. Batchelder, who pronounced the growth to be sarcoma. The tumor was very vascular. For some time afterward there was marked tendency to hemorrhage and a constant fecal discharge from the sinus. On May 22, one minim of the mixed toxins was injected into the skin in the vicinity of the sinus. The dose was gradually increased up to 15 minims daily without any increase in pulse or temperature. The treatment was discontinued for two weeks and resumed in July, and continued in slightly increased doses until the early part of August, when the patient was discharged. She had gained markedly in strength and general health, and the fecal fistula had closed and the other abdominal symptoms disappeared. She returned to her home in a neighboring State and one year later reported herself well.

Case 10.—Spindle-celled sarcoma of the omentum successfully treated with the toxins.—Dr. Horace Packard of Boston, has recently sent me the following notes: The patient, male, 58 years of age, was referred to Dr. Packard early in 1898 for the surgical treatment of a painful, movable abdominal tumor, located to the left and a little above the line of the umbilicus. He had emaciated progressively, was able to take but little nutriment, and pain had become constant and excruciating. Exploratory incision was made and there was found a malignant growth of the omentum about four to five inches in length, two to three inches in breadth. There were several secondary nodules in the vicinity. A portion of the tumor was removed for microscopic examination and the wound closed. The specimen removed showed the growth to be a spindle-celled sarcoma. The patient was immediately placed upon the unfiltered toxins, which were continued, with occasional intervals, for three months. Although the doses were small (1 to 2 minims) the reactions were severe, causing marked prostration. After the treatment had been continued for a month, it was allowed a respite of four weeks. The patient's general condition was vastly improved and the tumor had appreciably diminished in size; the pain had entirely left him and he looked and seemed well. When last seen by Dr. Packard the patient seemed in excellent health, and the tumor could be scarcely felt.

Case 11.—Inoperable spindle-celled sarcoma of the uterus, recurrent—entire disappearance within nine months after the treatment was begun. Patient of Dr. H. T. Williams of Rochester, N. Y. The patient, female, aged 37 years, Canadian by birth, married nine years, no children. Menstruation began at 16, regular and normal in amount. Dysmenorrhea for past twelve years. The patient was first seen by Dr. Williams, April 16, 1891. The patient noticed a growth in the abdomen six years ago, since which time it has gradually increased in size. Her health was fair. Diagnosis: uterine fibroid. May 31, 1891, abdominal median incision. Large smooth fibroid of uterus; sound passed nine inches. Numerous adhesions in view of which latter it was considered best not to hysterectomy but to try the effects of spaying. Both tubes and ovaries, which were large and cystic,

were removed as close to the uterus as possible. Catgut used to ligate pedicles. Recovery from operation without disturbance. Nov. 21, 1891, menstruation more regular and much less profuse. Uterine sound passed five inches. May 19, 1892, periods every four weeks and almost normal in amount; sound passed four and one-half inches. Patient had been gaining flesh. She was then lost sight of until March, 1896, when she again came to Dr. Williams complaining of pain in right side and saying that she felt another tumor. Examination showed a large, hard tumor about the size of two fists in right side of abdomen, and upon vaginal examination it appeared to spring from right horn of uterus. The tumor was not very movable and seemed to be attached to abdominal muscles. March 24, 1896, exploratory incision through abdomen revealed a large, elastic tumor apparently originating in right pedicle, extending into abdominal muscles and adherent to intestines. As operation would have had to be a very extensive one, involving the removal of a large amount of abdominal muscle with the growth and probably resection of the intestines, it was not deemed possible that the patient could survive it. A portion of the tumor was removed for microscopic examination, which showed it to be a spindle-celled sarcoma. The abdominal wound was closed with eight silver wire sutures and healed by first intention. The tumor increased rapidly in size and a month after exploratory incision it projected several inches above the surface of the abdomen. April 24, 1896, 3 minims of the mixed toxins of erysipelas and bacillus prodigiosus were injected into the center of the tumor. The reaction was very great, patient had a severe chill, went into collapse, and brandy with strychnia, with salt solution per rectum and hypodermically, were required before she rallied, which she did a few hours later. Temperature had risen to 106 degrees but after a few hours had dropped to 100 degrees and next day was normal, but patient felt very much exhausted.

April 28, 1896, 1 minim of the toxins was injected into the tumor about an inch below the point of first injection. The symptoms of April 24 were repeated, but less severe, the temperature rising to only 103 degrees. The patient declared she would rather die than have any more injections; however, she was finally persuaded to permit another injection of 1 minim of the toxins on May 1, 1896. Reaction was less severe, temperature reaching but 102 degrees. On May 5, 3 minims were injected, causing a temperature of 103 degrees and slight chill. On May 8 and 14, 3 minims were given and were followed by considerable reaction, but temperature was not high. May 18, 1896, 4 minims were injected, causing a very severe prolonged chill and a temperature of 105.4 degrees F. The patient felt extremely weak for some days afterward. After each of the previous injections a slight erysipelatous blush had appeared around the point of injection but disappeared after a few days. This time an area of three to four inches in circumference of bright red color appeared. Poultices were applied to it and in a few days it turned black in the center and a slough about the size of a silver half dollar came away, leaving a hole of two to three inches in depth in center of tumor. The patient positively refused to have any more of the toxins used. This opening discharged for several months but the tumor grew rapidly smaller. Eight months later it had entirely disappeared. The patient was examined by Dr. Williams one year later and no trace of growth could be detected; she has gained considerable flesh and felt well. She is at present June, 1898, two years later, in good health.

Case 12.—Intra-abdominal sarcoma successfully treated with the toxins. Case of Dr. Chas. R. Barber of Rochester. Patient, male, born in Germany, 35 years of age, well developed, began to have indigestion in October, 1893. In the spring of 1894 he began to emaciate rapidly, and shortly afterward a mass was found a little above and to the right of the umbilicus and settled in the epigastrium. In May, 1894, his weight had fallen from 180 to 125 pounds. On June 16, 1894, exploratory operation was performed by Dr. Barber. He states: "It proved to be a case of cancer—probably sarcoma, on account of rapid growth—of the omentum, involving the surrounding parts, forming attachments with the intestine, bladder and parietal peritoneum." A large portion of the cancerous mass was removed. The patient made a rapid recovery and for a few weeks seemed better. On August 1, six weeks later, the growth began to increase rapidly in size on the right side of the cicatrix and over the right lobe of the liver, involving the abdominal muscles. On August 25 a second operation was performed and apparently all of the diseased tissue removed. Recurrence very quickly followed in the same region and further operation was considered hopeless. Injections of the mixed toxins of erysipelas were begun; a distinct chill followed every injection, accompanied by a rise of temperature. Dr. Barber states: "I soon had the gratification of seeing the

tumor diminish in size and gradually disappear altogether." The patient regained his normal health and strength and has been working ever since. He was well and free from recurrence in June, 1897, or three years after treatment. Unfortunately, the portion of the tumor sent to the microscopist for examination was lost; yet the clinical history of the case, the very rapid development of the tumor and the rapid recurrence, make it almost impossible to doubt the correctness of the diagnosis of sarcoma.

Case 13.—Osteosarcoma of the fibula successfully treated with the toxins. The following is a brief abstract of a case just reported at the meeting of the North Carolina Medical Society, May, 1898, by Dr. J. C. Walton of Reidsville, N. C.

The patient, adult, female, was first seen in 1895, with a tumor enlargement in the region of the calf of the right leg. There was considerable pain and discomfort. The pain was first noticed in March, 1894, and the lump appeared in June, 1894. The swelling gradually increased in size and the tumor became more painful, until in the spring of 1895 she was unable to bear her weight upon the leg. Examination showed the calf of the leg to be the site of a large, hard, smooth, globular tumor, with distended veins over the entire surface. The leg measured over two inches more than the other. There was no involvement of the joint. The patient's general condition had been good up to a short time previous to the development of the tumor. As the growth increased in size, her general health failed, on account of the pain, loss of sleep and anorexia. A well-known Virginia surgeon had pronounced the disease sarcoma, and had advised amputation of the lower third of the thigh. Inasmuch as the patient absolutely declined operation, the injections of the mixed toxins were begun by Dr. Walton on May 18, 1895, the injections being made deeply into the tumor. The initial dose was one drop, which was gradually increased to four, but the patient was never able to bear more than this. The temperature reaction varied between 102 and 105 degrees, accompanied by the usual symptoms. The injections were kept up until August 1, or two and one-half months. The tumor had gradually become circumscribed, and in July had begun to soften and break down. On December 13 an incision was made and the broken-down mass removed with a curette. The tumor was very vascular and the hemorrhage profuse. In December and January a second and third curing was made and a large quantity of marrow-like, gelatinous substance, together with a portion of the shaft of the fibula, was removed. A severe hemorrhage followed a week after this operation. From this time on the patient's health rapidly improved, the cavity began to fill with healthy granulations and in a short time she was discharged cured. This was in January, 1896. Dr. Walton states that the patient is at present, May, 1898, in good health, able to walk without a cane, suffers no inconvenience except a little from the loss of bone, and presents a normal appearance.

In the discussion upon this case, Dr. Robinson, who had seen the patient, stated that there could be no doubt in the mind of anyone who had seen the case, that it was sarcoma. No pus had been found during the entire course of the treatment, and this, together with the fact that the joint was not involved, would seem to indicate beyond a doubt that the disease was sarcoma and not of tuberculous character.

Case 14.—Mr. C. Mansell Moullin, surgeon to the London Hospital, in a most complete paper read before the Harveian Society of London, on Feb. 3, 1898,¹ reviews the whole subject of the treatment of malignant tumors with the toxins. The paper shows a thorough familiarity with the literature of the subject, and his conclusions have the additional weight of being based upon an extended personal experience with this method of treatment. The toxins employed were in part prepared by the British Institute of Preventive Medicine and in part obtained from Dr. Buxton of the Loomis Laboratory of New York, and similar to those employed by myself. They were used in ten cases, with three successes and two deaths. In one of the fatal cases, Mr. Moullin states that the case was undoubtedly not a suitable one. The patient was a man over seventy years of age, with an enormous and very vascular sarcoma of the femur. His condition was very feeble, and during the month that elapsed before the fluid could be obtained his condition became much worse. The first injection was without result. The second, two days later, caused a rigor which was followed by such prostration that the patient never rallied. The tumor was a very vascular one, pulsating freely, and the injection on the second occasion in all probability entered directly into a vein. In the second fatal case the patient died from acute pyemia, under conditions curiously like those of a case recorded by Mr. Marmaduke Sheild.² In both cases the

fluid was carefully tested by a thoroughly competent observer and proved to be absolutely sterile. In both instances, another patient who was being injected from the same bottle, at the same time and even on the same day, experienced nothing more than the ordinary reaction. The explanation of death in these cases offered by Mr. Moullin is undoubtedly the correct one. In both cases the ulcerating parts of the tumor were full of pyogenic micro-organisms, probably staphylococci. It is well-known that micro-organisms that are comparatively harmless, either from the conditions under which they have been living or from the smallness of their number, may become intensely dangerous if they are associated with or aided by the presence of other organisms or the injection of other toxins. The staphylococci were there, inert or almost inert. The injections of the toxins, either by increasing their virulence or by diminishing the resistance of the tissues, or by both, were responsible for the pyemia that followed. Of the eight remaining cases one was a carcinoma of the breast which showed no change. Another was a lymphosarcoma of the groin in a young man who, after two injections, declined further treatment. A third was a similar growth in the neck of a man 65 years of age, which showed no effect from considerable doses of the toxins. Two improved slightly, and in three the tumors disappeared. The following is a brief abstract of these five cases:

Case 14.—(Moullin). A man, 28 years of age, was admitted to the London Hospital in November, 1895, with a tumor in the groin, which had been noticed for four weeks. The right iliac fossa was occupied by a firm swelling, fixed not fluctuating, rather tender on pressure, extending to within an inch of the median line and deeply on the inner surface of the pubes. The injections were begun in December, the initial dose being one-half minim, which was steadily increased to eight minims. Rigors occurred on several occasions. At first the tumor increased in size and the skin over it became red and tender; by the middle of January a diminution in size was plainly noticeable. Then it increased again concurrent with several rigors. After that there was a decrease in size until in March it had almost entirely disappeared. The treatment had been discontinued by the end of February, 1896. The patient's weight increased from 138 pounds to 145 pounds, and he was well two years later.

Case 15.—(Moullin). A man, 55 years old, admitted in November, 1896. Examination showed a large, irregular swelling of firm consistence not connected with the skin or abdominal muscles occupying the left flank. The tumor had first been noticed four weeks before. The injections were commenced in December, beginning with one-half minim and kept up until the end of January, 1897, causing several rigors. The growth continued to increase. At one time it appeared to be acutely inflamed. After that it slowly diminished in size until it could scarcely be felt. The patient was discharged in March, in a much better condition than when he entered, his general health being perfect. This case remained well up to the date of the paper, Feb. 3, 1898.

Case 16.—(Moullin). A man, 38 years of age, was admitted in October, 1895, with tumor of the hip. He had been sick for four months. The upper end of the thigh was occupied by an irregular swelling that filled up the space between the iliac spine and the trochanter, and moved with the limb. The iliac glands were enlarged. The limb itself was inverted, adducted and apparently shortened. Injections were commenced in October, the doses being increased rapidly up to nine minims, which produced rigor. After that several such doses were borne without effect until a third attack of rigor followed on injection of but five minims. The patient complaining of weakness the treatment was discontinued. The swelling of the hip decreased gradually. The gland disappeared. The movements of the hip became more free, and inversion and adduction were hardly noticeable. A year after his discharge there was no recurrence.

Case 17.—(Moullin). A woman, 29 years old, was admitted on the 7th of October, 1896, suffering from a tumor of the right temple. Six years prior to her admission a swelling had appeared over the root of the right upper canine tooth. This had gradually increased in size. In December, 1894, the right superior maxilla had been removed at the London Homoeopathic Hospital. Microscopic examination had proved the growth to be a mixed round and small spindle-celled sarcoma. Three months before admission the patient had noticed a swelling in the right temporal region. This had slowly increased in size and caused her much suffering from shooting pains. The swelling was of very firm and uniform consistence and non-fluctuating. Injections with toxins obtained from the British Institute of Preventive Medicine were begun October 9. They were given into the arm in doses increasing from one-half minim to twelve minims, and continued almost daily. There

¹ The Lancet (London) Feb. 5, 1898.

² Brit. Med. Jour., January, 1897.

was occasional slight reaction but no rigor or headache, and the growth steadily increased in size. On November 7, three minims of a fluid sent over by Dr. Coley were injected into the tumor, causing a rise of temperature to 101 degrees, cold feet and vomiting. The next day a dose of five minims was injected, being followed by distinct rigor, headache, vomiting and pain in the back. The injections were continued daily and gradually increased to eight minims, each treatment being followed by a rigor. On November 15 the tumor had definitely altered its shape. The next day, the patient objecting to further injections into the tumor, nine minims were injected into the arm without effect. The following day, the patient, having given up hope of improvement from the treatment, left the hospital. Mr. Gordon Brown reports that after the patient left the hospital the growth increased in size involving the malar bone, causing considerable swelling in the zygomatic fossa and leading to exophthalmos. There was intense pain in the head. The eyeball protruded and sloughed away. In November the tumor had become much smaller, but there was an apparent recurrence in the left tibia. In December, 1897, Moullin found that the sarcoma at the outer angle of the orbit had disappeared entirely. There was a deep hollow in the temporal fossa. The eyeball was gone and the orbit empty. The left leg was much swollen and there was apparently a tumor in the upper part of the tibia.

Case 18.—Inoperable sarcoma of the breast successfully treated with the toxins.¹ I am indebted to Dr. J. A. Jackson of Sun Prairie, Wis., for the report of the following case: Female, aged 36 years, with sarcoma of the breast of seven years' duration. The patient was seen in consultation by Dr. C. Fenger of Chicago, in September, 1896, and the growth at that time was pronounced inoperable. The cervical and axillary glands were enlarged, and the disease was also thought to have involved the femur. Dr. Fenger counseled against operation, and advised the mixed toxins of erysipelas and bacillus prodigiosus. The treatment was begun on the 25th of September, 1896, and continued until October 2, the highest reaction being 100.5 per cent. The tumor softened and discharged slightly. On the 30th of September she had nausea and vomiting. The vomiting continued almost constantly until October 9th. The vomiting was only controlled by hypodermic injections of morphia. From this time on the tumor shriveled up, the glands grew smaller, the ulcer healed and the appetite improved. On February 8, 1897, four months later, she had a well-marked attack of erysipelas of the face. After a few days it subsided, and the ulcerated surface cicatrized, leaving a smooth scar and the glands normal in both cervical and axillary regions. A metastatic tumor developed in the rectum about six months later which finally caused death.

Case 19. Case of Dr. D. B. Hardenberg, Middletown, N. Y. (Unreported.) The patient, male, 48 years old; merchant. Family and previous personal history good. The patient first consulted Dr. Hardenberg April 21, 1897, giving the following history: Several months he had suffered from almost constant pain located in the left hypochondriac region. On April 10th the pain and disability had so far increased as to confine him to bed. Physical examination, April 21, showed a hard swelling in the left iliac region, firmly adherent to the left ilium and abdominal wall. The tumor extended one inch above the crest of the ilium, was sharply defined on its upper border, and extended nearly to the median line. Examination by the rectum, negative. The patient complained of constant pain, and in the evening the temperature generally ranged between 101 and 101.5 degrees. In view of the duration of the tumor (3 to 4 months) and its close relation to the ilium, probable diagnosis of sarcoma with septic degeneration was made. May 1st, the temperature continued slightly increased, reaching 102.5 degrees, redness and signs of breaking down becoming apparent. The patient was etherized and a free incision made one and one-half inches above and parallel to Poupart's ligament. About two ounces of purulent fluid were evacuated, and a large sized rubber drainage tube inserted. The discharge was very moderate. The mass decreased in size, but the pain continued unabated. During the next four weeks persistent efforts were made by means of poulticing and the administration of alteratives to promote the breaking down of the tumor. At the end of this time the tumor had increased in size and was so firmly adherent to the ilium that it seemed to form part of it; the upper border was very sharply defined; the measurements of the tumor at this time showed that it extended three and one-half inches from the anterior superior spine toward the umbilicus, four inches toward the pubis. The case being regarded as hopeless, the mixed toxins were begun May 28, 1897, the initial dose being one-half minim. No reac-

tion followed. The second dose of 1 minim produced a marked chill and a temperature of 104 degrees. After the third injection a marked decrease in size was noted, the dimensions having become reduced by 1 inch. The toxins were continued in gradually increasing doses until June 18th. The tumor rapidly and progressively diminished in size until it finally disappeared. Two weeks later the patient had apparently recovered his usual health and was able to walk without difficulty, having been confined to his bed for three months.

In a letter from Dr. Hardenberg, dated June 1, 1898, he states: "The patient is now in excellent health, with no signs of recurrence." As regards the diagnosis, Dr. H. writes: "I regret that I did not remove a portion of the tumor at the time of the operation for microscopical examination, but I had not sufficient hope of a successful issue to be induced to do so. The clinical history, situation and general characteristics of the tumor are, I believe, good evidence of its nature. At all events, the toxins caused rapid disappearance of a trouble that neither time nor ordinary treatment made any impression upon."

This case bears a striking resemblance to the successful cases recently reported by Moullin; in fact, there is less reason to doubt the diagnosis of this case than there was in those of Moullin.

Case 20.—Inoperable recurrent sarcoma of the ovary; marked improvement under the mixed toxins; rapid necrosis of entire tumor; death from septic absorption (unreported). Case of Dr. M. L. Harris, Chicago, Ill. The patient, American, female, aged 31 years, unmarried. Family history good. In June, 1897, she first noticed discomfort and slight pain in the lower front of abdomen. Four weeks later the family physician discovered a tumor in the lower part of the abdomen; it grew very rapidly and caused disturbance of the bowel. Examination, Sept. 13, 1897, showed the following: General condition of the patient fair, heart and lungs entirely normal, abdominal tumor arising from the pelvis, extending midway from symphysis pubis to umbilicus, lying somewhat more to the right side, movable, but not freely so. The uterus was crowded anteriorly and slightly to the left side, moving with the tumor, which was solid. Operation, Sept. 22, 1897, median celiotomy. Large solid tumor originating from the right ovary, adherent to uterus, rectum and pelvic wall, was found. Uterus and appendages removed with the tumor. Gauze packing was necessary to arrest hemorrhage. Microscopic examination of the tumor showed it to be a large, round-celled sarcoma. The patient recovered well from the operation. October 11, difficulty in moving bowels. Examination per rectum showed a recurrent mass in the posterior part of the pelvis pressing upon and involving the anterior wall of the rectum. October 13, tympanites became marked; no bowel movement was attainable. October 14, tympanites intense. Rectum high up seemed virtually occluded by the pressure of the rapidly growing, recurrent mass. Colotomy was considered with a view of giving temporary relief, yet it seemed dangerous from the extreme distention. No gas passed per rectum. It was finally decided to try the mixed toxins. October 14, at 4:30 P.M., 1 minim was injected into the arm; no apparent reaction. October 15, at 6:30 P.M., she expelled gas with some fecal matter. At 10:30, 2.5 minims of the mixed toxins were injected into the arm. No reaction. October 15, 4 P.M., 5 minims of the mixed toxins were given; temperature arose 1.5 degrees; bowels moved and considerable gas was expelled. The patient rested comfortably. October 16, at 11 P.M., another 10 minims; 1.6 degree rise, reaction, temperature 100. Bowels moved several times; gas freely expelled. Tympanites had practically disappeared. (Dr. Harris adds: "I could only attribute the lessening obstruction of the bowel and the disappearance of the tympanites to the effect of the toxins, causing the shrinking of the tumor.") October 18, lower angle of abdominal wound reopened so that the tumor could be seen. It was found to be the size of an average coconut. The toxins were thereafter given daily in doses up to 40 minims, the injections always being made subcutaneously in the arm. Very little reactions followed the injections. October 31, pulse was 86; temperature 98; bowels moved freely, almost naturally. November 6, it was noticed that the tumor had become black and was evidently sloughing, fecal matter coming through the wound. November 8, the tumor remained black and sloughing, and there was a bloody watery discharge. The patient now began to show symptoms of septic absorption from the immense sloughing, which involved the entire mass and opened into the rectum. The patient grew weaker, dying November 15.

Dr. Harris states that all injections of the toxins were made in parts remote from the tumor, in the arms and sides of the body; no injection was made into the tumor itself. Only once

¹ This case was briefly reported at the meeting of the Central Wisconsin Medical Society, March, 1897, by Dr. L. B. Lewis.

did anything like a reaction follow the injections. On October 26, after an injection of 24 minims, there was a chill with a temperature of 103 degrees, pulse 150. A few days before the tumor began to slough the patient was sitting up in bed daily, eating fairly well and having good bowel movements. This unpublished case is reported at some length for the reason that it has an important bearing upon the question of the systemic action of the toxins: inasmuch as no injections were made into the tumor, it furnishes complete proof that the action of the toxins is systemic as well as local. It further shows the danger connected with the rapid breaking down of a large intra-abdominal sarcoma. Whether the result would have been different had the injections been given in smaller doses it is hard to say; it is possible that if the degenerative process had been slower the products might have been disposed of either by absorption or by external discharge, as happened in the preceding case of Dr. Mynter.

Case 21.—Recurrent spindle-celled sarcoma, intra-abdominal. The following case was treated by Dr. Frank H. Zabriskie of Greenfield, Mass., who has kindly permitted me to report it. The patient was a woman aged 43, with good family and personal history. In the latter part of 1895 she noticed a hard swelling in the lower part of the abdomen; this had steadily increased in size. In July, 1896, with the assistance of Dr. Zabriskie, I removed a large tumor, the size of a child's head, situated behind and to the right side of the uterus and apparently starting behind the peritoneum. Careful microscopic examination was made by the pathologist of the Greenfield Hospital, who pronounced the growth a spindle-celled sarcoma. A specimen was examined independently by Dr. B. H. Buxton, Pathologist to the New York Cancer Hospital, and the diagnosis was confirmed. About four months after the operation a recurrent tumor of considerable size was found at the site of the primary tumor. This grew rapidly, and in November, 1896, the mixed toxins were begun by Dr. Zabriskie and continued three times a week for about three months. The tumor decreased markedly in size. In July, 1897, I examined her and found a hard tumor in the region of the left broad ligament, about the size of a goose egg. I advised another attempt to remove it by operation, but the patient would not consent. The toxins were continued by Dr. Zabriskie two or three times a week in moderate doses (not enough to produce a chill) and with occasional intervals of rest. In June, 1898, I again examined the patient and could find only the merest trace of the tumor which was present the year before. Her general health was perfect.

Case 22.—Multiple fibrosarcoma, successfully treated by very small doses of the toxins injected subcutaneously remote from the tumor. W. H. Battle (London *Lancet*, April 9, 1898, p. 998) presented before the Medical Society of London, on April 4, 1898, the following case:

The patient, male, aged 30 years, was admitted to St. Thomas Hospital, London, Dec. 21, 1897, service of Mr. McKellar. The patient was a well developed, muscular man, with a history of having had syphilis six months before; three or four months prior to admission into the hospital a lump had appeared in the right arm. The tumor was painful. Later, several other swellings developed in the arm and axilla. Still later a tumor appeared in the subclavicular region beneath the pectoral muscle. The movements of the arm became limited and the arm itself gradually became swollen. Two weeks before admission a swelling was noticed about the right clavicle and another just to the right of the sternum; the right arm was swollen and edematous; superficial veins were dilated and tortuous. The tumor above the clavicle was the size of a hen's egg, while below the clavicle there was an elastic tumor of considerable size, underlying the pectoralis major and pressing this muscle forward. The tumor was of irregular shape, fixed to the deeper parts, but did not involve the pectoralis. In the axilla were two glandular tumors, the size of tangerine oranges, with numerous others of smaller size. The patient's general condition was good. Iodid of potash was given for a time, without any improvement resulting. Portions were removed from the sternal and subclavicular tumors and examined by Dr. Jenner and Mr. Shattock, who pronounced the growth to be a fibrosarcoma with giant cells. Small doses of the mixed toxins of erysipelas and bacillus prodigiosus (one-half minim) were given every other day, injections being made, not into the tumors, but subcutaneously into the arm. The treatment was continued from January 21 to March 21, two months. Iodid of potash was discontinued on March 6. From March 21 to April 4 (the day the patient was exhibited) 1 minim of the toxins was administered every other day. Patient was much improved in general health, and examination showed only two small swellings remaining, one at the site of the sternal tumor, which was reduced to one-third its original size, and the other under

the clavicle had become only a flat, limited hardness in the costa-coracoid membrane above the pectoralis minor $1\frac{1}{2} \times 1\frac{1}{4}$ inches in area. The other tumors had disappeared.

This case is one of the most remarkable yet reported, for two reasons: first, it furnishes additional proof of the view maintained by myself, that the action of the toxins is systemic as well as local; second, it shows that most remarkable results can be obtained by means of very small doses without any of the dangers and discomforts that accompany the severe reactions.

Summary of results in cases of other men employing same method.—Of 35 cases in which the sarcoma entirely or nearly disappeared 10 were round-celled, 10 were spindle-celled, 5 were based on clinical diagnosis alone, 5 were based on clinical diagnosis and history of recurrence after operation, 4 microscopic examinations made, but type of sarcoma not given; 1 endothelial sarcoma.

Of these 35 cases 26 disappeared completely; 2 others decreased so much that only an insignificant node was left and this was easily excised (one of these cases was well three years, the other was well one year when last reported.)

Final results.—Of 10 cases of spindle-celled sarcoma in which the diagnosis was confirmed by microscopic examination, 6 were well two to four and three-fourths years after treatment, (3 of them over three years). Of the round-celled 2 were well one to three years; the case of endothelial sarcoma two years; of the 5 cases in which the clinical diagnosis of sarcoma was supported by a history of recurrence, 2 cases are well three years, 1 case was well two years. Of the cases that rest on clinical diagnosis alone, 3 are well two years, 2 are well one year. Of the total 35 cases 14 cases were well over two years, and 6 cases well over three years. In 2 of the 35 cases death occurred during the third and fourth week of treatment, after the tumors, —both round-celled sarcoma—had been entirely destroyed. In 1 case (Shields') death was due to pyemia of staphylococcus origin, the infection occurring at site where tumor had sloughed away. In the other case death resulted from septic absorption from too rapid necrosis of very large round-celled sarcoma in the pelvis—here also outside infection undoubtedly occurring. In one case recurrent sarcoma of neck and tonsil. The patient developed erysipelas of scalp, six months after beginning of treatment, when apparently cured of the sarcoma. The treatment with the toxins possibly rendered the patient peculiarly liable to accidental infection.

Recurrence after having once disappeared under the treatment.—In seven cases recurrence took place after the tumor had disappeared. In six cases this occurred within a year, in one case at the end of two years. Three of these cases were round-celled, one mixed-celled, one sarcoma of neck, (type of cell not given) and two sarcoma clinical diagnosis. In four of these cases the recurrence was local and in three metastatic; one in lunge, one in rectum, (primary sarcoma of breast in both cases) and the third (Moullin's case) regarded as a probable recurrence in tibia, the primary tumor having been in superior maxilla. A careful study of the case however gives one reason to believe that this swelling in the tibia was not a recurrence but rather an inflammatory tumor indirectly following the use of the toxins. Such swellings I have observed a number of times especially when using the living cultures, and in Moullin's case the tumor of the superior maxilla and orbit having sloughed out, infection could easily have occurred.

ANALYSIS OF PERSONAL CASES AND SUMMARY OF RESULTS.

Total number of cases treated, 140. Of these 84 were round-celled; 21 were spindle celled; 9 were melanotic sarcoma; 2 chondrosarcoma; 12 sarcoma (diagnosis confirmed by microscope, but type of case not given); 6 sarcoma (clinical diagnosis of inoperable sarcoma).

Round celled.—Of these 40, or slightly less than half, showed more or less improvement, as evidenced by decrease in size and cessation in growth. In the great majority of these cases the improvement was only temporary. In 2 cases, however, the tumor entirely disappeared, and in a third nearly disappeared. All of these cases were well when last observed, one having gone over three years, one a year and a half, and a third one year. A fourth became so much reduced in size that it was easily removed. The remaining cases of round-celled sarcoma showed very little, if any, effect from the treatment.

Spindle-celled.—Of the 21 cases of spindle-celled sarcoma, 10 disappeared entirely and all of the remainder showed marked improvement. Of the 10 successful cases, one was well 6 years (living cultures used in this case); one for 5 years, one for 4 years, one for $4\frac{1}{2}$ years, one for $1\frac{1}{2}$ years, one for 1 year, one for 9 months. In 3 cases of spindle-celled sarcoma the disease recurred at intervals of 9 months to $1\frac{1}{2}$ years. In all of the cases the disease yielded to further treatment. Two are now

well, and the third, when last heard from, 9 months ago, was improving.

Melanotic sarcoma.—No case showed more than slight temporary improvement. It should be noted that Dr. George R. Fowler of Brooklyn has had one case of melanotic sarcoma of tonsil and fauces entirely disappear under the mixed toxins, but there was a recurrence two years later which proved fatal.²

Mix-celled sarcomas.—Of these, one entirely disappeared and the patient remained well for 3½ years, when a recurrence took place in retroperitoneal region, which proved fatal in a few months; one became smaller, was removed and the patient is now well over one year; two other cases were improved and two unimproved.

Chondrosarcoma.—In one case—very large inoperable sarcoma of ilium—the tumor disappeared entirely and the patient was well for seven months. Local recurrence then took place, proving fatal.

Osteosarcoma, inoperable.—Clinical diagnosis of only one case; osteosarcoma of sacrum. Tumor entirely disappeared and patient well nearly three years later. One of ilium; tumor disappeared and patient well 1½ years.

One epithelioma of chin and floor of mouth, is well 4 years; one recurrent, inoperable fibro-angioma is well 2 years.

SUMMARY OF FINAL RESULTS.

In 24 cases, partial or complete disappearance of tumors was observed; in 16 cases this was complete. Of these 8 cases were well 3 to 6 years; 9 were well 1½ to 3 years; 4 are well at present, 9 months to 1½ years; 3 died of recurrence, which took place from 7 months to 3½ years after treatment.

The action of the toxins upon the different types of sarcoma.—It is evident from a study of the cases reported that the influence of the toxins varies greatly, according to the type of the sarcoma, being most marked in the spindle-celled, and least in the melanotic variety. It is a significant fact, and one of great importance from a pathologic standpoint, that more than one-half of the cases of inoperable spindle-celled sarcoma treated with the toxins have disappeared entirely, and every case showed a marked improvement. Of the cases of round-celled sarcoma about one-half showed more or less improvement, the other half failing to show any effect from the treatment. In many cases the improvement was but slight and temporary in character; the tumors at first showed decrease in size, a little later they remained stationary and then after a longer or shorter interval again increased in spite of the treatment. A considerable number of round-celled sarcoma have disappeared entirely and there is reason to hope for a permanent cure.

The melanotic variety, as I have said, is the least influenced of all. I have treated ten cases of melanotic sarcoma, and in no case was there more than a slight, temporary improvement. It is true that most of the cases were multiple and very far advanced at the time the treatment was undertaken; yet, in one case the injections were begun immediately after primary operation, as a prophylactic measure, but this did not prevent speedy recurrence. Were it not for the fact that there is a case of advanced melanotic sarcoma on record which was cured by accidental erysipelas I should look upon this variety as entirely hopeless. The varying action of the toxins upon these different types of sarcoma lends support to the opinion expressed by Bland-Sutton in his book on "Tumors, Innocent and Malignant," which is as follows: "The opinion that all varieties of cancers are due to one cause, assuming cancer to be the product of such agents as produce tubercle, glanders and actinomycosis, it is much more probable that under the term cancer, many tumors are grouped together on account of structural likeness, they have a widely different cause: and the same view holds good for sarcomata and epitheliomata."

Again, writing in 1892, the same writer states: "Sarcoma" is probably the scene of action of a violent and prolonged contest between irritant micro-organisms and leucocytes. I say probably, because, as has been already remarked, pathologists have not yet succeeded in isolating a specific bacteria for sarcomata in general. That such agents will soon be discovered is in the highest degree probable, because in recent years the list of infective granulomata is made at the expense of sarcomata. The structure, mode of growth, infective properties and manner in which these tumors destroy life, clearly coincide with what is positively known in regard to infective granulomata.¹

I will here repeat the opinion which I have expressed in an earlier paper, first in 1892, that I believe this curative action of the streptococcus of erysipelas and its toxins can only be explained on the ground that sarcoma is of micro-parasitic or infectious origin. Furthermore, I believe this action in itself furnishes very strong evidence in support of this theory. It is a well-known fact that the streptococcus of erysipelas exerts a powerful influence upon tubercular and syphilitic lesions, both due to a specific micro-organism, and as far as we know it has no effect upon any form of tumor not of infectious origin unless we exclude sarcoma and carcinoma. Several links in the chain of evidence have been added during the past two years through the experiments of Juergens of Berlin, and more notably by the more recent researches of Roncali and Sanfelice of Italy. These experiments have been so convincing that so conservative and careful an observer as Dr. Roswell Park in his recent paper on the "Etiology of Cancer,"² read before the American Surgical Association, states: "Without going so far as to say that this can be done in every instance and that all cancers are necessarily of parasitic origin, one is justified by these results in at least maintaining that some cancers are positively of such origin. If upon this experimental ground one should infer that all cancers are parasitic manifestations he would do, as will be seen, little violence to the laws of evolution."

Space will not permit me to describe a number of other cases in which the injections of the toxins were followed by marked improvement, but I have given a detailed report of eight cases of sarcoma treated since the meeting of this Association in May, 1895, which totally disappeared under the injections. All save two were inoperable, and these two were both rapidly recurrent, amputation of the right arm being the only operation that could be offered in one, and extensive removal of the lip in the other. The diagnosis in seven of these cases was confirmed by microscopic examination, and in the eighth case the clinical diagnosis was beyond reasonable doubt. If a tumor of four months' growth, starting from the sacrum, can cause a loss of thirty-five pounds in weight, produce marked cachexia, severe lameness in both legs and agonizing pain, and yet be non-malignant, we have certainly discovered some new variety of benign tumor. Moreover, a substance which, injected subcutaneously, in regions remote from the tumor, causes almost immediate cessation of this pain, rapid return of appetite, an increase in weight of twenty-eight pounds in the short space of six weeks, with no other treatment, all this with the gradual decrease in size, and final disappearance of the tumor itself, while the patient con-

¹ J. Bland-Sutton: "Evolution and Disease," London, 1892.

² American Journal of Medical Sciences, May, 1896.

² Amer. Jour. Med. Sciences, August, 1898, p. 175.

tinues in perfect health three years after the treatment, such a substance must possess qualities sufficiently interesting and important to command our most serious consideration. Turning to the other seven cases in which the diagnosis was confirmed by microscopic examination, and in which the tumor entirely disappeared under the same treatment, have we not sufficient evidence to convince the most exacting critic that these toxins do have specific action upon sarcoma, which in a considerable number of cases, proves curative? In addition to my own, I have tabulated thirty-two cases of sarcoma treated by other surgeons, here and in Europe, with the same preparation of mixed toxins with complete or partial success. The successful cases have become so numerous and so well authenticated that the favorite explanation of the critics, "mistaken diagnosis," must now be abandoned. No one can seriously offer such an explanation and still retain a reputation for sound judgment and fair-mindedness.

I have been more than surprised to find surgeons for whose ability and judgment I have the highest regard, find it almost impossible to believe in the efficiency of the toxins of erysipelas, although they fully admit the beneficial and curative properties of accidental erysipelas in malignant tumors. The more we study the life history of pathogenic germs the more certain do we become that their influence upon man or animals is chiefly the result of the toxins they produce; therefore, admitting, as we must, the living streptococcus of erysipelas to have a curative action on malignant tumors, theoretically, we have the strongest reason for believing this action to be due to the toxins. The result of practical experience is, as we have seen, in strict accord with theory.

In view of the evidence already presented, is it not more rational to explain the disappearance of these tumors as a result of the specific action of the toxins upon sarcoma, than upon the theory of spontaneous disappearance or of mistaken diagnosis? In regard to these explanations so frequently offered, I would briefly say that after a most careful search of the literature of sarcoma, I have yet to find a single case of spontaneous disappearance in which the diagnosis had been confirmed by microscopic examination. In support of this view I again quote Mr. Bland-Sutton, who, in the discussion of Grieg Smith's well-known paper upon "so-called disappearance of abdominal tumors,"³ stated that he did not believe in the spontaneous disappearance of any connective tissue or cancerous growth, and the spontaneous disappearance of myomata which had been reported was based on clinical observation alone.

In the discussion of my last paper before the Johns Hopkins Medical Society, April 6, 1896,⁴ Prof. William Welch said: "I see no way of gainsaying the evidence which Dr. Coley has brought forward, that there is something specifically and genuinely curative in this method of treatment. A single undoubted cure of a demonstrated cancer or sarcoma by this treatment would be enough to say definitely that the treatment exerts some specifically curative influence, for the spontaneous disappearance of undoubtedly malignant growths of this character is almost unknown. Dr. Coley has, however, presented us positive proof not only of one, but of numerous cases of malignant tumor cured by his method."

As I have already stated in a previous paper, it would be somewhat remarkable that these cases should be the first and, thus far, the only ones with both clinical and microscopic diagnosis of malignancy, to disappear spontaneously; and it would be more remarkable still that this disappearance should be coincident with the beginning of the treatment with the toxins. Furthermore, it would be clearly unfair to rule out these cases on the ground of errors in diagnosis without ruling out the cases of cures following operations for sarcoma. Both have been subjected to the same standard of diagnosis, with this important difference, that the cases treated with the toxins have been subjected to *far more severe tests*, inasmuch as in most cases the clinical and microscopic diagnosis were confirmed by a number of the best surgeons and pathologists.

I admit, there is difficulty in always being able to differentiate between a tubercular or syphilitic tumor and sarcoma, but this applies only to round-celled sarcoma and not at all to the spindle-celled variety which, as Dr. Welch has pointed out, must be classed as a genuinely malignant tumor. If the successful cases were confined entirely to the round-celled variety of sarcoma, there might be some little weight to the argument, but inasmuch as the majority of the successful cases have been spindle-celled sarcoma, a type of tumor in which error of diagnosis is practically impossible, the tubercular or specific theory falls to the ground.

I may possibly be asked to explain the unfavorable report upon the value of the toxins of the Committee of the New York Surgical Society in April, 1896, which has been widely quoted, and which, coming from such a distinguished source, could not fail to raise doubt even in the minds of those hitherto disposed to give the method a fair and unprejudiced trial. Up to the present moment, I have made no attempt to answer this report, save by the presentation before the Society of additional cases successfully treated by the toxins. Since this report was submitted, I have exhibited before this Society four cases of inoperable sarcoma—the diagnosis of which had been confirmed in every instance by the highest authorities in pathology—successfully treated by the method in question. The tumors had entirely disappeared, and one of these cases, a spindle-celled sarcoma of the chest wall and axilla, is now free from recurrence nearly three years, the diagnosis in this case having been confirmed by Prof. Wm. Welch of Johns Hopkins University. I have acted on the principle laid down by Oliver Wendell Holmes more than half a century ago: "It is by notes of cases rather than by notes of admiration that we must be guided when we study the revised statutes of nature." And it is by virtue of these by notes of cases that I appeal from the verdict of the Committee of the Surgical Society.

The simple truth is what I have been seeking, and all honest criticism, so far as it tends to aid in arriving at truth, is most welcome. It is Huxley who says to the young investigator, "Veritas praevaleret some day, and even if she does not prevail in his time, he himself will be all the better and wiser for having tried to help her; and let him recollect that such great reward is full payment for all his labor and his pains."

CONCLUSIONS.

A careful study of my own cases, as well as those

³ Brit. Med. Jour., Dec. 10, 1894.

⁴ Johns Hopkins Bulletin, September, 1895.

thus far treated by other men, justifies, I believe, the following conclusions, which, I may add, are in almost perfect accord with those recently expressed by M. Moullin.

1. A considerable number of cases of inoperable sarcomata, the correctness of the diagnosis of which is beyond question, have entirely disappeared under this method of treatment.

2. A large proportion of these cases have remained free from recurrence more than three years after treatment, the period which has generally been accepted as of sufficient length to justify their being regarded as permanent cures.

3. The different varieties of sarcoma differ widely as regards the manner in which they are acted upon by the toxins. The results thus far show that the treatment is far more successful in the spindle-celled variety, more than half of the cases of spindle-celled sarcoma in which the injections were made having disappeared. Round-celled sarcomata yield far less readily, although a number have been successfully treated. No case of melanotic sarcoma has up to the present time shown more than slight temporary improvement.

4. The action of the toxins upon sarcomata must be regarded as a very rapidly progressing coagulation necrosis with fatty degeneration. This action is not the result of inflammation, nor does it resemble the destructive action of a local escharotic like carbolic acid, but it is rather specific in character, exerting a direct influence upon the tumor cells.

5. The specific action is further confirmed by the fact that several cases have entirely disappeared when the injections were made subcutaneously, remote from the tumor.

6. This method of treatment is attended with a certain amount of risk unless certain precautions be taken. The chief dangers to be guarded against are: *a*, collapse from too large doses of the toxins; *b*, pyemia from insufficient care as regards asepsis, especially in cases where there is a granulating or sloughing surface. To prove that the risks are small I may add that in more than two hundred cases treated personally, death was caused by the injections in but two, and one of these cases was so nearly moribund that no treatment should have been begun.

7. The use of the toxins after primary operation as a prophylactic against subsequent recurrence has much to recommend it. If used in such cases, mild doses should be sufficient, and if proper precaution is observed the treatment should be free from risk.

[I wish to take this opportunity of publicly acknowledging my great indebtedness to Dr. B. H. Buxton of the Loomis Laboratory, without whose skillful labors and untiring zeal these results would have been impossible.]

DISCUSSION.

Dr. McARTHUR of Chicago—Since Dr. Coley first introduced this treatment I have had six cases under careful observation and treatment, and last Christmas day I received a very handsome gift from a man who for two years has been free from any recurrence as a result of this treatment. One must bear in mind that the author only recommends his method in cases that are inoperable, and if he saves only twelve cases the attention of the surgical world should be directed to that remedy in the treatment of conditions for which we have no other recourse. I remember the case of a patient who twice refused to have an extremity amputated, although the diagnosis showed plainly it was sarcoma, and he subsequently recovered. One of my cases was a round-celled sarcoma, and the other a spindle-celled sarcoma, and under the treatment by the toxins

the growths disappeared, and the patients are living and well at the end of three years. I believe this method to be almost useless in cases of melanotic sarcoma, but in spindle-celled sarcoma there are very decided reasons for giving it a trial before removing the extremity.

Dr. HARRIS—I would like to ask why the author does not recommend toxins in carcinoma. I have a case under observation where I have been hesitating for several weeks as to what to do in order to obtain information on the subject, and I would like him to tell us why he considers it unwise to use the remedy in carcinoma.

Dr. LEWIS of Topeka—I am very much pleased with the method, especially as I had such a radical cure in one case, which occurred at the angle of the jaw on the right side in a patient of mine two years ago. Seeing that I knew what the result of an operation for such a condition would be, I advised the lady to go to Chicago and have it done there, which she did. Paralysis resulted, as I expected, and I later removed some more of the jaw. Suppuration went on, and eventually the clavicle became involved, and later the tibia, necessitating removal of sections of these bones. Some time afterward she accidentally acquired erysipelas in the face, which healed completely. This stimulated me to use Coley's mixture, and the woman is now well.

Dr. A. D. BEVAN of Chicago—I would like to relate my experience in this connection, as it may throw some light upon the action of the toxins in sarcoma, or in pathologic conditions with which it may be confounded. Within the past year a case of a large gumma of the thigh came under my observation, which was diagnosed at that time as sarcoma, and radical operation was recommended. The patient was loth to submit himself to such radical treatment, and I began the use of the erysipelas toxin. The result was some diminution in the size of the growth, but not to the extent of entire disappearance. I later did an exploratory operation, and removed a section of the tissue, which showed on gross appearance evidence of gumma, and histologic examination confirmed this. He was put upon iodid of potash, and the growth entirely disappeared. He then admitted having had a specific lesion some years before. The idea has occurred to me that possibly, in view of the fact, together with the unanimous opinion of continental surgeons, as well as many of our own countrymen, that in pure sarcoma no results have been obtained by the erysipelas toxin, it may be possible that many of these cases were gumma, resembling sarcoma very closely, which could only be proven by continuous specific treatment.

Dr. COLEY, in closing—I have treated nine cases of melanotic sarcoma, but in no case did I get more than a brief improvement. Up to the present time the results have not been sufficiently good in carcinoma to warrant me in continuing the use of the toxins. The only evidence I have as to the permanency of the cure in these cases is in a case of epithelioma of the mouth. The surgeon had recommended entire removal. The toxins were employed, and the case remained well for three years. As to Dr. Bevan's point, round-celled sarcoma is the only one that could be confounded with gumma. In the opinion of Dr. Welch spindle-celled sarcoma can not be confounded with anything else. As 50 per cent. of the spindle-celled sarcomas have disappeared, which before were hopelessly inoperable, I think the question of mistaken diagnosis is one that can not be entertained.

A SURGICAL TREATMENT FOR HYPERTROPHIED PROSTATE AND HERNIA IN OLD MEN, WITH A REPORT OF TWENTY-EIGHT CASES.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEORGE W. JOHNSON, B.Sc., M.D.

CHICAGO, ILL.

Concluded from page 400.

Reginald Harrison, F.R.C.S., reports twelve cases of single vasectomy. Seven derived permanent benefit; in the other five, the results were either negative, or it was impossible to trace the patients subsequently. The two cases he reports are as follows:

Case 1.—Patient, aged 69; his prostate was very large. Prominent symptom was extreme frequency of micturition. No catheter used. Amount of residual urine about an ounce, but for some time the patient urinated about every hour, day

and night. Operation was performed with successful result. When the patient was examined five months later, the right testis was found to be atrophied and soft, the left somewhat larger than before. The right side of the prostate underwent shrinkage and was smaller than the opposite lobe.

Case 2.—Patient, aged 72; complained of great frequency of micturition of ten years' duration, eventually amounting to about every two hours, day and night, sometimes oftener. Only a small amount of residual urine, and not dependent on the catheter. The right vas was divided. Six months after the operation micturition was normal in every respect, and although only one vas was divided, considerable shrinkage of the prostate had taken place.

Harrison states that in the majority of his cases micturition became much less frequent after the operation. But in two of his cases operated upon, no benefit was obtained in this respect, and no change was observed in the opposite testicle indicative of hypertrophic activity, and he was not disposed to repeat the operation on the other side. Harrison also reports ten cases of double vasectomy, for five of which he claims great, and believes lasting, benefit. Of the remaining five two have derived but very little benefit; two he was able to trace, and one, rather unusual, he reports as follows:

Patient about 70. In addition to suprapubic fistula consequent upon lithotomy, he had a very large, hard and fibrous prostate. The size of the latter was diminished by dividing the vasa. Two months elapsed between the first and second division. The result occasioned the abandonment of the catheter previously used constantly. Prostate half the size. Fistula also reduced to its smallest dimensions. Although only one and a half inch of each vas was removed, yet the patient retains the necessary desire and power for sexual intercourse. (*British Medical Journal*, 1895, Vol. ii, p. 993.)

Macewen reports three cases in which the prostate was atrophied by bilateral castration.

Case 1.—Aged 64. Feeble and frequent micturition for seven years; required to use the catheter frequently for attacks of retention. Passed urine every one and a half or two hours with much pain; length of urethra nine and a half inches; prostate much enlarged toward rectum, soft and elastic. Residual urine four ounces; urine alkaline and contains a considerable quantity of pus.

Double orchidectomy. Testicles of normal appearance and spermatazoa present. Wound healed without suppuration. In a week patient felt greatly relieved; could retain urine three or four hours. In a month prostate as felt per rectum sensibly smaller; urinated every four hours; quantity of pus diminished. At the end of two months the prostate was less than half its size at the time of operation. Patient passing urine three times a day and once or twice by night. Urine showed only mucous deposit; length of urethra eight and three quarter inches.

Case 2.—Aged 84. Symptoms began with complete retention, when urine had to be drawn off. Entirely dependent on catheter; expulsive power of bladder feeble; length of urethra ten and one-half inches. Prostate as felt per rectum much enlarged, hard and flattened.

Double orchidectomy. Microscopic examination showed testicles in a state of involution. Spermatozoa absent. Two weeks later no difficulty with catheter. Size of prostate unchanged. Two months after operation required catheter once in twenty-four hours. The remainder of the urine passed voluntarily. Length of urethra nine and one-half inches; urine clearer, deposit mucus and a few pus cells. Prostate diminished by one-half.

Case 3.—Aged 71. Had urinary difficulty for ten years, seven of which patient was compelled to depend upon the use of the catheter. Difficulty in passing urine with occasional discharge of blood. Before the operation he was obliged to use the catheter every two hours. Length of urethra ten and three-quarter inches. By the rectum prostate was found to be very large and somewhat hard.

Double orchidectomy. Testicles normal; no spermatazoa found. Catheter used without difficulty every four or five hours. Size of prostate per rectum unchanged. Three months after operation use of catheter required every six or seven hours. Length of urethra ten and one-half inches. Per rectum no appreciable change in size of prostate. (*Brit. Med. Journ.*, 1896, Vol. ii, p. 989.)

Colclough reports a case of double vasectomy; death; partial necropsy. Man aged 70 years, of unusual physique and heavy whisky drinker. At the age of 67 prostatic trouble commenced. Irritability of the bladder gradually commenced with attacks every three or four months. The patient then suffered from an attack of acute cystitis; the prostate was enlarged, but with "catheter life" the patient was comfortable, and not until fourteen months later did urethritis commence. The left lobe of the prostate increased considerably; the urethritis became almost constant. Examination of the left epididymis showed chronic enlargement. Vasectomy was performed. Patient survived the operation five weeks. Postmortem showed the prostate gland a simple bag of pus; the bladder was anchored down to the posterior wall of the abdomen; the left kidney bound down by adhesions and felt like a bag of fluid. The right kidney was hypertrophied. The lateral lobes of the prostate oozed with pus; the middle lobe was soft and pendulous. The lower two-thirds of the bladder was sacculated and thickened, with pus in all the sacculations. The right ureter opened normally, while the left was embedded in a mass of new growth. Below this mass was a closed-in abscess cavity with smooth walls. (*London Lancet*, 1897, Vol. ii, p. 658.)

Cabot reports a case in a strong man of 75; troubled five years with difficulty in urinating. He suffered from an attack of acute inflammation of the bladder. Catheter was used regularly. Castration was performed. After the operation patient's mental condition changed decidedly; he became maniacal. Injection of testicoline was tried with successful result, after which patient's mental condition was greatly improved. The prostate was the size of a hen's egg. Third lobe enlarged to the size of a pullet's egg and projected upward and backward into the bladder. On its apex there was a calcareous deposit firmly adherent. Posterior to this, extending forward in the body of the prostate was a cavity with smooth walls, which contained about a teaspoonful of gravel. Bladder wall was thickened and injected, and showed on its surface a few hemorrhagic spots. Kidneys were in a state of acute pyelonephritis, and the right was about one-third larger than normal. (*Annals of Surgery*, 1896, Vol. xxiv, p. 265.)

Morton, F.R.C.S., reports a case of prostatic hypertrophy in which he performed bilateral castration. The patient was 70 years old, with prostate moderately enlarged, hard, nodular, and there were twelve ounces of residual urine. Owing to the catheter not being kept clean, septic cystitis occurred. Both testicles were removed by a small median incision. There was no mental disturbance following. Very gradual atrophy of the prostate took place. A year later, when examined, it was normal in size, but patient still had the same amount of residual urine, although micturition was easier. There was a little pus in the urine which flowed through the catheter just before the bladder became empty. (*Brit. Med. Journ.*, 1896, Vol. ii, p. 995.)

C. Mansell Moullin reports two cases in which castration was performed for enlargement of the prostate.

Case 1.—Aged 74. Prostatic disease advanced. Perustomed the prostate was of enormous size. Patient was accustomed to use of catheter for many years. The urine, in spite of the bladder being regularly washed out, was foul, ammoniacal and loaded with mucus and phosphates. Bladder was so contracted from cystitis of several years' duration that it held only two ounces of urine. Patient wore portable urinal during daytime,

and in spite of morphia suppositories passed urine fourteen or fifteen times at night. Castration was performed. Three days later patient was able to dispense with morphia for two nights; slept an hour and a half at a time, the longest spell previously being three-quarters of an hour. Ten days later, as per rectum, prostate was found much smaller; stream of urine larger; urine was neutral in reaction, and small masses of phosphates were beginning to come away. One month after operation the prostate diminished so much that a metal catheter with ordinary curve passed without difficulty. Size of bladder increased a little; it retained at times four ounces of urine, but micturition was frequent day and night. No morphia was required. The patient frequently slept two hours without being disturbed.

Case 2.—Aged 64. Prostate very large; repeated attacks of cystitis and several attacks of profuse hematuria. Catheter was passed every hour, night and day. Castration was performed. There was no shock, and patient rallied well. Wounds healed. A small quantity of urine passed naturally, the first time in fifteen months. Eight days after the patient had a fainting fit, urine drawn off by catheter, and contained a good deal of blood. Two days later dyspnea and hematuria returned; diarrhea set in, the bowels acting eleven times in twenty-four hours. Death occurred on the eleventh day after operation. Two days previously blood-stained urine was passed at intervals by the urethra. Heart failure was the cause of death. (*Clinical Society Transactions, Vol. xxviii, p. 193.*)

Griffiths reports a case of enlarged prostate in which bilateral or complete castration was performed. The patient was 74 years of age and had severe cystitis of long duration. Urine contained a large amount of mucus and pus. Micturition was frequent and painful. Catheter was used for two years. Prostate per rectum as large as a medium-sized orange. Castration was performed. Testicles were of full size, and in the left there was a large spermatocele. In each testicle there were active spermatozoa in the seminal tubes. One week after the operation a few ounces of urine were passed without the aid of a catheter. Urine still contained pus, and the patient complained of much pain in the loins. At the end of the second week patient suffered from sleeplessness, becoming delirious. On the fourteenth day after operation the right popliteal artery became blocked, the limb below showed signs of beginning gangrene. Eighteen days after the operation the patient died.

Postmortem: The right kidney was found enlarged from chronic hydronephrosis; suppuration of the distended pelvis; left kidney natural. The bladder was thickened, mucous membrane and right ureter much inflamed. In the right popliteal artery, a mottled and adherent recent clot. The prostate still enlarged, etc. (*Brit. Med. Journ., 1895, Vol. i, p. 579.*)

Fenwick reports nine cases of double castration (White's operation) upon the enlarged prostate. He considers White's method for the shrinkage of enlarged senile prostate an important addition to our present methods. The reports of cases are as follows:

Case 1.—Test case for shrinkage of the normal human prostate after castration. Entire genitals of a man, aged 45, ablated by the Thiersch-Gould method for extensive epithelioma of the penis. After six months the prostate was reduced to the size of a small bean.

Case 2.—Aged 76. Some years of feeble prostatic micturition. Sudden and prolonged retention. Extreme difficulty of catheterization. Prostate unusually hard and enlarged, especially in the left lobe. Double castration. Three weeks after urine passed voluntarily without the use of catheter. Suprapubic wound closed. Prostate much diminished.

Case 3.—Aged 70. Symptoms of enlarged prostate for six years. Attacks of retention. Slight cysto-prostatitis with mild pyelitis present; inflammatory conditions commencing a year before castration. Per rectum, the prostate was small, but the lateral lobes were much upraised toward the bladder, the vas at the vesical orifice being edematous and translucent. Bladder was fasciculated and pouched. First week after operation the urine cleared, stream improved in force and the pain on urinating diminished. At the end of the third week the prostate was a little smaller, structures of the lobes more fibrous,

and the interlobar line had filled up. After three months the stream had markedly improved in force, and only slight variability in power of bladder remained.

Case 4.—Aged 76. Repeated attacks of retention and uremia. Catheterization most difficult. Prostate plump and elastic, only moderately enlarged per rectum. Suprapubic drainage for months without improving the cystitis. Double castration. Cystitis rapidly diminished and voluntary micturition recovered after a fortnight. Prostate slightly smaller at the end of the third week.

Case 5.—Aged 76. Dysuria for five years; not much relieved by catheter, which was passed almost every hour. Irrigation of the bladder had no control over the cystitis. Double castration. Prostate slowly diminished in size. Catheterization only needed every six hours. Cystitis diminished.

Case 6.—Aged 81. Catheter used for nine years, six or seven times during the night and three times during the day. Efforts to pass the instrument were often followed by hemorrhage. Prostate per rectum large and elastic, especially the left lobe. Castration performed. For three days after operation catheter needed twice in twenty-four hours, then four times. At the end of three weeks the prostate diminished and interlobar line of demarcation had filled in; cystitis greatly decreased, but catheter had to be used three times at night.

Case 7.—Aged 60. Dysuria for about three years, with occasional use of catheter, followed by cysto-prostatitis. Prostatic abscess formed and burst into the urethra. Intense pain after every feeble attempt at urination, finally retention. Catheterization for a week. Prostate enlarged laterally and elastic. Castration. Recovery of voluntary micturition on third day; slight shrinkage of the prostate after two weeks. Prostate plump and elastic, diminished one-eighth by the fourth week.

Case 8.—Aged 46. Aggravated prostatitis with great local pain, tenderness, severe and intractable neuralgic radiations for ten years; also increased frequency of micturition. Sitting or walking unbearable. Castration. Prostate slightly smaller; as yet no marked relief. Final condition to be reported later.

Case 9.—In progress.

The above cases were in urgent need of relief and were selected from a large series of prostatics for the operation. It will be noticed that they illustrate the use of the operation in four groups of cases: 1, those cases in which castration was performed early, that is, before the vesical muscle had been permanently crippled, but not before it had been impaired; 2, those in which the muscle power had been abrogated by years of catheterization, and in which death was approaching from ascending pyelitis; 3, those in which the ordinary obstructive symptoms were aggravated by chronic inflammatory troubles of the senile prostate; 4, one mid-adult case of incurable chronic prostatitis and vesiculitis which was complicated by unrelievable neuralgic radiations. (*Brit. Med. Journ., 1895, Vol. i, p. 378.*)

Hayden reports a case of hypertrophy of the prostate gland in which double castration was performed. Patient aged 70. For five years had frequent urination day and night; use of catheter painful and difficult. Straining caused protrusion of several hemorrhoidal masses. Urine ammoniacal. Bladder holds six ounces of fluid; severe cystitis. Prostate twice its normal size. Double castration performed. Twenty-four hours after operation there was a severe spasm of the compressor urethrae muscle, necessitating use of catheter. There was also spasm of the anal sphincter. Fifth day after, much improved. Catheter passed to the bladder. Two months later patient was absolutely free from all pain. Prostate per rectum a little enlarged, but non-painful. (*Medical Record, 1895, Vol. xlvii, p. 612.*)

Lilienthal reports a case of enlarged prostate practically cured by castration. Patient, aged 56. For ten years was troubled with frequent micturition; occasional attacks of vesical tenesmus. Catheterized for retention. His urine was alkaline, and there was severe cystitis. The urine contained quantities of

pus and bloody mucus. Prostate per rectum found to be enlarged three times its normal size. Both testicles were removed; signs of slight bilateral epididymitis. First improvement noted was that the patient could pass a stream: cystitis vanished. Four weeks after the use of the catheter was not necessary. Per rectum prostate still enlarged, but only half the size it was before, and feels flaccid. (*Medical Record*, 1895, Vol. xlvii, p. 506.)

Rand reports two cases of hypertrophied prostate relieved by castration,

Case 1.—Aged 58. For ten years patient had more or less difficulty in urinating. Five and a half ounces of residual urine were present at first catheterization. Both testicles were removed. Second day after operation he voided twelve ounces of urine voluntarily at different times during the day. Five weeks after, residual urine, off and on, was absent, or in small quantity. Prostate per rectum much smaller, and a small-sized sound drops into the bladder by its own weight.

Case 2.—Aged 69. For nine years patient has had frequent urination. Length of urethra eight inches. Residual urine six or seven ounces at times. Prostate twice its normal size. Both testicles removed. No shock nor pain followed. The size of prostate decreased rapidly within eleven days after operation. (*Annals of Surgery*, 1895, Vol. xxii, p. 217.)

Bryson reports a case of prostatic overgrowth relieved by complete castration. Patient, aged 74. At 56 he gave first evidence of prostatitis. There was dilatation of bladder from obstructive prostatic overgrowth. A cystitis and mild pyelonephritis also developed. Dilatation of heart and pulmonary emphysema supervened. Demonstrable results followed the operation. There was a marked diminution of the enlarged prostate without any change in frequency of urination, without alteration in the amount of tidal urine, and with but slight decrease in the amount of residual urine. In short, complete castration caused complete atrophy of prostatic gland without effecting any change in the chronically inflamed and degenerated bladder, and equally without curing or benefiting a chronic pyelonephritis from extension. (*Journal of Cutaneous and Urinary Diseases*, 1895, Vol. xiii, p. 352.)

Chetwood reports two cases of prostatic hypertrophy after operation: one by vasectomy; the other by castration.

Case 1.—Aged 52. Patient had never had treatment for bladder until his first attack of retention of urine, and catheter was passed for the first time. Prior to this he had frequent urination night and day. About eight months later he was operated on for fissure of the rectum; bladder trouble aggravated after operation, and he was regularly catheterized. Third day after, introduction of catheter was difficult, followed by hemorrhage. Patient was examined ten days later, and per rectum enlarged prostate was found, it being the size of a hen's egg. Third lobe prominent. An incision was made over the external ring, and after separating the vas deferens two ligatures were applied and one-quarter inch of the canal between them was resected. For ten days a record was kept of the amount of urine passed per catheter and voluntarily. At first the amount of urine passed by catheter greatly exceeded that passed voluntarily, but toward the end of the week the amount was reversed, so that at the end of the ten days the patient was able to empty his bladder down to about four ounces. The patient became lax in the proper care of himself and his old trouble returned with increased activity. Frequency and urgency of urination became aggravating and attacks of retention more frequent than before. About one year after operation his condition was worse than the previous year. Prostate was the same size and larger. Dr. Chetwood remarks that he is forced to believe that whatever relief he experienced was due to his introduction into catheter life. He says he finds that cases of vasectomy reported by Guion, Cartier, Helferich, Legen, Isnardi, and others, in most of which conclusions reached seemed decidedly negative, while in some instances there seems to be a certain amount of functional improvement with one exception, that there was no decided diminution in

the size of the prostate, and it is a question when improvement was noted whether or not it was due to the operation.

Case 2.—Patient, aged 81. Difficulty with urinary function for ten years; several attacks of retention which were relieved by catheter. For four years catheter passed twice in twenty-four hours. Examination showed four to six ounces of residual urine; penile distance nine inches; prostate fibrous and hard, upper distance barely touched with end of index finger, distance being about three and a half inches from below upward, and about three inches laterally. Double castration performed. Recovery from operation uneventful. During the two weeks following relaxation of regular catheterization and bladder irrigation there were symptoms of bladder irritability, turbidity of urine and tenesmus. Prostate was reduced one-third in size and softer in consistency; residual urine was reduced one-third; penile distance half an inch shorter. Five weeks after, urine flowed freely, and catheter not required. Urine, however, quite turbid. Two months after operation the bladder was irrigated at regular intervals; urine passed once every two hours by day; catheter used before retiring at night, by which means patient slept without again rising. Examination reveals that the prostate was reduced one-half its original size, and penile distance from three-fourths to one inch less than length before operation.

Regarding the subject of double castration from various cases reported in the journals of Guion of Paris and Casper of Berlin, Dr. Chetwood thinks that there is little doubt that removal of the testicle produces a certain amount of shrinkage in the prostate gland, but with a varying amount of subsidence of the functional disturbances. He doubts if the operation ever will be popular. (*Journal of Cutaneous and Genito-Urinary Diseases*, 1897, Vol. xv, p. 111.)

Howitz reports four cases of stone in the bladder with hypertrophy of the prostate gland, where a positive diagnosis was impracticable until double castration resulted in atrophy of the prostate, rendering the passage of a stone searcher possible.

Case 1.—Patient aged 70 years; suffering from symptoms of cystic stone, which were intensified for five years; urine contained blood. Per rectum hypertrophied prostate; no stone searcher could be passed. Double castration was performed. Two weeks after operation a stone searcher was readily passed and the existence of calculi easily detected. These were removed by a suprapubic cystotomy and patient recovered rapidly.

Case 2.—Aged 65 years. History of case similar to Case 1. Obstruction produced by enlargement of prostate, permitting passage of small catheter only. Double castration was performed. Fourteen days after a stone searcher was readily introduced and a large-sized calculus found, which was removed by a suprapubic cystotomy. Patient also recovered rapidly.

Case 3.—Aged 62 years; hypertrophied prostate. In addition to the usual symptoms there was great pain in the glans penis, especially after urination. Patient frequently passed blood before and after micturition; two attacks of retention of urine. Double castration preliminary to cystotomy. Ten days after operation stone searcher readily passed; two good sized calculi were found in a pocket posterior to the prostate and were removed by a suprapubic operation. Patient entirely relieved.

Case 4.—Aged 71 years. Pain in the head of penis, neck of bladder and over pubes after passing water. Frequent attacks of hematuria; one attack of ischuria. Prostate much enlarged. Double castration performed. Fifteen days after prostate sufficiently shrivelled to allow the introduction of stone searcher, when a calculus was located. It was small and easily crushed. Patient made a slow but complete recovery. (*Therapeutic Gazette*, 1898, p. 73.)

Watson reports three cases of castration for the relief of prostatic hypertrophy.

Case 1.—Aged 58 years. Patient suffered from symptoms of urinary obstruction for several years. Several attacks of retention of urine. After use of catheter symptoms became worse, and before the operation patient had a painful desire to urinate every fifteen minutes day and night. During five days preceding operation he was unable to void urine spontaneously to the extent of an ounce or two in twenty-four hours. Continuous drainage of bladder by a catheter in the urethra was not tried before operating. Both lateral lobes of prostate were markedly hypertrophied, the surface of the right lobe some-

what uneven and in the course of the vas deferens there was a hard, round body the size of a pea, which was movable. Castration was performed through two incisions, one over each testicle. Operation somewhat prolonged by the presence on one side of an encysted hydrocele of the cord, which was dissected out. Immediately after the operation the use of catheter was discontinued. Previous to operation retention followed if catheter was omitted. No change in the frequent or painful desire to urinate. At the end of thirty-six hours, and interval of one hour and a half. On the sixth day patient passed out four ounces of urine at each micturition spontaneously. On the tenth day he was free from pain. Three weeks after operation there was but an ounce and a half of residual urine, which was almost free from pus. Distinct diminution of size of prostate. Patient slept five hours at a time undisturbed. In daytime he is obliged to urinate once in three or four hours. Operation considered a complete success.

Case 2.—Aged 69 years. Both testicles removed through a single median incision. Slight hypertrophy of lateral lobes. The catheter passed nine and a quarter inches before entering the bladder. Symptoms of urinary obstruction for three years; catheter could not be omitted without retention. After operation catheter could not be omitted. The wound did well up to forty-four days after operation; no other improvement noticed; no perceptible change in the size of prostate. So far, case is a failure.

Case 3.—Aged 70 years. Retention of urine. Symptoms of urinary obstruction for several years; overflow of bladder for several months. Patient had double inguinal hernia of long standing. Prostate much enlarged; constant and painful desire to urinate and at times violent bladder tenesmus. During the night following operation patient tore off bandages, got out of bed, and in a violent fit of coughing forced down the herniæ, distending the scrotum and putting the wounds on the stretch. Patient died on the ninth day. No spermatozoa were found at the time of operation. Autopsy showed hypertrophy in the form of distinct fibro-adenomatous tumors, each lateral lobe containing a thickened capsule the size of a horse chestnut. No atrophy of the prostate occurred. Vesiculæ seminales contained no spermatozoa. Bladder the seat of chronic cystitis. Extensive pyelonephritis of both kidneys. (*Boston Medical and Surgical Journal*, 1895, p. 378.)

Kümmel reports three cases of successful operations of hypertrophy of the prostate by excision of the middle lobe of the prostate. This is the same method which is employed by McGill, Harrison, Landerer, Benno, M. Schmidt. First the bladder was disinfected and opened under the simultaneous use of Nelaton's catheter and the use of antiseptic solutions. Then the middle lobe of the prostate was caught with a forceps, drawn upward and slowly singed by means of a Paquelin cautery, or a glowing loop, afterward in several parts, working around as in cutting out the roots of a potato. Then a Hegar's dilator was employed, a permanent catheter introduced, and the wound closed by suture. The mucous membrane was sutured separately with catgut. Nelaton's catheter was removed fourteen days later. The three patients were 65, 70 and 72 years old, respectively. The cure was complete. (*Deutsche Med. Woch.*, 1889, pp. 310 and 314.)

Dr. William T. Belfield reports fifteen cases of severe cystitis dependent on prostatic enlargement, confirmed by autopsies, and says that he found intravesical tumors in eight, three times, as a single myoma or middle lobe, and in five as a more or less complete ring around the vesical orifice. In five, the growths were deeply intraprostatic, and in two diffuse hypertrophy with encysted calculi. In eight of the fifteen cases the prostatic obstructions were removable. Dr. Belfield recommends operation by perineal or supra-pubic incision.

In cases of prostatic enlargement where the cystitis is still slight he recommends the use of an intense galvanic current, after Apostoli's method with uterine fibroids. (*Medical Record*, 1888, Vol. xxxiii, p. 272.)

Heine reports four cases of successful cure of

hypertrophy of the prostate by parenchymatous injections, consisting of a solution of iodine, with no suppuration after the injections. The solution was kali iodid, 2 drams; tincture of iodine, 2 ounces; and, aqua distil, 6 ounces. Between twelve to twenty drops at a time were used. After a second injection the prostate was considerably diminished in a man of 75 years. Heine claims this as a radical method. In one case the prostate, after the injections, was even smaller than is usual with a healthy man. (*Langenbeck's Archiv für Klin. Chirurgie*, Vol. xvi, pp. 79-95.)

Mayer and Haenal report a case of hypertrophy of the prostate relieved by castration. Patient, aged 70. Prostate much enlarged, with cystitis and ammoniacal urine, tenesmus and toxemia, in whom catheterization was almost impossible on account of the pain produced. Several ounces of residual urine. Several days after operation improvement was noticed. Two weeks later the tonicity of the bladder began to return. In three weeks, urine nearly normal. In six weeks the prostate had shrunk to the proper dimensions and the bladder emptied itself completely, no catheter being required. Patient urinated every four hours; uric acid in reaction. (*Centralblatt für die Krank. der Harn. u. Sexualorgane*, Aug. 25, 1894.)

Helferich reports a case of typical hypertrophy of the prostate in a man of 70 years, which he cured successfully by resection of the middle lobe of the prostate. First, sextio alta, then injection of borate solution into the bladder, then excision of middle part of prostate.

Bottini reports three cases of radical cure resulting from hypertrophy of the prostate. This method is invented by himself and consists in galvano-caustic destruction of the growth. The galvano-cautery for the prostate is in form similar to the Soude angulane Mercier tube. (*Langenbeck's Archiv für Klin. Chir.*, Vol. xxi, p. 1.)

Dr. Landerer's method of treating hypertrophy of the prostate consists in the removal of the middle lobe of the prostate, which is in many cases the only hindrance to urination. This method was found by an attempt to remove a supposed vesical calculus; yet it really cured hypertrophy of the prostate. This method is the same as that employed by Volkmann and Thompson for the removal of tumors of the bladder. The scissors used is a combination of polyp scissors and hollow chisel scissors. (*Deutsche Zeit. für Chir.*, Vol. xxv, pp. 5-11.)

Leisrink reports a case of total extirpation of the prostate in order to remove a prostatic tumor. The prostate was enlarged to the size of an apple, almost closing the lumen recti, the mucous membrane of the rectum and the tumor. The adhesions were separated with the finger and the prostate isolated. The small tumors were removed with Cooper's scissors; the wound dressed with iodoform. The next day the wound was washed with thymol solution. Complete success. (*Langenbeck's Archiv für Klin. Chir.*, Vol. xxviii, pp. 5-78.)

Ricketts reports a case of enlarged prostate relieved by castration. Patient aged 64. On second day after operation the patient urinated with greater ease and pain was slight. He slept four hours at a time during the night, where formerly he had been obliged to urinate every hour, urinating thirty times daily. Condition continued to improve. (*Cincinnati Lancet-Clinic*, Dec. 1, 1894.)

Fremont Smith reports a case of enlarged prostate in which double castration was performed. Patient was an old man with prostatic hypertrophy and cystitis, general infection and threatened uremia. After operation catheter was used twice daily at first. Twelve weeks later patient reported to Dr. Smith that he had gained forty-five pounds in weight and had no symptoms of cystitis. (*New York Med. Jour.*, 1895, Vol. lxi, p. 585.)

Glück and Zeller have made experiments on living dogs and cadavers for total extirpation of the bladder and prostate. They find that dogs can easily stand extirpation of the bladder and prostate. They also sutured the urethra to the abdominal wall. Dr. Sonnenburg has followed this method on a living man with success. *Verhandlungen der deutschen Gesellschaft für Chirurgie*, Vol. x, pp. 158-166.)

Kümmel has produced artificial atrophy of the prostate by castration in eight cases, with the desired result.

Wagner of Leipzig reports that under six operated cases, four persons died of acute mania; while under fifty-three other cases from different countries, no such consequences are reported. (*Schmidt's Jahrbucher der gesamt medicin*, 1895, pp. 162-3.)

In the German International Congress of Innerliche Medicin, Dr. Reinert of Rubingen gives a new treatment for prostatic hypertrophy. He reports three cases which were considerably relieved by the ingestion of the preparation of the prostate glands of animals. (*Trans. Deutscher Congress f. innerliche Medicin*, 1895.)

Thomas reports a case in which castration in a patient, 65 years of age, who had had symptoms of prostatic hypertrophy for fifteen years, had caused "considerable improvement." Urination formerly was very frequent, but after operation he was required to urinate only three times a day. *Pittsburg Medical Review*, September, 1894.)

DISCUSSION.

Dr. G. FRANK LYDSTON of Chicago—Dr. Johnson's paper is one of the fairest presentations of what may be termed the unusual method of treatment for hypertrophied prostate—for it is of that portion of his paper particularly that I will speak—that has thus far been presented. He has eliminated what has seemed to me the principal weakness of the successful cases of orchidectomy and vasectomy thus far reported, namely, the effect of rest in producing diminution in the size of the prostate and improvement in the symptoms secondary to prostatic enlargement. It has been my experience that improvement very rapidly occurs in the majority of cases that are put to bed under proper measures of treatment. There is in all instances a greater or less degree of more or less recent hyperplasia due to irritation; this is a plus condition which rest very rapidly subtracts. In many of the cases that have been reported, considerable improvement has been claimed within a short time after the orchidectomy or vasectomy has been performed. In a large proportion of these the accuracy of the report is open to doubt, because of the fact that the rest incidental to the preparation for and following the operation must necessarily have subtracted to a certain degree the superadded conditions of congestion and recent hyperplasia present in such cases. There is no doubt but that vasectomy, and more particularly orchidectomy, are founded upon logical and philosophic principles. It is unnecessary for me to enter into a discussion of the influence of the testes upon the development of the prostate and seminal vesicles. J. William White has presented this subject so explicitly and fully that there is practically nothing to be added to it. There is no question but that the nutrition of the prostate is controlled or modified to an essential degree by what may be termed the physiologic reflex of the testes. There is also no question but that removal of these organs will produce an alteration in the nutrition of the prostate which, in the normal organ, results in atrophy, and in abnormal conditions of the organ results in shrinkage of the adventitious tissue and benefit or cure of

any abnormal conditions of the bladder which may exist as secondary features of obstruction at the vesical neck. I have found that in the majority of cases there is marked opposition to the operation of castration on the part of patients. Very few patients indeed will consent to the operation until their sufferings become so extreme that they are compelled to submit to obtain relief. Under such circumstances they are willing to submit to almost anything that promises them relief.

The sentimental and cosmetic objections advanced, even by patients who have long since been deprived of the function of the testes, are so strong that the range of cases to which the operation can be applied is considerably narrowed. On this account vasectomy, which, although not as efficacious as castration, is beneficial or curative in a fair proportion of cases, may often be performed where castration would be refused. I believe that castration has too frequently been performed in cases which were by no means suitable to the operation. One thing is certain, that in the presence of a fair condition of the kidneys, no man, whose sexual function has not disappeared, should be submitted to castration. No matter how severe the local symptoms may be, it would be far better to submit the patient to the radical operation of prostatotomy or prostatectomy, or even to perform palliative suprapubic cystotomy and the formation of a permanent suprapubic fistula, than to run the slighting risk of performing an operation for which the patient would not only reproach himself, but what is much more to the point, as far as the reputation of surgery in general is concerned, reproach us. Personally, I am in favor of radical operations upon the prostate itself, performed at an early period, when the operation is not only safe but offers an excellent prospect of radical cure. The trouble has been in the case of prostatotomy and prostatectomy, that these operative measures have only been resorted to in desperate cases. The general practitioner has been led to believe that no operative measures are warrantable in hypertrophy of the prostate, and so we have gone on and on in neglecting our cases until the last moment, when the old man has been operated upon simply because he was going to die anyhow, and then we marvel at the non-success of radical operations upon the prostate. I unhesitatingly affirm my belief that the statistics of operations upon the prostate thus far obtainable are well-nigh valueless, so far as showing the results of cases operated on under proper conditions is concerned.

I agree with Dr. Johnson in his statement that a digital examination per rectum should be made in every case where there is a suspicion of prostatic disease. He is correct in his assertion that palliative treatment often cures supposedly grave cases of prostatic disease. In many instances the condition of enlargement of the prostate is one simply of hyperplasia and congestion which lasts for many years before fibroid degeneration or adenomatous change occurs. Under these circumstances massage of the prostate and measures calculated to relieve irritation of the vesical neck, which is very often responsible primarily for the hyperplasia of the prostate, are frequently curative.

I can only compliment the doctor upon the careful manner in which he has operated upon and studied his cases. His favorable results, in my opinion, in what are certainly serious operations upon old men, are due in great measure to the care with which he prepares the patient for operation. I believe that Dr. Johnson is correct in attributing the mental symptoms that appeared in three of his cases to renal disease. I do not like the expression, however, "due to the presence of albumin in the urine." The albumin has nothing to do with it. In such cases it is the insufficiency of the kidney, as far as the elimination is concerned, that is responsible for the brain symptoms, and these brain symptoms, by the way, are by no means infrequent with operations upon the bladder and prostate, or indeed any operation for the relief of chronic genitourinary disease. I have in mind at the present moment the case of a gentleman who was insane for five months with suppression of urine, coming on four weeks subsequent to a successful perineal section for the relief of deep stricture. The gentleman eventually recovered completely.

The hernia operations performed in the class of patients coming under Dr. Johnson's care were certainly followed by very remarkable results, and are very encouraging with respect to the radical cure of hernia, especially when we consider the extreme age of the patients operated upon.

In conclusion, I will state that I am especially pleased with the cases reported by the author because of the fairness with which he has presented them. Such cases are reliable data from which to work in determining the advisability and value of castration and vasectomy for prostatic disease. There is no doubt but that these operations have a brilliant future before them. The principal objection I have to them is that they are

liable to interfere with the progress of radical operations upon the prostate, which, if performed early in life, will obviate long years of suffering, and will bring about a radical cure in cases that eventually would be compelled to submit either to radical operations upon the prostate at a time when the results would be extremely doubtful, or to castration. It must be remembered, that there is a large number of cases in which the patient suffers fearfully from prostatic disease; yet the sexual function remains practically unimpaired, and castration is not to be thought of for a moment. Such cases as these in my opinion will always constitute a demand for earlier and improved operations upon the prostate proper.

Dr. J. B. MURPHY of Chicago.—I desire to compliment Dr. Johnson on his excellent paper, and more particularly to congratulate him, first, on the line of investigation he has chosen; and, second, on the success he has attained in this unpromising and neglected field of surgery. The general practitioner, and, indeed, the general surgeon, are too prone to say to the unfortunate victims of prostatic disease, "Your trouble is one of the diseases of old age, and little, if anything, can be done for you." The poor old man is thus doomed to continue suffering such pain, such agony, such nocturnal disturbance, in short, such torture, that all things of the world, including life, are of negative value to him.

I feel that Dr. Johnson deserves the thanks of the ASSOCIATION for presenting this subject in such a terse and forcible manner. The emphasis placed on the careful examination should be reiterated, and particularly the careful sounding of the bladder for post-prostatic calculi, and the combined recto-digital and sound examination for intra-prostatic calculi. These are many times overlooked, and produce the most painful conditions of the prostate. To prevent the "catheter life" of the aged is worthy our best efforts, and Dr. Johnson has succeeded admirably. The cure of the hernia was of great value to the patients, and the results as far as life is concerned encourage the daily practice of this operation. It pleases me that so much stress was placed on the rapidity of operation, as I am sure the element of time was a most important factor in securing success in the old and degenerated subjects I saw in his Infirmary. Another good point made by the essayist is the avoidance of incision or manipulation of the scrotal tissue. This tissue is very prone to infection if lacerated or exposed. The improvement of the vesical symptoms took place slowly in most of Dr. Johnson's cases. This corresponds with the course of my cases, as I have seen none of the instantaneous cures supposed to follow this operation. I am in favor of orchidectomy for prostatic disease. I had an opportunity of observing some of the author's work and to see many of his cases after operation. His results were very gratifying.

Dr. OCHSNER of Chicago—Six months ago, at a meeting of the Mississippi Valley Medical Association, I drew the attention of the surgical section of that body to the fact that in old men hernia frequently became exceedingly troublesome, which had formerly usually been supported by means of trusses. This I considered to be due to the increase of intra-abdominal pressure, which was necessary to evacuate the bladder on account of the obstruction caused by the enlargement of the prostate gland. Having had an opportunity to observe many cases, and having had charge of five, in all of whom I relieved the condition by means of the operation which Dr. Johnson has described, and in all of which the result was extremely satisfactory—the patients being at once relieved of the difficulty resulting from the presence of the hernia and from the obstruction—has caused me to recommend this procedure. I am gratified to know that Dr. Johnson has made use of the extraordinary opportunity at his command in having care of such an enormous number of these cases, and I am equally gratified to learn of the excellent results. In children, we have a condition somewhat similar, and hernia are very much more common in male than in female children, although I do not remember the proportion. This difference is largely due to the fact that the male children suffer from phimosis. In a very large number of children I have cured the condition by simply operating to relieve the phimosis, keeping them in bed with their hips elevated for a few weeks thereafter. This method cures, practically, all cases of male children suffering from hernia. The fact, however, that hernia occurs in Jewish children does not alter the question, as these boys will also be cured if treated in the way I mention. We have here a condition which is very similar, and I think it is worthy of consideration. I have performed the operation a number of times with equally good results.

Dr. ALEXANDER HUGH FERGUSON of Chicago.—The operation for the radical cure of hernia in addition to removal of the vas deferens and castration being an additional danger to these cases, points out the comparatively safe manner with which

gonangeiectomy and orchidectomy may be performed. It also supports the theory of the ability of old people to withstand operations. It has been my good fortune to see most of the cases reported here today by Dr. Johnson, and although I have not made a critical examination of them, I learned from themselves that they were completely relieved of their former bladder trouble, or were vastly improved. I can also bear testimony to the careful aseptic surgical work done by Dr. Johnson at Dunning. Being a visiting surgeon to that institution myself, he has assisted me in a large number of operations on the aged poor.

It is not necessary on this occasion to say anything about the different methods for radical cure of hernia. Ever since Dr. White of Philadelphia, in 1893, brought this treatment prominently before the profession, for hypertrophied and enlarged prostate, several hundred cases have been treated in this manner, and even the most conservative surgeon must admit that the treatment is beneficial in a large percentage of these cases. Dr. Johnson has been fortunate in the selection of his cases, and the results he has given us today are exceedingly happy. It must not be taken for granted, however, that all prostatiques will behave so well and so completely recover after either of these operations. You may call it empirical surgery, if you please, but the good results obtained in cases that have not yielded to hygienic, medical and mechanical treatment, justify us in performing these operations, and to obtain the best results the cases must be selected, as was done by Dr. Johnson.

Dr. F. C. VALENTINE of New York—I cannot agree with the author of the paper. In the largest service in Europe, castration has not been done for four years; this is true of Paris and Berlin. Vasectomy is also very rarely done, and then only when the patient demands operation. It has the appearance of being simply tentative. In the course of my studies in Paris and Berlin, it was a very easy matter to detect men who had been frequently catheterized, by an examination of the prostate, and I saw several in life who had regained as much use of the bladder as if they had been castrated. The results of castration have been discouraging to most men, and men who have had such invariably brilliant results have special skill, or are specially fortunately situated. I think it is time to be conservative, and in making up your mind to relieve a prostatic obstruction, do not always think it necessary to remove the testicles. Bearing in mind the unfavorable reports that we have of this operation, I would prefer to hesitate in performing it, and would certainly not do it until I had exhausted every other resource.

Dr. W. J. MAYO of Rochester, Minn.—I have had considerable experience with these cases in institutions with which I am connected, and it has been our rule to operate upon all patients that were otherwise well for the radical cure of hernia and in all of the cases in which there is prostatic hypertrophy we castrate at the same time. I have no doubt that many cases not operated upon die from strangulated hernia and obstruction. Our method relieves the hernia and the urinary difficulty at once. There is one variety that is somewhat difficult to handle and that is those cases complicated with unreducible hernia. Insane patients stand the operation well, except that the wound sites are very dirty and the skin in all of these patients is very oily. Before and after an operation for unreducible hernia, the patient should be kept in bed for some time on a modified diet.

Dr. JOHNSON in closing—I am aware of the condition of the affairs in France and Berlin, and of the opinions of the leading men in this country and Europe. I have nothing further to say, except to refer to the conclusions in my paper.

SELECTIONS.

Treatment of Seasickness.—An experience of five years on a transatlantic steamship line ought to teach something about the therapeutics of this affection, and such an experience Dr. Hugh Taylor of Southampton, endeavors to convey to the *Lancet*. He says: The nausea and subsequent vomiting of the first few hours are to a passenger prone to this malady almost inevitable, but seldom require interference, though the retching may become distressingly violent and, if accompanied by streaks of hemorrhage, especially alarming to the patient. I have found that the best way of relieving this condition is to apply a mustard leaf to the epigastrium, to give a hypodermic injection of morphia, some crushed ice to suck, and to insist

on the recumbent position being maintained by the patient. A whiff of amyl nitrite or chloroform is often useful; alcohol is best avoided, though a little iced champagne may be sipped in very small quantities. The frequently present constipation must be relieved by an enema or suppository, as purgatives by the mouth will usually be quickly rejected. Too much must not, however, be expected of this or any other line of treatment, but the urgency of the symptoms usually abates in from twelve to forty-eight hours, the patient gradually acquiring that stability of the nervous system nautically termed "getting his sea legs." The cases of prolonged nausea and seasickness in which the patient refuses or rejects all food are very trying both to the invalid and to the surgeon. If the cabin is a fairly large one and is not crowded I think these cases do better in their berths than on deck, though meddling friends will urge them to go on deck, to "walk about," and to "fight against" the malady. This unequal combat generally ends in the victory of Father Neptune, and the vanquished one staggers or is carried below—sick, blue with cold, and generally wretched. Hot bottles, blankets, a little stimulant, hot beef-tea, will quickly make the patient more comfortable. For general fluid nourishment I use beef-juice, frequently retained, especially if the first two are mixed previously with a little powdered ice and administered in teaspoonful doses. If they are rejected they should be given again directly the fit of vomiting is over. As regards drugs I used with considerable success a prescription of chloroform, nux vomica, and compound tincture of lavender. An alkaline stomachic mixture with nux vomica is also useful after the acute symptoms have vanished; it assists a languid or capricious appetite. A dose of bromid of potassium and chloral or a hypodermic injection of morphia is beneficial at night, allaying restlessness and procuring sleep. In those cases which essay the ordinary saloon fare, anything in reason may be allowed them. One woman insisted that sauerkraut was the only thing which would relieve her, and it certainly on the trip in question seemed to stop the sickness, though it failed to do so on a subsequent one. Among adults there are some who, without any vomiting or nausea, suffer from persistent and severe headache and others who suffer from continuous intense giddiness; the former may derive benefit from phenacetin and caffeine, bromid and chloral, or from nitroglycerin. The discomfort of the latter is only alleviated by the maintenance of the horizontal position. Children rarely suffer from seasickness, they are sick for a few hours and then are soon running about. A gentle laxative to combat the costiveness usually induced in them by a sea voyage and a little bromid and chloral at night will soon put them right, as a rule. My voyages have never lasted longer than ten days, so that in the case of longer trips one's experience might probably be greatly modified. I have never seen the numerous "quack" remedies do the slightest good, nor have I ever seen the at one time much vaunted "chlorobrom" retained where bromids of potassium and chloral were rejected by the stomach. In conclusion, I would say that a farewell dinner or other jollification the day before commencing a sea voyage is to a person subject to seasickness the very worst possible preparation for it. A blue pill followed by a Seidlitz powder is far better, though certainly not so festive.

On "Seeing the Case a Little Sooner."—In the *Brooklyn Medical Journal*, July, Dr. W. L. Chapman reports a case of extensive necrosis of the bones of the hand following felon. The patient was a female, aged 30 years, and married. While dressing one of her children she pricked the end of her index-finger with a safety-pin. Severe pain set in within twenty-four hours, when she was awakened from sleep by a throbbing pain in the injured finger. Her family physician could not be found, so that a comparatively unknown physician of their neighborhood was called in. This physician properly diagnosed the case as a felon, made an incision of the last phalanx down to the periosteum and dressed the wound antiseptically. The dressings were repeated daily for three or four days, at the end of which time the entire hand was swollen and painful. The family discharged the first physician and sent for the writer of this paper, who found a general cellulitis of the hand. Incision of both palmar and dorsal aspects of the hand was performed and iodoform gauze inserted to secure drainage. The constitutional symptoms shortly abated, but

the wound continued to discharge until three weeks later, when the middle phalanx fractured spontaneously. Two days later the physician amputated the finger, but finding the metacarpal bone involved, removed that also. The metacarpal bone was not largely affected, but the patient had become greatly debilitated and he was afraid to leave any affected bone behind. The family was very angry with the physician who first treated the case, and the later practitioners had some difficulty in dissuading them from bringing suit against him for damages. They were ignorant people, and attributed the loss of the finger to the unskillful treatment of the first physician. They could not have obtained any damages, as the physician had treated the case properly, but it might have put him in a most unpleasant predicament and done him unmerited injury. Dr. Chapman closes his report with the following observations as to the medico-ethic situation in this and similar cases: "There is no doubt that the family might readily have found a plenty of 'ambulance chasers,' or unscrupulous lawyers to take the case in the hope of scaring him into a settlement, and a careless remark from either of us would have caused them to undertake it. Many damage suits for malpractice are caused by the statements of the physician who saw the case at its termination. In order to relieve himself of any responsibility in the case, he throws the blame on the one who first attended the case. There is one statement occasionally made by physicians which is a disgrace to the medical profession, lowering to the one who makes it, and injurious to his colleagues; its use is altogether too common. It is, 'If I had only seen the case a little sooner.' The reason I speak of the medico-legal part of it is that there are two cases pending now for similar affections. One was lanced, but did not terminate so favorably; the patient died. The other one is just like it. I have not the privilege of mentioning these cases directly, as I heard of them through friends. The suits are about to be brought."

PRACTICAL NOTES.

The Value of Digitalis in Pneumonia.—Maragliano states that he has established beyond a doubt the specific action of digitalis on the pneumonia coccus. A very small amount will kill the cocci in a culture and also neutralize the toxicity of pneumonia toxin in injections. Owing to this effect of the digitalis in neutralizing both toxins, pneumonia patients are able to stand much larger doses of digitalis than healthy persons.—*Gaz. d. Osp. e d. Clin.*, No. 31.

The Choice of an Alkali in an Acid Dyspepsia is not an indifferent matter, as Dubard has established that the acidity and pyrosis connected with the presence of organic acids in the stomach are rendered more intense by sodium bicarbonate, while they are favorably affected by the magnesio calcareous powders. On the other hand, in true "hyperchlorhydrie," especially when there is pylorism, the preparations of lime and magnesia aggravate these conditions, while sodium bicarbonate is beneficial.—*Semaine Méd.*, July 20.

Painful Dysphagia Evidence of Syphilis.—J. Garel calls attention to the fact that every person who complains that it has hurt him to swallow for the last few weeks, three at least, should be considered a syphilitic and treated accordingly. Syphilis can be diagnosed at once from this one symptom of persistent dysphagia at any stage. It is frequently the first or only symptom recognized by the patient. The pain vanishes with forty-eight hours' treatment with potassium iodid, unless it is due to that extremely rare cause, incipient cancer or tuberculosis of the throat, which can thus be differentiated.—*Semaine Méd.*, July 6.

Holocain.—Randolph (*Johns Hopkins Hospital Bulletin* for July) records fifty-four cases in the eye clinic with the use of holocain. He concludes that as an anesthetic it is sufficiently effective, and says: "In those cases where a test was made of the rapidity of its action, as for instance, in foreign bodies in the cornea, the quickness with which anesthesia was produced was striking. Whether the anesthesia produced after two minutes is sufficiently profound to guarantee a painless iridectomy or a satisfactory cataract extraction I did not determine, but in those cases where operations of this character were performed, and where the holocain was instilled just as we do cocaine, no difference was observed in the anesthesia from that produced by the latter."

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

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SATURDAY, AUGUST 27, 1898.

THE NATURE OF THE ANTAGONISM BETWEEN
TOXINS AND ANTITOXINS.

The antagonism of toxins and antitoxins is a subject in regard to which our actual knowledge has been limited thus far, and any contribution is therefore welcome. We know really very little about the true nature of these substances; our therapeutic acquaintance with their qualities has been gained by experiments suggested by empirical observation, not thought out and elaborated à priori from any actual knowledge of the true nature of the materials dealt with. The how and why there exists a therapeutic antagonism have been up to the present, mainly matters of conjecture, not of knowledge, and whether it is chemic or bio-chemic, or more strictly physiologic, has been disputed with more or less weight of argument on either side.

A late issue (August 4) of the English scientific publication "Nature" contains an abstract of a communication to the Royal Society, June 6, by Messrs. MARTIN and CHERRY that seems to add at least some facts on this matter of the antagonism of toxins and antitoxins. BEHRING, EHRLICH, KANTHACK and BRODIE had advocated the view that this antagonism was a chemic one, somewhat analogous to the neutralization of an alkali by an acid, while BUCHNER, CALMETTE, METCHNIKOFF and others have maintained that it is indirect, and operates through the cells of the organism. If, therefore, it can be proved that antitoxin neutralizes toxin outside of the body, *in vitro* and not necessarily *in corpore*, it would go far to establish the theory that the action was a chemic and not a physiologic one. CALMETTE had shown that in a mixture of cobra poison with a neutralizing

quantity of its antitoxin and heated to a temperature of 68 degrees C. for ten minutes, the toxin retained its powers, while the antitoxin was destroyed. The authors considered this experiment inconclusive, as not taking into account the element of time, which should be considered as well as that of temperature in estimating chemic action. They therefore made a series of experiments on guinea-pigs, with a mixture of one cubic centimeter of antitoxin to twice, three times, and four times the usual fatal dose of snake venom. In the control experiments with the venom only, all of the animals died within a few hours. The mixture was allowed to stand at the usual laboratory temperature of 20 degrees to 23 degrees C. for the period respectively of two, five, ten, fifteen and thirty minutes, then pipetted off and heated for ten minutes to a temperature of 68 degrees C. and then injected. The animals subjected to the mixture of the stronger doses of venom that had stood for ten minutes or less mostly died or were very seriously affected, all of those that received the fifteen-minute mixture survived, though two were sick, while the thirty-minute mixtures produced no symptoms whatever, as was also the case with a similar series of unheated mixtures in the same proportion that had been allowed to stand for eight minutes before injection. Similar results were obtained with diphtheria toxin and antitoxin.

These experiments seem to show as far as anything can that the neutralization of toxins may occur *in vitro* and that the vital processes in the organism or the body cells are not essential to the process, and unless we assume what appears hardly justifiable, considering the usual mode of its preparation, that the antitoxin itself possesses some vital properties that are active in it, it must be some sort of chemic reaction that takes place. Messrs. MARTIN and CHERRY, however, have supplemented the above experiments with another that appears equally conclusive, but in a different way. The molecular sizes of diphtheria toxin and antitoxin appear to be quite different; the toxin passes freely through a film of gelatin in a Chamberland filter under pressure, while the antitoxin is retained. They took a solution of diphtheria toxin, equal to eight fatal doses per cubic centimeter, and mixed it with a sufficient amount of antitoxin to neutralize it, allowed the mixture to stand for two hours and then passed it through the gelatin filter. Varying quantities of this filtrate up to four cubic centimeters (= 32 fatal doses) were then injected into guinea pigs without bad results, not even a local edema was produced, and the animals thrived under the injections. The unavoidable conclusion from this experiment is that the toxin was neutralized before filtration, as, were it otherwise, there was nothing to prevent it passing through a filter, as it had been repeatedly observed to do in fresher mixtures.

While the investigations of MARTIN and CHERRY throw a very decided light on the nature of the

antagonism of toxins and antitoxins, and leave us to infer with almost a certainty that it is a chemic rather than a vital one, they still leave us almost as much as ever in the dark as regards the real character and nature of the two substances. This assumption that the toxin is an albumose is perhaps a reasonable one, more so, indeed, than the suggestion based only on the apparent size of its molecules, that antitoxin is a globulin. Whatever they may be, however, it is an important gain to know something more of the nature of their inter-reactions.

Although the reaction seems to be essentially a chemic one, it is also possible that it is especially favored by the vital processes within the body. When we consider the fact that the toxins practically have in disease, it would appear probable that this must be the case to some extent, as otherwise the antitoxins could hardly be as effective as we find them to be, especially in diphtheria. In any case there is probably some natural resistance of the system to be accounted for in the practical problems of the action of these agents on the organism.

HAY FEVER.

Medical literature can give us no definite data as to when this peculiar affection was first regarded as a distinct and separate disease. Unmistakable cases were reported in the sixteenth century, and since that time the disease has been becoming steadily more and more prevalent. The fact that there is a hay fever association in this country, which has records of over two hundred thousand cases, will show how extremely common the affection is in the United States. Indeed, this country and England are its principal seats, the inhabitants of Germany, France and other countries of continental Europe affording comparatively few cases. It might be stated here as a rather curious fact that hay fever is but infrequently encountered among immigrant Germans (JACOBI) and French, even in the regions where native English and Americans are particularly prone to attacks.

Since its earliest discovery the cause or causes of hay fever have been enveloped in doubt. Every conceivable reason, from the blessed sunlight of heaven to peculiar odors of animals or flowers, has been eagerly accepted and as quickly rejected. It was only when the gloom of mysticism and empiricism began to give way to the light of earnest thought and scientific study that some order came out of chaos. It was early recognized that the disease occurred in several successive generations, so that heredity was looked upon as a factor of some importance. Its annual appearance in many sufferers not only on the same day, but at a certain fixed hour, has been noted by many observers; indeed, the victims themselves often predicted accurately the hour of their first sneeze. Cases are numerous of the influence of the smelling of a rose in the production of the disease,

and all are probably familiar with the case of MACKENZIE in which an attack was precipitated by his giving his patient an artificial rose to smell. Mere intelligent observation of a picture representing some farming scene has been a sufficient cause to bring on an attack. These and many other instances of a similar nature have proven beyond the question of a doubt the neurotic element of the disease. Among other predisposing causes might be mentioned the male sex and the white race, attacks being of exceeding rarity among negroes. Age does not exert much influence, all ages being susceptible; usually, however, the victim has been subject to several annual attacks before the middle period of life.

The symptoms on the part of the respiratory tract led to early explorations of the nasal cavity for possible cause. The observers were not disappointed; almost invariably the subjects of hay fever have had some pathologic condition existing in the nose; ulcer, polyp, hypertrophy or congestion of the turbinates, deviation of the septum, remains of adenoids in the nasopharynx, chronic nasopharyngitis, have all been noted by various writers. It might well be stated as an objection that the nose-and-throat man who can not find at least one of the above conditions in every case that presents itself should give up the specialty; so that possibly a pathologic nose does not play the important part it was formerly thought to.

Among other predisposing causes the one that has gained the most support of recent years was that advanced by BISHOP at the annual meeting of the AMERICAN MEDICAL ASSOCIATION in 1893. In his own words, "an excess of uric acid in the blood causes hay fever." He showed that many patients afflicted with hay fever have an excess of uric acid in the blood during the morning; further, that these were the ones that were attacked during the early morning hours. He thought the paroxysm of hay fever analogous to an attack of epilepsy superinduced by the irritation of some pathologic meningeal process, tumor, adhesion, or hypertrophied bone, and that an attack, itself caused by a setting free of uric acid, on account of the pathologic condition of the nose was determined to that area. BISHOP claims that his theory does not at all interfere with the neurotic theory, but on the other hand, seems to clear up some points previously obscure, as for instance the onset in the morning. He thought that with the correction of the possible pathologic nasal conditions present, the attacks were switched off, as it were, from involving the nose, but that the excess of uric acid in the blood would be certain to cause symptoms of uricacidemia elsewhere in the body. Naturally, then, he directed attention both to the cure of any nasal disease present and to the prevention of an abnormal quantity of uric acid in the system.

The exciting cause of the disease is undoubtedly the pollen of plants, as proved over thirty years by

the beautiful and laborious work of BLACKLEY. He demonstrated, to the satisfaction of the entire profession, the increase of pollen in the atmosphere at the time of the greatest prevalence of hay fever, and its gradual disappearance as the season verged toward fall.

TREATMENT OF ENTERIC FEVER BY SYSTEMATIC COLD BATHING.

Dr. WILSON of Philadelphia, who, as is well known, has, for a number of years, consistently practiced the treatment of typhoid fever by cold bathing in the German Hospital in Philadelphia, now reports¹ the statistics of 741 cases, of which 55 died, the mortality being 7.42 per cent. In these figures are included all the cases of typhoid fever which entered the hospital from Feb. 1, 1890, until Jan. 1, 1898, excepting one patient who entered one afternoon and died the following morning, the anatomic diagnosis being typhoid fever. This patient was not bathed.

An analysis of the cases of enteric fever for the years 1896 and 1897 is also presented. For the purpose of comparison there is appended the statistics of the three principal hospitals in Philadelphia for the year 1896. The average mortality of 403 cases in these hospitals was 9.92 per cent. In these institutions some cases are treated by systematic cold bathing according to BRAND's method, but this treatment is not general, and Dr. WILSON can not state what proportion of the cases are bathed and what treated upon other lines. During the same year 64 cases were treated in the German Hospital, with seven deaths, a mortality of 10.9 per cent. During 1896 2490 cases of typhoid fever were reported to the Board of Health at Philadelphia. The number of deaths was 402, mortality 15.14 per cent. In 1897 the mortality rate was 13.39 per cent.

In this article Dr. WILSON also describes certain modifications in the method as originally formulated by BRAND. These modifications have been gradually adopted as the result of experience.

1. At the beginning of the attack purgatives, especially calomel, sometimes in fractional doses, are given. Purgatives are not administered to those who enter after the tenth day of the disease.

2. Cold is applied to the abdomen in all cases of marked abdominal tenderness, pain and hemorrhage.

3. The treatment by systematic cold bathing is established as a routine method and is employed in all cases; the only contraindications are, speaking generally, the signs of peritonitis, hemorrhage, perforation. Appropriate medicines are administered in response to special indications. The proportion of cases requiring any medication whatever, has been found to be very small, not exceeding 10 per cent. As convalescence begins, dilute hydrochloric acid may be given for a short time, and later, if anemia is present, some form of iron.

4. The rule had been adopted, and is still in force, to repeat the bath whenever the axillary temperature reaches 101.4 degrees F. The baths are repeated whenever necessary at intervals of three hours. Formerly, however, baths were stopped as soon as the temperature ceased to go above this point. A very interesting observation led to a modification of this rule, viz.: quite frequently patients with a temperature lower than 101.4 degrees would ask for baths because of the greater comfort obtained. Hence there has been instituted the practice of giving one or two plunges a day during defervescence, and this has seemed to hasten convalescence.

5. The fever wards in the German Hospital are small, each containing six beds. The bath has been arranged at the end of the small ward; the graver cases are placed in the beds nearest the bath and carried by the attendants from the bed to the tub and back, while the milder cases and the improving patients walk to the bath with the assistance of the nurses. In all cases the improving and milder cases rise from their beds every three hours, are assisted to the tubs by the attendants and return the same way. In no instance has Dr. WILSON had any occasion to believe that this modification of BRAND's original formula, namely, that a movable bath tub be placed at the side of the bed, had any unfavorable effects. On the contrary, favorable influences upon the course of the disease have been noticed. In addition to these empiric reasons there are good theoretic reasons for certain changes in the traditional methods of treating cases of long acute febrile diseases. Among the complications of typhoid fever, bronchitis, bronchopneumonia and hypostatic congestion have always been prominent, no matter what the treatment. These phenomena are, to a certain extent at any rate, due to the progressive weakening of the heart and mechanical derangement of the circulation. Dr. WILSON also believes that the development of somnolence, intestinal paresis, etc., is favored by the log-like, passive recumbency of the typhoid patient. Muscular atrophy from disuse and deranged lymphatic circulation are also mentioned in this connection. The experience in the German Hospital seems to point to the fact that enforced continuous repose adds to the original disease secondary nutritional disturbances due to functional disuse.

6. The measure of success in the treatment by cold bathing is determined by the period in which it is begun. BRAND's claim that the mortality is practically nothing when the cases are treated by his method from the beginning can not be confirmed in ordinary hospitals, because cases do not come to the hospital in the beginning of the attack. Many observations, however, show that the earlier the treatment is begun the greater the reduction in the death-rate. Ordinarily the hospitals do not receive any cases of typhoid fever until toward the end of the first week, the great

¹ The Philadelphia Medical Journal, July 9, 1898.

majority later than this, and quite a number as late as the middle of the third week. At the same time there are many mild cases ("mild typhoid") admitted at any time during the progress of the disease, with so low temperature that but few baths are given. These cases would probably recover without any treatment at all.

Plainly, treatment by cold baths, begun late in the course of the disease, must largely fail as a general plan, and it is also plain that the bath treatment can not be claimed to shorten the course of mild cases of typhoid. Dr. WILSON believes, however, that these two groups of cases offset each other, and that the conclusions based upon statistics are justified.

VENEREAL DISEASE IN FICTION.

From SWIFT'S "Tale of a Tub" it is evident that it was in the early eighteenth century *en regle* for young men "seeing life," to contract gonorrhoea as a necessary part of their sociologic experience. Dr. TOBIAS SMOLLETT, in the latter part of the same century, evidently also deemed it a necessary part of the social education of the young men. Roderick Random, while an apothecary's clerk, contracts gonorrhoea as a necessary part of an amour. He cures himself and his female companion of this disease. She, a woman of good standing in society originally, has sunk into prostitution through seduction. According to her, in the eighteenth century, "The most fashionable woman of the town is as liable to contagion as one in a much humbler sphere. She infects her admirers; her situation is public; she is avoided, neglected, unable to support her usual appearance, which, however, she strives to maintain as long as possible; her credit fails; she is obliged to retrench and become a night-walker. Her malady gains ground; she tampers with her constitution and ruins it. She grows nauseous to everybody, finds herself reduced to a starving condition, is tempted to pick pockets, is detected, committed to Newgate, where she remains in a miserable condition till she is discharged because the plaintiff will not appear to prosecute her. Nobody will afford her lodging, the symptoms of her distemper have grown outrageous; she sues to be admitted into an hospital, where she is cured at the expense of her nose." Random's master, the apothecary, has a specific for venereal disease, which brought him in a great deal of money, that had no effect on tertiary accidents. This is not surprising, considering the proclivities of this apothecary for substitution. Venereal disease, impotence and seduction to sexual perversions are utilized by Dr. SMOLLETT, but only, however, as a realistic side issue in the retribution for sexual errors. This phase is only with SMOLLETT a part of the novel, for a purpose. In his day, Lock hospitals were frequently started by practitioners, ostensibly for charitable purposes, but really for the same object that dispensaries are started today. It is a singular fact,

however, that the prejudices in cities against these was in the eighteenth century, in England, much less than it is today.

In the late nineteenth century the employment of venereal disease to subserve the moral objects of a novel for a purpose has been revived by SARAH GRAND. Her first popular production, "The Heavenly Twins," dealt with the marital effects of syphilis acquired by the husband in youth. She assumes, however, that syphilis insontium is an impossibility and that the male is always to blame. The object of the introduction of the venereal element into "The Heavenly Twins," is to show that men of fast lives ran serious risks of infection with constitutional venereal disease. It further teaches the sound sociologic doctrine that girls should not allow themselves to be married to such men, even if they had reformed mentally, unless their physical cure was equally well established. A marriage occurs in "The Heavenly Twins," based on "love" between playmates. The child which results from this marriage is born "old," with a "cold in its head," and resembles "a speckled toad." An illegitimate child of the same father has identical characteristics. The wife becomes progressively pallid, weaker and irritable from the day of her marriage till after the birth of the child. Thereafter she becomes insane, with a psychosis of a type due to exhaustion, rapidly passing into dementia, and hence probably of luetic origin. Although the topic is dealt with by SARAH GRAND in a less revolting manner and with greater scientific probability than in CONAN DOYLE'S "Round the Red Lamp," where tertiary effects are carried in full luxuriance to the third generation, still the problem involved in marriages with victims of syphilis is stated with equal force in both. It is to be regretted, however, that neither of the two has the notion of introducing syphilis caught from the practice of kissing children, or from the employment of healthy women to wet-nurse a syphilitic child. It would appear more desirable, if venereal diseases must be utilized in fiction for sanitary and sociologic purposes, that the fiction should deal with those innocently acquired, since these are the most dangerous. Obstetric syphilis, contracted by the physician in the general practice of his profession, has often led to the moral downfalls of the onset of parietic dementia, and hence could not but furnish a valuable moral from a sanitary standpoint to the writers of the "novel with a purpose."

In her second volume, "The Beth Book," SARAH GRAND strikes at a revived prejudice against the adoption of the treatment of venereal disease as a specialty by physicians. As already stated, this prejudice was not strong in the English cities during the eighteenth century in proportion to its strength today. Just ere the outbreak of the fifteenth century epidemic of syphilis this prejudice was particularly rabid. On the modern principle of the effect of a new culture-medium on the microbe, the virulence of the epidemic

as contrasted with the centuries-old, practically endemic lues (BURET, "History of Syphilis") is readily explicable. This virulence, however, gave acute characters to the old disease. Society physicians, fearing ostracism, refused to treat a disease which they claimed was unknown to GALEN and abandoned the sufferer to the tender mercies of quacks and empirics. Among the ranks of the medical profession have always been heroes who refused to obey society's behest and neglect suffering even among the vicious and criminal. Prominent among these was that great reformer under the guise of satire, Dr. RABELAIS, whose generous disposition drew him toward this neglected class of patients. In 1538 he made great efforts to reform the abuse of mercury in the treatment of the syphilitic patients at Paris. RABELAIS says that he "has often seen syphilitics when greased with mercurial ointment, their faces on edge like a knife and their teeth clacking like the key-board of a broken-down organ." In the treatment of syphilis RABELAIS used mild mercurialization, guaiac and the hot air and other baths which had been previously recommended by TORELLA.

SARAH GRAND makes a plea similar to that of RABELAIS for the treatment of venereal diseases in special hospitals. The "Beth Book" deals with the social ostracism of a physician to a Lock Hospital because of the prejudice of the society people of the English countries against the practitioner of an admitted specialty of venereal diseases. Among the British squirearchy (as a rule the narrowest snobocrats of the English-speaking peoples) this prejudice flourishes in full luxuriance, stimulated by a Malthusian cant which the humane MALTHUS would have been the first to repudiate. It is to be especially regretted that the absence of special hospitals for venereal disease from most American cities, demonstrates that this prejudice exists to an enormous extent among the speculative commercial classes who practically rule the business end of public and private charity. The existence of innocently acquired venereal disease is a sufficiently potent argument against Malthusian cant of the type described. It is to be hoped that "The Beth Book" may accomplish some reform in the English-speaking countries in this particular, albeit the book, like "The Heavenly Twins," appeals in its style to the hysteric rather than to the well-balanced social reformer.

CHOLERA BELTS.

It is understood that the Army Medical Board consisting of Colonel DALLAS BACHE, Lieutenant-Colonel CHARLES SMART and Major WALTER REED, convened by the Secretary of War to consider the question as to whether or not the Government should issue the so-called "cholera bands" for the use of United States troops in the field, has made its report to the Surgeon-General of the Army. It appears that the board in-

vestigated the literature of the subject, including the latest and best works on military and general hygiene, and the writings of the authorities on tropical diseases to determine the precise grounds on which the popular impression of the value of the abdominal band was based, for the board recognized the existence of a general impression among the members of the medical profession as well as among the laity, that the protection afforded to the abdomen by the wearing of a flannel band of sufficient width is beneficial in warding off attacks of diarrhea and dysentery. It did not, however, find any conclusive evidence of the value of the band. The authorities on the diseases of tropical climates recommend its use as a sanitary precaution; but these authorities are almost without exception, English physicians, and their remarks have a special reference to the insufficient protection afforded by the regulation clothing of the British soldier. The highest English authority on both general and military hygiene says: "The soldier wears no drawers, but in reality it is just as important to cover the legs, thighs and hips with flannel as the upper part of the body. Drawers folding well over the abdomen form, with the long shirt, a double fold over that important part, and the necessity of the flannel belt is avoided." The English soldier, in temperate as well as tropical climates, is supplied with two abdominal flannel belts, for the reason that, during the night hours and while sleeping, the skirt of the shirt, not being held in place by the belt of the drawers, is liable to be drawn up, with a consequent risk of chill to the abdominal surface. The board invites attention to the fact that it has not been found necessary to issue abdominal bands to U. S. troops serving in Arizona and New Mexico, a climate in which there is marked variation between the diurnal and nocturnal temperature, and rapid evaporation from the surface of the body, owing to the extreme dryness of the atmosphere. The American soldier is provided with suitable woolen underclothing including shirt and drawers; the whole surface of his body is protected against sudden chilling, and the region of the abdomen guarded by two thicknesses of material. Under these conditions the board considers that there is no necessity for the issue of the so-called "cholera bands" for the use of the United States troops in the field.

CORRESPONDENCE.

The Medical Department of the Army.

FORT HAMILTON, N. Y., Aug. 15, 1898.

To the Editor:—After the published statements of General Sternberg, Lieut.-Col. Senn, Capt. Munson, U. S. A., and others, perhaps nothing further is needed to offset the prejudiced and sensational articles which have appeared in the daily press from correspondents and from certain hysteric members of the Red Cross, seeking to aggrandize their own services by belittling the work and results of the Medical Department of the Army. However, I will venture my mite. Sent to service

with troops in the field at the time war was declared, attached to regiments, and later a member of the staff of the Second Divisional Field Hospital, Fifth Army Corps, there has been abundant opportunity at Chickamauga Park, at Tampa, on the hospital ship *Olivette*, and in Cuba, from which I returned on July 19, to see the workings of the Department under many and varied exigencies incident to the adaptation of its organization from a peace to a war basis.

It is to be noted that until after the landing in Cuba there was a remarkable freedom from adverse criticism by the lay or medical press or individuals. On the contrary, remarks complimentary to a high degree were frequently heard from line officers, to the effect that if war had developed defects in other staff departments, it had shown the soundness and efficiency of this one. The medical officers of the regular army, who, under the scientific guidance of General Sternberg, had for years rigorously and at frequent intervals inspected the sanitary conditions of posts and camps, the food and clothing, analyzed the water-supply, and superintended the first-aid training of officers and enlisted men, continued their work at the Chickamauga and Tampa camps, and the records show how few men were left behind or accompanied the army of invasion with physical disabilities. While a great quantity of medical supplies were carried along on the *Olivette* and on the troop-ships, our ambulances and transport wagons, of which a sufficient number had been provided by Colonel Pope, U. S. A., the chief surgeon, were denied ship room.

During the long trip from Tampa to Baiquiri, the *Olivette*, commanded by Major A. H. Appel, with its eighty first cabin staterooms, accompanied the fleet, and whenever the sea permitted, received all sick from the crowded transports. Plenty of fresh air, ice, and suitable food brought about a speedy recovery in many men, who were consequently able to rejoin their companies on reaching land. At Baiquiri, as rapidly as men could be landed, they were pushed to the front with only travel rations, a change of underclothes and ammunition, leaving behind, in most cases, the medical stores of the regimental surgeons, either on the transports or along the shore where the small boats had dumped them. Dependent on other departments, its own means of transportation being perforce left far behind, the difficulties confronting the Medical Department of carrying tentage, cots and supplies along with the rapidly advancing army, and keeping everything in shape for the quick relief of the hundreds of wounded and sick men liable to be thrown on their hands at any hour, were truly immense, and reflection has not lessened my admiration for the executive work of men like Major Legard, Major Wood and Major Rafferty, who were burdened not only with their strictly professional duties, but with details of quartermaster and commissary work. However, a field hospital was on hand at the battle of Las Guasama, and the *Olivette*, steaming to Siboney, received on board the eighty wounded, of whom not one, to the best of my knowledge, has since died from his injury.

Personally present during part of the battle of San Juan, I was amazed and gratified not only at the intrepidity and dexterity of the regimental surgeons and their hospital corps men while under fire, in dressing the wounded, but in witnessing how quickly the wounds of hundreds who were placed hors de combat in a few hours were quickly protected by their comrades with sterilized first-aid dressings. The worst cases were treated at Major Wood's hospital, which was as near the front as the firing allowed. The others returned by ambulances or wagons to Siboney, where the second and third divisional field hospitals joined their forces. Here tentage for nearly a thousand patients had been erected. Of the necessary antiseptics, dressings and instruments there was a sufficient supply, though much still remained aboard several transports impossible of access, and the hospital ship *Relief*, under Major Torney,

U. S. A., arriving soon after the San Juan battle, brought a great quantity more. Only a few men in all reached the Siboney hospital without having previously received a first-aid dressing, and careful disinfection of wounds, dressings or operations were proceeded with as rapidly as was consistent with the patients' safety. I can speak with great pleasure of the uniform carefulness and attention to surgical cleanliness on the part of my colleagues, even when ready to drop from exhaustion incident to days and nights of almost continuous work. But one amputation from bullet wound and the very few cases of infected wounds speak volumes for their care and skill.

Upon the scene now appeared for the first time representatives of Clara Barton's Red Cross, who, with a doctor or two and several trained nurses, lent an assistance duly appreciated. It must not be for a moment forgotten, however, that what they did—and no one appreciates it more than those they directly aided—was but a drop in the bucket to what had been done and was being done by the Army organization. Suffering there was, of course. As Dr. Senn says, "war always has its hardships; it can not be prosecuted in parlor cars or club-houses;" and in spite of all defects and omissions incident to our first hurriedly prepared invasion of a foreign land, history, I think, will show that after no previous battle were the wounded tended so quickly, and with such good results and so little suffering.

Respectfully,
LOUIS P. SMITH,
First Lieutenant and Asst. Surgeon U. S. A.

A Chair of Ethics in Medical Colleges.

TOLEDO, OHIO, Aug. 15, 1898.

To the Editor:—It goes with the saying that medical colleges are very largely responsible for conditions existing in the medical profession. Conditions, as used above, include many things, and the word "responsible," in this same sentence, points prideward as well as in the opposite direction. One condition, as the word is used, is the general intelligence of the medical profession; another, the standard of medical knowledge which maintains, while professional honor, honesty, morality, etc., are others.

Medical colleges are alike responsible for the highest grade in learning, uprightness and respectability, for example, as they are for the lowest grades in the same spheres. Naturally one looks for a college-bent principle to lean in the same direction throughout life, and the expectation is usually realized. There is among some members of the profession a positive antagonism to the "Code of Ethics." That antagonism had its origin some place, in some influence which was generated either by teaching or from observation, and medical colleges are in a great measure responsible for the existence of that unbelief. Like other evils, it would cost many times more to uproot it than it would have cost to have seen to the sowing of clean seed in the start.

Recently a physician said, during the session of a medical society, that he had been practicing medicine for thirty years, and that he had never so much as read the "Code of Ethics." There was an air of serenity about him which betokened a feeling of self-satisfaction within, and as he stood in contemplation of the example of a self-made ethical physician, which he presented to the society, the odds were, from his point of view so preponderantly against anything which the followers of the Code could adduce, that the expression of his face showed commiseration for that physician who had been under the dwarfing influences of the Code. Not much can be done with such a map. Probably the easiest way and best way is to leave him to the blissful enjoyment of his own company.

There are other kinds of anti-code men, and anti code men for other reasons. These men skirmish in their home societies during the year, and then have their annual round-up at the meetings of the A. M. A. There are all kinds of men at these

meetings, and one class get so tired of the yearly résumé of the various astigmatic visions which the Code reformers believe they have had during the year, that they say, "for the sake of harmony, for the sake of peace, for the sake of what we came here for, give them what they think they want." This class of men are loyal to the profession, to the Code, and to the A.M.A., but they are they who, because they have not much depth of earth (sand), when the heat comes, wither away, and the no-codists have the aid of their votes.

Another class, while not more loyal to the best interests of the profession, take life easier, that is to say, stand grief better, and upon the final vote, good-naturedly vote, "No," and then, as they should, dismiss the matter from their minds until some one of the reformers proceeds to remove the dressings from the imaginary sore, at the next session.

This class of physicians appreciate the fact that the no-codists are equally as scientific physicians as are those who uphold the Code. They know too, that they themselves have hobbies, and that if fifty or a hundred of them could but unite upon one particular hobby, they could make life as much of a burden for the members of the ASSOCIATION as the no-codists are doing; and so they charitably accept the situation as being one of the afflictions to which humanity is incident, giving thanks that their own erratic ideas are of such a nature as to make a combination with any other hobby impossible. There always have been no codists at the sessions of the A. M. A. and the no-codists emphatically assert that they are always going to be there, so it would seem that a meeting in which the Code question would have no place upon the program is past praying for; and really, to have the Code regularly scheduled as the subject for annual effervescence and defervescence is not the worst thing for the ASSOCIATION which can be thought of. Beside, it follows by no means, that if the Code question were strictly debarred from discussion there would be no time spent over ASSOCIATION rules and laws of government, because it is apparently the first thought of some men as soon as they become members of an organization, to look in the constitution and by-laws for something to amend or strike out, and it is better and safer for the ASSOCIATION, as now, to have a definite, well-understood subject the object of attack, than it would be to leave the undictated imagination to find a wrong whose victims would be crying to heaven for redress.

Some probably are kept away from the meetings by what they feel to be an unbrotherly contention, or a waste of valuable time, but quite as many others, if it were known that the code question would not come before the session in any form, would stay at home, so that the effect upon the number of members in attendance is a stand-off.

The object in having a Chair of Ethics established in medical colleges is not that such a chair would in any way seek to interfere with the no-codists' cherished right of the stated parade of their opinion, or in fact with anything else that they feel belongs to them, but the object is to inculcate the truths of the Code on the minds of students of medicine, precisely as the chair of anatomy builds up in the minds of students a knowledge of anatomy.

The anatomy of osteopaths, christian scientists, and what-nots, is a very different thing from anatomy as taught in medical colleges, and just so the no-codists exhibit their skeleton of the code, which everybody except themselves knows is not the frame-work of the Code of Medical Ethics at all. The chair of anatomy does not bother with osteopaths, etc., neither would the chair of ethics need to trouble itself with the no-codists. If a medical student were, once or twice a week, for four years, to listen to a lecturer upon the Code, he would be at his graduation a better physician, a better citizen, a better man, than he would be without the lectures. There is abundant material about every medical college to illustrate

the teachings of the Code, and with a copy of the Code in the hand of each student, the professors would become exemplars of the Code, not that they are not such now, but, in a wider and deeper sense it would be more manifestly and specifically the appropriate thing that "the teachers of such things ought themselves so to walk."

For the demonstration of the operations of the Code, the clinic itself would furnish many object lessons. To most men the Code is a helpful looking-glass. By it many removable defects are made visible, and these defects removed in student life would save much mortification that would otherwise be inevitable in later years. It costs something in temporary comfort, and in money also, to remove a blemish, but society as well as the afflicted one, in the end, is better off for the sacrifice.

The Code, like all other beneficent provisions, squarely antagonizes selfishness. There is a robustly modest denial of the existence of selfishness in any degree, in some sections of the East, but most men in their quiet moments can recall in some of their acts the workings of that subtle influence, and to such men the stimulation to greater carefulness, which the Code constantly begets, is an acknowledged help. Selfishness is in a way, cunning. Our own selfishness often deceives our very selves. More often it is, indeed, that it blinds and deceives us, than that others are fooled by it, hence it is that the easiest place to detect selfishness is in others. In a chair of ethics is a hitherto unused power which is potent for good to the medical profession.

What the condition of the profession would be to day, had such a chair always been in colleges, is a matter of guesswork; but because a chair of ethics never has existed is no reason why one should not be established.

The desirableness of a better knowledge of what the Code teaches, so that there may be a better measuring up to its standards, must be the excuse for having taken so much of your space in trying to outline the theme.

J. F. TRACY, M.D.

Congenital Absence of the Uterus and Anus, the Rectum Ending in the Vagina.

PAWNEE CITY, NEB., Aug. 10, 1898.

To the Editor:—After describing the more usual forms of malformations, Dr. C. A. Kelsey,¹ says: "In addition to these more common malformations there are various others. The anus may open by an abnormal anus at any point in the perineal or sacral regions, or it may end in the bladder, urethra or vagina." Bearing on this subject I wish to report the following interesting case which came under my observation:

Mise —, age 23 years, small of stature, of good family history, has one older sister who menstruated quite young; has never menstruated. About a year and a half ago she and her mother came to me with the following history: when she was born, it was discovered that there was no anal orifice and she was given up to die by the physicians, but after a few days straining the nurse noticed that a small amount of meconium was escaping from the vulvar orifice. This increased in quantity and she began to thrive, but had great trouble with her bowels until about ten years ago; had to use enemata or take salts to secure a passage. For the past few years she has not been troubled in this way, but when the bowels are loose can not control the movements well and in consequence sometimes soils her linen. When the bowels are not loose she has no trouble but must go on rather "short notice," sometimes. She further stated that for the past few months, she had at irregular intervals, experienced vague pains in her back and abdomen, which she thought were caused by the menstrual molimen, hence the consultation. On making a physical exam-

¹ Reference Hand Book, Vol. 1, page 257.

ination I noted the following: A well-formed girl, small of stature; weighing about one hundred pounds; mammae well-developed and perfectly formed; measurements with the pelometer showed the following dimensions: Across spine of the ilium, twenty-four centimeters; across from crest to crest, twenty-five centimeters; bis-trochanteric, thirty; conjugato (external), eighteen. The pudendum was covered with a normal growth of hair. The labia majora were hardly so full as the normal in one of her build. The nymphæ and clitoris were well-developed. On separating the nymphæ, a normal urethral meatus presented. The hymen was somewhat rudimentary but fairly well outlined and caruncular myrtiformes fairly well marked. The vestibule and fourchette were normal. In fact, the entire pudendum was normal.

Extending from the fourchette posteriorly for about two centimeters and about one centimeter in breadth, was a band of delicate skin, very closely allied to mucous membrane. From this back to the tip of the coccyx the appearance was that of a normal perineum, the skin containing the usual amount of pigment, but no signs of an effort at the formation of an anus. The ostium vaginae, in passing the finger, seemed quite normal, but after the examining finger had penetrated to the depth of two and a half or three centimeters, it came in contact with an annular constriction which was evidently the internal sphincter of the rectum. When told to contract the sphincter, its grasp was quite perceptible, but nothing like the force of the normal muscle. Just beyond this the finger came in contact with well-moulded feces and quite a roomy rectum. Bimanual palpation disclosed a narrow band running from one side of the pelvis to the other. On the left side, a quite movable body could be felt, which appeared about half the size of a normal ovary. This is undoubtedly a rudimentary ovary, as pressure on it causes that peculiar sensation complained of when the normal ovary is pressed. On the right side, occupying the same relative position, was a small, firm body about one centimeter in diameter. This was no doubt the rudimentary right ovary. There was no evidence of a uterus, except the narrow band which crosses the pelvis, corresponding to the upper border of the broad ligament. The bladder was normal in every respect, and a small speculum introduced showed the mucous membrane to resemble that of the rectum. From the explanation of the father, who had consulted me relative to the case before the patient presented herself, I had expected to find an *anus vestibularis*.

J. W. BULLARD, M.D.

A Leaf From an Old Book.

HUDSON CENTER, N. H., Aug. 15, 1898.

To the Editor:—There has recently come into my possession a book the title of which reads as follows: "Medicina Magica tamen Physica: Magical but Natural Physick, or a Methodical Tractate of Diastatical Physick. Containing the general Cures of all infirmities. With a Description of a most excellent Cordial out of Gold much to be estimated.

Published by Samuel Boulton, Salop, London. Printed by T. C. for N. Brook at the Angel in Cornhill, 1665."

The book is inscribed to the "Marquess of Dorchester," by Samuel Boulton, under date of 1646.

In these days of various "gold" treatments it may be of interest to become acquainted with methods employed 250 years ago. To quote our author: "Put foliated gold into a vessel well sealed with *Hermes* seal; put it into our fire till it be calcined to ashes; then sublime it into flores, having his *caput mortuum* or black *terra damnata* in the bottome; then let that which is sublimated be with the same degree of fire united to the same *caput mortuum* that it may be revived by it; so thall all may be reduced into an oyle which is called *Oleum Solis*; the dose hereof is 2 or 3 grains; And out of this Mercury of *Sol* thou maiest also by the spirit of wine extract

an high redness which will contain the cure of all diseases curable in nature, which is a true *aurum potabile*, and much to be estimated."

A most interesting feat of surgery is described as follows:

"A certain man of *Bruxels* being at *Bologna* did in a fray lose his nose; and going to *Taylaicoza*, a Chyrurgeon living there, to consult how to have a new nose; and fearing the cutting a piece out of his own arm, he hired a porter for a good summe of money to have one cut out of his arm; which being done, and the cure performed, the man of *Bruxels* returned home."

This result appears to be eminently satisfactory and worthy of being ranked with the achievements of modern surgery, but note the after history of the case:

"About 13 months after, he felt his nose suddenly grow cold, and within a few days after it rotted and fell quite off; And he with many others, wondring at the strange chance, enquiring of the cause, it was found that just at the same instant that the nose grew cold, the Porter at *Bologna* died; the truth whereof, as *Helmolt* writes, many at *Bruxels* will testifie."

Our author shows true courage and approximates the modern standpoint in combating the then prevalent belief in the almost universal efficacy of blood-letting.

"Some say many have amended upon letting blood. I deny it not, but that was not the cause of the recovery, but natural heat, stirred up, set upon and conquered the disease, which heat might have been better stirred up, especially by Purgation at the beginning when there was strength; by which means also the cause of the disease being partly taken away, the part is much relieved. Thus you see the madness of them that are so forward upon every occasion, time, and age, to let blood; whereon, how many dangers follow, I appeal to Experience. And this is the true cause why Feavers are so seldome cured. I would physicians would follow nature, and leave off one to swear himself a slave to *Galen*, another to *Avicen*, a third to *Paracelsus*. These men were great, but when they strove to defend their owne Opinions, they often erred."

Let us allow our author to display his knowledge of physiology, by quoting his description of the urine: Urine is an Excrement of the second Concoction, done in the Liver, or rather in the Veines, from whence by the emulgent veins it is sent to the reins, yet mixt with blood, out of which by the Uriters it is as it were percolated and strained and so sent to the bladder, where also it abideth a while, and then is by its passage cast out; Hence it appears that the urine hath a great communion with most part of the body; for it hath great affinity with the Liver, Reins, and Bladder; for by these parts it passeth."

Perhaps the most interesting passage in the book is the description of the wonderful weapon salve compounded of brain tissue, Egyptain mummy, etc., mixed only when the auspices of the moon and planets are favorable, and applied daily, not to the wounded part but to the weapon with which the wound was inflicted.

HENRY O. SMITH, M.D.

Normal Salt Solution.

CHICAGO, Aug. 17, 1898.

To the Editor:—Have just been reading the really valuable article, "Saline Infusions" (*vide* JOURNAL, August 6, p. 306), and its suggestions will doubtless have great weight with many practitioners. In view of that fact, I thought it might be well to call attention to a typographic error in the fourth line from the top of page 307, where it directs a 6 per cent. salt solution when it should say .6 per cent. More especially did I think it necessary, since I saw no correction in last week's number. Life-saving measures ought to be well known, and this certainly is one.

Truly yours,

C. H. MILLER, M.D.

Of course our correspondent noticed what was so obvious

that the necessary punctuation mark in front of the figure six (.6) was omitted, and its absence escaped the attention of the proof-reader. But the formula was correctly stated in the preceding column of the same article, as a drachm to the pint. According to Foster ("Text-book of Physiol.") 0.6 per cent. is a normal solution. Howell ("Am. Text-book of Physiol.," p. 362) states 0.9 per cent. is the "physiologic salt solution." Foster's Dictionary states that a solution of $\frac{1}{2}$ to $\frac{3}{4}$ per cent. causes little or no change in animal tissues with which it comes in contact, and hence is called "indifferent" (or *normal* or *physiologic* salt solution), and is used in physiologic experiments and microscopy whenever it is desired to keep the tissues as nearly normal as possible (Wood, "Ref. Handbook"): Normal salt solution, gm. 15 to 2 liters.

Ethics as Practiced.

CONSHOHOCKEN, Pa., Aug. 15, 1898.

To the Editor:—It seems to me that this letter is a good text for an editorial on "Medical Ethics." Is this the ethics recognized by the New York profession and recommended by a teacher in a medical college, even though a subordinate?

Respectfully,
GEO. M. STILES.
BROOKLYN, July 7, 1898.

To whom it may concern:—This is to certify that I am acquainted with the methods of the International Fidelity Rupture Cure Co., and am satisfied that it is a work which any doctor, whom this Co. may consider competent and reliable, can take up in connection with his regular practice, with great advantage to himself, and at the same time keep within the bounds of Professional Ethics. Yours respectfully,

HERBERT A. RUSSELL, M.D.,
Demonstrator of Anatomy at Long Island College Hospital.
P. S.—The above is a verbatim letter from Dr. Russell, who is using this treatment in connection with his practice.

NEW YORK, Aug. 13, 1898.
G. M. STILES, M.D., Conshohocken, Pa.
Dear Doctor:—We have a positive cure for all forms of hernia that can be retained with a support, and can demonstrate the truth of our assertions to your complete satisfaction. With the great number of people afflicted with hernia—at least one in every ten—here is a field that is practically unoccupied, and from which large fees are obtained. We receive from \$100 to \$500 for a guaranteed cure in adults. Children are cured for less.

You can use this treatment in connection with your practice and make from \$3000 to \$8000 per year; or, if you prefer to make a specialty of it, as many do, the income ranges from \$6000 to \$15,000 per year, and only a few hours each day are devoted to the work.

The pay is certain and prompt, and all the disagreeable features of a general practice are eliminated.

This treatment is strictly ethical, for there is nothing secret about it. To each physician engaging in the work, every part of it is explained explicitly.

If you are interested in this, and will write to us by return mail, we will give you all the information at our command, and will, if you desire, call upon you personally and explain to you our method of starting you in the business. Respectfully yours,
INTERNATIONAL FIDELITY RUPTURE CURE CO.,
Per B. H. TEMPLE.

Remarks of Dr. Egan at Detroit Conference.

SPRINGFIELD, ILL., Aug. 19, 1898.

To the Editor:—As my reply to the question asked at the recent Conference of States and Provincial Boards of Health at Detroit, relative to the principal line of work of the Illinois State Board of Health, is incorrectly reported in the JOURNAL of the 20th inst., I will ask you to kindly print my remarks in full, a copy of which accompanies this. Very truly yours,
J. A. EGAN, Sec. Ill. State Board of Health.

DR. J. A. EGAN I regret to state that the principal line of work of the Illinois State Board of Health is in connection with the enforcement of the Medical Practice Act, the duties pertaining to which have so increased during the past few years that the Board has really become one of registration and examination. It is earnestly hoped that before this Con-

ference again meets the law will be so changed that the Board will have an opportunity to perform its legitimate functions. Notwithstanding, that for years the Board has recommended the enactment of a law creating a State Board of Medical Examiners, to examine and license physicians and midwives, all efforts to obtain the desired legislation have been futile. There are, however, excellent reasons for believing that relief will be obtained during the coming year. As an illustration of the duties devolving on the Board incidental to the Act referred to, I will state that during the past year the Board has issued licenses to 875 physicians on presentation of diplomas and has examined 35 physicians whose diplomas are not accorded recognition. Fifty non-graduates in medicine and seventy-five midwives were also examined. During the same period the Secretary answered 11,473 communications, and the Board instituted prosecutions against 94 violators of the Medical Practice Act and took steps whereby 100 more were compelled to desist from practices. The above represents only a part of the duties occasioned by the Act. Aside from the maintenance of an efficient inspection and quarantine service at Cairo and other points in the southern portion of the State from September 7, the date on which yellow fever was announced as existing in New Orleans, to November 7, when the disease was entirely stamped out in Memphis, 100 miles south, very little outside of the ordinary routine work has been done by the Board in the line of sanitary investigation during the year. Whenever it has been found necessary or desirable, local boards of health have been assisted in the conduct of sanitary measures. All epidemic outbreaks throughout the State have been promptly investigated, and wherever no local boards of health existed efforts have been made to have such established. The sanitary condition of several of the State Institutions have been inspected, and in connection with the University of the State, analyses of the water supplies of the State have been made. Owing to a decision of the supreme court of the State adverse to the Board, no attempt has been made to enforce the school vaccination order, and on account of defects in the law creating the Board, it has been found impracticable to obtain any system of vital statistics. The existing conditions can be little bettered until legislation is obtained. The creation of a State Board of Medical Examiners is absolutely imperative, and sanitation would be much better promoted were laws also enacted establishing local boards of health, making the appointment mandatory, not optional as at present. There are several cities in the State, the populations of which run from 1000 to 10,000, which at present have no local boards of health.

PUBLIC HEALTH.

Bubonic Plague again Epidemic.—Press reports of August 17 quote official reports from Bombay, of the preceding week, as summing a total of 103 deaths (*vide* JOURNAL, Aug. 20, p. 429).

San Juan Board of Health.—General Miles has organized a board of health in San Juan; and when they are generally organized and are doing their good work all over Cuba, Porto Rico and the Philippines, the day of filth diseases and the deadly reign of General Bacillus will begin to be numbered.

A Coming Report on Typhoid Fever.—A Washington dispatch of August 17 states that Surgeon-General Sternberg has appointed a Commission to inquire into the cause and prevention of typhoid fever in camps. The commission will consist of Major Walter Reed, U. S. A.; Major Victor C. Vaughn, division surgeon of volunteers, of the University of Michigan, and Major Edward O. Shakespeare, brigade-surgeon, U. S. V. No more competent commission could have been selected.

New State Health Officer.—The Governor has named Walter Frazer Blunt, M.D., of Galveston, Texas, as State Health Officer to succeed the late Dr. Swearingen. In 1878 Dr. Blunt was appointed as State quarantine officer, and held the position for many years, first under State Health Officer Swearingen, then under Dr. Rutherford, and again under Dr. Swearingen. He resigned the position about eighteen months ago, being in ill health. During the quarantine troubles last fall he assisted Dr. Swearingen, and while Dr. Swearingen was so ill Dr. Blunt was called to Austin to take charge of the Health Department.

A New Focus of Endemic Bubonic Plague has been unearthed by R. Koch in the course of his travels in Africa. It is at Kiziba, on Lake Victoria Nyanza, and has hitherto been restricted to this locality, but there is danger of its spreading on the completion of the railroad now being built by the English to connect the lake with the Indian Ocean. The natives live almost exclusively on bananas, which they plant in groves so dense that no light nor air can penetrate, and these groves swarm with rats. Koch considers that effective measures will, in time, eradicate this disease, which is primarily a rat disease.

The Paris Sewage Park.—The luxuriance of the vegetation on these fields is remarkable; all kinds of vegetables, medicinal plants, etc., thrive to perfection, irrigated with water from the Paris sewers, which is so purified in its course that it emerges from the "park" limpid and pure, as visitors taste and exclaim. There is no perceptible odor except in the midst of a net-work of the irrigating canals, and a few steps beyond it is impossible to distinguish it. All fear of contaminating the atmosphere of the vicinity has proved groundless. The number of bacteria is reduced to approximate spring water, and the authorities claim that the infection of the Seine will diminish with increased areas appropriated for sewage parks, until it will cease altogether when all the sewer water from the city shall be spread out thus on the fields. The amount thus far utilized is 20,653 cubic meters to the hectare; there are 795 hectares devoted to the purpose.

Research Laboratories at London.—The new government laboratories in Clement's Inn are found to be a great convenience. No fewer than thirty-eight rooms, specially constructed and fitted with perfect appliances, are at the disposal of the staff. It appears that in 1867 the number of samples examined and reported upon was 9,055; in 1877, 14,024; in 1887, 39,244; and in the twelve months ended March of the present year, 64,664; of these, 28,875 were samples of beer and brewing material, 11,403 spirits, 14,872 snuff and tobacco, 41 coffee, 6,423 miscellaneous articles, and the standardization of excise instruments and 3,050 specimens of the contract supplies of government departments. The principal laboratory is specially adapted for the examination of beer and spirits. A set of rooms are used for the analysis of crown contract samples and of food and drugs as well as tobacco. The new building was constructed by the Board of Works at a cost of between £25,000 and £30,000.

Sanitary Workers Should be Divorced from Politics.—The Secretary of the State Board of Health was re-elected for the fourteenth time, which is a highly appreciated compliment. He also, with the next issue of the *Bulletin*, will enter upon his twelfth consecutive year as editor thereof. This honor is not unusual, but is rather a practical exemplification of civil service principles. So far as we know, Dr. Pelletier, Province of Quebec; Dr. Bryce, Province of Ontario; Dr. Young of Maine; Dr. Watson of New Hampshire; Dr. Lindsley of Connecticut; Dr. Abbott of Massachusetts; Dr. Frazer of Delaware; Dr. Porter of Florida; Dr. McCormack of Kentucky; Dr. Laine of California; Dr. Jennings of Arkansas; Dr. Sewell of Colorado; Dr. Baker of Michigan; Dr. Johnson of Mississippi; Dr. Probst of Ohio; Dr. Swearingen of Texas and Dr. Lee of Pennsylvania have been the secretaries of their respective provinces and states since their State Boards of Health were organized. There were others, as Dr. Metcalf of Indiana, Dr. J. Berrien of Tennessee and Dr. Cochran of Alabama, who maintained like relations to their respective states until death terminated their services. The position is one that by common consent seems to be, and should be, awarded independent of politics, religion, or on purely personal grounds.—*Iowa Health Bulletin*.

Smallpox Prevalence in North Carolina.—The *Bulletin* of the State Board of Health of that State for July reports a material spread of variola, both as to increase of cases and of localities

infected. About the middle of July there was known to be four infected points in Iredell County; also at Asheville, 1 case, which is nearly well; Catawba, 6 cases in one family in the southeastern part of the county; Cleveland, in Rowan County, 7; Reidsville, 1; Durham, 1. When the superintendent of Rowan County was first notified of the existence of smallpox at Cleveland he found 20 cases, 13 of whom had recovered. They had been diagnosed as chicken-pox, urticaria and pemphigus, and no precautions whatever were taken in consequence. The people, we are told, called it "elephant itch," not a bad name, as the eruption of smallpox is about the biggest thing of its class. A negro from Cleveland went to Reidsville and was there two days with an eruption of smallpox on him before he was discovered. During that time he went on an excursion and mingled promiscuously with his people. One of these who had been exposed went from Reidsville to Durham in the beginning of the eruption stage. Although sought for he was not found until next morning, after he had slept in the same room with several others. Reports from Asheville, Iredell County, generally, Cleveland and Durham, show everything in good shape except the reluctance in too many instances of the people to be vaccinated. The reports, however, from Catawba County and Reidsville are not at all satisfactory, and we fear a spread of the disease in these localities.

Relations and Conditions of the Soil to the Spread of Disease.—Dr. W. H. Welch has shown that the possibilities of infection from soil contaminated with disease germs are numerous, and often intricate. The list of diseases whose causation has been shown to stand under conditions in more or less direct relation to contamination of the ground with their specific germs is a long one. Among the more important may be mentioned malaria, typhoid fever, cholera, yellow fever, dysentery, tuberculosis and the summer diarrhea of infants. Experience teaches, unmistakably, that contamination of the soil with organic refuse favors the development and spread of such diseases as these, and that the drainage and purification of the soil by proper systems of sewerage are among the most effective measures for their prevention. No more instructive illustration of the value of modern methods of public sanitation can be found than the inability of Asiatic cholera to secure a foothold during the last two European epidemics in clean cities, with proper sewerage and water-supply, and its ravages in notoriously filthy or insanitary cities, such as Toulon, Marseilles, Naples, and formerly Hamburg. Authorities have differed as to the relative value of sewerage and of water-supply in influencing the prevalence of typhoid fever. We need not pause here to discuss the matter. Both factors are important, the drinking water usually the more important. But it is sufficient for our purpose to show that purification of the ground by proper disposal of sewage is not one of the factors in determining a reduction in the occurrence of typhoid fever and other diseases. It is by no means an easy matter in all cases to assign to each one of the various recognized elements which go to make up an entire system of satisfactory municipal sanitation its due share in the beneficial result, for it rarely happens that one is introduced by itself alone, and the harmonious working of the whole system is often necessary to secure the best results from the individual factors, such as pure water-supply, efficient sewerage, good drainage, cleanliness of streets, improvement or removal of insanitary quarters, thorough sanitary inspection of dairies and food stuffs, public disinfecting establishments, hospital for infectious diseases, municipal laboratories, etc. In some instances, however, the conditions have been such as to furnish conclusive demonstration of the separate influence of the introduction of effective sewerage upon the death-rate from typhoid fever.—*The Sanitary Record*.

SOCIETY NEWS.

American Microscopical Society.—The twenty-first annual meeting of this Society will be held in Syracuse, N. Y., Aug. 30, 31, and Sept. 1, 1898. Tuesday, August 30, 10 A.M., will occur the addresses of welcome, followed by the reading and discussion of papers. On the evening of Tuesday will occur the annual address by the acting president, Prof. V. A. Moore of Cornell University. Wednesday afternoon there will be given demonstrations of the projection microscope and of laboratory apparatus, and in the evening will occur the soirée. Thursday afternoon the Society will be shown much of interest in the New York State Institution for Feeble-Minded Children. The Vanderbilt Hotel will be headquarters, with a special rate of \$2 per day. A small dining-room, known as the "ordinary," will be reserved for the exclusive use of members. Owing to the State Fair, held in Syracuse from August 29 to September 3, a round-trip ticket from any station in New York State may be purchased for half the usual rate and 50 cents (which entitles the holder to one visit at the Fair). All interested persons are invited to be present, join the Society and read and discuss papers or demonstrate apparatus and methods. For particulars as to membership, etc., letters may be addressed to Prof. S. H. Gage, Ithaca, N. Y., or Dr. A. C. Mercer, Syracuse, N. Y.

The Fourth International Congress for the Study of Tuberculosis in Man and Animal, held in Paris, France, July 27 to August 2, concluded its sessions by adopting the following resolutions:

1. While awaiting the time when tuberculosis shall be included among the contagious diseases requiring official notification, all public places should be provided with hygienic cuspidors and placards warning against their disregard.

2. Public authorities everywhere are urged to set the example by installing hygienic cuspidors in all places under their jurisdiction, especially—and this is the most important feature of the reform in schools of all kinds.

3. Protesting against the admittance of tuberculous patients to institutions for convalescents open to patients with other diseases.

4. Urging the establishment of public free sanatoria and asylums for convalescent children.

5. Endorsing the founding of as large a number of small sanatoria as possible by private initiative on the part of physicians and also by the public.

6. Recommending periodic international reunions for the further study of tuberculosis and especially of its prophylaxis.

7. Endorsing the courses in hygiene recently inaugurated by the Antituberculosis League in Paris and urging their adoption elsewhere.

8. Requesting the authorities to investigate means to prevent the use of fraudulent tuberculin for the purpose of concealing the existence of tuberculosis in animals destined for export.

The Congress also proclaimed the urgent necessity of legislative measures requiring: 1. The separation of diseased from healthy animals. 2. The sale of diseased animals for any purpose except for slaughtering. 3. The constant surveillance of dairies and the immediate slaughter of every animal affected with tubercular mammitis. 4. The sterilization, or at least the pasteurization, of all milk used in the manufacture of butter or cheese on a large scale. 5. The universal adoption of a service of meat inspection on lines similar to those followed in Belgium the last few years. The Congress also passed a vote of thanks in recognition of the active support rendered the League in the prophylaxis of tuberculosis by the presidents of the French universities.

San Francisco County Medical Society.—The regular monthly meeting held August 2, was devoted to a discussion of "Cancer of the Stomach." Dr. Philip King Brown treated of the pathology, Dr. William Fitch Cheney the diagnosis and Dr. Emmet Rixford discussed the treatment, confining his remarks entirely to the surgical treatment, practically the only aspect of the subject. Dr. Brown said that while scirrhus was the most common form and adenocarcinoma the next most frequent variety

met with, but little attention had been given to the form of pigment-celled carcinoma which, though not at all common, still was met with occasionally and was deserving of more notice than generally given it by writers. He gave a careful résumé of the facts known as to the macro- and microscopic appearances of the various forms of cancer in this location. Dr. Cheney, in discussing the diagnosis, referred to the tabulated, though unpublished, results of an examination of 150 cases in which the disease was found 20 times to have appeared in a subject under 30 years (between 20 and 30), and 17 times between the ages of 30 and 40; these cases seem to somewhat controvert the accepted idea that the disease is very rare under the age of 30 years. Of these 150 cases, 11 gave a family history of cancer, showing that while the factor of heredity may be exaggerated in many instances, it is certainly an element to be considered. In no instance in this series of cases could it be ascertained that injury played any part as a causative factor. The symptom complained of as the most aggravating and prominent, in this same series of 150 cases, shows pain to take the first place, being noticed in 130; vomiting was complained of in 128; while a tumor had been noticed by the patient or was at once perceptible in 115 cases. Only 36 cases had vomited blood, indicating that this factor is not so common as generally supposed. Dyspepsia has been noticed and was aggravated in 38 cases. Pallor, loss of flesh and the cachexia should lead, if combined with any one of these symptoms, to a careful examination of the abdomen, the possibility of cancer being suspected. On examination, the abdomen should be carefully inspected, for it was found in 76 of the 150 cases that on careful examination, or rather on simple inspection, a tumor could be more or less well discerned; it may be that the tumor does not appear at first glance, but as the abdomen is longer inspected the shadowy outline will become evident. Simple inspection will very often reveal an abnormal pulsation of the abdominal aorta. The fact was accentuated that the tumor may be at the pylorus and yet be found in almost any part of the abdomen, for the reason that there is so often enlargement of the stomach, thus allowing the tumor to sag down or to assume a location quite other than would perhaps be expected; because the tumor is found at some point other than the true pyloric location, is not any evidence that it is not a tumor of the pylorus. The value of the abnormally increased peristaltic wave was pointed out, as showing the presence of an increased muscular action, or an unusual development of the muscular coats of the stomach contents through the lessened lumen of the pyloric orifice. This peristaltic wave may be stimulated by striking the abdomen with a wet towel, or by rather rough percussion. Inflation of the stomach, either by means of bicarbonate of soda and tartaric acid, or by gas direct, should always be resorted to; by this means we may clearly ascertain the presence of other tumors of metastatic origin. The proceeding of inflation is perfectly safe, in the doctor's opinion, and has nothing to discourage its use. On palpating the abdomen it may occur, and in fact does often occur, that the tumor will be outlined one day, and perhaps not the next; this should not be regarded as an unfavorable factor in the diagnosis, for many circumstances may prevent the discovery of a tumor on any particular occasion; if it be found once it will be found again if persistent effort is made. The chemic examination of the stomach contents and test meal, though it should always be undertaken, is not so fruitful of good results as could be desired. It should be accepted only as one link in the chain of evidence. Tissue fragments, too, do not always throw much light on the true condition, for the arrangement of the cells has a great deal to do with the diagnosis from this standpoint, and the cells derived from washings are almost always much broken up and disarranged. If a portion of cancerous growth can be obtained, of course the diagnosis presents no further difficulties. The matter of the differential diagnosis was brought out very forcibly and the many points to be considered were carefully outlined. Dr. Rixford, in dealing with the question of treatment had prepared a careful list of the various operations in chronologic order, that had been advanced and tried for relieving the condition of cancer of the stomach. In speaking of the difference in the percentage of mortality between the first operations and those of the present day in pylorotomy, the point was emphasized that early operation is of vital importance and has had as much as any one thing to do with the decreased mortality. It was very difficult to gain the consent of any patient at first for the operation. Dr. Rixford called attention to the reports at the late congress at Moscow, when the returns

from a large number of operators were given; pylorotomy resulted in a mortality of 37.0 per cent., while the palliative operation of gastro-enterostomy exhibited a mortality of but 25 per cent. Very few of the cases operated on have lived for more than two years; it is largely on this account that the majority of the English surgeons are not disposed to favor operative interference in cancer of the stomach. As for gastrectomy, the Doctor was of the opinion that the operation was too young to express any opinion as to its usefulness, but he was rather inclined to look upon it as an operation with a very limited field, and one that, after a while, would be seldom done. The subject was discussed at considerable length by Drs. J. Henry Barbat, F. B. Carpenter, Dudley Tait and others.

NECROLOGY.

FOSTER PRATT, M.D., of Kalamazoo, Mich., died August 12 of angina pectoris, while seated in his library at his home with the evening paper in his hand. He had a severe attack of a similar character on August 7, while visiting relatives in a neighboring city, from which he had not completely rallied, although he had been able to be out, and two days before his death was actively engaged in attending to his professional duties. Death came peacefully and without warning as he sat in the company of his wife. Dr. Pratt was born in Mt. Morris, N. Y., Jan. 9, 1823. He spent his boyhood days in New York, completing a course in the Franklin Academy and later became principal of the Angelica Academy, which position he held until compelled to give it up on account of sickness. In 1844 he went to West Virginia to take charge of a private school in Hampshire County. He there married Miss Mary L. Gamble, studied medicine with Dr. A. J. Sangster and later went to Philadelphia and was graduated from the University of Pennsylvania in 1849. He practiced in Virginia until 1856, when he came to Kalamazoo, where he has since continuously resided. He early established a large practice, but gave it up to accept a position as surgeon of the 13th Michigan Volunteer Regiment. His regiment participated in the battles of Pittsburg Landing in 1862, the engagements of Stone River, Chickamauga, Chattanooga, Lookout Mountain, Missionary Ridge and Sherman's march to the sea. In 1891 he was made president of the village of Kalamazoo and at numerous other times he has been placed in official capacities. To him the city is largely indebted for its present system of sewerage which was established while he was one of the Commissioners of Sewers. He also took a very important part and active interest in providing the city with its water-supply. He has been a member of the AMERICAN MEDICAL ASSOCIATION for twenty years and has been a member of its judicial council. He was an honorary member of the American Medico-Psychologic Association, was twice president of the local Medical Society, once vice-president and acting president of the State Medical Society and once its president by election. His contributions to literary papers and medical journals were highly valued. In 1882 he wrote a comprehensive review of that portion of the tenth census relating to criminals, paupers, insane, idiots, the blind, the deaf and dumb. He strongly advocated the idea of the restriction of indiscriminate immigration to the United States of objectionable persons or those having a tendency to produce criminals and dependents. He had decided literary tastes and was quite a politician. He was district delegate to the National Democratic Convention at New York in 1868, at Baltimore in 1872 and a delegate at large at Cincinnati in 1880. In his early days he was a political speaker and a fine orator. He was prominent in Masonry, and while secretary of the Grand Lodge, he wrote the present code of Masonic Laws for the Michigan Jurisdiction. In 1858 Dr. Pratt was elected to the Legislature, and at the session of 1859 secured by zealous and hard work the first appropriation of any magnitude for the Michigan Asylum for the Insane at Kalamazoo. From that time on he was a staunch and steadfast friend and worker for the asylum.

When Dr. E. H. VanDeusen, its former superintendent, was sued for false imprisonment for detaining a patient in whose commitment papers there was some slight irregularity, Dr. Pratt was the earnest and helpful adviser of the asylum and, largely by reason of his suggestions and directions, the asylum was victorious in a very tedious lawsuit. In 1882 Dr. Pratt became a member of the Board of Trustees of the asylum, which position he occupied for twelve years, being president of the Board for four years. Since 1887 he has been a member of the local Pension Examining Board. Dr. Pratt was a man respected by all who knew him, a man of high and honorable aims and virtues, one whose faults were few and small. As a citizen and a friend he is held in tender remembrance by all who knew him.

WILLIAM CARTER OTTERSON, M.D., College of Physicians and Surgeons, N. Y., 1853, died at his summer home in Long Branch, N. J., August 17. He was a son of Rev. James Otterson and was born in Roslyn, Long Island, Sept. 17, 1828. During the Civil War he served as surgeon U. S. V. from Dec. 24, 1861, to May 25, 1864. Five years ago he gave up the duties of his profession in consequence of paralysis of the right side, after having practiced twenty-five years in Brooklyn, N. Y., at one address. Two sons and a daughter are his survivors.

OWEN J. WARD, M.D., N. Y. University Medical College, 1865, died at his home in New York city August 17, aged 58 years. He served on the visiting staff of the Gouverneur St. Hospital from the date of its establishment until his death.

W. J. CANNON, M.D., Lambert, Tenn., August 14.—George E. Catlin, M.D., Lake Geneva, Wis., aged 58 years.—Harlow P. Gamwell, M.D., Westfield, Mass., August 12, aged 74 years.—Edwin Gibbs, M.D., Washington, D. C., August 15, at Lynnwood, Va.—Benjamin F. Wright, M.D., Youngs, Ga., August 10.

MISCELLANY.

An Advance in Therapeutics.—A New York physician, of course in an absent-minded way, prescribed protocol, grs. x, as the latest anodyne. He had been reading the war news.

A Prohibitive Tax.—Prof. Enrico Bottini, an Italian surgeon, announces in a public card his retirement from practice because "he was oppressed by the weight of the income tax imposed and was no longer able to meet it."

Anti-streptococci.—Marmorek's new antitoxin for the streptococcus pyogenes is proving successful in the tests at the Paris hospitals in septic wound and puerperal fevers, blood poisoning and other diseases caused by this streptococcus, and also in the complications of diphtheria, against which the Behring antitoxin is powerless.—*St. Petersb. Med. Woch.*, July 11.

Patent on Antitoxin.—Concerning the recent patent granted Prof. Behring, on antitoxin, Messrs. Parke, Davis & Co. of Detroit announce that they will protect and defend purchasers from any legal proceedings brought as a result of their purchase, sale, and use of their serum, having retained the services of Messrs. Betts, Betts, Sheffield & Betts, of New York City, patent lawyers, to fight the monopoly on antitoxin.

Ohio Medical College.—The *Times-Star*, Cincinnati, August 15, says: "They apologize—The AMERICAN MEDICAL ASSOCIATION has apologized to the Ohio Medical College for ousting them from the ASSOCIATION a year ago." This item only shows the ignorance of the *Star* in confounding the AMERICAN MEDICAL ASSOCIATION with the Association of American Medical Colleges, an entirely separate body.

The St. Louis Eye, Ear, Nose and Throat Hospital.—This hospital, located at 500 N. Jefferson Avenue, was opened to the public, April 1, 1898. The Eye Department is in charge of Dr. J. Ellis Jennings, and the Ear, Nose and Throat Department in charge of Dr. Leo Caplan. The ground floor is en-

tirely devoted to the out-door department, and is open to the poor from 2 to 4 P.M. daily, except Sunday. Care is taken to exclude from free treatment persons able to pay for professional services. The institution will be incorporated and have the privilege of giving post-graduate courses in diseases of the eye, ear, nose and throat, and of issuing certificates or diplomas to those who have taken the courses.

Nervous Phenomena in Children.—Willits (*Phil. Med. Jour.* for August 6) says that a perfectly healthy infant should sleep twenty of the twenty-four hours. He condemns the practice of suddenly waking a babe from a sound sleep, so often done for visitors to talk and play with it, as this excitation falls directly on the nervous system and is an important factor in producing nervousness. Startling noises of any sort, as street noises, loud-striking clocks, bells, etc., are to be avoided.

Subclavian Aneurysm.—Moynihan (*Annals of Surgery* for July) discusses the treatment by both excision of the sac and the use of the distal ligature. He advocates the former method and claims for it a far greater chance of recovery, no risk of recurrence, less risk of gangrene, and a probable complete recovery from any affections due to nerve interference. He gives statistics concerning the mortality, gangrene and recurrence after operation in both of these methods, recurrence after operation being noted in 5 per cent. of the cases after ligature.

Medico-Legal Surgery.—The September number of the *Medico-Legal Journal* will contain an article on "The Progress of Medico-Legal Surgery," by the editor, Clark Bell, advance sheets of which have been sent to the *JOURNAL*. It gives a sketch of the organization of the Army and Navy Medical Corps and a full account of railway surgery in the United States and of its societies and associations, including the Section of Medico-Legal Surgery of the Medico-Legal Society, which is largely a body of railway surgeons. The article gives, briefly, a statement of the advances in surgery since the Civil War, and a series of letters from eminent surgeons with their opinions in regard to this subject, and would be a useful one for reference as to questions of military, navy and especially railway medical organizations in this country.

Thyroid Medication is generally considered injurious in exophthalmic goiter, but O. Martin urges all to cautiously try it in this disease before resorting to severer measures, as he has witnessed a number of severe typical cases permanently cured with this alone. He describes one of them in the *Presse Méd.* of July 13, nothing left but a slight tremor after four months of 40 to 20 centigrams a day of the desiccated thyroid extract. It has also proved effective in chlorosis. Capitan relates a number of cases which had resisted iron and tonics, but yielded at last to thyroid medication, indicating a thyroid origin for certain forms of this disease.

Township Trustee can not Bind County to Pay.—Section 6718 of Burns' Revised Statutes of Indiana of 1894, provides that the board of commissioners of each county shall constitute a board of health ex-officio for the county, whose duty it shall be to protect the public health, by removal of all causes of diseases when known, and in all cases to take prompt action to arrest the spread of contagious diseases, etc. But the appellate court of Indiana holds, in the case of Board of Commissioners of Perry County vs. Bader, June, 1898, that a claim for services as watchman during time of quarantine against smallpox, rendered by order of the township trustee, can not be collected from the county, through the board of commissioners, it showing no liability upon the part of the county.

An Ancient Hospital.—At Baden, near Zurich, Switzerland, in connection with recent excavations at Windisch, the Roman Vindonissa, an ancient military hospital has been discovered. It has fourteen rooms, which appear to have been well supplied

with medical, surgical and pharmaceutic apparatus, including probes, tubes, forceps, cauterizing implements, and even safety-pins; medicine spoons of bone, silver measuring vessels, jars and pots for ointments, etc. Some coins were also found, those of silver being of the reign of Vespasian and Hadrian, those of copper bearing the effigy of Cladius, Nero and Domitian. At Vindonissa, two great Roman military roads meet, one leading from the great St. Bernard along Lake Leman and then by Aventicum and Vindonissa to the Roman stations on the Rhine; the other from Italy to Lake Constance by the Rhaetian Alps, the present canton of Winterthur, Baden and Windisch. This last point was the station of the seventh and eighth legions.—*Scientific American*, Aug. 13.

A Skeptic in Georgia.—We once heard a very eminent and scholarly Bishop say that, in his experience, some learned men were the greatest fools. We do not care to apply this harshly to Prof. Koch, but will mildly suggest that he is out of his reckoning. Prof. Koch of antituberculosis fame has made a new discovery. He has come forward with the startling announcement that he knows what causes malaria. It's mosquitoes. He might just as well have included sandflies, gnats, and bedbugs. The *New York Times* cleverly turns the tables upon the professor. It says: "Now, Prof. Koch may be a very great man, but he has simply begged the question. If mosquitoes cause malaria, what causes mosquitoes? That's what this patient world wishes to know. Tell us how to get rid of the mosquitoes, and we shall not worry about the malaria." The presumed origin of the mosquitoes is water, yet Dr. Koch insists that malaria is not water-borne. The facts are against him, but just now he has his mosquito theory in full blast.—*Augusta Chronicle*.

Gynecologic Surgery of the Insane.—Hobbs (*Am. Jour. of Obstet.* for August), in a paper on "Surgical Treatment of Patients at the Asylum for Insane," London, Ont., says that "the work in gynecologic lines shows that perhaps one-sixth, if not one-fourth, of all the women in asylums for the insane are there because of the special infirmities of their sex." Of 136 women, 126—17 per cent. of the female inmates—had organic lesions or malformations incompatible with normal genitalia. Of the 126, the condition of 121 necessitated operative measures for the amelioration of physical disorders which either caused or complicated disturbance of the nerve centers. The impossibility of obtaining reliable data from the insane as to the origin of the ill-health made actual examination necessary, and always under anesthesia, ether being used, and, in these patients, being rapidly recovered from and rarely causing nausea or vomiting.

Speech Defects.—Scheppegrell (*New Orleans Med. and Surg. Jour.* for August) writes on the etiology and treatment of stuttering, stammering, etc., and groups the forms of speech defects in two classes: paralalia and dyslalia, the former referring to defective speech, lisping, etc., and the latter to difficult or spasmodic speech, as stammering and stuttering. He considers prophylaxis of the utmost importance, and believes the inclination of mothers to teach their children "baby talk" can not be too severely condemned, as they become so accustomed to this method of speech as to make it difficult to change it. He points out that girls suffer less from the more severe forms of speech defects than boys, and some authors have even doubted the existence of female stutters, while Cöen of Vienna, places the number at only 1.5 per cent. of the whole number affected. He says that children should not be allowed to associate with stammerers, as the children may not only be influenced but there is also a tendency to aggravate the defect in the case of the stammerer.

Exhibition of Rupture to Jury.—In the personal injury case of what is now styled the Chicago & Alton Railroad Company vs. Clausen, in which the supreme court of Illinois affirmed a judg-

ment against the railroad company, and denied a rehearing, June 10, 1898, it was complained that the trial court had improperly permitted the plaintiff below to exhibit to the jury a rupture alleged to have been caused by the accident set forth in the case. This leads the supreme court to say that it is primarily within the discretion of the trial court to permit an injury to be shown to the jury for any legitimate and proper purpose that will aid in the determination of the issue; and that, while it is questionable whether the exhibition referred to was proper, inasmuch as the existence of the rupture, and the nature and extent of it, were not controverted by the defendant, and it is questionable whether its only effect would not be to excite feeling, rather than to aid in settling any disputed question, the court does not feel prepared to say that such was the case, or that there was a clear abuse of the discretion confided to the trial court.

A Medical Relief Yacht.—Mr. Alexander Van Rensselaer's yacht *May*, the services of which were tendered the United States Government by the owner, sailed August 5, for Porto Rico. It has aboard the four special commissioners appointed by the National Relief Association: Hon. William Potter, ex-Minister to Italy, chairman; Mr. Alexander Van Rensselaer, Mr. Louis C. Vanuxem and Dr. G. G. Groff. The yacht will carry supplies for the soldiers, which, by order of Surgeon-General Sternberg, will be placed at the disposal of Colonel Greenleaf, Chief Surgeon of the troops under General Miles' command. Having discharged the supplies, the yacht will carry to the United States any sick or wounded soldiers or sailors that may be awaiting transportation.—(*Phila. Med. Journal*, August 6.) [The press dispatches of August 20 noted the arrival of the vessel at Ponce. Mrs. Van Rensselaer was slightly injured by a stumbling horse while riding from Ponce to the military camp.]

New Medical Faculty.—The faculty of the Baltimore Medical University, which had been depleted by the resignation of a number of its members, has been reorganized with the following roster: Jas. G. Linthicum, emeritus professor of principles and practice of medicine. Hampeon H. Biedler, principles and practice of surgery and clinical surgery. Wm. A. B. Sellman, diseases of women and children. J. W. C. Cuddy, theory and practice of medicine and clinical medicine. E. Reid, diseases of the nervous system and diseases of the throat and chest. Frederick C. Jewett, physiology and hygiene. Theodore Cook, Jr., diseases of the eye and ear. A. G. Barret, toxicology and chemistry. Z. K. Wiley, anatomy and pathology. C. Urban Smith, materia medica and therapeutics and clinical professor of diseases of the stomach. The adjunct faculty is: H. J. Hankel, demonstrator of anatomy. Howard Bryant, lecturer on medical jurisprudence. Shelton Law, lecturer on minor surgery and bandaging. S. Leroy Robinson, lecturer on practical pharmacy. H. A. Huland, assistant demonstrator of anatomy. J. T. McCarthy, lecturer on diseases of the skin. N. J. Kasten, lecturer on histology and bacteriology. M. J. Kelley, demonstrator of pathology. Edward C. Moriarity, assistant demonstrator of pathology. J. J. Valentini, lecturer on diseases of nose, throat and chest. Geo. W. Lautenbach, assistant to the chair of nose, throat and chest. W. J. Chappell, lecturer on diseases of nervous system. George A. Strauss, lecturer on applied therapeutics. Thos. A. Poole, assistant to chair of eye and nose.—*Baltimore News*.

Presumption as to Qualification of Physician.—The rule seems to be that, when the question of license arises collaterally in a civil action between the physician and one who employs him, due qualification under the statute will be presumed, and the burden of proof is upon him who denies such license. So says the supreme court of Iowa, in the late case of Kossuth County. But when it comes to proving the incompetency of a physician, as of one employed by the board of supervisors to furnish poor

persons in the county with medicine and medical aid, so that another physician employed by the township trustees to attend a pauper may recover of the county therefor, the court holds that the same rule applies as where the character of a person is directly in issue, and that the evidence must be confined to general reputation, and particular acts or specific facts are not admissible. And under this rule, the mere individual opinion of the witness is not admissible, and no one will be permitted to speak affirmatively to the character or competency of another, as distinguished from general reputation, solely from rumors or reports. The court can not try collaterally each and every case tending to show the ability or competency of the person whose skill is the subject of inquiry, and, before one is permitted to speak of the character or competency of another, knowledge must appear.

The National Relief Committee on Pure Water for Troops.—The National Relief Committee, through Dr. E. O. Shakespeare, the chairman of its committee on sanitation, has issued a pamphlet address under the title of "Pure, Wholesome Water for all Troops" in which, after showing what has been done by the Surgeon-General and the Quartermaster-General of the Army to provide germ-free filtered water for a certain portion of the army, it urges the necessity for boiling all water not thus filtered. It then discusses the necessity for aerating the boiled water to render it palatable and makes various suggestions for accomplishing this. The Committee has adopted the following resolutions:

WHEREAS, in the opinion of the Executive Committee of the National Relief Commission, the supply of the American Armies with germ-free and palatable drinking water is so essential to the maintenance of the health and strength of the men,

Resolved, That the action of the Government in providing the means of furnishing 50,000 of our troops with germ-free drinking water should be most heartily commended; but we would at the same time most earnestly urge upon the responsible authorities at Washington, the necessity of providing, at the earliest possible moment, the means of furnishing the remainder of our armies, namely the other 200,000 men, with equally wholesome quality.

Resolved, That this body hereby expresses its willingness and desire to co-operate in such an effort to the extent of its ability and in any manner possible.

In carrying the last resolution into practical effect the committee on sanitation has communicated with commanding and sanitary officers of armies in the field, inviting attention to the necessity of boiling and aerating the water-supplies of camps, and requesting their views as to the best methods of effecting the purification of natural waters. Meanwhile, it has sent a special commissioner, Mr. Louis C. Vanuxem, to Porto Rico with supplies for the benefit of the hospitals there; and in view of the probable need for apparatus for purifying the drinking water, it proposes sending facilities for furnishing 5000 men with wholesome and palatable water, irrespective of the original quality of the natural supply. The apparatus comprises fifty water boilers, each encased in a removable wooden box for safe transport. Each boiler is about 20 by 11 by 13½ inches, fitted with hinged handles for convenience of transportation and with a rose sprinkling attachment, by passing through which the boiled water, when cooled, may be aerated to ensure palatability. A suggestion is made that this aeration may be effected by pumping air through a rose nozzle from such a pump as is used to inflate bicycle tires.

Standard Medical Works as Evidence.—The theory of the plaintiff in the recent personal injury case of Bixby vs. the Omaha and Council Bluffs Railway and Bridge Company, was that he had received a serious shock to his nervous system in a collision of street-car and railway train, and had symptoms indicating locomotor ataxia or some neurotic trouble, although at the time of the trial there was no objective or external evidence of any injury. One physician testified to such symptoms, while three

others insisted that there existed no signs of any disease. Then the plaintiff was permitted, over the objection of the defendant, to read in evidence extracts from a number of admittedly standard medical works, the portions read to the jury treating of the symptoms, and not the cure, of diseases. But the supreme court of Iowa holds that this was reversible error. It says that the question is not whether the courts will use the helps of science in the investigation of truth. There is no controversy on that score. The authorities are agreed that the truths of the exact sciences, the established facts of history, and computations from fixed data may be proven by the works of reputable authorities. This is on the ground that all men assent to their correctness. But it points out that medicine belongs to the class known as inductive sciences. The data are constantly shifting with new discoveries, and the conclusion which may be considered sound today is repudiated tomorrow. A medical work may be standard this year, and obsolete next. And even the opinion of the same author changes in the different editions, owing to new discoveries and a better understanding of symptoms. These facts, with the added one of difficulty often experienced by those learned in medicine to determine from the books the nature and extent of injuries and diseases, the court insists, emphasize the necessity of cross-examination and the use of an oath, not only that the theory contained in the books may be known and understood, but that practical skill may apply the science of medicine in each case. Nor does it consider that the admission of medical treatises is authorized by section 4518 of the Iowa code, which says: "Historical works, books of science and art, and published maps or charts, when made by persons indifferent between the parties, are presumptive evidence of facts of general notoriety of interest therein stated." But the court suggests that the same reasoning does not apply to a case where a physician is employed to treat a patient according to a certain system, so that, in determining whether he has in fact followed that system, the books from which physicians of that school are shown to have derived their knowledge may be admissible, for these expound the very principles which he is alleged to have violated; and, under the circumstances, the books themselves would be better evidence than quotations from them. But in Alabama alone, it is said, are medical works received in evidence for general purposes.

Hospitals.

THE NEW Sternberg hospital only a short distance from Lytle, Ga., was thrown open for the reception of the sick at Camp Thomas, August 16. The hospital has accommodations for 1200, and a corps of Red Cross nurses is in attendance.

OTTO YOUNG has donated a \$50,000 building, fully equipped, to the Chicago Home for Incurables as a consumptive ward.

Societies.

The following recent meetings are noted:

Indiana.—Southern Indiana Medical Society, Indiana Springs, August 12.

Iowa.—Southwestern Iowa Medical Association, Council Bluffs, August 18.

Michigan.—Grand River Valley Medical Society, Holland, August 9.

Ohio.—Muskingum County Medical Society, Signal, August 11.

Pennsylvania.—Cecil County Medical Society, Perryville, August 12; Lycoming County Medical Society, Williamsport, August 12.

Virginia.—Richmond Academy of Medicine and Surgery, August 9.

Louisville.

RODMAN.—Dr. Wm. L. Rodman, former Professor of Surgery in the Kentucky School of Medicine, will remove September 1 to Philadelphia, where he goes to accept the chair of Surgery in the Medico-Chirurgical College. Dr. Rodman filled the

chair during the last college term, but returned to Louisville at the conclusion of it; he now goes permanently.

NOVEL EXPERIENCE.—Dr. S. J. Meyers, at home on sick-leave from his post at Camp Thomas Division Hospital, relates the following experience, which is decidedly original and uncommon in army hospitals: He had hardly been in the camp two hours when he had delivered a woman of a premature fetus. Standing at headquarters a soldier rode up in great haste stating that a woman was dying in another part of the camp, and soliciting medical aid. The Major commanding the hospital sent Dr. Myers with instructions to do all he could for the patient without assuming any responsibility. The Doctor found one of the actresses at the camp theater in labor, and delivered her in a few moments of an eight months' fetus which was dead. The mother stated she did not know she was pregnant and had not lost a moment's time from her work to the time of her delivery. A labor case in an army camp of 45,000 men is something of a novelty.

Washington.

HEALTH OF THE DISTRICT.—The report of the health officer for the week ended August 13 shows the total number of deaths to have been 96, of which number 51 were white and 45 colored. The principal causes of death were: Nervous diseases, 13; heart diseases, 7; intestinal, 4; respiratory, 17. There were 2 deaths from diphtheria and 1 each from measles and typhoid fever. At the close of the week there were 28 cases each of scarlet fever and diphtheria under treatment.

PHYSICIANS TO THE POOR.—Drs. H. T. Harding and P. C. Hunt have been appointed physicians to the poor, at a salary of \$30 per month. Dr. E. A. Gorman has been appointed resident physician of the Washington Asylum, vice S. C. Johnson resigned. Dr. J. Spence Hough of the health office, who was appointed a surgeon in the navy for duty on the steamer *Morrill*, has been granted indefinite leave of absence by the district commissioners.

PHYSICIANS LICENSED.—The following named physicians, having successfully passed the District examination, have been licensed to practice by the Board of Medical Supervisors: Drs. Jesse Lee Adams, Jr., John R. Atwell, George Kasper Baier, Wm. Mitchell Barnes, Levi C. Blake, Martha Clark Burritt, Wm. J. Bush, John A. Clark, Carl A. Clemons, Elmon A. A. Cook, Thomas Dowling, Jr., Wm. N. Fisher, A. F. Foy, Julia M. Green, Thomas A. Groover, Carl D. Haas, Stuart C. Johnson, Carl S. Keyser, Robert S. Lamb, W. R. Rives, Jr., Lewis Albert Walker, Charles S. White and Wm. E. Whitson.

ARMY APPOINTMENT.—Dr. William E. West of New York, resident physician at Columbia Hospital and late resident physician at the Central Dispensary and Emergency Hospital, has been appointed an Assistant-Surgeon, U. S. A., for duty at Porto Rico on the U. S. ship *Florida*.

WASHINGTON TRAINING SCHOOL FOR NURSES.—The Washington Training School for Nurses will hereafter be operated in conjunction with the Emergency and Alms House Hospitals. Congress has appropriated \$6,000 for a nurses' home to be established at the Alms House Hospital grounds. Application for admission to the school for free instruction will be received at either institution, or by Dr. H. L. E. Johnson, Dean.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—The hospital has recently suffered great loss in the death of Dr. George Byrd Harrison, a member of the Board of Trustees, and one of the consulting staff. Dr. Harrison formerly had charge of the Department of General Disease. The medical staff called a special meeting and adopted appropriate resolutions of regret. Mrs. Phebe Hurst has donated a large building and grounds opposite the hospital to be used as a nurses' home for the institution. The gift was made through Dr. Burnett, who is having the necessary alterations made, when it will be formally transferred. Congress appropriated \$2,000

for necessary repairs to the hospital and the work is being pushed with dispatch. In order to prevent overcrowding and imposition on the hospital, the Board has agreed to charge \$15 a week to those able to pay for board. This is in line with the wishes of the Medical Association.

HEADQUARTERS FOR THE RED CROSS.—Dr. J. Ford Thompson has tendered the use of house 1310 G Street to the American National Red Cross Society as a headquarters for their committee. The offer has been accepted and the committee has raised the Red Cross flag over the building.

GIFT OF THE RED CROSS.—Surgeon-General Sternberg has acknowledged the receipt of \$5000 from the supply committee of the Red Cross Society, which he will distribute. He will send \$1000 to Colonel Forwood, chief surgeon at Montauk Point; \$1000 to Colonel Harvard at Santiago; \$1000 to Colonel Greenleaf, chief surgeon on General Miles' staff at Porto Rico; \$1000 to Lieutenant-Colonel Hoff, chief surgeon at Chickamauga; \$500 to Major Hale, in charge of the U. S. Hospital at Ft. Thomas, Ky.; \$500 to Major Fay, in charge of the U. S. Hospital at Ft. McPherson, Ga., all of which will be used for the purchase of delicacies for the sick and wounded soldiers who are arriving at these points.

ISOLATION HOSPITAL PLAN.—The district commissioners have appointed an additional architect to assist the inspector of buildings in the preparation of plans for the construction of an isolating building on the grounds of Providence Hospital for the reception of minor contagious diseases. The entire cost of the building is not to exceed \$25,000.

HOSPITAL FOR FOUNDLINGS.—The superintendent of the Washington Hospital for Foundlings has submitted the yearly report to the district commissioners. The average number of children cared for this year has been larger than any year since its organization in 1887. The total number in hospital June 30, 1898, was forty-six, and forty-four received during the year. Thirteen were adopted by outsiders, nine died and four were transferred to other institutions. Mal-nutrition caused the greatest number of deaths. The total receipts of the year were \$11,485.88; total expenditures, \$7449.48, leaving a balance of \$4036.40.

THE NEW MORGUE.—The coroner, Dr. Wm. P. Carr, reports that the new morgue for the District will shortly be completed. The morgue will not compare favorably with morgues of other large cities, but it will be a great improvement on the old shed in the rear of the station-house, previously known as the morgue. It is to be but a one-story building, with only two rooms, but will be fitted out with ice-boxes and other necessary paraphernalia to the extent of the parsimonious appropriation for that purpose.

GEORGETOWN UNIVERSITY HOSPITAL.—The Committee of Administration of the Georgetown University Hospital, consisting of Drs. J. T. Johnson, S. S. Adams, George T. Vaughn, Chas. Klineschmidt and Geo. M. Kober have announced, by circular, the formal opening of the hospital for the reception of patients. The free beds are for the benefit of indigent sick, but evidence of dependency must be furnished in accordance with the rules of the Medical Association of the District of Columbia before admission is granted. Seven rooms have been fitted up for the accommodation of pay patients, and the privilege of attending private patients in these rooms is extended to all members of the Medical Association and to surgeons of the Army and Navy and Marine Hospital service. The hospital will have in addition a well-equipped emergency and dispensary department.

Philadelphia.

WILL OF DR. PEPPER.—The will of the late Dr. Pepper was admitted to probate a few days ago. It was drawn up in February last and is very short, covering three typewritten pages. The actual value of the estate is unknown, personal property \$100,000, and real estate \$20,000, being only nominal items to

comply with regulations concerning the fees of the register. It is known that Dr. Pepper carried heavy life insurance, and it is the prevailing belief that the entire estate will approximate a million dollars. Four executors were chosen: his widow, Mrs. Frances Pepper; his eldest son, Dr. William Pepper; his nephew, George Wharton Pepper, and his brother-in-law, James B. Leonard. After the provision that his brain be given to the anthropometric society and his body be cremated, the other provisions concern the real estate and personal property to be divided between his wife and three sons.

DR. PEPPER'S SUCCESSOR.—While discussion of Dr. Pepper's successor at the University of Pennsylvania may not be with good grace, since the time of his death has been so short, yet there is some speculation going on regarding the one upon whose shoulders the mantle of the distinguished teacher and clinician will fall. It appears that there are several being mentioned for the chair, but matters have not progressed far enough to say with any reasonable certainty as to who it will be. Of those mentioned, the names of Dr. William Osler and Dr. James Tyson seem to be most prominent. It will be remembered that Dr. Osler once occupied the chair of clinical medicine in the University of Pennsylvania, but subsequently accepted the chair which he now holds at the Johns Hopkins. Dr. James Tyson succeeded Dr. Osler as professor of clinical medicine at the University, and as he has filled this chair for the past four years, therefore becomes the logical successor of Dr. Pepper. Dr. Tyson has been connected with the University almost since he was graduated in 1863, first as lecturer in microscopy (1868) and in chemistry (1870), and later professor of microscopy and physiology in the Pennsylvania College of Dental Surgery. In 1874 he became lecturer on pathologic anatomy, and in 1889 succeeded Dr. Osler in the chair of clinical medicine. It is a question whether or not Dr. Osler would be willing to give up his chair at the Johns Hopkins to accept the chair at the University of Pennsylvania. Provost Harrison is reported as saying: "The trustees will not meet until October, and it is impossible to say with any accuracy who will be chosen as Dr. Pepper's successor. I would not want to discuss the question now."

SICK SOLDIERS OF PENNSYLVANIA.—It is proposed to bring back all those patients now ill with typhoid fever and other diseases, to Philadelphia, where they may be placed in suitable hospitals. The University Hospital, Episcopal Hospital, Pennsylvania Hospital, German Hospital and St. Ayers Hospital, have tendered their beds free of charge for the treatment of these cases. To bring the cases home a complete hospital train has been fitted up by the Pennsylvania Railroad Company, consisting of eight coaches, of which five were fitted up as hospital cars with a capacity of 100 patients, two Pullmans, to be used a dining and sleeping car by the physicians and nurses. The train will be in charge of Drs. Carl Freese of the German Hospital; Henry Sykes of the Episcopal Hospital; George Pfroem of the Medico-Chirurgical Hospital, and Wilmer R. Batt of the City Council, with a full corps of nurses. The University of Pennsylvania claims priority over all others in tendering its services to the Government, Provost Harrison having written to Governor Hastings to that effect April 29.

YELLOW JACK AND PHILADELPHIA.—Aside from the precaution exercised by the city and State, the United States government is under existing laws taking precautions against the introduction of yellow fever into Philadelphia and other cities. A few days ago an inspecting party left this port on the "floating" quarantine station *Protector*, built for the purpose of preventing the entrance of yellow fever into this city. The *Protector* was taken to Fort Pond Bay, near Montauk Point, where it will remain under the charge of Dr. J. J. Kinyoun, bacteriologist of the Marine-Hospital Service. It is the intention to destroy all germs of yellow fever by thoroughly disinfecting the baggage of every soldier coming into port, also to

cause a reasonable detention of the person before mingling with those who have not been in infected areas. The vessel is built of steel, 150 feet long, over 20 feet beam and without propelling machinery. The cost of building of the vessel, apparatus, etc., was about \$50,000.

PREVENTION OF TUBERCULOSIS.—Judging by an editorial which recently appeared in one of the lay papers here, the people are gradually learning that prevention is the best means of stamping out that disease. Frequently we hear it stated that tuberculosis is gradually becoming more prevalent in the larger cities, but this does not apply to Philadelphia. On the other hand, the statistics prove that deaths from that disease are gradually growing less. For instance, in 1892 deaths to 1000 persons living was 2,480; in 1895, 2,104, and in 1897, 1,966. This reduction in the number of deaths from tuberculosis in Philadelphia is attributed to the good work of the Pennsylvania Society for the Prevention of Tuberculosis, under the supervision of Dr. Flick, who located infected areas and infected houses throughout the city in 1892. The paper then speaks of ways of preventing the disease, such as through the inspection of food supplies, suppressing the habit of expectorating along the public highways, and taking the necessary precaution in those houses infected by tuberculosis. As a further method of suppressing the disease, it is recommended that a State sanitarium be built where these cases might be treated under the care of those most competent to render effectual aid.

PTOMAIN POISONING.—Two families are seriously ill with symptoms of ptomain poisoning derived from ham. One, the Cortledge family, is composed of the father, mother and two-year-old child; the other of two boys, aged 12 and 3 years, respectively, and a girl, aged 21 months. On the 15th both families ate boiled ham for supper (bought at the same store) and at 11 o'clock Mr. Cortledge and child were seized with violent abdominal pains, accompanied by vomiting. The mother was only slightly affected. It was subsequently learned that the other family were similarly affected, and two physicians pronounced the cases ptomain poisoning. The ham had been boiled by the manufacturer in this city, but those who had prepared the food for market could not be found. Samples of the food are being examined.

MORTALITY REPORT.—For the week ending at 12 o'clock, August 15, 443 deaths had been reported to the Board of Health. This shows a decrease of 41 over the previous week and of 37 over the number for the corresponding period of last year. Of the total number of deaths, 164 occurred in children under five years of age. The principal causes of death were: Nephritis, 18; cancer, 14; cholera infantum, 57; phthisis, 52; dysentery, 4; marasmus, 24; paralysis, 8; suicide, 2; whooping cough, 3; sunstroke, 9; heart disease, 20.

INFECTIOUS DISEASES.—This week: Diphtheria, 16 deaths and 45 cases; scarlet fever, 1 death and 10 cases; typhoid fever, 78 cases and 8 deaths. Last week: Diphtheria, 2 deaths and 49 cases; scarlet fever, 25 cases; typhoid fever, 13 deaths and 60 cases.

RESULT OF EXAMINATIONS.—The report of the examinations of the last meeting of the State Medical Board has just been published and the following results are tabulated:

	No. examined.	No. rejected.	Per cent. rejections.	General average.
University of Pennsylvania	93	1	01.0	83.63
Medico-Chir. Col., Philadelphia	76	8	10.5	78.84
Woman's Medical Col., Phila.	26	1	03.9	78.68
Physicians and Surgeons, Baltimore	2	1	50.0	76.71
Jefferson Medical College	20	5	25.0	74.73
Western Pennsylvania	21	8	38.1	72.39
Miscellaneous	53	17	32.1	75.61
Total	316	47	14.9	78.77

The honors in this examination were held by the University of Pennsylvania and the Medico-Chirurgical College of Philadelphia, the University leading, as it generally does. The Medico-Chirurgical College, however, made a good average for the hospitals here and captured one-half of the positions on the resident staff of the Philadelphia Hospital.

INFECTED DURING A SURGICAL OPERATION.—Dr. Emil Dippe, chief resident surgeon at St. Timothy's Hospital, while assisting in an abdominal operation on July 4, inoculated himself with infected material, near the nail on the left hand. A

localized abscess formed but was relieved by an operation. Subsequently another abscess developed in the left axilla and the Doctor can only be relieved by another operation.

ALMSHOUSE MAY BE ENLARGED.—The Board of Charities has recommended that councils appropriate \$60,000 to be expended in repairing and otherwise making room for the care of patients now in this institution. At present there 1355 insane patients being treated in the buildings, which are greatly overcrowded.

ROUGH RIDERS AT THE UNIVERSITY HOSPITAL.—Alfred Roey, a Cuban, Percy Geyer of Colorado and Joseph Adkins of Colorado, were taken ill on their way from Tampa to Montauk Point, the quarantine station, recently, and were transferred to the University Hospital.

WILL INSPECT ARMY CAMPS.—Dr. E. O. Shakespeare of Philadelphia, member of the Sanitation Committee of the National Relief, has been commissioned to head a council, whose duty it shall be to inspect the various United States Army Camps and to better matters where unsanitary conditions are found. The National Relief Association recently issued an earnest appeal for funds to support its work, both in the States and in the field, with very good results. It is stated that this special board has been created to render void the necessity of red-tape methods at the different departments at Washington, and that matters will receive attention with much greater dispatch. Remembering that typhoid fever and preventable diseases have been on the increase from the time that soldiers were first put into camps, it seems just a little strange that some one was not sent to these places long ago; but as health matters are usually those which receive attention last, and since the war is over, these things may be now considered. When unsanitary conditions are found, Dr. Shakespeare will at once telegraph to Washington, and all measures likely to bring about disease will be corrected immediately.

PHILADELPHIA SOMEWHAT UNCLEAN.—During the recent inspection for any latent case of yellow fever which might have crept in unawares, certain districts along the Delaware were found in unsanitary condition. Chief Nuisance Inspector Kennedy presented his report to the Board of health a few days ago, stating that 3673 premises had been visited and rigorously inspected and that 704 nuisances were discovered.

EXPERT TESTIMONY.—Dr. Charles K. Mills of the University of Pennsylvania has been called to Lancaster, Pa., to give expert testimony in the Wireback murder trial.

PHILADELPHIA POLYCLINIC.—The fifteenth annual report of this institution shows that during the year 92,564 visits were made to the dispensary and 634 operations were performed under ether. Miscellaneous contributions during the year amounted to \$7,500 and a State appropriation of \$2,500 was received. The operating expenses were \$41,824.23; receipts \$41,152.88. To this must be added \$10,725.46, being the amount of floating indebtedness on Jan. 1, 1897, which makes the total floating indebtedness of the institution on Dec. 31, 1897, \$11,406.81.

THE PUBLIC SERVICE.

Memoranda Relating to Operations of the Medical Department, U.S.A.—MEDICAL OFFICERS.—The number of medical officers allowed by law is inadequate in times of peace. The total number allowed is one hundred and ninety-two. There are at present thirteen vacancies. The administration of the Surgeon-General's Office and the Army Medical Museum requires six. Eleven are on duty at medical supply depots and as chief surgeons of military departments. One is at the Soldier's Home; fifty-six are at general hospitals, on hospital ships, and at garrisoned posts. Four have been disabled during the war by sickness. Five are on duty as chief surgeons of army corps. This leaves ninety-six medical officers available for duty with troops in the field. Of these, thirty-five have been appointed brigade surgeons of volunteers, and are distributed among the various army corps.

This deficiency in regular medical officers has made it necessary to employ nearly four hundred contract surgeons, and more are being employed every day. Most of these doctors from civil life are doing good service, and many of them are thoroughly well-equipped physicians and surgeons, with ample hospital experience; but it has been impossible to make a careful selection, owing to the great pressure of business in the Surgeon-General's Office, and the urgency has been so great that it has not been practicable to have examining boards to pass upon their qualifications.

In addition to this, there have been appointed by the President, eight brigade surgeons with the rank of lieutenant-colonel, twenty-four division surgeons with the rank of major,

and sixty-five brigade surgeons; also three medical officers for each of the regiments of U. S. Infantry, Cavalry and Engineers. All volunteer regiments have three medical officers appointed by Governors of States.

General hospitals have been established at Key West, Fla., with a capacity of 755 beds; at Fort McPherson, Ga., 1050; Fort Thomas, Ky., 432; Chickamauga Park (Leiter Hospital), 255; Fortress Monroe, Va., 535; Fort Myer, Va., 308. In addition to this, several hundred sick and wounded soldiers have been placed in the Marine Hospital on Staten Island and in civil hospitals in New York and Brooklyn; also nearly two hundred in the civil hospitals in Charleston, and a smaller number in civil hospitals in various parts of the country.

The Hospital Train, which was equipped for service June 22, and consists of ten tourist sleepers and a dining car, has made repeated trips from Camp Thomas, Tampa and Fernandina, with sick, to the general hospitals at Fort McPherson and Fort Thomas, and has proved to be most useful.

The Hospital Ship *Relief* was purchased May 18, but owing to delays in preparing her for service, did not sail from New York until July 2. Four days later she arrived at Siboney with an ample supply of medical stores of all kinds and with sixteen doctors. She returned to New York with a load of wounded and was then dispatched to Porto Rico. She is now returning to New York with 260 sick and wounded soldiers.

The Hospital Ship *Olivette* went with the Fifth Army Corps from Tampa, Fla., to Santiago and brought a load of wounded from that port to New York. She returned to Santiago with supplies and is now en route to New York with 200 patients.

MEDICAL SUPPLIES.—When the troops were originally ordered from their respective posts into the field each regiment was required to take with it medical and surgical chests, litters and field supplies for three months. Afterward, medical supplies in ample quantities of all kinds were sent to Tampa for the Fifth Army Corps, about to sail for Cuba, and supplies have subsequently been sent to the several camps that were formed, wants being anticipated as far as possible and requisitions approved promptly on receipt.

Supplies for the army have been furnished from three medical supply depots: New York, St. Louis and San Francisco, the latter supplying very largely, by purchases on the Pacific Coast, the troops that went to Manila. St. Louis depot supplied the camps and regiments in the Mississippi Valley and the West; and the New York depot the camps and expeditions fitted out from the Atlantic Coast.

In addition to general medical supplies in great variety, 1204 medical and surgical chests have been issued, the surgical chests containing surgical instruments and dressings especially designed for the relief of wounded on the battlefield.

The extent of the demands upon the medical supply depots is indicated by the following figures, showing the issue of some of the more important articles.

First aid packets	No.	272,000
Hospital corps pouches	"	5,797
Orderly pouches	"	509
Pocket cases	"	952
Surgeon's field cases	"	369
Field operating cases	"	323
Medical and surgical chests	"	1,204
Litters	"	2,250
Litter slings	"	7,600
Cots and bedsteads, with bedding	"	18,185
Blankets, gray	"	23,950
Field desks	"	440
Quinin pills	"	7,300,000
Chloroform and other	botts.	13,220
Gauze, sublimated, 1 meter pkgs.	Pkgs.	100,000
Gauze, bandages, 3 sizes	No.	331,776

SICK AND WOUNDED.—At the present time, August 15, we have a full record of 40,620 cases of sickness and wounds that occurred among a mean strength of 154,028 men, during the months of May, June and July. As the average of the 3 months probably 6 per cent. of the troops were constantly sick. Reports from commands not yet represented in the statistics are expected daily.

HOSPITALS CORPS.—Immediately at the outbreak of the war the Hospital Corps consisted of one hundred hospital stewards, one hundred and three acting hospital stewards and five hundred and twenty privates, making a total of seven hundred and twenty-three. The larger part of this number was ordered with the troops that left their respective stations to the camps of concentration and accompanied the regular regiments in the 5th Army Corps to Cuba, the smaller part being left behind at the various Army Posts, they being just enough to take care of the medical property.

Enlistments were at once ordered throughout the country of suitable men for the Hospital Corps, special attention being paid to enlisting nurses, pharmacists, cooks, drivers, mechanics, etc. A good many medical students and young physicians were also accepted.

By means of enlistments and afterward by transfers from volunteer regiments to the Hospital Corps a large number of men were obtained, and today there are in service by actual count five thousand and eighty-four. Probably a thousand are in service whose enlistment and transfer is not yet reported.

In addition to the members of the Hospital Corps enlisted for the purpose of taking care of our sick and wounded, we have employed 141 male nurses and 386 female nurses under contract.

CIRCULAR NO. 6.—

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, Aug. 12, 1898.

Chief surgeons of army corps, of divisions and of smaller independent commands are expected to make timely requisition for medical supplies. It must be remembered that some delay is often unavoidable in putting up supplies at the supply depots and in their transportation to the point at which they are needed. In an unexpected emergency telegraphic requisition must be made and supplies will be sent by express; but it must be remembered that this mode of transportation is very expensive and that failure to make requisition in advance of immediate needs entails unnecessary expense upon the Government. Division and field hospitals in which typhoid fever and other serious cases are treated should be liberally supplied with all articles necessary for the treatment and comfort of the sick. The field supply table applies only to mobile commands and division hospitals to accompany them on short notice.

GEO. M. STERNBERG,
Surgeon-General, U. S. Army.

CHANGE OF ADDRESS.

Bailhache, P. H., from 1819 M. St. N. W. to 2115 S. St. N. W., Washington, D. C.
Clark, T. H., from 2720 Indiana Ave. to Chicago Policlinic, Chicago, Ill.
Dicken, H. W., from Ann Arbor to Potoskey, Mich.
Fisher, G. C., from 2601 Calumet Ave. to 291 S. Lincoln St., Chicago, Ill.
Hoffman, A., from Chicago, Ill., to Topeka, Mich.
Halmag, J. H., from Hartford, Mo., to Cincinnati, Ohio.
Johnson, H. B., from Denver, Colo., to St. Johns, Ariz.
Kendall, H. B., from Wrightstown, Wis., to Freedom, Ohio.
Klebs, A. C., from 92 State St. to 419 Indiana Ave., Chicago, Ill.
McKinnon, J. R., from 313 Chicago Ave. to 345 Rush St., Chicago, Ill.
MacAllister, S., from Rocky Ford to Eads, Colo.
Nagel, J. S., from 553 W. 79th St. to Harrison St. and Western Ave. Chicago, Ill.
Norris, W. L., from 2123 Ashland Ave. to National Union Bldg., Toledo, Ohio.
Prensel, J. E., from Chicago, Ill., to Robison, Brittain Columbia Canada.
Rumsey, F. W., from 1013 17th Ave. to 1618 Pennsylvania Ave., Denver, Colo.
Somers, L. S., from Analomink to 8554 N. Broad St., Philadelphia, Pa.
Sisson, E. R., from Indianapolis to Maxwell, Ind.
Schmitt, G., from 120 Warren Ave. to 1268 W. Madison St., Chicago, Ill.
Whitwell, W. S., from San Francisco to San Mateo, Cal.

LETTERS RECEIVED.

Atkinson, W. B., Philadelphia, Pa.; Angear, J. J. M., Chicago, Ill.; American Medical Compend, Toledo, Ohio; Anderson, Winstow, San Francisco, Cal.; Applegate, J. C., Bridgton, N. J.
Barnstein, J. E., Manitowoc, Wis.; Bodenbender, N. W., Buffalo, N. Y.; Braut, A. C., Canton, Ohio.
Collison, F. J., Columbus, Ohio; Campbell, Chas., Petersburg, Pa.; Coleman, J., Washington, D. C.; Collins, G. S., Providence, R. I.
Edwards, Wm. M., Kalamazoo, Mich.
Friend, S. H., Milwaukee, Wis.; Frazler, W. S. & Co., Aurora, Ill.; Frick, Lewis, Hilbert, Wis.; Fitzwilliams, J. J., St. Louis, Mo.; Fuller's Adv. Agency, C. H., New York, N. Y.; Fries Bros., New York, N. Y.
Goldspohn, A., Chicago, Ill.; Gregory, L. L., Chicago, Ill.; Greeno, J. H., Dubuque, Iowa.
Hunter, C. H., Allison, Iowa; Hudson, G. W., Camden, Ark.; Hash, E. W., Chicago, Ill.; Hektoen, L., Chicago, Ill.; Hummel Adv. Agency, A. L. (2), New York, N. Y.
Johnson, H. L. E., Washington, D. C.; Johnston, C. H., Grand Rapids, Mich.
Keach, J. S., Racine, Wis.; Kiernan, Jas. J., Chicago, Ill.; Klein, Henry, Chicago, Ill.
Leckie & Saylor, Chicago, Ill.
Maline Mfg. Co., The New York, N. Y.; Moreland, W. H., Manitowoc, Colo.; Murphy, A., Octavia, Neb.; McCready, L. R., Grand Rapids, Mich.; Mufford, H. K. Co., Philadelphia, Pa.; Merck & Co., New York, N. Y.; McFadden, W. G., Shelbyville, Ind.
Overstreet, G. M., Sylvania, Ga.
Palmer, F. A., Chicago, Ill.; Prince, L. H., Palmyra, Wis.; Parke, Davis & Co., Detroit, Mich.; Priebe, J. M., Yale, Ky.; Parsons, J. W., Portsmouth, N. H.; Paquin Laboratories, The Paul, St. Louis, Mo.; Powell, H. H., Cleveland, Ohio.
Rutledge, J. C., Detroit, Mich.
Shoemaker, J. V., Philadelphia, Pa.; Spivak, C. D., Denver, Colo.; Smith, Kline & French Co., Philadelphia, Pa.
Tuley, H. E., Louisville, Ky.; Treyner, V. L., Council Bluffs, Iowa; Thomas, S. J., Corey, Mich.
Union Adv. Agency, Louisville, Ky.
Woldert, E. A., Philadelphia, Pa.; Watson, W. S., Flashkill-on-Hudson, N. Y.; Weinberger, Dr., Vienna, Austria; Wathen, W. H., Louisville, Ky.; Whitford, Wm., Chicago, Ill.; Walker, J. E., Hornellsville, N. Y.; Walright, G. W., Round Knob, Ill.
Yeager, J. A., Archbold, Ohio.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, SEPTEMBER 3, 1898.

No. 10.

ADDRESSES.

THE INFLUENCE OF AGE, SEX AND RACE IN SURGICAL AFFECTIONS.

Address of the Chairman of the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WM. L. RODMAN, M.D.

LOUISVILLE, KY.

Gentlemen of the Section:—Allow me first to express my grateful appreciation for the honor conferred upon me at the Semi-Centennial Meeting. To be chosen as Chairman of this, the largest Section of the ASSOCIATION, is indeed an honor any one should esteem highly.

I have endeavored, with the aid of the distinguished Secretary, Dr. Parkhill, to present to you as attractive a program as has ever been offered to this or any other Section in former years. Indeed, too much credit can not be given our Secretary for his indefatigable labors and their fruitful results. We regret that his obligations to our country, now resounding from end to end with stern alarms, deprive us of his companionship and help on this occasion, to which he has looked forward with such keen pleasure, and for the success of which he is so largely responsible. I am sure that I voice the sentiments of every member of the Section, when I thank him for his work in our behalf, and bespeak for him a safe return to Denver, where his professional worth and surgical skill have long been recognized as second to none. Our loss is the country's gain, and we might well wish that all of our countrymen needing surgical attention in the pending war with Spain, may fall into hands as competent and deft as the Surgeon of Colorado's Volunteer Corps.

We also wish to express our gratitude to Dr. Powers, the Acting Secretary, who on short notice assumed the work and gave to it most intelligent and conscientious attention.

In offering for your consideration the customary Chairman's Address, I have chosen for my subject "The Influence of Age, Sex and Race in Surgical Affections." Time limits will prevent consideration of all diseases having a bearing upon the subject, and your attention will, therefore, be asked to some affections seeming to have a pointed claim to our notice.

The treatment of racial differences has been almost necessarily limited to the white and black races of North America, as but few of the many army and navy surgeons to whom I have written for data gathered by them in their various assignments, have been able to reply at satisfactory length on account of the exacting demands of the past three months.

The diseases of the negro possess an abiding interest to those of us living in the South, called upon as we are daily to give him professional succor in private, hospital and dispensary practice. Although much

that is of value has been written of his immunities and susceptibilities to disease, it has occurred to me that the last word has not been spoken, due more to the changes in the negro himself than to inaccurate observations on the part of medical writers of the past and present.

To the careful student who reviews the literature of the subject, there is no escape from the conclusion that the negro as we now find him, with changed environments, habits and associations, is a different being from what he was in antebellum days. He came to America three hundred years ago with certain immunities and susceptibilities to disease, which were so conspicuous as to be noted by all trustworthy observers. A few of the immunities he hitherto enjoyed have been maintained, more have been lost in part, others wholly exhausted, and to some few diseases he shows not only the same liability as the Caucasian, but even exceeds him in vulnerability, to-wit: local tuberculosis of glands, skin and bones. The original susceptibilities of the negro seem to have abided with him, and to have undergone less change, he still being as obnoxious to fibroid and other benign neoplasms as he has ever been, as well as to keloid, elephantiasis and tetanus. Not only is the race manifesting an increasing tendency to disease of all kinds, but statistics of every Southern hospital will prove them to be less resistant and to show a larger mortality, both in medical and surgical affections (operative and non-operative cases), than the Caucasian. The full-blood is less resistant to begin with, and the mulatto inherits the weaknesses of both races, the strength of neither, and begins life with the heaviest of handicaps. Therefore, it is not surprising to the observant to occasionally hear such authorities as Hunter McGuire, D. W. Yandell, and other thoughtful practitioners of large and long experience with this race, say that the African will in time become as extinct in this country as the bisons and the North American Indian. It is clearly foreshadowed, that he can not maintain the struggle for life with a race his superior in every respect, in a climate to which he is ill-suited at best.

MALIGNANT DISEASE.

All early writers testified to the immunity of the African, in both his native and adopted country, to malignant disease. It can not be doubted, I think, that as a race, cancer was most rare with them up to fifty years ago. These early writings have too much influenced practitioners of this generation, however, and many reason that cancer is still rare with negroes, because such was undoubtedly the case a few generations ago.

Malignant disease (both sarcoma and carcinoma) is certainly increasing in frequency in the black with even greater ratio than in the white race. From a condition of practical immunity they have become nearly as liable to malignant disease of some organs

as the white, quite as much so to that of the mammary gland and the seemingly more obnoxious cancer of the uterus. The records of the City Hospital and Health Department of Louisville for the past thirty years are in line with the statements and statistical data of Billings and Matas, and emphasize especially the frequency of cancer of the uterus in negroes. It would be interesting to know what per cent. of the cases were in full-bloods; but it is impossible to ascertain this, as no distinction is made in our reports between full-bloods and mulattoes. Nor is it possible to determine with reasonable accuracy the relative number of cases of sarcoma and carcinoma, and therefore, no attempt is made to do so.

It is safe to say, however, that the negro is relatively somewhat more prone to sarcoma than cancer. As has been stated, the mammary gland suffers as often in the black as in the Caucasian, the uterus more so. Now it would appear *à priori*, that the negro, almost universally affected as he is with phimosis, should show a special susceptibility to cancer of the penis; yet I have never seen such a case, nor do the records of our city hospital indicate that one has been treated there in thirty years. Of 207 deaths from cancer in negroes reported to the Louisville Health Department in thirty years, none have been entered as cancer of the penis.

According to the eleventh census (just issued), malignant disease occurs in every 100,000 living inhabitants:

Whites	53.93
Negroes	36.65
North American Indians	5.31
Chinese a little less liable than Indians.	

To every 1000 deaths from known causes in the United States in persons over forty-five years of age, there were due to cancer and tumor:

Whites	62.86
Negroes	29.81
North American Indians	14.49
Chinese	12.99

In this country, as in England, cancer is alarmingly on the increase. Both races show a marked increment of gain, and so far as cancers in general are concerned, the increase has been about the same in the two races, as will be shown by the table giving every death from cancer in Louisville for thirty years. These records have been gone over by my assistant, and are, I am sure, reliable, as he has devoted weeks to the work. It will be seen that the number of cases has doubled each decennium.

CANCER OF ALL PARTS.

1868 to 1878—total number deaths 244; white 205; colored 39.
1878 to 1888—total number deaths 484; white 411; colored 73.
1888 to 1898—total number deaths 892; white 797; colored 95.
Total number deaths for thirty years 1620; white 1413; colored 207.

There have been 161 cancerous patients in the Louisville City Hospital during the past twenty years (1878 to 1898). The records of the decennium from 1868 to 1878 are incomplete and are therefore excluded. Of cases admitted there were 118 white and 43 colored.

1878 to 1888—total number cases admitted 63; white 47; colored 16.
1888 to 1898—total number cases admitted 98; white 71; colored 27.
1878 to 1898—total number cases admitted 161; white 118; colored 43.

These statistics agree fully with those of Matas, drawn from the service of the Charity Hospital in New Orleans, and show that malignant disease, instead of being uncommon in the negro, is as often encountered in him in Southern hospitals as it is in the whites.

Of 1620 deaths from malignant disease reported to

the Louisville health office, 1413 were whites and 207 colored, or about one-eighth of the total number; the normal proportion of colored population to white in Louisville is one to four, which indicates the mortality in the colored population to be 50 per cent. of what it is in the white for cancers in all situations. This I believe to be nearer the truth than the smaller hospital series indicates, as it deals with the entire population of the city, and is moreover nearly in accord with Billings' eleventh census statistics (death rate 53.93 to 100,000 living white inhabitants and 36.65 colored). Further, these represent deaths, and are not open to the objections clinical diagnoses may be.

The discrepancy between the statistics of the hospital and health office are apparent and not real, for, while the hospital shows the colored race to suffer as often as the white, it should be remembered that the improvidence and indigence of this race force them into the city hospital twice as frequently as the more favored whites. The normal hospital proportion of colored to white is just double that shown by the city at large; hence the two reports are in perfect harmony and show the negro to suffer one-half as often from cancers in general as the whites.

Mammary gland.—Far from being uncommon, as many practitioners believe, malignant disease of the mammary gland is as frequent in the black as the white. Personally, I have seen five cases, and know from a colleague that two others were recently in the city hospital. The first case of cancer of the breast I ever saw was in a negress about forty years of age, as black as a crow's wing. She died from recurrence after operation, at the usual time and in the usual way, confirming the clinical diagnosis. In all the others the clinical diagnosis was confirmed by the microscope and by the death of each from recurrence.

There were 889 cases of cancer of the breast reported in the eleventh census; 811 females, 28 males. One occurred under 15 years of age; 163 between 15 and 45; 670 at and over 45. Rate of death to 100,000 inhabitants: females, 8.23; males, 0.29; age 45 to 65, 30.08; 65 and over, 50. Death rate practically same in white (4.27) and colored (4.19).

The records of the Louisville city hospital for the past twenty years show that three-fifths of the cases were whites and two-fifths colored, though the latter represent but one-third of the hospital population. Our health office shows that there were fifty-eight deaths from mammary cancer in the past thirty years. Of this number fifty were white and eight colored.

1868 to 1878—total number cases mammary cancer 14; white 14; colored 0.
1878 to 1888—total number cases mammary cancer 17; white 15; colored 2.
1888 to 1898—total number cases mammary cancer 27; white 21; colored 6.
1868 to 1898 58; white 50; colored 8.

Undoubtedly there have been a larger number of deaths from cancer of the breast, but many have doubtless been entered as "cancer" without giving situation. Small as this series is, it emphasizes the increase of cancer in the negro, especially, and shows that as a race they suffered more frequently than the white during the past ten years.

Cancer of uterus.—The eleventh census shows cancer of the uterus to be far more common in the colored race. There were 1472 cases reported and the death rate was 24.94 in the negro and 14.41, or but little more than half the number in white women. Table shows death rate per 100,000 during census period at all ages:

	All ages.	15 to 45 years.	45 to 65 years.	65 years and over.
Total	14.93	9.32	54.01	45.91
White	14.41	8.79	52.29	44.36
Native born	10.98	7.51	51.71	43.71
Foreign born	22.92	11.98	50.79	41.77
Colored	24.94	18.32	94.59	88.36

The death rate is very much higher in the colored race for all ages.

Both the Louisville city hospital and health office statistics show cancer of the uterus to be more common in the black race. From 1878 to 1898 there were 31 cases of cancer of the uterus in the city hospital; of these 23 were white and 8 colored (normal proportion of colored to white in hospital 1 to 3), showing relatively a greater number of cases in the black race:

- 1878 to 1888—total cases 13; white 12; colored 1.
- 1888 to 1898—total cases 18; white 11; colored 7.
- 1878 to 1898—total cases 31; white 23; colored 8.

From 1868 to 1898 there were 272 deaths from cancer of the uterus reported to the health office of Louisville; of this number 216 were white and 56 colored. It shows a per cent. against the negro—our normal population being 1 to 4. Total number deaths from carcinoma uteri in Louisville from:

- 1868 to 1898—272; white 216, colored 56.
- 1868 to 1878—39; white 29, colored 10.
- 1878 to 1888—190; white 74, colored 27.
- 1888 to 1898—133; white 113, colored 20.

I would be glad to pursue the subject of regional liability in the two races further, but it is impossible at this time; suffice it to say that liable as the mammary gland and uterus of the negro are to malignant disease, certain other regions which one would expect to suffer often do so infrequently. I have never seen cancer of the penis, larynx or tongue in a negro, while rectal cancers are common.

Cancer is rare in Indians, and when it does occur, so I am informed, attacks the breast and uterus. Great smokers as they are, their immunity to cancer of the lips has been remarked upon by a number of army surgeons who have written me. Cancer is rare in all savage races, and is pre-eminently an affection which increases in frequency with a higher state of civilization. Dark-skinned races suffer less than the fair.

Age and sex.—Women are twice as liable to malignant tumors on account of their proneness to disease of the uterus and mammary gland, which embrace one-half of the cases in the female sex. Snow's statistics, gathered from the Cancer Hospital in London, and those of W. Roger Williams recently published, clearly attest woman's double liability. The sexes are upon a parity up to the fifth quinquennium, when the difference between them becomes striking. From 25 to 55 the female is nearly three times as liable to malignant disease, and from 55 to 90 is almost twice as obnoxious. Gusserow, who analyzed 3385 cases of uterine cancer, found only two to have occurred prior to 20; while of Gross' series of 1622 mammary cancers the youngest was 21, a ready explanation of the heavy tribute woman pays to malignant disease during the activity and devolution of her sexual organs.

Age.—Infancy and childhood are practically exempt from epithelial malignant neoplasms (cancer), the youngest case on record being one of cylindroma of the rectum in a girl aged 11 (Stern). Cancer being rare prior to 30, then gets to be more common, is ever thereafter more liable to occur with each suc-

ceeding year, and has been reported by Sutton at 102. Practically all tumors of infancy and early childhood are sarcomata, they being nearly as exempt from benign neoplasms as they are to true cancers. Sarcomas of the eye, kidney, testis and prostate are common in infancy, and may be in many instances congenital.

Duzan analyzed 182 cases of sarcoma in infancy, and found 70 of the eye, 45 of the kidney, 11 of the testicle, 8 of the prostate; while the bones, tongue, abdomen and brain were affected 5 times each; lung and dura mater 4 times; pancreas 3; liver, tonsil and rectum 2 each and stomach 1.

During the second decennium the long bones and maxilla are the usual sites of sarcoma. The long bones still suffer in the third, and in the fourth decennium some of the long bones, as the humerus, and the mammary gland and testicle exhibit their greatest tendency to sarcomatous change. After forty, sarcoma is rather uncommon until sixty, when it again becomes frequent. Like cancer, it is common as a senescent change, but unlike it, shows its greatest destructiveness in infancy and early childhood.

The following tables are by W. Roger Williams, on "The Malignant Tumors of Infancy, Childhood and Youth," the *Lancet*, London, May 1, 1898:

TABLE 1. Showing the deaths due to malignant disease at different age periods:

Sex.	All ages.	Under 1 year.	1-2.	2-3.	3-4.	4-5.	Total under 5 years.			
Males	57,454	8	6	6	6	5	31			
Females	10,489	7	6	6	6	6	31			
	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65-75	75-85
Males	18	18	33	50	145	426	1095	1727	1555	591
Females	15	18	25	41	321	1313	2464	2922	2330	910

Over 85, males, 65, females, 101. Total both sexes, 16,243.

TABLE 2. Showing the number of deaths from malignant disease in early life per million persons living at each age period:

Age periods.	Under 5.	5-10.	10-15.	15-20.	20-25.	All ages.
1861-70	13	7	7	7	17	381
1871-80	12	7	7	7	27	464
1881-90	20	10	11	20	35	539

BENIGN NEOPLASMS.

As a class the mesoblastic benign neoplasms are more common with the negro, he being exceptionally obnoxious to fibroma, lipoma and keloid. Molluscum fibrosum, which I am not disposed to question is more frequent in the negro, is, I am sure, a more common affection in the whites of this and even more Northern latitudes than authorities admit. Many speak of it as an affection almost peculiar to the black races of the tropics, yet I have in my own practice seen three most beautiful instances of this disease in white males, all past forty, within the last four months. I have seen the disease more often in the white than the black. Keloid is also, I take it, more common in the white race than many believe, though it is certainly many times less frequent than in the negro. I have seen a number of typical keloids supervening upon vaccination scars, on the lobule of the ear after the piercing, and upon cicatrices variously situated, in the white race. I agree perfectly with Tiffany that operation does no good in young subjects, and that there is in elderly persons afflicted with keloid a spontaneous tendency to undergo resolution. There is no disproportion between the sexes in their liability to benign tumors.

Age: As has been intimated, the very young are practically exempt from benign neoplasms. The first decennium suffers rarely, and then usually from congenital angiomas and lymphangiomas.

TUBERCULOSIS OF BONES, JOINTS, SEROUS MEMBRANES AND GLANDS.

Pulmonary consumption, which was practically

unknown to the Africans and Indians of North America, several generations ago, has become their deadliest foe, and is fast decimating their ranks. It is more than twice as common in the African as the white, and still more prevalent with the Indian, the latter race suffering directly in proportion as they give up their tepee life and live in poorly ventilated buildings. Therefore, it is not surprising that local tuberculosis of bones, joints, lymphatic glands and serous membranes should show the same proportion of cases in the three races.

I am informed by reliable observers in the Medical Corps of the Army and Indian Departments, that an enormous per cent. of Indian boys and girls develop one or more varieties of surgical tuberculosis when they give up their 'outdoor life for the schoolroom. Tuberculosis in all of its manifestations has increased with the Mexicans in the same ratio as with the Indians.

Age has a distinct influence, and a majority of such cases occur in the first decennium, about one-fourth in the second, and the remainder after 20. The two sexes are equally obnoxious.

VARICOCELE.

This disease is closely associated with the evolution of sexual apparatus, and is, therefore, largely encountered in adolescence. In my own series of 215 operative cases, and many others not treated, I have never found it to begin before puberty, and rarely after 30. The immense preponderance of cases will be met with in the decennium from 15 to 25. Occurring, as it generally does, in youths who have not begun a sexual life, it is, as a rule, cured by marriage, unless of long standing and accompanied with atrophy of the testicle. While relatively rare in married men, I have operated within the last year upon four such cases in men aged 24, 30, 35 and 57 years respectively, the last being older than any other case in my series; in fact, his was the only instance of the disease I have seen past 40. He was a frail man, doing heavy lifting in his occupation as ship carpenter. The pampiniform plexus was greatly enlarged in this case, and the pain in the cord and back, and the dyspeptic symptoms were so pronounced that he was sent to me from Indiana for operation. He was promptly cured, and I have never seen a quicker and more decided improvement in one's general health, follow any surgical procedure. Negroes are practically immune to varicocele. It has been frequently observed that this race enjoys a relative immunity to varices in general. Varicose veins of the legs and hemorrhoids are noticeably less common in the negro, still a number of such cases have come under my observation. I have for fifteen years been looking for a varicocele in the negro, and my chief of clinic has been instructed to examine all males coming to our clinic, and has done so with negative result. In an analysis of more than 600 cases treated and operated upon by Louisville surgeons, not a single case has been seen in the negro, and only one encountered in a mulatto. I have taken great pains to see each of the clinical teachers and their assistants, and the records of the four large dispensary services of Louisville do not furnish a single case of varicocele, notwithstanding the fact that nine-tenths of our patients are negroes. Correspondence with surgeons and clinical teachers of other cities has almost invariably been followed by the statement, "Have not seen varicocele in negroes."

Prof. J. William White of Philadelphia, recently told me that in several hundred operations he had done for varicocele, none were negroes. Horwitz of Philadelphia, in 278 cases, has seen but a single instance, and that in a mulatto. Kirby of Philadelphia has not seen it in the negro. Tiffany of Baltimore, has had but one case and that in a bright mulatto. Prof. John P. Bryson of St. Louis writes me as follows: "We have failed to elicit, either from private practice or from clinics of the St. Louis Medical College or the St. Louis Hospital, a single case of prostatic hypertrophy or of varicocele occurring in the full-blooded negro. While, as you say, the negro population of St. Louis is not large, it seems unlikely that these conditions should exist to any but the rarest degree without some of them appearing at one or other of the two above named clinics. I have had abundant evidence of the prevalence of tubercular affections of both prostate and testis in the full black, but of hypertrophy of the former or of varicocele, I have no record or memory. The question is an interesting one, and may shed, on investigation, some light upon the obscure subject of the etiology."

Professor Hunter McGuire of Richmond, Virginia, writes me as follows: "I have never seen a case of varicocele in the full-blooded negro. I do not remember to have seen one in a mulatto."

Dr. F. C. Leber of Louisville writes: "Varicocele is rare in the negro. I can speak decidedly in regard to this, since in the four years during which I was President of the United States Board of Examiners of Pensioners in this city, I can not recall a single instance of this disease, while the cases in which pensions were granted to white veterans for this affection were quite numerous, as the records show."

Captain and Assistant Surgeon William L. Kneeder, United States Army, writes: "I have never seen a well-marked case in the negro. I served three years with colored regiments and examined many negro recruits."

Lydston of Chicago has seen "one case of moderate varicocele in a mulatto."

Bull, Wyeth and Coley of New York tell me that they have never seen varicocele in the negro.

Therefore, I take it, I am justified in assuming that the full-blooded negro is practically immune, and that mulattoes have varicocele most rarely. No one, so far as I know, has investigated this subject before, but it does seem to me that the evidence here presented is weighty. There are, I think, good reasons anatomically and physiologically for this marked immunity. Anatomically the testicles do not hang so low as in the white; are not so large, though the penis is larger, and the scrotum is close fitting and less lax than in the white man. In the negro the condition is much like the scrotum of the dog. Physiologically the negro begins his sexual life at puberty, and does not know what it is to be continent any time thereafter. Dissections which I have made and caused to be done have failed to show any difference in the veins of the negro from the white.

The usual causes of varicocele given in text-books and other literature fail to explain this striking immunity of the negro. I am satisfied that the better mechanical support given his veins, together with his lascivious life, furnish the best explanation. I also believe that the reason for this disease always affecting the left pampiniform plexus of veins is mostly due to the fact that the left testicle is larger, heavier and

more dependent than the right. This in conjunction with the fact that the spermatic veins empty at a right angle into the left renal instead of at an acute angle into the vena cava as upon the right side, and the absence of a valve upon the left side, which was shown by Brinton to exist upon the right, offer a perfectly satisfactory reason as to the left-sidedness of this disease, entailing as it must a sluggishness of the venous circulation upon this side. I do not believe that it ever occurs upon the right side unless preceded by a larger varicosity upon the left. In my 215 operations for varicocele I have encountered it as a bilateral condition in two cases, and in each the trouble was primary and much greater upon the left side. In only one of these cases did I operate upon both sides. In the second case the varix upon the right side promptly subsided after operating upon the left.

Several army surgeons to whom I have written making inquiry if varicocele was common among the North American Indians, have replied always in the negative. It must be, from the information I have at hand, at least rare, if it occurs at all, with the Crow, Arapahoe, Cheyenne, Sioux, Apache and Comanche Indians.

ENLARGED PROSTATE.

My own experience leads me to believe that enlargement of the prostate as a senescent change is common enough in the white after 50, but rarely seen in the negro. Every surgeon to whom I have written expresses the same opinion, many stating that they have never seen it in the full black. Prof. Hunter McGuire writes me as follows: "As much as I have had to do with this subject and as much as I have written about it, I never saw a case of chronic hypertrophy of the prostate gland in a pure negro; I see it very often in the mulatto and mixed breeds." Dr. F. C. Leber, who was president of the Louisville Board of Examiners of Pensioners, says that in his four years' service no case of enlarged prostate presented for examination in the negro. He has not seen it in private or hospital practice in thirty-seven years' experience. Prof. John P. Bryson of St. Louis writes that while he often sees tuberculosis of the prostate and testicle in the negro, he has never seen a single case of prostatic hypertrophy, nor do the records of the college and hospitals of St. Louis with which he is connected show a single instance of this affection. Profs. F. W. Samuel and H. H. Grant of Louisville, both surgical teachers and busy men, have never seen enlarged prostate in the negro, notwithstanding the fact that our negro population is one to four and our clinics are made up almost entirely from the negro population. Other Louisville surgeons, as Bloom, Roberts, Vance, Cartledge, Orendorf and Blue, have all expressed the opinion to me and have written that enlarged prostate in the negro is very rarely encountered. I have seen one case in a negro past 20 in twenty years' experience. My distinguished friend, Prof. P. S. Conner of Cincinnati, writes me that "enlarged prostate is infrequently found in blacks."

The records of the Louisville City Hospital for the past ten years have been most carefully examined, and there has not been a single case in the negro. I therefore agree with Matas that chronic enlargement of the prostate gland is a rare disease in hospital practice in Louisville, as it is in New Orleans, but can not

agree with him that it is relatively nearly twice as common in the black race. Age has a most important bearing upon enlarged prostate, and it is practically never seen before middle life. It is said by most authors that about one-third of all males past middle life are subject to some enlargement of the prostate; in only about one-tenth of these, however, is the enlargement of such a nature as to be of pathologic import. I am sure that I have never seen enlarged prostate, not clearly due to malignant disease, prior to 50, and few cases under 60. White and Martin state that prostatic enlargement occurs as a rule in men who have passed the age of 55, and that "on the basis of extensive tabulations it is, however, apparent that enlargement of the prostate begins only exceptionally under the age of 50, or after that of 70."

Since writing the above a letter has been received from Prof. H. H. Mudd saying that his case of supposed hypertrophy of the prostate in a negro aged 27, proved to be malignant. This case has been often quoted, and I am glad to have an authentic statement from Dr. Mudd. In his letter he says: "I have never seen a pure case of hypertrophy of the prostate in the negro. I reported two cases at one time; one a pure case of hypertrophy in a white child, aged 13 months, and another, a full-blooded negro with very large prostate which proved to be malignant. The prostate of this case was a hard, firm, malignant growth of the size of the two fists. I will look up my reports and see if I can give you a description of the pathologic conditions found by examination under the microscope."

A letter of more recent date says that the enlargement of prostate filled the pelvis and was found to be alveolar sarcoma. This disposes of a hitherto puzzling and much quoted case.

GALL-STONES.

That gall-stones practically never occur during the first decade of life, and but rarely in the second, I am now assured after an extensive search of the literature of the subject and personal correspondence with a great many surgeons who have been kind enough to give me reports of the ages of all cases operated upon. It may be said that they are infrequently seen under 30. After 30 cholelithiasis becomes progressively more common with advancing years. In more than 9,000 autopsies gall-stones were found in one case in every thirty by Naunyn; in persons past 60, one out of every six is affected. The disease is unmistakably more common in women than in men, the proportion being usually given as five to two. In my opinion the disproportion is even greater than this, as is shown by a careful analysis of more than 100 cases operated upon by Louisville surgeons. Of 102 cases where sex was stated 18 only were males. The wearing of corsets, etc., has been held to explain the greater prevalence in females, but it would seem to me that a better explanation is given by their sedentary habits and greater tendency to stomach, liver and bowel troubles.

That the colored race is far less frequently affected than the white seems certain. Prof. Tiffany writes me that while he has done many operations for gall-stones in the white, he has never seen a case in the negro. Prof. Hunter McGuire writes me that he has never seen a case in the negro. Dr. W. E. B. Davis of Birmingham has met with a case in a mulatto, but has seen none in the full-blood. In 106 cases oper-

ated upon by Louisville surgeons but one was in the negro. I have at great pains seen every surgeon in this city and gone over their series carefully with them, and am sure that these statistics are absolutely trustworthy. I have done more, and have gone to Dr. Soloman, Curator of the City Hospital, who has kept a record of every postmortem examination he has made since he has been curator (two years) and in not a single instance have stones been found in the gall-bladder of a negro. It, of course, was examined in every postmortem. He found them frequently in whites.

That the negro should suffer less frequently is, I think, explained by their more active life, better teeth and stronger digestion, coupled with the fact that they do not indulge in the highly seasoned and bilious-making food of the whites; they are also less liable to malaria and other conditions dependent upon, or associated with, a torpid liver.

ANEURYSM.

According to the Eleventh Census Report aneurysm is far more common (3 to 1) in the colored than in the white race. The records of the health office in Louisville agree fully with Billings' statistics, showing that in a population of one to four there were nearly as many deaths in negroes as in whites (14 colored and 18 whites) in the last decennial period.

Of patients treated at the Louisville City Hospital for ten years past, there were slightly more than three times as many negroes as whites, although the proportion of white to colored patients in this institution has been nearly three to one. Sex also has a most marked influence in the etiology of aneurysm. Crisp, in an analysis of 551 cases, found it to be seven times more common in men. Souchon's series of 98 cases shows 76 males and 22 females. An analysis of the cases at the Louisville City Hospital, and those reported to the health office for the past ten years, shows more than three times as many cases in men. The disproportion in the two sexes is, I think, readily explained by the greater tendency of the male sex to arterial degenerations on the one hand, and their occupation and habits on the other. Age has a most direct bearing, as aneurysm rarely occurs before 30. In the series analyzed by me none occurred under 25; there were but three under 30, aged 25, 28 and 28 respectively. The greatest number of cases will be found between 35 and 55. The disease is rare after 60. The following table gives a record of all cases reported to the Health Department of the city of Louisville during the past ten years:

Age	White		Sex not stated.	Colored.		Sex not stated.	Totals.
	M.	F.		M.	F.		
1 to 10							
10 to 20							
20 to 30	2			1	1	1	4
30 to 40	3		2	1	1	1	7
40 to 50	3		1	3	2	1	10
50 to 60	3	2			1	1	7
60 to 70		2		4		1	4
70 to 80							
Totals	11	4	3	5	5	4	32

Males. White, 11; colored, 5; total 16. Females. White, 4; colored, 5; total, 9. Sex not stated. White, 3; colored, 4; total, 7.

Aneurysm is apparently far more common in some races than in others, being very frequent and seemingly increasing in England, while it is one of the rarest affections in China, due, it is said, to the non-stimulating rice diet, temperate habits, and phlegmatic temperament of the Chinese. Prof. Hunter McGuire, of Richmond, Va., writes me as follows:

"Aneurysm is much more common in the negro than in the white in my experience." Prof. Tiffany of Baltimore writes of the frequency with which aneurysm occurs in the black race. Nearly all surgeons to whom I have written and from whom I have received replies have remarked upon the greater liability of the black race to aneurysms. I regret to say that few have given any reports of cases, and that these statements are merely impressions gained from a large experience but not substantiated by statistical detail. It is certainly my own conviction that aneurysm is relatively far more common in the negro, and therefore, can not agree with Matas' statement that aneurysms are somewhat less common in the African, a fact he thinks due to their comparative immunity to gout, rheumatism and alcoholism.

TETANUS.

While tetanus is co-extensive with civilization, affecting every race and clime, it is more common in subjects living in hot climates and possessed of dark skins. Negroes, Hindoos, South Sea Islanders, Italians, Spanish and French are less resistant to the germ of Nicolaier. In this country the negro is unquestionably more obnoxious, the infant mortality being heaviest. Appreciating the indifference with which negroes treat minor injuries, and their proverbial uncleanness, we can well understand their greater liability to infection.

The mortality among colored infants is particularly high in comparison to the white, which is explained by racial predisposition on the one hand, perhaps, and by the greater chance for infection through the cord of the newborn, cut as it is with dirty scissors, handled with dirtier hands and wrapped in unclean rags. A large per cent. of colored infants die from trismus neonatorum on Southern plantations, death usually occurring within a fortnight after birth. In the Island of Jamaica and other more Southern countries, the death rate is at times frightful, being from one-quarter to one-half of all infants born; yet the whites here do not suffer to any degree.

According to Billings' recent Census Report, there were 2019 deaths in the census year: 1238 males and 781 females. In 1880 the death rate was greater. Persons from 5 to 15 years show the highest death rate (1.74); those from 15 to 45, 1.04; and over 45, 1.42. The death rate in boys was nearly five times as heavy as in girls. There were sixty deaths in Chicago during the month of July, 1881, due to toy pistol accidents. This, I think, explains the greater prevalence in males; they are simply more exposed to accidents of all kinds and are not more liable, *per se*, to infection.

Tetanus is, or has been in past wars, frequently encountered in military surgery. English soldiers in Spain suffered from tetanus in proportion to one case in eighty wounds; and in the East Indies, in 1872, twice as often. During the civil war our troops were more fortunate. A letter just received from Surgeon Major J. C. Merrill, United States Army, and librarian of the Surgeon-General's Office, is as follows: "I would state that out of 246,712 injuries by weapons of war, 505 (0.20 per cent., or a little over two in a thousand) were followed by tetanus. I may add that over one-half of these cases occurred after injuries to the lower extremities, a fact that has been noted by several authors in other statistics. Your second question, as to the relative frequency of tetanus or erysip-

las in colored and white troops, and also in North American Indians, can not, I think, be answered without an amount of search that would require weeks to make it valuable. Isolated cases are reported here and there, but I know of no statistics of sufficient numbers to throw any light on this matter."

The Italians, Spanish and French have suffered more in their wars than soldiers of more Northern countries with fairer skins. Sudden variations in temperature and the depressing effects of defeat, have always increased the number of cases in military surgery.

I am told by Hebrew surgeons that trismus neonatorum is more common than it should be in Jewish infants. It can well be explained, if true, by the manner of performing the ritual circumcision. The Mohel is necessarily surgically unclean and careless in performing the operation, and infection should be easier than if this function were transferred to surgical hands. I am reliably informed by one of my Hebrew medical friends of Louisville that a well-known Mohel of that city is himself infected in a serious way, and a very unfit person to officiate as he does. I am further told by Jews who were born in Russia and other countries, that an affection, which I take it from their description, must have been trismus, is quite common among Jewish infants there. The Jews are a shrewd, wideawake, sensible people, quick to see their own interests, and it is reasonable to assume that time will soon bring about a change of sentiment in this rite.

Health office.—Deaths reported due to tetanus from 1888 to 1898:

White 5, colored 3, total, 8 cases age not given; white 39, colored 16, total 55 cases over one month; white 126, colored 29, total 155 cases under one month. Total, 218 cases. Total white, 170. Total colored, 48.

VARICOSE VEINS.

Varices of the limbs are but seldom encountered in negroes. Of 23 cases of varicose veins of the legs, without ulcer, there was but a single case in a negro, a male aged 44. Of 29 varicose ulcers there was only one case in a negro, a man aged 53. Of the 45 cases there were 13 females and 32 males.

Varicose veins of the limbs are rare before 30, there being but two in the series, aged 27 and 28 respectively. Between 30 and 40 there were 4 cases, between 40 and 50 there were 4 cases, between 50 and 60 there were 6 cases, between 60 and 70 there were 7 cases, between 70 and 80 there were 2 cases. Varicose veins of the limbs are uncommon with Indians, Mexicans and Chinese.

ERYSIPELAS.

The total number of deaths due to erysipelas, in the United States Census Report just issued, was 2663. The death rate per 100,000 inhabitants was as follows: Under 5 years 31.34; 5 to 15 years 0.81; 15 to 45 years 2.80; 45 to 65 years 8.88; 65 and over 38.55. Very few cases occurred in colored persons, so few as to be of no value. A careful examination of the records of our city hospital and the Louisville Health Office shows that the disease is not so rare in the negro as many suppose. Of 79 deaths due to erysipelas, reported in the past ten years to the health department of this city, 17 were colored, which is about the normal proportion, our population being one to four.

Those who are unaccustomed to seeing erysipelas

in the negro are apt to overlook it on account of the color of his skin. Sex would seem to have but little effect. The two extremes of life suffer by far most frequently, young adults and middle-aged persons having it but rarely. Erysipelas of the newborn has not been a frequent affection in Louisville, judging from records of deaths reported to the health department. In ten years there have been 11 cases dying within the first month of life; of these 10 were white.

STONE IN THE BLADDER.

Dr. George Ben Johnston of Richmond, Va., has made a careful investigation of 1068 cases of urinary calculi occurring in twelve Southern States, and finds that the negro is less immune to this affection than has been hitherto believed by many surgeons. It occurs once in every 11,732 whites, and in the black race once in 55,305. It is, then, nearly five times (4.72) more frequent in the Caucasian. Sex was specified in 708 cases, there being 691 in males and 97 in females; more than seven times as frequent in the male sex. The ages of his cases in this large and interesting series were not given, I regret to say. Gross analyzed 6042 cases of urinary calculi with reference to age, and found that:

2334 occurred from 1st to 10th year.
1079 occurred from 10th to 20th year.
513 occurred from 20th to 30th year.
353 occurred from 30th to 40th year.
422 occurred from 40th to 50th year.
536 occurred from 50th to 60th year.
587 occurred from 60th to 70th year.
201 occurred from 70th to 80th year.
17 occurred from 80th to 90th year.

It will be seen that more than one-half of all cases occurred within the first two decades of life, and that the first furnishes more than double as many cases as the second, the latter more than double the number in the third decade. The ratio is then pretty well maintained until the sixth decade, when an increase is noted; this increase to be still further augmented in the seventh decade. When it is remembered that there are relatively fewer persons living in the sixth and seventh decades, it will at once be seen that the two extremes of life, the first and seventh decades respectively, are most obnoxious to urinary calculi. Stone in the bladder occurs everywhere, affecting every race, but it is found in some countries more frequently than in others. In North America it is found most frequently in Kentucky, Tennessee, Ohio, Missouri, North and South Carolina, Virginia and Georgia. New England is relatively exempt, as are also Mississippi, Alabama, Arkansas, Louisiana and a few other Southern States. Stone is common in France, Austria, Hungary and Russia; seldom seen in Spain and Switzerland. It is also frequent in England, though less so in Ireland. It is very common in India. In China gravel and calculus are, according to Gudgeon of Pekin, among the rarest of affections. Stones are common enough at Canton, but of infrequent occurrence at other points. It has been supposed to be due to the fact that the inhabitants here live largely upon fish, but this can hardly be, as Gudgeon states that the diet, water and habits are the same here as at other Chinese centers.

Opium eating is supposed to lessen the liability of the Chinese, as a race, to stone. Certainly it is not the drinking of limestone water, as river water is universally drunk and very generally boiled before drinking. Little cold water is drunk in China. A number of my surgical friends in the Medical Corps of the

United States Army assure me that stones in the bladder and kidney are rare among the North American Indians, and the reported cases will generally be found to have occurred as a result of traumatism, a nucleus in the bladder inviting the deposition of the solid constituents of the urine around it. I have reports which justify me in thinking that vesical calculi are more common with Mexicans, one operator in the small town of Santa Fé reporting five operative cases.

STONE IN THE KIDNEY.

Practically all that has been said of vesical calculus pertains with equal force to the renal variety. The two extremes of life are most obnoxious; males also suffer about twice as often as females, some placing it as much as three times as frequently. Some excellent authorities, however, as Duplay, Reclus and others, think the two sexes equally affected. It is very certain that the disproportion which exists between the two sexes in vesical calculus does not exist here, and does occur in the former disease for obvious anatomic reasons. The short, capacious urethra of the female easily allows gravel to pass, which in the male must remain in the bladder and act as nuclei for future stones. No cases have been reported to me as occurring in the negro.

OVARIAN GROWTHS.

Ovarian tumors, cystic and solid, occur at all ages and in every race so far as I know. The more usual form of growth is cystic in character, simple or dermoid. Both varieties may be congenital, frequently are, and only await the stimulation which puberty brings to awaken them into renewed life. Therefore, while the records abound with instances of operations done upon simple and dermoid cysts in children by operators all over the world, we may say that prior to puberty ovarian growths are relatively rare. An infant four months old was successfully operated upon by D'Arcy Powers at the Victoria Hospital for an ovarian cyst containing fifty-nine ounces of fluid, reported only a few weeks ago. Hoffman reports an unsuccessful case at three months, the tumor containing six to eight pints of fluid and the solid portion weighing $2\frac{1}{2}$ pounds, in all 10 pounds. Busch operated unsuccessfully upon an ovarian cyst in a child 24 months old. de Santa Anna removed a dermoid cyst in a child 1 year old, and Roehmer one from a child 20 months old, and Schwartz one from a child 4 years old. Mears, Barker and Rein have operated in cases of children under 7 years of age; while Thornton, Lucas, Hamaker, Cupples and Chenoweth have operated in children from 7 to $7\frac{1}{2}$ years. Sir Spencer Wells and many others report operations in children under 10 years of age.

As to the other extreme of life, the same may be said, the octogenarian being not immune. A great number of cases have been reported in women past 70, and a reasonable number 80 and beyond. Cartledge of Louisville, recently operated successfully upon a case past 81. Hoffman reports a case at 82. But, while it is true that ovarian cysts may and do present themselves at any age, it is also true that they are most likely to develop during the sexual life of the host. Puberty stimulates not a few to rapid growth, especially dermoids; therefore, it is not unusual to find such growths under 20. They, and all other ovarian tumors, are more common, however, during the next three decades of life.

Much has been written about the immunity of the negro to cystic diseases of the ovary, yet literature teems with instances of the affection in the colored race. It is unquestionably less common in the negro, but the difference in liability of the two races which is supposed to exist by many surgeons is not supported by careful statistical data. A great many ovarian cysts in the negro, full-blooded as well as mulattoes, have been reported to me by various surgeons of the South. The records of the Health Office of the city of Louisville show that there have been nearly one-third as many deaths from ovarian tumors in the colored race as in the white during the past ten years. This would indicate them to be even more common than in the white, as the normal proportion of colored to white population is one to four; yet this is not the case, I fancy, as the discrepancy is easily explained, I think, in several ways. In the first place the colored race is less resistant to surgery of all kinds, which fact seems clearly established by Matas, from the enormous experience of the Charity Hospital of New Orleans. In the second place negroes are oftentimes operated upon by less skilled abdominal surgeons and under environments less advantageous than whites enjoy.

I am, to conclude, satisfied that the supposed immunity which the negro is thought by many to enjoy does not exist, except to a limited degree, if at all; for if they were immune at one time, the immunity hitherto enjoyed, has, like unto that from malaria and yellow fever, almost wholly disappeared. The size of ovarian growths varies from a walnut to a mass aggregating a weight of 245 pounds, the largest tumor on record, removed by Cartledge of Louisville, within the year. A female laparotomist of Japan removed one weighing considerably less. Keen of Philadelphia, removed a very large tumor in a girl 15 years of age, weighing 111 pounds, the child weighing, after removal, 68 pounds.

Malignant disease (usually sarcoma) of the ovary may occur. It is four times as common before the age of 15 as afterward; 25 per cent. die from any operative interference, and nearly all within a year from recurrence. Convalescence is also tedious in those who survive operation.

CONGENITAL DEFORMITIES.

Harelip, cleft palate, clubfoot, spina bifida and all congenital deformities are certainly less frequent in the negro, judging from the experience of Louisville surgeons and other practitioners in Southern cities to whom I have written. But a single case of harelip and cleft palate, both in the same individual, has been operated upon in Louisville, so far as I can learn from personal interviews with its surgeons and examination of the records of the city hospital and college clinics, for the past ten years. Clubfoot and spina bifida in the negro have never been encountered in my practice, nor so far as I can learn in the practice of other Louisville surgeons. Dr. Vance is positive that he never saw a case.

Congenital deformities of all kinds are also reported to be most rare with Indians. The only deformity reported by any of the many army surgeons to whom I have written was one case of clubfoot and a double harelip, both in Sioux children. The clubfoot was in a boy and the sex of the harelip case was not given by the reporter, Dr. William L. Kneedler, captain and assistant-surgeon, United States Army. Other army

surgeons who have answered my inquiries have all stated that they have never met with these deformities in Indians; most of them, however, stating that they may not be so rare as their observations would indicate, for it is the custom of the Indians to put deformed children to death soon after birth. The Jews, I am informed, suffer less than others from congenital deformities. The Mexicans as a race suffer more frequently than Indians from all congenital deformities, and a number of cases of harelip, club-foot, supernumerary digits, etc., have been reported to me. One family in the practice of Dr. J. M. Diaz of Santa Fé, N. M., is remarkable for each of six children having six fingers and as many toes upon each hand and foot.

APPENDICITIS.

That appendicitis is relatively a rare disease with negroes is a fact substantiated by all Louisville surgeons and others from whom I have received answers to my questions. In an analysis of 250 cases operated upon by Louisville surgeons, but 5 cases have been reported in negroes. This would indicate a striking immunity, as it shows the disease to be only one-tenth as common in the black race.

Sex.—Nearly all writers on this subject have remarked upon and tried to explain the greater frequency of appendicitis in the female. That it is more common in men none will deny. Just what the difference in liability is, it is not easy to say. Fowler's statistics indicate it to be rather more than four times as common—142 men, 35 women. In 92 cases analyzed by myself there were 58 males and 34 females.

Age.—The influence of age is not less marked than that of sex and race. The disease is common between 15 and 35. Though Hold, Villard and others report cases under 5 years of age, but few are of record, and we are justified in saying that the first quinquennium of life enjoys a practical exemption from this affection. It is rare in the second quinquennium, more common in the third, liability further increased in the fourth, and reaching the maximum in the fifth quinquennial period, then declining slowly in the sixth, seventh and eighth to become thereafter a rare disease. The average age in 92 cases was 23.13 years.

I have analyzed 92 cases with reference to age and sex: Of these there were 58 males and 34 females. The ages were as follows:

	Cases.
Under 5 years (3 $\frac{1}{4}$ years)	1
5 to 10 "	9
10 to 15 "	11
15 to 20 "	18
20 to 25 "	19
25 to 30 "	16
30 to 35 "	4
35 to 40 "	4
40 to 45 "	5
45 to 50 "	2
50 to 55 " (51, 52 and 53)	3
Total	92
Average age	23.12 years.

In Fowler's 169 cases (*Annals of Surgery*, May, 1894) 142 were males and 35 females. The age of the youngest was 2.5 years, the oldest 68 years. In the youngest case the disease was tubercular in character. This was the only case occurring under 5 years of age.

	Cases.
Between 5 and 10 years	8
" 10 " 15 "	21
" 15 " 20 "	29

Between 20 and 25 years	43
" 25 " 30 "	23
" 30 " 40 "	28
Over 40 years.	16

Experience of Louisville surgeons:

James M. Holloway—"I recall but one case in the negro." Ap Morgan Vance—"Forty-four cases, one negro; average age 24." A. Morgan Cartledge—"I have operated but once on the negro in more than one hundred cases; first, second, third decade." J. Garland Sherrill—"Three cases; none in negro; aged 55, 20 and 38." H. Horace Grant—"About 5 per cent. in negro." W. O. Roberts—"About twenty cases; one in negro." T. B. Greenley, Meadow Lawn, Ky.—"Have never seen case in negro." J. R. Buist, Nashville, Tenn.—"Common from 5 to 40; rare in negroes." Hunter Maguire, Richmond, Va.—"I see very little difference in appendicitis in the two races; probably it is a little more common in my experience in the white." L. McLane Tiffany, Baltimore, Md.—"I have operated upon two negroes for appendicitis; one a male child, one a young male adult." In more than fifty operative cases I have seen appendicitis but once in the negro.

RECTAL DISEASES.

That all periods of life do not suffer from the several diseases of the rectum is apparent to every observant practitioner. Children frequently have prolapsus ani and polypi, but rarely other rectal affections. Elderly persons also enjoy a relative immunity to rectal disorders, as they suffer infrequently from the more common troubles, hemorrhoids and fistula. Cancer, to be sure, is more frequent with them, but it is, comparatively speaking, a rare disease. Middle life is the time when piles, ischio-rectal abscesses, fistulae and fissures are most prone to occur. They are all frequent. An analysis of 70 cases of hemorrhoids shows only three patients under 20 to have suffered—at the ages of 14, 18 and 19 years respectively.

Suffered in the third decennium.	14
Suffered in the fourth decennium.	15
Suffered in the fifth decennium.	19
Suffered in the sixth decennium.	19
Suffered in the seventh decennium	3
Total.	70

Sex seems to have an influence, as less than one-third were females (females 23, males 47).

Race has a more marked influence, there having been 60 whites to ten colored. As these were hospital cases where the proportion of colored to white patients was 1 to 3, piles seem to be more than twice as common in the white.

Hemorrhoids are said by army surgeons and others to be rare among the North American Indians. The celebrated authority, Van Buren, who spent some years among them, stated that he never saw a case of piles in an Indian. Dr. F. A. Winter, assistant-surgeon, United States Army, informs me that hemorrhoids are reported to be common with the Mexicans, and their liability is supposed to be due to the free use of mescal. Piles are common with the Mexicans of New Mexico where pulque is not used as a beverage, and is supposed, by nearly all of the practitioners of the Territory, to be due to the free eating of Cayenne pepper.

I am told by careful observers doing much practice among the Jews that they are, as a race, liable to rectal affections, Dr. Gerster of New York, for many years surgeon to Mt. Sinai Hospital, where the

patients are mostly Hebrews, gave it as his opinion in a paper read before the American Surgical Association, that this race frequently suffered from rectal affections. He expressed the same opinion to me personally.

Fistula in ano is just as common, or nearly so, in the colored race as in the white. An analysis of 43 hospital cases shows 33 in whites, 10 in negroes; normal proportion of colored to white, nearly 1 to 3. The liability of the negro to tuberculosis explains his being more frequently affected with fistula than piles. Twenty-seven of the series were males and 16 females.

Age.—The first decade, as in piles, furnishes no cases; the second but 5 cases, aged 13, 16, 17, 18 and 19 respectively.

	Cases.
The third decennium furnishes	12
The fourth decennium furnishes	10
The fifth decennium furnishes	4
The sixth decennium furnishes	11
The seventh decennium furnishes	2

Fistula is undoubtedly more fatal in the colored race. Of the fatal cases reported to the Louisville Health Office during the past ten years, there were nearly twice as many deaths in negroes, although the normal proportion of colored to white population is only 1 to 4. This would indicate fistula in the negro to be nearly eight times as fatal as in the white. The excessive mortality in the colored race can be explained by their greater tendency to tuberculosis, sepsis and syphilis.

ACUTE INTESTINAL OBSTRUCTION.

Omitting congenital malformations as a cause of obstruction, we have first, invagination or intussusception; second, impaction of foreign bodies, notably gall-stones; third, volvulus or twisting of the bowel upon its axis, said to be due to elongation of the mesenteric attachment of the gut; and fourth, internal strangulation either due to an inflammatory band, a Meckel's diverticulum, or a protrusion of the gut through some internal opening. I have only chosen to consider acute obstruction, as it would seem to have a more direct bearing upon the questions of age, sex and race.

Intussusception.—Intussusception causes at least one-third of all cases of acute intestinal obstruction. According to W. Brinton, who analyzed 12,000 post-mortem examinations, intussusception causes about 43 per cent. of all cases. Leichtenstern and Fitz place the figures at 38 per cent., others place them as low as 30. Intussusception is *pre-eminently* an affection of *infancy* and *early childhood*. L. Emmett Holt has collected 385 cases of intussusception in young children; 141 were under six months old, 89 between six and twelve months, 32 between the first and second year, 96 between two and ten years. It will be seen that considerably more than one-half of these cases occurred within the first year. It was encountered more frequently in males than in females—174 against 94. In adults intussusception is said to be more common in women than in men (Park's "System of Surgery"). At least one-half of all cases of intussusception take place at the ileo-cecal junction. Of the remaining cases twice as many will occur in the small intestine as in the colon.

Impaction of foreign bodies.—Foreign bodies, hardened feces, and especially gall-stones, may occasionally cause intestinal obstruction. From statistics, which I have carefully examined, it would seem that

this will explain about one case in fifteen of intestinal obstruction. I have seen two cases caused by impaction of enormous gall-stones, both in elderly subjects (white) and in females. Occasionally an instance will be met with in a child who has swallowed foreign bodies. Cases due to fecal impaction are usually in elderly subjects, a decided preponderance being females.

Volvulus.—Intestinal obstruction due to volvulus is comparatively rare. It nearly always occurs after middle life, frequently in elderly people, and is three to four times as common in men as in women. Elongation of the mesentery, which is supposed to act as a cause, may be congenital, but is usually exaggerated late in life as a result of prolonged traction, therefore explaining the relative frequency of this affection in elderly subjects, just as hernia is accounted for in the same way.

Internal strangulation.—This variety of intestinal obstruction is the most frequent of all. It may be caused by a Meckel's diverticulum, inflammatory bands, retroperitoneal hernia, prolapse of the intestine into an abnormal pouch, or be a form of hernia. An intussusception is closely identified with the first decennial period of life, and volvulus with elderly subjects, this variety is associated with those between the two extremes of life. This is, as we might expect, on account of occupation, exposure and the diseases to which we are liable during the active period of existence. In men it may follow appendicitis caused by a band constricting the bowel; in women it not infrequently follows pelvic inflammation.

Race.—Of 45 fatal cases of intestinal obstruction reported to the health office for the past ten years, 40 were white and 5 colored; 26 males, 19 females. This would indicate a mortality in the white race exactly double what it is in the black. (Normal population one to four).

White, male 23, female 17; color not stated 10; colored, male 3, female 2; sex not stated 1; total 56.

CHAIRMAN'S ADDRESS.

[ABSTRACT.]

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY JOSEPH PRICE, M.D.

PHILADELPHIA, PA.

In the early history of gynecology the real pioneers had not only the scientific knowledge to attain, but principles to practically apply, means and methods to adopt without the aid of precedents or the counsel of fellow practitioners. It has always been difficult to perfect and establish a procedure.

McDowell operated with a mob at his door. Nineteen and ten years before McDowell's operation, William Bainham did two successful operations for ectopic pregnancy. Doubtless the success of Bainham's operation greatly influenced McDowell and was inspiration in his own heroic and successful work. Yet notwithstanding this success there was a suspension of the operation for a quarter of a century. Not again was the operation resorted to until 1843. Then by John Light Atlee of Lancaster, Pa., and John Clay of Manchester, England. To the extent to which these pioneers carried their work, we have in our own work, without material change, followed their methods,

perfecting somewhat the lessons they taught and enlarging the field of their application. Ignorance and prejudice yet face us at every turn, repeatedly opposing from sources from which we have the least right or reason to expect it. The old conflict is not yet altogether dead, buried and out of sight and hearing. Those whose courage was great, motives worthy, were abused for throwing light into the darkness in which the great body of the profession groped.

To illustrate and somewhat contrast the spirit of then and now we let Dr. Atlee speak: "It is well known that from the earliest period of ovariectomy in Philadelphia down to the present time it has been my invariable custom to invite members of the profession to witness the operation, in order that they might be able to form a proper opinion of its character and to judge of its propriety. There was not a prominent medical gentleman in this city that had not such an opportunity. It was a rare circumstance during the probationary stage of the operation for any one to accept the invitation cordially and gratefully. Some did so coldly, as if conferring a favor upon me, others politely declined, others positively refused and emphatically condemned the operation, while others took the invitation as an insult." "Gentlemen who were bold enough to witness the operation were even directly accused by their professional acquaintances of being *particeps criminis* in committing murder, notwithstanding these murdered patients recovered. Some high in the profession, against all ethical consideration, would call upon the patients who had finally decided upon the operation for the purpose of warning them against me and certain death. The colleges proclaimed fiercely against the operation as unjustifiable and criminal." Professor Meigs thus emphatically expressed himself: "I detest all abdominal surgery, I am free to say that I look upon all operations for the extirpation of the diseased ovary as not to be justified by the most fortunate issue in any ratio whatever of the cases, or in other words, not to be justified by any amount of success."

It is very good for men to be honest in their opinions, it is very much better for them, in spirit and in fact, to be right in them. Oliver Wendell Holmes has aptly said: "There can be no reason why the student of science should limit his attention to his specialty, though there is abundant reason why he should avoid any attempt to make researches over too wide a range of ground. His researches in his own special corner of science will lose nothing in value, but gain greatly, by an occasional survey of the work of others, only let him not pretend to take part in actual work in many parts of the field he surveys." All troubles to which women are subject, medical and surgical, are found within the field of the general practitioner. He should be a skillful diagnostician and should be competent to deal directly with many minor gynecologic troubles.

In the last decade the younger school of gynecologists have unfortunately lost interest or neglected plastic surgery. The great majority of them have been seized by the strange, inexplicable infatuation for the surgery of the peritoneal cavity.

The vital questions relating to plastic work have largely dropped out of the discussions of our societies, there are few recent contributions to our literature worthy careful study. Along this line we are slow in following the footsteps of the older specialists, the

compeers and followers of Sims. Sims, followed by his pupils, gave his plastic operations, methods and instruments, as yet not improved upon by modification or otherwise. All know the beautiful results following careful and successful work, and fully recognize that it is not work to be done by a mere apprentice to secure desired results. The reports of vesico-vaginal fistulæ run about as follows: "Two attempts at closure resulted in benefit to the patient, reducing the size of the fistula." Distressing conditions are not corrected, because gynecologists are not giving the subject the careful study its importance demands. My own experience can not differ widely from that of many others. In a recent series of cases I had four of vesico-vaginal fistula. They were sent to me either by their friends or physician. In each case there had been three or four attempts at closure, all failures. These failures were explainable from the certain premises that the patients had not been thoroughly prepared for operation by the common methods so fully detailed by Sims and his pupils. Operations for opening into the bladder, for complete laceration of the sphincter are failures in great numbers. Some operators seem to miss the sphincter absolutely. Careful training in plastic work is of more importance than in abdominal surgery. An apprenticeship in a gynecologic dispensary gives a practical knowledge of skin diseases about the external genitals, of parasites and growths, and also lacerations, that is rarely obtainable in private practice. Simple ovariectomies are easy, compared with the delicate, tedious and difficult work of dealing with mutilations where they are extensive, where we have lacerations of the urethra, perineum, bladder and cervix, or a very common distressing disorder, uterine displacement, which received prolonged and careful attention at the hands of the early and prominent gynecologists. Of late years the preparation of the patient and soft parts for operative interference has not been sufficient. Uterine displacements were treated successfully by simple methods by the early gynecologic specialists. Hodge, Sims, Gaylard, Thomas, Albert Smith and many others of equal prominence at home and abroad, corrected the displacement or put the uterus in the normal or desired position with some form of properly adjusted pessary. Displacements are quite generally shirked or neglected. The very common office attempt at local treatment and the correction of displacement is an error and about always a failure. Both office and the run-about treatment in the whole range of gynecologic disturbances are to be condemned. Women with uterine posterior displacements should be put to bed, uterus put forward, all lacerations repaired and a well-fitting pessary placed. Many general practitioners who make no pretense of special skill or knowledge, succeed beautifully in correcting displacements; this they do by putting the patient to bed and correcting the retroversion or the retroflexion by using one of the varieties of the Albert Smith or Hodge pessaries, with Gayland Thomas modification. The great, round, soft rubber rings are useless and harmful, but are in much too common use. The stem girdle pessaries are of but little value. All lacerations should be carefully repaired and posterior displacements carefully corrected before any of the usually adjusted pessaries are placed.

The rest treatment for the correction of displacements is the shortest, surest and most satisfactory. Anterior dressing of the uterus for a few days, with the

patient remaining at rest, in the Sims position, favors a very speedy recovery.

It should not be taken that there are no risks associated with these mechanical appliances. Early in the history of the use of the pessary there were numerous accidents. I have removed them when very careful dissection was required, when the patient had worn them for ten or twelve years and had lost all knowledge of their presence. I have found them deeply buried and the patient dying. No great skill but great care is to be exercised in their application. Men familiar with placing them get good results, and rarely have accidents. The statistic records of accidents have a warning in them. An eminent physician has published an analytic monograph in this relation and tabulates results as follows: "Twenty-three cases of perforation of the rectum by the pessary; 20 cases of perforation of the bladder alone; 10 cases of perforation of the bladder and rectum; 1 case of ureteric fistula alone; 1 case of ureteric and vesico-vaginal fistula; 1 case of perforation of Douglas' pouch (neither fatal); 3 cases of perforation of the vaginal wall, the extruding portion of the pessary lying in the pelvic connective tissue, and 6 cases of the entry of a vaginal pessary into the uterus."

This record sounds a warning as to the importance of care in the application of the pessary. There has been no very recent startling of the profession by the announcement that someone had invented a new pessary. It is to be anticipated that during the meeting of our ASSOCIATION there will be a very lively shucking out of new methods of procedure.

All we know of the physiology of uterine action compels us to regard the uterus and ovaries as the strongest links in the chain of woman's health of mind and body.

Be not deterred by false sentiment or the jealousies of those who would rather keep their patients in their own hands than see them cured by others from doing what we know to be our duty.

"Do we not all know by sad experience of the years of useless suffering that might have been spared, of lives that might have been saved, of the ruin of conjugal happiness that might have been averted, of material usefulness that might have been preserved had an accurate diagnosis been arrived at in the earlier stages of uterine disease and a proper line of treatment adopted.

"In prolonged disorders of the uterus, resulting in enlargement, hyperplastic deposits or a process of fibroses following on arrested involution, in those secondary pathologic conditions attending upon lacerations of the cervix, in deep erosions, in unrelieved versions and flexions, in tubal enlargements and displacements, and in chronic affections of the ovary, as sequelæ of pregnancy, we find not only these reflex conditions present, but more aggravated pathologic consequences and more serious disturbance of function." These are the mature opinions of MacNaughton Jones and other eminent English specialists and general practitioners. I strongly direct attention to this subject because it has not received the attention its importance deserves. It has had a few able and courageous champions who have had to contend against obstructions raised chiefly by members of the profession from motives which we will not attempt to analyze.

I am satisfied that many cases of nervous disorder could be averted or cured by early and careful atten-

tion to uterine and ovarian troubles and the examination of pelvic viscera. We can only clear away doubts and establish safe scientific methods by utilizing the lessons of the observations and clinical experience of men who are working among facts.

Our surgery is very much more than an art, it is also a science without limit, a science with no tolerance for obstructionists, no false deference for the venerable, that replaces the old with the better new. We are not accepting mere opinions for truths, we are demanding scientific and practical tests, that old knowledge shall pass the crucial test of modern experiment and analyses. We recognize that we have not reached the "last results," that there is enough we do not know to keep us from falling into a condition of inertia, to furnish us with extensive "happy hunting grounds." I could not refer to many of the evidences of our progress without raising controverted questions.

We have given and continue to give names to things we do not understand, we know little or nothing about. We have cancer, typhoid and puerperal fever, they are names for conditions; there we are estopped; finding ourselves face to face with the unexplained, we grope for the cause and remedy. Among the best evidences of our progress are our medical journals. They are largely to be credited with the scientific spirit, the earnestness of research diffused through the profession, they bring forward questions of direct and current interest, touch our every-day work, give those facts of our clinical experiences which constitute our best lessons, they index our progress. Our periodical literature has largely taken the place of our old text books. Our leading minds, where they have something to say, say it through our magazines, and give us the best they know. To the busy physician the JOURNAL is largely his literary world. The JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION speaks for us as an ASSOCIATION, it is our official organ, it represents our scientific spirit and activities, the results of our study and research. Through it the teachers in our colleges, the specialists and general practitioners speak. However able and enterprising may be the editor, the JOURNAL will not rise above the high-water mark of the scientific intelligence of the AMERICAN MEDICAL ASSOCIATION—the great representative body of the American medical profession—by its report of our work we will be judged at home and abroad.

In conclusion I can only make brief reference to obstetrics. It is gratifying to know that the mortality in child-bed has been greatly reduced; this is largely due, both in lying-in institutions and in private practice, to cleanliness of environment. In maternity cases it is in the great majority of instances dirt and meddlesome or unskillful instrumental interference that kills. To have skillful obstetricians, the teaching of our schools should be more thorough, theoretically and practically. Our students pay liberally for their advantages and should be dealt with liberally; every avenue to thoroughness should be open to them. The professor who teaches him obstetrics should know the science and art of his subject and how to teach it. As a rule the professor of obstetrics is not an enthusiast in his line, nor does he infuse interest and enthusiasm in the student; his teaching is largely perfunctory. He teaches one subject, or professes to, while he practices another. About all of them *want to be* gynecologists and

specialists. Some of them take to neurology, which requires great versatility of genius, the art to write poor poetry and indifferent fiction. There are ample facilities in our educational centers for practical education in obstetrics; hospitals, courts and alleys are open. The student should be given that which will enable him, when he goes home, to go to work and do good work.

ORIGINAL ARTICLES.

THE QUALIFICATIONS AND DUTIES OF THE MILITARY SURGEON.

BY LIEUT.-COL. N. SENN, U. S. V.

CHIEF OF OPERATING STAFF WITH THE ARMY IN THE FIELD.

Nearly five months of continuous service with the army in the camp and field has afforded me an excellent opportunity to make a practical study of the above subject. This time was spent in Camp Tanner, Springfield, Ill.; Camp George H. Thomas, Chickamauga, Ga., and the Cuban campaign, the time being about equally divided in the different places. The first four weeks were occupied in Camp Tanner, where I assisted in the capacity of Surgeon-General of the State in the organization of the State troops. This service brought me into closer contact with the National Guard of our State than at any time before. A physical and professional examination in which I took part brought out the shady as well as the sunny side of their qualifications. The result of my experience here convinced me that the average National Guard surgeon is a faithful doctor, with more than average professional ability, but, with few exceptions, lacking the necessary military training in performing satisfactorily his administrative duties. This is a part of his education that has been sadly neglected in the past and should receive more attention in the future. Very few States make provision for physical examination of the medical officers, consequently some of them have entered the service totally disqualified for participating in an active campaign. Two of the candidates for the volunteer service from the National Guard of Illinois were rejected on this ground. The four weeks' service at Camp George H. Thomas as chief surgeon of the Sixth Army Corps opened up a wide field for extended observations in making comparisons between the work done by the surgeons of the regular army and of the National Guard. The surgeons of the United States Army are all men of superior education, splendid physical development, and those who have been in the service for several years are well versed in the routine work of the Medical Department. However, in all matters pertaining to medicine and surgery the average National Guard surgeon more than holds his own. This superiority of the National Guard surgeon over his colleague of the regular army is no reflection on the latter; it is the natural outcome of circumstances, which made such a difference inevitable. The young army surgeon has to spend many years at small and often out-of-the-way posts, where the opportunities for clinical experience and intercourse with professional colleagues are necessarily limited. He naturally soon falls into the monotonous and routine work of the post life, with little or no inducements to continue his post-graduate, scientific and medical studies. When the time comes to pass an examination he wakes up from his lethargy suffi-

ciently to go through the different compends to prepare himself for the coming ordeal. He breathes easy after he has reached the major's rank, as this promotion forever closes the door of the much-dreaded green room. From now on he is in the line of slow promotion without any extra exertions on his part. He receives his salary and looks confidently for assignments to posts where he can spend the balance of his life in ease and luxury. He has reached a time in life when he feels that he can avail himself of the work of his subordinates without interfering with his emoluments or his position in social and military life. He is conscious of the fact that he has reached a rank and a station in life where it is proper for him to look to his assistants to do the drudgery which he had become accustomed to in the past, and begin to enjoy the life before him. It is different with the military surgeon taken from civil life. He emerges from the turmoils of family practice. From the day of his graduation he has tasted the bitter fruit of active competition. His work has been watched with an envious eye and subjected to sharp criticism by his neighboring colleagues, old and young. He felt from the very beginning of his professional career that success depended upon his own exertions. The average American practitioner is a hustler. He is willing to work night and day to gain a lucrative practice and the social position which goes with it. With few exceptions he knows that what he has learned in college is but the entering wedge to a comprehensive knowledge of the practice of medicine and surgery. He knows that our profession has become a progressive one. His college education tells him what is new today will be old tomorrow. He looks with pity on his colleagues, advanced in years, whose language and practice convince him that they have fallen into a dangerous rut. He reads the numerous medical journals, the great avenues of recent medical literature. He spends his scanty income in purchasing new books and instruments for scientific investigations. All requisitions are made on himself and are honored only by writing his own checks. He joins medical societies, large and small, and attends their meetings regularly. He listens intently to the reading of papers and discussions to increase his store of knowledge and returns to his limited field of action better prepared to battle against disease. He mingles freely with the members of his profession, always ready to absorb and digest new ideas. He makes frequent pilgrimages to his alma mater or some post-graduate school to familiarize himself with the most recent advances in medicine and surgery. Social life has no attractions for him; he has entered the profession for the sole purpose of becoming an influential and successful practitioner. This is the kind of material our National Guard surgeon is made of. No wonder he outweighs the professional military surgeon in practical knowledge required in the treatment of injuries and disease.

The exacting and often onerous duties of the military surgeon in times of war require special qualifications to prepare and fit him for his work. He is not only expected to be well versed in theoretical and practical knowledge of everything pertaining to the practice of medicine and surgery, but he must be endowed with qualities both of mind and body upon which he can rely when engaged under the most trying circumstances. In field work he has often to perform the most difficult tasks with very limited

resources. In such instances good common sense and deliberate action go much further in accomplishing what is desired than the finest scholarship and the most profound logical reasoning. The man who can in a few moments extemporize a well-fitting splint out of the simplest materials and perform with the contents of an ordinary pocket case the most difficult operation will do vastly better work on the battlefield than most professors of surgery and the most brilliant operators in civil practice. The surgeon who understands the principles and practice of good cooking is of more service to the troops than the one who can repeat, word for word, the contents of the most exhaustive treatise on materia medica and therapeutics. The medical officer with a full knowledge of hygiene and sanitation and endowed with the faculty of making a rational, practical use of it is preferable to the most expert clinician, as in military practice it is more important to prevent than to treat disease, no matter how successfully and scientifically the latter may be conducted. The all-around medical officer must be a good mechanic; he should know how to use the carpenter's and blacksmith's tools, how to row and sail a boat, how to make a raft and occasionally he will have reason to be thankful if he has learned how to pack a mule and drive an ambulance team. His

every particle of his reserve strength to perform a critical operation with a view of saving the life of another. Achievements of this kind are possible in private practice but are entirely out of the question in military service. The physical condition of the military surgeon must be as nearly perfect as possible. A physical examination as thorough and as painstaking as in the case of a private can only decide upon the necessary physical qualifications of candidates for commission in the medical service. For good reasons this rule is followed in the selection of medical officers for the regular army and there is no ground why the same requirement should not be exacted in the National Guard. During my service at Chickamauga and in the Cuban campaign, I saw more than one volunteer surgeon who ought to have been excluded from the service for physical disability. During a campaign the loss of a single medical officer may prove a great disaster. Of all commissioned officers the surgeon is the most indispensable. The vacant place of a line officer can be filled at a moment's notice without any serious loss to the service; not so with the surgeon. His position is one requiring special training and one that can not be filled without crippling the medical service at some other point. For this, if for no other reason, the medical officer must



Transfer of wounded to the hospital ship *Relief* at Arroya.

miscellaneous knowledge of matters and things entirely outside of his legitimate province will be constantly drawn upon from different sources and the more he knows and is willing to impart the more he will be useful and popular. The man who enters the medical department of the army under an impression that he is only expected to treat wounds, set broken bones and prescribe for the ordinary camp ailments makes a serious mistake and will be surely a disappointment both to himself and to those he is expected to serve.

Physical condition.—The ideal military surgeon in possession of the necessary mental and physical qualities to make him so is seldom seen. The most active brains are often found in a frail body. I have often seen in civil life surgeons of great reputation struggling with disease or its effects, or the victims of some congenital or acquired defects, who were wonders in the operating amphitheatre in spite of such disability. I have seen more than once the saddest of all spectacles in professional life—a surgeon, himself the subject of an incurable disease, muster into service



The Spanish military hospital in Ponce, Porto Rico.

be in sound health and able to cope successfully with the hardships of a campaign. In battle, and during the prevalence of an endemic or epidemic disease, the medical officer is the one above all others whose strength and endurance are taxed to their utmost extent. His services are required by day and by night. He has no rest, and unless in possession of an iron constitution, his strength fails him and he becomes, if not a fit subject for the hospital, at least a physical wreck, who, if he persists in continuing his work, will often do more harm than good. A number of such instances came to my personal notice during the Cuban campaign. A medical officer should not only be in full possession of health and all that this implies, but he should have been in training to endure hardships of all kinds from early childhood. He need not necessarily be an athlete, but he should be able to walk twenty miles a day or ride forty without fatigue and then be ready to do a night's work should an emergency demand it. The dancing halls and club houses are poor training schools for a successful military career. The labor and hardships

encountered in hunting are best calculated to prepare the body for a life of great activity and privation. Frugal living will not only prove conducive to the maintenance of health but will be the best means of initiating the surgeon to the uncertainties of the commissary department when on the march or in the field.

Let every one who chooses the military career dispense with unnecessary clothing and luxuries during early life in order to accustom and adapt himself for his life work, which in time of war will bring the inevitable amount of vicissitudes and even suffering. The medical officer must be a good horseman, which here not only implies a good rider, but a knowledge of the usual ailments of horses, the treatment, feeding and care of the animals. To sum up, the military surgeon must be a man of vigor, made so by birth and training, with as few requirements in his habits of living as possible, in order that he may resist to the highest degree the influences of climate and disease and prepare himself for the hardships and privations incident to active warfare.

Mental qualifications.—A proper and adequate preliminary education is exacted of every surgeon in

resent. The elevation of the standard of medical education by most of the medical schools throughout the country will gradually wipe out this blemish, but it will take many years before all of the diplomas can be accepted as sufficient proof that their possessors are entitled to recognition by the medical department of the different States. Let us hope that a speedy and radical reform may be instituted in the different States which will accomplish the desired object, and which will make the commission of a medical officer of greater import in showing a higher degree of preliminary and professional proficiency than the diploma of any of our medical colleges. This is a desideratum for the realization of which every one interested in the success and usefulness of the national guard should willingly use his influence. Fortunately, there are no specialties in military practice. The medical education of a military surgeon must be of the most liberal and broadest kind. His practice is so varied that he may have to be physician, surgeon, oculist, aurist, etc., the same day. The sphere of the regular army surgeon serving at a post includes in addition obstetrics, gynecology and diseases of children. Every military surgeon must be an expert in physical diag-



Ambulance train on the way to the hospital ship *Relief* in the harbor of Ponce.

the regular army; without it he is not permitted to pass the medical examination. Statistics show that a large percentage of the candidates are dropped at this stage of the examination. This is a reflection on the system of medical education which continues to prevail in our country. About the only evidence of proficiency the National Guard surgeon in most of our States is required to show is his diploma. It makes but little difference when the diploma was obtained. Evidences of a satisfactory preliminary education are not required. In consequence of such an easy entrance into the medical service of our State troops, many of the men who receive commissions are illiterate. By hard post-graduate work they often become good physicians, but they seldom if ever make up for the early defects of their education, which seriously interfere with a successful military career. Is it to be wondered at that when such shortcomings are discovered by their colleagues and officers of the line, they do not command the respect their commissions, should entitle them to? The reports made out by such men speak for themselves, and appear as black stains upon the department they rep-



Litter work in the court of the Spanish military hospital in Ponce.

resentation and examination of the eye and ear. He must know something about dentistry, he must know how to extract teeth and how to put in a temporary filling in a carious tooth that can be saved. He must be familiar with neurology, the use and application of electricity as a diagnostic and therapeutic resource. In camp and field he is limited to his own resources in the diagnosis and treatment of all kinds of injuries and diseases. He must therefore be well equipped with a thorough knowledge of everything pertaining to surgery and medicine, and is often called upon to represent the different specialties. No amount of preliminary and professional education will make the military surgeon an efficient officer unless he is possessed of an inborn aptitude for the profession. He must be able to apply and make use of his knowledge. Many men of great learning never become successful practitioners. Their store of knowledge fails them when they come to apply it. The military surgeon in camp and field must be a man of quick perception. He must be able to recognize malingering as well as disease. In an emergency he must be in readiness to act intelligently at a moment's notice. Hesitation is

dangerous both to the patient and the reputation and good standing of the surgeon. Indecision creates mistrust, procrastination disaster. Quick decision and prompt action are the essential prerequisites of successful emergency work. Successful action, however, must be preceded by thoughtful, systematic preparation. The most successful surgeon is the one who adopts and follows the watchword, *semper paratus*. He should never be caught napping. Careful preparation makes prompt action possible. The successful surgeon makes his plans ahead and supplies himself with the necessary outfit, medicine, dressing materials and instruments before the emergency arises, and when it does so he is fully prepared to meet it. A lack of forethought and systematic preparation accounts for many shortcomings of medical officers in the field and camp, with the necessary evil consequences for those entrusted to their care.

Military spirit.—Any one who enters the medical service of the army as a life avocation will be disappointed unless he does so imbued with a proper military spirit. The military surgeon must be a military man and an integral part of the army, if he wants to



Court of the Spanish military hospital in Ponce.

do justice to his calling and the department he represents. I fear it is a lack of the proper military spirit in some of the medical officers in the regular army that is responsible for a well recognizable cleft between them and the officers of the line and field. If this is true in the regular army, it is only too obvious in the National Guard. The rank of the medical officers and their standing in military and social circles suffer when they are regarded and treated as an ordinary doctor. The West Point graduate, educated at the expense of the government, too often forgets that it takes more hard work and a longer time to make a good doctor than an officer. The officers of the National Guard, holding commission by the grace of their governor, do not realize sufficiently that their military surgeons have spent a small fortune and five years in acquiring a knowledge of their profession. They seem to forget, or at any rate often ignore, that when they go into camp or in the field they do so at a great personal and pecuniary sacrifice. Their absence from home, even for a short time, may cause a break in their practice difficult to repair. The medical officer is entitled to recognition as a military man, and if this is not accorded to him voluntarily, he

must resort to measures that will enforce it. The lack of military dignity on part of the medical staff is due largely to a lack of the proper military spirit in the members which compose it, and to too great a familiarity between the surgeons and the officers and men. The correction of these evils can not be undertaken too soon, and when accomplished will add much to the dignity, influence and efficiency of the medical department of the army and State troops.

The medical officer who has enjoyed the advantages of an early military training in a military academy or the national guard, is the one best qualified to enforce military rules and assert the dignity of his position.

Punctuality.—The busiest men have always the most time to perform a duty or to meet an engagement at the appointed time. This rule holds good in all walks of life. The drones are always behind. In military life punctuality means everything and from this exaction the medical officer should never be excluded except for special and well founded reasons. In the regular army there is a way of disciplining the medical as well as other officers in coming to time in



Transfer of patients to the lifeboat in the harbor of Ponce.

the performance of definite duties and in making out the reports. My long experience in the National Guard service has taught me, occasionally in a painful way, that the surgeons are often entirely oblivious to the matter of time, especially in the matter of making out and transmitting the regimental reports. It is the men who put off for tomorrow what should be done today, and who meet their engagements at one o'clock or thereafter instead of twelve, that render the life of their superior officers one of misery and full of disappointments. The men that accomplish the most are always ready and on time. The medical officers must be made to understand that a due regard for punctuality in performing their duties, in meeting appointments and in mapping out and forwarding reports is one of the most essential features of a successful military career.

Courage.—It is still the general belief that, in times of war the military surgeon is exposed to less danger than the soldiers and officers in command. That this is not so is shown by the statistics of all wars. Although the position of the military surgeon is behind the fighting line, he is usually near enough to the enemy when serving in the front to be

reached by stray bullets and bursting shells. The number of surgeons killed and wounded in the performance of their duty in rendering first aid is by no means small in any war of magnitude. In active warfare, however, the greatest danger to the surgeons is to be found in their constant exposure to contagious and infectious diseases, which follow large armies in all climates and during all seasons of the year. To enter a yellow fever camp, to my mind, calls for more courage than to lead and command the troops in the battlefield. Disease always claims more victims than bullets, and this is especially true of the present war with Spain. The nation worships the heroism of those who fell before Santiago, but much less is said of the vastly greater number stricken down by disease, and who have lost their lives from disease, often after prolonged and intense suffering. To the credit of the medical officers of this and other wars it must be said that they showed no fear, either in facing the enemy or what is vastly worse—disease. When yellow fever made its appearance among the troops around Santiago, every man remained at his post and faced the danger without flinching. Men from the North who had never seen the disease accepted the detail for duty in the fever hospitals without a word of complaint. The medical officer must be endowed with more than ordinary courage to face the many dangers that surround him on all sides during every campaign. Patriotism begets heroism and I make a well-founded claim for both for the medical profession represented in the army.

Personal habits.—The old adage that "It is easier to preach than to practice," is a familiar one and should be made to apply with the same force to doctors as preachers. The first and most important duty of the military surgeon is to prevent disease. This can often be done more effectively by example than by precept. The military surgeon must guard the camp against disease. He is looked upon and must be regarded by those under his care as the one above all others who can give them advice in matters pertaining to their health. He is expected to do this by example as well as precept. He must become a permanent object lesson in inculcating the importance of cleanliness in person and in dress. His tent should be the cleanest and most orderly in camp. Temperance in eating and drinking can be taught more successfully by action than by words. A military surgeon under the influence of liquor will do more harm in encouraging the vice of intemperance than can be undone by weeks of lecturing. Profanity is prevalent in every camp and while it is not the duty of the surgeon to supplant the chaplain in suppressing it, it should receive no encouragement by his example. In his conduct toward the men the surgeon should be firm and dignified, yet kind and sympathetic, especially to those in need of his professional services. An impetuous nature and an irritable temper create a rebellious spirit, which it is difficult to control by the most energetic measures. Proper questions should be answered willingly and with sufficient clearness and adequate length to furnish the desired information, and not gruffly and snappishly, as is occasionally done without any reason or provocation. Overwork and a disordered digestion are poor excuses for treating a subordinate in an undignified, ungentlemanly manner. The military surgeon must be known in camp as a gentleman, not only by the officers but by every man under his

charge, if he expects to be respected and to do justice to his high calling and responsible position.

The military surgeon in war.—The true qualities of the military surgeon are crystallized and best known during an active campaign. It is in war that his ready resources will come to the surface and will be subjected to the severest tests. It is in battle and during the prevalence of devastating diseases that his moral courage and physical endurance will be most severely tried. It is under such circumstances that the troops will look to him most confidently as their protector and nearest and dearest friend. It is not in peace but in war that the bond of true comradeship becomes tighter and tighter between him and the officers and men. It is on the march, in camp, and on the battlefield that the important function of the military surgeon receives the recognition to which it is entitled. It is the wounded and the sick in a strange land that look to him for help and restoration to health. It is the surgeon who so often receives the last message of the dying.

The first and most important duty of the military surgeon during active warfare is to prevent disease and unnecessary suffering by giving early advice and resorting to timely precautions. The location of camps, policing of the same, the water-supply, food and clothing are subjects which must receive his early and earnest attention. In this work he should receive the hearty co-operation of the officers in command and if this is not the case he has the moral and military authority to demand it. It was not the medical department, but the arrogance or stupidity of the commanding general of the invading army that is responsible for the extensive outbreak of yellow fever during the Cuban campaign. This experience is sufficient to teach commanding generals that it is unsafe in the future to follow such an example, as an imprudence of this kind, giving rise to inexcusable slaughter and indescribable suffering, will meet with universal indignation. The military surgeon is in reality the family physician of the men placed under his charge. He attends to the little ailments with the same care as though he had been sent for by a wealthy family and expected a handsome fee. To be successful in the treatment of disease he resorts to the simplest medication. Complicated prescriptions are dangerous and absolutely out of question in military practice. The tablets containing drugs in the most concentrated form are a great blessing to field practice and should be relied upon almost exclusively in the treatment of disease. The remedies needed are few, and if well chosen and applied will answer all indications. A liberal supply of quinin, opium, calomel, strychnia, camphor, iron, arsenic, bicarbonate of soda and bromid of potassium will leave but little to be desired. Turpentine, castor oil, alcohol and the anesthetics are about the only fluid medicines the military surgeon has any use for. The breakage and waste in dispensing medicines in bottles are inexcusable in modern field work. Fancy drugs and preparations should not be tolerated. In the practice of surgery the military surgeon who wishes to attain the maximum success must be conservative. Strict asepsis and conservatism are the two things which are destined to make military surgery successful. Every surgeon must have special training in emergency work. He must be perfectly familiar with the indications and technique of every operation which may become necessary in the field. He seldom will have an opportunity to cut

for stone, extract a cataract, remove an ovarian tumor or operate for other benign and malignant growths, but he must know how to treat a compound fracture in the most modern and approved manner; he must be skillful in the treatment of wounds of all kinds, and he must be a master in performing an amputation and in ligating arteries in any part of the body. He must learn to perform all emergency operations with the simplest facilities and fewest instruments possible, in order to adapt himself in time to the exigencies of war. The surgeon who can extemporize an operating table in the field and who can secure asepsis with the use of the camp kettle, soft soap and carbolic acid or sublimate and who can perform the most difficult operations with the simplest and fewest instruments, with little or no assistance, is the one who will accomplish the most and who will obtain the best results in the field.

Ponce, Porto Rico, Aug. 8, 1898.

TREATMENT OF RETRODISPLACEMENTS OF THE UTERUS BY SHORTENING THE ROUND LIGAMENTS PER VAGINAM.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Dr. Howard A. Kelly, at the recent meeting of the American Gynecological Society at Boston, announced in a discussion that he had collected a list of forty-five different operations that had been suggested for the relief of retrodisplacements of the uterus. Accepting this statement as true, what more suggestive fact could we have of the importance in which this affection is regarded by the profession, or of the assiduity with which the profession has devoted itself to its relief?

Much has been learned regarding the dynamics of the female pelvis, but much still remains to be discovered. Plates representing sagittal sections of the female pelvis taken from frozen sections have been transmitted from one generation of text-books to another, and the errors therein depicted have likewise been transmitted from one generation of medical men to another. The section of a frozen pelvis represents the relation of the parts in that individual only, and in all probability does not correctly represent the relation of these parts during life. It is a recognized fact that the uterus rests in a position of unstable equilibrium, varying in its position with every movement of the body and with every respiration, so that the average position of the uterus as obtained after an examination of many living women is the only way of reaching a conclusion as to even a proximal ideal position. A great advance was therefore made in definite knowledge upon this subject when an investigation was instituted for the purpose of more positive information by examining *living* women, while standing in an erect posture. By this method of investigation it has been reliably determined that when a woman is upon her feet, and that is the position in which all great effort is made and the forces brought into play which tend to retain or remove the uterus from its normal position—it has thus been determined

that when the body is in an upright posture the uterus normally rests upon its anterior face and is suspended in a cradle or sling of tissue reaching from the symphysis pubis to the sacrum, known as the vesico-uterine ligaments in front, and the utero-sacral ligaments behind. The uterus is steadied in this position by the broad ligaments, reaching from either side of the pelvis to the uterus, and the round ligaments, which tend to restrain the uterus in its anteverted position, and indirectly to support the broad ligaments.

Accepting, then, the broad principle that Nature is consistent in her work, and applies to the uterus the same mechanical principle that she utilizes in supporting all other organs of the human body, we must conclude that the uterus is supported by ligaments.

The uterus itself is not an organ of any great weight, and requires only delicate structures to retain it in its proper location in the pelvis. It is, however, subjected to intra-abdominal pressure which must be counteracted. Let us see, then, how this is accomplished. Resting as it does, upon its anterior surface, or in other words, having its anterior face looking downward, it receives the intra-abdominal pressure expended in the pelvis upon its posterior surface. If then the sling of tissue which sustains the cervix high in the hollow of the sacrum is sufficiently strong to retain it in that position, all intra-abdominal forces impinging upon the uterus tend to force the fundus still farther to the front, and so help to maintain its normal anteverted position. We must therefore look to the tissue between the cervix and the sacrum, viz., the utero-sacral ligaments, as the chief factor in maintaining the anteverted position of this organ. If for any reason these ligaments become over-stretched or relaxed, so that they lose their contractile powers, the entire uterus settles in the pelvis, and the cervix swings correspondingly to the front, thus preventing the resultant of intra-abdominal forces from carrying the fundus to the front until this stretching process has reached such an extent as to actually permit them to impinge upon the anterior segment of the uterus and eventually carry it into a position of retroversion. In this process all of the ligaments gradually become relaxed as the strain is put upon them until not only one or two, but all of them lose their tone, and the uterus becomes hopelessly displaced. Such, to my mind, is the rational explanation of the etiology of this affection. In a normal unimpregnated uterus the round ligaments alone may be relaxed to any degree you choose and the uterus will still remain in place; the same thing may be said of the broad ligaments; but once you relax permanently the utero-sacral ligaments, and you at once set in motion the process that eventuates in retroposition.

The most frequent cause of this relaxation is undoubtedly the absence of prompt and efficient involution following parturition. Next in order of causation, I place prolapsed and diseased appendages, which, resting upon these structures and becoming adherent to them, so interfere with their nutrition that they eventually relax and allow the cervix to swing to the front. Another and not infrequent cause is the presence of a fibroid tumor located near the uterine insertion of the utero-sacral ligaments.

The condition of retroversion and retroflexion is not confined however to married women. In single women, especially in cases of congenital retrodisplacements, the etiologic factor is also to be found in the cradle

or sling of tissue reaching from the symphysis pubis to the sacrum, but instead of being posterior to the cervix, the cause of displacement is to be found in the vesico-uterine ligaments, and more especially in the manner of their insertion into the uterine tissue. Reynolds of Boston, following Foster and Ranney, and Hart and Barber, has called attention to the fact that the method of attachment of the tissues about the cervix is an important element in retaining the uterus in its normal position. For example, the anterior position is maintained by the tissues in front of the cervix being inserted into it at a higher level than that at which the tissues posterior to the cervix are attached. If, for any reason, by an anomalous anatomic arrangement, the tissue in front is inserted at a lower level than the tissue behind, the natural pull of these ligaments tends to throw the fundus backward. This condition is exactly the one that is so often found in congenital displacements, and in fact in all retropositions of the uterus as found in unmarried women, and probably the majority of these are congenital—that is the cervix being in the axis of the vagina and the anterior wall extremely short, showing that the utero-vesical ligaments are inserted very low down. This principle has been taken advantage of by Reynolds of Boston, in an operation for the relief of this condition in virgins, in which he simply detaches utero-vesical ligaments from their low insertion and stitches them to the anterior face of the uterus at a little higher level. He reports a number of cases in which he has applied this treatment successfully. This certainly seems a most rational procedure.

In accordance with the dynamics as previously explained, however, the most rational relief of retrodisplacements is to be found in some operation which will shorten or restore to their normal condition the utero-sacral ligaments. An effort has been made to accomplish this by some German operator and also by one or two surgeons, in our own country, but the difficulties of reaching these structures, either through the abdominal wall or per vaginam, are so great that thus far no satisfactory results have been obtained. It is my belief, however, that in shortening these ligaments is to be found the proper method of treating these persistent cases. Next to the utero-sacral ligaments the most rational structures to be utilized in an operation for the relief of this condition are the round ligaments. While the functions of the round ligaments, are to direct and limit the excursions of the fundus from its normal position, rather than to sustain the weight of the organ and resist the pressure upon it, nevertheless experience has shown that they are quite equal to the latter offices, at any rate for a sufficient length of time to allow the utero-sacral ligaments to regain their function.

Today by far the most popular operation for the cure of retroversion, and the one most frequently employed by operators throughout the country, is either the original or the modified Alexander operation. The objections to Alexander's operation, however, are many: 1. It has a limited field of application, being restricted absolutely to cases in which the uterus is perfectly movable and the appendages free from disease. Such cases in my experience constitute but a very small proportion of those requiring relief. 2. The round ligaments can not always be found at the external ring. In this connection it may be noted that a number of cases have been reported in which an anomalous insertion, either into the fascia about the internal

ring or at the outer border of Poupart's ligaments has been found. Moreover, in many instances the ligament is so frail in this part of its course, that it does not withstand the strain necessary to draw it out of its bed and breaks in the procedure. 3. The operation necessitates two incisions and two objectionable scars in the abdominal wall. 4. The operation in the hands of every operator experienced in this procedure is followed by hernia in a certain percentage of cases.

In order to extend the field of application of the Alexander operation so that it might include cases of retroversion with adhesion and with diseased appendages, Drs. Wylie and Dudley of New York, and Dr. Mann of Buffalo, have suggested and put into practice a method of shortening the round ligaments within the pelvis through an incision in the abdominal wall. The procedure in the hands of these three operators differs only in the manner in which the ligaments are doubled back upon themselves. The results, however, have been satisfactory, and the operation is still practiced by them all. The objection to it, however, is that it necessitates a laparotomy with all its attendant discomforts and possible hernia, and in simple, uncomplicated cases is altogether too serious a procedure for so simple a condition. Other operators, in their endeavor to avoid laparotomy, have opened Douglas's pouch through the vagina; broken up the adhesions, thus setting the ovaries and appendages free; and then shortened the round ligaments at the external ring.

As this operation which I am doing has to deal with the round ligaments, I have expended most of my time in discussing that structure as the natural support, without entering upon the relative merits of abdominal fixation, which I believe has a certain field of application, although a limited one.

With the work of these operators in mind the idea naturally suggested itself of opening the peritoneal cavity through the anterior vaginal fornix, breaking up the adhesions, restoring the uterus to its normal position and shortening the round ligaments through the one incision. This has been found a perfectly feasible procedure, and has met with such success at my hands that I have ventured to urge its adoption in all cases of retro-position of the uterus, whether simple or complicated.

The technique of the operation is as follows: After rendering the parts thoroughly aseptic, curetting the uterus and packing it with iodoform gauze, the cervix is seized by a vulsellum forcep and dragged down to the vulva. A transverse incision is made just in front of the cervix through the vaginal wall, as in the procedure for vaginal hysterectomy. The bladder is then stripped from the anterior face of the uterus and the finger pushed through into the peritoneal cavity. Grasping the edge of this transverse incision near its middle point by two artery clamps, the anterior vaginal wall is put upon the stretch and the longitudinal incision is made in the anterior wall throughout its whole extent. The bladder is then dissected off the vagina for a distance of half an inch either side of this longitudinal incision. The purpose of the latter incision and the separation of the bladder is to secure sufficient room through which to work. The dissection is done almost entirely with the handle of the scalpel and the finger, and the hemorrhage is inconspicuous.

The finger is now passed over the uterus and by

careful but persistent efforts the adhesions are broken up, both those to the uterus and those to the appendages. By hooking the index finger over the broad ligament near one cornua of the uterus, the latter organ is gradually delivered into the vagina. The ovaries and tubes are readily drawn down afterward, where, in full view and of easy access, they can be treated in whatever way may be indicated. The diseased portions of the ovaries may be resected, portions of the Fallopian tubes removed, or the appendages of one side may be removed and conservative work done upon the other side, or if the appendages of both sides are found hopelessly diseased, they and the uterus can be easily removed.

The proximity of the horn of the uterus to the vulva enables a ligature to be applied about the appendages and as near to the fundus as may be desired. After the appendages have been cared for, the round ligament, first of one side and then of the other, is caught by an artery clamp from one to one and a half inches from the horn of the uterus and dragged down in the form of a letter "U." In this position a fine braided silk ligature is passed through the ligament at as remote a distance from the forceps on the outer side as will allow approximation when it is passed through the ligament near to the horn of the uterus. It is then tied, thus shortening the round ligament to an extent equal to the length of tissue taken up in the loop. Two other smaller sutures are passed between this one and the forceps, and finally a third one, catching the tip of the loop and attaching it to the anterior face of the uterus just at the origin of the round ligament. The horn of the uterus thus treated is allowed to resume its position in the pelvis, the other horn of the uterus drawn down and the round ligament of that side treated as in the first instance. The uterus is then allowed to take its normal position of anteversion, and the bladder tissue that was dissected from the uterus is adjusted in its original position. The tissues are not sutured to the uterus, but a running catgut suture is applied through the extent of the longitudinal incision. The vagina is then comfortably packed with iodoform gauze and the operation is completed. In cases of congenital retroversion not only are the round ligaments shortened by this operation, but uterine insertion of the utero-vesical ligaments is carried up on the anterior face of the uterus and the abnormal anatomic arrangement previously described is thus remedied.

The commendable feature about this operation is its wide application. Simple retroversion of the uterus can be relieved by the application of a properly fitting pessary, and it is a question whether the condition demands the application of any surgical procedure beyond that. The circumstances of the individual case, however, must determine action in that direction. The chief point of attention is the complications attending this condition. Through the anterior vaginal wall all complications can be readily dealt with; from the simple removal of diseased appendages throughout the whole range of conservative procedures, and even to the extent of myomectomy for small fibroids and ovarian cysts of all kinds. During the past winter I have operated upon cases of retroversion with fixation, complicated by simple cysts of the ovary, by purulent cysts of the ovary, by pyosalpinx, and in one instance by a dermoid cyst containing about a quart of material.

Now as to results. The total number of cases sub-

mitted to this operation is thirty-one. The first operation was done in March, 1896, and the last done in May, 1898. In all my cases of simple retroversion treated in this way the results have been entirely satisfactory, not only in the anatomic cure, but also in the complete removal of all symptoms. Of these cases there have been six. I have had one case complicated by a dermoid cyst and five cases complicated by adhesion, club-shaped Fallopian tubes and cystic ovaries. In all these cases the ovary has been resected and the Fallopian tube amputated. In all the other cases the appendages of one side have been completely removed for destructive diseases of those organs, and in about one-half of them conservative work has also been required upon the remaining appendages. Of these cases, one patient from whom the appendages of one side were removed became pregnant shortly after the operation and was delivered of a healthy child in September, 1897, after a period of five years' sterility. This patient has been examined by me since and the uterus found freely movable and in perfect position.

A second patient, in whom conservative work was done upon the appendages of one side, the appendages of the other side being healthy, after a period of four years' sterility and intense suffering, became pregnant shortly after the operation, and since my arrival in Denver I have learned through my assistant that she has been delivered of a child weighing nine pounds, and that she has passed through this gestation with greater comfort than any of the three previous ones.

A third patient is now pregnant five months. In this case the appendages of one side were removed and the round ligaments shortened as usual. She reports no unusual symptoms during her gestation up to this stage.

As to absolute and partial failures. After having done the operation a number of times, it occurred to me that perhaps it would be an improvement upon the usual method of shortening the ligaments to free the ligament from its bed, double it upon itself and then allow it to retract beneath the peritoneum. To accomplish this an incision was made through the anterior face of the broad ligament just over the round ligament, and an aneurysm needle passed underneath the round ligament and slid back and forth to free the ligament from its bed. The ligament was then drawn out, doubled upon itself and stitched, and allowed to retract beneath the peritoneum.

In the first case this maneuver was attended by some hemorrhage, but not enough to deter me from applying it a second time. In the second case, however, a hemorrhage occurred, not alarming in its extent, but most persistent in its character. This hemorrhage came from the blood vessels accompanying the round ligament in its course. After trying various methods of controlling the hemorrhage without destroying my work, I despaired of success in this way and concluded it was best for the safety of the patient to at once remove the uterus, which I did. That was the only case in which any hemorrhage, even of an annoying character, has attended the work. It was due to the modification which I adopted and which was promptly abandoned.

In the cases in which it became necessary to remove the appendages of one side, I endeavored to economize time by drawing up a loop of the round ligament of that side and including it in the common ligature. In accordance with my custom, I used

catgut ligature, and have had the mortification of discovering that in two of these cases, two months after the operation, the ligament of that side has given way and the uterus has swung around to the opposite side in a position of partial retroversion. Both these cases, however, had suffered from persistent irreducible retroversion, and since this accident have both been completely relieved by the insertion of a retroversion pessary. Hereafter I have decided not to include the round ligament in the ligature applied to the appendages, but to go through with the routine process of shortening the round ligament upon that side as well as upon the other. By doing so I believe that the accident referred to can be avoided. All of the other cases have been completely relieved of symptoms, and when last seen were anatomically cured.

The more experience I have with the operation the more satisfactory it becomes. In not one of the cases has there occurred a single complication in the process of convalescence. There has been no shock, no temperature. The after-treatment is extremely simple. The vaginal and uterine gauze is removed upon the fourth day, and thereafter no further treatment is required except a daily vaginal douche.

DISCUSSION.

Dr. ALBERT GOLDSPOHN, Chicago—I congratulate the doctor on the commendable work he has been doing in this direction. The efforts of attending to the indications for pathologic conditions in the female pelvis through the vagina, originated, we may say, with Duhrssen, Mackenrodt, Aug. Martin, of Berlin and others, and are somewhat repeated in the operation described here. I have done the same operation about a dozen times without difficulty. I consider it a feasible operation, and certainly one to be esteemed above those other unsurgical procedures which need to be relegated to the past. I mean ventrofixation, vaginofixation and ventrosuspension. These procedures are repugnant theoretically and practically to surgical instinct, and I am surprised that people of so much scientific common sense as the Germans should be the fathers of these procedures. We need such loans from the domain of pathology, for some extreme cases of prolapse, for instance. I will not totally condemn any one thing that was ever done by rational physicians with repeated success.

Doctor Goffe is not entirely correct in placing the symphysis pubis at a lower level than the tip of the coccyx in the standing woman. That is an error. The dynamics with relation to the genital organs as stated by him are in the main correct. But intra-abdominal pressure must be carefully defined if we would escape objections from our opponents in this question. The reason why I have not more frequently done vaginal shortening of the round ligaments, or vaginal fixation of the round ligaments, as now done chiefly by Wertheim, of Vienna, is because we need to adopt a different plan in our indications of operating for displacements of the uterus and its appendages. The reason why so many cases are not wholly well that have been properly treated as far as the operation went, in restoring the uterus alone to normal position, is because the same treatment was not extended to the adnexæ also. The majority of retroversions of the uterus have such conditions of the adnexæ that they require conservative operations as the Doctor has suggested. But the reason the ovaries became so diseased in a large proportion of cases is because they were previously displaced; they were away from the lateral normal location against the pelvic wall; they had migrated toward the median line of the pelvis and to a far lower plane; where they were subjected to traumatism between the uterus and the rectum, as well as to the evils of venous hyperemia. The uterus when retroverted is crowded on to the displaced ovary by abdominal pressure. If, then, the displacement led to the disease in the ovary, we need to correct not merely its condition, but above all, its position also. We must do something with the displaced ovary after we have resected it, secure it in normal position. This requires good access to the lateral walls of the true pelvis, which is not at all obtainable by any vaginal incision. For this can only intensify the ovarian displacement, out not correct it. For that cardinal reason, I can not make use of the vagina anywhere near as frequently as I would. The principle the Doctor states of the sacro-uterine ligament main-

taining the equipoise of the uterus in normal anteversion is correct, although the numerical proportion of inefficiency of the sacro uterine ligaments, as stated by him, is too great.

Dr. HENRY P. NEWMAN, Chicago—I was highly pleased with the paper and with the stand taken by Dr. Goffe. Ten or twelve years ago, when this work was advanced, particularly the round ligament operation, we had very few that would sustain us in our work, many members of the profession believing it to be visionary and work that would only last for a short time. At the present time it is highly commented upon all over the country. The objections, however, that are met with even today that deter many physicians from adopting the round ligament operation are, I believe, simply faults in technique. By making the primary incision over the external ring, thereby finding a ligament that is well developed, when it is drawn out it is the abdominal portion of the round ligament. The abdominal portion of the round ligament is a different structure, is of different size, more stable and decidedly a better support than that of the inguinal canal portion of it. Moreover, the inguinal canal portion of the ligament when drawn on stays in the old operation; that is, by being stretched it is frequently attenuated, is reduced materially in size, and is not the intra-abdominal ligament at all. It does not accomplish much in bringing and holding the uterus forward, and consequently the operation is a failure. If the round ligament is drawn out on a line with the attachment of the uterus, you are sure of drawing out the part of the ligament which needs to be shortened, namely, the intra-abdominal portion. This much and other points in relation to operating upon the external ring are features that I brought out some ten years ago, and have adhered to with most satisfactory results, and those gynecologists who have followed this method of operating have been equally well satisfied. I do not think, as the Doctor stated, that the etiology of displacements of the uterus is confined to these two ligaments. I refer particularly to congenital cases so called, or cases that are really faulty at puberty. The uterus at birth in these cases is uniformly an infantile organ, but after puberty an arrest of development means under all circumstances a puerile condition of the organ. There may be a long cervix, and a fairly well developed fundus lying upon a conical cervix. This is a factor in producing displacements.

Dr. HOWARD A. KELLY, Baltimore—I naturally feel interested in this discussion, as I have operated a great many times for these conditions. I believe no surgical operation will restore *ad integrum* these tissues and the uterus where they were before. If this is not accomplished by plastic operations and rest preventing a tendency to descensus, then the question is one of the best surgical operations from a mechanical standpoint. I believe all these operations should be supplemented by restoration of the floor of the pelvis. I do not believe that the round ligaments support the uterus. They are always found kinked in abdominal operations and hence can not be supported. With the uterus retrodisplaced, the abdominal force increases the trouble, while if the uterus is anterior it increases the anterior displacement. A thread applied to the fundus holds it in this normal position and the pressure then falls upon the posterior surface. The floor should then be restored. I have operated through a one and a half inch incision over four hundred times, and only about 2 per cent. of the cases relapsed. About twenty of the women have become pregnant. All are doing well but one, and in her case agglutination occurred. Fixation is not the proper procedure for these cases; it is suspension that is required. None of the cases died. Severe pain has not been noted in any case. I do not include the fascia or muscle in my stitch, but only the peritoneum and subperitoneal tissue.

W. B. CRAIG, Denver—I would like to say a few words in support of the Alexander operation. I have had no experience with vaginal fixation, but have performed the Alexander operation in nearly a hundred cases. I have been looking for some of the accidents and dire consequences which I read of in the medical journals, and I am glad to say to you that I have been disappointed. I know of no case of hernia following any of my operations, and I kept track of the majority of my cases. No dire consequences have followed from infected ligatures, or cases of sepsis from any cause. In a body of this character these operations are purely technical. If we are attempting to instruct the general practitioner, who is rapidly becoming accustomed to surgical work, both special and general, then the matter takes on a different aspect. Any surgeon or student with a little preparation can do an Alexander operation with comparative safety; but it takes an expert to do a vaginal operation, especially of the nature of those described here this afternoon. Of course, the old method in the Alexander operation has been discarded. I do not believe the time will ever come when abdominal section will be

absolutely without mortality. This operation (the Alexander) has practically no mortality. In my series of cases I have had possibly one case of recurrence of displacement. Dr. Kelly struck the keynote when he said that anything that will hold the uterus forward for a short time until we get what is known as involution or reduction in the size of the organ will effect the purpose. It is much simpler to make an inch and a half incision in the groin than in the belly, as we do not have the risk of adhesions, of volvulus and other occurrences which occasionally follow the most careful abdominal operation.

S. C. GORDON, Portland, Maine—There are two or three points in connection with Dr. Goffe's paper that I wish to touch upon. I doubt very much the proposition made by Dr. Goffe that the utero-sacral ligaments have much to do in supporting the uterus. It seems to me the broad ligaments have very much more to do with supporting the uterus than anything else. In relation to the support of a uterus which has a certain amount of descensus, it seems to me that we must have something at the top in one way or another to hold it forward. The only exception I would take to Dr. Kelly's method is that I would use catgut instead of silk, feeling sure then that I would have nothing which was going to act as an irritant and produce trouble afterward. After all, if union of the peritoneal surfaces is desired, it may be obtained by good catgut, and you have an absorbable material which is taken care of; so that between Dr. Kelly's operation and the operation for shortening the round ligaments, I should confine myself to those two, and should always do them through an abdominal opening. I am not much in favor of vaginal operations for remedying or treating these conditions. We can treat these conditions so much better through a small abdominal opening than by resorting to the long process described by Dr. Goffe. I do not like it, but Dr. Goffe does, I have no doubt. I do believe, however, that through a small abdominal opening we can get at things and do them much better; we can do conservative operation upon the ovaries and tubes and put them up where we want them. But it seems impossible to me when we resort to the vaginal operation. Then, again, no vaginal operation can be done without resulting more or less in the formation of scar tissue which may become a source of pain. So the point is this with me: Abdominal section with fixation or shortening the round ligaments by either the Dudley or Mann operation, Mann's preferably, fix the uterus forward a little while and the thing will take care of itself.

Dr. HENRY O. MARCY, Boston—At one time I was very enthusiastic in regard to the Alexander operation. I was one of the first surgeons in this country to adopt it and have had considerable experience with it, and have utterly abandoned it. It is a popular operation with us in Boston; but as I have seen so many cases of hernia that have presented themselves to me after this operation, I am compelled to believe that it is the exceptional operation that we should do. It may be advisable to do it under certain conditions, but the surgeon must know the condition of the pelvic structures. We know that in the vast majority of cases there is something besides the mobility of the uterus with which the surgeon has to deal, and that something is an unknown factor unless we open the abdomen. For years I have adopted the method of opening the abdomen, as advocated by the last two speakers, determining the factors with which I had to deal, and instead of using silk, as I believe Dr. Kelly does, I use the animal suture on either side close to the cornu of the uterus, making double fixation. I believe Dr. Kelly puts one suture into the fundus and another a little posterior to it. There is considerable advantage in placing sutures on either side; it does well in my hands, and whatever means we resort to we should be careful as to the other factors, to-wit, the endometrium, the cervix, the perineal structures, and look after the circumferential factors as well as the one condition of malposition of the uterus proper.

Dr. CHARLES I. BONFIELD, Cincinnati—In regard to the etiology of these cases, it seems to me Dr. Goffe has very much exaggerated the rôle the utero-sacral ligaments play in supporting the uterus. If any of you will take a case where the uterus is in its normal position, pull it down to the vulva, and take pains to introduce the finger into the vagina and feel where most of the traction is made, you will find it is not altogether in the posterior cul-de-sac.

Another point is the normal tone of the structures that hold all the abdominal organs in place. Most of you must have observed cases of slight ventral or inguinal hernia in which it was considered unnecessary to wear a truss; and yet when these patients became run down in health and the tissues became lax the hernia gave much more trouble. When their health was improved again their hernia practically disappeared. I have had cases that have gone on for five or six

years without a truss who had worn it for years. They become ill with pneumonia or typhoid fever, and again the truss has to be worn. This is a factor which should be considered in treating uterine displacements.

Dr. MILO B. WARD, Kansas City—I can not see how it is possible for us to make such a bugbear of entering the abdomen and dissecting the vagina, bladder and uterus with perfect impunity. It seems to me, every case of retrodisplacement or of retroflexion can not depend upon the utero-sacral ligaments. A retroversion may do so, but certainly not a retroflexion. If you put your finger in the cul-de-sac of Douglas the uterus will fall back quickly if you do not keep it there. The utero-sacral ligaments have nothing to do with it. Every case of retroflexion is pathologic only when adherent by some condition of the appendages holding it there or a fibroid in that portion of the uterus lying next to the cul-de-sac. So we must do something with the appendages in all cases. That being true, we must go into the abdomen. I can not, I am sure, go into the vagina as the essayist can and bring forward adherent appendages by looping the finger over the fundus of the uterus, because I find in hysterectomy, while I have gotten the position before and behind me and have every opportunity to get in behind the uterus, I use a hook to bring it forward; I can not do it with my finger. If we operate through the abdomen, which we ought to do in nearly all cases, we can shorten the round ligaments as it is done in New York and other places, or as I have done it in my operations. I loop the round ligaments to the anterior aspect of the uterus thereby shortening them. This can be done in a minute or two with kangaroo tendon; it is perfectly safe, and holds the uterus a short time until the pubic bone becomes stiffened, and it remains as long as you want it. I do not believe the Alexander operation is applicable in these cases, because if we do the operation at all, we are doing it on a case that is not very pathologic, for the reason the uterus is movable, and pessaries will act as well as an operation and are certainly much safer.

Dr. WILLIAM H. HUMISTON, Cleveland, Ohio.—As I stated a year ago, I have not used the Alexander operation, for the reason that if we have disease of the adnexa the case can be cured without that operation. If you have a misplaced organ for a number of months or a year or more, if the diseased condition is continuous, there is a change in the tubes and ovaries, and by bringing the uterus forward, after having curetted the diseased mucosa and reduced the size of the uterus, it will remain in place if supported six or eight weeks by a pessary. The majority of cases of retrodisplacement of the uterus only exist for a short time and can be cured simply by placing the uterus well forward and supporting it for a few weeks with a pessary, then the pessary can be removed and the uterus will remain in place. If you have changes in the adnexa, then the uterus is liable to go backward again. Therefore, in the Alexander operation you have a movable uterus; you must have the appendages healthy or the mere shortening of the round ligaments is not going to relieve symptoms. If you have displacement with healthy adnexa, the Alexander operation is not indicated, and mild curetting and placing the uterus forward are sufficient. In cases where we have diseased adnexa, I open the abdomen for the purpose of examination. I anchor the uterus forward, and use kangaroo tendon with which to hold the uterus to the abdominal wall. I do not scarify. It will hold the uterus there a sufficient length of time for the adhesion to take place. It is elastic and it will relieve the case.

Dr. W. O. HENRY of Omaha—I can hardly agree with the essayist regarding the anatomy that he gave either as to the position of the symphysis pubis when the patient is standing, or as to the importance of the attachments, both anterior and posterior.

In regard to the operation of Dr. Goffe, I should say it is a difficult one, and an unnecessary one as a rule. Personally, I prefer to open the abdominal cavity and attach the uterus after the manner recommended by Dr. Kelly, by the slender peritoneal attachment, and I think the remark he made should be emphasized, because I believe there are many cases in which bad results have occurred after ventrofixation. In such operations as ventrofixation, where the peritoneum is scarified, we get an absolutely immovable uterus. But when a silk ligature is introduced through the entire thickness of the abdominal wound, you get a strong enough peritoneal tissue to hold the uterus in place. Where there are no adhesions and the peritoneum is all right, where the uterus is not necessarily large, no operation is needed. In many cases the uterus can be replaced and patients cured of their trouble by the use of a suitable pessary. I believe in the use of the pessary in such cases; but where an operation is necessary I still believe in operating by the abdominal method. I open the abdomen,

attach the uterus by two ligatures to the abdominal wall. If you have two ligatures within each other you are likely to get a dropping into a little nook a piece of omentum or bowel, strangulation taking place, and necessarily you will have to reopen the abdomen. A single ligature for suspending the uterus will generally answer in the majority of cases.

Dr. GEORGE J. ENGLEMAN, Boston.—The subject under discussion is a very broad one, and we all have our preferences. My own preference has been to attempt to restore normal conditions as far as possible, and not to replace one fixation by another, and, of course, fixations are now largely given up, likewise suspension. We must all yield to Dr. Kelly's success and the number of his cases. From close observation extending over quite a long time we must all admit that fixation is injurious unless it is resorted to in older women, where possibly the appendages have been removed and prolapse has occurred. I have seen a number of cases in which the delicate ligament has been stretched four or five inches or more, and yet it did not accomplish the object. If the good is accomplished in a given time, say in two or three weeks, I have no doubt the ligament holds. But frequently it is elongated more and more, and unless the normal conditions are restored, the operations are failures. I have preferred the shortening of the round ligaments with the restoration of other co-existing conditions. It has appeared to me that if we repair an old door we must repair the hinges, not nail it down either open or closed, but restore it as far as possible to normal conditions, and for that reason I prefer the shortening of the round ligaments through an abdominal incision in order to deal with the appendages, which in so many cases are at fault.

Dr. JAMES H. ETHERIDGE, Chicago—I have finally settled down for the past three or four years to abdominal fixation. Personally, I think there is very little difficulty in doing an operation through an inch or an inch and a half incision. As to ventrofixation, I have done many operations of this kind with only one abdominal suture. I suture through and through the abdominal wall, and one intra-abdominal suture is all I generally use in doing this operation. I have observed throughout this discussion that but very little allusion has been made to Dr. Goffe's paper. I am very glad to have heard Dr. Goffe's paper, because it is something new, and I want to hear what he will have to say three or four years from now. I still think I shall continue to do the abdominal fixation operation.

I am very much impressed with Dr. Ferguson's idea of suspending the uterus in this way. I cannot but believe that something will occur in loosening the stumps around the ligament, and they will slip back into the abdomen, one side or another. He says that is the fault of the operator or in the technique of our operations. If that occurs, he is hopelessly in the minority in the way of getting a reasonable expectation of good results from it.

Dr. JOSEPH PRICE, Philadelphia—In regard to the precise position of the ligature in these operations by Dr. Kelly, it has been disputed thrice or more by good men practicing the operation, each criticising one another's technique. One inserts the suture at the fundus or posterior to it, and the other a little more anterior. Thus, a paper was read by Dr. Ashton, one by Dr. Penrose, and I think, a third by Dr. Noble, each differing in the mathematical degree of position of the ligature.

Dr. JAMES H. ETHERIDGE, Chicago—I understand Dr. Kelly uses silk, and Dr. Gordon catgut. I have always used silkworm gut, leaving it in three weeks, taking out the abdominal stitches at the end of eight or ten days, and leaving the through-and-through silkworm gut stitches in three weeks. From past experience I have had in digging out silk material and other things from sinuses, I have gradually given up the idea of leaving a fixed suture in the uterus.

Dr. C. E. RUTH, Keokuk, Iowa—I have had considerable experience and some disappointments in trying to relieve uterine displacements. I think a pessary has its place in suitable cases. Had I known what the condition of the uterine adnexa was, I am quite sure I could not so well deal with the adnexa through the incision which Dr. Goffe makes as I could through an abdominal incision. I have done quite a number of ventrofixations that were very unsatisfactory, so far as relief from the symptoms was concerned for which the operation was done, and I have practically abandoned the operation for a year and a half, not believing that it should never be done, but I have not found a case in that time in which I thought the operation was indicated. I have since done it a few times, but I very much dislike to substitute one pathologic position for another. I am very slow indeed to believe that all cases of uterine retroversion and flexion are pathologic and demand treatment. I believe we will better subserve the interests of

our patients and own reputations if we make a small abdominal incision, and be certain as to the existence of a pathologic condition of the uterine adnexa. As to leaving unabsorbable materials in the abdominal cavity, I am less and less in favor of it as the years go by.

Dr. JOSEPH EASTMAN, Indianapolis—There is one point that was touched upon by the last speaker and Dr. Etheridge with reference to leaving material, such as sutures, which is not absorbed, and which I think is important. Silk, for example. Recently Dr. Tait has abandoned using anything else but silk. For a number of years I have boiled my silk, and then added quite a strong solution of carbolic acid to it. I have no trouble in digging out silk, and I think Mr. Tait resorts to a similar method. I do not think we should abandon silk altogether in our intra-abdominal work.

Dr. A. H. CORDIER, Kansas City, Mo.—I desire to offer a mild protest as to the ease with which the essayist would have us believe that this operation can be done through the vagina. I feel very much safer to make a small incision in the abdomen, open from above and remove the adhesions. While I use silk in all my abdominal work in the peritoneum, the placing of the silk ligature is an important thing. If the silk ligature should become infected at any time in the future in the position here (illustrating), it would find its way out through the bladder two or three months later if buried in the tissues. That would be a serious objection to the use of the buried silk suture in between the uterus and bladder itself. I would also disagree with the position of Dr. Ferguson in regard to making three openings in the recti muscles, because he takes a portion of the round ligament that stretches during pregnancy, shortens it up, so that he has nothing but two stumps to the abdominal incision, and as pregnancy advances these little stumps will not stretch like a ligament which is seven inches long running from the tubes up through a canal that is movable. The Doctor will find that this will be a serious objection to the use of the operation he has so beautifully illustrated with his diagrams today. Dr. Goffe has presented a most excellent paper, but I wish to protest against the idea that it can be done easily with the adhesions separated and the uterus placed forward in position in a mass of intestinal leaks that will require possibly a future operation to repair.

Dr. A. H. FERGUSON, Chicago—I believe Dr. Goffe speaks of his method as a new operation. I think if the literature is thoroughly gone over he will find that this is not correct, and in the absence of Dr. Byford, I wish to say that he presented a paper in which he described this same operation, which he does through the vagina. It was described several months ago in Chicago. In reply to Dr. Cordier, I wish to say that there is a distinction between stretching and hypertrophy when pregnancy takes place.

Dr. ALBERT GOLDSPOHN, Chicago—In regard to the question of priority of vaginal shortening of the round ligament, I beg leave to say that the first man who did it was a German in Dresden, whose name I can not recall. It was then done by Wertheim of Vienna, from which we Americans have it. Dr. Byford of Chicago was the first man probably in the West who did it after those gentlemen.

Dr. JOSEPH PRICE of Philadelphia—Dr. Kelley in his remarks spoke of pregnancy occurring in 5 per cent. of the cases in which he had corrected displacement of the uterus, or 20 in the 400 cases treated by him. The percentage of pregnancy following the old-fashioned simple methods of correction of uterine displacement was much larger. Dr. Bantock records a case returning from Africa to London for the correction of a posterior displacement thrice. Thrice a pessary was replaced and thrice she conceived. That has been my experience in several instances. I am very old fashioned, quite as much so as Emmet, in efforts at correcting displacements of the uterus by old-fashioned simple methods. I am not willing to admit for a moment that Hodge, Smith, Hewitt, Gaillard Thomas and others of the old school of gynecologists were fools and false in their statements when they told us they used pessaries successfully. Many of these displacements of the uterus can be relieved by the application of suitable pessaries. While I have the reputation of cutting almost everything, I want to take this opportunity of correcting that error. The character of suture material that we should use in our surgical work is very important. I have removed great quantities of it. Two or three days before leaving home I removed ligature material for three consecutive days from one patient. This was a doctor's wife who had suffered the tortures of the damned for some days, and I found her uterus held down with guy ropes that Dewey ought to have to tow some of his monarchs with. (Laughter and applause.) I have released more ventrofixations than I have ever done. I have been repeatedly told by husbands that their wives got out of bed

every half hour or so for a year or more; but by putting them to bed, freeing the uterus, omentum and bladder, and possibly removing a dead ligature, they have gotten along nicely.

In all fairness to Dr. Goffe, I wish to say that his paper is a scientific one and the fixation of the uterus in the anterior vault is one that in all probability will give less post-operative annoyance and sequelæ than others that have been so long practiced. The criticism offered with regard to the ease of the operation are like those of vaginal hysterectomy. It was a long time before physicians recognized that vaginal hysterectomy was an easy operation. It was really unfortunate they discovered it was an easy one, and yet it has taken the profession many years to recognize that fact.

Dr. GOFFE (closing the discussion)—I have very few remarks to make. A great many points have been suggested with which I do not agree, and while I should be glad to answer them in detail, I am afraid it would take too much time of the Section to do so. We are all agreed that a simple retroversion of the uterus is not so serious a condition as to require an elaborate surgical procedure for its relief. I believe we agreed, too, upon the point that it is only in certain selected cases that we advise patients who suffer in this way to undergo operation. As to the use of pessaries, my experience is that when a pessary is properly applied promptly after confinement, while involution is going on, the ligaments recover themselves sufficiently to retain the uterus in place. But in chronic cases of retroversion and retroflexion pessaries only afford temporary relief. Shortly after removing the pessary the condition is reproduced. That has been my experience, as well as the experience of men of wide observation. If we carefully look into the literature of the subject we will find that it is the experience of men who have kept watch of their cases most carefully, that only about 5 per cent of them that submit to pessaries are cured.

We all agree that in these cases the indications for operation are to be found in diseases of the appendages. Granting that is so, to reach the appendages we must open into the pelvic cavity, and the question resolves itself into the abdominal or vaginal route of entrance, and that is a question, I believe, that is going to be fought out in the next few years, and I believe the consensus of opinion to be in favor of the vaginal route. My own opinion at the present time is, and my own conduct in these cases, is never to do a laparotomy if I can avoid it. If I can in any way relieve a patient by vaginal incision instead of a laparotomy I always do it. I believe this is going to be the practice of the future. With regard to the length of time it is necessary to retain the uterus in an anteverted position in order to recover itself, and why it recovers itself I believe that if we can retain the uterus in an anteverted position for a certain length of time by something that does not impinge upon the utero-sacral ligaments as a pessary does, we allow the utero-sacral ligaments to recover themselves, to regain tonicity, the muscular tissue contracts, and as the utero-sacral ligaments recover themselves the uterus is retained permanently in place. The slight adhesions to the peritoneal membrane do not take the weight off the uterus; they do not overcome intra-abdominal pressure but simply direct the axis of the uterus, and we have done that in its proper channel, as indicated upon the board. We have intra-abdominal pressure carrying intra abdominal pressure forward.

In regard to the priority of the operation, I do not claim priority for this procedure. Wertheim of Germany has suggested it and practiced it; but before he published his paper, and before Dr. Byford published his paper, grounded on the same idea, I did my first operation, and while Wertheim has priority for publication in Germany, and Byford priority for publication in this country, about which I do not care, I am certainly entitled to priority for having done the operation in this country before it was published. It is my wish to bring this operation before the profession more pronouncedly than it has been done heretofore, with the hope of inducing some of you to adopt it. I shall do the operation tomorrow morning at 7:30 at the County Hospital in this city. I do not know how serious the operation may be, but it is a case which has been saved for a few days with the idea of doing an Alexander operation. I shall be glad to demonstrate to you the facility, ease or difficulty with which the operation can be done. I do not claim it is a simple operation. It is one that takes time and patience; but the results of the operation through the vagina are so satisfactory that I can highly recommend this procedure.

Police Reports.—The recent Latin-American Scientific Congress at Buenos Ayres passed a resolution urging the daily press to refrain from publishing police reports as "there is overwhelming evidence to show that they are direct incentives to ever-widening circles of suicide and crime."

DESCENSUS AND SUSPENSION OF OVARIES.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY A. GOLDSPOHN, M.D.,

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The medical profession has during the last two decades been more especially interested in the *exciting causes* of disease, the infections, and the ravages of these microbial invasions. The transcending value of the conquests in this direction amply explained and justified this tendency. But we are finding out that the infections, after all, are generally playing only a part, and, in some cases, a small part, in the aggregate causation of many diseases. We recall the tenets of our fathers who spoke of *predisposing causes* and find that these are just as prevalent in our day. Within the female pelvis and abdomen these causes are created mostly by displacements of the internal generative organs, with the consequent embarrassment of their circulation and impaired trophic conditions. As pertaining to the uterus, this fact has been recognized for a long time by the majority of gynecologists and general practitioners, and it explains the modern operative zeal for the cure of uterine displacements that is noble in its purpose, but very unfortunate in the choice of some unnatural methods (vagino- and ventrofixation or suspension). But, that descensus (badly called prolapse) of ovaries is a positive and potent pathologic factor, that it constitutes a large part of the aggregated evils in cases of retroversion of the uterus, that it justly demands permanent correction by suspension of each ovary so affected approximately in its normal position in conjunction with every surgical invasion of the pelvis that makes it possible and that, in the presence of such displaced ovaries, entrances to the pelvis for other causes should be so chosen as to make it possible to discharge this duty toward the adnexæ also—these are facts that need to be insisted upon and reiterated, not merely for general practitioners, but also for the majority of gynecologists.

The normal location of the ovary in the living woman was ascertained by Bernhardt S. Schulze,¹ the father of bimanual palpation, the one only searchlight in ordinary gynecologic diagnosis; and the clinical views of this ideal gynecologist were subsequently substantially confirmed by the anatomists Hasse,² Kölliker,³ His,⁴ Waldeyer⁵ and Vallin.⁶ During more recent years this topic has been invested with more practical interest than ever before, and it has been the subject of extended anatomic investigation, more especially by Aug. Martin⁷ and Dr. Hammerschlag,⁸ a student of Waldeyer. Minor differences of opinion still exist between the opinions of some investigators as to the exact location of the ovary; but they relate only to unimportant features, as, for instance, does the ovary lie more upon the anterior or the posterior part of the lateral wall of the true pelvis? Does it lie in a fossa, either specially designed for it, or resulting from indentation? But they agree in all important points—that the ovary lies against the lateral wall of the true pelvis, a little beneath its brim, and is sheltered by the tube and its mesentery (ala vespertilionis) arching over it. It rests approximately in the

obturator fossa (Waldeyer), being suspended against the lateral wall of the pelvis, with its long diameter parallel to that of the body in erect posture, by means of the suspensory (spermatic) ligament attached to its upper pole, the ligamentum ovarii proprium connecting its lower pole with the corresponding cornu of the uterus, and by its hilum a sessile insertion of its straighter edge into a projecting niche upon the outer part of the upper surface of the broad ligament. Its free border, which is thicker and more rounded, is directed in an inward and posterior direction. While we are compelled here to omit extended details of anatomy, we note, however, two very important practical facts; 1, that the ovary is suspended within the true pelvis, nearly as high on either side, and nearly as far away from its median line as possible, and 2, that it will be acted upon by intra-abdominal pressure chiefly in a centrifugal direction, tending to support rather than to dislocate it.

Nature of descensus.—There are two degrees or stages of descensus ovariorum. In the first degree the ovary is arrested in its descent by the sacro-uterine fold or ligament of the same side, and lies against the side of the supra-vaginal portion of the cervix and body of the uterus, in what Waldeyer calls the *fovia retro-ovarica*, and what Coe⁹ and others call the retro-ovarian shelf. In this location it is readily felt by the vaginal finger in the posterior fornix of the vagina in bimanual palpation. In the second degree the ovary has passed over the sacro-uterine fold and then descends to the extreme bottom of Douglas' cul-de-sac, where the finger in simple vaginal palpation meets it at once, almost before coming in contact with the cervix. While both ovaries are not infrequently descended to the first degree, particularly when associated with an old and extreme reversion of the uterus, it is rare that both of them lie together in the bottom of the cul-de-sac. Probably on account of the sigmoid flexure, the left ovary is the one which descends by far the most frequently in both stages, and it is usually the one found in extreme descensus (or prolapse). In 77 cases of ovarian descensus Mundé¹⁰ found the left one alone displaced 46 times, the right 19 times, and both together 12 times.

Causes.—Aside from various upward, inward or backward displacements which the ovary experiences from neoplasms arising from the uterus or the broad ligament, it undergoes a downward displacement—which is here alone considered—from three different classes of causes.

1. Those which occasion an abnormal or disproportionate increase in its weight, as *a*, inflammatory processes due to direct local infection or to systemic infectious diseases, especially typhoid and scarlet fever, variola and influenza; *b*, multiple cystic degeneration of Graafian follicles and corpora lutea.

2. Relaxation of the ligamentary supports of the ovary, *a*, by enfeebling or wasting diseases (occasioned partly, perhaps, by the associated loss of fat from the tissues); *b*, subinvolution during the puerperal state, after they have undergone a physiologic and somewhat proportional elongation during gestation; *c*, elongation of its ligaments, particularly of the lateral or upper suspensory ligament, by vicious traction made upon them during conservative surgical work upon the tube or ovary through an opening into the peritoneal cavity, that does not admit of sufficient access to the lateral wall of the pelvis. This is the case sometimes when a very small median ventral

incision is made in corpulent women; and it is always so in any form of vaginal celiotomy (Sanger),¹¹ which is an eligible operation for extirpation of adnexæ, but not for conservative work upon them, because their displacement—which in many cases led to their diseased condition—is not remedied, but aggravated by it.

3. Finally and chiefly, retroversion and retroversion-flexion of the uterus are responsible for downward and inward displacement of ovaries, more than all other causes put together. The statement of H. T. Hanks¹² that 33 per cent. of all cases of such uterine displacement are accompanied by a descensus of one or both ovaries to at least the first degree, is a very moderate one. And the fact that they are not so displaced already in every case of retrodeviation of the long uterine axis does not argue for the innocence of the latter, because descensus of ovaries associated with a normally anteverted uterus occurs in only about 2 per cent. of cases that are not influenced by pelvic neoplasms or tubal swellings of any kind. It could not be otherwise, as the anatomy of the parts indicates. The utero-ovarian ligament (lig. ovar. proprium) is a firm, round, comparatively unyielding, fibro-muscular cord (Luschka)¹³ enveloped by peritoneum and only 2.6 cm. long. The other supports of the ovary, the hilum and the upper suspensory ligament, are little more than duplicatures of peritoneum containing areolar connective tissue, but practically no fibrous or muscular elements, and are therefore very yielding in character. They allow the ovary to ascend in the abdomen, with the fundus uteri during gestation, and to follow it at close range in all its voluntary or forced excursions in the pelvis.

Harmful factors incident to descensus.—These are, first partial venous stasis, and second, mechanical traumata.

1. As the ovary descends its venous current is obstructed by traction and torsion exercised upon its hilum; for the displacement occurs not merely by a sliding movement, but by a tipping over or rolling inward and downward (Sanger).

2. *Traumata from the uterus and rectum.* Although intra-abdominal pressure is everywhere equal and therefore affects all intra-peritoneal bodies from all sides alike, nevertheless, during coughing, sneezing, vomiting, and other straining efforts, as at defecation, there is a marked temporary and physiologic recession of abdominal viscera into the pelvis, that occurs by virtue of proportionally greater power vested notably in the diaphragm and other muscles in the upper part of the abdominal parietes. The consequent reduction in lumen of the abdominal cavity and temporary downward recession of its viscera is the domineering feature of intra-abdominal pressure in the pelvis. It is the sovereign factor in emptying the rectum; it is the greatest force exercised in the second stage of labor; it sustains the uterus in normal anteversion or holds it in constant retroversion according as it is guided forward sufficiently or not by its ligaments, and woe to the sensitive feminine testicle when it departs from its sheltered nook upon the side of the pelvis and approaches the median line of the pelvic canal where intra-abdominal pressure in this manner will be brought to bear upon it, through the medium of the rectum posteriorly, and the uterus anteriorly. The traumata thus inflicted upon the descended ovary are intensified when the body of the uterus lies retroverted, which is the case in probably 95 per cent. of

all cases of descensus ovariorum. In complete descensus at the bottom of the posterior cul-de-sac, the ovary lies as in a vise that acts irregularly, but very frequently. Every forcible exercise of intra-abdominal pressure crowds the (usually retroverted) uterus down upon it from above. Every filling of the sigmoid and passage by the rectum brings contusions from behind or below; and normal coitus is scarcely possible without bruising the usually hyperemic, edematous or inflamed ovary and causing much pain. When the ovary has descended only to the first degree, and lies backward and to the side of the uterus in the sulcus created by the sacro-uterine ligament or fold, it does not experience the traumata mentioned so directly and invariably, but, like a floating body in the knee-joint, it may be caught at any time and is compressed frequently and violently enough (Goodell)¹⁴ to carry it beyond the domain of conservative treatment, unless it be restored to normal position permanently—with resection when necessary—before a number of years elapse.

The *pathologic changes* that occur in such ovaries in consequence of the constant venous hyperemia and innumerable traumata are: 1, hematomata in Graafian follicles and corpora lutea; 2, edema; 3, connective tissue hyperplasia, which is well known to result from constant embarrassment of the venous current, in other organs of the body; 4, chronic oophoritis, leading to multiple cystic follicular degeneration, usually in parts of an ovary, and cirrhotic conditions in other parts; 5, even perioöphoritis and eventually peritoneal fixation may occur without infection, according to Sanger.¹⁵

It is often impossible, but likewise non-essential, to determine whether descensus of an ovary, in a given case, is the cause or the result of an inflammation or degeneration of the organ. For, while it may be the entire source of disorder in the former case, in the latter it imposes insurmountable barriers to all natural forces in their efforts to establish a *restitutio ad integrum*.

The *indication* to permanently reduce such dislocation of ovaries is therefore general; and it should be done by non-surgical means when possible, and with surgical measures when necessary, especially when resection of them is also required. That ovaries so displaced, diseased, and distressing to their bearers, can by such treatment, be restored to good or relative health anatomically and functionally and, in the great majority of cases, do not require extirpation, my experience during the past five years has abundantly proven in several hundred cases. Naturally the prospect or advisability of saving these organs becomes constantly less the longer the vices incident to the displacement have acted upon them and have induced greater anatomic changes. They are also much less in those comparatively rare cases where their descensus occurred in connection with a normally anteverted uterus.

So-called medical treatment for this disorder is really effective for a few cases in that category only in which the descensus (prolapse) of the ovary is associated with a retroversion of the uterus, namely, in recent cases of this kind, following within a month or two after parturition, in which subinvolution is a prominent factor. If involution of the uterus and of the uterine and ovarian ligaments be promoted in these cases by an early restoration and retention of the retroverted uterus and descended ovaries in nor-

mal position by a properly fitting pessary, and if this be supplemented possibly with a vagino-abdominal faradic current of not more than sixty interruptions to the minute, or by massage of the uterus in anteversion, and by tonic medical treatment, then a cure of the displacement of both uterus and ovaries is here sometimes attained. In non-puerperal cases, however, usually only temporary relief is obtained by these means. In cases that are associated with a retroverted uterus that can not be brought into thorough anteversion by bimanual manipulation preferably—owing to peritoneal adhesions or infiltration in its supports—so that this invariable and absolute preliminary requirement for the use of any pessary can not be fulfilled, all local medical treatment resolves itself, among other minor agents, into the abstraction of water from the parts by from one to two ounces of glycerin (with bichlorid of mercury, 1 to 4000), applied by means of tampons of elastic (non-absorbent) sterilized cotton or wool. These are best applied when the patient is in the genu-pectoral position, and the cervix has been drawn or crowded into the sacral hollow. They may be left in forty-eight to sixty hours, and should be renewed in a day or two. If no septic elements linger in the adnexæ, the tenderness may hereby be so much reduced that bimanual massage may liberate the organs and right their position so that a pessary becomes a possibility, but also a life-long necessity. But the only really effective treatment for descended (or prolapsed) ovaries, with given exceptions, is essentially of a surgical nature. And, while this subject eminently deserves the careful attention of all general practitioners and medical specialists, because it furnishes an anatomic reason for many a persistent dyspepsia, vaso-motor disturbance or neuralgia, still I would address myself chiefly to those who have occasion and facilities for working in the pelvic peritoneal cavity; I would call their attention to the important duty, namely, in every instance before closing this cavity, to see to it that the uterus and every ovary that is allowed to remain, is also given the most favorable opportunity to remain healthy, by securing each organ as nearly as possible in its normal position or environments by dealing with natural structures in a manner that does not disarrange the normal anatomy or disturb the physiology of these or other adjacent organs. Furthermore, I would remind them of the fact that with surgical methods that are designed to rectify displacements of the uterus alone merely, we are discharging but little more than half of our duty in many cases, that a nearly equal obligation frequently obtains with reference to the adnexæ, to relieve them of diseased portions (resection), or of incipient disordered conditions (salpingostomy) and to secure them in a normal location. Certainly the restoration of the displaced uterus is a most potent and unavoidable means for the replacement and retention of descended ovaries, but it is not the only or all sufficient means in the majority of cases. But a choice of a surgical method for the most frequently associated retro-deviation of the fundus uteri is necessary for the relief of a descended ovary. Vagino-fixation, ventrofixation and ventrosuspension being intrinsically very unnatural and unsurgical procedures, and giving rise to disorders in gestation and obstructions in labor on the one hand, and intestinal obstruction on the other, are not eligible as normal procedures in women who retain a capacity for conception. Nor are they

adapted to serve harmoniously with other surgical acts that are demanded by descensus of adnexæ.

The most nearly ideal structures to deal with to meet the combined requirements of a retroverted uterus and descended ovaries, with certain exceptions, are the round ligaments of the uterus. These ligaments may be dealt with by three different routes: 1. *By vaginal section*, by which they may be shortened intra-abdominally or may be drawn out and fastened to the vaginal wound. This route is, however, only suitable in cases where no conservation work upon the ovaries or tubes is needed, so that they do not need to be drawn into the vaginal wound, away from their more lateral location, and then dropped into an abnormal situation. 2. *Ventral celiotomy*. This is the proper route to deal with descended ovaries, with or without an associated retro-deviation of the fundus uteri, in all cases that are complicated, not merely by adhesions, but probably also by lingering actively septic elements. After removing all depots of the latter, and thoroughly liberating all remaining parts, the uterus should be secured in normal anteversion when necessary by intra-abdominal shortening of the round ligaments, every remaining dislocated ovary should be suspended in the following manner: A full-curved cambric needle armed with fine silk, suitable for intestinal work, is passed through the web that connects the abdominal ostium of the tube with the ovary—called the ovarian fimbria—about midway between the two, and so as to grasp from one-half to one cm. of its free edge. The needle is next made to grasp a similar amount of the inner free border of the spermatic or proper suspensory ligament of the ovary near the ilio-pectineal line. Usually two stitches, about a cm. apart, are so placed and tied. In passing the needle through the spermatic ligament, it is usually well to draw out its free border with a forceps so as to avoid puncturing veins that are very prevalent in it. Thus the ovary and infundibulum of the tube are both suspended mediately in approximately normal relation to each other and without direct fixation of either, leaving to each a range of mobility. 3. *By way of the inguinal canals and dilated internal inguinal rings*. This is the most nearly ideal route by which to shorten the round ligaments of the uterus, and gives the least objectionable and most enduring results in permanently correcting the displacements for which it is intended, if properly performed. It is therefore desirable to treat as many cases by this modified and improved method of Alexander as possible; and, indeed, it is very serviceable, not merely for uncomplicated freely movable retro-displacements of the fundus uteri and descended adnexæ, but also for that large class of such displacements in which the formerly active septic or infectious factors have died out, but have left behind an array of adhesions about these organs and various removable deformations and degenerated portions of adnexæ. This very important work can be done by this route efficiently and safely, both as to primary and sequent developments, by cutting only skin, fat, and sometimes peritoneum, and separating all other tissues about the inguinal canal bluntly, by stretching the internal inguinal ring (which in every case must be opened to admit of a proper shortening of almost every round ligament) enough to admit an index finger, and by introducing this finger, and if necessary the next one also, through this opening, freeing the uterus and adnexæ of all

adhesions or fixations and bringing the tube and ovary up into and out of the wound where salpingotomy, destruction of cystic follicles or resection of the ovary, and suspension of it, can be done singly or collectively as required, or the tube and ovary may be taken out if worthless. The internal inguinal ring is situated on a line nearly anterior to the lateral and upper suspensory ligament of these organs. Therefore, the farther or the more readily the upper pole of the ovary is drawn out the greater is the relaxation of its upper suspensory ligament, and the clearer is the indication as well as the possibility of shortening it. In this operation this is done by passing fine silk sutures around the ovarian fimbria, as above stated, and uniting this to the inner edge of the spermatic ligament well drawn out, at a point as low down in the wound as can be reached by depressing the surrounding abdominal wall.

This not very easy, but very innocent, and extremely benign work on the patients, I have gradually developed since Sept. 18, 1893, when for the first time I failed to find a round ligament in performing an Alexander operation upon a mentally deranged patient who would not admit of careful previous examination. Instead of giving it up, which I have never done, I opened up the wound into the abdomen and traced the round ligament from the uterus outward. Incidentally, I discovered a menacing tube and ovary and removed them, obtaining a good recovery of the patient mentally and physically. During the last seventeen months I have performed this extended Alexander operation thirty-six times; eleven times the simple operation was done with no intraperitoneal work upon the adnexæ aside from exploring them in each case on one or both sides with a finger introduced through the ring, and suspending one ovary in a few of the cases; thirteen times with resection of one or both ovaries, making a suspension of the latter in about half the number of ovaries dealt with, and restoring the canal of the tube in a smaller number. In twelve, or one-third of the cases, I removed the appendages of one side; and in some of these resected and suspended those of the opposite side. In an experience with about one hundred and forty cases, the Alexander operation, variously modified, has not only not been responsible for any death, nor followed by hernia or any other evil sequel; but the general average of morbidity during convalescence is much lower than of abdominal sections proper in which only the same amount of work has been done upon the same organs, but much more incidental exposure and manipulation of intestines especially was necessary. The general average of good health during subsequent years in cases of such displacements that were surgically treated upon this plan, either intra-abdominally or by way of the inguinal canals, so that not the uterus only but the ovaries also were secured in normal position is much better than of similar cases in which the uterus *alone* was formerly attended to by the same and other less eligible methods.

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FURTHER EXPERIENCES IN THE MANAGEMENT OF UTERINE DISPLACEMENTS.

Presented to the Section of Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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I have been prompted to present this subject on account of the misapprehension which, I believe, has prevailed respecting the character of an abnormal position of the uterus, and the method of treatment that should be adopted for the correction in certain cases.

It has been a frequent occurrence to meet with cases having a marked backward displacement where a pessary had been inserted and worn for a considerable period without an attempt being made to overcome the adhesions and to restore the organ to a position as nearly normal as possible.

For convenience in treatment, uterine displacement may properly be divided into two classes, namely: anterior and posterior rotation.

I have often found the former division to yield quite readily to dilatation and to the maintaining of the patency of the cervical canal; this can be effected by the employment of a glass drainage-tube while the patient is kept in a recumbent position. In those cases in which there is much congestion or inflammation of the uterine canal or of the tissues connected with the appendages, douches or other local applications should be used previous to dilatation and drainage.

Of the two results that follow anterior displacement, I have noticed that sterility has been the more common condition or has not been as easy to control as has dysmenorrhea.

Within the past year I have observed an unusual number of cases of sterility dependent on a preternatural closure of the uterine cervical canal. In one case my records show that the patient had some eight years before given birth to a child: the ante flexion of the corpus uteri was of the third stage, or of an angle about forty degrees. In endeavoring to effect dilatation I found that there existed much hyperplasia of the cervix, which was evidently the result of an old endometritis. An innocent-looking exudation taken from the cervix, when placed under the microscope, revealed the presence of gonococci, the existence of which must have been of long standing and must have contributed to the sterility and to the changes that had taken place in the endometrium. Dilatation of the canal, incision of the interior of its cervical portion, curettement, drainage and cauterization with a 60 per cent. solution of chlorid of zinc finally overcame the dysmenorrhea and relieved the essential symptoms.

In some instances I have found that ante flexion resulted undoubtedly from congenital causes. In very marked or aggravated cases I have observed vesical symptoms to arise. The urine may contain a

muco-purulent sediment. After dilatation and other local measures have been tried, a properly fitted Hodge pessary, introduced so as to lift the uterine fundus from the bladder, afforded satisfactory relief.

As regards anteversion, I have found that condition often associated with subinvolution and therefore has been the result of pregnancy and of parturition, laceration of the cervix, and relaxation or inflammation of the uterine ligaments. Dilatation, curettement, and the direct application of iodine and of other alterative agents have proved excellent preliminary measures of treatment. The laceration of the cervix and of the perineum and also of other parts should in due time be attended to.

In two cases of ante flexion of the third degree, pregnancy took place before opportunity for a systematic plan of treatment could be carried out. In one of the cases vomiting of pregnancy occurring after the tenth week became alarming; this, however, was brought under control by rest and by tamponading the vagina so as to elevate the uterus from the rectal, sacral, and vesical tissues. Such vomiting can often be relieved by the milder means used for replacement of the uterus. If, however, there are firm adhesions, as there were in a case to which I was called some months since little can be safely attempted in this respect until after the term of pregnancy has been completed.

It is sometimes said that the stimulating effect of pregnancy tends to improve the development of the uterus and thus to overcome the ante flexion. In one of my patients, notwithstanding pregnancy went twice to full term, the ante flexion recurred soon after each parturient process had taken place.

As before remarked, I have relied in the treatment of ante flexion much upon resort to dilatation, either by the gradual or by the rapid method, as the condition of the case would seem to justify. In regard to the time when rapid or more forcible dilatation should be attempted, much will depend upon the character of the case. If there is evidence of much old hyperplasia, with a preternaturally small cervical canal, dilatation should be had recourse to as soon after menstruation as it will be deemed expedient to undertake. If, however, the cervix is soft and imperfect in its size and shape and there is a tendency to menorrhagia or metrorrhagia, the operation should not be performed for some days after the flow has ceased.

In dilating the uterus I have noticed that much care should be taken not to exercise too much force in the beginning; the condition of the tissues somewhat above the internal os should not be overlooked. In cases in which there is considerable hyperplasia or induration of cervical tissue, incision of the parts within the canal will be most helpful; the sudden forcible stretching of the tissues without incision is liable to be followed with delay in recovery or with other untoward results. In cases in which there is a complication of salpingitis, ovaritis, or other inflammatory processes, rest and preliminary treatment should be tried before the more radical measures are employed.

In all cases, after dilatation has been effected, the patient should be kept for a considerable period in the horizontal posture. If sterility or dysmenorrhea continue, dilatation, curettement and intra-uterine applications should be repeated at proper intervals. I have found, however, that when treatment was seasonably undertaken, favorable results in a large percentage of cases were early achieved.

In the management of retroflexion we have been accustomed to speak of the corpus of the uterus as being bent or turned backward from its original position. In this connection it might be proper to say that the cervix of the uterus is in its normal position when its axis is nearly at right angles to the axis of the vagina and the corpus inclined forward toward the abdominal wall. The degree of retroflexion may then be determined by finding the measurement of the angle that is formed by the backward displacement of the body from the internal os. We may have a retroflexion that embraces an angle varying from the dimensions of half a circle to those that are included in less than a quarter of an arc. As regards the treatment of such cases many points have to be considered. Of course, replacement of the organ must first be accomplished and its reduction must be maintained. I will not discuss the question of repair of the lacerated cervix or of an injured perineum, for we all now recognize that such cases should receive proper attention, as well as that measures should be instituted to overcome the condition of subinvolution. The cases that of late have given the most trouble have been those in which the organ was firmly bound down by adhesions, or after the adhesions have been overcome, the ligaments and other parts have been found so weakened and relaxed as to fail to act as guys in sustaining the organ in its restored position.

As we come to appreciate more and more the influence of intra-abdominal pressure in the maintaining of the uterus in its normal position, we shall perceive more clearly the reason why we have succeeded in some cases by a resort to a special method of procedure, while in other cases such operations have proved to be almost entirely useless.

Last winter there came under my care a case in which Alexander's operation had been tried some three months previously without any beneficial results being apparent. I found, on further examination, that the retroflexion was of nearly the third degree. Some dysmenorrhea was complained of, besides the effects of pelvic pressure and other annoying symptoms, the result of reflex irritation. The vulvo-vaginal introitus was relaxed and patulous. The only operation that I could recommend was Hegar's method of posterior colporrhaphy. The posterior vaginal wall was narrowed so as to overcome the patency of the vulval opening, and thus to prevent the ready ingress of air. The uterus was then kept in place by a properly fitted Hodge pessary, though the round ligaments were much relaxed, and no attempt was made to shorten them.

I believe that Alexander's operation is the most useful in those cases in which the vulvo-vaginal wall is so intact as to be sufficient to maintain the intra-abdominal pressure. There can be no doubt that had the perineal and vaginal tissue been repaired at the same time that the operation was undertaken for shortening the ligamenta rotunda, the results, in all respects, would have been typical of the benefits that could have been achieved by necessary operative interference.

Those cases in which the uterus is displaced backward and is firmly adherent, are frequently the most troublesome to manage. Manual and instrumental interference may sometimes be helpful in effecting the proper reduction; so, also, will repeated tamping with iodoform gauze or with prepared lamb's wool, but these procedures have many times proved

to be tedious measures of treatment. In such cases, Alexander's operation will have to be deferred; this operation would be especially contra-indicated if the adnexa were prolapsed and adherent also. The course then to be pursued will depend on the amount of suffering.

If the severity of the symptoms cannot be relieved by resort to milder means, or by the recourse to the extra-peritoneal method, ventrofixation or ventrosuspension may, of course, be the next expedient. Before resorting to this measure of proceeding it is highly necessary to be certain, as it is in Alexander's operation that the perineum and vulvo-vaginal tissues are intact, and that there exists in those parts no patency that would materially overcome the equipoise of the intra-abdominal pressure.

On making an abdominal incision other factors as contributing causes of the retro-displacement may be discovered; these will have to be dealt with as may, in each individual case, seem proper. Ventrofixation as a routine method of treatment for correcting retro-displacement of the uterus can, according to the present knowledge of the results of abdominal surgery, be scarcely approved. The operation in certain cases has its peculiar benefits; in others it has its exceeding limitations. Ventrofixation or ventrosuspension, I have found, is an admirable surgical expedient in those cases in which one or both of the appendages or portions of the broad ligament have been removed through an abdominal incision; for overcoming retro-displacement in married women, I believe that it is best that the operation should, if possible, be deferred until the approach of the menopause. If conditions admit of a choice, Alexander's operation for shortening the round ligaments in properly selected cases is no doubt the less dangerous to the patient's life and the less likely to interfere with the normal evolution of pregnancy, though I have seen a few cases in which utero-gestation, taking place at an early date after the operation, terminated about the sixth month in premature parturition.

DISCUSSION ON PAPERS OF DRs. GOLDSPOHN AND CLARKE.

Dr. JOSEPH EASTMAN, Indianapolis—I desire to thank Dr. Goldspohn for his excellent paper. I endorse every word I heard, although I did not enter the room until the paper had been well begun and the foundation had been laid. The paper certainly shows that the Doctor is studying along anatomic lines in a conservative way, and with the absolute view of effecting cures, and not for the sake of making new experiments or developing new modes of operating.

Dr. HOWARD A. KELLY, Baltimore—Some of you may recall a paper in the *British Gyneological Journal* in 1889 with reference to stitching up the ovary with its attendant prolapse. I myself have never felt perfectly clear as to the pathologic significance of those ovaries that were felt with unusual distinctness in Douglas' pouch, and I have never felt warranted in opening the abdomen for the sake of stitching up such ovaries. When I have opened the abdomen for other causes these ovaries have never appeared to be diseased; they may have had small cysts in them. I shall watch with interest the effects of operations upon descended, prolapsed, more or less tender ovaries. In the course of abdominal operations, where I have removed the tubes, and the ovaries have tended to drop back, I have pinned them to the cornu of the uterus in a number of instances. It is interesting to note the varieties or differences we find in the course of operation in the utero-ovarian ligaments. Of course, the length of the ligament allows the ovary to drop back. I have seen a case within the last two weeks in which the ligament was over two inches in length. That was in association with a tumor, which was large. When the ligament was pulled out I never saw one as long before. I have seen them short and thick. I wish to say in this connection, that a short time before I came here I saw a case where there was absolutely no utero-ovarian ligament. The appearance was curious. In opening the abdomen and exposing the

uterus, saying this *à posteriori*, the ovary was plastered right on to the uterus on both sides for about two-thirds of its surface, the scar tissue looking like skin that had been in water for some time, radiating several centimeters around. This was the only case in which there was absence of the utero-ovarian ligament.

Dr. WILLIAM H. HUMISTON, Cleveland—In reference to cases of prolapsed ovaries, I find it is a great question for me to decide as to the necessity for an operation. I do not feel clear in deciding to operate until I have gone through a course of treatment in these cases. It is rare for me to find an ovary prolapsed unless we have descensus or a retroposition of the uterus. In those cases I find that the history gives an indication as to what the result may be from ordinary treatment. If the case has existed for a long time, usually it has failed to be permanently benefited by putting the uterus in its proper position and condition. But I feel like trying the conservative method always in doubtful cases before resorting to surgical procedures. I find in a great many of these cases, if the symptoms have been only a year in duration, that they do get well by placing the uterus in its proper position and supporting it there with rest in bed, hot water douches, by glycerin pads, and with medicated boro-glycerid, or ichthyol-glycerin solution. I have never done the operation of suspending the ovaries, for after failure of the conservative method of treatment, the symptoms not being relieved to any extent, upon opening the abdomen and inspecting the appendages I find them in a pathologic condition, and then removal of them is the only thing to give permanent relief, and in those cases I have had most pronounced success. Many cases that have come to me with symptoms of recent date, say within a year, have been permanently cured by the ordinary treatment with pessary, after six or seven or ten weeks of support by pessary. The uterus remains in its position and we have no further trouble. Usually pregnancy takes place and they go on to full term without any trouble. Where the appendages are not diseased, merely congested, and the ovaries prolapsed, perhaps the conservative treatment has been usually sufficient in my experience.

Dr. E. GUSTAV ZINKE, Cincinnati—I can not believe that an otherwise healthy ovary or ovaries that are prolapsed, even though they be lying behind the uterus or in front of it, will give rise to any serious symptoms—certainly any symptoms that would in my opinion justify operative interference. This is the view which I take of this procedure. I have yet to see a single case of prolapse of the ovaries without adhesions that has given rise to such symptoms as will warrant operative procedures, except perhaps such as a patient may be put in the genu-pectoral position several times a day for as long as she may stand it in connection with the use of tampons, keeping the organs in their place as much as possible; but when I have found relief from measures of this kind, I always feel sure that whatever symptoms there were present they were not the result of adhesions, and in no case were they so severe as to justify an abdominal section for the purpose of stitching the ovary in its proper place.

Dr. J. H. W. CHESTNUT, Philadelphia—My experience in these cases coincides very clearly with that expressed by Dr. Humiston of Ohio, and Dr. Zinke. The numerous cases I have seen have been so comparatively insignificant in their ulterior influences that I have not yet been called upon to operate for removal of the ovaries except where there were evidences of intrinsic disease. The frequent placing of the patient in the knee-breast position, the retention of the ovaries in their position by tampons medicated by glycerin and ichthyol and rest in bed with the hot douche will give relief. Where there have been adhesions I have felt compelled to remove the organ. I have no doubt, however, that there are cases in which this procedure will be of value.

Dr. MILES F. PORTER of Fort Wayne, Ind.—There are certain cases of prolapse of the ovary in which we know the shortest and best method of treatment is some method of fixation or their removal. With the Goldspohn method I have had no experience whatever; but I have had some happy results from abdominal fixation of the ovaries, in cases where apparently there was absolutely nothing wrong save that the ovary was out of position—sometimes out of position one day and in position the next. A few days ago a case of this kind presented itself which had been treated by the usual method without result, and upon leaving she remarked to me that the first movement of the bowels without pain and without distress, she had for a period of eighteen months, she had had within three months after the ovary was put in position, and retained there through an incision in the median line.

Dr. CHARLES I. BONFIELD, Cincinnati—It seems to me that the experience of Dr. Kelly and of Dr. Zinke that these cases

do not cause some trouble must not be the experience of the entire profession. The cases that are attended with retroversion of the uterus, and the cases that are relieved when the retroversion is relieved are amenable to the office treatment so graphically described by Dr. Humiston of Cleveland. But when the ligaments of the ovary are so stretched that replacement of the uterus does not also replace the ovary, then it has been my experience that local treatment is very hard to carry out, and it is almost impossible to make it effective. A great many of the gentlemen have said that the ovaries, if not diseased, need not be disturbed; but it has been my experience, after watching these cases, that if I am not able to relieve them in any way, sooner or later the ovary itself becomes diseased; the malposition of it interferes with its nutrition, and sooner or later we have a diseased ovary which requires its removal. The gentleman who spoke a minute ago, from Iowa (Dr. Fairchild), voiced my sentiments when he said that certain women could not afford to be treated months for this condition, such as school teachers, music teachers and clerks in stores. They cannot afford to pay money for their care, nor can they afford to rest long enough to get temporary relief. In those cases some surgical measures are indicated.

Dr. E. GUSTAV ZINKE, Cincinnati—It is possible I have placed myself in a wrong position because I was not here when the paper was read. I may not have been correctly understood with reference to what I had said before. What I meant to say was that when we have a perfectly healthy ovary, in other words, no diseased condition in the pelvic cavity, only prolapse of the ovary, that the symptoms arising therefrom can not be sufficiently severe to warrant operative interference. Furthermore, when I spoke of the genu-pectoral position for the relief of the condition, everybody knows that there are no adhesions present. The treatment need not be very protracted, and a few applications will probably be sufficient. If protracted treatment becomes necessary, it is evidence that adhesions exist, and that other pathologic conditions have arisen for which operative interference will be perfectly justifiable. I wish it distinctly understood that I endorse every honest effort. I do not know whether Dr. Goldspohn does this operation for prolapse of the ovary without any diseased condition present or not. I simply make these statements in order to make myself understood. I hope if I did not make myself understood then I have done so now.

Dr. JOSEPH PRICE, Philadelphia—My experience has been instructive and interesting in this line of work, although I have not resorted to surgical procedures except in the presence of pathologic conditions. A prolapsed ovary with fixation commonly has occlusion with retention, and the same holds good with retrodisplacements with fixation. It is exceptional to find a fixed uterus without an occlusion with retention of blood, pus or water. You have alluded to the importance of surgical interference in this class of cases. For simple descensus of either or both ovaries, or the truant ovary of the Germans, we have had a great variety of treatment. I do not approve of the office treatment. It avails but little. If you are going to treat a case successfully you must put the patient at rest, and if the treatment be local and general you will succeed in many cases in giving marked relief by some of the methods recommended. The globe trotters and the class of women who do not want to be mothers, or prefer postponing the treatment of their troubles for trivial purposes or other convenience, are the ones that annoy us most. If you can convince some of these women that they should become mothers you will, in many cases, cure the truant ovary. Before leaving home I examined a patient who has not conceived for eleven or twelve years. She is living in the extreme Northwest; she was the victim of artificial methods of preventing conception, and, as a consequence, had marked nervous disturbance bordering upon insanity. I found in her case, large, congested uterus and truant ovaries. I put her to bed, corrected the displacement of both ovary and uterus, and she returned eight months later to ascertain the presence or absence of pregnancy. I assured her that she was pregnant some four months or more. She went away rejoicing. We are burdened in the East by a number of cases traveling all over the world. They have an unnatural dread of having a baby, and a baby is a thing we love down East above all things.

Dr. CLARKE (closing the discussion on his part)—In most cases where we have displacement of the adnexa we have displacement of the uterus, and in my paper I spoke of the importance of intra-abdominal pressure, and I believe we should in all cases endeavor to restore that. There is a class of cases in which I think my methods of treatment should be of avail, but I have seen some cases in which ventrofixation or ventrosuspension has been undertaken and carried out with so little good effect, that I am afraid of it. I believe if the Alexander

operation is performed in a certain class of cases, and the peritoneum is intact and the subinvolution is overcome, with a little rest in bed, the woman kept in that position, we will get almost a perfect cure. If we perform Alexander's operation without restoring the parts to overcome subinvolution and without watching the condition of the ovaries and tubes we will meet with failure. The purpose of the round ligaments is to prevent backward displacement, and to fasten the uterus to the abdominal walls or to the peritoneum has, in my experience, been a failure in those cases in which the tubes and ovaries have been removed.

Dr. GOLDSPOHN (closing the discussion)—I condemn the surgical monstrosities of ventrosuspension, ventrofixation and vaginofixation. Direct or immediate fixation of the uterus to the abdominal wall, without an intervening band, is so serious a thing that soon it will be malpractice to perform it in women who may conceive. Suspension exposes the patient to the risks of intestinal obstruction. If the bands made by these operations were the result of anything else, the operators themselves would open the abdomen to remove them. The records show that two-thirds of the women subjected to these operations have troubles in gestation or labor, or both. The harvest of ileus after ventrosuspension has only begun. The round ligaments are merely guy-ropes. Intra-abdominal pressure is the holding force that either supports the normally anteverted uterus or condemns the retrodisplaced uterus to remain permanently in that position. The best way to correct these displacements is by means of the round ligaments and through the inguinal canals. The cardinal points in the technique of Alexander's operation are that the way into the abdomen is not to be cut, but the tissues are split so that they fall together afterward; that the conservative operations upon the appendages can be done through the dilated wound, and that each layer must also be closed individually. At least 95 per cent. of the cases of descent of ovaries are associated with retroversion of the uterus, and hence the treatment must be directed to the displacement of both. The gynecologist who knows no middle ground between amputating an ovary and doing nothing, stands in the same position as the surgeon who would amputate every diseased leg. I never do Alexander's operation without curetting thoroughly and repairing the cervix or perineum, or both, at the same sitting, if at all required. My technique of the operation is briefly as follows: The pubic spine and Poupart's ligament are the guiding points. An incision is made half an inch above the ligament, beginning near the spine, passing down to the aponeurosis of the external oblique. The bunch of fat in the external ring is grasped with forceps and a finger is placed in the ring. The aponeurosis is then split up without being cut, and is held aside by retractors; the round ligament is traced to the internal ring by tearing the attachment of the deeper muscles to it, when the end of Nuck's canal can be seen. This is cut slightly and a pedicle forceps is introduced and the internal ring is stretched so that the index finger can be introduced. With this all adhesions to the uterus and to the tube and to the ovary of the same side are severed. The ovary and tube, if abnormal, are brought out, inspected and their condition is corrected surgically if possible, or they are removed. The round ligament is sutured to the under surface of Poupart's ligament, in the act of closing each layer in the wound separately, and after the principle of Bassini hernia operating.

THE TREATMENT OF AMBULATORY GYNECOLOGIC CASES.

Presented to the Section of Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10.

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Sanger tells us that gynecology is the surgery of the female genitalia. His definition is neither exact nor complete, but it is clinically useful. As a matter of fact the first thing to be determined in every gynecologic case is the advisability of operation. A necessary subdivision of the question is at once apparent. There is the consideration of immediate operation at the time of examination, the operation in such cases being trivial. There is to be considered the advisability of local and systemic treatment, which is often to a great extent tentative, with the reasonable hope

that surgical treatment may ultimately be dispensed with or may become relatively insignificant, at least not especially dangerous, and finally, there is the certainty that operative measures are imperative, perhaps that their immediate adoption is the only known means of relief or of saving life, in which event removal of the patient to a hospital is usually indicated. There is, therefore, in the first examination of every gynecologic patient a chance for much difference of opinion, both as regards the indications for operation, the kind and extent of surgical measures to be adopted, as well as the relative value of measures, chiefly medicinal and topical in character, which include no extensive surgical interference.

I desire in this connection to refer to the gynecologic cases I have seen at the Chicago Polyclinic during the past four years. I ask your attention exclusively to those cases, very properly designated as ambulatory, where the women, although often seriously diseased or suffering from a condition which seems to demand surgical treatment, are unable to submit to radical measures which would necessitate sojourn in a hospital or cause them to give up their daily work. These patients are chiefly working women, many of them having to support children and at times a husband. If not employed in some shop or factory they are obliged to attend to household duties, from which they can not absent themselves without serious interference with the routine of their family life. In some instances they are impostors. I have known them to come several thousand miles for treatment. They have settled down in Chicago with their families and have taken advantage of our dispensary and hospital facilities in the most shamefaced manner. Prostitutes are not frequent attendants of our gynecologic dispensary. The women, as I have said, are, as a rule, obliged to work for a living. They are often poor, but not destitute. They are, most of them, trying to do their part in the struggle of life. For this reason it is a hardship in several ways for them to remain in the hospital long enough to convalesce from an operation. They can not indulge in the "rest cure," or in many instances, purchase proper food. They seek relief from their ailments without interference with the routine of their daily life. It is gratifying for me to be able to say that often such a course of treatment is practicable and sometimes surprisingly successful. Let me briefly detail the methods in use in the different classes of cases I have been called upon to treat:

Venereal warts if small are snipped off with scissors under cocaine anesthesia. Occasionally the base is touched with a drop of carbolic acid. If the warts are large and extensive the patient goes to the hospital for a few days, the strip of mucous membrane from which they grow is dissected off and the edges united, very much as in a Whitehead operation for hemorrhoids. During pregnancy no operation has been undertaken, nor have the warts, as far as known, in any way interfered with parturition. During the puerperium they diminished in size and in some cases they have disappeared. Chancroids are touched with strong carbolic acid for its anesthetic effect, followed by a drop of fuming nitric acid applied with a glass rod. Powdered boracic acid is applied to suppurating surfaces after the parts have been cleansed with a boracic acid solution and dried with absorbent cotton. No case of phagadema occurred. Chancres were not often seen. They occurred on the fourchette and inner surface of the labia majora. They were dusted

with boracic acid and pills of proto-iodid of mercury were exhibited.

Condylomata have been dusted with powdered boracic acid or stearate or oleate of zinc. A douche, often of a 1-4000 solution of bichlorid of mercury, would be given two or three times a day and general cleanliness of the parts would be insisted upon. With these local measures, under a vigorous mixed treatment, the condylomata would disappear or perceptibly diminish in size, and the ulcerative condition of the neighboring parts would improve.

Pruritus, in connection with pathologic conditions would often be relieved by applications of powdered boracic acid and the maintenance of cleanliness. In other cases a saturated solution of sulphite of sodium would be prescribed with great benefit, although in some cases of pregnancy its use would have to be persisted in.

Lacerations of the perineum would often present themselves, but usually cicatrization had taken place and no serious discomfort was occasioned by their presence. In recent cases powdered boracic acid would insure healing without much pus. Where extensive rectocele existed the patient was advised to submit to a Hegar operation in the hospital. In many instances circumstances prevented the acceptance of this advice, and it was found in the great majority of cases, that when the patient, in the course of time, recovered from pelvic pain and other symptoms due to infection of some of the pelvic viscera, the rectocele apparently caused but little inconvenience as long as the bowels acted daily. Cases of somewhat extensive laceration of the anterior vaginal wall would favor the development of a cystocele, but in many cases without appreciable inconvenience. Here also, it was noted that when the symptoms due to infection were relieved the cystocele would persist, but it would cause—at least while the patient was under observation—no decided bladder symptoms.

Many cases were observed of what is commonly called "irritation of the neck of the bladder." The symptoms were undue frequency in urination and a desire to pass a drop more accompanied by more or less pain. Urethral caruncle when observed in connection with these symptoms was promptly removed under cocain anesthesia. In addition to the routine treatment of infection of the pelvic contents, to be later described, it was customary to recommend the copious drinking of water and the exhibition of twenty grains of benzoate of sodium three or four times a day. Only exceptionally would it be necessary to give an anodyne. When pain was severe it would usually be relieved by a suppository of one-half grain of the aqueous extract of opium often combined with one-third grain of the alcoholic extract of belladonna. Once or twice a year there would be a case of chronic urethritis which would disappear under the foregoing treatment and the bi-weekly passage of steel male sounds, gradually increasing in size, as is practiced in the treatment of urethral stricture in the male. Rarely was it necessary to send the patient to the hospital for bladder irrigation, ureteral exploration or some operative procedure.

Infection of the vulvo-vaginal glands, one or both, was often observed. In many instances no special discomfort was occasioned, and in the course of time the infection would subside. In other instances pus had formed so that a free incision was necessary. Several cases were seen that had persisted for years.

It was noted that a small incision, amounting to little more than a puncture, had been repeatedly made, which would allow the evacuation of pus, but the abscess would invariably recur. In such cases it was gratifying to observe that an incision which extended throughout the length of the gland would invariably effect a cure within a few days. Some chronic cases where induration was apparent were sent to the hospital and operated on by excision of the glands.

Hemorrhoids were often seen in connection with other diseased conditions. If external, and especially if situated some distance from the verge of the anus, they were incised and the clot turned out. In other cases an ointment of equal parts of ungu. gallæ and ungu. zinci benzoat, containing perhaps ten grains of extract of opium to the ounce would reduce the tumors in size and relieve the itching and irritability complained of. Of course means were adopted to secure free bowel movements in each case.

Internal hemorrhoids and anal fissure were treated by moderately stretching the sphincter muscle and applying powdered boracic acid twice a week. Of course here also free catharsis was secured. It was found that these measures were usually sufficient to heal the fissure, reduce the hemorrhoids to an appreciable extent, and to relieve all symptoms due to their presence.

Leucorrhœa, as would be expected, was a symptom frequently observed. Indeed, its presence often induced the patient to apply for treatment. She would suffer also from variable pelvic pain, but in many cases the constant discharge was so disagreeable, or its continuance was regarded as such a drain on the system that immediate and permanent relief was urgently demanded. When the discharge was at all profuse or the attack was recent, the gonococcus would be looked for. A drop or two of the pus would be collected on a glass slide; methyl blue or gentian violet used as a staining material and the specimen examined microscopically. If diplococci were found Gram's iodo-iodin solution would serve to differentiate the gonococcus by decolorizing it. Usually it was found where the discharge was profuse, unless a recent infection of the endometrium or a cervical laceration was clearly demonstrable. Vaginitis was rare except in children. This was the rule in nearly all cases of leucorrhœa, the delicate character of the mucous membrane apparently offsetting the protection afforded in adults by the pavement epithelium. The treatment of gonorrhœa and of the vaginitis of children consisted in the application of a nitrate of silver solution to the mucous membrane of the vulva, the entire surface of the vagina, the portio vaginalis and the exposed portion of the interior of the cervix. In adults this application consisted of a 20 grain to the ounce solution, and was made with a swab of absorbent cotton at intervals of three days. A 1-4000 bichlorid douche used twice a day would also be prescribed. In children the application was necessarily less thorough. It was made in the same manner to the vulva and lower portion of the vagina, but in addition a vaginal injection of the solution, 10 grains to the ounce, would be made by means of an eye syringe.

In most of the cases that presented themselves for treatment there was evidence of infection of a cervical laceration, the endometrium, the lymphatics or veins near the uterus, the interior of the tubes, the ovaries, or the peritoneum adjacent to the fimbriated extremities. These cases constituted the conditions often

called "cellulitis," "perimetritis" or "parametritis." By me these terms are no longer used. They present to my mind no definite idea of the exact pathologic condition that exists nor are they in any way indicative of etiologic relationship nor suggestive of suitable means of treatment. I also abstain from the use of the words "endometritis," "salpingitis" and "ovaritis." These expressions, it must be admitted, indicate very often the true condition that exists but, with our latter day knowledge of bacteriology, we understand that the inflammatory reaction that occurs when infection takes place, is the effect of microbial action and is always the result of a morbid process, which is itself usually of the first importance.

I have no wish to be pedantic, at the same time I contend that for many reasons, it is preferable to say infection of the endometrium or tube, as the case may be. This defines the exact condition. This is a step in the right direction. It will not be long before the variety of infection will be stated, with very great value to our knowledge of definite therapeutics. The effects of the inflammatory reaction must also be recognized and appreciated. Indeed, in many of these cases, the extent of the inflammation is of itself a positive indication for determining the proper course of treatment.

Lacerations of the cervix were often noted. Sometimes there would be no infection. The finger could detect a solution of continuity in the portio vaginalis but no other symptoms, subjective or objective, could be determined. In such cases the lacerations were let alone. In other cases the infection was the factor of importance. The portio vaginalis, torn bilaterally or presenting an irregularly stellate laceration, would be everted or hypertrophied, the red and inflamed surface of the endocervical mucous membrane constituting the condition which used to be called "ulceration of the womb." In all such cases there was found an extension of the infection to the endometrial mucous membrane or beyond. Repair of the lacerations or amputation of the cervix, together with a thorough curetting, was usually recommended, but in most instances, sociologic and economic reasons prevented the acceptance of this advice. Under these conditions, powdered boracic acid was applied and the routine treatment, soon to be described, was persisted in, usually with satisfactory result.

I may as well state frankly that our diagnosis was often imperfect and incomplete in many of the cases where infection, originating in the endometrium, had extended either by continuity of epithelial surface through the tube to the ovary or to the peritoneum or where invasion occurred through veins or lymphatics—often of the placental site—to the parenchyma of the uterus or the surrounding areolar tissue. It must be remembered that we encountered stout patients and those in whom there was much muscular rigidity or extreme tenderness. The bimanual examination was often facilitated by the assumption of the exaggerated lithotomy position and the use of a vulcella forceps, but these means were not always sufficient to enable us to map out the pelvic contents with any degree of accuracy, and it was rarely practicable for our patients to take an anesthetic.

Under these conditions the presence of infection could be noted but the locations infected could not be accurately determined until the patient had become accustomed to our examination or the tenderness had appreciably subsided. As a matter of fact, as I often

took occasion to say to the practitioners who attend our clinic, the etiologic relationship and the location of the infection are relatively of little consequence, in comparison with the importance of knowing its extent; that is, if it has gone on to suppuration. The presence of pus in the pelvis is, in my judgment, the important point to be determined in the examination of gynecologic cases showing the effects of infection. When pus has formed to any great extent its evacuation is usually the proper treatment. In our patients, however, it was often impossible to operate and our advice had to be disregarded. It is extremely gratifying to be able to say that in the great majority of cases where pus was diagnosed in the tube or the areolar tissue of the broad ligament our treatment would succeed in relieving all pain and all discomfort so that the patient became symptomatically well. This experience in time modified our prognosis and had its effect upon our advice. When a pyosalpinx was discovered we did not feel it necessary to demand an immediate celiotomy as the only means of saving life. When pus was diagnosed in connection with the ovary or broad ligament we insisted that the surest and speediest way to ensure recovery was a vaginal incision and drainage, as Henrotin has so ably pointed out. Nevertheless, we soon learned that if circumstances prevented a sojourn in the hospital and operative interference, there was a reasonable probability that in the course of time microbial action would cease, the pus, now no longer septic, would become absorbed or encapsulated, and the patient would be free from pain and discomfort. We learned further that our routine treatment was beneficial in all cases of infection of the pelvic organs or the tissues surrounding them. As a matter of practice, we submitted all patients of this class to essentially the same treatment. We succeeded in all cases except those requiring surgical interference, and in many of these cases, when we advised vaginal or abdominal incision for the evacuation of pus, curetting for the removal of granulations or the retention of membranes following abortion or labor, trachelorrhaphy or some form of colporrhaphy, it was most surprising to notice that the symptoms would gradually subside and the patients would be able to continue their daily occupations without inconvenience.

I will now state the details of what I have called our routine treatment. I do not claim that it is the best treatment, much less that it is the only treatment for this class of cases. In our hands it has been found convenient and many hundreds of poor women can testify as to its success. I consider it worthy of mention, although there is nothing new about it, for it must be remembered that the patients who were benefited were working women unable to purchase expensive drugs, food or appliances and forced to continue on in their daily routine of life. Our first direction is a 1-4000 bichlorid of mercury douche to be taken as hot as can be borne twice daily, with the patient on her back and the hips up. The error is explained of an attempt to take such a douche with the bulb syringe or on the water closet seat. The patient lies flat on her back in the bath tub with a rubber water bag under her hips, or, as often happens, if there is no bath tub, she lies on the edge of the bed with her feet separated, each on a chair.

The bowels are made to act freely at least once a day. For this purpose it is customary to prescribe the fluid extract of cascara sagrada in a routine man-

ner. The drug is given at first in 20 drop doses to be taken three times a day. If the bowels do not move, a compound cathartic pill is given at night and a dose of salts in the morning. Sometimes it is necessary to give at first a saline enema or one of glycerine and water. However this may be, no more than 20 drops of the cascara are given at a dose. In a few days the salts may usually be omitted in the morning and some days later the pill at night is also omitted, to be promptly resumed, however, if on any day the bowels fail to move. It is usually found that, after a week's time, the three daily doses of cascara produce daily evacuations. Our directions now are that the drug be taken regularly in the same dose no matter how frequent the discharges may be, provided they are fecal in character. It is noted that after the cascara has been taken for some little time, colicky pain and diarrheal movements supervene. This is our signal, not for stopping the medicine, but for its exhibition in the same way three times a day in a smaller dose, say 15 drops instead of 20. Another period of regular bowel movement usually follows but, in the course of time there again occur watery movements and abdominal colic. Here again the dose is diminished, the original dose being promptly resumed or the cathartic pill, enema or salts given if required. In a few weeks more the dose can often be still further reduced although taken in the same regular manner, three times a day. Finally, after the dose has been reduced to one drop three times a day, the medicine can be discontinued and the bowels act freely and regularly of their own accord.

The patient is told to assume the knee-chest position twice a day for ten minutes. Twice a week, when she calls at the dispensary, she assumes this position upon the operating table, a large Sims's speculum is introduced and a tampon of absorbent wool, one end soaked in a 10 per cent. solution of ichthylol in glycerine is applied by means of a uterine dressing forceps. This tampon remains in situ some twenty-four hours, unless an offensive discharge or undue irritation ensue, and is removed by the patient by means of a string which is tied to one end of the tampon.

This is our routine treatment of infection of the pelvic contents. Powdered boracic acid is dusted on the inflamed cervix. Benzoate of sodium is given as already stated when there is irritation of the bladder. Quinia, iron and strychnia are often given with phosphoric acid. Some form of pepsin with hydrochloric acid is prescribed when there is stomachic indigestion. These drugs are invariably combined with cascara even when the patient disclaims any tendency to constipation. Very rarely is it necessary to prescribe anything else. No uterine probe or sound is used in my clinic nor is there ever made a uterine application. Our experience with pessaries has consisted solely in their removal. No uterine dilatation is practiced. I hardly need say much in explanation of this plan of treatment. My purpose is to record facts and not to attempt to defend a theory. Uterine dilatation is rarely, in my opinion, a justifiable procedure in an ambulatory patient. In the class of cases under consideration it would have been a dangerous experiment. For the same reason no application was made to the endometrium. My experience with hundreds of women during the past four years appears to show that it is unnecessary.

Some surprise may be occasioned by the absence of all reference to uterine displacements. It does not

mean that they were not observed. They were usually found, however, in connection with pathologic conditions which were themselves of chief importance. In the absence of fibromata of the uterus or cysts of the ovary or broad ligament, in the absence of ectopic gestation, hematoma or other condition which mechanically influenced the position of the uterus, displacement occurred as the sequel of infection or the inflammatory action that had ensued. With an infected puerperal uterus, with adhesions which matted the parts together, it was evident that the infection was of the first importance, and it was usually found that when the infection was benefited by treatment, the uterine displacement disappeared or caused no inconvenience unless there were present conditions warranting operation. For this reason the displacement of the infected uterus was practically disregarded. The mobility of the healthy uterus was explained to our practitioner-students by reference to well-known facts concerning the anatomy of the parts and by demonstration in patients free from infection. The presence of infection was pointed out both in reference to its etiologic relationship to the displacement and its importance as an object of attack in our treatment. The symptoms complained of were very much alike wherever there was infection which had extended much. There was pelvic pain and a "bearing down" sensation, usually increased during menstruation. There were often bladder symptoms, due to pressure, or to an amount of infection which showed itself by no objective symptoms. There was lumbo-sacral, as well as inguinal pain, and there was often pain extending down the inner surfaces of the legs. There were reflex symptoms in great number and in varied character. It was our constant endeavor to secure an accurate record of all these symptoms. Our history also included a full description of all objective symptoms which were described as the "result of physical examination." For instance, under this head, the record would show "solid, movable tumor, oval in shape, apparently two inches in length, in cul-de-sac," also, in the same case, "no tube or ovary palpated in left ovarian region," and under the head of diagnosis we would insert "prolapse of inflamed, left ovary." These facts are mentioned, for it is evident that the diagnosis, which is the deduction from the premises presented, may often be inaccurate, whereas the record of symptoms complained of and of physical findings is apt to be reasonably correct, provided the observer exercises proper care in the interrogation of the patient and is experienced in his examination.

In cases presenting the usual symptoms of infection, together with leucorrhœa, uterine tenderness and sometimes enlargement as well, our diagnosis of the infection referred especially to the endometrium. Where infection of a cervical laceration was evident it was assumed that extension by epithelial continuity had taken place unless it was at the same time apparent that some traumatism was present or that retention of membranes or placental remnants had occurred. Curetting was advised in these cases when menorrhagia or metrorrhagia persisted, when offensive leucorrhœa occurred as a sequel of labor or abortion, or when the chronic character of the infection and the continuance of the leucorrhœa gave reason to believe that granulations had resulted. Curetting was not advised in cases which showed an extension of the infection beyond the endometrium. When pus was

present anywhere in the pelvis its evacuation was considered rational and it was found that subsequently our routine treatment in time controlled the infection of the endometrium. When congestion and other evidence of phagocytosis were noticed beyond the endometrium it was deemed judicious to persist in local treatment until the effects of infection were removed or until the formation of pus had become a certainty. Especially in extension to the mucous membrane of the tube was it considered advisable to defer a curetting because the probability of a reinfection of the endometrium was a danger which our experience taught us to be imminent. Indeed, in several cases where both tubes had been removed it was observed that the infection of the endometrium still continued and gave rise to symptoms scarcely less severe than those which were noted prior to the operation.

Many of the cases where operative interference was advised and where circumstances prevented the acceptance of our advice were after all forced to submit to hospital treatment owing to subsequent pus formation or the development of other serious sequelæ. Nevertheless it must be stated that in a certain number of cases when, in our judgment, an operation was urgently demanded, the symptoms, under our routine treatment, would gradually improve and finally disappear.

When a fluctuating tumor was felt outside of the uterus, the anamnesis and the concomitant symptoms would permit us to determine the presence of pus. Its immediate evacuation was recommended in all extraperitoneal cases. The etiologic differentiation was often difficult and at times impossible. We felt, however, that the important point to be determined was the relationship of the pus to the peritoneum. Whether the suppuration was the sequel of invasion through lymphatics or veins of vulva, vagina, cervix or uterus or had occurred by an extension through the tube to the ovary or the pelvic peritoneum was, in our judgment, of insignificant importance in comparison with the necessity of determining the feasibility of operating without danger to the peritoneum. In many cases where pus was diagnosed and in certain cases where its presence was demonstrated, it was observed that the swelling would subside, the pain would diminish, menstruation would become normal in character and the patient in time would be relieved of all symptoms.

Where pyosalpinx was diagnosed, an immediate operation was not usually advised. Our experience showed that quite often pus, in the course of time, would be evacuated through the uterus and all symptoms of infection would disappear. Many chronic indeterminate cases were observed. The excursion of the uterus would be restricted by adhesions. The infection would have persisted for years with irregular exacerbations. Pain, tenderness, leucorrhœa and menstrual derangement would be associated with various effects of infection. In these cases especially our routine treatment would yield most satisfactory results. In all cases the subjective symptoms would in time disappear or suppuration would become localized so that proper surgical measures could be employed.

The record of these everyday gynecologic cases and the details of the simple treatment instituted, will be considered of but little value by gentlemen who see in every woman only a patient to be oper-

ated on. I venture to hope, however, that it is not without interest for us to realize the possibility of relieving distressing symptoms, even in serious cases, when circumstances prevent hospital treatment. I consider it of importance for us to understand that patients can sometimes recover without curetting, uterine dilatation or the application of caustics to the endometrium. I think it well for us to know that lacerations of perineum, vagina and cervix do not always have to be closed. I regard it as a matter of interest to appreciate the fact that the day of the pessary has passed and that displacements are no longer of paramount importance. It is, moreover, satisfactory to note that even in cases where the consensus of opinion would pronounce unhesitatingly in favor of operation, it is occasionally possible for milder measures to succeed in the amelioration of symptoms, while the patient continues to follow her usual pursuits. The inference from this observation is obvious. Infection is the factor of importance in most gynecologic cases. Displacement, hypertrophy and hyperplasia are essentially the result of infection or the sequel of the consecutive inflammation. Infection is chiefly to be considered in the adaptation of our therapeutics. Indeed in many cases no thought need be given to concomitant conditions. Caustics, astringents, scarifications and many ancient practices which prevailed when we sought to control inflammation are superseded by rational methods based upon an increasing knowledge of bacteriology.

CONGENITAL UTERINE ATRESIA AND DOUBLE HEMATOSALPINX.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

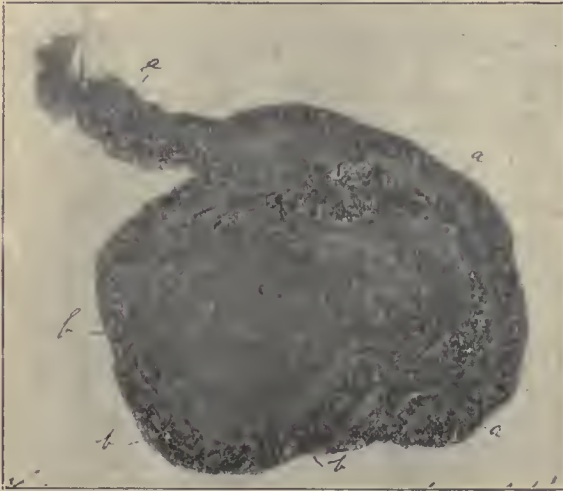
BY ALEX. HUGH FERGUSON, M.D.

CHICAGO, ILL.

Congenital uterine atresia with consequent double hematosalpinx is sufficiently rare and interesting to crave your attention to a report of the only case suffering from these conditions met with in my practice. This was a case of atresia of the cervix uteri without the least communication between the uterine cavity and vagina. The vagina was nearly normal in size. There was a free communication between the uterine cavity and the enormously distended Fallopian tubes and adventitious cysts in the pelvis. The accumulation of six years of the menstrual fluid was imprisoned in the uterus, tubes and acquired cysts, except the amount that had become absorbed. An operation effected relief.

The history of the case is as follows: Mrs. B., patient of Dr. Dame of Winnipeg, was admitted to the St. Boniface Hospital, complaining of abdominal enlargement and frequent attacks of pain in the lower half of the abdomen. She was a brunette, 24 years of age, of plump and healthy appearance, weighing 136 pounds, and sanguine in temperament. In the history of her development during girlhood days there was nothing unusual. When 18 years old, having then to all appearances grown to be a woman, monthly pains in her breasts, back and pelvis began; and several months, with three or four days of suffering in each, passed by without a menstrual flow appearing. When about 20 years of age a physician was consulted, and then she was given internal medication, but no physical examination of the generative

organs was made. Two years were consumed in general treatment and still no flow appeared. During these four years (18 to 22) her general health was good. She was constipated. She enjoyed life as other girls did, except at monthly periods, when pains and local pelvic distress were severer each succeeding



month than during the previous one. Latterly, however, attacks of cramping pains intervened between the periodical monthly disturbances, and the abdomen became enlarged, perceptible only to herself at first. A few more months of suffering elapsed, the attacks becoming more frequent and the abdominal



Fig. 2.—Right hematosalpinx, four-ninths actual size. a, fallopian tube; b, ovary; c, cysts.

enlargement well pronounced. She then consulted the late Professor Fenwick of Kingston, Canada, who diagnosed her case and opened the abdomen, in 1893, with the idea of removing the tumors. He found the pelvis filled with two cysts, and so extensively attached with vascular adhesions to omentum and

bowels that he thought it best to leave them alone. He closed the abdomen and left the blue and vascular-looking cysts in the pelvis. She made a speedy recovery from the operation. Her sufferings continued, and the tumors increased in size. Still her general health was fair, and she was able to do her share of home household duties. A few months afterward she married and moved to Manitoba, where she fell into the hands of Dr. Dame, who referred her to me for operation. A physical examination revealed a prominent abdomen immediately above the pelvis; a tender mass extending on left side to a point midway between the pubes and the umbilicus, and another on the right, not so high, but equally tender. The vulva, vagina and cervix appeared normal to sight and touch. A uterine probe passed into os uteri about one-eighth of an inch and there became obstructed. The occlusion was inspected through a straight cervical speculum. There was nothing to be seen but smooth mucous membrane. The atresia was undoubted. The uterus was slightly movable and two tender masses could be felt, one on each side of it, and extending backward and downward, filling the pouch of Douglas. Bimanually it felt more like a double pyosalpinx than anything else. She had a temperature in her last attack of local peritonitis, and it was feared that the retained menstrual fluid had become infected. The rectum was free from trouble. Coitus was always a little painful to her at first, but she was quite amorous and enjoyed the orgasm.

Operation.—On June 16, 1894, assisted by Drs. Dame and Todd, I successfully removed the double hematosalpinx. The abdominal scar tissue was extirpated, the abdomen opened, the adhesions rapidly stripped off, commencing behind the left horn of the uterus, where a free cleavage point was found. No difficulty was experienced in turning out the left dilated tube and ovary without rupture of the tube or cyst. I then amputated the left Fallopian tube down to the uterine mucosa. The uterine cavity was filled with a dark-looking, tenacious fluid and freely communicated with the Fallopian tube, which was distended with the same material. An interlocking ligature of silk was applied to the pedicle and the mass cut off. The hemorrhage, although copious, was not alarming and was easily controlled. A probe was then passed into the uterus and extended into the cervix beyond the internal os. The cavity of the uterus was not much enlarged. I decided not to remove the uterus, but to open and drain it per vaginam. The dark, treacherous substance was squeezed out, and the hole at the cornu closed with catgut sutures. The right dilated tube and ovary were dealt with in a similar manner, and the abdominal operation completed without delay. On account of the extent of the raw surface left, both gauze and tube drainage were inserted. The cervix was exposed through the vagina and split transversely a distance of about half an inch, when the uterine cavity was reached. It was washed out and drained with gauze. The patient made an uninterrupted recovery and left the hospital on the twenty-third day after the operation. Three weeks afterward the silk ligature (the only silk used) on the left stump misbehaved and came away via abdominal incision, after which she remained well. A year later the cervical canal was quite patulous and she was enjoying excellent health.

THE SPECIMENS.

Fig. 1 represents the left hematosalpinx two-thirds

its actual size. It is, more properly speaking, a tubo-ovarian retention cyst, inasmuch as the ovary forms part of the cyst wall, and the contents consist of the retained menstrual fluid. Fig. 2 represents the right distended tube and ovary, two-thirds its actual size. The ovary is distinct by itself and in a condition of cystic degeneration. The Fallopian tube and adventitious cysts at its end contain menstrual fluid. The plates are accurate, the drawings being made before the cysts were opened, so I shall not describe the external appearance of the two specimens.

The pathologic anatomy and nature of the retained menses are well known. In this connection let me say that two fimbriæ of the left tube could be differentiated within the cyst, and the contents were free from germs.

THE USE OF THE CURETTE IN ACUTE INFECTION OF UTERUS WITH ADHERENT PLACENTA.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., July 7-10, 1898.

BY D. S. FAIRCHILD, M.D.
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In the midst of the discussions of the more difficult and complex questions of abdominal and pelvic surgery our leading and most eminent gynecologists, whose opinions are of inestimable value to workers in more limited fields of general gynecologic work, often fail to furnish us lessons from the results of their own varied experience in the less brilliant but equally important matters pertaining to every-day practice.

I have often been impressed with the thought, if our information was definite enough in relation to the use of the curette in removing attached portions of placenta in cases of abortion, premature labor or labor at full term when infection has occurred. It is clear enough that in diseases of the endometrium the curette is of great value and is, as a general rule, properly used in the cases which come under our daily notice. But in the cases where, from the retention of small masses of adherent placenta, infection has occurred, the uterine mucosa is softened, the uterine lymphatics are blocked with infectious thrombi and the temperature elevated from absorption of septic material, is it really safe to employ the curette in a vigorous and indiscriminate manner? I have frequently observed in general surgical practice that in certain cases of local infection anything more than the most careful and delicate procedures has been attended by a sudden accession of the local symptoms, together with a marked rise of temperature and have observed the same condition arise after curetting a uterus containing acute infective material.

I am aware that many advocate the use of the curette in septic conditions of the uterus following abortions or after labor, when there is reason to believe that portions of placenta are still retained in the organ. I have of late years been led to believe that this is not an altogether safe practice to follow. Great discrimination should be employed in resorting to this procedure, otherwise much harm may be done.

In cases where decomposing material affected by saprophytic micro-organisms is retained in the uterus the influence of which is marked by high temperature and offensive lochia, the dull curette employed carefully for the purpose of removing from the organ the

offending substance, which has but little or no attachments to the uterine walls, is an exceedingly valuable procedure, followed by irrigation with sterilized water. When, however, a septic endometritis exists in connection with necrotic decidua burdened with septic germs, streptococci, the curette may become a very dangerous instrument. In these cases it is quite easy to inflict a trauma which may serve as an additional means of introducing septic germs into the system. The protective granulation layer which serves a conservative purpose of limiting the constitutional infection may thus be distributed, furthermore it is quite possible to penetrate the softened uterine tissue and thus lead to most disastrous results.

The use of the curette in the removal of adherent portions of placenta in the early period after an abortion, before a septic inflammation of the uterus has occurred is beneficial and this together with thorough irrigation will save some of the danger of infection. But after septic infection has once developed this treatment is attended, with considerable danger as I have abundant proof in my own hands and in the practice of professional friends. I have no recent misfortune of my own to record for I have long since abandoned this method of treatment. The removal of adherent masses under these conditions by scraping with the finger nail is not less hazardous, but even more so, on account of the trauma inflicted and on account of the risk of introducing germs which may lie concealed under the nail, especially under some nails which may be used for this purpose. The conditions which we have to contend with in these cases are purely surgical and should be treated accordingly.

If a surgeon, in the treatment of an infective wound, should undertake to remove necrotic tissue by violent means he would find that the condition of the wound and the general condition of the patient would become more serious. In all cases of septic infection, whether of wounds or of the uterus, drainage is the first consideration together with the removal of infective material so far as possible without disturbing the boundaries which conservative efforts have placed for the purpose of protecting the system against infection. It often becomes a delicate question what to do in cases of sepsis arising from the uterus. The general practitioner will, in a great number of cases, be called upon to decide what course to pursue, and if he has in mind the necessity of employing the curette as the most approved method of treatment he will sometimes be led into most serious difficulty and do his patient great harm. A correct appreciation of the pathologic condition should underlie the measures to be employed. If the examination reveals the existence of necrotic decidua, bearing saprophytic micro-organisms, giving rise to sapremic intoxication, the careful use, of the dull curette, not for the purpose of scraping the interior of the uterus, but for the purpose of facilitating the escape of the contents of the organ, followed by irrigation with sterilized water, will accomplish the desired end. If, as it is sometimes found, the os is somewhat tightly closed, under the influence of an anesthetic the cervix can easily be placed in the most favorable position and sufficiently dilated for satisfactory drainage. If it is found however that the uterus is swollen and the endometrium softened and infected with streptococcus, only the irrigation should be employed, and the irrigator handled with great care lest the violence disturb the granulation layer and expose new points for the ab-

sorption of infection and thus expose the system to a larger dose of poison. If the examination reveals the absence of an offensive discharge, and the general symptoms are profound and not attended with local conditions other than a septic and necrotic endometrium, no local treatment should be instituted, for it is probable that the uterus is infected throughout, that a condition of thrombo phlebitis exists, that the uterus is softened, that no granulation layer exists, and the use of the curette or irrigation can do no good, but rather harm, and should be avoided. Whatever may be the merits of a vaginal hysterectomy in these cases can not be considered in this paper for the reason that the great multitude of physicians who have these patients to treat can not afford to employ it in general. It will occasionally happen that the os is closed in cases in which it will be necessary to reach the interior of the organ. I do not remember of meeting with a case where I could not dilate the cervix with my finger when the patient was under the influence of an anesthetic, but if the cervix is too rigid to be dilated in this manner forcible instrumental means may be employed, but great care should be observed lest a trauma be inflicted and at least afford additional facilities for the absorption of septic material.

This paper is presented simply as a protest against what I believe to be a indiscriminate use of the curette in acute infection of the uterus. While these observations may not have any application to leading members of the profession I am quite sure that the lines bounding the use of this instrument are not often enough drawn to furnish safe guides for many practitioners whose experience is more limited.

I contend that great care should be observed in the use of the curette in acute infection of the uterus.

In cases in which portions of placenta are adherent they should be removed by the sharp curette, but before infection has occurred, under antiseptic precautions. If infection has developed, it is safer to remove all detached portions with a dull curette without inflicting trauma, irrigate and drain. If infection of the uterus has occurred without offensive lochia but with serious constitutional symptoms, no curettement or irrigation should be employed. The dangers of the free use of the curette are of two kinds: 1, inflicting trauma which may facilitate absorption of infection material; 2, the penetration of the softened uterine tissue. If the os has closed, retaining in the uterus suspicious or decomposing material, very careful dilatation should be employed under an anesthetic; detached masses removed with the dull curette and gentle irrigation employed; the whole procedure so conducted as to inflict the least trauma possible.

THE EFFECT OF UTERINE CURETTAGE AND DRAINAGE ON DISEASE OF THE TUBES.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

BY W. W. GRANT, M.D.
DENVER, COLO.

One of the commonest diseases of womanhood, and at the same time one of the most serious in its consequences to health and life, is inflammation of the Fallopian tubes. It is very generally, if not uniformly, secondary to disease elsewhere. Like peri-

tonitis, it is not idiopathic. It is a common cause of sterility, either in direct consequence of the disease, or as a result of the surgical measures employed for its cure. It leads not infrequently to fatal results. Therefore to prevent mortality and to preserve mental stability and the functions of maternity, disease of these appendages is second in importance to no other, and appeals always to our highest consideration and best judgment.

It is just to say that pyosalpinx is a purely surgical condition, requiring some form of operative procedure for its permanent cure, yet cases now and then recover without recourse to the knife. As uterine endometritis is the usual cause of salpingitis, it is self-evident that whatever means will prevent, or most speedily cure, the former disease can only tend to the preservation of the functions and integrity of the tubes. Acute aseptic corporeal endometritis is not often observed. As sepsis following abortion, labor, gonorrhoea or operations, is the usual cause of serious forms of uterine endometritis, and secondarily of salpingitis, it follows that prompt and efficient treatment of the endometritis is a primary necessity of the greatest importance. In gonorrhoeal endometritis the virulence of the gonococci is not, at this stage, so great, being rarely acute even at a comparatively early period, and is not therefore manifested by the severe positive symptoms of the acute vulvo-vaginal, urethral and cervical forms of the disease, consequently it is generally overlooked. To Sanger is credited the statement that about one-eighth of all gynecologic diseases are credited to gonorrhoea. Unlike puerperal sepsis there are no immediate, constitutional or peritoneal indications, these being dependent upon septic absorption as well as extension of the disease in one case, and chiefly extension of the inflammation to the tubes in the gonorrhoeal form, and usually by leakage from the abdominal ostium of the tube inducing severe violent or local peritonitis. In every form of septic endometritis except the early gonorrhoeal, the wise and accepted rule of treatment is to clean out all debris and foci of infection from the uterus by curettage, irrigation, or both, ordinarily supplemented by gauze drainage. The rule is the reverse, in fact the treatment is negative, as to the early period of gonorrhoeal endometritis, on the ground that to curette the uterus at this time and in this condition is to open up new channels of infection and cause a more certain extension of disease to the tubes and peritoneum. I very much doubt the wisdom of the usual inaction and delay at so important a juncture. The reasoning I believe more theoretic than practical. The uterus is not in the soft receptive state of the puerperium, and yet we know that the mortality in the latter has been greatly diminished and should practically be abolished by early curettage, irrigation and gauze drainage. Deep and thorough curettage is specially necessary in the gonorrhoeal cases, because the utricular glands are deeply affected. After curretting apply immediately such a mixture as iodine and carbolic acid, and then antiseptic gauze for drainage and there need be little fear of aggravating the disease. The surgical principle involved is the same in all—to remove the diseased tissue, which is the source of infection, and place the parts in the best possible condition for drainage and thus prevent further infection. This is the dictum of modern surgery and I believe should be applied in the early period of uterine gonorrhoeal, as well as puerperal or other infection. It

is usually during the period of declension, which in the adult is not usually vaginal, that the endometrium becomes affected and there should be no great risk in curetting at such a time.

Not a great while ago I treated a case of gonorrhoeal puerperal sepsis in which the wife in the last four or five weeks of pregnancy contracted gonorrhoea from her husband, she never knowing the nature of her disease. By all possible cleanliness and the use of sublimate irrigations to the very hour of labor I hoped to prevent puerperal sepsis. But distinct chills and temperature of 103 degrees on the third day, alternating with perspiration and attended with pain in left ovarian region, left no doubt as to the nature of the trouble. There was distinct swelling of the left tube, with a well-defined circumscribed tumor at the site of the ovary; no parts of membrane or placental tissue were found in the uterus, which was immediately irrigated and drained with iodoform gauze. This was repeated several times in the course of a week, with resulting lower temperature. After a vacillating and uncertain history for two or three weeks the patient gradually improved, with a steady decrease of the tumor and temperature, which in seven weeks disappeared without operation or rupture of abscess—I supposing abscess would result. Her recovery was finally complete and she again became pregnant. The right tube was not involved. I have no doubt the sepsis was gonorrhoeal in origin and by extension to the tubes produced severe local peritonitis.

On Nov. 29, 1896, I was called to see Miss L., aged 20, who the night previous had slight chills with pain in the hypogastrium. About a month before she contracted gonorrhoea, which had produced endometritis, suppurative salpingitis and local peritonitis, doubtless from leakage of the tube. The left tube was swollen and tender, with a distinct circumscribed swelling as large as an unhulled walnut in the left broad ligament, with a temperature of 103 degrees and a free mucopurulent discharge from the uterus. Suspecting there might be remnants of an abortion, the patient was anesthetized the second day, the uterus dilated and no evidence of abortion found. It was now thoroughly curetted under sublimate irrigation of 1 to 4000 and gently packed with 5 per cent. iodoform gauze for drainage which was removed at the end of the third day. The temperature immediately fell to 101. The operation was not repeated. For three weeks the temperature varied from 99 to 100 in the morning, to 101, and occasionally to 102, in the evening. At no time was there much tympanitis or evidence of extensive peritonitis. After this there was steady improvement, the swelling or tumor gradually disappearing and a diminishing pus discharge from the uterus, with occasional—temporary—interruptions. She was in bed eight weeks, when the tumor had completely disappeared. Slight uterine discharge continued two or three weeks longer. After curetting, the treatment was rigid confinement to bed with hot antiseptic vaginal irrigation and cotton batting and bandage to abdomen; mercury and iodid potash internally and salines, with rarely an anodyne.

This was an undoubted case of gonorrhoeal purulent salpingitis with severe local peritonitis, due probably to leakage, and in which there was not the usual closure in such cases of either the abdominal or uterine ostium of the tube. I have examined this patient several times in the past year, the last recently, and she is, under bimanual palpation, as well as symptomatically, entirely well. Menstruation is perfectly regular and painless, though not quite so profuse as formerly. In such cases operation by section or even per vaginam is not advisable in the acute stage because of the greater virulence of infection and danger, unless demanded by impending general peritonitis. In each of these cases I believed that a subsequent operation by incision and drainage or extirpation would be necessary, in accordance with our

more common experience. Pus tubes and small accumulations by leakage are soon encysted by inflammatory adhesions and in the absence of extending peritonitis, general infection or other grave symptoms, the indications for immediate operation are not urgent, and it may safely be deferred a few weeks.

A sister of the last patient suffered from gonorrhoea about the same time, but with no acute symptoms referable to uterus or tubes, yet disturbed menstruation, irregular, more profuse and painful and ill health, caused her to consult me a year later. She was suffering from chronic endometritis and right catarrhal salpingitis, for which in January, 1898, I curetted and drained the uterus. Small strips of gauze with mild iodine and carbolic acid applications were applied once a week for five or six weeks. Her health improved steadily, and is now fully restored.

Mrs. C., aged 26, in first labor July, 1896, suffered two or three days from puerperal intoxication, or sepsis, due to retained membrane, which was promptly relieved by curetting, irrigation and drainage. A few months later she experienced some pain in the right ovary and tube, which in six or eight months was greatly increased, especially at menstrual periods and when on her feet much. She was exceedingly nervous and at this time I found the uterus retroflexed and slightly adherent, the fundus thickened, as it is so commonly in retro-displacements, with pain and tenderness and slight enlargement of right tube from interstitial inflammation: leucorrhoea slight and inconstant. With patient in knee chest position, and by the use of two fingers in the vagina and moderate pressure, the uterus was immediately replaced, but followed immediately by increased pain, and a temperature of 101, which was reduced permanently to normal in twenty-four hours by absolute quiet, which was maintained for a week, the uterine tenderness to pressure and pain in the right side continuing moderately during this time. After two or three weeks, the local symptoms being in abeyance, the uterus was curetted and drained with iodoform gauze, and a pessary (Albert Smith) inserted, and the patient kept in bed two weeks. After the operation she improved rapidly in every respect, gaining ten pounds in a month, and is now perfectly well and entirely free from nervousness and pain at any time.

In line with the foregoing treatment, the following case seems to me of interest:

Mrs. W., aged 28, confined two years before, labor normal. Returned from visit to the East latter part of October, 1896; was taken early in November with mild typhoid fever. About the 20th ordinary menstruation was manifested. On the evening of the second day the flow suddenly ceased, with severe uterine colic, which continued all night. Believing the history for two or three weeks and present condition demanded a thorough and immediate investigation the patient was anesthetized, and examination revealed a rigidly anteflexed uterus, fundus slightly enlarged and a small tumor in left broad ligament. The two or three preceding menstrual periods were attended with some pain in this locality, while menstruation had always previously been painless. It was impossible to insert the blades of the dilator, so I succeeded with small conical dressing forceps in entering the uterus, when about an ounce of dark menstrual blood escaped. The internal os was rigid, the tissues hard, but yielded slowly and sufficiently to the dilator. There was no growth or debris in the uterus. It was gently curetted and irrigated and packed loosely with iodoform gauze. The pain ceased at once, and menstruation has been regular and painless to the present time. The tumor gradually disappeared without further treatment and the patient progressed and convalesced in the usual way with the fever.

This was unquestionably a case of hematometra—hematosalpinx and hematoma from gradual and finally complete obstruction at the internal os, due partly to mechanical constriction from an unusual degree of anteflexion and probable cicatricial contraction at the os internum. This is an unusual complication, subsequent to labor, and manifested under such conditions excited more than ordinary interest.

I have confined myself to the presentation of a few cases from my list that seem typical, to accentuate

certain facts and probabilities in reference to disease of the tubes, their cause and treatment. I refrain from discussion at present of the plain operable cases. It is evident that some cases of pyosalpinx will recover without operation by drainage through the uterus. That the best treatment of subacute and chronic and interstitial salpingitis is curettage and drainage of the uterus, using such other local and constitutional means as may be indicated or appropriate to the case, and that such treatment may be useful in some cases of purulent, not cystic, salpingitis, though not as a rule deemed wise and appropriate in acute salpingitis, yet I believe it true that rough examinations and manipulations and pulling the uterus down, thus stretching the inflamed organs and tissues, would do more harm than gentle curettage of the uterus and the application of iodoform gauze for drainage.

As the endometrium is the usual channel by which disease invades the tubes, we should in all cases, infectious and non-infectious, give the former prompt and earlier consideration than is frequently accorded, and this is especially true of gonorrhoeal cervicitis and corporeal endometritis, which not being ushered in with severe and acute manifestations, is generally overlooked; and if observed at an earlier period, as it may be, should be treated by curettage, irrigation and drainage, not only to cure the local disease, but contrary to the generally accepted opinion, to prevent the extension of the disease to the corporeal endometrium tubes and glandular tissues. The left tube is more frequently affected than the right, and when the disease is unilateral, I believe the treatment advised will very generally tend to prevent extension of the disease to the sound tube and ovary, which should be preserved always when not destroyed by disease, even should it become necessary to remove the appendages of the opposite side. Such possible contingencies is no defense for their sacrifice. It is doubtless quite well understood that drainage is not a positive necessity after curetting an aseptic uterus under aseptic conditions, but I always use the antiseptic gauze nevertheless, and have never had occasion to regret it. In two or three hundred cases of curettage, some of them septic, but most of them not, I have never seen a single unpleasant result from the use of gauze drainage. Penrose in his recent excellent work says that "gauze is liable to obstruct the escape, rather than favor drainage, of discharges from the uterine cavity," and that "elevation of temperature and uterine pain are often caused by it."

I think surgeons are quite well agreed that no better drainage material exists for use in the peritoneal cavity and appendical abscesses, and I am quite certain that most of those who have used it extensively in the cavity of the uterus, are equally favorable to its use, most certainly in septic cases. Yet if it should produce fever by not draining the aseptic uterus, its use would be inappropriate in the septic, and I am quite confident this is not the experience of most operators. I have long been convinced that antiseptic gauze is, by all odds, the best possible material at our command for draining the septic uterus, and that it not only keeps open the cervical canal, but maintains a germicide in easy and direct contact with the whole diseased surface and drains effectively in obedience to a well-known law of physics. Of course if allowed to remain longer than three or four days, it may become saturated with mucus and will not then drain so perfectly. Its effect is to deplete the uterus and

appendages by rapid osmosis, and a free discharge, and in a marked degree promotes involution. If the uterus is well dilated, well curetted, and the gauze properly applied, by gently filling the cavity of body and neck, permitting it to protrude into the vagina, no one need have any apprehension or disappointment as to its action.

DISCUSSION ON PAPERS OF DRS. LEWIS, FEROUSON,
FAIRCHILD AND GRANT.

Dr. JOSEPH EASTMAN, Indianapolis—Drainage which does not drain is useless; drainage which impairs drainage is worse than useless. Dr. Savage laid down the law with regard to uterine contraction of the fundus; that an accumulation of gauze or any substance in the body of the uterus secures the contraction of the cervix. In those cases to which the Doctor referred I use a metallic substance in the cervix to secure contraction of the fundus, thereby lessening the area of surface for the absorption of septic material.

In abdominal drainage for appendicitis or other purposes I can not any longer trust to gauze drainage in the lips of my wound as I have found it strangulated and drainage arrested. I would suggest in the place of gauze a metallic or some hard rubber drainage, like the plug of Wylie, in addition to gauze drainage in order that it may remove material, and not place some foreign substance in the cervix which impairs drainage.

Dr. ALBERT GOLDSPOHN, Chicago—I wish to say a few words regarding the paper of Dr. Fairchild, endorsing his ideas *in toto*, and wish to say that not sufficient distinction is made between the puerperal uterus and the non-puerperal or ordinary gynecologic uterus in pathology and treatment. If we think for a moment of the consistence of the former and the consistence of the latter, how great a difference there is, and how great a difference there is in the condition of the lymphatics in the former as compared with the diminutive size of those structures in the latter, we can readily see how curettage of the puerperal uterus should not aim at doing anything to the lining of the puerperal uterus, but this measure should be resorted to simply to facilitate the extrusion of what stands on top of the mucous membrane, and the idea of using a sharp curette, particularly a small one, is most abominable. I have seen the evil of this repeatedly in the hands of other physicians. If we use a curette at all it should be a blunt one and large so as to be able to rake as large a surface with each stroke as possible. But in conjunction with the use of a large blunt curette we must bear in mind the Emmet curette forceps, which of all things that Dr. Emmet's name is attached to, I appreciate the highest for this work.

Dr. H. G. WETHERHILL, Denver—I have maintained that the curette in acute septic conditions is very much more likely to do harm than good. If used at all, it must be used to remove a foreign body and must not be used with the intention of denuding uterine surface, thus opening up new avenues for infection. The position so long taken by our President (Dr. Price), is the one I take, namely, that the finger is the instrument of instruments wherever it is possible to use it. Where it is not long enough, then possibly a dull curette or the placental forceps of Dr. Parvin or the forceps alluded to by Dr. Goldspohn may be used. Only a little while ago an instance of this kind occurred in this city, the case being one of induced abortion. The woman was neglected for a long time until serious symptoms arose, when she was seen by one of the best practitioners in our city, who, notwithstanding the critical condition in which she was, sent her to the hospital with a pulse of 120 and other symptoms accompanying it, and realizing that she was in a condition for radical work, he curetted the uterus. The next day she was worse when I saw her with him, and we concluded that general peritonitis existed, and that there was little chance of a favorable result under any circumstances, and that one chance was in the direction of opening the abdomen and thoroughly cleaning out the focus, which had gone beyond the uterus, and in that way making an effort to save her life. The abdomen was opened and the peritoneum was covered with lymph clear to the diaphragm. The point I want to make in connection with this case is this: What possible use is the curette going to do when the infection has gone outside of the uterus into the lymphatic and involved the peritoneum? As I have said before in this connection, you may just as well excise a vaccine mark after the eighth day to prevent the effects of vaccination. It is entirely beyond your reach, and I maintain further that no man can say absolutely when that point has been passed.

Dr. MILO B. WARD, Kansas City, Mo.—I believe we have much trouble in these cases because we use irrigation. We do not dilate the cervix enough and try to wash out the material we ought to get out with a curette or with the finger or tampon of gauze. We dilate the cervix a little and try to wash out the debris with water, and we nearly always have a chill afterward, which means a septic infection results from water being used. It is my judgment that we have more trouble caused by the finger-nails of physicians and surgeons in the way of sepsis than by any other one cause. When I die, Mr. President, I want this epitaph put at the head or foot of my grave, "Here lies the greatest crank on finger-nails in the world, except Dr. Joseph Price."

Dr. WILLIAM H. HUMISTON, Cleveland—In cases of delivery at term where symptoms arise indicative of retained products of conception, we should first explore the uterus without doing any damage and determine whether there is material there or not. If so, remove it carefully, and thoroughly cleanse the uterus. You can remove it with the finger, a dull scoop, but not with a sharp instrument, as with a sharp curette you will open up new channels for infection. If you have a case with a history of criminal abortion where drastic measures have been used to bring it about, undoubtedly the infection has extended beyond the uterus into the lymphatics and involved the broad ligaments, etc., and you may curette such a uterus until you are gray-headed and do nothing but damage.

Dr. F. F. LAWRENCE, Columbus—One point in regard to the second paper. So far as the first paper is concerned, I am in accord with a number of the speakers that in puerperal septic conditions of the uterus we should not use a curette. The point I wish to make is with reference to the shape of the uterine cavity, the angles at the fundus. I believe we do harm when we express the opinion that curettage is a simple operation. I believe more women have been killed by both immediate and remote conditions by the improper and unskillful use of the curette than by any other gynecologic means or effort. It is utterly impossible to clear out the cornu of the uterus in diseased conditions with a large sized curette. It must be a small curette. If you curette the lower surface or mucosa and leave the cornu with infected material there, what good is done? What is the possibility of preventing subsequent and almost positive or continued infection extending into the tubes? As to the disappearance of pus tubes following curettage, possibly such a thing is true, but I have always feared personally to use the curette in cases in which I have reason to believe there is pus in the tube. There may be a thin portion of the tube, and traction and manipulation of the uterus, which is necessary in these cases, may carry the infection to the general peritoneal cavity and develop a septic peritonitis. I think we are safer in any case, where we have reason to believe there is pus, to remove it thoroughly and thus get rid of any possible source of infection.

Dr. T. M. BURNS, Denver—I have a few words to say in favor of the sharp curette. In the first place, I do not consider it a hoe nor a crowbar. I consider curettement of the uterus an exceedingly delicate operation, and it must be done with great care. It may be compared, as regards delicacy, with the extraction of a cataract from the eye. If we have an infected uterus with retained placenta, the retained placenta is a focus of infection, and the remnants of placenta or rotting mass should be removed promptly and as thoroughly as possible. If you can do it better with your finger or dull curette, all right. I can do it better with a sharp curette. It does not require so much force to do it. It seems to me we have to use a greater amount of force with a dull curette than with a sharp one, and thus do a greater amount of violence to the uterus. If curettement is done carefully and properly with a sharp instrument there is very little danger.

Dr. B. SHERWOOD DUNN, Boston—I rise to endorse the position taken by Dr. ... arhill and Goldspohn. The curettement of the uterus is by a more dangerous operation than that of the abdominal section, and I think the consensus of opinion of gentlemen who have had a large hospital experience will be that more women are crippled for life by the use of the curette, either dull or sharp, in the hands of an incompetent general practitioner or a gynecologist in embryo, than any other one procedure in surgery. I believe the consensus of opinion of the best surgeons is that more than thirteen uteri subsequent to incompetent curettement are disposed to the use of the sharp curette at the literature to ascertain the number of uteri that have been perforated by the sharp curette in the hands of careless practitioners. The most puerperal uterus is a large, soft, vascular organ with practically no membrane lining it. The parturient symptoms are equally apparent, only a few hours in

parturition and the rise of temperature and pulse, showing post-partum infection by reason of other foci of membrane or placenta that has been left. I am absolutely convinced that these foci of infection are more readily and perfectly removed with the wire curette than by the sharp instrument and it does no injury to this disorganized organ, for it certainly is disorganized at the moment you operate upon it for any post-partum pathologic condition.

In regard to the case reported by Dr. Ferguson. It was my fortune during my hospital service in Paris to have a similar case come into my hands. It was so unusual that a number of my masters were present at the operation. After opening the abdomen we found posterior to the uterus and filling up the posterior cul-de-sac a large hematoma as large as a fist, impinging upon the cul-de-sac of Douglas. The ovary was partially coalesced upon the wall of this tumor; the Fallopian tube was permeable with the cavity of the uterus, as was the one in the case recited by Dr. Ferguson. On the opposite side there was a pervious tube with a large edematous, badly cystic ovary unattached to the tumor, which was of minor importance, and then the one point of cardinal importance in the case was that the uterus was filled with the tumor which swelled it, and at the point of the internal os, where the congenital atresia had probably commenced, there was a sharp delimitation of the tumor. The external os was conical on account of delimitation. We decided that so far as motherhood was concerned the organs could be preserved. We closed the abdominal incision; I resected the uterus at the point of its vaginal insertion, and there was a little white spot in the center of the uterus where the canal should have been, and with the thermo cautery I opened what should have been the canal and when I withdrew the cautery the pressure was so great that the blood and water contents were thrown over my face and garments. Two years afterward this woman bore a child. Three months afterward I did a subsequent operation, removing a large hematoma on the left side.

Dr. GEORGE J. ENGELMANN of Boston—In regard to Dr. Lewis' paper, some of the points he has made have been lost sight of in the discussion of the surgical points, which are always more interesting. And it was well, too, that the curette was taken up, because it is a safe instrument in skilled hands, and yet I know, as you all do, of so many sad cases throughout the country. But I was surprised to see in the reports of a large hospital a mortality of 2 per cent. It ceases to be a trifling operation when we have this mortality in skilled hands, and from the days of the wire loop of Thomas I have fought the dull curette. It is a sharp knife and a sharp curette which the surgeon wants. A dull instrument will do mischief, that is, in the non-puerperal uterus. The dull curette is a diagnostic instrument, but only the sharp curette should be used for surgical purposes. In the puerperal uterus I have used the large sharp spoon of Simon. It is not a curette, but a wire loop with which we bring out the detritus. Dr. Lewis has called attention to the fact that we must treat cases, not as ideal circumstances demand, but as the existing conditions demand, and this is frequently forgotten, and in all our discussions I believe it is overlooked. We invariably seek the treatment as it should be under the most favorable circumstances, when the facts are that we meet with cases in actual practice and must do the best we can for them under very unfavorable conditions. Cases that come to our out-patient departments are too much neglected in many of our large institutions. We must attempt to do something for them; there may be cases which go into the hospital, and we must attempt to relieve them, and Dr. Lewis has placed these points before us in his paper and has given us the methods he has pursued in ambulatory cases. If a patient presents herself whose case is inoperable, she probably receives an astringent or antiseptic douche, and then goes.

Dr. S. C. GORDON, Portland, Maine—I fully agree with the gentleman who said that curettement of the uterus is a very serious operation. A patient should be prepared for a curettement with as much care as for an abdominal section, and the most important point in the curettement is that you should dilate the cervix beyond all question. Simply putting in a dilator and opening it an inch or an inch and a quarter is not sufficient dilatation by any means. You can not be sure of washing out the detritus in the uterine cavity until you have overcome the constriction by proper dilatation. I do not like the use of chemicals in the uterine cavity, but I wash out with sterilized salt solution. I also believe it is important for at least twenty-four hours to put in a tape, as I do not like packing the uterus, and this will give you drainage that you can not get in any other way. We know how important it is to have drainage, and I believe by curettement, in a great many cases, we can avoid what has been and is being done so

badly, namely, operations for closure of the lacerated cervix. I scarcely close a lacerated cervix now at all. I find few cases in which I have to do it, but I have seen so much harm in treating so many cases of pus tubes following trachelorrhaphy, that I think it has done ten hundred times as much harm as it has done good. I agree with Emmet fully in that matter, that it is a serious thing to close a lacerated cervix. But the beginner in gynecology thinks that trachelorrhaphy is a simple thing to do. By doing it we close the passage and we entirely prevent the most important thing, and that is drainage, and I had a good deal rather instruct young men never to do a trachelorrhaphy, but to resort to dilating and curetting, telling them that they will do the patients a great deal more good and very much less harm.

Dr. EMORY LANPHEAR, St. Louis—If you will but recall the pathology which underlies postpartum and post-abortual septic infections you will come upon a common plane. In the case of saprophytic infections we have no implication of the uterine mucosa until very late, in which instance the dull curette or the finger, after proper dilatation, is all that is necessary. When we have the staphylococcus pyogenes aureus, albus and citreus affecting the uterus, then must we remove the infected tissue, which is the uterine mucosa, and which can only be accomplished by the use of the sharp curette. When we have streptococcus infection, no curette under heaven will do the patient one bit of good.

Dr. LEWIS (closing the discussion on his part)—Four years ago, at the time the large dispensary of the Chicago Policlinic was placed in my hands, I had been in the habit for many years of having charge of the gynecologic and obstetric wards of the County Hospital of our city. I had operated on pyosalpinx and the usual diseases, and I had absolutely no knowledge of the cases presenting themselves at the dispensary. The first day I assumed charge there, the first patient who presented herself had a pyosalpinx as far as I could diagnose it, and I advised immediate operation. She said she was unable to go into the hospital because her children were ill and she had to take care of them. The next patient had a laceration of the perineum with rectocele; I advised operation in her case, and for sociologic or economic purposes, she was unable to accept that advice. And so it went on, case after case appeared at the dispensary which in my judgment required surgical interference, and they were unable to accept the advice I gave them. Under the circumstances I felt it was necessary to do something, and I persisted in the treatment which I have outlined to you today, and the results were gratifying, and in many instances most surprising, to me. For that reason I have taken the opportunity of presenting to you cases that will prove very surprising to others as well as myself.

I should like to go into the subject of the use of the curette, but time does not permit, and I will say nothing further about it, except to remark regarding the statement made by one gentleman who spoke of perforations of the uterus, and intimated that the sharp curette was responsible for such perforations more frequently than the dull curette. As a matter of statistics, the uterus has been perforated with dull instruments more frequently than with sharp curettes. The probe, the uterine sound, and the silver catheter have caused more uterine perforations than sharp instruments. This is simply a matter of statistics, which I have looked up.

Dr. GRANT (closing the discussion on his part)—There was one statement made by one of the speakers which I think should not go unchallenged, namely, that because the infection has gone beyond the uterine endometrium and has infected the tubes, it is useless to remove the diseased condition in the uterus. I do not think any more fallacious surgical principle could be advanced, that simply because we can not reach the disease all at once we should do nothing. That is about the feeling of the criticism of one of the speakers, who believes that we should not curette a uterus which is really the *fons et origo* of the trouble. The most important thing is to scrape away all of the diseased tissue that has caused the trouble and which if left continues to infect neighboring structures.

I very much regret that some of those gentlemen in the discussion did not devote a little more time to those cases of gonorrhoeal origin which are so very frequent and of very great importance. I was in hopes of hearing something from some of my distinguished friends here in reference to the early treatment of these cases. They are certainly common and overlooked. These cases should be curetted more frequently.

With reference to the question of curettage and drainage, one of the gentlemen made the statement that this practice might cause infection on account of the free raw surface which is made by the curette. I have stated that if the septic material is thoroughly removed there was very little danger. As a matter of fact, there are few men who have had a large expe-

rience in the early treatment of gonorrhoeal cases of this form. That is why I introduced the cases I did in which I have had a surprising experience.

PROPHYLAXIS OF DISEASES OF WOMEN.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY DAVID W. BASHAM, M.D.

NEAL, KANSAS.

Since the science of hygiene is justly allowed to occupy so important a place in the literature of general medicine, I deem it a duty incumbent upon those engaged in gynecologic and obstetric practice to endeavor to elevate the prophylaxis of the diseases of women to the same exalted plane.

Generally the average gynecologic essayist, disdainful to concern himself with the ordinary affairs upon which our clients so much need good and wise counsel, endeavors to elucidate his own or some fellow practitioner's method of extirpating the internal genitalia, or some part thereof, from the female pelvis. All of this is laudable, because it serves a beneficent purpose as concerns both mankind and the profession of medicine. But if it be noble and great to emancipate the human body from disease and suffering by the dexterous use of the scalpel, scissors, and sterilized catgut sutures, how much better is the rendering of these appurtenances of our art unnecessary. This paper is not an argument for conservatism in the treatment of existing pathologic conditions, but a simple effort to disseminate the doctrines of preventive therapeutics. As often as I am called upon to disembarrass a patient of important organs rendered useless and intolerable through pathologic metamorphoses, the result, perhaps, of a non-aseptic accouchement, I promise myself to labor with renewed assiduity to inculcate the tenets of preventive medicine, which shall be the medicine of the future.

Owing to the anatomic construction of woman, the female pelvic organs are far more vulnerable to the influence of pathogenic agents than are the analogous organs in the opposite sex, because in the former a readier and more commodious medium of communication exists between the cavities of the genital tract and the atmospheric world. The same anatomic design conduces to the easy genesis of pathogenic micro-organisms within the series of cavities constituting the genital system. This arrangement, which is indispensable to the perfect operation of the viviparous plan of reproduction, which provides that after having attained a certain stage of development within the maternal body, the fetus shall be forcibly extruded into the world, unavoidably entails a greater or less degree of traumatism to all the structures concerned. These facts serve to explain why the pelvic organs in woman are so much more frequently the seat of pathologic changes than the same organs in man. All of the elements necessary to the process of infection are present in the act of childbirth, and also in a less accentuated form in many other acts inseparable from the functions peculiar to woman. The things requisite in the process of infection are: violence, to produce a breach in the tissues sufficient to admit of the ingress into the circulation of germs or putrid material, and the existence of certain conditions which facilitate the introduction of such germs or putrid material into the cavities of the system of hollow organs known as the genital tract, and

where the breaches into the circulation exist, and where also are found fluids and coaguli to serve as media and nidus wherein rapid multiplication takes place. The question of prophylaxis of diseases of the female pelvic organs then resolves itself into two principal propositions: the first of which consists in the minimizing of traumatism to the genital mucosæ, and the second is the preclusion of the introduction of disease micro-organisms from the extraneous world into the hollow organs constituting the genital system.

It will be seen then that the major part of gynecologic prophylaxis rests in the degree of perfection with which the art of obstetrics is carried into practice. It is a fact beyond refutation that an enormous proportion of all gynecologic affections have their origin in the parturient act, and the week in bed that follows. Endometritis, salpingitis, ovaritis, cystitis, and nephroptosis, are some of the conditions which are often simply sequelæ to the act of parturition and the puerperal month.

So much depends upon the work of him who essays to minister to the needs of woman in the hour of travail, that it is not easy to overestimate the importance of the offices of the accoucheur in the matter of diminishing the frequency of pelvic diseases in the female. The scientific obstetrician has well accomplished his duties, so that it is no longer a question of profounder knowledge, but simply a matter of the better application of the principles already well known to the profession. Of all the members of the medical fraternity who should act with an eye to the future condition of his client, there are none upon whom this obligation should rest with greater weight than the obstetrician. The prompt application of surgical principles to the treatment of traumæ received during childbirth may avert many of the troublesome sequelæ to that act which often terminate in serious pathologic changes, and often demand radical measures for relief. It is not at all improbable that uterine cancer is frequently the result of a neglected cervical laceration. The immediate restitution of a lacerated perineum may avert the occurrence of a case of prolapsus which would require hysteropexy, or even a case of procidentia uteri with chronic endometritis and hypertrophy of the organ, which might demand hysterectomy to effect a cure. Thus it is throughout the entire catalogue of minor accidents and the corresponding surgical procedures for their relief.

There are some grave conditions which owe their inception to accidents occurring during the age of pubescence, or during the first years of menstrual life. It is here that the general practitioner might find an opportunity to enhance his usefulness at the expense of the neurologist. It is reasonable to believe that many cases of aberration of nerve function might be prevented by well-directed medical attention during the early years of menstrual life.

In sum: the prophylaxis of the diseases peculiar to woman may be embodied in a more perfect application of the principles of obstetrics in actual practice; a profounder understanding of the accidents occurring so frequently at the age of pubescence, and finally greater attention to the hygienic regulations which should govern daily life.

GONORRHEA AS A FACTOR IN PUERPERAL FEVER.

Presented in the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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The methods which have revolutionized modern surgery as the direct results of the teachings of Lister have been more or less efficiently carried out in the practice of modern obstetrics. The new science of bacteriology and the accumulating evidences of the pathogenic nature and far-reaching effects of certain micro-organisms have invested the subject of the prophylactic, aseptic and antiseptic protection of the parturient with increasing interest and importance. Notwithstanding the advancements along these lines, the query arises, why is there not greater freedom from septic complications and fatal issues in the service of those who carry out the most approved measures in the practice of midwifery? In other words, are there not frequently sources of danger within the mother herself, antedating childbed, which ordinary methods fail to avert? I desire to emphasize the importance of these vital questions.

Since the discovery of the gonococcus which Neisser announced as the specific cause of gonorrhœa, in 1879, two important discoveries have placed his claims beyond all cavil; first, the Gram method of staining, by which this germ is differentiated from all other diplococci, and, second, the improved culture methods of Bumm and Wertheim (1889-1891), by which its true specific character was established by the four immutable laws of Koch. It is now possible to scientifically demonstrate the multiple roll of this ubiquitous germ in its capacity for pathogenic mischief. A glance at the biology of the gonococcus will help us better to comprehend its possibilities for doing harm in the puerperium. Its habitat is the mucosa and glands of the genito-urinary organs of the human race. It is not known to exist anywhere in nature apart from the human body. It perishes quickly when removed from its host. It is cultivated with difficulty on nutrient media of human blood serum or urine. It dies very soon in water, loses its virulency when thoroughly dried, and is easily destroyed by ordinary antiseptics. Notwithstanding all this, the germ is most persistent in its normal surroundings. It is able to exist in various degrees of chronicity for indefinite periods of months or years, retaining its power to invade new territory and regain its old-time activity under favoring circumstances. It requires no solution of continuity or lesion of any nature to prepare the soil for infection. It is able to penetrate readily the epithelial, follicular and glandular structures of the mucous surfaces everywhere. Nor does it stop here. It also penetrates the submucosa and adjoining muscular walls. It makes its destructive pilgrimage through lymph channels into the circulation itself, and sets up dangerous lesions in distant organs, like the heart, brain and articulations. This power of extending its field of operation by penetrating almost every tissue of the body, together with its persistence in favorite localities while awaiting its opportunities, constitute its most dangerous properties as a pathogenic organism in childbirth.

Again, it is essentially an irritant pus germ. Its

Radiographs of Encapsulated Trichinæ.—Radiographs of encapsulated trichinæ in the muscle of a cadaver have been secured at Würzburg, the birthplace of the Röntgen ray.

advent upon uninfected mucosa is quickly followed by copious, purulent discharges in which at first no other pathogenic germs are found. It is not self-limited and hence immunity is never established, although degrees of tolerance in the form of chronic pathologic changes in members may exist for indefinite periods. According to Finger and others, the nature of the epithelium of the mucosa has an important bearing on the behavior of the gonococcus. The germ remains superficial on mucosa covered with squamous epithelium, but it quickly penetrates into connective tissue under cylindrical epithelium. He found that injections of pure cultures into the peritoneum and joints of animals produced rapid and acute inflammations, while injections of filtered culture-fluids gave negative results; showing that the pathogenic effects were caused by the living germ itself and not by its products. Hence we may readily understand its ability to produce abscesses wherever swollen ducts, canals or tubes hinder free drainage or where trauma has given it entrance to the systemic circulation. Bujwid has reported the case of a gonorrhoeic male who was seized with a chill two days after catheterization. These chills were repeated several times in the next ten days, followed by intramuscular abscesses in various parts of the body, the pus from which afforded pure cultures of the gonococcus; thus, showing its ability to produce pyemic conditions. Not only is it a source of danger in itself, but its presence prepares a suitable field for the culture of other germs, even more dangerous in the presence of the slight or severe trauma of parturition. The lowered vitality of infiltrated mucous and submucous structures, the hypersecretion of muco-pus, the débris of swollen and exfoliated epithelium offer a most favorable soil for mixed infection. The gonococcus will share its possessions in apparent harmony with other pathogenic germs, or, at an indefinite period, quit the claim in their favor. We believe these facts are overlooked in estimating the rôle played by the gonococcus in childbed fever. We have developed slides from a case of chronic gleet in a patient suffering from arthritis of the knee, two years after his acute infection, in which the pus-cells contained gonococci, while the field surrounding these cells was filled with staphylococci. We have found the same microscopic showing in discharges taken directly from the cervix uteri of a patient suffering from her first attack of salpingitis, four years after her primary infection by her husband and three years after her only confinement, at which time she suffered from febrile arthritis of the shoulder, her babe having gonorrhoeal ophthalmia at the same time. Pyosalpinx and a laparotomy are probabilities in her future history. It is to be hoped she is now permanently sterile. In the gonorrhoeic female sterility is a conservative process, a blessing in disguise.

Having reviewed some of the most important characteristics in the life history of the gonococcus, let us examine the opportunities it has for complicating and endangering the puerperal state. It has been variously estimated that from 10 to 30 per cent. of all women became gonorrhoeic. I believe the latter figure is nearer the truth. This is better understood when we consider that the majority of males become infected sooner or later, and that the greater portion of them remain in uncured chronic and latent stages for indefinite periods, during which time they are capable of imparting the disease. Indeed, the proportion of

both sexes who never are completely cured is much larger than is commonly supposed. It is doubtful if chronic or residual gonorrhoea in the female, by reason of its inaccessible location, is ever completely cured during her child-bearing years. If the disease were confined to the vaginal mucosa, lined as it is with squamous epithelium, it would remain superficial, as Finger has pointed out, and would be accessible to antiseptic treatment. In its urethral and vulvar locations it could be readily dislodged also, but we must remember its predilection for the ciliated, columnar epithelium of the endocervix, endometrium and fallopian tubes, and its rapid penetration of this kind of epithelium to deeper structures. Fournier's statistics show that one-fifth of all women contracting gonorrhoea develop salpingitis. If this be double, sterility is usually entailed (Terillon). The radical cure of such a state is an almost hopeless problem.

Wertheim, discussing endometritis before the German Gynecological Society said, "Next to the urethra, the uterus is the favorite seat of gonorrhoeic infection. It is directly infected and may be confined to that organ. It exists as an interstitial endometritis. Krönig found gonococci in many examinations of the lochia along with other pathogenic micrococci, especially strepto- and staphylococci." He concludes that gonorrhoea extends to the endometrium during the puerperium, and may give rise to fever without a trace of mixed infection.

At the puerperium the disease may be recent, in the form of acute or subacute urethritis or vulvovaginitis, or it may have existed in chronic forms a long time in such favorite localities as the glands of Bartholini, in the columnar epithelium and glands of the cervix, or having preceded conception, there may be a chronic gonorrhoeal salpingitis or unilateral pyosalpinx. Fehling observes that gonorrhoeic endometritis and perimetritis in pregnancy is now an established fact, and urges careful treatment of women who have been infected during or after conception, to prevent symptoms of a still graver character. Max Madluer demonstrated the ability of the gonococcus to pass from the endometrium into the uterine muscles and set up inflammatory processes. This, he says, is especially the case in the puerperium, and may result in abscess formation. Infection of the peritoneum through the uterine wall is a possibility, and, he believes, explains the fact of perimetritis without implication of the adnexa.

Fehling says absorptive fever is not rare in patients suffering from gonorrhoea during pregnancy, and pustules are often noted. In such a state of affairs parturition opens up many channels for infection and constitutional symptoms of varying degrees of sepsis. A ruptured perineum, a vaginal erosion, a lacerated cervix, a denuded placental site, are so many open gates for the invading gonococcus or for other dangerous germs, which might not have been present but for a soil rendered favorable by gonorrhoea. If pyosalpinx exists, the condition is fraught with the gravest possible dangers, which human skill may be powerless to avert. It is evident, then, that many mothers run the gauntlet of hidden, and oftentimes unsuspected, foes during confinement on account of gonorrhoea alone.

DIAGNOSTIC POINTS.

If possible, an early examination should be made of every prospective mother, especially if she be a

primipara, for the reason that this class is in the greatest danger, because of more recent infection and less constitutional tolerance of the germ. 1. Any muco-purulent discharge from urethral, vaginal or cervical orifices should be regarded with suspicion and should be submitted to microscopic proof and treated according to findings. 2. The existence of a vulvar abscess or the discharge of pus from a Bartholinian gland on pressure is presumptive evidence of gonorrhoea. 3. The presence of gonorrhoeic ophthalmia in the new-born is positive proof of maternal infection. If the mother be a primipara, she will be extremely fortunate if she escapes puerperal complications. 4. The presence of arthritis with pyrexia during gestation or during the puerperium makes the diagnosis of gonorrhoeal infection highly probable. Gonococci have been found frequently in inflamed joints as the active cause of irritation, swelling, pain and fever, which are the expressions of a systemic infection, erroneously styled gonorrhoeal rheumatism. I have seen acute febrile arthritis in the seventh month of pregnancy, which was not correctly interpreted until it occurred in childbed, without any pelvic symptoms whatever. Gonorrhoeal ophthalmia in the babe, however, cleared up the nature of the ante- and post-partum arthritis of the mother.

In a series of cases reported to this section by the reader at the Atlanta meeting of 1896, there were three fatalities after perfectly normal labor in primipara, in which gonorrhoea was a clinical feature during pregnancy. In one of these sepsis developed twenty-four hours after delivery, from the discharge of an extremely fetid tubal abscess into the uterus, when the detached secundines had freed the uterine orifice, resulting in general peritonitis and death on the seventh day. The second died from recurring pelvic peritonitis and exhaustion one month after confinement. The third, with no pelvic symptoms whatever, developed multiple arthritis with hyperpyrexia and acute systemic infection, which terminated her life on the twenty-seventh day, possibly from ulcerative endocarditis. Of the non-fatal cases, the mothers all had either acute metritis or arthritis, or both, with chills and pyrexia, and all of the babes had ophthalmia microscopically shown to be gonorrhoeic.

TREATMENT.

1. *General prophylaxis.*—Prophylactic measures are of the greatest importance. These may be: 1. Educational. Our youths should be instructed at the proper age in our public schools concerning sexual physiology, sexual hygiene and sexual morals. 2. Executive; through the sanitary supervision of all classes and individuals liable to spread gonorrhoeic infection. 3. By legislative enactments, regulating the marriage license. We believe that no candidate for marriage should receive a license who has not filed a certificate of health from a competent medical official showing freedom from all contagious diseases.

2. *Specific prophylaxis.*—Once a female is known to be infected with gonorrhoea, her treatment should be conducted even more persistently and more carefully than in the male, for the infection more readily passes to inaccessible locations and the remote effects are far more subversive of health and dangerous to life itself. It is unfortunate for women that gonorrhoea is so often overlooked in their sex in its acute and subacute stages. Undoubtedly if it were recognized and some sort of antiseptic treatment insti-

tuted as early and universally as in the male sex, many disasters would be averted. The plan of treatment depends upon location and the stage of the disease. So long as it has passed no farther than the urethra, vulva and vagina and their special glands, drainage and irrigation with solutions of silver or potassium permanganate are effective. If the endometrium is involved without tubal infection, curettage and irrigation may cure. If the tubes are infected, as evidenced by acute or chronic salpingitis or pyosalpinx and recurring pelvic peritonitis, no local treatment can eradicate the disease. If, now, infection has taken place at the time of or during the term of gestation, much may be done to avert childbed complications. Every pregnant woman should be carefully inspected at least a month preceding childbed. Her physician should know of the sanitary condition of her parturient canal and relevant organs in order that her puerperium may be free from all preventable dangers. Inspection of parts and microscopic examination of suspicious secretions from urethra, vulvar glands, vagina or cervix uteri will determine the question of infection. Urethral or vaginal irrigation of potassium permanganate solution, 1-2000, drainage, curettage or dissection of infected vulvar glands and topical applications of nitrate of silver solution, 10 per cent., to the endo-cervix will place a patient in the most favorable condition for her confinement.

3. *Child-bed treatment.*—Ante- and post-partum diagnostic symptoms of gonorrhoeic infection have already been given. Now, that such a contingency exists, what should be the treatment in child-bed? Vaginal irrigations of sterilized water or antiseptic solutions after normal labor have been generally abandoned by obstetricians, for obvious reasons. Labor complicated by pre-existing gonorrhoeic infection is not a normal state, and I believe justifies the irrigation of the vaginal canal twice daily with warm potassium permanganate solution, 1-2000. The procedure is devoid of danger and may prevent extension to the endometrium appendages and the pelvic peritoneum. In the event of symptoms showing endometritis, intra-uterine irrigation carefully done with the same solution has given good results and I believe is rational treatment. Other external local applications and internal systemic treatment for depletion, sedation and elimination will suggest themselves according to the exigencies of the case. In the fulminating forms of puerperal fever, little can be done. If these are due in any way to gonorrhoea, it is from secondary mixed infections of virulent types made possible through previous gonorrhoea. Here the antitoxins are on trial with some promise of success.

CONCLUSIONS.

1. Gonorrhoea is a widely disseminated disease, especially persistent and dangerous in females.

2. Gonorrhoea is directly or indirectly a factor in puerperal sepsis, and accountable for a larger percentage of complications and fatalities than commonly supposed.

3. Prophylactic measures, general and specific, are most important in averting the septic dangers of childbed.

Antiseptics and Diphtheria Toxins.—Salkowski states that guinea-pigs survive fatal doses of diphtheria toxin if salicylaldehyd, carbolic acid or formalin be combined with it. The toxin seems to be chemically rather than mechanically affected, and the body temperature is evidently a factor in the result.—*Munich Med. Woch.*, June 28.

COMPOUND INTRA-UTERINE FRACTURE OF THE FEMUR, WITH REPORT OF A CASE.

Presented to the Section on Obstetrics and Diseases of Women, at the
Forty-ninth Annual Meeting of the American Medical Association,
held at Denver, Colo., June 7-10, 1898.

BY A. D. WILKINSON, M.D.

LINCOLN, NEB.

The two most prolific causes of fracture are falls and blows. The few recorded instances of fracture of long bones by unaided muscular action can be ascribed solely to violent and sudden flexion. It is a generally received opinion, however, that no long bone can be broken in its shaft by the mere contraction of its muscles. But it is a conceded fact that abnormal increase of the muscular power, as during convulsions, may be sufficient to account for it. Lente has seen both femurs broken in epileptic convulsions in a child 12 years of age. Park says the compression of uterine contraction and external violence may produce an intra-uterine fracture. Professor Gurli, who has discussed the subject of intra-uterine fractures in an exhaustive paper fortified by cases, published in Berlin in 1857, and later in his classic "Treatise on Fractures," believes that many intra-uterine fractures result from external violence received by the mother during the advanced period of pregnancy. He says, in such cases the force may be transmitted to the fetus, fracturing its bones without at the same time leaving any marks of violence upon the maternal elastic abdominal walls. The long bones are the most apt to be broken, which from their shape are the most friable, and especially those of the leg, which, from the bent-up position of the fetus, are most exposed. The angular distortion observable in these cases is due to the pull of the muscles after the fracture, and the cutaneous dimple which invariably corresponds to the projection of the bony angle is the scar resulting from the perforations of the integuments by the sharp ends of the bones.

Professor Brinton, in the second volume of the "Transactions of the American Surgical Association," has reported two cases of intra-uterine fracture, with remarks on fifty-one cases already reported by different writers, and concludes from his own observation and from a study of the reported cases, that external violence received by the mother is certainly in many cases a sufficient direct cause of fracture of the fetus in utero. He states he is unable to understand why it should be held that force from without can not reach the fetus, and why it is not necessary to make muscular action as an efficient cause of fracture. It is alleged that the child swims in the bag of water, and therefore is as removed from outer evidence as is a fish in a pond; but a moment's reflection, he says, will show us that the protecting influence of the amniotic fluid is over-estimated. Ask a woman who has been pregnant and she will often tell you that the movements of the child are felt as if just beneath the integument; in fact, to use a woman's expression, it is as if the child were trying to get out through the skin. It seems to her not that the child is deeply placed, but rather that it is almost under her touch; that she can feel with the tips of her fingers, as it were, the hardness of the head of the fetus, and the tremor of its limbs. He further states that it is this very exposure of the child which gives rise to, fosters, if I may so say, the instinct of the woman to protect

her future offspring, and leads her to guard her person with her hands alike in passing through a crowd of people or in treading her way among the many articles of furniture which encumber the modern house. A mother's feelings teaches the woman that the slightest harm to her may reach her child, and I think we may learn from her silent teachings.

The case I wish to report occurred during my service at the Home for the Friendless in the city of Lincoln, in 1894.

Mrs. P., aged 25; multipara; an epileptic; gave birth to a child which in every way seemed to be perfect, except a shortening of the right lower extremity, which showed considerable shortening. Thinking perhaps it might be a dislocation of the hip joint, I placed the child on a table, but found all the joints to be perfect. The right femur was shorter than its fellow, and a closer examination revealed a cicatrix in the anterior aspect of the middle third and that the femur had suffered a fracture—a compound fracture—in utero and had united at an obtuse angle. Two or three months later this angle had faded away considerably, until the bone assumed very nearly a straight line. I lost sight of the case for a time, but when the child commenced to walk the mother consulted me relative to securing an apparatus for the short leg, saying the baby was in perfect health and that it needed something to assist it in walking.

I am unable to assign a positive cause for this fracture. There is a history of an epileptic seizure of the mother in the fourth or fifth month of pregnancy, in which seizure she fell violently over a stove, but aside from the fall no pain followed the accident. Another theory is that the husband, who afterward deserted his wife, owing to a continuance of domestic infelicity, may have abused her, either by striking her or by some other violent means causing the fracture.

My other theory, and the one I wish to call your attention to especially is, that during an epileptic seizure, a compression of great severity produced by an abnormal increase of muscular power of the abdominal muscles would be sufficient to squeeze, as in a vise, the bent-up fetus, which would at that time, most likely, be raised up against the abdominal walls, consequently being more exposed to the spasmodic contractions of the muscles or walls of the abdomen. Nothnagle says that during the grand mal increased peristaltic action of the intestines occurs, with rumbling in the belly and discharge of flatus and feces and ejaculation of semen, and that Tissot and Portal report the escape of urine with so much force even as to rise in a stream five to ten feet high.

If this state of things can occur during the epileptic seizure, what is to prevent the abdominal muscles from acting in such force as to cause the fracture of the frail and slender femur, the patient being in opisthotonos, the fetus as a result up against the abdominal walls, the brittle shaft of the femur in perfect position to receive an injury?

ANATOMIC POINTS IN ABDOMINAL AND PELVIC SURGERY.

Presented to the Section on Obstetrics and Diseases of Women at the
Forty-ninth Annual Meeting of the American Medical Association,
held at Denver, Colo., June 7-10, 1898.

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I make no claim to know anything which no one else has knowledge of, but have observed a few things in my surgical work which proved to be of enough

importance to me that I became anxious that others might appreciate them more, and possibly save themselves and unfortunate patients trouble, suffering or life.

We often meet with adhesions between peritoneal surfaces, the legitimate ultimate result of peritoneal inflammations of all kinds, so numerous and extensive that all semblance to normal organs and landmarks is destroyed. These adhesions are always primarily conservative, but may lead to secondary grave complications. They may be so strong as to readily bear the patient's weight. The attenuation of these adhesions becomes possible when the inflammation causing it was traumatic, small in area, and a more or less constant tension was maintained thereafter. No man should for a moment think seriously of engaging in abdominal and pelvic surgery, who has not a thorough understanding of the relations of the normal peritoneum and all organs within the cavities he is to explore. He will at times find these familiar and usual landmarks obscured or obliterated. Then it is that the smallest hint may serve him for a guide, and he should be able to avail himself of it in time to save his patient's life, his own credit, and give his patient the best chance for future usefulness.

It is a well-known fact that union between peritoneal surfaces is the strongest union obtainable between the hollow viscera, and after it is a few weeks old, separation along the old line of union is well-nigh impossible. In attempts to affect separation, the peritoneum is torn off on one or other side, leaving the muscular coat or the areolar and connective tissue exposed, if the much more serious accident of opening directly into one or other viscus does not happen. If, upon opening into the abdominal cavity, we find everything a mass of agglutination, in which uterus, ovaries, Fallopian tubes, rectum, bladder, mesentery, omentum, etc., are individually unrecognizable, we may get a valuable aid in the large male sound, introduced into the bladder as a guide to the wall of this organ, and by care, may soon find our way down behind the bladder to the uterus, thence upward along its anterior and lateral surfaces to the cornua, and out along the Fallopian tubes and broad ligaments, working under these old lines and masses of peritoneal adhesions until we have found and dealt with the entire uterus and adnexa, as occasion may require.

Where the uterus is readily found but ovaries and tubes are buried in dense adhesions, connected to intestines, etc., it is usually much safer, and many times easier, to open into the broad ligament space by cutting the Fallopian tube, between ligatures, close to the uterine cornua, and begin your enucleation in the connective tissue space on the under side of the tube, beneath the peritoneum, working all the time, when possible, beneath the peritoneum, in this connective and areolar tissue space. The separation is much easier than breaking down old adhesions; the hemorrhage is usually insignificant: and, above all, you have a definite anatomical guide, instead of groping aimlessly about for something you can recognize to guide you, or tearing directly into the weakened intestines or bladder, or across the ureter. Either of these accidents may be as dangerous to the patient and as annoying to the surgeon as the original trouble for which the operation was undertaken. The best surgeon cannot afford to proceed with an abdominal operation, in dealing with adhesions, without definite

anatomic landmarks to guide him, and when those which are usually made use of are gone, it becomes his duty to search out others. In abdominal work it becomes important to quickly determine which is the stomach end of a given loop of intestine. If we keep in mind the parietal attachment of the mesentery extending from the left side of the spinal column on a level with and close to the body of the second lumbar vertebra, and extending thence downward to the right, obliquely across the spinal column to end at right sacro-iliac articulation or in the right iliac fossa, we will have a basis for immediate determination of the point in question. If the loop be brought up until the mesentery is taut, with the loop parallel with the long axis of the body, the index finger should be passed into the abdomen by the side of the loop, keeping the palmar surface in close contact with the mesentery as the finger is passed down to its posterior attachment. If the finger remains all the time on the side at which it started, then up is up and down is down. If, however, it passes across to the opposite side, then up is down and down is up, or the lower is the stomach end. Should there be one, or more than one-half, turn or twist in the mesenteric loop it (the turn) and its direction, is at once detected by the finger. Peritoneal adhesions being always primarily conservative, it is very important that we should not do harm in separating parts which nature has united for the individual's protection, unless we can remove the cause for which the union was produced. If adhesions are separated, we must see to it that resulting union shall not be more harmful than the former. Omental grafts should be sparingly used to cover abrasions of the hollow viscera, because of their tendencies to contraction.

We will often serve our patients better if we evacuate the septic products which cause the adhesive inflammation and make no attempts to separate adhesions. This is often the case in appendicitis, where the appendix is lost in a pus sac, and adhesive inflammatory exudate has passed far up on to the colon and has thrown its protective bridges far out among the small intestines, so that all our accurate guides to it are lost. In such a case, before the peritoneum is reached, in making an incision close to the inner side of the anterior superior iliac spine, the muscular tissue will show evidence of infiltration or bogginess from serous exudate. This is due, not to the fact that septic material has passed *directly* through the peritoneum in the iliac fossa, but that it has, in all probability, passed along the loose connective tissue space formed by the divergence of the layers of mesentery to enclose the appendix. By following this space, the pus may appear external to the peritoneum at the base of the appendix, and often posterior to the cecum. This anatomic fact explains the large number of cases of appendicular abscesses, which may be opened extraperitoneally by the surgeon, and do sometimes so discharge without his aid. This puts at rest much speculation regarding our ability to reach and open so large a number of appendicular abscesses extraperitoneally when the appendix is normally an intraperitoneal organ, and this too, in many cases where there are little or no adhesions of abscess to the abdominal wall.

Great distention or contraction of parts of the colon, inflammatory or atonic changes may make its identification difficult, especially to those of slight experience. We should find the colon darker in color than

other parts of the intestine, but the longitudinal bands and *colica epiploica* will enable us to identify it readily in almost every instance, and a knowledge of its mesenteric or closer attachment to the parietes will be of material aid. In most cases, we should be able to pick it up and be sure of what part we have at once, without even the aid of vision. In appendectomy we often find the organ so firmly bound down by adhesions that it is with the utmost difficulty that we can separate them; in fact, often it is quite impossible. In these cases, if we can identify the peritoneal layer at any point and gain a start underneath it, we can usually enucleate the organ very rapidly and easily, doing all our separation work between the peritoneum and muscular coat. When so done, we can close the peritoneal rent and leave no denuded surface to form other troubles. We are again making use of our old plan in dealing with the Fallopian tubes. Many times our work will be greatly facilitated if we will first ligate the base of the appendix in two places, cut between ligatures, and start our enucleation process at the base, between the diverging layers of the mesentery. I have found this plan of especial help when the appendix tip was buried deeply in the pelvis under dense adhesions passing down over the external iliac artery and in contact with the ureter. In surgery of the gall-bladder and ducts, too many surgeons habitually depend on finding the fundus of the gall-bladder as an anatomic starting-point, forgetting that it may be congenitally absent, or the trouble for which the operation is undertaken has produced inflammatory adhesions and possibly buried the fundus and body of an atrophied gall-bladder so completely that he who persists in his search for it as a guide to subsequent manifestations may tear off its attachments to the liver and cause troublesome hemorrhage, and be no nearer than before to a recognition of the cause of the trouble, which is, in all probability, located in the cystic, hepatic, or common duct. In such cases, we will gain much time and save ourselves much annoyance by first locating the hepatico-duodenal fold of peritoneum, or grasp in it the common bile duct, hepatic artery and vena porta, with the foramen of Winslow beneath and hepatic and cystic ducts to the right; we can at once determine, in most cases, the location of the difficulty for which the operation was undertaken, if it pertains to the gall circulation, and with much less danger than by way of the fundus.

In perineorrhaphy work, too many cases have only a skin support, the normal perineal structures proper being in no sense restored as a supporting organ by the operation intended to relieve various forms of prolapsus, the defect being only hid; the result is altogether disappointing to the patient and surgeon, and brings this much-needed operation into disrepute.

In the flap-splitting method, in some cases the recto-vaginal septum is not located, but the vaginal mucosa only is raised, and when the sutures are introduced they cause strangulation necrosis of the vaginal flap or a large part of it, because it is impossible to get sufficient hold upon so thin a tissue without seriously involving its blood-supply in the suture clasp. The same danger occurs from a little carelessness in forming the flap on the opposite side, and there is great danger of fecal fistula. If, however, the recto-vaginal septum is followed, the separation may be made extensive enough to give any desired result in a new perineum, and no harm will result, if any care be used in suturing. I am convinced, however, that the

general plan of introducing sutures in the old through-and-through manner to the highest point of separation is a great mistake, and many such sutures will cut deeply and cause prolonged irritation and often a tender perineum.

Much better results will be obtained by introducing several layers of buried absorbable sutures, which will make a more perfect approximation of all parts of the deep wound. If a through-and-through suture is used, I am sure that better results are obtained by using here the same principle that Fowler applies in his "figure 8" abdominal method, because it secures more perfect approximation of all parts than by the old plan. The purse-string tendency of the old suture method makes our resulting perineum only one-third to one-half the depth and corresponding strength we originally supposed we would be able to attain.

TOTAL REMOVAL OF STOMACH FOR CARCINOMA OF PYLORUS—RECOVERY.

BY G. CHILDS MACDONALD, M.D. (BRUX., HON.)

F.R.C.S., Edinburgh, Exam. M.R.C.S., England. Fellow Medico-Chirurg Society, London. Late Resident Surgeon Royal Edinboro Infirmary. Lecturer on Surgery, College of Physicians and Surgeons, San Francisco, and Visiting Surgeon, St. Mary's Hospital, SAN FRANCISCO, CAL.

J. Patrilli, Italian; aged 38 years; occupation, dairyman; admitted to St. Mary's Hospital on June 15, 1898, suffering from a tumor of the pyloric end of the stomach. The usual symptoms associated with that condition were present; as the patient was unable to speak English but imperfectly, no definite history was obtainable, but so far as we could gather, he had been ill, probably unable to work, for two and one-half months prior to entering the institution. He stated he never had any previous illness; moreover his immediate relatives were free from cancers or tumors. He complained of pain in the epigastric region, paroxysmal in character, vomiting and weakness. The physical examination revealed marked general emaciation, a distinct movable tumor in the right hypochondrium; the stomach was dilated and on stimulation of the epigastrium by rubbing could be made to contract violently, attempting to pass its contents on to the duodenum. By the clinical picture presented, I concluded the growth must have extended, at least, over a period of six months. His weight, unfortunately, was not taken. Feeling the hopeless condition of the patient, I decided to remove the whole of the stomach. To this he consented. He was accordingly brought into the operating room at 9 A.M., June 15, 1898. Ether was the anesthetic used, which he took badly, and half the operation was done without any stimulants having to be administered hypodermically on several occasions.

The incision was commenced at the tip of the ensiform cartilage, continued down over the linea alba to half an inch below umbilicus on the right. On opening the abdomen the stomach and liver came into view, omentum devoid of fat; there were no adhesions. The first part of the duodenum and pylorus were freely movable. The great omentum was tied in portions about half an inch from the stomach and cut away to a point midway between the first part of the duodenum and splenic end of the stomach. The gastric hepatic was treated in a similar manner, to half way along the lesser curvature; fine catgut was the material used. The duodenum was now

clamped in two places and the gut divided between; the forceps on the distal end were covered with rubber; the cut ends were immediately packed around with gauze to prevent infecting the peritoneum; by this means the pyloric end of the stomach could be drawn out of the abdominal cavity. The remaining portions of the gastrohepatic omentum and of the gastro omentum were treated in a similar manner. The esophagus, which was elongated and drawn down, was clamped and divided as had been the duodenum; the stomach was then removed. It was found the duodenum and esophagus could be brought together with a moderate amount of tension. A large-sized



Exterior of stomach; stomach much contracted, due to formalin solution being too strong. 1. Esophageal end, 2. Duodenum.

Murphy button was used to complete the anastomosis, but it was found necessary to use several reinforcing sutures for the anterior two-fifths of the duodeno-esophageal juncture; the material used for this, as likewise the running thread, was silk. The abdomen was closed in the usual way. From the time the man commenced to take the anesthetic till his removal from the table, a period of ninety minutes had elapsed; toward the end he showed a considerable amount of collapse; this continued for four hours, despite hot water bottles, flannels and stimulation by hypodermics of whisky and strychnin. Toward the after-



Interior of stomach, showing growth. 1. Pylorus.

noon he rallied; by 7 P.M., his condition became again alarming, the pulse ran up to 120, weak, compressible and irregular; in fact, he presented all the symptoms of so-called cardiac failure. Enemas of hot coffee, together with hypodermics of whisky and strychnin, were administered without any appreciable effect; hot water was also tried by mouth. Sitting by the patient's bed, feeling the failing pulse, it struck me the condition presented more the phenomena resulting from inhibition of the pneumogastric, and the uncontrolled action of the sympathetic; I therefore administered a hypodermic of 1-100 digitalin. The effect was immediate, the pulse dropping to 110

and steady. From now on he continued to improve, the digitalin being continued at intervals as required. Urine and feces passed voluntarily at 10:30 P.M. Nutritive enemata were given through the night. The following day he was given half an ounce of peptonized milk and whisky by mouth every hour. Larger amounts by rectum at similar intervals. Respiration 30, temperature 101, pulse 102. June 17, pulse 118, respiration 23, temperature 101.2. Nourishment as before. June 18, pulse 106, respiration 18, temperature 100.8. Amount of nourishment doubled, per mouth, but given every two hours, white of egg and beef peptonoids added, enemata as before. June 19, pulse 82, respiration 18, temperature 99; rectal feeding stopped. Chicken broth added, bowels moved. June 20, pulse 80, respiration 18, temperature 98.4; egg-nogg added. June 21, pulse 82, respiration 18, temperature 98.3; given chicken broth thickened with rice flour; corn-starch and wine jelly; bowels moved. June 23, wound dressed first time



Photograph of patient taken twenty-five days after operation.

today; had healed by primary union; about half of the sutures removed; patient hungry, wants beef-steak. July 3, button passed. Given California oysters and minced chicken. Bowels act once daily, evacuations solid. July 10, sat up. From this on patient improved rapidly, gaining strength and flesh. On July 15, he informed a fellow countryman in the ward, he intended going down town to see a friend and do a little shopping; he slipped out of the ward and was discovered by me at 4 P.M., carrying a grip-sack which contained his purchases. He was indignant at my putting him on a car and taking him back to St. Mary's, saying he "felt good" and was "all right." The grip-sack weighed 12 pounds and the man turned the scale at 105 pounds. He then made us understand that his usual weight was 135 pounds, July 21, patient has not started off on any more excursions, but contents himself with playing poker and walking round the hospital grounds. His weight today is 107 pounds.

I have to thank Drs. Frazer, Kingwell, McMonagal

and Bailey for their kind assistance during the operation; also Dr. Keenan, our resident on the third floor, for the great interest and trouble he took in the after-treatment; Sister Mary Carmel for the individual and close attention she gave to the nursing. There is no doubt that I have to thank Dr. Keenan and Sister Mary Carmel for the successful termination of this very interesting and instructive case.

July 28, patient left the hospital and returned home and is feeling well and in every way satisfactory.

SELECTION.

Repulsed by Fever.—It is fortunate that the headlong valor of the American forced the surrender of Santiago. But for the sheer fighting which was won against all odds, the Santiago campaign would now be ending in ignoble failure. The army which Spanish arms could not defeat is repulsed by fever and must come North. The result was foreseen by every one aware of the only conditions under which white men can wage war in the tropics. But countries, like men, never really learn by the experience of others. The English Army has learned how to conduct a campaign in regions like Cuba and in time the United States will. Until we are willing to learn, we shall have the experience of Santiago. White men, the English have learned, can not campaign in the wet season in the tropics in the open unless they have an army of attendants. The English expedition which went to Abyssinia just thirty years ago under Lord Napier of Magdala, had 16,000 English soldiers and 32,000 native attendants to take care of them. All English tropical expeditions are organized after this fashion. Every regiment has its watermen and its tent-men, its carriers and its cooks. A white man in the tropics has a store of cold climate force, vigor, energy and bravery which makes it easy for him to sweep through any tropical fighting line he meets. But he cannot fight the climate. He can not endure rain by day or the damp ground by night. Fresh from the North, for three or four weeks he will endure these things with a glorious disregard of experience. It is as Franklin said, "a dear school; but fools will learn in no other." After three weeks of exposure fever taps the incredulous Northerner on the head and he wakes some morning to find he is too ill to move. As General Ames says: "A full list of the sick would be a copy of the roster of every regiment. The only mercy is that there are only 16,000 men at Santiago who have won a great victory and brought peace instead of 60,000 men about the lines of Havana, lines too strong for assault and needing "regular operations" and weeks of fever-stricken delay. The lesson is clear. For the work of occupying and garrisoning Cuba, the United States must organize an army on the British Anglo-Indian plan. The core of the army must be "immune" whites from the South and negro regiments. No men unacclimated by some experience are ever sent in the British Army to the tropics and men under 25 are excluded altogether from such service. But even regiments thus constituted can not live in the physical conditions usual in campaigning in the temperate zone. The fighting man in the tropics must be taken care of. A force of laborers, all tropical, must be hired. Instead of feeding the idle at Santiago on landing, not an able-bodied man among the natives should have been given a ration unless he was willing to work, and strict military discipline should have ended the fatal and inexcusable nonsense of precious Northern fighting material courting fever and inviting death by digging and pack-carrying when idle Cubans were standing around eating United States rations. If this course had been followed, while fever would have come it would not have demoralized and broken the strength and fighting force of brave men as it has at Santiago and assuredly will at Manila. The prediction is easy to make, it is based on two centuries of Anglo-Indian experience—the instant General Merritt's force moves from its lines and begins active operations in the field, where the men have to get wet, unless they are provided with a plentiful supply of coolies to fetch and carry and spare the white men, tropical fever will mow a broad swath through the strong ranks and a quarter

will never come back. These are words of truth and soberness. Every medical man and every man of tropical experience or knowledge knew that the Santiago campaign was a terrible risk. The nation deliberately matched with fever and death for victory and won in the grim game by overmastering bravery. But for white men nothing foils tropical fever except close personal care. If a white man in the tropics has to dig and get wet and do common labor he collapses in all cases and dies in about one-half the instances. The United States has to occupy and, for some time, to garrison Cuba—Porto Rico is higher and healthier. Unless there is to be a terrible waste of life, the Anglo-Indian plan of minutely caring for white men in the tropics must be adopted in Cuba. Any other plan is sure to end like the present collapse at Santiago due to climate, doubtless aggravated by faulty staff administration, but primarily due to climate.—*Press, Philadelphia, August 5.*

The history of the Panama Canal where the French Engineers had plenty of well equipped hospitals, and an abundance of skilled attendants, shows that the fearful sickness roll must be due to inherent conditions of the tropics.

PRAGTICAL NOTES.

Inherited Tendency to Hemophilia.—Dr. Sadler, in the *Birmingham Medical Review*, reports a family having marked hemorrhagic tendency in two generations. The father of the family died in 1895 of senile decay; the widowed mother is 60 years of age and in fair health. She has had sixteen children, three of whom died from infantile complaints in the first few days of life. The remainder comprises eight boys and five girls, the eldest of whom (a boy) at the age of 3 years, when apparently in perfect health, fell and bit off the tip of his tongue; the bleeding could not be stopped, and death occurred on the fourth day. The next two sons and their children have not shown any tendency to the diathesis, nor has the fourth son. The fifth son died at the age of three months, from "sun-stroke." The sixth son was noticed to become bruised very easily at the time of his first attempts to walk. When he was nearly 7 years of age the cutting of a tooth led to hemorrhage which proved fatal after a week's duration. The seventh son, now aged 12 years, has never bled nor bruised. The eighth boy early developed the tendency to bruise, but it is diminishing year by year. He has had several troublesome attacks of epistaxis. The joint affection of hemophilia first showed itself in him at the age of 3 years. He has had repeated attacks since, and they always begin suddenly in the night. The well-known fact that the girls of the family do not themselves exhibit the hemorrhagic tendency, but that they transmit to their male children, appears in the present instance. Both the first and second daughters have always been perfectly healthy; they are married, and have each had two boys; three of these children are alive and present marked hemorrhagic symptoms. The remaining one died at the age of 3 years from a combination of epistaxis with bleeding from the ears and mouth.—*London Lancet.*

Removal of a Bullet from the Body of the Axis after its Localization by Skiagraphy.—In the *Intercolonial Medical Journal of Australasia*, Dr. E. Bird has published a case of this novel operation, which certainly could never have been carried out without the aid of skiagraphy. The operation was performed more than three months after the injury, at the earnest solicitation of the patient, who suffered a good deal from deep cervical pains on the left side and stiffness of the neck. A three-inch incision was made along the posterior border of the sternomastoid muscle in order to gain access to the lateral aspect of the second and third cervical vertebrae. The dissection was continued until the descending fibers of the first bundle of the levator anguli scapulae were well defined in their upper two inches. The great vessels and nerves were held forward and search made for the bullet. It could be neither seen nor felt, but the transverse process of the axis was in advance of the next. On holding the pharynx forward the dark bullet was seen buried in the body of the axis. Bone had to be snipped away before it could be extracted; recovery followed.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, SEPTEMBER 3, 1898.

THE MUSTERING OUT OF THE VOLUNTEERS.

When volunteer troops are to be mustered into the service of the United States, the one point of interest is the physical examination by the medical officer or medical examining board. If the physical condition of the candidate for military service is such as to enable him to pass this examination successfully, the remainder of the process is easily accomplished; but in the mustering out of volunteer troops there is necessarily more of what is usually called red tape by those whose cerebral masses are incompetent to understand the details needful to bring a complicated piece of business to a successful conclusion in the simplest way. The debtor and creditor side of the sheet between each officer and man of a command and the United States Government must have each entry accurately specified, so that when a last payment is made by the paymaster, a balance is effected and the contract between the soldier and the Government is dissolved. Officers responsible for property have to turn it over to designated officers, obtaining in return from the chief of that particular supply department a certificate of non-indebtedness, and enlisted men have to turn over arms and equipments in good condition. The greatest care has to be taken in making up these muster-out rolls. When finished they are submitted to a board of officers who compare their statements with the statements on previous muster rolls, and clothing account-books to ensure their absolute correctness in every respect. The command is then sent to its state or regimental rendezvous to receive its final payments and be mustered out. But

here a new and very valuable piece of red tape has been introduced by the recent instructions to mustering officers issued from the office of the Adjutant-General of the Army. This new departure is a piece of wisdom inculcated by the experience of our Bureau of Pensions since the close of the civil war. In the language of the instructions just cited: "To facilitate the settlement of pension claims that may be made on account of disability incurred in the United States service and to protect the rights of persons who may be entitled to the benefits of the pension laws as well as to guard the interests of the Government, it is ordered that a thorough physical examination be made of all officers and enlisted men of volunteers, except general officers and officers of the general staff, immediately prior to their muster-out of service or discharge." Each officer and enlisted man has to sign a declaration as to his physical condition, which is then verified by examination by a medical officer of the regular army whenever the services of such an officer are available, and when not, then by a medical officer of volunteers not belonging to the organization of which the officers and men to be mustered out are members. If any person under examination claims to have a disability of which the medical officer can find no evidence, or to have a disability incurred in the line of duty, whereas the medical officer is of opinion that it was not so incurred, a board of three medical officers will be convened by the Adjutant-General to make a full report on the case, and if the members of the board fail to agree, a separate minority report will be made by the dissenting member. The physical condition of every soldier at the time of his muster-out will thus be a matter of record, and the work of the Pension Bureau in the future will be materially reduced and simplified. Had such an examination been made at the close of the civil war, the list of disabled pensioners would now be much smaller than it is by the exclusion of all those cases in which the evidence was defective and the benefit of the doubt given to the soldier.

THE DUST CONVEYANCE OF TYPHOID FEVER.

The spread of typhoid fever in the various military camps during the present war has become so serious a matter as to call for a most thorough investigation; it certainly was not anticipated and its occurrence will have to be accounted for. It is naturally to be assumed that the camp sites were, for the most part, selected with reasonable care, and with at least the ordinary amount of sanitary precaution usual in such selections, under the oversight and with the consent of the Army Medical Staff. There may have been exceptions, but this certainly should have been the rule. Allowing fully for the careless habits of volunteers, the spread of typhoid seems to have been excessive, and something more than the usual water-

borne contamination would seem necessary to account for it. It is presupposed that, with the oversight of medical authorities and the generally diffused information in regard to the subject, any direct contamination of the sources of drinking water would have been avoided so far as possible, and if other methods of diffusion of typhoid can be invoked it may simplify the investigation materially, and we look with interest for the report of the very competent board selected by the Surgeon-General.¹

In a paper read before the British Medical Association, July 30, in its Section on State Medicine, Dr. JOHN ROBERTSON, medical health officer of Sheffield, on "Soil as a Factor in the Spread of Certain Diseases," maintains that, while the water carriage of typhoid infection is important, the attention given to it has obscured the relatively still more important subject of dust- or filth-borne typhoid. He has studied the subject carefully and finds that in over 80 per cent. of urban cases the theory of water or milk infection will not suffice to account for the occurrence of the disease. He finds also that the typhoid fever dies out quickly in grass-covered areas, that when planted beneath the surface it has a tendency to extend upward rather than downward, and that it is capable of living and multiplying in the ordinary surface soil. The transference of the germs from the soil to man is made, he feels assured, under certain conditions, chiefly through the medium of aërially carried dust.

If we consider fully the conditions of some of our military camps, situated in a warm southern climate, where northern grasses can hardly be said to abound, and where such grass-covered areas as existed would soon be trampled out, occupied by inexperienced volunteer troops who naturally are ignorant and reckless as regards sanitary matters, and whose officers have their ideas of control and precaution in these respects yet to be formed, it is not difficult to suppose conditions that will fully account for the typhoid epidemic that has apparently existed. At least this is true if we accept Dr. ROBERTSON'S conclusions, and they seem reasonable.

Another point which he makes that is worthy of notice here, is the influence of ground-water, which had been already noticed by VON PETTENKOFER. Dr. ROBERTSON finds that typhoid is more liable to be endemic in regions where the ground-water is near the surface. This, in connection with unsanitary local usages, such as are likely to prevail in camps, might have, it would seem, also an important influence. With a surface soil impregnated with typhoid germs working toward the surface, and with grass wanting or trampled out, we have the most favorable conditions for the aërial transmission of disease, and the

winds, which should be a purifying ventilation, may thus become conveyers of pestilence.

In those cases where the camps are supplied from artesian wells, the question of the height of the ground water can be of no possible consequence as regards direct infection by drinking water, but it might still have its influence as regards infection by the medium of dust.

The character of soils in relation to disease is certainly an important subject, and one that has a special significance in a point of view of military sanitation. In an active campaign in respect to fixed posts, where permanent sanitary conditions can be secured, it may be of less importance than in the case of temporary encampments for organization, like those of Chickamauga or Tampa, but in such the attention given it can hardly be overdone. It is a possible thing that some phases of this particular question have been too much overlooked in our recent military operations. In any case, the question of the propagation and carriage of the infection of such diseases as typhoid by the agency of the soil is one that should receive attention.

THE SEVENTH ARMY CORPS AT JACKSONVILLE, FLORIDA.

At this time when we hear so much of the prevalence of typhoid fever in the camps of our volunteer troops all over the land, it is gratifying to find satisfactory reports coming in from some quarters. The camps at Jacksonville, Fla., are said to be in excellent condition, with few cases of typhoid in the division hospitals, and all these imported cases. The water supply is from artesian wells, 800 to 1000 feet deep. It is saturated when fresh with sulphuretted hydrogen gas, which speedily escapes on exposure to the air. The hospitals are well provided with everything required, and the three division ambulance companies and the reserve ambulance company are thoroughly organized, fully equipped and in good running order. The personnel of the hospital corps consists of 75 medical officers, 75 hospital stewards, 30 acting hospital stewards and 550 privates. Lieutenant-Colonel L. M. MAUS, is Chief Surgeon of this Corps.

RETINAL HEMORRHAGE.

With the passing of the ophthalmoscope from the exclusive use of the oculist, the cases and causes of hemorrhage into the retina have greatly multiplied. The underlying etiologic factors have become of interest to all, regardless of specialism; for the affection may occur in the practice of the surgeon and gynecologist as well as in that of the oculist and the devotee to internal medicine. It may come without warning and indeed without apparent sufficient justification, or cautions in the way of constitutional disease may have existed for years. It is no respecter of age, nor are either of the sexes favored to any

¹ This board consists of Surgeon Walter Reed, U.S.A., and Surgeons Shakespeare and Victor C. Vaughan, U.S. Volunteers.

extent; for an increase on the one hand due to obstetric and gynecologic causes is equalized on the other by the greater prevalence of arteriosclerosis and injuries among males. In size it may be barely discernible or may involve the retina in its entirety. There may be but one spot, or the hemorrhages may be so numerous as to leave little more than spaces between them to show that they are separate and distinct. Multiple hemorrhages may involve the periphery alone, may surround the optic disc, or invade the region of the macula lutea. It will be remembered in the anatomy of the retina that the larger vessels lie in the layer of nerve-fibers, while the capillary vessels are contained for the most part in the layer of ganglionic cells and in the inner molecular layer. It follows from this that hemorrhage into the nerve-fiber layer appears superficial (to the ophthalmoscope), large, and as a rule striated, from the peculiar and characteristic course of the vessels in this area. Occasionally the hemorrhage may be so near the surface and in such quantity as to rupture through the internal limiting membrane and involve the vitreous. The age of the hemorrhage influences its color. Fresh hemorrhages are of a deep red in comparison with the rest of the field; when older, evidences of decolorization are present, sometimes irregularly placed, more often around the periphery, forming a complete whitish investment. Rarely the color may be entirely lost, nothing but a white patch remaining. Whitish spots dotted here and there with masses of black pigment are not infrequently the only remnants of an extensive hemorrhage.

Leaving for a time the consideration of trauma in the production of retinal hemorrhage, the remaining cases can be traced to the circulatory system, either the blood itself or the vessels. A most common cause is the rupture of a blood-vessel weakened in some way by disease, either by the formation of miliary aneurysms, as in syphilis, or by the production of arteriosclerosis. The pipe-stem artery, no matter what the cause of its presence, be it Bright's disease, syphilis, chronic lead poisoning, alcoholism or what not, is always a source of danger, and the retina which can offer but slight protection to the vessels contained within its various layers, is often a seat of rupture. Not only in the slow, chronic, interstitial variety does Bright's disease bring about hemorrhage, but in that acute form known as hemorrhagic nephritis hemorrhages may occur. There is one point of difference: in the chronic disease the hemorrhages are superficial and, following the course of the vessels, are striated, forming the well-known "flame-shaped hemorrhages," while in the acute variety the hemorrhagic spots are large and irregular.

Anything preventing the easy exit of blood from the globe, may, by overfilling the vessels behind, cause their rupture, especially if such an obstruction has been of long duration. Thus local diseases of the eye,

as tumors, retinitis from whatever cause, glaucoma from whatever cause, myopia of high degree, thrombosis and embolism especially when involving the central artery of the retina, may be the underlying factor, as well as obstructive heart disease, especially mitral, lung disease as chronic interstitial pneumonitis, tumors, or any other cause preventing a free flow of blood through the lungs. While glaucoma itself may act as an exciting cause, it must be confessed that hemorrhage is more apt to follow a sudden diminution in the ivory hardness of the globe; in other words, with the sudden lessening of the intra-ocular tension, as in an iridectomy for glaucoma, the support given the retinal vessels transmitted through the vitreous, is rapidly withdrawn, and rupture of these vessels readily takes place, particularly if arteriosclerotic changes have supervened.

It is, however, in the diseases in which the blood itself has undergone changes that the larger proportion of cases occur. These changes may be hydremic in character or result from the presence of deleterious, poisonous substances, but whatever the cause, the nutrition of the blood-vessels suffers, small areas of fatty degeneration form, and but slight traumatic causes may bring about rupture. Such changes in the nutrition occur in constitutional affections, where fatty degenerative effects are common, diabetes, scurvy, septicemia, pyemia, purpura and in the acute poisonings where several days lapse before the fatal termination, as by phosphorus. The blood diseases proper are complicated by hemorrhage into the retina. It is not too much to say that in a majority of the cases of leukemia and pernicious anemia, retinal hemorrhages will be found, that are usually multiple in these diseases, often large, and as a rule irregular in outline. Chlorosis and the simple anemias may all afford a complication of a similar nature and such cases are not infrequently mistaken for pernicious anemia.

The affection is of interest to the gynecologist in that occasionally in amenorrhea, sudden blindness supervenes about the time of menstruation, were such a function going on; ophthalmoscopic examination reveals retinal hemorrhage without apparent cause. This is then explained as an example of vicarious menstruation, and as in several reported cases of amenorrhea, fresh hemorrhages have occurred with each monthly interval, that explanation is probably correct in obstetric practice, retinal hemorrhages sometimes occur during the pregnancy, without apparent cause, though they are thought to be due to some change in the blood itself. During delivery, efforts at expulsion producing cerebral congestion in a perhaps already weakened vessel, account for not a few cases. New-born infants are especially susceptible to this trouble, but, remarkable to state, complete absorption usually takes place and that without injury to vision. Injury is by no means an uncommon source of retinal hemorrhage. The injury may

involve the globe itself, as in a penetrating stab wound or a blow upon the ball without rupture, or an injury in the neighborhood, as a fracture of the base of the skull may occasion the same result. The operation of iridectomy has this troublesome affection for one of its most dangerous complications, especially when the eye is glaucomatous and the patient well advanced in life. When all is done and said, however, there still remains a fair proportion of cases in which no cause can be determined, the individual being in apparently perfect health.

CLINICAL TEACHING.

An inevitable change that must come in medical teaching is an extreme predominance of clinical and laboratory teaching over the didactic lecture. The student can learn from lectures by able men, and much is unquestionably impressed upon the student's mind in this way alone, but aside from the practical experience of the lecturer and certain details of application which he can give, the student learns nothing that he can not gain from his text-book on the subject. Furthermore, he loses as a rule a large part of the lecture by attempting to take notes, and no mind possesses the phenomenal ability to remember without notes a detailed series of lectures on a single subject, to say nothing of an attempt to retain lectures on many subjects. At the end of one hour this student has a mass of notes, that are bad, as a rule, and an indefinite idea of the subject. In clinical teaching the professor, again a man of experience in details, is in the presence of an actual case of the disease under description. The disease is presented to the student as he will meet it in practice and his picture must be a more complete and lasting one than any that could be formed from a didactic lecture. The value of clinical methods of teaching would seem an established fact and any argument in favor of it unnecessary, yet it does seem that the faculties of various colleges need to be reminded that their curriculum insists upon attendance at lectures and leaves the clinics to the option of the student. The option regularly results in the cutting of clinics, or it results in his choice of the gynecologic clinic where his erotic desires are stimulated. Furthermore, they need to be reminded that he is required to attend surgical clinics at some large hospital, where he wastes his time by observing an operation he will never perform or by being so far distant that he loses the detail. In any out-patient department there are cases of surgery, medicine, skin diseases, etc., that he may handle, question, diagnose and, what is very important, follow to the termination of their illness. These are the cases that will develop in him a distinctly medical mind and a clinical eye for observation. By far too many students leave college today with the exact means of diagnosis impressed upon them to the exclusion of clinical symptomatology and unless furnished

with the facilities for the Widal test are totally incapable of making a diagnosis of typhoid. It seems imperative that such a condition should be changed and the out-patient clinical work be required, if not made predominant, in his course. A satisfactory examination in physical diagnosis and clinical treatment should be as necessary for a degree as a satisfactory paper in medicine or surgery. The college must assume that the majority of its students will enter practice without hospital training and this means that he begins his professional career heavily handicapped by having no clinical pictures of disease, and especially handicapped when it is remembered that in the American perception and memory, sight represents four and hearing one.

THE PURIFICATION OF SEWAGE BY BACTERIOLOGIC METHODS.

The London County Council has lately undertaken a study of sewage and its purification by bacteriologic methods. Experiments on the changes in crude London sewage by its filtration through coke are to be conducted at the outfall at Crossness. Pending the construction of the filter and the completion of other arrangements, Dr. A. C. HOUSTON, the bacteriologist who has been assigned by the Council to co-operate in these investigations, has made a careful bacteriologic study of the raw sewage, preparatory to the special inquiry into the changes brought about by the micro-organisms in the filterbeds which are designed for its purification. The results of Dr. HOUSTON'S work have been published by the Council as the first of a series of reports on the "Filtration of Sewage." The work was done in the Public Health Laboratory of St. Bartholomew's Hospital; and thanks are accorded to Dr. KLEIN "for advice and help of the greatest value." Samples were collected in sterilized glass-stoppered bottles, and cultivations were made on the day of collection. Gelatine plates were used in determining the total number of bacteria. The rapid liquefaction of the gelatine produced by the liquefying bacteria in sewage was found to be a decided disadvantage; but with a suitably diluted sewage and with observations made from day to day, it was not difficult to obtain plates with colonies sufficiently advanced in their growth and sufficiently numerous to allow of their being counted with accuracy, even when rapidly liquefying species were present. From 0.1 to 1.0 c.c. of a liquid consisting of crude sewage diluted with 10,000 times its volume of sterile water was used in the cultivations, which were conducted at 20 degrees C. When agar-agar was used the results were too low and the differentiation of species difficult. The number of colonies found in 1 c.c. of sewage varied from half a million to seven million; average about four million. Spores were estimated by adding 1 c.c. of diluted sewage (1:10) to 10 c.c. of melted gelatine in a test tube, heating to 80 degrees C. for ten minutes,

and then pouring into a Petri's capsule. The average number of spores in 1 c.c. of sewage was about 350. Liquefying bacteria were estimated from the ordinary gelatine plate supplemented by surface plate cultivations. The number of these was always found to be large—about 400,000 per cubic centimeter. It is held that their presence has a bearing on the ability of sewage to cause the liquefaction of its own solid or suspended matters.

In discussing the search for special micro-organisms the *B. enteritidis sporagenes* of KLEIN is given prominence. A minute quantity of sewage is added to 15 c.c. of freshly prepared sterile milk, contained in a test-tube, which is then heated to 80 degrees C. for ten minutes, cultivated anaërobically by BUCHNER'S method and incubated at 37 degrees C. When *B. enteritidis* is present the casein is precipitated, the whey remains nearly colorless, and there is a marked development of gas. A guinea pig inoculated with 1 c.c. of the whey dies within twenty-four hours with typical enteritic lesions. "If sewage," the report states, "be regarded as the most frequent and dangerous source of the pollution of natural waters, and if, as seems to be extremely probable, it is found that the *B. enteritidis* is not present in pure waters, it is obvious that apart from the pathogenic character of this anaërope, we are here dealing with a bacteriologic method of detecting contamination with sewage, which excels in delicacy any chemical process known. As the life history of this micro-organism becomes more fully known the bacteriologist may not improbably be in a position to condemn a water for drinking purposes, by merely considering the results obtained in his examination for this particular organism."

The *B. coli communis* is found in London sewage in large numbers, together with many which can be differentiated only by subcultures on a variety of media. The typhoid bacillus was sought for in surface phenol gelatine, and in potato gelatine plates and the diphtheria bacillus in ascitic agar plates incubated at 37 degrees C.; but the occurrence of these two micro-organisms in sewage in numbers sufficiently great to afford even a faint hope of their isolation must be an event so rare that it is probably a waste of time, according to Dr. HOUSTON, to specially search for them when more practical and more immediately useful work claims attention. In the London sewage protean forms were very abundant, and spores of *B. mycoides*, *B. subtilis* and *B. mesentericus* were usually present, but Sarcinae, yeasts and moulds were rare.

The report is handsomely illustrated by plates showing the gross and microscopic appearances of the micro-organisms described. The progress of this inquiry by the London County Council will be watched with interest by health officers and municipal authorities, in the hope that in its developments an answer may be suggested for the troublesome question, what is to be done with our sewage?

THE PENSION PROBLEM.

For years the pension problem has been an embarrassment to the Government, and at the close of the present hostilities the question may assume greater proportions. With the wisdom born of experience, plans of mitigation have already been devised to meet prospective difficulties. Throughout the late Civil War the cry was against "red tape" as being a cunning art of procrastination, and not much time was bestowed upon records. The medical department of the period was supposed to be sufficiently occupied with the sick and wounded in the gross. Persons were classified into cases, and thus this system, although of value as a contribution to medical history, was useless in identifications. Civil work was also neglected, principally on account of items absent from the blanks. Information was not expected and therefore not given. Besides, military activities due to a sudden expansion of the army were in the ascendant, levies of troops increasing in number at each call were more frequent, and the outcome of the war was at the least quite uncertain. Pensions, likewise, were more lavishly promised, and provisions for liquidation of claims were rather on a haphazard scale. As in life, individuals degenerate into records, so in the cases under consideration; what wonder that there should be delays, disorder, frauds and denials of justice? In the language of a war department official "the chief difficulties have been in the obtaining and sifting of testimony after late determinations." For more than thirty years an army of examiners, regular and special, has been maintained at a great outlay, since a government, like a bank secretary, ever pays upon mere sight of the draft. Beyond a doubt a nation's gratitude is desirable to the claimant, but somehow the much-referred-to "unscrupulous attorney" spoils the chances of the worthy and gains but little in the way of a pittance for his easy-going client armed with his flawless affidavit, in too many instances entirely innocent of the fatal element of truth.

We have been assured that our new pension list, according to the most accurate calculations, will closely crowd about 3000, owing to the new warfare and the triumphs of modern surgery. But we are also told that over 600,000 old applications are pending, which include original pensions as well as increases accrued and new disabilities. With all the humane tendencies of the government and all the liberal provisions against disaster, proof of worthiness is a necessity, and the applicant must consume a deal more of time than he expected. The work to be done is practically indexing his own records so that they may lighten the labor of the searchers, in other words, the card system of libraries with duplicates as a provision against accident, the same, as a matter of detail, to be edited by a chaplain or company secretary for the sake of conciseness and smoothness of diction. These hints are given out in substance by the Pension Depart-

ment, which thus far has admirably reconciled the interests of the victim of war with the gratitude of the Republic.

With a little more time the medical and military history may be presented as twin documents. The fact that the Civil War was one of stupendous proportions, and that it drew its fighting material from untrained masses of people, devoted to peaceful pursuits, must constitute a plea for delays and lost identities. Meanwhile, let us remember that the Government more than echoes the sentiment of the people in its love of just and humane methods. Therefore, at the outset of a new epoch, in the face of a dissolving army and navy, let there be more of aid than censure, since the war has been short, and therefore, in every sense economic of life and limb.

CORRESPONDENCE.

The Medical Department of the Army.

WASHINGTON, D. C., August 27, 1898.

To the Editor:—In the JOURNAL of August 20, Wm. Cuthbertson, late Major and Surgeon of the First Illinois Cavalry, gives it as his opinion that the Medical Department of the Army is incompetent and inefficient, and he explains what he considers to be the causes of these alleged conditions and how they are to be remedied. Of all things literary I dislike a newspaper or journal controversy; but my thirty-six years of active service as an army surgeon will not permit me to be silent when I find in the columns of the Journal of our National Association a criticism of Army medical methods by one who, in every line of his published article, shows himself to have been incompetent for the position of regimental surgeon, on the holding of which he evidently bases his claim to criticism. He begins his attack by boldly assailing headquarters. The incompetency and inefficiency which have been apparent to him he considers due primarily to want of rank in the medical corps; that men who are sufficiently endowed by nature with brains and ability to enable them to take an elevated position in the Department will not enter the service when the highest position they can attain is that of Brigadier-General. I need hardly point out to the members of this ASSOCIATION that the man who now occupies this highest position is one who achieved it by virtue of the same brains and ability which made him president of the American Public Health Association and of this, the AMERICAN MEDICAL ASSOCIATION, and gave him a wider than national repute in several fields of medical and sanitary science. The fallacy of this argument of want of rank is shown also by the history of the Medical Department of the Army in the war of the Rebellion. The men who built up the field hospital system of that war, which proved so efficient at Antietam, where it was first put to the practical test, and at all the subsequent battles had no higher rank and no expectation of a higher rank than that of Major. The patriotism of the men of those days led them to serve their country irrespective of questions of rank, and we must say the same of those of the present day, when we see such men as Professor Senn going out as a corps surgeon, and Professor Vaughan as the surgeon of a Michigan regiment.

But to make the Medical Department thoroughly efficient it requires, according to Dr. Cuthbertson, not only higher rank, but to be separate from and independent of all other corps of the army. It so happens, however, that all large armies are necessarily composites; and their efficiency depends upon the drill and discipline which bring about co-operation of action.

Artillery is of little account unless it has infantry supports and infantry lines may be rolled up unless covered by cavalry on the flanks, and all are dependent upon the quartermaster's, subsistence, ordnance, medical and other staff departments. It is very well for an ex-surgeon of small experience to settle at his desk how the medical department of an army corps should be managed during the battles of an active campaign; but actual field conditions do not always conform to the notions of theorists. It would be an excellent thing for the Medical Department to be less dependent than it is on the dicta of commanding generals and quartermasters. Where there is responsibility adequate powers should be granted. But this principle applies to the commanding generals as well as to the Medical Department. On his shoulders lies the responsibility for the conduct and success of the campaign. He must therefore have the power. He must not be handicapped in his command by any proviso restricting his movements unless with the permission of the Medical Department. Doctors may know that a certain locality is infected, but if it is necessary for military reasons for troops to hold that locality they must hold it as well against the infection as against the fire of the enemy. If the commanding general concludes for military reasons to make an assault without waiting for his artillery to disembark, the chief of artillery is not blamed for lives lost that would not have been lost had his guns been in a position to rake the enemy. If he concludes that victory will be purchased at a less price if the troops are hurried to the assault without waiting for the hospital supplies to come up, the resulting suffering to the wounded is not to be blamed upon the medical officers. Under such conditions artillery men remain with their guns; but medical officers, instead of remaining with their medical and surgical stores, follow the troops to the field and endeavor to relieve suffering with the materials in their hospital corps pouches and first-aid packets. Had the army chanced to be in a tight place and had those artillery men hurried to the front and done good service with carbines and Colt's revolvers instead of heavy guns, the country would have resounded with the story of their heroism. This is precisely what was done by our medical and hospital corps at Santiago, and I, for one, fail to see incompetency and inefficiency in the noble work which was done by them in the early days and nights of July last. I desire to invite Dr. Cuthbertson's attention to the fact that the Surgeon-General gave the necessary instructions to have all needful articles purchased and that those instructions were carried out in an efficient manner, and yet sufferings were endured at Santiago because the military conditions were such as to render these purchased articles unavailable for use on the field.

To sustain his charges of incompetency and inefficiency on the part of the medical department in general, Dr. Cuthbertson relates his difficulties in obtaining as much castor oil and laudanum as he desired when encamped at Chickamauga Park. Had he inquired closely into the reason for this he would have found that it originated in the effort to lessen transportation and give the largest amount of supplies in the smallest bulk by providing as much as possible the medicaments for the field in tablet form. Again, he could not procure carbolic nor boric acids. The supply table of all armies in the field is necessarily limited. Had he made himself acquainted with the character of the supplies provided he would have found plenty of sterilized absorbent cotton, sublimated and iodoform gauze, mercuric chlorid, lime chlorid and trikresol. In fact, Professor Senn is reputed as having testified that even at Santiago there was no lack of antiseptic dressings for the wounded. That which sufficed for Nicholas Senn, when face to face with the surgery of a battle, ought surely to have satisfied a regimental surgeon when dealing with the sore arms of some vaccinated men. At the time Dr. Cuthbertson went to the camp at Chickamauga the supply

departments of the army were confronted with a great labor, providing for a quarter of a million of men suddenly called into the field. Full outfits of medical and surgical chests for regiments and for division hospitals, with ambulances, tents, cots, etc., were shipped off rapidly from the purveying depots so rapidly that transportation companies had difficulty in delivering their freight; and these things had to be made, they were not to be purchased in any drug store or wheelwright's shop. I need say no more of these conditions. They are readily understood by men of intelligence, few of whom will agree with Dr. Cuthbertson, that "if numbers of medical men whom he could name had been placed at the head of affairs, our whole army would have been completely equipped with every medical and surgical necessity they could require in *three days*." Respectfully yours,

CHARLES SMART,

Lieut.-Colonel, Deputy Surgeon-General, U. S. Army.

The "Incompetent and Inefficient" Medical Department of the Army.

NEW YORK, Aug. 27, 1898.

To the Editor:—I have all along sympathized with Surgeon-General Sternberg for the load he has had to bear; but I did not fully appreciate the bearing of his burthen until I read the letter in your issue of August 20, (pp. 421-3). The wail of the "Late Major and Surgeon" [*hinc illæ lachrymæ*] recalls the complaint of the governor of a great State that the medical officers of the regiments from that State "could not get their prescriptions filled," who, when confronted with the Army Medical Supply Table, and told that it was the fault of those officers if they lacked anything, said: "Oh, yes, I have seen that, but I would like you to show me lactopeptin on it." "Lactopeptin! What would they want with lactopeptin?" "Why," said he, "most of these men have not been accustomed to the coarse army fare and they required lactopeptin to be able to digest it."

Who would not be Surgeon-General of the Army?

Fortunately there is balm in Gilead. Let the Red Cross see that every soldier's "panties" shall have two extra pockets, one for a bottle of lactopeptin and the other for that "splendid little machine," commended by Clara Barton (Feb. 21, 1896), the *Electropoise*; or, perhaps, these pockets had better be put in their pajamas, the lactopeptin to insure the digestion of the "coarse army fare," and the *Electropoise*, "that incalculable blessing," which has "power to put a person to sleep and keep him asleep until satisfied Nature awakes refreshed," to protect him against night alarms.

About six weeks ago some charitably-disposed ladies offered a naval purveying officer an unlimited supply of catnip for the sailors in the navy. Why should not catnip be equally serviceable to soldiers? If every one in the United States will only suggest what he or she thinks ought to be added to the Army Medical Supply Table, the Medical Department of the Army may in time become not quite so "incompetent and inefficient." The Association of Military Surgeons of the United States might profitably consider this matter at its *post-bellum* meeting.

A. L. G.

The Association and the Colleges.

TRENTON, TENN., Aug. 22, 1898.

To the Editor:—After carefully reading the notice sent out by Dr. W. B. Atkinson, Permanent Secretary, to the deans of the various Medical Colleges in the United States, setting forth the action of the AMERICAN MEDICAL ASSOCIATION, at Denver, in June last, in which it was voted "to allow no one to register as either delegate or permanent member of this ASSOCIATION," who, as "professor or other teacher in, or graduate of any Medical College in the United States, which shall,

after Jan. 1, 1899, confer the degree of Doctor of Medicine, or receive such degree on any condition below the published standard of the Association of American Medical Colleges," I am satisfied that the ASSOCIATION has attempted to reach a point which it should attain, in an unconstitutional manner. This resolution attempts to define who shall be received hereafter as members of this ASSOCIATION, and in doing this certainly is amending section 2 of our Constitution, which clearly defines the membership of the AMERICAN MEDICAL ASSOCIATION, and as such should be laid over for one year. (See section 7, page 9 of Constitution.) Had this point of order been made against the resolution at the time it was offered, as the presiding officer of the ASSOCIATION on that day, I would have decided the point well taken, and have ruled it out of order.

It is a point of law that any action improperly taken, unlawfully passed, is not binding. Hence, it seems to me, that to make such action binding, the matter must be presented in the form of an amendment, lie over one year, and then be acted on. This matter is one of too much importance to the ASSOCIATION to be rushed through in the hurry of business with the assurance from the Secretary of Business Committee that one member of the Southern Medical College Association assured him that they were all ready to abide by the action of the ASSOCIATION.

I dislike to call attention to this matter, but being connected with no college, I feel that I can do so without being charged with selfish motives. The Southern Colleges had, many of them, sent out their catalogues setting forth a three years' course of study, and now for the ASSOCIATION to say to them that "neither you nor any of your graduates for 1899 can be received as members of the ASSOCIATION," is unjust. Some of these professors are live, active members of our ASSOCIATION. As already stated, this action of the ASSOCIATION can not bind any one, having been illegally taken; hence, the Registration Committee should be notified to proceed at Columbus under the old law.

Yours truly, T. J. HAPPEL, Ex-Vice-President.

A Handy Way to Clean Tubes.

ELGIN, ILL., Aug. 23, 1898.

To the Editor:—Being interested in the use of the hematocrit and the hematocytometer, I wish to mention a few matters of technique which I have followed that have facilitated the use of these instruments.

The hematocrit percentage tubes are usually accompanied with a dropper and rubber tube connection, presumably to be used for filling and cleaning them. It will be found difficult to fill a percentage tube by the use of the dropper from one drop of blood without admitting air at the same time. If the tube is perfectly clean it can be much more easily filled by placing its point in the drop of blood and allowing it to fill by capillary attraction, but the success of the procedure depends on the cleanliness of the tube. The slightest coating of fibrin in the tube prevents it from filling, but if absolute cleanliness is observed, one will experience no difficulty.

To clean the tube perfectly has been a problem which demands attention. After using a tube there will be found a deposit of fibrin which can scarcely be removed by simple washing in water, alcohol and ether. A fine cambric needle armed with a strand of mending cotton can be used to wipe the inner surface of the tube, preferably after the tube has been thoroughly dried.

To dry the percentage tubes of the hematocrit and the measuring tube of the hematocytometer, the use of an ordinary bicycle-pump will be found very satisfactory.

Possibly these simple procedures may have been adopted by others, but if mentioned in any of the current literature such mention has escaped my notice. Very respectfully,

F. H. JENKS, M. D.

Malingering.

WASHINGTON, D. C., Aug. 24, 1898.

To the Editor:—Apropos of the communication on "Malingering" (p. 423, August 20), suits for alleged malpractice are indeed to be deprecated, and it behooves the profession everywhere to stand together in resisting the attacks of the ignorant and the malicious, whether they be directly from the laity or, as is so often the case, inspired by more or less unprincipled and over-zealous "hysteres" of the legal profession. On the other hand, when, as in the case cited, the medical practitioner adopts such questionable methods, does he not but reap the penalty of his folly? That a physician should consent "nearly every day, to make some kind of an application to the uterus" of a pronouncedly hysteric woman of neurotic history, "more to satisfy her than for any good it did," is of the very essence of charlatanism. There seems to have been no question as to the diagnosis; the symptoms noted would be most natural under the conditions described. The daily diddling, under the guise of legitimate operative procedure, could accomplish nothing but an aggravation of the patient's erethism, pampering to her depraved sensibilities. Of course, the patient is strong, robust, healthy, and active," "since he quit" practicing such instrumental masturbation! Such treatment, or rather such abuse of the perverted sexual instinct of a hysteric, smacks of ignorance born of laziness, if no worse; but, by the defendant's own admission, he deliberately set about to deceive his patient, "to satisfy her intense desire that he should use powerful remedies to kill her cancer," which he knew she had not. Surely, the "reputable firm of lawyers" could find no better brief to submit in behalf of their client than this outrageous confession. Faithfully yours,

MURRAY GALT MOTTER, M.D.

ASSOCIATION NEWS.**Some Suggestions Regarding the American Medical Association.**

The large number of physicians attending the annual convention of the American Medical Association are certainly entitled to individual consideration. It is, therefore, proper for the benefit of the scientific sections to have only those papers read which are practical and which can bring out good discussions, or those based upon practical research and investigation. There can be no question that either there is mismanagement in some Sections or that special favoritism is bestowed on a few influential friends. Our attention is, however, directed to an abuse which calls for an executive investigation, viz.: That certain men send titles of papers to several sections—in some instances they announce papers in three different sections, in most instances merely to see their names in print or else to see how often they can find their names printed in a single program. In one instance a gentleman was given preference on the program and other papers postponed to enable this bright individual to wander from section to section and give "scientific" orations and expound new ideas, based on experience of long standing. This is radically wrong. While there can be no objection to discussing papers of especial interest in the various sections, especially so if invited to participate, we feel that it is radically wrong to permit some men to monopolize various sections and crowd equally prominent men. It can only add to the dignity and scientific value of each particular section if each paper, or rather if the abstract was carefully scrutinized and eliminated if not found desirable. This would not only encourage good work, but would stimulate those men who boast that anything is good enough for the American Medical Association.—*Medical Times and Register*, August 13.

SOCIETY NEWS.

Tennessee Health Officers' Association.—This body held a three days' session at Nashville, Tenn., ending August 16. In the election of officers, Dr. W. S. Nash of Knoxville, was re-elected

president and other officers chosen as follows: First vice-president, Heber Jones of Memphis; second vice-president, Charles E. Lones of Knoxville; third vice-president, Larkin Smith of Nashville; secretary, H. C. Chance of Tazewell; advisor and superintendent of the veterinary division of the association, H. D. Fenimore of Knoxville.

Canadian Medical Association.—At the twenty-first annual meeting of this Association, held at Montreal, August 18, 19 and 20, the following officers were elected: President, Dr. Irving H. Cameron, Toronto; vice-presidents, Prince Edward Island, Dr. J. McLeod, Charlottetown; Nova Scotia, Dr. Kirkpatrick, Halifax; New Brunswick, Dr. L. N. Bourque, Moncton; Quebec, Dr. Jas. Bell, Montreal; Ontario, Dr. J. A. Williams, Ingersoll; Manitoba, Dr. R. S. Thompson, Deloraine; Northwest Territories, Dr. Lindsay, Calgary; British Columbia, Dr. P. J. Tunetall, Vancouver; general secretary, Dr. F. N. G. Starr, Toronto; treasurer, Dr. H. B. Small, Ottawa; publishing committee, Drs. A. D. Blackader, J. L. Dawson, W. W. Young and the general secretary and treasurer; by-laws, E. C. Parne, Wyatt Johnneton, Jas. Bell, E. R. Dickson, G. S. Ryan, W. W. Dickson, M. Beausoleil and the president and secretary.

Health Officers and Sanitariums in Illinois are invited to the next meeting of the Auxiliary Sanitary Association of the Illinois State Board of Health, which will be held in the Capitol Building at Springfield on Sept. 26 and 27, 1898. The object of this meeting is to discuss matters of interest to those engaged in sanitary work, such as the prevention and restriction of communicable diseases, the regulation of systems of sewerage and public water-supplies, the drainage and sewerage of villages, the legislation necessary to promote sanitation throughout the State, etc., and to establish close relationship between the State Board and local officials. A program of the papers to be read will be sent to any who make request, by the Secretary, who will also gladly answer any inquiries. The Illinois State Fair will be held at Springfield, September 26 to October 1. Those who attend the convention will have an opportunity to also visit the Fair on the days when the most attractive programs will be presented, and the railroads have agreed to sell tickets to all attending the Fair at one fare for the round trip from any point in the State. J. A. Egan, M.D., Secretary Illinois State Board of Health, Springfield.

Association of American Medical Colleges.—Decision of the Judicial Council, denying the right of the Medico-Chirurgical College of Philadelphia to resign its membership:

The Council decides that the Medico-Chirurgical College of Philadelphia is now, and has been continuously since 1891, a member of the Association of American Medical Colleges, in full fellowship. It signed the Constitution and By-Laws and participated in each annual meeting, including that of 1898, thereby assuming the obligation of honor to maintain and observe all the provisions of the constitution.

Article III, Section 3 of the Constitution, which the said Medico-Chirurgical College voluntarily pledged to observe, says: "Candidates for the degree of Doctor of Medicine in the year 1899 and thereafter, shall have attended at least four courses of medical instruction, each course of at least six months' duration, no two courses of which shall have been in the same calendar year."

Section 6, Article III, prescribes the conditions on which credits for one year of time, in the four courses may be extended to certain persons whose claims for exemption are clearly defined.

Section 7, Article III, states that; "Members of this Association may confer the degree of Doctor of Medicine, during the year 1898, upon students who have attended three courses of six months' duration each; each course shall have been in a separate calendar year."

The Judicial Council of the Association of American Medical Colleges has repeatedly decided that the constitutional requirement of four courses in 1899 and thereafter must be construed to begin Jan. 1, 1899, and these decisions have been unanimously adopted by the aid of the votes of the said Medico-

Chirurgical College participating in the general sessions of the Association. It is impossible that the said Medico-Chirurgical College, an institution of high character, could have promised any student to descend from the scale of honor, and to hold down the standard below the requirements it solemnly pledged to observe in 1899 and thereafter.

The AMERICAN MEDICAL ASSOCIATION, at Detroit, June, 1892, unanimously demanded of all the colleges in the United States the adoption and observance of a standard of requirement for the degree of Doctor of Medicine, which should in no manner fall below the minimum standards of the Association of American Medical Colleges. At Denver, on June 9, 1898, the AMERICAN MEDICAL ASSOCIATION unanimously resolved to hereafter deny the right of membership to any professor or other teacher in any medical college which confers the degree of Doctor of Medicine on conditions below the published standards of the Association of American Medical Colleges after Jan. 1, 1895. Those receiving the degree on such conditions are likewise barred. It is clear, therefore, that the College Association must maintain its own published requirements, as these are conditions which shall determine the qualifications of membership in the AMERICAN MEDICAL ASSOCIATION. The Association of American Medical Colleges can not concede to any one of its members the privilege of resigning to fulfill a pledge made as a breach of faith.

It is the judgment of the Council that the resignation of the college can not be accepted, and that the presence of Professor LaPlace as the authorized delegate, and Professor Shoemaker as an associate, and their participation in the general sessions of the Association of June 6, 1898, directly contradict the statements of Dean Egbert in his letter of resignation.

(Signed by) DUDLEY S. REYNOLDS,
STARLING LOVING,
JAMES H. ETHERIDGE,
ALBERT R. BAKER,
RANDOLPH WINLOW,
VICTOR C. VAUGHAN, absent in Cuba;
JOHN B. ROBERTS, failed to report.

Mississippi Valley Medical Association.—The following is the preliminary program for the meeting at Nashville, October 11-14, 1898:

Why I have Abandoned the General Practice of Vaginal Hysterectomy. B. Sherwood-Dunn, Boston, Mass.

Tonillitis or Quinsy, Causes and Treatment. J. A. Stucky, Lexington, Ky.

Pichi. H. W. Whitaker, Columbus, Ohio.

A Few Practical Points in the Treatment of Posterior Urethritis. A. Ravogli, Cincinnati, Ohio.

The Neuro-Hypothesis of Rheumatoid Arthritis. Frank Parsons Norbury, Jacksonville, Ill.

Diphtheria and its Logical Treatment. A. M. Oness, Dayton, Ohio.

Varicocele. F. E. Kelly, LeMoille, Ill.

A Plea for Pelvic Peritonitis and Cellulitis. F. F. Bryan, Georgetown, Ky.

Syphilis. John M. Batten, Pittsburg, Pa.

Gonangeiectomy and Orchidectomy for Hypertrophied Prostate in Old Men. Geo. W. Johnson, Dunning, Ill.

Wounds of the Lachrymal Apparatus, Report of Operation for Restoration of Canaliculi Obliterated by Traumatism. Geo. F. Keiper, Lafayette, Ind.

A Consideration of the Limit to Operative Gynecology. Shelby C. Carson, Greenboro, Alabama.

The Relations of the Gynecologist and the Neurologist. W. H. Humiston, Cleveland, Ohio.

Intermingling and Changing of Type in Diseases. W. Gaston McFadden, Shelbyville, Ind.

Mercury and Its Action. William F. Barclay, Pittsburg, Pa.

The Diagnosis of Gonorrhoea in Women. J. Riley Eastman, Indianapolis, Ind.

Sub-Periosteal Removal of Caries from the Pelvic Basin, with the Report of Cases. S. E. Milliken, Dallas, Texas.

Complete Inspection of the Rectum by Means of Newer Mechanical Appliances. Thos. Chas. Martin, Cleveland, Ohio.

Hydrotherapy in Stomach Diseases. Geo. D. Kahlo, Indianapolis, Ind.

Surgical Treatment of Infantile Paralysis. Alex. C. Wiener, Chicago.

Suprapubic Cystotomy vs. Perineal Section. James M. M. Parrot, Kingston, N. C.

Report of Cases in Obstetrics with Complications. R. C. Pratt, McKenzie, Tenn.

How Should We Treat Typhoid Fever? T. Virgil Hubbard, Atlanta, Ga.

Interesting Surgical Cases. M. Goltman, Memphis, Tenn.
The Relationship between the Genito-urinary Tract and Rectum, with Special Reference to the Female. John L. Jelks, Memphis, Tenn.

A Clinical Contribution to Ectopic Gestation. W. W. Taylor, Memphis, Tenn.

The Bicycle from the Medical Standpoint. I. N. Love, St. Louis.

Surgical Treatment of Pus in the Pelvis. Jos. Price, Philadelphia, Pa.

Operations on the Mastoid, When and How Performed. Andrew Timberman, Columbus, Ohio.

Arthritic Diathesis. R. A. Bate, Louisville.

Diagnostic and Therapeutic Uses of Tuberculin. Chas. W. Aitken, Flemingsburg, Ky.

Some Pathologic Conditions of the Ovaries and Adnexa Causing Pain. G. W. Halley, Kansas City, Mo.

American Association of Obstetricians and Gynecologists.—This Association will hold its eleventh annual meeting at Pittsburg, Pa., Sept. 20, 21 and 22, 1898. The following program is announced:

President's Address, Charles A. L. Reed, Cincinnati.

Septic Infection of Ovarian Cystoma, Charles Greene Cumston, Boston.

Recent Experiences with the Alexander Operation, H. E. Hayd, Buffalo.

Nursing in Abdominal Surgery, Joseph Price, Philadelphia.

Carcinoma of the Breast, W. F. Westmoreland, Atlanta.

Operative Technique for Intraligamentous Ovarian Cystoma, D. Tod Gilliam, Columbus.

Organization of Major Operations in Private Practice, W. G. Macdonald, Albany.

Explanation of the Character of the Temperature in Appendicitis, Robert T. Morris, New York.

Pathologic and Clinical Phases of Gall-Stone, A. H. Cordier, Kansas City.

Some Facts in Regard to Uterine Fibroids, H. D. Ingraham, Buffalo.

Albuminuria Complicating Gynecologic Operations, Rufus B. Hall, Cincinnati.

Extrauterine Pregnancy with Specimen; Mature Fetus Borne Twelve Years, W. J. Asdale, Pittsburg.

Surgical Treatment of Morbid Conditions Involving the Broad Ligaments, A. P. Clarke, Cambridge.

Paper by Walter B. Dorsett, St. Louis.

A Second Paper on the Surgical Treatment of Intussusception in Infants, with Cases, H. Howitt, Guelph, Ont.

Relation of Nervous Affections to Diseases of Female Pelvic Organs, B. Sherwood Dunn, Boston.

Ureteral Anastomosis, Geo. H. Noble, Atlanta.

The Graver Forms of Nerve Disturbance due to Organic Changes in the Genital Organs, W. H. Humiston, Cleveland.

Some of the Complications Following Vaginal Hysterectomy-Salpingo-oophorectomy in Pelvic Suppuration, F. Blume, Allegheny.

The Question of Intra-abdominal Drainage, Edwin Walker, Evansville.

Report of a Case of Double Uterus and Vagina with Pregnancy in one Horn; Excision of Vaginal Septum, F. Blume, Pittsburg.

Some Clinical Observations, Based on Over 100 Abdominal Sections for Ovariectomy, X. O. Werder, Pittsburg.

Remarks on Methods of Hemostasis, with Demonstration, Walter B. Chase, Brooklyn.

Past and Present Surgery of the Gall-bladder and Bile-ducts, William H. Myers, Fort Wayne.

Treatment of Granular Erosion of the Cervix by Ligature of the Cervical Vessels, D. Tod Gilliam, Columbus.

Relation of Rectal to Pelvic Disease and to Nervous Disorders in Women, Joseph M. Mathews, Louisville.

Treatment of Endometritis, William A. B. Sellman, Baltimore.

Tubercular Peritonitis, J. B. Murphy, Chicago.

BOOK NOTICES.

Diseases of Women: A Treatise on the Principles and Practice of Gynecology for Students and Practitioners. By E. C. DUDLEY, M.D. Octavo, pp. 637. Philadelphia and New York: Lee Bros. & Co. 1898.

Professor Dudley's work is the result of long years of study and observation and this fact must carry with it a certain

authority. The book fairly covers the field of gynecology, and is divided into five parts. Part I is given to the general principles of gynecology, such as psychologic periods in the life of women, aseptic and antiseptic diagnosis, local treatment, major and minor operations, drainage and after treatment, relations of dress; Part II is given to inflammations of the female generative organs, including the pelvic passage; Part III to tumors, tubal pregnancy and malformation; Part IV discusses traumatism, both nonpuerperal and puerperal, and Part V displacement of the uterus and other pelvic organs.

The teachings of the author are sound and conservative; the illustrations are clear, many of them original, and the book as a whole constitutes a valuable contribution to the subject. The author's personal contributions to gynecologic literature have been extensive, and the resulting work may be taken as a finished product of his life experience.

History of Yellow Fever; Indispensable Facts Pertaining to Its Origin and Cause, and Its Present Artificially Acquired Habit, with Reasons Going to Show the Possibility of Its Complete Extinction from the Globe; Its Nature, Anatomic Characteristics, Symptoms, Course and Treatment, with an Addendum on its Twin Sister, Dengue, containing a Parallel Table of the Most Prominent Symptoms of each Disease. By W. L. COLEMAN, M.D. Pp. 141. Houston, Texas.

This book comprises the results of forty years' active work in the South and personal experience in passing through several epidemics of yellow fever. It is pleasantly written, and many of us will notice with pleasure the frequent reference to names of well-known epidemiologists. The anecdotes in the book are well told, and whether or not one agrees with the optimistic views of the writer in regard to the prevention and ultimate extinction of the disease, he will at least derive pleasure from a perusal of the book.

A Guide to the Clinical Examination of the Blood for Diagnostic Purposes. By RICHARD C. CABOT, M.D. With colored plates and engravings. Third revised edition. Pp. 452. Octavo. New York: William Wood & Co., 1898. Price, in cloth, \$3.25.

We have heretofore mentioned in terms of praise the appearance of successive editions of this estimable volume. The present edition has had about forty pages of new matter added, in which is an account of Professor Oliver's tintometer and hemoglobinometer, new matter on the primary anemias and on leukemias, also a description of Muller's "blood dust," new observations on poisoning by alcohol, opium, corrosives and ptomaines, on aneurysms, on paroxysmal hemoglobinemia and on cretinism. The general plan of the book remains the same as heretofore. It is indispensable for practitioners who desire to keep abreast of the newer methods of clinical diagnosis, and is wholly a credit to American medical literature.

Laboratory Work in Physiological Chemistry. By FREDERICK G. NOVY, Sc.D., M.D. Second edition, revised and enlarged. Pp. 326. Ann Arbor: George Wahr, 1898.

This edition is, as stated on the title page, enlarged and revised, so much so as to almost constitute a new book. Every medical student should receive laboratory instruction, and this work will be indispensable in the examination of food stuffs and the fluids and secretions of the body. Indeed, modern physiology requires so much experimental work for its proper understanding that the intelligent reading of a modern text-book is scarcely possible unless one keeps posted in the operations of the laboratory.

Transactions of Forty-eighth Annual Meeting, with Constitution and By-Laws, of the Illinois State Medical Society, held in Galesburg, May 17, 18 and 19, 1898. Pp. 530. Ottawa Free Trading Printing house, 1898.

This volume contains, besides a record of the proceedings, the addresses and papers read before the Society, list of officers, place of meeting, list of members, officers of sections and committees. The Secretary is to be congratulated upon the early appearance of the transactions, the careful editing and excellent makeup. We regret that the speeches at the

annual dinner were not reported, but otherwise there is little room for criticism. The papers are generally excellent and show a high grade of work.

The Sanitary Institutions of the imperial Government of Japan. Paper. Pp. 103. Published by the Central Sanitary Bureau of the Home Department, Yokohama, 1898.

The five parts of this volume deal respectively with: "The Organization of the Sanitary Institutions," "Institutions as to the prevention of Infectious Diseases," "Institutions for Vaccination," "Public Health Institutions," and "Medical Institutions." The arrangement and classification of the topics under these several heads is clear and the various chapters contain much information as to the sanitary institutions of Japan.

Proceedings of the Association of American Anatomists. Paper. Illustrated. Pp. 142. Washington, D. C. 1898.

This volume contains the proceedings of the tenth annual session of this Association held at Cornell University, Ithaca, N. Y., Dec. 28-30, 1897, and an appendix containing a list of members. It also contains the Constitution, officers for 1897-98, a report on anatomic nomenclature, and various papers and discussions.

PAMPHLETS RECEIVED.

Bronchial Carcinoma; The Question of Operative Interference in Recent, Simple Fractures of the Patella. By Charles A. Powers, Denver, Colo. Reprints.

Calculus Disease and the Treatment best Adapted for its Prevention. By H. Foster Hazlett, Pueblo, Colo. Reprinted from Therap. Gaz.

Carcinoma of the Stomach, Retrogressive Lymphatic Transport, etc. By W. C. F. Witte, Milwaukee, Wis. Reprinted from Phila. Med. Jour.

Catalogue of Law, Medical and Dental Departments of the National University, Washington, D. C.

Cataract Operations. By L. Webster Fox, Philadelphia, Pa. Reprinted from International Clinics.

Colorado College of Dental Surgery, Third Annual Announcement. Denver, Colo.

Curvature of the Neck of the Femur, Sometimes Called "Coxa Vara." By Charles H. Frazier, Philadelphia, Pa. Reprinted from Annals of Surg.

Disease as Described in Literature. By Cephas L. Bard, Ventura, Cal. Reprinted from Pacific Med. Jour.

Diseases of the Eye Caused by Diseases of the Nose. By Allen T. Haight, Chicago, Ill. Reprinted from Jour. Am. Med. Ass'n.

Georgetown University School of Medicine: Circular of Information, Washington, D. C.

Influence of Antitoxin in Treatment of Laryngeal Diphtheria with and without Intubation. By Edwin Rosenthal, Philadelphia, Pa. Reprinted from Md. Med. Jour.

John A. Creighton Medical College Announcement. Omaha, Neb.

Johns Hopkins Medical School, Baltimore, Md. Sixth Annual Announcement.

Kephir. By C. D. Spivak, Denver, Colo. Reprinted from N. Y. Med. Jour.

Kryofine. By John H. Curtis, Chicago. Reprinted from Therap. Gaz.

Medico-legal Significance of the Physical and Mental Examinations of Railway Employes. By Granville P. Conn, Concord, N. H. Reprinted from Railway Surgeon.

New York Post-Graduate Medical School and Hospital. Announcement. New York City.

Physical Characteristics of 10,000 Men. By Lieut.-Col. Charles Adams, Chicago, Ill. Reprinted from Med. Standard.

Precocious Cerebral Syphilis. By W. F. Wegga, Milwaukee, Wis. Reprinted from Trans. of the State Med. Soc., 1898.

President's Address before Med. Soc. of Pennsylvania. By W. Murray Weidman, Reading, Pa. Reprinted from Penn. Med. Jour.

Remarks at the Presentation of the Candidates for the Degree of M.D. at the Commencement of the Johns Hopkins University, June 14, 1898.

By William H. Welch, Baltimore, Md. Reprinted from Johns Hopkins Hosp. Bul.

Renal Calculus; The Diagnostic Importance of Fever in Late Syphilis; The Essential of the Art of Medicine. By J. H. Musser, Philadelphia, Pa. Reprints.

Sanitarium Treatment of Pulmonary Tuberculosis. By J. Edward Stubbert, Liberty, N. Y. Reprinted from N. Y. Med. Jour.

Sectarianism in the Medical Profession. By G. W. Brooke, Ellsworth, Ohio. Reprinted from Cleveland Jour. of Med.

Some Results of the Administration of Thyroid Extract on the Corpuscles and Hemoglobin in Anemia Associated with Melancholia. By Samuel Bell, Newberry, Mich. Reprinted from Physician and Surgeon.

Sauvenir Magazine, Ann Arbor, Mich.

State Control in Medicine. By J. W. Pettit, Ottawa, Ill.

Tuberculin Test in Cervical Adenitis. By Edward O. Otis, Boston, Mass. Reprinted from Med. News.

University of Colorado, Summer Bulletin. Boulder, Colo.

University of Oregon, Medical Department. Annual Announcement. Portland, Ore.

Western Reserve University Announcement. Cleveland, Ohio.

TRADE PAMPHLETS.

Illustrated Catalogue of Orthopedic Apparatus. W. F. Ford & Co., New York City.

Jewell Water Still, The. O. H. Jewell Filter Co., Chicago.

Lactopeptine Desk Calendar. New York Pharmaceutical Association, New York City.

Palmyra Springs Sanitarium. Dr. L. H. Prince, Palmyra, Wis.

Price List of Bayer's Pharmaceutical Products. Forbenfabriken of Elberfeld Co., New York City.

Price List of H. K. Mulford & Co., Philadelphia.

Red Cross Notes. Johnson & Johnson, New Brunswick, N. J.
Steuben Sanitarium, The. Dr. J. E. Walker, Hornellsville, N. Y.
Surgeons-General of the U. S. Navy. Series I. Maltine Company, New
York City.
The Glen Springs, Watkins Glen, N. Y.
The Ship's Doctor, Arlington Chemical Co., Yonkers, N. Y.
Ypsilanti Mineral Bath House. Ypsilanti Mineral Bath Co., Ypsilanti,
Mich.

NECROLOGY.

FRANCIS WALTON TODD, M.D., was born at Bardstown, Ky., April 17, 1816, and was educated at Illinois College, Jacksonville, Ill. In March, 1838, he was graduated in medicine at Cincinnati College under the tutelage of Drs. Drake, Willard Parker, Fash McDowell and Samuel D. Gross, and in 1839 he went to Port Gibson, Miss., where he practiced his profession until February, 1847, when he joined the army of General Scott as an assistant-surgeon, and made the campaign to the city of Mexico. After the close of the war he resided in New Orleans until the spring of 1849, when he went to Panama, and was employed by the chief engineer superintendent of the railroad, then building, to take care of his sick, which he did until the steamer *Panama* came around from New York, on which vessel he went to California, arriving at San Francisco June 4, 1849. For several years he resided at Todd's Valley, Placer County, and to the practice of medicine he added horticulture and viticulture in which he was successful, but the mines having become exhausted, and the population gone to other pursuits, together with his remoteness from market he gave away a property that had cost him a large sum and removed to Stockton, where he gave twenty years to medicine, except three years spent in Europe. During this time he held, for several years, the office of member of the first State Board of Health, was a delegate to the International Congress in 1876 at Philadelphia, was one year the secretary, three years a vice-president, and one year president of the State Medical Society of California, president of the Board of Health of Stockton, for two years president of the San Joaquin Society of California Pioneers, and as long as the Society existed was secretary of the San Joaquin County Medical Society. Retiring at the age of 72 years, from a laborious practice, he sought ease in retirement at Coronado, Los Angeles, and other resorts. Dr. Todd was a mason and knight templar and died at Capitola, Cal., Aug. 5, 1898, strong in the faith of the Christian religion.

LAWRENCE S. SMITH, M.D., major and surgeon of the First Regiment Penn. Vol. Infantry, died at sea, on the hospital ship *Relief*, August 17, of typhoid fever. Major Smith was 32 years old, and since 1894 has been in general medical practice at 133 South Eighteenth Street, Philadelphia, Pa., devoting special attention to gynecology. He was educated at the Cheltenham Military Academy, subsequently entering successively the College and Medical Departments of the University of Pennsylvania, from which he graduated in 1891, then serving eighteen months as resident physician, the time being divided between the Pennsylvania Hospital and the University Hospital. From the latter he went to Germany, and studied at Gosttingen for two years. At the outbreak of the war with Spain he was surgeon major of the First Regiment, and was mustered into service with that command at Mt. Gratra. While at Chickamauga he was ordered to Newport News, to accompany the Porto Rican expedition as surgeon of the First Army Corps, and contracted typhoid fever at Ponce.

JOHN F. MORSE, M.D.—On August 23 San Francisco witnessed the funeral of one of her ablest surgeons, John F. Morse. He was a native Californian, graduated from the old Medical College of the Pacific in November, 1878, and had practiced surgery in San Francisco almost continuously since that time. For some years he was connected with what was then known as the Morse Clinic of the Cooper Medical College, the clinic having been established by his father. A few years ago there arose a difference of opinion between Dr. Levi

C. Lane, who controls the Cooper Medical College, and Dr. Morse, which resulted in Dr. Morse severing his connection with the clinic. Dr. Lane thereupon changed the name of the clinic from the "Morse Clinic" to the "Cooper College Clinic." Dr. Morse shortly afterward was appointed chief surgeon to the German Hospital, which position he filled with eminent satisfaction up to the time of his death. He was an intense student, a brilliant, clever and capable operator, a hard worker, and a man of sterling honesty. No surgical proceeding or possibility, which offered the slightest prospect of relief for his patient, was too difficult or appalling for his deft fingers or his clear, cool thinking. He was a member of a number of lodges and societies, and at the time of his death an active member of the Board of Health of San Francisco. The funeral was held under the combined auspices of those various organizations. Though his home and his work were in San Francisco, his name and his fame were confined to no City and no State in our country, nor to our country alone. He died after an illness of about ten days, from cerebral hemorrhage following a collapse from overwork. His life was a living illustration of the three factors which should actuate every physician: Honesty, thoroughness, and persistent, indefatigable application.

JOHN S. GRIFFIN, M.D., a pioneer physician and a public-spirited citizen, who founded East Los Angeles, and whose sheep once roamed in thousands over his ranches in San Pasqual, now Pasadena, died at Los Angeles, Cal., August 24, aged 82 years. Through the history of Southern California for the past half-century runs the thread of his life. He received his medical education at the University of Philadelphia, and practiced several years in Louisville, Ky., being appointed assistant-surgeon in the army in 1840. After service in Florida, he was with General Kearney in 1846, when he entered Santa Fé at the outbreak of the Mexican War, going to San Diego, Cal., Dec. 10, 1846.

JOSHUA P. ARTHUR, M.D., Laredo, Texas, August 19, aged 58 years.—Harvey S. Baker, M.D., Bradford, Pa., August 17.—C. B. Belt, M.D., Boston, Mass., August 23, aged 51 years.—D. W. Boyd, M.D., Yoakum, Texas, August 18.—N. Chapman, M.D., Washington, D. C., August 16, aged 58 years.—G. A. Henry, M.D., Detroit, Mich., August 19, aged 35 years.—C. M. Hibbard, M.D., St. Louis, Mo., August 22.—Caleb C. Johnson, M.D., Hillsdale, Mich., August 28, aged 84 years.—W. D. Lonergan, M.D., Rogers Park, Chicago, August 28, aged 57 years.—E. G. Moore, M.D., Spring Valley, Ill., August 11.—John Morehead, M.D., Dixon, Ky.—John Borland Wallace, M.D., Detroit, Mich., August 21, aged 48 years.

PUBLIC HEALTH.

Yellow Fever in the South.—According to press dispatches of August 25, Dr. Carter of the United States Marine Hospital Service, who has been stationed at Franklin, La., declares the case previously reported there as suspicious to be genuine yellow fever. This is the second case reported at Franklin.

Barbers Preparing a Bill.—According to the *Chicago Record* of August 25, the barbers and some of their friends in the medical profession will prepare a bill to present to the legislature, which, if it becomes a law, will require barbers to disinfect all tools, towels, sponges, brushes and whatever articles may be required in the pursuit of their business. Under this law nothing but strictly antiseptic barber shops will be allowed in Illinois. The bill will provide that all barber shops shall be under the control of the State Board of Health, and each pay a license of \$10 a year. The license shall only be granted after a thorough examination of the applicant's shop has been made and its sanitary conditions approved. Each individual barber shall also pass an examination as to his knowledge of the trade and as to his knowledge of the use of disinfectants. The barber shall also have worked at his trade a certain number of

years. The tools, brushes, towels and other articles in use in the shop must be thoroughly sterilized after being used, according to regulations the Board of Health may make.

Polluted Passaic River.—According to the *New York Herald*, it looks as if nothing less than a little infusion of state socialism would be required to settle the question of disposing of the Passaic river water-supply over in New Jersey. The welfare, the health and the lives of 600,000 of the suburban residents of New York are involved in keeping the Passaic river pure, yet the utmost that the state of New Jersey has done to protect these interests has been to appoint a Commission to see what can be done about it. Without waiting for the action of the Commission, the East Jersey Water Company has made arrangements to draw off most of the water-supply from up stream in order to sell it to its customers; and this has called out a protest from the interests lower down, which are using the river as a sewer and which are afraid that there will not be enough water left to flush their sewage. Such a condition of affairs is a menace to the public health and an insult to the public intelligence, but it only represents the average result of a contest between franchise-grabbers and stream-polluters on one side and the people on the other.

Sanitation of Havana—Sewerage the Prime Necessity.—A writer in the *Watchman* points out what must be done to make Havana habitable. It has often been stated that if a canal should be cut from the bottom of the cul-de-sac which forms the Harbor of Havana, through to the sea, the sanitary condition of the city would be enormously improved. Doubtless such a canal would do something, but probably not so much as is commonly supposed. The most unwholesome wards in Havana, he says, are not those that front the harbor, but those which front the sea. The entire city must be repaved and a complete system of sewers constructed, with a pumping-station for discharging sewage into the ocean. When Havana becomes a city of the United States all this will be done. It will cost millions upon millions, but one of the principal plague-spots of the western continent will be cleansed, and incidentally the work will afford a series of fat jobs to the public officials and contractors. It will be interesting to observe whether the same system is followed in Havana that prevails in most of our cities, where streets are paved and sewered, *i. e.*, pave them thoroughly and then tear up the pavement afterward to put in the sewers.

A Traveling Show Spreads Smallpox in Ohio.—The July issue of the *Ohio Sanitary Bulletin* reports an outbreak of variola in that State, beginning in the early part of May, at Delphos, in Van Wert County. The infection is believed to have originated from a traveling dramatic show, some members of which were found out to have been affected with some eruptive disease. The first townsman to have the smallpox had attended the show, and was about the cars, carrying the show-people, while they were being unloaded. Fifteen days later he came down with the disease. Several other mild cases followed and these were mistaken for varicella, the usual story. In June the State Board of Health was called upon to make an investigation, and on July 1 it was known that not less than twelve cases of the disease had been recognized and reported upon, as the law directs. Up to July 15 there had been three other cases reported at that place. The local health authorities were at first negligent in enforcing quarantine, and many people were exposed to the disease. At present rigid measures are being enforced, which, it is hoped, will prevent its further spread. At Van Wert, which is near Delphos, two boys were taken sick about the middle of May, with what was called chickenpox. These boys had been to Delphos and were probably exposed there. The true nature of the disease was not recognized until a third case of smallpox developed on June 23. Consequently many persons were exposed to the first two cases. From that

time on, the Board of Health, realizing the gravity of the outbreak, has been very active in enforcing proper restrictive measures. On June 29 an investigation was made by the State Board of Health, and five cases, counting the two cases called chickenpox, had developed at Van Wert. To July 15, eight cases were reported. The case near Bays, a woman who came from Pennsylvania, was taken ill shortly after her arrival at her brother's house. This case was well isolated, and but few persons have been exposed. July 14 the brother of this patient was reported as having the disease.

Water-Supply of Philadelphia.—A report by Dr. Benjamin Lee, of the Pennsylvania Board of Health, has been made, setting forth some of the most flagrant examples of fouling of the Schuylkill sources of the water-supply of Philadelphia. The report is based on the results of a recent tour of inspection made in April and May. Dr. Lee was accompanied by Drs. A. G. Abbott, Geo. Woodward, R. L. Pitfield, a photographer, and others. The banks on either side of the Schuylkill were carefully examined, as well as the outlets of sewers and streams, and samples of water were taken for examination at the various points of pollution. The place at which the most serious pollution was found was near Lafayette station and Shawmont, near the pumping station of the Germantown water-supply; Mill Creek, Rose Glen, and Gulf Creek.

"At Conshocken, both the canal and Schuylkill River were found to be receiving many kinds of filth. At Plymouth Creek pipes were found conveying sewage laid under the water-quarter across the canal, and discharging themselves into the water, which presented the appearance of indigo-blue mixed with tar. The odor was such that the committee were compelled to turn away. From this point all the way to Bridgeport the water was thick with decaying vegetable matter and refuse thrown from the houses, and the stench arising therefrom was almost unbearable. Numerous refuse-heaps also drained into the stream. The committee found that the farther it went up the canal the worse became the pollution. Not only were no means whatever taken to prevent the household drainage and human excreta from entering the river, but apparently nothing was left undone to perfect arrangements for the conveyance of such matter to the canal. All seemed to consider the canal a common receptacle for everything they wanted to get rid of which might cause disease if allowed to remain on land. Added to this were the washings from several dyeing factories.

"Pottstown, which for many years past has been considered one of the chief sources of pollution, was found to be contributing largely. A large population of Hungarians living in huts along the creek on property owned by one of the large manufacturing firms, made use of the stream as a receptacle for garbage and refuse of every description. The privies for these people had been placed by the owners of the mill on bridges and platforms directly over the water. In addition to Manatawny Creek, which at a number of points was badly polluted, are Tan Yard Run and Hubbins Run, both of which discharge into the river an immense quantity of house drainage. Nearly all of the houses of Birdsborough were found to drain into the canal and into Hay Creek, which empties into the Schuylkill. The inspection was concluded at Reading. Samples of water at many points were taken. This city has, at great expense, in compliance with the recommendations of the State Board of Health, introduced a sewage purification plant which, although still to a certain extent on trial, is doing excellent work. The sand which is scraped from its surface, however, is deposited at a point where, in heavy rains, drainage from it may reach the stream. A plan is in contemplation for roasting this sand so that it may be used again. While the conditions above described indicate pollution of this stream of the most serious and fatal character, yet your Secretary could not but be impressed with the fact that many large manufacturing establishments, which formerly employed thousands of operatives and the filth from which immediately entered the stream, are now standing idle. This is owing in some instances, as for instance in the case of the iron works, to the fact of a direct falling off in the business, in others, as in the case of paper mills, to the fact that modern machinery is of so much greater weight than formerly used that the buildings are not sufficiently strong to support it. There are undoubtedly many other streams in the State used as sources of water supply for domestic purposes which are equally as badly polluted as the Schuylkill. This fact, together with the demonstration afforded by the city of Reading of the possibility of purifying sewage on a large scale, should make an argument in favor of stringent legislation against river pollution."

NEW INSTRUMENTS.

A PRACTICAL ADJUSTABLE NOSE GUARD.

BY ALBERT B. HALE, M.D.
CHICAGO, ILL.

It sometimes falls to the lot of the practicing ophthalmologist to furnish eyeglasses as well as the prescription for the lenses. In such cases I have seen no advantage in keeping a large jeweler's stock of frames and nose-pieces, and I have tried to content myself with one pattern of simple nose guard, which could be ordered or fitted in the office, to suit nearly any nose and purpose required. This device has been manufactured at my suggestion by Edw. Allen and Co., opticians, of Chicago;



No. 1.



No. 2.

it fully warrants the term "adjustable," being so constructed that it may be adapted to the positions met by different styles of nose-pieces. The cuts show the adjustments: No. 1 is a face view showing how the guard has a lateral movement; No. 2 is a side view with its forward and backward movement.

As office furniture, particularly for the out-of-town doctor who does not always have an optician at hand, I know of nothing that seems to serve its purpose so well.

MISCELLANY.

A Singular Bequest.—The will of the late Dr. Theodore H. E. Gruel a graduate of the Jefferson School, class of 1867, which was admitted to probate in Philadelphia lately, contains this clause: "My niece, Mrs. Bertha Lutz, shall have all that is pertaining to the family of Gruel. I wish that she should take great care of a basket containing the hair of members of my family for a hundred and fifty years back."

Endothelioma of the Cervix Uteri.—In the *Johns Hopkins Hospital Bulletin* for August, Hundon adds a third case to the two already reported in medical literature. The uterus and upper part of the vagina was removed, with extensive tissue at the base of the broad ligaments. The growth had extended beyond possibility of complete removal before attention was drawn to it and the patient died on the fifteenth day, of sepsis.

Cured by Laparotomy Alone.—Lejars reports two new cases of tubercular peritonitis permanently cured. In one the symptoms presented the picture of intestinal occlusion; in the other, those of appendicitis with general peritonitis. Tubercular lesions were found when the abdomen was opened, and it was closed without further interference, followed by the complete subsidence of all trouble.—*Echo Méd. du Nord.*, June 26.

Medical Department of the University of California.—The Faculty held a special meeting on August 18 in order to appoint a committee to confer with the Regents of the State University to arrange for the passing of the control of the Medical Department entirely into the hands of the Regents of the University. No immediate changes in the operation of the school are anticipated. At that meeting, Dr. John M. Williamson, Professor of Anatomy, was appointed lecturer on Surgery, vice Dr. W. E. Taylor resigned.

Official "Pay Courses."—At the *Paris Faculté de Médecine*, official "pay courses" have recently been inaugurated, optional, the class limited to twenty, paying fifty francs each, intended especially for French and foreign physicians. Professor agrégé Hartmann has charge of the course in operative medicine,

which is to be strictly practical; other courses are in contemplation. The innovation has been warmly welcomed, as similar courses have contributed much to the success of the Berlin and Vienna schools.

Woman's Medical College of Pennsylvania.—The *Philadelphia Medical Journal* has been advised that this old and worthy school is to be materially improved by several noteworthy additions. A new wing will be added to the hospital building and a new laboratory building, three stories in height, is to be erected. The basement of the latter will contain a central heat and light plant; the first story will be devoted to a gymnasium and hygienic laboratory, the second to a lecture-hall and a physiologic laboratory, and the third to laboratories of normal and pathologic histology.

Prognostics by Proxy.—It is related of a noted English bishop who had for years nourished the fear that he would some day become paralyzed, that on one occasion at a dinner, he suddenly interrupted the guests at the table by exclaiming that his worst fears had been realized at last; that he was paralyzed in his right lower thigh; that he had been pinching his thighs for some moments and was unable to detect the slightest feeling. A lady sitting next to him assured him that he was mistaken, for it was her limb he had been pinching instead of his, the silk of the lady's dress being difficult to detect from the bishop's robe.—*Philadelphia Medical Journal*.

A Heroic Surgeon.—In the present war our American youths have borne a valiant part, and some of our educated young men who saw battle for the first time fought with such dash and fire that already the action has given character in the eyes of Europe to our American navy. Says one writer: "In the final charge at San Juan deeds of heroism enough were done to fill a volume. One of the men of Troop E, desperately wounded, was lying square between the lines of fire. Surgeon Church hurried to his side, and with bullets pelting all around him, calmly dressed the man's wound, bandaged it and walked unconcernedly back, soon returning with two men and a litter."

St. Athoay's Hospital, a new Catholic institution located at West Nineteenth Street and Douglas Park Boulevard, Chicago, was dedicated by Archbishop Feehan, August 28. The building is four stories high and has a basement. The walls are of Bedford stone and light-colored pressed brick. There is a fine gable at each end and in the center of the front, and from the roof springs a pretentious spire. "Among the commendable features are fireproof construction, elevator service, iron staircases, verandas on the rear court, a complete system of ventilation, and the cheerful appearance of the facade with its covered carriage entrance. The cost, \$85,000, includes \$15,000 for the land. The hospital is the property of the Franciscan Sisters of the Sacred Heart.

Specific Gravity of Urine.—Brown (*Johns Hopkins Hospital Bulletin* for August) reports results of experiments to ascertain the effect of ether anesthesia on the specific gravity of the urine, there being markedly diminished secretion of the solid constituents, but, at least in a certain number of cases, less marked effect on the elimination of water. In a second series of experiments, there was marked decrease in specific gravity, following enemata of normal salt solution, probably due to increase in the quantity of water eliminated rather than lessening of the solid constituents excreted. He suggests "the possibility of giving rectal enemata of normal salt solution or water, to increase the flow of urine, and thereby probably to stimulate diuresis in some affections of the kidney, and as a method of internal irrigation, as it were, in some cases of cystitis."

Scurvy in Children.—Bovaird (*Phila. Med. Jour.* for August 20) groups the cases since 1894, 64 in number, bringing the

total cases in this country to 100. Of these 64 cases, the youngest was six months old, the oldest $2\frac{1}{2}$ years. Four only were over eighteen months of age, and 35 from nine to thirteen months. Of 50 cases in which the sex was noted, 24 were girls and 26 boys. Of the 64 cases, 52 presented a definite gum affection. The gums were normal in 10 and in 2 the record was incomplete. From his tabulations he concludes that: 1. The contention that there is no evidence that scurvy has been caused by sterilized milk must be given up. The evidence here presented is not considered conclusive, but it renders it highly probable that persistent sterilization of the food by boiling may produce scurvy. 2. It must even be admitted that scurvy may develop in nurslings.

Women in the Medical Profession.—The recent German Aerztetag or Congress of Physicians devoted one session to a consideration of this question, finally officially adopting the conclusions of Prof. Pentzold's address; "If women should enter the profession in large numbers, which is however scarcely probable as long as the requirements are the same as for male students, and as long as no special schools are founded to facilitate their studies, the sick would not be materially benefited; it would prove no benefit, to say the least, for German universities and German science; it would detract from the dignity of the profession, and the public welfare would not be promoted thereby. For these reasons it is unwise for medicine to be the first of the learned professions to admit women."

Dellgation of the Innominate Artery.—Dr. J. T. Lewtas (*Indian Lancet*, May 16) reports the successful ligation of the innominate artery for secondary hemorrhage following an injury to the subclavian artery due to the bursting of a gun. The man entered the hospital a month after the injury, complaining of pain and stiffness in the neck and shoulder. Alarming hemorrhage followed the removal of a flat piece of steel, and the man became unconscious from loss of blood. The operation was performed without an anesthetic, and the patient seemed in a hopeless condition. He rallied, however, and made a slow but satisfactory recovery, being able six months after the operation to earn his living as a field-laborer and stating that his right arm is as strong and useful as his left.

The *Philadelphia Medical Journal* makes the above annotation, and adds that while the innominate artery has been deligated a considerable number of times, this case is believed to be the third successful operation.

Diphtheria of the Eye.—McCullum, writing on "Antitoxin in the Treatment of Diphtheria" (*Boston Med. and Surg. Jour.*, for August 18), mentions fifteen cases in which the sight would undoubtedly have been lost except for the heroic administration of antitoxin. In only one of those cases was there destruction of the organ, and this was in abnormal condition at the commencement of the attack. "When a diphtheritic membrane appears in the eye the effect of antitoxin on the membrane can be more carefully studied than when it appears in the pharynx. In some of these cases 2000 units were given as the initial dose, and this was repeated in six or eight hours, if there was not a marked improvement." Except in very young infants, he believes the initial dose should be 2000 units, and in severe cases 4000 units may be given; the more concentrated the better, as the possible source of danger lies in the amount of fluid, and not in the inherent property of the antitoxin.

The Artichoke as a Culture-medium in Microbiology.—Bacterial cultures have been made on almost all vegetables, but the potato and the carrot are the principal ones in daily use in bacteriology. M. Roger has, however, reported to the Society of Biology, at the July meeting, that in his opinion the artichoke possesses several advantageous qualities in this respect. Nothing is more simple than to prepare it for the purpose. After having stripped off the scales the thick part is cut up

into little cubes, care being taken to preserve the fibers (foin). The pieces are placed in tubes plugged with damp wadding, the fibers being uppermost, so that the culture-medium is represented by a fleshy mass surmounted by a sort of tuft. When the wadding is inserted the whole is heated in an oven to 115 degrees C. for a quarter of an hour. In making the inoculation the germs must be deposited at the point of insertion of the flowers.—*London Lancet*, July 30.

Antitoxin Treatment of Tetanus.—Lund (*Boston Med. and Surg. Jour.*, August 18) reviews the treatment with tetanus antitoxin to date, and concludes that: 1. The statistics show a diminution in the mortality, but the cases treated have as yet been insufficient in number, the reports too indefinite, and probably not all fatal cases included. 2. The more careful study shows less evidence that the antitoxin treatment, and not the mild course of the disease, determined the favorable course. 3. In the majority of instances the dose, especially the initial dose, has been too small. 4. The treatment demands further trial. 5. Efforts to secure a stronger product with a sufficiently large initial dose and at the earliest possible moment, directly into the blood-stream will make it more effective. He believes that for immunizing purposes antitoxin has a valuable field, and the treatment should consist of: Thorough disinfection of the primary focus by mechanical means, including, if necessary and practicable, amputation; the thorough local employment of such chemie antiseptics as have been shown to destroy both the bacilli and the toxin; symptomatic treatment by sedatives, etc.; thorough diuresis; intravenous injection of an amount of antitoxic serum which shall contain at least 500 antitoxic units, at the earliest possible moment.

Hemorrhage Following Tonsillotomy.—Zimmermann (*Archives of Otolaryngology* for August) says that tonsillotomy should never be performed in certain constitutional affections, as in hemophilic persons or those who for any reason have a tendency to bleed profusely, or in hypertrophy of the left ventricle; hemorrhage occurs more frequently in adults than in children. In acute inflammation it should not be performed, hyperemia being present and a greater tendency to bleeding. After the operation the patient should keep quiet, avoid alcoholics, not use his voice, not travel, and not eat solid food for several days. Gargling with cold water is good after the operation, but not for too long a time, as it may interfere with the formation of thrombi. After the bleeding ceases, dust the surface with iodoform mixed with tannic acid. In persistent hemorrhage, resort to the Paquelin thermocautery, or a thick probe made redhot. Cauterization not being successful, he grasps the bleeding spot with an artery forceps which he leaves in place for a while and then makes torsion. "In all cases of severe bleeding after tonsillotomy the patient ought to be kept in an erect position, so that by the resulting anemia of the brain he is apt to faint, as a spontaneous restraint of the bleeding has been observed in cases in which an attack of syncope occurred."

Anecdote Concerning Dr. William Pepper.—The *Philadelphia Medical Journal*, August 6, tells the following incident of his later life, tending to show the heroic temperament and habits of its subject. The writer says: "We are enabled to put on record a pretty little incident that occurred within the past few months which is related in illustration of the character of the man. A visitor calling upon him found him asleep in his office. He opened his eyes and gave a cheerful though weary greeting. At this moment a boy brought in a letter. Without rising, Dr. Pepper read it and handed it with the attached slip of paper to his visitor with the remark, 'This is the sort of thing that is killing me.' When the visitor read the slip, which was a check for \$10,000 for one of Dr. Pepper's numerous works of beneficence, he said, 'Most men would be made very much more alive by such work as this of yours.' 'Each endowment I get costs me so much life.' To the further ques-

tion why he should not prolong his life by working less intensely and constantly, he half contemptuously said, 'If the same work is done in ten years for which others take thirty, it is in reality doubled, and more than doubled.' It was the public duty upon which his eye was ever fixed, and everything, even his own life, certainly his own selfish interest, must be sacrificed to the noble cause. He might be called our greatest institution builder. He was assuredly Philadelphia's best friend and greatest citizen."

The Fool on a Cycle.—In spite of the object lessons which inquests on cyclists give, and in spite of police prosecutions, the number of cycling accidents increases, while it is evident that the majority of the casualties follow upon reckless riding. The most common cause of disaster is want of caution in descending hills. The effort of the National Cyclists' Union to prevent accidents by placing notice-boards at the top of all dangerous hills is treated with contempt by many cyclists, who regard such boards as a playful invitation to "coast" to the bottom. In a recent inquest held at Hull, the coroner is reported to have said that if cyclists persisted in disregarding notices which were exhibited for their personal safety it might be necessary for the protection of the public to require all cyclists to dismount on going down hills which were marked "dangerous," and to inflict a heavy fine in every case where the notice was disregarded. We quite agree. "Put a fool on a cycle and he will ride to destruction," makes a very good reading of an old saw, and describes a situation which we can regard with equanimity. But when the fool on his way to his proper destination thinks well to smash into other people it is time to put a limit to his folly.—*London Lancet*, August 6.

The Histopathology of Herpes Iris.—Dr. L. C. Pardee in the *Bulletin of the Johns Hopkins Hospital* for July reports two cases of this disease, with the results of a close study of its pathology. His report shows that the histopathology may be summarized as an acute exudative inflammation of the upper half of the corium, with dilatation of the superficial network of blood-vessels and lymphatics (the latter being slight), accompanied by a considerable emigration of polynuclear leucocytes, which in one case became almost immediately disintegrated after leaving the capillaries of the papillæ. The latter, as the process extended, became practically filled with nuclear detritus, and, by the confluence of neighboring papillæ similarly affected, the vesicle was formed. This phenomenon of nuclear fragmentation does not appear to have been noted by any previous observer. In both cases the vesicle was formed by the lifting of the entire epidermis from the papillary body, the former becoming compressed over the vesicle in Case 1 and in Case 2 appearing swollen and edematous, and showing more or less dilatation of the inter-epithelial spaces and detachment of the cells of the basal layers of the epithelium. The contents of the vesicles were always the same, and consisted of coagulated serum, polynuclear and mononuclear leucocytes, occasional detached epithelial cells, strands of fibrin, and in Case 1 much nuclear detritus. No infarcts of blood-vessels and no hemorrhages were noted. The sweat apparatus, hair follicles and sebaceous glands were unaffected.

The Typewriter.—Bizzozzero in Italy, and other foreign writers, have recently been extolling the typewriter as almost a necessity for every professional man, comparing the easy, erect attitude at the machine with the position in writing; fingers and arms cramped, body stooping and pressed against the desk or table. The injurious effects are particularly noticeable after a hearty meal, or with failing eyesight. The typewriter does not strain the eyes; with practice it is possible to use it in the dark. The time saved is also a great advantage, as much less time is required to typewrite the same amount of matter. The blind were among the first to recognize the utility of the typewriter. A light, inexpensive one is now made for them to com-

municate with each other in the dot language used among them, and the same machine, made heavier, with a pedal attachment, stamps a brass plate, from which any number of copies and books can be printed. The physician also requires a light, compact, easily cleaned, durable and comparatively inexpensive typewriter. These advantages are only to be secured with a steel type-wheel machine. The types are all on one small steel spool, which can be taken out and cleaned in a moment. They are made interchangeable, with or without medical characters, and in any language. Another advantage of this style is that the machine automatically stops printing when the end of the line is reached. Many a physician has been enabled to lengthen and utilize his much-needed vacation by having his portable typewriter with him, catching up with his correspondence and "getting up those papers" for which he has been collecting notes. Where speed is not an object, no skill is required to run the machine; hesitating work and trembling fingers do not affect the printed copy, and writers all find after a little practice that literary work is much facilitated by composing on the typewriter, which shows each sentence in print. The *Presse Méd.*, recently asserted that "all American physicians now have typewriters in their offices for their personal use" which exaggerated statement we can accept as the customary tribute to our Yankee "appreciation of a good thing when we see it."

Incarceration of the Penis.—Dr. Theodor Floras, principal medical officer of the Anatolian Railway, Constantinople, reports (*Deutsche Med. Woch.*, of July 14) a case of incarceration of the penis. The patient was a railway employe, about 55 years of age, who, presumably while in a state of intoxication, in the presence of a companion, passed his relaxed penis through the aperture of an iron screw-nut, this aperture having a width of only 1.5 centimeters (0.6 in.). The matter was treated as a joke, and encouraged by his companion he forced the nut with a twisting movement until it arrived at the attachment of the ligamentum suspensorium urethræ. He was subsequently unable to remove the nut, but nevertheless went to work that same day and also the next. On the evening of this second day he consulted a surgeon, who drew off his retained urine with a fine catheter, prescribed a diuretic, and directed lead lotion to be applied to the penis. It was only next morning that Dr. Floras saw him, more than thirty-six hours after the application of the nut. The man was then in a state of the greatest alarm and uneasiness; his penis hung down like an enormous, tightly-filled sausage, and the diffuse swelling was so great that it was difficult to find the nut among the infiltrated tissues. Amputation seemed to be unavoidable, but before resorting to it the man was taken to the engineering shop and held by two men in the upright position against a large anvil. The penis, with the square nut encircling it, was then held horizontally on the anvil, a slight cut was made in the nut by a sharp chisel, struck by a hammer, and this cut was cautiously deepened until an iron wedge could be driven into it, whereupon the nut broke in two. The internal screw threads of the nut had sunk into the tissues of the urethra and had caused ulcerative and necrotic changes, but in a few days all these symptoms disappeared, and the man returned to his work. Dr. Floras refers to a somewhat similar case recorded by M. Ameisen, quoted in the *C. für Chirurgie* for 1897, p. 1166.—*London Lancet*, July 23.

Use of the Galvanocautery.—Rice (*N. Y. Med. Jour.* for August 20), in a paper on "In What Conditions of the Nose, Pharynx and Larynx the Galvanocautery Should and Should not be Employed," says: "Cicatrices in the nose are always to be avoided, and should be made as small as possible. The galvanocautery puncture needs to be carefully done with an electrode at not more than a red heat. The point should be introduced cold, and the current turned on perhaps three times while the point is in the same place, until sufficient depth of puncture is ob-

tained. The smaller the diameter of the puncture the better. This method is resorted to in anterior turbinated swellings only after all obstructions pertaining to the septum have been removed. The galvanocautery should never be employed at so great a heat that the opposing surfaces are scorched. There are several abnormalities of the nasal septum which may be corrected with the electric cautery. Small spurs of bone, etc., on the septum may be reduced by a single application of the cautery, sparingly, making a wound not more than one-eighth of an inch in diameter. Where the nasal partition is deviated as a whole, producing marked obstruction in one nostril, it should not be used. The cautery is also of avail as a styptic in some cases of profuse nose bleeding, and prominences of the septum, three-quarters of the way back, can be nicely contracted by the cautery. The use of the cautery loop or écraseur in removing fibrous and semifibrous growths from the vault of the pharynx, he considers the only conditions of the post-nasal space demanding the galvanocautery, its greatest use being in the middle pharynx. It should never be used in the larynx, where few conditions would demand it, except by the experienced.

American Medical Operations in Persia.—Drs. Wishard and Mary J. Smith are at present in charge of the American Hospital and Dispensary at the Persian capital. The hospital is a well-built stone building, laid out on a scale too extensive for the means and force; but the two completed wings, with the well-equipped dispensary just erected, wholly with money given in Teheran, constitute an effective plant. Every day is dispensary day, and the crowds of men and women flock into their separate rooms. The firman under which the hospital was erected, and the customs and prejudices of the country, prevent the reception of women into the hospital. In Tabriz the missionaries feel it necessary to proceed with caution in the establishment of a hospital for women in a residential building, that has already been set apart for that object when the fit time shall have come to occupy it; the popular mind has not yet been educated up to the point of accepting that line of charitable effort. In Teheran, however, the women come in swarms to the dispensary. Dr. Wishard is obliged to act with constant tact and discretion, and under constant limitations caused by the prejudices of the people. For example, on one occasion he removed a tumor from the eyelid of a young woman, who, with the aid of two friends, managed to keep most of her face covered with her heavy veil during the greater part of the operation, exposing only the eye, and not minding blood and water and pain, so long as she could maintain the form of hiding her face from us. She was not handsome; few of the women are. It is only a fruit of the suspiciousness which shows itself in certain western countries in hiding the points of a race-horse. Woman is an animal to be guarded, suspected, hidden from others and never to be trusted. Each man's wife is a prize animal for exhibition only to him. This is the case in the cities, while in the villages women are as careless of veils almost as with us. Medical missionaries need to be careful as to every assumption of the responsibility for cases. The result, whatever it may be, is credited to the doctor. Dying patients it is dangerous to receive, as a few deaths in the hospital, maliciously repeated in some false tale by an enemy, never lacking in a Moslem land, might bring a period of long and utter uselessness. Yet mercy ever triumphs over prudence. Men are often brought wounded or diseased to the hospital gate, and thrown down there. One was left in the depth of winter in a ditch at the gate, and was found when nearly dead.

Fracture of the Patella.—Stimson (*Annals of Surgery* for August) advocates the single free incision as tending to the better protection of the patient in the treatment of this fracture. That the operation can be done without once touching the cut tissues with the fingers, he considers an advantage.

He has frequently done the operation under local anesthesia, as cocaine or freezing. He makes an incision in the median line, slightly overlapping both fragments, then draws the sides apart and in turn lifts the fragments with a sharp retractor, freeing the surface from clot or fringe. While they are thus held up, the joint is thoroughly washed with a hot salt solution. The fragments are then drawn snugly together with hooks, the fringe adjusted, and two or three catgut sutures placed in the periosteum along the edge of the fracture, or a single silk or stout catgut suture passed through the tendon and the ligamentum patellæ so that its two strands lie on the front of the bone. In the rents in the lateral expansions he sometimes places additional sutures. With a continuous silk suture the incision is closed and, without drainage, the dressing applied, the limb being bound upon a posterior splint and the patient kept in bed with the foot elevated for a week, when the silk suture of the incision is removed and a light plaster of paris encasement applied. This permits the patient to use crutches in a few days, and after a month the dressing is cut and the patient directed to wear it in the daytime only. He finds that the joint can be flexed 90 degrees by the end of the third month, often earlier, the splint usually being entirely discarded before that time.

International Red Cross Assistance for the United States.—A communication has recently been received by the Secretary of State, from Hon. And. D. White, the ambassador of the United States at Berlin, inviting attention to an appeal made to the people of Germany for funds to relieve the suffering growing out of the war between the United States and Spain. The appeal was made by the Central Committee of the German Society of the Red Cross at the instance of the International Committee at Geneva. The following is a translation of the appeal:

The war which has arisen between Spain and America is beginning to cause greater misery, especially owing to diseases which have broken out, so that a request for aid has been addressed to us here, through the medium of the International Committee of the Red Cross at Geneva. The undersigned Central Committee deems it its duty, in view of the ties which unite the Societies of the Red Cross, and with a grateful recollection of the aid rendered from abroad to the German Volunteer Associations for the care of the wounded in war, to furnish pecuniary assistance to both the American and Spanish Societies of the Red Cross in their efforts to alleviate the sufferings of war. In order, however, to prevent too great a diminution of the funds of our Societies of the Red Cross, upon which there is a great demand for their own work and for objects which have greater claims upon them, we apply to such circles in Germany as are willing to contribute to the relief of the wounded and sick in the present war, with the request that they will entrust such contributions to us, and thereby enable us to show the feelings of humanity which are always deeply impressed upon German hearts, even for the sufferings of strangers, and which have been proved by liberal gifts. Our undersigned treasurer will receive contributions marked: "For the Societies of the Red Cross in America and Spain," and will acknowledge their receipt in the press. We also request all the country associations of the Red Cross in Germany to open places for the receipt of contributions.

The appeal is signed by the members of the Central Committee of the German Unions of the Red Cross: B. von dem Kneeseback, Vice-Upper-Master of the Ceremonies and Royal Chamberlain, President; Von Spitz, General of Infantry on the active list, First Vice-president; Dr. Koch, President of the Directory of the Imperial Bank and Privy Councillor, Second Vice-president; Lademann, First State Attorney in the Second Royal District Court of Berlin, First Secretary; Marcinowski, Privy-Upper-Financial-Councillor, Second Secretary; Dr. Lieber, Surgeon-General on the retired list, General Secretary; Von Burchard, President of the Board of Maritime Commerce, Active Privy Councillor, Treasurer. The Central Committee of the German Unions led off the subscription list with a contribution of 10,000 marks, which, so far as

the United States is concerned, may all go to the Spanish Red Cross. Our own National Society has been generously supported by the people, and the many other relief associations that have been formed have been vying with it and with each other in their efforts on behalf of the sick and wounded. Nevertheless it is gratifying to know that through the medium of the International Red Cross material assistance would have come to us, had we required it, from the sympathetic people of other countries.

Service on an Army Hospital Train.—We have been permitted to copy the report for the week ending August 7, rendered by Major Charles Richards, Surgeon U. S. Army, as illustrating the arduous service of the Hospital Train of Pullman cars on the railroads between Southern camps and general hospitals in the interior: At the beginning of the week, July 31, 1898, the train was en route to Tampa, Fla., from Newport, Ky., in compliance with orders received from the Surgeon-General on the previous day. Tampa was reached next day, August 1, at 7:30 p. m., about three hours late, the delay being due to the movement of troops north from Tampa on the same railroad. At this point, Assistant-Surgeon Stiles, U. S. Army, assistant medical officer and acting quartermaster of the train, was taken sick and excused from all duty. Owing to the poor facilities at Tampa for watering trains, it was not until after midnight that the train reached Ybor City, where patients were to be loaded. Word had, in the meantime, been sent to the Chief Surgeon, Fourth Army Corps, that unless patients had already been sent to the station at Ybor City it would be best to wait until the following morning before taking them on the train. However, twenty-eight cases were at the station on the arrival of the train, and these were placed upon the cars by 2 o'clock, a. m. The remaining cases began to arrive a few hours later, but as it rained almost incessantly it was 1:30 p. m. before all the patients were on the train. The total number of patients received was 159. Of these, 121 had the diagnosis typhoid fever and 11 malarial fever. The general condition of the patients received was much better than on some of the previous trips, most of the cases of typhoid fever being apparently in the first week of the disease. At 1:45 p. m. the train left for Fort McPherson, Ga., which point was reached the following morning, August 3, at 7 o'clock, and by noon all the sick had been removed from the train, including one member of the Hospital Corps detachment on duty with the train. Assistant-Surgeon Stiles, being still unfit for duty, was permitted to leave train here and go to Atlanta. Many minor repairs were needed, especially to the interior of the cars, and so far as the officer in charge was aware there was no urgency for an immediate return to Tampa; he, therefore, requested the Surgeon-General to allow two days at Atlanta for these repairs. This was granted, and the train was taken to the Southern Railway shops to enable this to be done. By the time the repairs were completed, August 6, orders had been received to take the train to Fernandina, Fla., to receive sick for Fort McPherson, Ga., and to take convalescents and those able to travel to Washington Barracks, D. C. In accordance with these instructions the train left Atlanta at 4:30 p. m., August 6, and proceeded to Fernandina. As the train was held at Atlanta for nearly three days undergoing repairs, the number of cases transported during the week was under the average. The number of miles traveled was 1700. Although the number of patients carried was less than usual the duties were, perhaps, more arduous for all than those of any previous week in the record of the train. Some patients were received after midnight, which necessitated their being visited and prescribed for immediately after their reception. The remainder were received during a severe rain-storm to which the entire personnel of the train was exposed for hours. But few of the patients were able to walk and had to be carried into and out of the train, all of which work devolved upon the train detachment. These men performed their trying duties cheerfully and satisfactorily. This might not be worthy of note but for the fact, that with a single exception, all of the privates of the detachment have been less than three months in the service, and that in addition to the physical labor of carrying 120 to 130 patients into and out of the cars at the beginning and end of each journey, they have had but little rest, either day or night, while patients are in transit, that their meals are often irregularly served, patients always being looked after first, and that sleep on a railroad car in motion is not as restful as sleep under ordinary conditions.

The Human Skeleton.—The following alleged boy's composition on bones is doubtless the best thing of its kind that has yet appeared. It is from the *San Francisco Impress*. "Bones are the framework of the human body. If I had no bones in me I should not have so much shape as I have now. If I had no bones in me I should not have so much motion as I have now and Grandma would be glad, but I like to have motion. Bones give me motion, because they are something hard for motion to cling to. If I had no bones, my brains, lungs, head and larger blood-vessels would be lying around in me sort of loose-like, and might get hurted, but now the bones get hurted, but not much lest it is a hard hit. If my bones were burned I should be all brittle, and you could crumble me up because all the animal would be out of me. If I was soaked in a kind of acid, I would be limber. Teacher showed us some bones that had been soaked. I could tie a knot in one. I had rather be soaked than burned. Some of my bones don't grow snug to my other bones like the branches of a tree do, and I'm glad they don't, for if they did I couldn't play leap-frog and other good games I know. The reason they don't grow that way is because they have joints. Joints is good things to have in bones. There are three kinds. The ball and the socket joint is like my shoulder joint. Teacher showed it to us, only it was the thigh of a cow. One end was round and smooth and whitish, that is the ball end. The other end is the socket. It is saucer-like and oils itself. Another joint is the hinge joint, like my elbow. It swings back and forth, oiling itself, and never creaks like the school-room door does. The other joint ain't much of a joint. It's in the skull and don't have no motion. All of my bones put together in their right places make a skeleton. If I leave out some or put some in their wrong places it ain't no skeleton. Crippled and deformed people don't have no skeletons. Some animals have their skeleton on the outside. I'm glad I ain't them animals, for my skeleton like it is on the chart wouldn't look well on the outside."

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward for the week ended August 20, showed the total number of deaths to have been 112, of which 56 were white and 56 colored. The annual death-rate for whites was 15.20; for colored, 32.80. The principal causes of death were: Kidney diseases, 12; diarrheal diseases, 9; nervous diseases, 11; pulmonary consumption, 14. There were 3 fatal cases of diphtheria and 10 of typhoid fever. At the close of the week there were 24 cases of diphtheria and 25 cases of scarlet fever under treatment. The annual report shows, for this year, the lowest death-rate in the history of the city, it being 19.32 per thousand.

ENFORCES THE MEDICAL PRACTICE ACT.—Health Officer Woodward is to be congratulated on the promptness with which he enforces the Medical Practice Act in force in the District of Columbia. He has recently notified Dr. A. M. Curtis that no death certificates bearing his signature will be accepted as valid by the Health Department. Dr. Curtis is a political appointee, under the Interior Department, which, strange to say, has control and directs the management of the Freedman's Hospital. While Dr. Curtis, it appears, was appointed after certification of the Civil Service Commission, he has not complied with the Act of Congress, requiring registration in the Health Office upon receipt of license from the Medical Supervisors of the District Examining Board. The Interior Department claims that their appointee should not be amenable to the District law regulating medical practice, and has written to the Commissioners, requesting that the Health Officer be directed to accept the death certificates, signed by Dr. Curtis. The Health Officer has been unable to find any clause in the Act of Congress regulating the practice of medicine in the District, which exempts Dr. Curtis from complying with the requirements of the Act. The Health Officer has also decided that Dr. Curtis is practicing medicine in violation of the law, and has directed the Coroner to review all cases of death reported on the certificate of Dr. Curtis. The local profession cordially endorse the action of Dr. Woodward.

WOMAN'S DISPENSARY.—The annual report of the Woman's Dispensary shows the total number treated to have been 2852;

number of new cases during the year, 1101; number of surgical operations, 48; number of prescriptions compounded, 2841.

WASHINGTON ASYLUM HOSPITAL.—The report of Dr. D. Percy Hickling, the visiting physician to the Washington Asylum Hospital, has been submitted to the District Commissioners. It shows the total number of patients treated during the year to have been 941, of whom 488 were white and 453 colored. The daily average attendance of the hospital was 85; number of prescriptions compounded, 28,900; total number treated in the Alms and Workhouse, 4062; insane cases examined, 57. He recommends an appropriation of \$7,000 for building a new maternity ward, and \$15,000 for building and furnishing a receiving ward for infectious diseases. He further recommends a nursery and an ambulance for emergency service, and a fumigation plant for patients' clothing, etc. He asks for an appropriation to furnish the nurses' home, and a salary for a trained nurse to have charge of the nursing in the hospital.

HOSPITAL FOR INCURABLES.—The report of Mrs. Helen D. McLanahan, the acting President, shows that the total number treated during the year was 55; number of deaths, 11. On June 30, 53 patients were in the house, of whom 12 were pay patients. The total expenditures for the care of the hospital were \$12,731.65. She recommends a Congressional appropriation of \$5,000 for the current year.

COLUMBIAN UNIVERSITY HOSPITAL.—The Columbian University Hospital, adjoining the Medical Department, is about to be occupied. The hospital is equipped in the most modern style, with large, well-ventilated wards for males and females and a number of private rooms. It has an operating room of modern design and spacious. The building is lighted by electricity and is provided with an elevator and cold-storage room. The physicians connected with the Medical Department of the University constitute the attending and consulting staff.

Dr. C. G. MORRIS has been commissioned an acting assistant-surgeon, U. S. A., and has been ordered to Chickamauga Park Hospital, Ga.

Dr. J. M. HELLER, acting assistant-surgeon, U. S. A., has been relieved from duty at Fort Washington, Md., and ordered to Camp Wikoff, Montauk Point.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To duty at Camp Wikoff, Montauk Point, N. Y.: Lieut.-Col. Nicholas Senn, U. S. Vols.; Major J. L. Powell, Surgeon U. S. A.; Major Ira C. Brown, brigade surgeon; Major Simon P. Crâmer, brigade surgeon; Major Samuel W. Kelly, brigade surgeon, and Acting Asst.-Surgeon John J. Cannon from Williamsport, Pa. To duty at Camp Meade, near Middletown, Pa.: Major David C. Peyton, brigade surgeon, and the following acting assistant-surgeons: W. L. Stevens from Orange, Va., Edward Lyon, Jr., from Washington, D. C., D. N. Grealish and Frederick H. Mills from Buffalo, N. Y., H. M. Miley from Chambersburg, Pa., H. M. Cohen from Baltimore, Md., and E. W. Karmann from North Woodbury, Conn. To duty with troops at Ferdinandina, Fla.: Capt. W. F. Lewis, Asst.-Surgeon U. S. A., his orders to accompany the 5th U. S. Infantry to Santiago, Cuba, having been revoked. To duty with troops at Santiago, Cuba: Major John G. Davis from duty with the 7th U. S. Vol. Infantry at Jefferson Bks., Mo., and Major John J. Archibard from duty with the 2d Louisiana Vol. Infantry at Jacksonville, Fla. To duty with troops at Ponce, Porto Rico, via New York: Acting assistant-surgeons Azel Ames from Washington, D. C., Clarence M. Spalding from Rochester, N. Y., and Halsey L. Wood from New York City. To duty with troops at Chickamauga Park, Ga.: Brigade surgeons U. S. Vols.: Charles Adams, Oscar Le Seure, John L. Maccumber, Bial T. Bradbury and Henry H. Lee, with the following acting assistant-surgeons: Milton D. Norris from Baltimore, Md., Wm. G. Young from Grand Rapids, Mich., Frank A. Roberts from Camden, N. J., Wm. P. Earle from Herkimer, N. Y., Josiah W. Richards from Slaton, Pa., James A. Keown from Lynn, Mass., Charles A. Cattermole from Lansing, Mich., Albert N. Jacob from Philadelphia, Pa., Dwight B. Taylor from Norwalk, Ohio, Chas. H. Stoddard from Milwaukee, Wis., Andrew Godfrey from Ambler, Pa., Chauncey T. Scudder and Chas. I. Woolford from Baltimore, Md. To duty with troops at Huntsville, Ala.: Major Chas. M. Gandy, brigade surgeon, with the following acting assistant-surgeons: Geo. F. Jennermann from Washington, D. C., Charles C. Jolliffe from New York City, Gustavus C. Thiem from Baltimore, Md., Chas. H. Andrews from Buffalo, N. Y., and J. Frederick Haller from Providence, N. Y. To duty at Camp Alger, Fall's Church, Va.: Chief Surgeon Francis R. Percival from Washington, D. C. To the general hospital, Fort Myer, Va.: Major John E. Woodbridge, brigade surgeon, and Acting Asst.-Surgeon D. H. Lamb from Owosso, Mich. To duty with troops at Chickamauga Park, Ga., the following acting assistant-surgeons: Duacan S. Worth from St. Louis, Mo., Herbert M. Huston from Ruthven, Iowa, John B. Alcorn from Gallipolis, Ohio, T. H. Lander from Canton, Ohio, Harry A. Barnhardt from Philadelphia, Pa., Wm. E. Stems from Kansas City, Kan.; E. D. Meeker from Trenton, Mo., and A. G. Donaho, Jr., from Hartsville, Tenn. To report to the commanding General at Ponce, Porto Rico, for duty with troops, proceeding via Fort Monroe, Va.: Acting Asst.-Surgeons

William J. Hughes from Baltimore, Md., John N. Goltra from Buffalo, N. Y., Michael E. Hughes from Adams, Mass., and Compton Wilson from Norfolk, Va.; Via Charleston, S. C.: Acting Asst.-Surgeons Frank I. Disbrow from New York, N. Y.; James Reagles from Schenectady, N. Y., Charles H. Farr and Edward A. Southall from Buffalo, N. Y., and Harry Street from Baltimore, Md. To the 4th Army Corps at Huntsville, Ala.: Lieut.-Col. R. M. O'Reilly, chief surgeon of volunteers. From the 4th Army Corps to Ft. Ethan Allen, Vt.: Capt. H. D. Snyder, Asst.-Surgeon U. S. A. To report to the commanding General, Camp Wikoff, Montauk Point, L. I., for duty with troops: Major John P. Dodge, Surgeon U. S. Vols.; Major Leonard B. Almy, chief surgeon of volunteers from the 2d Army Corps; Capt. F. A. Winters, Asst.-Surgeon U. S. A., and acting assistant-surgeons Joseph M. Heller from Ft. Washington, Md., and William F. Skinner from St. Thomas, Pa. To the Dept. of Santiago, reporting to the commanding General: Lieut.-Col. Valery Havard, chief surgeon of volunteers, as chief surgeon of the Dept., from duty with the 5th Army Corps; Capt. W. F. Lewis, Asst.-Surgeon U. S. A., to accompany the 5th U. S. Infantry from the United States, and the following acting assistant-surgeons proceeding via Tampa, Fla.: W. L. Coleman from Houston, Texas, John E. Crouin from Savannah, Ga., L. De Poorter from New Orleans, La., John B. Sewell from Baldwin, La., W. H. Aylesworth from Fairfield, Iowa; E. J. Kenworthy from Tryon, N. C., Louis J. Genella from New Orleans, La., G. W. Luster from Utica, Miss., J. M. Lindsley from Nashville, Tenn., E. F. McClendon from Smithville, Texas, W. E. Moody from Hermitage, Miss., W. H. Reynolds from Packsville, S. C., O. W. Stone from Bay St. Louis, Miss., Batt Smith from Wharton, Texas, and A. L. Izlar from Ocala, Fla. From the 5th Army Corps to Washington, D. C., for instructions: Lieut.-Col. Benjamin F. Pope, chief surgeon of volunteers. To the U. S. hospital ship *Missouri*: Acting Asst.-Surgeon John E. Brackett from Washington, D. C. To the U. S. general hospital at Montauk Point, L. I.: Acting Asst.-Surgeons E. Nunez from Philadelphia, Pa., and Frank Donaldson from Washington, D. C. From the U. S. general hospital, Key West, Fla., to Key West Bks.: Acting Asst.-Surgeon Geo. R. Plummer. To the U. S. General Hospital, Ft. McPherson, Ga.: Capt. W. E. Purviance, Asst.-Surgeon U. S. A., from Ft. Morgan, Ala., and Acting Asst.-Surgeon John H. Grant from Buffalo, N. Y. To the U. S. general hospital, Ft. Myer, Va.: Acting Asst.-Surgeons Geo. W. Pattison from Buffalo, N. Y., and Geo. M. Bradford from Philadelphia, Pa.

Promoted.—Major Victor C. Vaughan, from surgeon 33d Michigan Infantry to chief surgeon of division, U. S. Volunteers.

Resigned.—Major Chas. M. Robertson, chief surgeon of volunteers; Major Henry G. Fish, surgeon 3d Regiment volunteer cavalry; Major John W. Herriman, 50th Iowa Vol. Infantry, and Lieut. James A. Toole, Asst.-Surgeon, 3d Regiment volunteer infantry.

Died.—Major Lawrence Smith, Surgeon U. S. Vols., on the hospital ship *Relief*, while en route from Ponce, Porto Rico, to New York City.

CHANGE OF ADDRESS.

Boggers, Dr., from 308 to 220 W. Chestnut, Louisville, Ky.
Brothers, S., from 244 to 227 Madison St., New York, N. Y.
Bell, F. A., from 157 N. Akard to 389 Elm St., Dallas, Texas.
Crow, S. C., from Ann Arbor to Mason, Mich.
Coyle, J. E., from Jordan to Paducah, Ky.
Capron, V. J., from Everett to Roche Harbor, Wash.
Douglass, W. H., from Benton City, to Rush Hill, Mo.
Drew, C. A., from Harding to State Farm, Mass.
Gladmons, E., from Washington, D. C., to Southern Pines, N. C.
Gibbs, M. D., from Greenwood to Macon, Colo.
Jensen, P. C., from Chicago, Ill., to Manistee, Mich.
Kenyon, E. L., from People's Inst. Bldg. to 940 Madison St., Chicago.
Montgomery, F., from Clayton to Mt. Sterling, Ill.
Rawley, W. S., from 63d and Wallace to 750 W. 63d Pl., Chicago.
Van Deman, J. H., from Albionville to 9½ E. 8th, Chattanooga, Tenn.
Wenzlick, W., from 331 E. North Ave. to 310 E. Chicago Ave., Chicago.
Welch, J. P., from Glendale, to Cottonwood, Arizona.
Ziliak, J. E., from Ann Arbor, Mich., to Haubstadt, Ind.

LETTERS RECEIVED.

Alexander, A. J., Mayfield, Ky.; Alexander, W. H., Blakely, Ga.; Ayer & Son, N. W., Philadelphia, Pa.; Atkinson, W. B., Philadelphia, Pa.; American Medical Compend, Toledo, Ohio.
Belfield, W. T., Chicago; Bruner, W. E., Cleveland, Ohio; Blech, G., Chicago; Blech, G. M., Chicago.
Coley, W. B., New York, N. Y.; Carroll, C. T., Jr., Marvin, Tenn.; Chicago Polyclinic and Hospital, Chicago; Chrisinger, W. H., Trenton, Mo.; Christian, J. M., Washington, Ga.; Creighton, B. B., Manitou, Colo.; Chatterton & Co. A. L., New York, N. Y.; Carson, E. P., Madison, Wis.; Caulkins, N. M., Manitou, Ill.; Charlton, N. E., Clayton, N. M.; Dennis, F. W., Unionville, N. Y.; Dwight, H., Friendship, N. Y.; Denver Chemical Mfg. Co., Denver, Colo.
Evans, D. W., Dell Rapids, S. D.; Edsen, C. E., Denver, Colo.
French, A. L., Sykeville, Md.
Hubbell, W. B., Elyria, Ohio; Hall, H. C., Detroit, Mich.; Hodghead, G. A., San Francisco, Cal.; Hill, E. A., Chicago; Hare, H. A., Philadelphia, Pa.; Horlbeck, H. B., Charleston, S. C.; Hannaford's General Adv. Agency, T. W. London, Eng.; Hessler, Robert, Indianapolis, Ind.; Hendrickson, C. R., Yukon, Oklahoma.
Johnson, G. W., Chicago; Jowers, J. G., Smith's Fork, Tenn.; Jarvis, A. A., Faulkton, S. D.; Jacinsky, J. R., Crete, Neb.
Kendall, L., Sikeston, Mo.; Katharmon Chemical Co., St. Louis, Mo.; Kavit, E., Philadelphia, Pa.
Lee, Elmer, New York, N. Y.; Lawrence, G. H., Galesville, Wis.; Lucas, S. T., Van Hill, Tenn.; Lane, E. B., Boston, Mass.
Madden, John, Milwaukee, Wis.; Mendenhall, W. C., Trotwood, Ohio; Merck & Co., New York, N. Y.; Mogk, W. A., Ann Arbor, Mich.; Moreland, W. H., Manitou, Colo.; Macintyre, David, London, Ont.; Moran, J., Adair, Mo.
Patch, Wm., Stanford, Ill.; Pierson, A., Spencer, Ind.; Pynehon, Edwin, Chicago; Phillips, J. P., Brockton, Ala.; Pillsbury, H. H., Palo Alto, Cal.
Rodman, W. L., Philadelphia, Pa.; Revue Generale de Pathologie Interne, Paris, France; Revue Hebdomadaire de Laryngologie, D'Otologie, Bordeaux, France.
Sears, M. H., Denver, Colo.; Stuver, E., Rawlins, Wyo.; Shelton, A. K., Oliver Springs, Tenn.; Stevens, J. L., Mansfield, Ohio; Shelby, Mary C., San Francisco, Cal.; Saunders, W. B. (2), Philadelphia, Pa.
Tyree, J. S., Washington, D. C.; Taylor, J. H., Providence, Ky.; Tuley, H. E., Louisville, Ky.; Trump, J. F., Collinsville, Ohio.
Wingate, N. O. B., Milwaukee, Wis.; Whitacre, H. J., Cincinnati, Ohio.
Young, J. W., Afton, Iowa.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, SEPTEMBER 10, 1898.

No. 11.

ORIGINAL ARTICLES.

THE SURGICAL TREATMENT OF UTERINE MYOMATA.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY HENRY O. MARCY, MD., LL.D.
BOSTON, MASS.

In the rapid progress of events, the timid steps earlier taken in a most careful way, in the devising of better surgical methods, are now naturally considered of little importance. However, historical studies are of interest and value: of interest, in that they show the thoughtful, reflective judgment of men who considered the gravity of the problems upon which a life is ever more or less dependent; of value, since they point out the way, open ever, but only, to the real student who seeks the ideal, regardless of self-interest; and especially in the fruitage of averted suffering and the saving of life beyond the hope of previous generations.

Based upon ample data, collected with painstaking care, a generation ago, military surgery was rewritten and stands today as the enduring monument of my early master, the late George A. Otis, Surgeon U. S. Army. The slowly developing interest in the surgical diseases of women was held in abeyance, as a seeming side issue of little importance at the close of our late war, and the few more courageous men who presumed to devote special study to this branch of surgery were looked down upon as men of doubtful importance, by the body politic, and unworthy the highest consideration of the public. The late Dr. Gilman Kimball of Lowell¹ appears to have been the first surgeon in the world who deliberately determined to attempt the removal of a large uterine myoma by abdominal section, which was followed by the recovery of the patient, and who planned step by step the procedures which he regarded essential to its accomplishment; and yet such was the criticism of his well meaning contemporaries that I was personally advised to avoid his acquaintance as detrimental to my professional repute.

Dr. W. Burnham of Lowell, in 1853, only a little time previous to Dr. Kimball's operation, removed a large fibroid tumor, followed by recovery of his patient. However, he began his operation in the belief that it was an ovarian cystoma. Dr. Burnham passed a strong ligature through the neck of the uterus and tied it on each side. Then to make doubly sure against hemorrhage, a ligature was placed round the whole neck. The ovaries were removed. The cervix was dropped and the ligatures were brought out at the lower angle of the wound. They came away during the fifth week. Dr. Kimball operated very much in

the same manner, but, eight months later, he reported that the ligatures were still attached. Such was the heroic courage of Dr. Burnham, guided by the conviction that relief should be rendered this unfortunate class of sufferers, that he continued to operate from time to time until 1876, in all fifteen operations with only three recoveries. Heath and Charles Clay of Manchester, England, were doubtless the first who removed uterine fibroids by laparotomy, in 1843 and 1844, but both patients died.

The first Boston surgeon and the third in America to perform suprapubic hysterectomy was Dr. H. R. Storer, Sept. 23, 1865.² The criticism of his unwonted daring was almost universal and made so condemnatory that not one of his little circle of assistants was permitted to escape in sharing of it. The short cycle of a generation which has supervened since that period has worked most remarkable changes. In no other department of surgery have such striking victories been won as those now universally accredited to gynecic surgery. Every American surgeon points with pride to our McDowell, who, although described as a frontiersman of the West, profited by his careful Edinburgh training, and in the freedom of his new surroundings dared to think for himself. This opened the way for abdominal surgery with its many present brilliant subdivisions, in which every abdominal organ has been a sharer. It would seem almost invidious to name any of the long series of most distinguished men who have labored to bring about, perhaps the greatest triumph of modern aseptic surgery; the present comparatively safe surgical removal of uterine myomata. Indeed, it is not necessary, since to you the names of these leaders are not alone household words, but their personal influence has been felt and still governs a large share of those whom I have the honor of addressing.

Schroeder, in 1874, advocated the treatment of the pedicle of fibroid tumors by including it in the lower angle of the abdominal wound after the method of Koeberlé of Strasburg, or returning it into the cavity of the abdomen, after ligating or cauterizing it, much in the same way as advised for the treatment of ovarian tumors. In December 1879, he had operated eighteen times with eleven recoveries, and he then advocated the amputation of the uterus at the level of the os internum. The ovarian arteries were ligated on each side, and the cervix was tied in two portions, each including an uterine artery. The uterine stump was cut V-shaped, the muscular walls were closed with coarser, the peritoneal covering with finer, interrupted silk sutures.

In 1880, assisted by my distinguished teacher, Dr. Gilman Kimball of Lowell, I removed the uterus for the first time for a large multiple myoma, where I adopted a modification of Schroeder's method, embodying all that is at present considered essential.

¹ Boston Med. and Surg. Jour., May 3, 1855.

² American Journal of Medical Science, June, 1866.

Commencing on one side, I sutured the broad ligament with a double continuous tendon suture, extended so as to include the cervix. The broad ligaments were divided, the peritoneum reflected from either side, the stump cut down conically, and this was covered over by an intrafolding of the peritoneum with a continuous sero-serous animal suture. The suture thus taken intrafolded the peritoneum evenly, while it was itself buried beneath it, leaving no line of infraction of the pelvic peritoneum. Thus the stump, while dropped within the abdomen, was itself *extra-peritoneal*. This method seemed to me so important an improvement upon that of Schroder that I reported it in a paper³ read at the International Medical Congress, held in London, in 1881. I incorporated it in further detail in my address⁴ upon "Fibroid Tumors of the Uterus," as President of the Section of Obstetrics and Diseases of Women, of the AMERICAN MEDICAL ASSOCIATION in 1882. In 1887,⁵ I reported still further my experience with this method and emphasized its value. I also pointed out the importance of dealing with the larger number of uterine myoma which develop in such a way as to have really no pedicle. My last special contribution upon this subject was a paper entitled, "The Surgical Treatment of Non-Pedunculated Tumors," read at the AMERICAN MEDICAL ASSOCIATION in May, 1890. Up to that period, in common with nearly every abdominal surgeon, I had considered hemorrhage as the greatest of all dangers, and in order to lessen this, I advocated and used the so-called rubber dam, a thin sheet of rubber with a central reinforced opening which was stretched over the tumor and crowded down as far as possible to its base, around which was placed a constricting rubber ligature. The suggestion of its use occurred to me from noting the admirable service rendered the dentist by the constricting rubber placed around the root of a carious tooth. It served the double purpose of controlling hemorrhage and keeping the abdominal cavity entirely free from surgical contact. This was applicable, however, only to movable tumors with a more or less distinct pedicle.

Dr. L. E. Stimson certainly made one of the most valuable contributions upon this subject by ligating the ovaries and uterine arteries preliminary to hysterectomy. He did this at first in order to perform a complete hysterectomy, but the teaching that hemorrhage might be controlled by the ligation of these arteries bore immediate fruitage in lessening the almost universal fear by the surgeon of the danger of hemorrhage. One has only to observe the enormous dilatation of the venous plexus, commonly accompanying large uterine myoma, to understand the reason of the fear and the real danger occurring from hemorrhage. It was on this account that I included the entire broad ligaments on either side by my method of double continuous en masse suturing.

In 1892, Dr. B. F. Baer made his valuable contribution to this subject, in which he modified the operation of Stimson by ligating the arteries independently, while he left the cervical structures as a pedicle, quite in accordance with the method which I advocated. The adoption of new methods with the improvement of aseptic procedures has firmly established hysterectomy as a well-advised and comparatively

safe operation for the removal of large uterine myoma.

Dr. Joseph Eastman of Indianapolis has done valuable work in the removal of the uterus, including the cervix for fibroid tumors. He met with exceptional success in so doing, and has devised instruments of special type, which are valuable accessories for this purpose.

In an exceedingly interesting article, Dr. Charles P. Noble of Philadelphia, upon "The Development and the Present Status of Hysterectomy for Fibroid Myomata," gives Dr. Eastman the credit of first covering the pedicle with a double flap of peritoneum, which he states was similar to an operation of Dr. Emmett, performed in 1884. It will be noted, however, that I had deliberately effected this for the purpose of making the stump extraperitoneal in 1880, and published the same in 1881 and 1882.

The method of intraperitoneal fixation of the pedicle was of very slow adoption owing to the excessive fear of surgeons lest secondary hemorrhage might ensue. The fixation of the pedicle in the abdominal wall placed it where it could be kept under observation, but the mortality was so great that various ingenious modifications of this method were devised. One of the most interesting of these was by Dr. H. R. Storer of Boston, who sewed the pedicle, including also the ovarian tumors, into the lower angle of the abdominal wound for the purpose of shutting off the peritoneal cavity. This he called "pocketing the pedicle."⁶ This operation was revived by Dr. H. A. Kelley of Baltimore, in 1888, with the addition of the use of a temporary elastic ligature.

The first operation for the removal of the uterus, including the cervix (total extirpation), for fibromata, is accredited to Dr. Mary Dixon Jones of Brooklyn, N. Y., who operated Feb. 16, 1888, whereas Dr. Eastman's first total extirpation bears date of August, 1889.

Dr. H. A. Kelley furnishes a valuable contribution with the title "Hysterectomy by Continuous Incision from Left to Right, or from Right to Left," November, 1895. It shortens the time of the operation by commencing at one side, securing the vessels, dividing the cervix, and under tension made upon the tumor, the uterine artery of the opposite side is easily exposed and seized with forceps. The division is continued until the ovarian artery is the last vessel secured. The vessels are ligated, the stump covered over by a continuous over-and-over-suture of catgut. Emphasis is made upon the importance of commencing the incision upon the side where the ovarian vessels and tube are most accessible.

There is an undoubted gain by this method in the saving of time, and the certitude of work accomplished, and very generally this is greatly facilitated by placing the patient in the Trendelenburg position. Although this paper is not intended to be an historical treatise upon the subject, and as a consequent, many of the most worthy workers in this field have not been mentioned, it seemed to me necessary to follow the line of thought the development of which has brought the present operation of hysterectomy to such greatly reduced rate of mortality, a danger not so very much greater than that attending the removal of an ovarian cystoma. It is very probable that further modifications of this operation will be adopted in the hope of giving still greater safety and satis-

³ Trans. International Med. Congress, 1881, Vol. ii, pp. 233.

⁴ Trans. Amer. Med. Assn., Vol. xxxiii, pp. 203, 204.

⁵ Histology and Surgical Treatment of Uterine Myoma. President's address, Sect. of Gynecology, Ninth International Med. Congress, 1887. Vol. xi, pp. 835-845.

⁶ Journal of Gynecological Society Vol. i, p. 150, Sept. 23, 1867.

factory results. The greatest reason, however, why recent statistics show such marvelous improvement lies in the fact, just as pertains to the history of ovarian cystoma, of the greater confidence of the surgeon, who, as a consequent, advises early operation for comparatively small tumors, which, only a brief period ago, would have been let alone without discussion of operative measures.

The ovarian cystoma which has obtained any very considerable size is likely to have become adherent, and these complications render ovariectomy much more serious and dangerous than the treatment of the pedicle per se. On the contrary, the enlarging myomatous uterus is not likely to form adhesions until at a late period of its development, and its removal is attended with danger chiefly because of the basic structures which must be divided. A supravaginal hysterectomy, therefore, must necessarily involve much greater difficulty than the separation of the ovarian pedicle.

In a very large percentage of cases taken under advisement for operation the pelvic basin is filled with more or less of these growths, and the functions of the pelvic organs are so interfered with as to demand relief. Here adhesions are common, the relationship of the structures disarranged, the intestines and bladder not rarely involved, and the ureters are in dangerous proximity to the growth to be removed. Such cases will ever tax the most resourceful of operators, and the greater the experience the more will the surgeon consider the responsibility of his duty. Oftentimes multiple masses are to be enucleated until at last the uterine arteries are seized upon well down in the cervical region. After the tumor has been removed, the vessels ligated, not seldom a very important part of the operation consists in the reconstruction of the pelvic peritoneum. I exercise more and more care in this direction with each succeeding year.

Hemorrhage, the former greatest danger of the surgeon, is now practically eliminated from the problem, and septic infection, the peritonitis of the earlier day, is almost equally rare. In my last hundred hysterectomies I have not had a single death from hemorrhage or from septic infection. Almost the only cause of death has arisen from intestinal obstruction, induced by infractions upon the peritoneal surfaces, and it is in this I am exercising the greatest care. I recognize the value and importance of time to the patient in prolonged operations, but the rapid surgeon never hurries. "Well done is quick enough done," was the maxim of the elder Crosby. The surgeon should ever be assured of the integrity of the intestinal canal, and as far as possible avoid conditions which may induce obstruction. Adherent omentum not seldom leaves rents through which a loop of small intestine may easily slip. All adhesions of the peritoneum should be closed. This is easily effected by suturing in the same manner as that employed in covering the cervix with the intrafolded peritoneum. A fine tendon is selected and by a loop-stitch fastened in one end of the adhesion. The full-curved small Hagedorn needle is made to penetrate through the healthy peritoneum a few lines from the edge of the rent and parallel to its long axis. Each stitch is inserted directly opposite the emergence of the preceding one, in the same way on the opposite side of the peritoneal rent, and thus from side to side the suturing is continued until the rent is closed. When drawn

upon, this sero-serous suture evenly intrafolds the peritoneum, while it is itself completely buried. An exposed ureter may be easily covered in this way, and when the pelvic peritoneum is much disorganized I have not seldom sutured the peritoneum of the entire pelvic basin in even juxtaposition quite to the pelvic brim. I emphasize this method of closing the peritoneum, especially of the pelvis, since I am sure by it little harm can come from the future disarrangement of the organs; that it does not interfere with the rectum or bladder, and that it does materially lessen the really very great danger of adhesive processes so liable to induce obstruction of the intestines and subsequent functional discomfort, while it is now recognized as by far the most common cause of acute intestinal obstruction.

The variety of methods under discussion at the present time is limited chiefly to suprapubic hysterectomy as above described; to the removal of the uterus, including the cervix; to the saving of as much of the uterine tissue as possible when the myomata are small and not too numerous, and finally to the advantage of leaving the adnexa (the ovaries and tubes) when the conditions will permit. Each of these different methods have certain possible advantages. As I believe, for reasons already stated, the larger number of hysterectomies for uterine myoma should have a certain portion of the cervical tissue left. Generally the operation is less difficult and more rapid. The remaining structures furnish a means of support to both bladder and rectum, the vagina is uninjured and the relations of the pelvic organs are maintained in easy mobility, conditions having a value in marital life of great importance. The objections to this are the possibilities of infection of the wound through the cervical canal and lack of drainage, where conditions of the pelvic basin may render drainage an important factor. To my mind these criticisms are, at the most, of minor importance, since the cervical canal can easily be disinfected or the entire mucosa removed. Should drainage seem desirable, and each year this is considered of less importance, it can easily be provided for by an opening through the posterior fornix.

There are conditions in which it may be of decided advantage to remove the entire uterus. Doyen of France has modified the technic of complete hysterectomy, which, briefly, consists in making forcible tension upon the uterus and myoma by drawing it forward over the pubis through the abdominal opening and then incising the vagina posteriorly. This permits pulling the cervix upward into the abdomen, which makes tension upon the broad ligaments. First one is divided and then the attachments of the uterus to the bladder are separated, and lastly the other broad ligament is divided. These are seized and held by assistants during the operation and until the arteries can be independently secured. It will be noted that by such a measure the operative field is brought clearly into vision, greater safety as well as celerity attained, since the relationship of the ureters, intestines and bladder can be determined with much greater certitude. After hysterectomy has been thus performed, complete peritoneal closure of the pelvic basin may be made if considered advantageous. This leaves a wound open only from below, which may be lightly packed with iodoform gauze. Dr. W. P. Allen of Cleveland has contributed a valuable article upon complete hysterectomy, in which he advocates two modi-

fications of Doyen's method, both preliminary to the abdominal section. The cervix is curetted and packed with antiseptic gauze, the vagina is carefully disinfected, the cervix seized with a strong pair of vulsellum forceps and drawn downward. With the cautery the vaginal tissue about the cervix is dissected. The advantages claimed are: "1. Asepsis is secured with more certainty than by any other method. 2. The division of the vaginal vault by the cautery is in most cases performed quickly and without hemorrhage. If the cervix be very short or difficult to reach, as is sometimes the case when the fibroid is developed in the lower part of the uterus, its separation by the cautery may be unusually difficult. It can, however, usually be accomplished." "The abdominal cavity is not opened from below. A long pair of slender, curved forceps is now used to seize the tissue just behind the cervix at the point at which it is divided by the cautery. The object of this pair of forceps is that when the abdomen is opened, the forceps may be pushed upward into Douglas' cul-de-sac, and marking absolutely the vault of the vagina, enable the surgeon with certainty and rapidity to open downward into the vagina. With long vulsellum forceps the cervix is firmly seized and drawn upward and backward into the abdominal cavity." Dr. Allen thinks the operation of Dr. Doyen as thus modified greatly shortens the time consumed in the removal of the uterus, while the intestines, ureters and bladder are much more easily avoided, and he recommends it for favorable consideration.

By general consensus of opinion, little by little, the cautery has been relegated to history, and at present, when asepsis makes a certitude of primary union, the use of any means which leaves of necessity necrosed structures should, if possible, be avoided. Dr. Eastman's hysterectomy staff easily fulfills every purpose sought to be attained by Dr. Allen with his fixation forceps to mark the point of posterior vaginal section.

It not seldom happens that uterine myoma are found which may be advantageously removed, leaving the uterus more or less damaged or deformed. Dr. A. Martin of Berlin was among the first and most earnest advocates of myomectomy. More than ten years ago this seemed to me the ideal method, and I examined all the cabinet specimens preserved in the Boston and New York museums for the purpose of determining its possibility. I also made a large series of sections of the smaller growths in order to establish the relation between the tumor and its parenchyma, the so-called capsule.

The accompanying photographs will show that this is developed from the deformed surrounding uterine muscular structure, and that the tumor itself usually receives its nutrition from it rather than by vessels directly penetrating its substance. In one instance, however, I succeeded in injecting the vessels of the tumor through the uterine arteries. Unfortunately, it happens that in the great majority of instances the myomata develop from a considerable number of independent centers, whatever may have been their cause and as a consequent the uterus can not be preserved intact, and the invading growths removed. In exceptional cases this may and should be done. In common with other operators I have not infrequently removed a considerable number of these growths, and do not recall a single case where convalescence did not easily follow. The constricting rubber-dam is often of much

service in this operation, since it may make the operation bloodless. It is my habit to occlude the cavity with continuous tendon sutures and introflect the divided peritoneal surface over it. The pendulum of opinion upon this operation swings to both extremes. Dr. Noble above quoted, closes his paper as follows: "Myomectomy is the ideal operation for fibroid tumors. The next advance in the treatment of fibroid tumors will be the acceptance of early operation, with the definite purpose of substituting myomectomy for hysterectomy in women of child-bearing age in cases having a small number of fibroid nodules." At the last meeting of the British Gynecological Society, Dr. W. Alexander of Liverpool urged the enucleation of multiple uterine myoma as a favorite alternative operation to hysterectomy, and that it being a non-mutilative operation it presented a marked advantage over total removal of the uterus. The society did not accept his views, but rather Mr. Bland-Sutton's terse summary, who claimed "that in most cases such tumors were developed after the child-bearing period, when the uterus was a non-important organ. He felt sure that a woman was much better off with ovaries and no uterus than with uterus and no ovaries." Dr. J. F. Baldwin of Columbus, Ohio, advocates in abdominal hysterectomy the fixation of the round ligament between the cervical flaps, which holds it *in situ* by buried animal sutures. He claims the advantage to be in the fixation of the parts and preventing prolapse of cervical stump in the vagina.

There can be no doubt but that the improved operations for the comparatively safe removal of large uterine myomata had not alone its inception, but its development to its present successful status in very much the larger degree with American surgeons, the credit of which should be given to American surgery. Within the last half decade, under the leadership of Doyen, Segmund, Richelot and others, vaginal hysterectomy has been successfully developed, especially for the removal of small uterine growths, quite beyond anything attempted in this country in this operation. Vaginal hysterectomy for cancer is more especially a German operation in its origin. Intrauterine myoma for a long period have been successfully removed per vagina by morcellement, even when of very considerable size. At an earlier period I removed a number such growths by this method, one weighing four pounds, where I am convinced I should now perform abdominal hysterectomy, and this because of our greater confidence in an improved technic for abdominal hysterectomy. The French school have advised special methods for operating upon the pelvic structures through the vagina, here usually performed by the abdominal route. Their brilliant successes were at once accepted with approval by some surgeons in America and have at present their advocates. It is very probable, however, that this vaginal operation has been popular in France in a large degree owing to their comparative unfamiliarity with abdominal hysterectomy, which they are pleased to style "the American operation."

Blind surgery is bad surgery, and on this account vaginal operations upon the pelvis must ever be held to a certain degree in criticism. If, for instance, a small uterine myoma is to be removed, the choice of the vaginal route, under certain conditions, might advantageously be made. In a large degree this too is an American operation, first advocated and per-

formed by our lamented fellow-countryman, Dr. Robert Battey of Georgia. In 1879 I first removed a fibroid tumor through Douglas' cul-de-sac (a myomec-

better to operate by the abdominal route, since this is the class of cases most suitable for myomectomy. Little further need be said in reference to the tech-

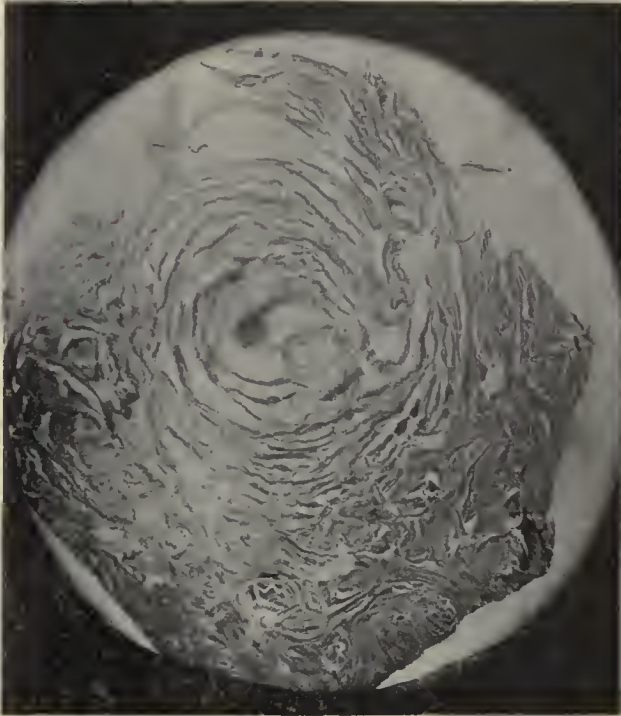


Fig. 1.—1, small uterine myoma. Singular resemblance to a fetal head. 2, uterine cavity. Specimen injected, vessels much enlarged.

Fig. 3.—Section from just over a small myoma. The enlarging blood-vessels and capsular formation well shown.

omy), saving the uterus. However, in much the larger class of cases, where it is judged wise to

remove the tumor, it must be conducted as far as possible under strict aseptic conditions. An unin-

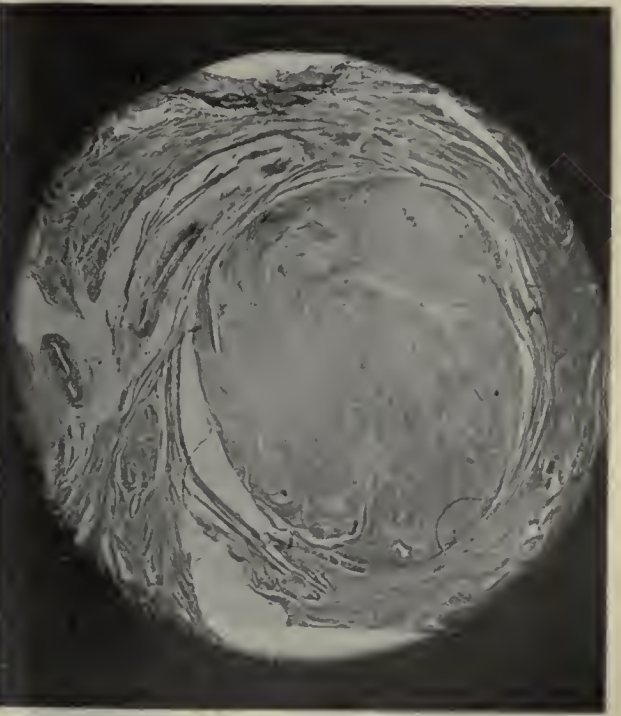
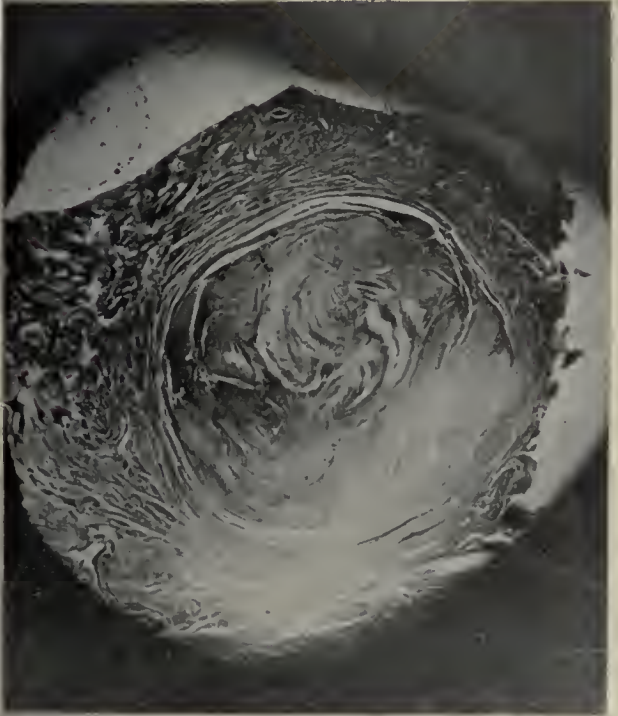


Fig. 2.—Uterine myoma with multiple centers. Capsule formation well pronounced.

Fig. 4.—Large surrounding vessels. Capsule well developed. Vessels greatly enlarged.

remove uterine myomata sufficiently small to accomplish the work through the vagina, it is undoubtedly

fectured abdominal cavity, left in good condition, should be closed without drainage. The abdominal

wall is reconstructed by independent lines of continuous buried tendon sutures. I consider the peri-

much to be preferred for holding in coaptation the edges of the skin. The final dressing consists in the

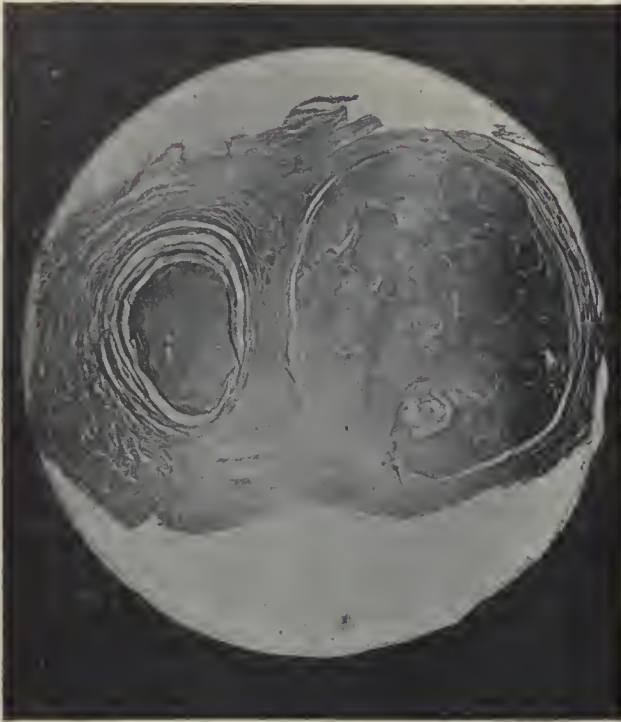


Fig. 5.—Double uterine myoma. Capsules well developed. Tumors slightly vascular.



Fig. 7.—Calcified tumor. Infiltration by lime salts. Uterine myoma showing process of calcification. The dark spots mark the lime deposit.

toneum and thick fascia can be much more satisfactorily reunited by the use of the double continuous tendon suture. A subcuticular, fine tendon suture is

application of contractile collodion, holding in solution iodoform, reinforced by a few fibers of absorbent cotton. Unless the tumor is of exceptional size



Fig. 6.—Triple uterine myoma. Adjacent vessels enormously ectatic. Taken from a uterus not greatly enlarged but studded with multiple growths.

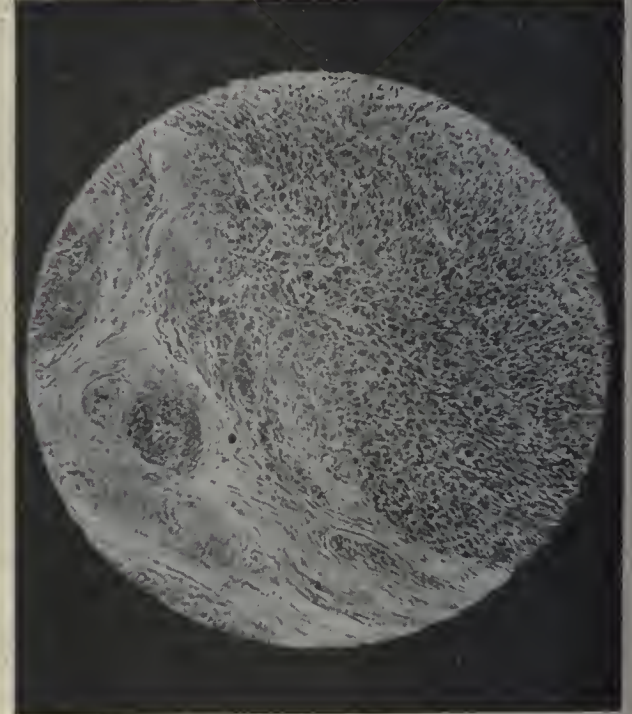


Fig. 8.—Section shows the cell disposition. In the larger portion the cells are cut transversely.

the patient is usually more comfortable without the application of an abdominal bandage. The advan-

tage derived from suturing the abdominal wound in layers is so apparent that I find its adoption is becoming more and more common. I have thus sutured since my first advocacy of buried animal sutures quite twenty-five years ago, and for fifteen years with no other dressing than the collodion seal. Subsequent hernia does not occur, and in over eight hundred laparotomies I recall but one case of subsequent hernia, and this in a case where the abdominal wall had become excessively thin from a large fibroid tumor.

A final question for consideration is the ever recurrent one: When shall we operate? As in ovarian cystoma, so here the pendulum of opinion constantly varies. Without doubt the larger number of abdominal surgeons are operating on cases today, which they would have judged ill-advised four years ago. In young women, small growths which cause pain, excessive menstruation and interfere with the functions of the pelvic organs should be no longer subject to unsatisfactory medication, since operation in these cases gives the lowest rate of mortality, and not seldom by a myomectomy results in complete restoration of unamputated organs with restored functions. There is a general consensus of opinion that the patient will profit less by the cessation of the menopause than was earlier believed.

Many of the more dangerous growths develop comparatively late in life, a considerable percentage of which go on to most extraordinary development regardless of menstruation. When the patient is still within the cycle of menstrual life and the ovaries comparatively healthy, it is probably wiser not to remove them. It is my own belief that in the future a wise conservatism will give an approval for operative measures upon a very considerable class of invalids, now usually permitted to drag out a more or less wretched life of suffering. I would, however, urge the limitation of the operation to the practice of men who have equipped themselves in a special manner for this class of surgery, since it is not alone theoretic knowledge that he must master, but more especially a technic that shall make him at once an artisan and an artist.

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THE INDICATIONS FOR PLASTIC SURGERY UPON THE CERVIX UTERI, TRACHELOPLASTY, WITH A NEW METHOD OF OPERATING.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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CHICAGO.

The operation known as trachelorrhaphy or Emmet's operation, has been in vogue for thirty-five years. It has had a brilliant history and has won honors for the originator wherever gynecology is practiced, but like many good things it is not only capable of improvement, but has of late been quite generally superseded by operations in the nature of amputation; plastic work looking toward removal of diseased tissue, restoration of organic function, and remodeling of the cervix to as nearly normal outlines as possible. These operations are commonly known as amputation of the cervix, but only for want of a better name, since it suggests the crudeness of the former excision of the neck of the uterus, and in no way conveys all that is comprehended in the newer work. There is a wave of interest abroad concerning these improved methods, and many reports of admirable work are being made in foreign journals. In our own country, Emmet himself concedes that his original operation for pathologic conditions following laceration has had its day, and suggests for it honorable retirement to a few well-selected cases. On pages 351-2 of the *Am. Gyn. and Obstet. Journal*, Vol. ii, 1897, he says: "Since the writer's attention has been drawn more particularly to the subject of amputation of the cervix uteri as a necessary operation after laceration, he has realized that a very important change for the better has taken place within the past twenty years in the practice of obstetrics. As the custom has now become a general one to employ every antiseptic precaution in obstetric practice, when laceration of the cervix occurs the efforts of nature thus assisted are sufficient in all but the worst cases to fully repair a very large proportion of tears. The writer [Emmet] has also recognized the fact that within a few years past a comparatively smaller number of this lesion which need 'Emmet's operation' for repairing the cervix are now seen in practice. The condition has become directly reversed within a few years past, and now, with but few exceptions, amputation is the proper means to employ. 'Emmet's operation' fully filled its place under the then existing circumstances and still does so whenever indicated, but the author (Emmet) now offers through the publication of this paper, an equally original operation (amputation) for the relief of pathologic laceration of the cervix as it is now met with." Elsewhere in the same article under the title, "When to Amputate in Preference to Repair of a Lacerated Cervix by the Usual Method," Dr. Emmet says: "For many years I held the opinion that it was possible, in almost every instance, by careful local and general treatment to restore in time the lacerated tissues to so near the normal condition, that when the operation had been properly performed, complete restoration would eventually take place with the result of bringing about involution of the uterus. But I am now of the opinion that there are exceptional cases to this rule, where under certain conditions it is better surgery to amputate a portion or the whole cervix, provided the dis-

eased tissues are completely removed and the wound afterward treated in the manner I shall describe."

While agreeing with the gifted author as to the desirability of the amputating operation, I claim that that mode of procedure is most excellent which requires least preparatory and after treatment, and which exacts least in the way of time and patience from patient and physician. There is a reaction against the tedium of routine local treatment that bids fair almost to go too far and abrogate it altogether. It is a detriment to any patient to be subjected to prolonged topical treatment. It has the tendency to establish the habit of invalidism, and to fix the attention inward, which is not a healthy stimulus to recuperation. I have for some years sought to do operative work of such a character that as much as possible may be accomplished at one sitting, and the patient led to expect prompt recovery and encouraged to consider herself well and free from bondage to the gynecologic chair. My results have so far been satisfactory, and it is to call attention to a method of cervical operation which meets these requirements that I have selected this subject. My manner of operating differs materially from any so far described, and possesses certain advantages which I hope will commend themselves in comparison with existing modes. As yet, there is no unity in choice of technique. Dr. Von Ramdohr said recently (*Am. Gyn. and Obstet. Jour.*, page 711): "As long as there are twenty-five methods of doing things none of them is good." This has a measure of truth in it, but the progress of surgery is marked by the passing of modification after modification of good methods, and only in such a way can perfection be reached.

The poor results complained of by some good operators with amputating operations, I believe to be due to faulty technique. That is to say that following the older methods of Schroeder, Emmet, Pozzi and others so far described, does not attain what is desired, because these methods through inherent faults do not meet the indications. The following criticism is made by Dr. A. Palmer Dudley of New York: "In closing the wound one is very apt to narrow the canal to the extent of obstructing the escape of the normal discharges from the uterus, thereby injuring the woman instead of benefiting her. Many here can recall cases in which, before operating for laceration of the cervix, they could recognize no disease of the uterine appendages while afterward disease developed. Why? Simply because in repairing the cervix they closed it, prevented the normal discharge from the uterus, induced continual passive congestion of the endometrium, and the disease then traveled up the tubes."

Early in the history of the operation Pauly is said to have declared that: "Of all surgical operations the excision of the neck of the womb has hitherto been the most murderous."

Improvement in technique in many quarters has advanced the operation rapidly in favor, and it is due to the literature of gynecologic surgery that such progress should be duly reported. In giving a description of my own method, I wish to touch upon the indications for which it is used, and to call attention to the development of opinion in this regard.

Dr. Thomas, in the fourth edition of his work on "Diseases of Woman," published more than two decades ago, gives as indications: "Malignant disease, great enlargement from cervical hyperplasia, longitu-

dinal cervical hypertrophy, conical and projecting cervix and granular or cystic degeneration of intractable character." I have already spoken of the manner in which present authority sanctions its use in cases of laceration, and in addition we now consider chronic metritis and cervicitis, certain forms of displacement, what is known as congenital elongation or infantile uteri and stenosis as calling for such operations. Concerning the latter I find this comment in Gould's Year Book for 1898, page 534: "True cervical stenosis is a comparatively rare disease, it exists most often in the mind of the physician."

Notwithstanding this formidable comment upon a former paper of mine presented to this society, a large experience in the reality of the thing only confirms me in the opinion that cervical stenosis, whether of traumatic or congenital (?) origin, is yet a potent factor in the etiology of much pelvic pathology and an indication of radical error in the hygiene and growth of women.

What is known as congenital stenosis is rarely the result of embryonic divergence, but rather persistence of the infantile condition through lack of proper development at the developmental period.

In advocating amputation of the cervix for inflammatory conditions L. Touvenaint (France) says: "The curette, which gives excellent results in chronic corporeal endometritis, is altogether insufficient in cervical endometritis. The operation gives brilliant results preceded by curettage. We say 'preceded by curettage' because it is rarely the case that inflammation of the cervix has not been propagated to the cavity of the body, and the endometritis become general. It has certainly been established that amputation is the operation of choice." He further says: "Amputation of the cervix is not done solely for the sake of removing a part of the organ; it possesses also the advantages of inducing profound modification in the vitality of the entire uterus, so that this undergoes a veritable involution." Mundé, in an article on trachelorrhaphy in 1889, said: "When a superficial layer of an organ which is affected by hypertrophy is cut off, a marked tendency to diminution in the bulk of the remaining tissue shows itself." Curettage alone can not accomplish this result, although it can do much, and in connection with excision is a valuable adjunct. Not only the cervix, but its mucous lining differs from that of the uterus above in essential particulars, and chronic inflammation creates a dense, firm tissue with deep glandular involvement which only a sharp curette thoroughly used can remove. Such removal is apt to result in constriction of the canal amounting to a severe stenosis or even atresia unless followed by tedious and objectionable after-treatment. As I have said, the ideal operation should attain restoration of physiologic as well as anatomic conditions, and with the smallest expenditure of time and the least possible manipulation.

The following are details of the method which I have found meet these requirements better than any of which I know. The patient, prepared as for any minor gynecologic or plastic surgery, is placed in the lithotomy (extreme dorsal) or Sim's position, and the cervix drawn down with the bullet forceps or the double tenaculum. The cervix is dilated and the uterus curetted in the usual manner. Curettage is used only when the indications for its employment exist, but these are so constant as to make it virtually the rule. The blades of the bullet-forceps are then

reversed and replaced within the cervix so that their points are directed laterally from within outward. By using them in this manner traction is made upon the inner area of the cervix leaving the anterior and posterior walls free for making the flaps. The cervix is now transfixed by the knife here exhibited, (Fig. 1a.) and a clean cut made from above downward, first in the posterior lip. (Fig. 1.)

The anterior lip is transfixed in a similar manner about 1 cm. or $1\frac{1}{2}$ cm. in front of the other and cut in the same way.

The intervening plug of diseased tissue is now removed by a single cut or two of the curved scissors, the bullet-forceps having been changed to a lower position to allow of this. (Fig. 2.) If the flaps have been properly made they will now fall together, (Fig.

for ease in removal I am in the habit of treating them as follows: In tying the sutures one end of each is left long, and these long ends are grouped by tying them together according to their location. The three anterior sutures form one group, the three posteriors one group, and the two lateral sutures are tied together, a pair on each side, making four groups in all. (Fig. 4.)



FIGURE 1.

3) and inward, so as to assume the appearance of a normal cervix, and will require only the simplest suturing to keep them in this position. The first suture is passed through the center of the anterior flap a centimeter or more from its cut edge and brought out about three-fourths of a centimeter within the cervical canal. Two parallel stitches are now placed at each angle of the cervical canal. Silkworm gut is the suture material which I commonly use.

The posterior lip is similarly treated, except that it is somewhat easier in this situation to pass the sutures from within outward rather than the reverse, as in sewing the anterior lip. Two sutures are now passed, as in trachelorrhaphy, through the outer angles of the wound, which gap slightly after the turning in of the flaps. For nice adjustment of the stitches and



FIGURE 2.

A uterine tampon of iodoform gauze or wicking is now inserted by means of this forceps and tampon-carrier. A projecting strand is attached to the vaginal tampon (also of gauze) in order that both may be removed without undue disturbance of the

parts. If no accessory work is done the usual perineal dressings are applied and the patient put to bed.

The external genitals are bathed with antiseptics after micturition but no douching of vagina or disturbance of tampons is allowed until the second or third day, when the entire tampon is removed and not replaced. Vaginal douches of 1-4000 bichlorid are then used twice daily. The sutures are removed at the end of two weeks, when the patient can be up.

The advantages claimed for this method of operating are: 1. The quickness and ease of operating by the knife here presented, the manner of making the flaps, transcending in certainty and safety of execution the ordinary methods of excision. 2. Clean, smooth-cut surfaces which are obtained without haggling of tissues, always most desirable in plastic surgery. 3. The easy approximation of flaps and the avoidance of all hemorrhage beneath them by deep placing of suture and compression of the flaps. 4. The accurate approximation of mucous membrane to

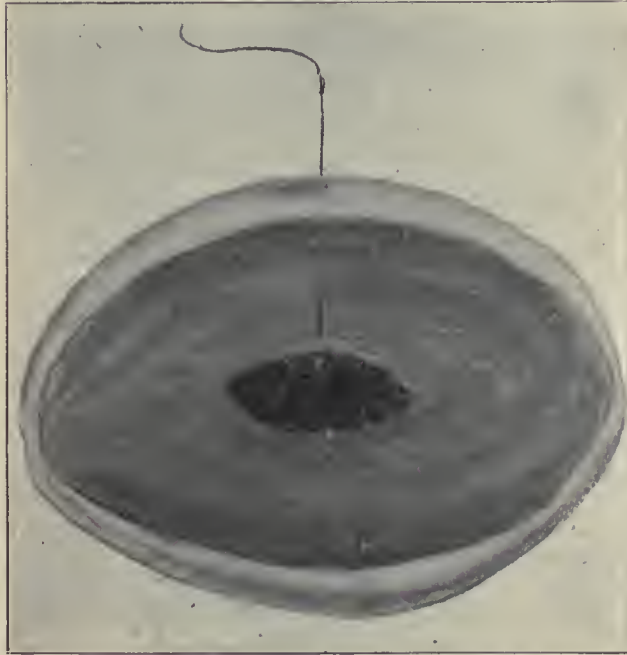


FIGURE 3.

mucous membrane thus avoiding granulating surfaces, formation of cicatrix and constricting of the canal. This feature, which obtains also in Schroeder's operation and modifications of it, is of great importance and a decided advantage over trachelorrhaphy, especially where the entire cervical mucous membrane is removed. 5. The certainty of obtaining a permanently patulous canal and a well-formed cervix with pronounced reduction of the hyperplastic uterus. 6. The simplicity of the after-treatment.

I would urge the necessity in doing plastic gynecologic work of fortifying it by doing all accessory operations at the same time. The neglect to do necessary complementary operations brings frequent failures. The operation I have described is seldom called for alone. While it will often correct a simple displacement of the uterus due to inflammatory conditions with increased size and weight, by correcting the lesion of the cervix and accompanying metritis and stimulating involution, it is not to be advocated as a substitute for the Alexander or other suspensio-uteri

procedures. It will not restore the proper sustaining power of the pelvic floor, but it will be in many cases a valuable adjunct to any operation undertaken for these conditions. Dr. E. E. Montgomery says: "When a condition is due to lesions during the delivery of the patient, we have a large heavy uterus. In any case, in order to restore the patient to a normal condition the first aim should be to reduce the size of the organ. This is best accomplished by amputation of the cervix. The metabolic changes which take place as a result of the operation and the rest in bed will lead to a considerable reduction in size."

Besides correcting existing lesions and encouraging a return to the normal state it may be a determining factor in preventing the progress of malignant disease and the extension of infectious or inflammatory conditions to the adnexa. The cervix is an etiologic factor in many diseases; it is a storehouse for infectious

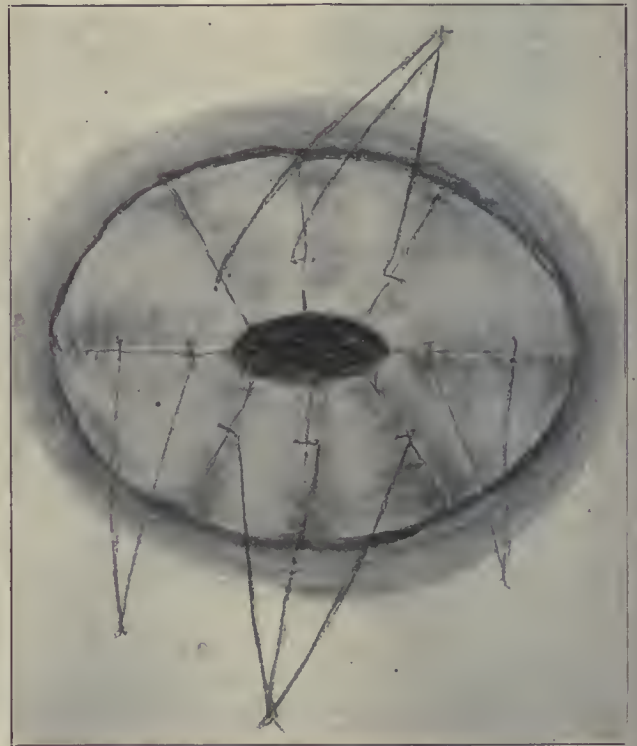


FIGURE 4.

germs; it is the portion of the uterus which suffers most from maldevelopment at puberty, thus causing dysmenorrhea, sterility and concomitant evils; is most frequently injured in childbirth, so that until preventive medicine shall have succeeded in eradicating the more common causes of cervical diseases this organ will continue to offer wide opportunities for plastic surgery of the most careful and progressive kind.

In conclusion, I would offer a suggestion as to the nomenclature of the operation. Amputation of the cervix is as much too narrow a term for such work as trachelorrhaphy is too broad to be monopolized by the operation devised by Dr. Emmet. Much plastic work upon the cervix might be known as trachelorrhaphy but since this name has been applied for so long to one class of methods exclusively, we are forced to find something more distinctly descriptive for the newer work.

Amputation conveys the idea of taking away of an organ, whereas this work is really conservative, plastic surgery; nothing is removed but diseased or adventitious tissue, and I suggest that it be designated in future by the expressive and inclusive term *Tracheloplasty*.

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ANTERIOR COLPOTOMY WITH REMOVAL OF ONE OVARY AND BOTH TUBES— VAGINAL FIXATION.

Presented to the Section on Obstetrics and Diseases of Women, at the
Forty-ninth Annual meeting of the American Medical Association,
held at Denver, Colo., June 7-10, 1898.

BY WILLIAM N. SWIFT, M.D.,
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Mrs. L. R., aged 21 years, married two months. Probable gonorrhœa two years before; since that time, more or less pelvic pain and very marked pain at menstrual periods. Since marriage has had great pain across lower part of abdomen. Coitus so painful that it became impossible. Examination showed uterus much enlarged, very sensitive, retroflexed and somewhat toward the left side. Enlarged tubes felt on both sides. Operation, Aug. 9, 1897.

The bladder was separated from the uterus without difficulty. Plica opened with scissors. Extensive adhesions over the fundus of uterus and tubes. The uterus was seized with double hooks and delivered through the wound with some difficulty. The left tube and ovary were firmly adherent. The tube was freed from adhesions and on being opened was found to be entirely disorganized and occluded. It was removed, but the ovary was left as it was—normal. The right ovary and tube were bound down by strong adhesions. The ovary contained one large and many small cysts. On section, it showed no normal tissue. The tube was also much thickened, and both ovary and tube were removed. The uterus was fixed by three silkworm gut sutures through the vagina, peritoneum and uterus itself, then peritoneum and vagina on the other side. After these sutures were put in place, the peritoneum was sewed up with a continuous catgut suture, and later the wound in the vagina. After coming out of ether, the patient showed no symptom of shock. She passed urine on the morning of the second day. Examination at present shows no tenderness over scar in the vagina. Uterus small, in normal position, not tender. Some tenderness over left ovary, which can be plainly felt. Patient feels well and has worked since two months after operation. Coitus has not been painful. Has menstruated regularly, with only at times slight pain over region of left ovary.

There are several points in this case that are interesting: First, the question of abdominal or vaginal section in such a case. The chief advantage of the vaginal route is that it is a much less serious operation than abdominal section. There is no abdominal scar with risk of hernia. The patient has much less discomfort and pain immediately after operation. She

can turn on her side at once and is usually up in two weeks. Another great advantage in vaginal section is the ease with which any operation can be done on the uterus, tubes or ovaries, after they are delivered. A small vagina makes the operation difficult even with lateral incisions. A fixed uterus that can not be drawn down at all makes the operation impossible.

The method of opening the peritoneal cavity which I employ is practically the one described and practiced by Professor Duhrssen of Berlin. The parts are made as aseptic as possible. The cervix is then dilated, curetted with a sharp curette, afterward with a douche-curette, and washed out with corrosive-sublimite solution (1 to 10000). The anterior lip of the cervix is then seized with the fixture. This instrument, as used by Prof. A. Martin, consists of a stout sound behind and a pair of stout double right-angle hooks in front, set on a broad surface. The sound is inserted into the uterine canal, the double hooks into the anterior lip of the cervix, which is compressed between the two. The uterus is then brought down as far as possible and held forward. An incision about half an inch long is then made through the vaginal mucous membrane at the upper border of the anterior lip of the cervix. One must be careful not to make this incision too high up, for in pulling down the uterus the bladder is displaced and may be wounded. This incision is prolonged with scissors about half an inch on each side. A double tenaculum is put on the vaginal mucous membrane at the center of the incision, and traction made upward. The bladder is then separated from the uterus by the finger, aided at times by the closed points of the scissors.

It is important to carry the dissection well out on each side so as to have the ureters as well as the bladder out of the way. By keeping close to the uterus there is no danger of wounding the bladder. This dissection is carried as far as the internal os. It is a mistake to strip off the peritoneum from the uterus farther up than this point. The fold in the peritoneum may be felt by the finger against the anterior surface of the uterus, and in most cases may be seized between the thumb and finger. An artery clamp is then put on the peritoneum and the peritoneal cavity opened by a small snip with the scissors, as near the uterus as possible. Artery clamps are then put on each side of the opening in the peritoneum and the bladder dissected away from the peritoneum still farther. As the bladder is pushed away, the peritoneum is slit up and clamps put on each side as guides. A pair of double hooks are put on the vaginal mucous membrane about half an inch below the urethra. The middle point of the vaginal mucous membrane in the transverse incision is seized with forceps. Traction is made with both instruments and the ridge made in the mucous membrane is slit up with scissors. The triangular flaps of vaginal mucous membrane formed by the transverse and longitudinal incisions are then dissected away from the bladder. This usually peels off easily with the shut points of the scissors. If vaginal fixation is to be done, the sutures are then inserted on each side through vaginal mucous membrane and peritoneum. I began by using silkworm gut, but since my first two cases have used catgut, the silkworm being rather troublesome to remove. This incision gives a wound extending from the cervix to the urethra, and laterally about an inch on each side of the cervix.

The examination of the uterus and adnexa is next

made. The uterus is then seized with stout double hooks—I much prefer right-angle hooks, as they do not pull out so readily. The fixture is removed and the cervix pushed back with the speculum. The uterus is then delivered through the wound, any adhesions being separated at the same time with the finger. When the uterine tissue is soft the double hooks may tear out several times before the uterus is finally delivered. The first hooks inserted are usually too low and the uterus has to be seized several times before it is pulled out. In this manipulation the uterine tissue may be a good deal torn. The tears should be at once sewed up with a fine needle and catgut. No ill effects come from these so far as I have seen. This gives ready access to the uterus, tubes and ovaries, either for their removal or for the excision of diseased portions. The tubes may be probed, and small cysts of the ovaries opened and curetted. After whatever is indicated has been done, the fixation suture on each side is passed around the round ligament at its base, close to the uterus. The uterus is then replaced and the end of the fixation suture on each side is passed through the peritoneum and the vaginal mucous membrane. The rent in the peritoneum should then be united with a continuous suture of fine catgut. If this is done no raw surface is left, and the adhesions holding the uterus forward will only be between the two layers of peritoneum. The wound in the vagina is then sewed up with a continuous catgut suture. Amputation of the cervix may be done if indicated. Finally the fixation sutures are pulled tight and tied.

The retention of the left ovary when the tube was removed is an interesting point in this case. I am being constantly more impressed by the importance of the general nervous disturbance that follows the removal of both ovaries in comparatively young women. The mental effect in these cases is sometimes very marked. The woman often regrets the operation even when she has relief from much pain. I have seen many cases of marked mental depression following castration. The vasomotor disturbances are usually very striking and the patients suffer very much from them.

If it is possible to spare the woman all these ills by leaving even a part of an ovary that is healthy, ought it not to be done in every case? My case shows that when an ovary is left and both tubes are removed, menstruation goes on with little discomfort. I am convinced that leaving the ovary has made an immense difference to the well-being and happiness of this woman.

SOME OF THE CAUSES OF NERVOUS DISTURBANCES.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY JOSEPH EASTMAN, M.D.

INDIANAPOLIS, IND.

Mr. Chairman and Gentlemen:—I would rather this afternoon be an attentive listener, and be instructed, than attempt to instruct. I was much pleased with the idea of uniting specialties rather than subdividing them. There is certainly a great advantage in reciprocity in connection with the specialty of neurology and that of gynecology. I have this conviction very forcibly impressed upon me every day when I am at work, because of the extreme diffi-

culty encountered in determining whether, in a given case, the disease from which my patient suffers is a local expression of a general neurasthenia, or whether the neurasthenia is the expression of a local pelvic condition. The title upon the program is a little different from that which I gave the Secretary. I said I would speak of the causes of some pelvic diseases which had to do with nervous conditions. It is not by any means certain, as has been supposed, that every ovary which had prominent upon its surface a Graafian follicle, when removed, was cystic. Some practitioners would have us believe that the uterus and ovaries produce nearly all pelvic disturbances. There are other causes to which I shall refer. The relation of uterus and ovaries to this subject has been thoroughly gone over by those who have preceded me.

In a very able article written by my friend, Dr. Etheridge of Chicago, published some months ago, he shows conclusively that a lacerated perineum, although so slight as to be almost imperceptible, does in many cases continue to so disturb the nervous centers that decided neurasthenia may result. He shows also very conclusively that repair of some of these perineal materially benefits the patient, and in many cases cures neurasthenics who have passed through the hands of other specialists, who could detect nothing of the kind. I will couch my words in as modest language as I can, yet I hope that none of the lady physicians present will think me immodest when I speak of such things as concern the happiness of women, women who are the life and peace, and joy and happiness of our homes, and such conditions as send women not only to the gynecologist, but to the insane asylum and to the grave.

Dr. Thomas, in his work on "Diseases of Women," speaking of some of the sequelæ of lacerated perineal, makes a remarkable statement. As among the things which may result, he speaks of impaired sexual gratification to the male in the act of coition. Why a man of his great intellect and colossal experience should not have called attention to the fact that the same condition would have a worse effect upon the woman than upon the male, I do not know. Because of the lack of perineal support and loss of vulval constriction the male organ is not brought against the erectile labia minora and sensitive structures in the anterior angle of the vulva. By carefully inquiring of my patients from time to time, as opportunities have presented themselves for a number of years, I have been much gratified to have women of education and refinement tell me in a modest way that the sad old experience and great sorrow had passed away since a perfect perineum had been produced, according to the method spoken of by Dr. Haggard this morning—restoration of the vulval constriction and restoration of the perineum. I could cite perhaps twenty or thirty cases where I have positive information on this subject, in which women were continually left with the sexual impulse excited, but not relieved, unless by masturbation, and this has been completely overcome by restoring the perineum. I have some other experiences in connection with the same subject which are worth citing.

Some years ago a gentleman in Berkeley, Cal., bearing my name, cut out a section of the pudic nerve for clitoromania. He reported his case as cured, but also stated that prior to operation both ovaries were removed. The oöphorectomy had failed to effect a cure. Following his operation, I cut out a section of

the pudic nerve in a given case, and for a time I believe the patient was better, although she had gone on so far as to be a decided epileptic. After a period of three years I find that I have done no good whatever, and the patient is not well. My second operation was made upon a patient where the ovaries had been removed with no beneficial results at all. I had the pleasure only two weeks ago of seeing this young lady, who was brought from the South. She belongs to a family of wealth, education and refinement, and had become a monomaniac for some reason (perhaps, as I believe, from an inflammatory condition of the pudic nerve). Before coming under my observation her ovaries were removed by a physician in Buffalo, N. Y. Five years elapsed and no good had come from the operation. After taking out a section of the pudic nerve, I found to my satisfaction two weeks ago that she is now perfectly well and entirely restored mentally. Her health was good enough physically before. A careful examination of the parts showed that they were in an almost normal condition instead of being hyperemic and hyperesthetic, as they were at the time I operated. This was one of the most gratifying results I have ever had. Those two cases which have come under my observation, together with the case of my namesake, make it conclusive to me that the removal of the ovaries preceding the operation of taking out a section of the pudic nerve was essential to overcoming the condition.

One of the gentlemen who spoke here this afternoon referred to the cure of insanity by surgical procedures. I had in my experience the case of a young lady who was the head teacher of one of our city schools. She was confined in an insane asylum one year, and then removed from the asylum as incurable. Upon careful inquiry I found that an intense headache came on at the time of the menstrual period. This had gone on from bad to worse until insanity had resulted. In her case I found everything in the pelvis absolutely normal except one Fallopian tube, and that was kinked very sharply, and its lumen completely obstructed. The removal of this tube and ovary upon that side has completely restored her to health. Here was a case under the treatment of the best neurologists for a nervous condition prior to her becoming insane, and yet she was ultimately cured by a simple surgical procedure. I merely cite this case as an instructive one in connection with the point the gentleman mentions.

For a number of years I have been in the habit of inquiring about the vermiform appendix. I have in some of these cases opened the abdomen, searched for the cause of the nervous disturbance, and, finding the only disease of the appendix, removed it, the nervous condition gradually passing away. As to whether it was the psychic effects of the operation, I am not prepared to say. I believe, however, that if we look up the literature of the subject we will find those who speak of epilepsy as a result of intestinal irritation. I recall one instance: In Quain's medical dictionary it is said that disturbance of the mucous membrane of the intestinal tract in children may result in the production of epilepsy and other convulsive diseases. If this little appendix is an incubator wherein all manner of germs may produce a catarrhal condition, and a point from which nervous disturbances are likely to emanate, surely it is to be considered in connection with reflex pelvic disturbance.

At the same time there is another condition which I

have found to be worthy of attention in more cases than one, and it is a point which has been overlooked. I refer to coccygodynia. I believe it to be the imperative duty of every gynecologist, and neurologist for that matter, in making an examination, to pass the finger into the rectum and carefully examine the coccyx. It is well known that the coccyx may be bent forward by falls in childhood or be broken backward by the fetal head in childbirth. This point alone has been sufficient to enable me to find in many cases a condition from which patients could only be relieved by the removal of the coccyx. I recall one case in particular: she had her ovaries removed; she had been in a sanatorium under the best of care; was given massage, baths, etc., for a period of nearly one year; she was declared to be incurable by one of our best physicians. She recovered within four weeks from all nervous disorders after the removal of the coccyx. While I had taught anatomy for seven years I had forgotten the exact relation of the coccyx to the ganglion impar. Getting down Gray's Anatomy, he uses these simple words, "it is located on the coccyx." Then, we have, as it were, an electric button placed at the lowest point of the spinal column which may cast its current upward through the sympathetic into the great central ganglia within the brain or into other parts connected with the pelvic organs. In this connection I must express my belief that it is very rare indeed for any local condition to produce the so-called reflex nervous phenomena in an individual who is not neurasthenic and whose nerves have the proper affinity to attract from the passing blood stream, Lecithin, the material provided for nourishment of nerve cells. In nearly all cases of nervous reflexes there is a pre-existing tendency to neurasthenia, otherwise the reflex cause would only be a local condition producing its local phenomena, and would not produce the usual nervous phenomena so often accredited to local reflexes. I have not in my experience seen local conditions in the pelvis produce the general nervous disturbances so often spoken of. It is absolutely necessary, as I understand it, in many instances where we operate for pelvic disease and the nervous system is involved, to prepare the patient by treatment for neurasthenia and supplement the surgical procedure with appropriate treatment for the neurasthenic condition by the neurologist. Hence our gratification in meeting with the neurologists this afternoon.

There is a class of women who come to us complaining of nervous phenomena. They want to be everything but their present identity; everywhere except where they are now: in some one's company, present company always excepted. They have been to the neurologist, and they go to the gynecologist and undergo formidable operations with a heroism unparalleled in history; yet, after all there is some unhappy mental condition; they are living in some sort of mental torture; there is a skeleton in the closet. They have not loved wisely. They have not married the one they loved.

Their hearts do break and show no sign—
Save whitening lips and fading tresses;
'Til death pours out its cordial wine
Slow pressed from misery's crushing presses.

If singing breath and echoing chord
To every silent pang were given;
What endless melodies were poured,
As sad as earth as sweet as Heaven!

If we could only get at all of these psychical condi-

tions, we might lay down our scalpels and leather bags; there might be some way of curing or relieving such individuals of their trouble and sorrow.

But of all the cursed and damnable causes of pelvic disease and neurasthenia, the horrible means to which women resort to prevent themselves from having children must be considered. My friend, Dr. Price, touched on this subject this morning, and it will not need much more touching up after he has handled it. The thousand and one methods of preventing conception, the mental torture that they continually undergo for fear they will conceive, are frightful to contemplate. By and by, they are, perchance just as wild and crazy to have children, when all of the delicate functions participating in conception and motherhood, have been so impaired, and the pelvic organs so destroyed or diseased, that conception is impossible. Then, too, there are the damnable methods of procuring abortion. I heard an explanation only recently why extra-uterine pregnancy was so common, and it was this; that the fetus even in its smallest form had become shy and hid away up in the Fallopian tubes to escape having its eyes punched out with crochet needles and septic probes of "quack" doctors. (Laughter.) There is in my judgment no one thing which is to-day contributing so largely to the deterioration of womankind and ultimately to mankind, as the damnable methods of the prevention of conception and the procuring of abortion.

NERVOUS AND MENTAL DISEASES FOLLOWING PELVIC OPERATIONS.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY HAROLD N. MOYER, M.D.
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The topic assigned to me is a narrow one, namely, the nervous and mental diseases or changes which follow pelvic operations in women. The purpose of the inquiry is to show if there is any difference in the nervous and mental effects which follow operations upon the pelvic organs from operations done on other parts of the body or surgical operations in general. It would be easy to discuss this subject from one's individual experience, but it would be exceedingly narrow. The observations that come to any one man are certainly few as compared with those that come to a large number of operators, so that I shall not relate individual cases, but will draw conclusions so far as I can, from the literature which is accessible to me and the material which I have collected. The literature is disappointingly deficient in many respects. Reported cases of the nervous and mental changes which follow operations in general are very disappointing, especially when studied from a statistical standpoint. There have been a large number of studies made and cases collected of the nervous and mental phenomena which follow operations in general, but when we come to analyze this material we find that it is so varyingly expressed in different groups and in different tables, that an adequate comparison of a considerable number of cases is well-nigh impossible. If you think for a moment, you will see that the subject is one so complicated in its nature, that it scarcely lends itself to statistical treatment at all. If you remember, for instance, the widely varying opinions as to the efficacy of a particular treatment of

typhoid fever, or indeed so recent a subject as the antitoxin treatment of diphtheria, a disease which is comparatively the same in all individuals, being of short and very nearly the same duration, it would seem as if the statistical method would throw abundant light upon the value of these treatments and would serve at once to settle the question as to their value. But as a matter of fact, it has not done so conclusively in all respects. When we come to consider the subject of operations and their effects you can see that the increased factors which we have to consider constitute such a varied problem that accurate, clear and concise conclusions can not be drawn. I can only bring to you today such general statements and such general conclusions as I myself have arrived at, without being able to give in figures the basis upon which they rest.

The first question which naturally presents itself is this: Is there any difference between operations upon the pelvic organs of women and operations in general? If you examine the statistics you will be at once struck with the number of cases which are operated upon for pelvic disease, which show insanity, neurasthenia and other nervous troubles following operation and probably resulting from it. Some writers have come to the conclusion that these operations are peculiarly liable to be followed by such phenomena; but if you come to analyze the cases more closely, you will find that operations are performed upon persons whose general health is greatly impaired. The great majority of them are very much reduced by a long history of illness prior to the operation. The operations in themselves are many times prolonged, and a by no means infrequent condition is the one of infection, a slow poisoning of the system for which the operation was undertaken. Those necessarily are apart from the operation itself, and they furnish a fruitful soil upon which nervous troubles and insanity are built. In order to get some sort of basis for comparison, I have taken fifty cases of operations upon the prostate and bladder. I have thought there might be some comparable relation between the pelvic organs in the male and in the female. The operation was on the same part of the body and frequently accompanied by ill health, and often in the male by infection. I compared fifty cases, excluding all those in which there was marked disease of the kidney, and I found that the nervous and mental effects following operations which might be attributed to the operation per se, were much greater in the male than in the female. Taking all factors into consideration, operations upon the female pelvic organs are not attended with more nervous disturbance, such as neurasthenia or insanity, than are operations in general surgery.

The character of the mental disturbance which may follow operations is substantially the same, whether the operations are done upon the pelvic organs or upon other parts of the body. The great bulk of them fall within the class of neurasthenia, or that condition which is described by alienists as primary confusional insanity. These two conditions seem to be the great predominating mental and nervous states which follow operations.

Again, I tried to study the question as to the particular character of the operation, and as to the part that was involved in the operation, and to find out if that had a bearing upon the question. I am unable to offer any conclusion on this point. Those

operations which include the ovary or Fallopian tube, and which are followed by the artificial or early menopause, were carefully studied, and I particularly addressed myself to the question as to whether there was any difference between the nervous phenomena of the artificial or induced menopause and the nervous disturbances which accompany the menopause at the ordinary time of life. My conclusion is that there is no essential difference and that they are practical, so far as nervous phenomena are concerned.

Another question is: Whether the removal of the ovary added an additional factor, in the sense that there was something taken out of the economy, if you please, by which there was created an unstable or peculiar nervous state; something that was comparable to the removal of the thyroid gland or an internal secretion cut off, and whether there might be mental phenomena growing out of the removal of the ovary distinct in their characteristics from the artificial menopause? I have no conclusions to offer upon that phase of the subject. I have not formed an opinion as to whether that is so or not, as the evidence is very conflicting. It may or may not be. Certainly, so far as the effects of operations are concerned and so far as my studies go, there seems to be a practical point in this, that the ovary had better be left in, or a part of it, if possible, and there is also sufficient to warrant the deduction that resection of the ovary is far preferable to removing it, if it is possible to do so.

In conclusion, therefore, I would simply say that I have arrived at the opinion that there are no radical differences in the primary effects of operations upon the pelvic organs in men differing from the effects of similar operations in women, or indeed of operations in general surgery, and that there is a distinct and peculiar effect from the removal of the ovaries or tubes, or both, by which the menopause is established, but that that does not differ in its nervous phenomena from the menopause occurring normally at the ordinary time of life. As to the possibility of a peculiar physiologic effect following extirpation of the ovary, not attributable to the menopause, I have absolutely no conclusion to offer.

DISCUSSION ON PAPERS BY DRs. EASTMAN AND MOYER.

Dr. Milo B. Ward, Kansas City, Mo.—I could never quite understand how it is that we have so many differences of opinion in our profession regarding a question of so much importance as the one before us today. One physician will come before you and say that surgical interference is never indicated in neurotic troubles, and that the results are never good. That is the implication at least. Another will tell you that of very many cases that have come under his observation the majority of them, when operated on judiciously, recover entirely. We take the history of one case, for instance, in our experience and make it cover the whole experience of our practice. For instance, if I operate on a patient who I know has a nervous affection and she does not recover, I am frightened out of doing an operation for like conditions on other patients. About three years ago, when I was called upon to discuss this question in the State Medical Society of Missouri, I said then that I did not believe surgical interference was ever indicated for neurotic troubles unless the pathology was very marked, and then we operate for the pathologic condition without any expectation whatever of deriving much benefit from the operation as to mental influences. I am here today to champion the opposite of that opinion. I have had cases enough in my own experience in which relief was so perfect following surgical interference for disease of the pelvic organs and marked nervous disturbance, that I think we have here a great field for investigation and work. We are bound to admit that there is no other influence in the human economy that has so much to do with the general system as the pelvic organs in the females.

About a year ago a young lady was brought to me under the

impression that she had some pelvic trouble. Her father had been told by his physician that she had epilepsy; she was a great sufferer, and it was really a pity to look at her. I examined her carefully under ether, and found absolutely no pathology in the pelvis. I stated as my further belief that an operation for pelvic trouble was not indicated and that I would put her on the improved treatment for epilepsy and watch the symptoms. After two and a half months' treatment the young lady improved, but not satisfactorily so. I made an exploratory incision and finding that the appendages were diseased, removed them. The young lady went home at the end of five weeks perfectly well and has not had a symptom since then.

I have had two cases in the last six months where I have removed the uterus for disease. In one case the appendages were removed for neurotic troubles. These patients were great sufferers constantly for weeks and months, and both of them are well today, having had no symptoms since the operation. I have been informed recently, although I can not give the author of the statement, by a physician who heard the report that in Toronto an alienist reported that a hundred and nine cases in the asylum there were subjects of various pathologic conditions, and each one had had an operation performed, and of that number about seventy-five per cent. of them were sent home well. How are we going to account for that fact unless there is some relation between the pelvic organs and the general nervous system?

A few years ago I had the honor to be gynecologist for the Topeka Insane Asylum. There were two patients brought to me with the belief that something could be done for them by resorting to operative interference. One young woman had homicidal insanity; tried several times to kill herself, and was brought to the asylum as incurable. In her case I found marked pelvic disease with adhesions, and I said to the husband, "I will operate on her, although I do not believe it will do any good." I removed the diseased organs, and strange to say, that woman never had a symptom after the operation. It is three years since the operation was done and she has never had any symptoms since.

Dr. J. T. Eskridge, Denver—I am sure we are very much impressed with the change that has taken place during the last fourteen years. I remember—I think it was in November or December of 1883—of participating in a discussion before the Philadelphia County Medical Society on this subject. There was a distinct antagonism between the position of the neurologist and that of the gynecologist. As you can recognize from the discussion this afternoon this feeling has largely passed away. We are coming to recognize that the mutual relations of certain specialties are so strong that we must work together, if we work for the good of our patients. I feel very closely associated with the general practitioner of medicine, with the gynecologist, the laryngologist, the ophthalmologist and with the specialist of acute and chronic diseases in both male and female. I feel that every man must know something of everything in medicine and everything, if possible, of some one special subject. We find patients coming to us who complain of various symptoms. If a patient comes to me complaining with an array of nervous symptoms which have existed for some time, and I find on inquiry that the symptoms point strongly to the pelvic organs, I do not submit that patient to the expense of an examination from a neurologic standpoint, but I send her to a gynecologist and let him find out whether there is any special trouble in the pelvis first. I realize the fact that I am to do my best, and if some organic lesion exists in the pelvis it is impossible to cure the patient until the organic lesion is relieved. The gynecologists and neurologists of Denver work together in this respect. If I begin to investigate a case of nervous disease, and find there are other symptoms which strongly point to some local trouble, be it in the chest, in the nose or the eye, I invariably send the patient to the proper specialist for investigation before I try to thoroughly examine her. A neurologist should be made the broadest of all specialists. He should investigate his cases most thoroughly, but only after certain conditions are excluded. I have tried to cure certain cases of nervous diseases that presented decided symptoms of pelvic trouble. I have succeeded in many of them, but have failed in others. Now, I never try to cure a case of nervous disease, such as neurasthenia, until I have excluded the possibility of local trouble in various portions of the body. Further, I believe that certain conditions, depressed states of the nervous system, may cause the development of symptoms in special organs of the body; that we may have a person simply in a neurasthenic condition extending over a period of years and she may after a while develop some pelvic trouble, and a gynecologist getting hold of the patient may think that she has suffered all the time from some intra-pelvic trouble, when, as a matter of fact, it is not so. The intra-pel-

vic trouble has been subsequently developed; her state of health has been depressed, other causes have acted locally and local trouble is developed.

In regard to how much intra-pelvic trouble has to do with the causation of nervous troubles, I think everyone who has had much experience will say that they have a great deal. We can have a typical train of nervous symptoms due to intra-pelvic trouble, as has been developed over and over. We can bring forward numerous cases of insanity that we have seen cured by operative measures, but no cases of dementia existing over a period of years. Dementia is practically incurable, that is, it is never cured by intra-pelvic operations. But the insanities are cured. A number of cases of operations upon the body other than the pelvic organs have resulted in a cure of mental disturbances. I could cite a number of cases of insanity that have been cured in this city by prompt surgical measures. These were comparatively acute cases of insanity. But there is a happy medium, and that is just what we are all striving for, and the nearer specialists work together, the sooner we will reach the goal. We should investigate our cases from an unbiased standpoint; we should investigate them so that we can get an exchange of opinion, and I hope the time is coming when we will have other symposiums on different subjects, so that we can understand each other. It would be a good thing if we could meet together in one room, but we can have symposiums from year to year and learn the views of others, although our work runs separately.

Dr. JOSEPH PRICE, Philadelphia—During the last year or two neurologists have paid quite as much attention to gynecology theoretically as we have, but not quite so much, I regret, practically. If they had paid as much attention to the diagnosis of the pelvic viscera as they have to the theory of neurasthenia, they would not have appeared in print as often the last year or so, and some of the gentlemen have figured in this discussion.

Intra-pelvic disease in private practice and in our public asylums is largely responsible for many of the nervous disturbances found. I recall a case that came under my observation some years ago, in which a woman was said to be suffering from vesical or rectal disturbance, and I was asked if I would not see her. I saw her the following day, relieved a simple fissure by division, and returned the woman, who was lodged in an asylum, to her home. She is now an active woman, and has borne a large family. Dr. Potter of Germantown once referred a patient to me who was wearing a spinal brace, and I think a jury mast. She had been married some years ago and had never conceived. She was greatly emaciated; she had all sorts of emotional disturbances aside from her physical incapacity. On examination I found the uterus and appendages fixed, and where we have a fixed uterus and appendages we have occlusion with retention of fluid, pus or water—always. I removed the diseased appendages, freed the uterus, and she made a good recovery. She has not worn the jury mast or spinal brace since. Another case: A woman from Pottsville, the wife of a prominent business man, was confined in an asylum. Her husband was urged to consult me, and I advised him to bring her home. This he did. On examination I found the appendages diseased, with occlusion and retention again. I removed the diseased appendages, and the woman has made a beautiful recovery.

An active practitioner in West Philadelphia brought a patient to my office some two years ago. She was a young woman, 20 years of age, and she had been treated by three prominent neurologists of Philadelphia. He went on to tell me that her mania and nervous disturbances were of such a marked nature that it was necessary to confine her or put her in a jacket. The nervous disturbance was always aggravated at the menstrual period. He asked me if I would attempt to do something for her relief. She was the daughter of intelligent people in good circumstances. The young woman was admitted to my hospital in a strait-jacket. This was removed and she was controlled by two good nurses. In that case I found simply prolapse with fixation, a subject you have discussed most carefully. There was also great tenderness. The local conditions had been treated by general treatment, but unfortunately not by local methods. I removed the appendages and she recovered beautifully. She went to the country and her convalescence was prolonged by quiet and rest. I do not think she has ever had a convulsion since, and she is now a devoted daughter, and goes out into society.

Some years ago I did a few operations in my native State, and while visiting an institution at Petersburg, Va., I had a curiosity to know how many colored women in that asylum were burdened with fibroids. I do not believe that most women who have fibroids are entirely themselves. There is always more or less marked disturbance. I went over the asylum and

examined the colored women rapidly for one hour with fibroids and tubal and ovarian disease. In some cases it would really have been difficult to have passed a catheter between the fibroid, compressing the pubic arch, and the urethra. It was the saddest experience I have ever had in gynecology.

Regarding nervous phenomena following operations, I am perfectly willing to admit that we have had too many post-operative sequelæ and too many local lesions following our operations; but many of the operations early in the history of gynecology were imperfect and incomplete. The materials were badly chosen, and are yet in many cases. Very few gynecologists and very few surgeons are serving the apprenticeship they should serve. For instance, I am constantly removing dead ligatures, and all of you who are doing much of this work are doing the same thing. Three days before I left home I did three consecutive sections. One woman had had two sections performed on her. While operations are done with badly prepared materials we will have all sorts of nervous disturbances and local pain until they are removed.

The specialists in other departments have been very fair. I have specialists who constantly send patients to me. Nose, throat and ear men send patients to me and ask if there is anything the matter with the pelvic organs of their patients. I examine them carefully and write them if I find the slightest lesion whatever. If there is but slight tenderness and absence of adhesions of any character on the right or left side, I tell them a little general treatment judiciously directed by themselves will be sufficient, and that operative interference is out of the question. They follow my instructions, and the patients are willing to be guided by their counsel and treatment, and are benefited. Early in the history of this subject we were probably all guilty of doing operations we should not have done, but we do not feel so badly about it because the cases were very few, and it is easier in a progressive profession simply to practice levelling.

Dr. HENRY O. MARCY, Boston—Your presence during three long hours upon a discussion of this subject is sufficient evidence of the intense interest and value of it. But I am reminded that this discussion should have closed with what Dr. Price has told you. However, there is something else to be said. It is not a very great while ago that a story was told me of the late distinguished Benjamin Butler. His assistant interrupted him in the midst of one of his debates to give him a point, and he turned to him and said, "When I have got through, you can rake behind." When Dr. Price gets through there is very little raking to do. It is said that a student in New York from the Allegheny Mountains, after hearing a discussion upon this subject by one of his professors, turned to one of his friends and said in his vernacular, "I'll be gol darned, I'd rather be a moonshiner in the mountains of Tennessee than to be a uterus in the city of New York." This subject is by no means so new as some would have us believe. I am reminded of a celebrated discussion that occurred between two most notable men sixty years ago in London: Sir Benjamin Brodie and the great Watson, who wrote the practice of medicine in two volumes which we were asked to digest in our earlier days. After they had gone over the case carefully, Sir Benjamin asked this great physician his opinion, and he said: "Sir Benjamin, it seems to me, Sir, that it is equally good practice in medicine, as it is good practice in surgery, that if you find the offending organ, to deal with it in accordance with its real merit." That may settle altogether the question you have had so long under discussion today. When you have found the offending factor it is your duty to consider it in the light of the better knowledge which it is our profession to possess. This may settle the question in broad terms. You all know that the experiences that have been related today are not alone, but that they can be multiplied in the experience of every individual present. I am glad to tell my friend, Dr. Ward, that it was none other than the distinguished Dr. R. M. Bucke of London, Ontario (superintendent of the Inebriate Asylum), who, as my guest less than three years ago, said he would go back to Ontario and ascertain by careful examinations made by good gynecologists how much a factor pelvic diseases pertained to the patients there incarcerated. And last summer at the Montreal meeting of the British Medical Association he made the report to which Dr. Ward referred, and he told me afterward personally that in more than 80 per cent. of the cases there were complete cures, the patients' mental equilibrium being restored. I believe that Dr. Price is right regarding our asylums. In Massachusetts I have asked several times that the inmates in our institutions for the insane be examined by a competent man, and I have had the requests denied. It is a question that has a practical bearing. I am sure there are many cases in which, after pelvic opera-

tions, mental troubles have been relieved. Plenty of cases can be reported. Here is one, for instance. A woman had been married seven years and for this period was practically an invalid in bed. She was brought to me 500 miles, and after the removal of the offending pelvic organ she was completely restored; she took her position in society and made her home happy. Four years later she came to see me and said that she was not feeling quite well, and this time the appendix was the offender, which had been carried down by some forcible act into the pelvic structures and was adherent behind the uterus. The appendix was removed and again she was restored to health.

Not long since a patient in my private hospital was brought to me in a strait jacket; she had worn a suspensory apparatus so long a time that it had deformed the body. She had been in one of our general hospitals for several weeks, had been examined by neurologists, and they had declared nothing could be done. After a careful examination I found adherent adnexa, disease of the ovaries, removed them, and four weeks afterward the woman was walking without her jacket, and only a day or two before I left home I was informed that she was progressing rapidly. This is not an isolated case; each member of the Section can multiply them in great number. Take the diseases that come from pus tube and many affections of that character, and ask yourselves as to the results following surgical interference. But in closing this already too long discussion, for I see many of you are tired, I would like to say this, that in all of the discussions in which I have participated I have rarely seen such equipoise of good judgment and of discrimination as has been shown in the debate to which we have listened this afternoon.

Dr. CHARLES H. HUGHES of St. Louis, Mo.—I believe I had the honor by invitation of Dr. Marcy of reading the first neurologic paper in this country before a gynecologic body. I selected, at the suggestion of Dr. Marcy himself, the theme, "The Neurological Aspect of Gynecic Disease." We all sail in the same boat. We work in the same field, and we are obliged to work together; we can not make any progress without it. Neurology depends upon gynecology largely in the affections of women, and it is apparent to leaders in gynecologic thought that the nervous system is no longer ignored, and has not been for decades in the history of gynecologic practice by the most eminent, practical and best gynecologists of our day. There is no quarrel between the average intelligent gynecologist and neurologist today, and if I had made the opening speech I should have congratulated both departments upon the wonderful growing together of neurology and gynecology, and the notable advances which both specialties have been making in the last three decades. Neurology is a young specialty. Gynecology antedates neurology a long way. You have a longer time in which to look over past records. You have committed some errors; ours are yet to be made. The question we are both endeavoring to determine with scientific accuracy is when and where and how to interfere gynecologically, and when and where and how to proceed neurologically in a given case involving woman. Our observations teach us that it is absolutely impossible for either of us to get along without the other and be successful practitioners of medicine. We have learned, gynecology has learned, and now gynecology teaches that a neuropathic diathesis is not to be obliterated by an operation, and neurology acquiesces in the dictum of gynecologic thought. It is not the intelligent, up to date gynecologists that neurologists quarrel with; but it is the intermeddler who knows neither gynecology nor neurology. Neurology does not exempt a woman's pelvis from those necessary operative procedures which are so essential in the presence of disease. An unstable nervous organism may be rendered stable by a judicious and timely pelvic operation. The gynecologist does not cure the underlying, the neuropathic, hereditary instability of the organization. It is only men of limited knowledge in gynecology or neurology that make this assertion. The atmosphere is becoming clarified, and we are seeing more clearly than ever before, and we are working together.

Dr. Price referred to a case of insanity being cured by treating a fistula. When I was 22 years of age, in a military hospital, I recollect relieving a fistula and curing a case of melancholia in three weeks. The neuropathic instability was there; the determining factor that produced the latent melancholia was removed and the man was restored to his normal condition. That is the value of the neurologic idea of gynecic operations. We do not step upon rational gynecologic procedures. We ought not in a discussion like this to attempt to make each other out culprits and disparage the efforts of the other in this work, because we as neurologists can not get along without gynecology. We do not want it, and you can not get along without us, without borrowing information from neurology; nor can we without borrowing information from gynecology; nor do we want to.

My object in participating in this discussion is to put neurology in its proper aspect before gynecology. It is the needless, middlebore gynecology that we object to; it is the psychical effects produced at certain times by gynecologic procedures that are not necessary, but whenever an operation is inevitably necessary no neurologist, properly informed, dare object.

Dr. S. C. GORDON, Portland, Me.—I had the honor to be Chairman of this Section at the meeting in St. Louis in 1886. The title of my paper at that time was "Hysteria and its Relation to Diseases of the Pelvic Organs," and was based upon operations that I had made from 1883 to 1886 in just this class of cases. I showed from the cases detailed there abundant proof to my mind that removal of the ovaries had produced relief of the nervous symptoms, or of hysterical symptoms. Before that time neurasthenia had hardly come into use. We had hardly discriminated between hysteria and neurasthenia. Now, some of the cases operated on and reported at that time have been neurasthenia. I am not sure they were not. I am sure, the neurologists of today would not have called it neurasthenia, and neurologists all admit, that neurasthenia may have a pelvic origin, and it may be relieved by operations upon the pelvis. I do not mean to say, that I did operations at that time that were needless.

I was called at that time, "a radical." Dr. Joseph Price has been called a radical. It never disturbed me very much, because I know I did a great deal of good in this radical direction. Since then I have learned a good many things; I have learned to do conservative operations upon the ovaries and tubes, and such operations have been beneficial, as has total extirpation of these adnexa. But I am still a radical, and in every case where I feel obliged to remove the adnexa, I remove the uterus and all. I get rid of the whole business. If that is radicalism, I make the most of it. I do not remove the tubes and ovaries for conditions that I once did. But the point made by Dr. Humiston of Cleveland is a strong one, and that was made prominent by Dr. Palmer of Cincinnati in a paper read before the American Gynecologic Society three years ago, namely, a sclerosed condition of the tunic of the ovary. You cut the ovaries with a knife and you can cut the finger with the edge of the incision in the ovary. Those are cases that no neurologist in the world can benefit, and when they have nervous symptoms connected with this condition I remove the ovaries, but I do so only after a careful examination and the conviction that such is the physical condition of these ovaries. Therefore, I believe we are doing a great work in this matter. We have done a great deal in this direction, and we all learn from our mistakes. We believe we have benefited hundreds of women by radical operations.

Dr. C. E. RIGGS, St. Paul—I think this symposium has proved of the greatest benefit. We have learned some valuable facts, namely, that we are very much closer together than we really knew of. If a woman has local trouble she expects to be neurasthenic or hysterical, and possibly insane, that is, in extreme degree. I never will forget a case I saw in the Salpêtrière a little over a year ago, shown by Charcot the younger. It was a woman who had a great desire to be an angel. So intense was the desire for it that she went into the chapel where the beautiful pictures were with hands clasped, rising on the feet ready to soar and pierce the heavens. She did rise on her feet. She had an hysterical contraction of the gastrocnemius muscles, and the only one thing she lacked was wings.

This feeling, that there is something particularly serious about pelvic conditions is destined along the line of suggestion to do a vast amount of harm. I remember Charcot saying, never, never remove the ovaries for hysteria. I do not think he meant to exclude the removal of pathologic ovaries, and I am sure, no neurologist, who has looked at the subject broadly, would take any other view than that if the ovaries were the source of reflex irritation they should be removed. I have in mind at the present time a woman who was said to be having serious trouble during the adolescent period, and finally, not knowing whether the ovaries were exactly healthy or not, they were removed, and for seventeen years that woman has been an invalid. The ovaries should have been allowed to remain. I think resection of the ovary in some cases would prevent many serious consequences along the line of nervous troubles that usually follow. As to mental troubles, it is absurd to suppose that pelvic disease can cause dementia. Terminal dementia, as has been said by my *confrère*, Dr. Eskridge, is absolutely incurable. There is no doubt but what local troubles can cause a neuropathic condition; but when we have degenerated cells, we have hyaline and fibroid degenerations in the blood-vessels, we have increased neuroglia, we have thickened membranes, we have all of these things closing the drama of the life of an individual which no operation can remove.

A CONSIDERATION OF SOME OF THE REMOTE SYMPTOMS AND COMPLICATIONS OF A PELVIC DISEASE.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. D. NILES, M.D.
SALT LAKE CITY.

The existence of an intimate relationship between diseases of the female generative organs and morbid conditions and functional disorders in other parts of the body was known and appreciated in the earliest days of gynecology. The older gynecologists, guided as they were by clinical observations alone, and misled by a false pathology, based upon speculations and guesses, regarded these conditions and disorders as expressions of a mysterious, sympathetic or nervous influence that these organs, when diseased, exercised over remote parts of the body. For many years such obscure, vague and indefinite explanations satisfied the arm-chair theorist and furnished guidance and consolation to the office gynecologist and his patients. So long as our knowledge of pelvic disease was limited to conjectures suggested by the position of the uterus, the character of the vaginal discharge, the appearance of the os, etc., and our treatments were confined to applications, poultices, injections and sedatives, these unsatisfactory and untrue explanations can not be said to have been absolutely harmful. But with our present conception of the pathology and surgical treatment of pelvic diseases, it is both possible and necessary to obtain a clearer understanding of these remote symptoms and complications; and the serious consequences of overlooking and misinterpreting them are emphasized today by many a sufferer from an unnecessary, ill advised, poorly planned or neglected operation. The complaints of these sufferers not only remind us of actual errors or oversights which we should strive to avoid, but often serve unfairly as texts for remonstrances against surgical treatment in general.

Tempted and sometimes misled by the allurements of the more brilliant life-saving procedures, I believe we are prone to forget that the ultimate fate of our patients, our own reputations and the further advancement of surgery depend today more upon our correctly interpreting these symptoms and our prevention and proper management of these complications, than the devising of any newer and quicker methods of removing a pathologic specimen or of evacuating a pelvic abscess. The patient may soon forget the length of time in bed and lose interest in the size or location of an operation scar, but neither she nor her physician can banish from their minds the misery and suffering resulting from an imperfect diagnosis or an incomplete operation.

In examining a patient suffering from a possible pelvic disease, I have found it convenient and helpful to recall that the remote effects of pelvic disease may be due to the following causes:

1. *Septic infection*, ranging in virulence from puerperal septicemia, attended by chills, high fever; sweats, etc., to the mildest sepsis which may be shown by a slight headache, feeling of malaise, bad color, loss of strength, etc.

2. *Pressure upon nerves, vessels, ureters, bowels or bladder* causing neuralgias, local congestions, hemorrhoids, vesical irritation, painful defecation, constipa-

tion, partial or complete suppression or retention of the urine with resulting general symptoms.

3. *Bladder, bowel or omental adhesions*, the latter producing a chain of symptoms, due to the weight and dragging upon the stomach and colon of an adherent omentum. I believe that in women a large number of the cases described as gastro-enteroptosis may really be suffering from this cause or from colons heavy with fecal accumulations.

4. *Nervous reflexes*.—Under this head are included all those symptoms which with our present light can not be satisfactorily explained on any other hypothesis.

The wide range of symptoms capable of being produced by these four sets of causes may be advantageously considered in groups as follows:

1. All those that are due to deterioration of the blood, either by septic absorption or defect in the eliminative organs.

2. Those that are due to pressure upon the nerves or blood vessels of the pelvis. Among the pressure symptoms are also included all those non-inflammatory and non-malignant hypertrophic or atrophic changes in the ovary or endometrium which by pressure or irritation of the nerves or glandular elements cause distress or functional derangement.

3. Those that are due to functional disturbances or organic disease of the stomach and intestine from omental or bowel adhesions. In this group would be included such cardiac and nervous symptoms and evidences of malnutrition as may result from gastro-enteric disease.

Given a pelvic lesion, I believe that a reasonable explanation of most of the remote symptoms will be suggested under some of the above headings; or given the symptoms indicated in the foregoing classification inexplicable otherwise, I believe that we should search the pelvis for a possible cause, even in the absence of local signs or symptoms.

The two sets of symptoms which in my experience and observation we are most prone to overlook, underestimate or misinterpret are: 1, those symptoms of a mild systemic infection from low-grade chronic inflammation, and 2, those distressing derangements or grave diseases of the stomach and intestines, that bowel or omental adhesions are capable of producing.

Arthritis, tonsillitis, headaches, neuralgias, general mental and physical depression, evidences of malnutrition and all the well-known symptoms of a mild toxemia, with or without fever, may be due to absorption from a chronic salpingitis or an endometritis that may produce but little pelvic distress. All pelvic surgeons have observed the emaciation in chronic pus cases long after the acute symptoms have subsided. Dr. Price was the first to call my attention to this wasting, particularly in the legs of such patients, and he regarded it as a symptom of some significance. My own observations lead me to conclude that as a rule the nervous system is first to feel the effects of this deterioration of the blood, then the muscular system, but any of the structures of the body may suffer to an extent that might easily divert our thoughts from the real source of the trouble. I think that when these indications of blood deterioration occur and no defect in the excretory or assimilative functions can be discovered, we may assume that they are due to toxic absorption, and in women between the age of puberty and the climacteric the most probable source will be found in the pelvic

organs, just as in a man a posterior urethritis or a chronic appendicitis is the usual origin.

The stomach and intestines seem to readily adjust themselves to the changes in position and crowding produced by large tumors or pregnancy, but any interference with the functions of their muscular coat, impairing, preventing or reversing normal peristalsis, whether by direct pressure of tumors, the dragging, constricting or occluding of bands of adhesion or the action of toxic irritants, may be followed by the most serious results. Normal peristalsis depends upon perfect and regular contractions of the circular and longitudinal fibers of the muscular coats of the intestines, and as no chain is stronger than its weakest link, any band of adhesion that serves to impair the functional activity of any part, however small, of this muscular coat, must interfere with normal peristalsis. Taking this view and taking into account the frequency of these lesions, I am convinced that peritoneal adhesions rank second only to sepsis in the production of distressing and dangerous symptoms. All pelvic and abdominal surgeons who have studied carefully the many recent excellent articles upon gastropnoxis, gastro-enteroptosis, dynamic and adynamic ileus, etc., must be impressed that these conditions are due, not directly to downward displacement of the abdominal viscera but to interference with the normal functional activity of the muscles employed in peristalsis and that this interference is usually due to the dragging, constricting or occluding effects of adhesions, or in rare instances to the presence of microbic or other irritants (as lead). This view is further corroborated by the well-known fact that the omentum is always quick to attach itself to any pelvic inflammation and the contraction and the impaired mobility that ensues is likely to be followed by dragging upon the colon and stomach and attended by characteristic gastric symptoms. A colon heavily loaded with fecal matter may produce the same dragging with similar symptoms. The vomiting accompanying hernia of the omentum is susceptible of the same explanation. In a large proportion of the autopsies performed upon child-bearing women, a sagging colon will be found that has produced no suggestive symptoms during life, unless chronic constipation, peritoneal adhesions or exposure to lead poisoning previously existed. I believe, therefore, that we are not justified, as a rule, in regarding this displacement, taken by itself, as a pathologic entity. The following case illustrates well the point I have attempted to emphasize and will doubtless recall other cases where the remote symptoms and complications overshadowed and obscured the original pelvic lesion.

Mrs. C., Idaho, aged 37, housewife. First seen Feb. 20, 1897. The patient, an extremely pale, anemic, emaciated woman, gave a history of having been ill for two years. During the most of this time she had been under active treatment for a grave stomach disease which was regarded by her last medical attendants as either gastric ulcer or cancer. She certainly gave a very suggestive history, viz., severe pain over the pit of the stomach, radiating to the back and shoulders, worse after eating; vomiting daily, food, coffee-ground material, and at times considerable blood. She had lost fifty pounds in weight and for the past six months had been bed-ridden most of the time. Her diet had been soft predigested foods taken in small quantities. When the paroxysms of pain occurred the only relief she obtained was by the use of morphin and the stomach tube which had been her constant companion. There was no tumor nor marked tenderness, but the stomach was displaced downward until when distended it extended below the umbilical line. It seemed to me that in

spite of this history, the length of time should exclude cancer and that we had not the typical symptoms of gastric ulcer. Vaginal examination disclosed a retroverted uterus, the fundus pressed to the right by a small immovable tumor.

On February 25 I opened the abdomen and removed a dermoid cyst, the size of a small orange, containing bone, cartilage, hair and sebaceous material. The adhesions were extensive and strong, attaching the lower order of the omentum firmly to the tumor and thus dragging upon the stomach. These adhesions were thoroughly broken up and the abdomen closed without flushing or drainage. The patient made a smooth recovery and left the hospital quite well four weeks later. I have heard from her at intervals ever since and always favorably. She eats anything and everything with impunity, has no distress or occasion to take a dose of medicine. She has regained her former weight and strength and in every way appears perfectly well.

Septic infection, peritoneal adhesions and the presence of tumors or growths are the chief indications for pelvic surgery.

The relative importance and responsibility of each of these pathologic factors as a producer of distressing or dangerous conditions indicate to the pelvic surgeon the relative claim of each to surgical attention. Those of us who are convinced that no one of these factors should be neglected in any operation under any pretext, can not consistently endorse those surgical procedures, which include alone, the removal of pus or the pathologic specimen perhaps, but does not embrace the breaking up of all adhesions. We believe that the present growing tendency to do such incomplete work will be found unsatisfactory in time, as further study and experience reveal the evil consequences, remote and immediate, of such operations and render apparent the true origin of these consequences. Those who have a working as well as theoretic faith in complete work can not, to my mind, look with favor upon any vaginal operation for the relief of pelvic inflammation, the delayed operation for appendicitis, or the leaving of an abscess wall or gangrenous appendix, or bands of adhesions after opening an appendiceal abscess, nor upon the so-called conservative work upon the appendages. Neither can they regard any peritonitis infected by an inflamed tube or appendix as ever cured except by operative measures. Illogic and misleading references to so-called clinical recoveries, the exaggerated advantages of a quick and easy operation, short time in bed, lessened shock and hidden scar will not, if they are true to their faith, tempt them to subject their patients to the dangers of an incomplete operation.

In saying this I do not forget that among those who teach and practice these incomplete appendiceal and vaginal operations, and this so-called conservative abdominal surgery are operators whose skill, reputation and sincerity can not be questioned; and their honest belief that these methods give the maximum amount of relief, with the minimum amount of risk, is not to be shaken by ridicule, abuse, statistics or persuasive arguments. But I trust and believe that their conversion to the complete operation will come as the importance of peritoneal adhesions as a pathologic factor is made apparent to them in their practice.

The actual increased immediate risk of the complete operation, we can already approximately determine, but the real point of contention, and that most difficult to make apparent and agree upon, is our estimate of the serious remote consequences of peritoneal adhesions, partially devitalized tissue remaining in the peritoneal cavity, pressure, symptoms, etc. As further study, experience and observation shall reveal just how much and how little these factors have to do

with our ultimate results, we will progress toward precision in diagnosis and in treatment. In the meantime neither the diagnostician nor the operator can afford to be diverted by the urgency, prominence or immediate danger of other symptoms from a fair consideration of those less acute, more remote but not less grave, symptoms, complications, and sequelæ which usually exist and often menace the health, well-being and even threaten the life of patients suffering from pelvic disease.

PELVIC INFLAMMATORY DISEASES.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY A. H. CORDIER, M.D.

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This subject would seem to be worn threadbare, judging from its being so often used as a theme for discussion, yet the fabric, being of great surgical value, has rather improved by use and age. The discussion of any topic in which the questions of human life and comfort are concerned is always timely and of interest.

Sentiment and fashion should never be permitted to enter into a proposition where the question is one in which these unsurgical twins have long since proved themselves monstrosities.

Abdominal scars have been used as breastworks behind which some surgeons have hidden their fears of removing complications and the performance of complete work, while they made and abandoned tunnels in which the enemy threw up additional fortifications to repulse the invader who attempts to reduce their stronghold to liberate imprisoned organs and dislodge the offending cause.

It is perfect surgery, or as near perfect surgery as possible, that all surgeons should desire, but before accepting precepts involving human life and comfort, all evidence should be brought to bear on the topic, duly analyzed and weighed for its proper worth. Occasionally a surgeon who has been obtaining almost uniform good results will give up the old for something new and uncertain.

The limit and the character of the pathology should form an indication as to the character and the extent of the surgical procedure. A succulent and pus-infiltrated uterus, with possibly numerous pus foci, surrounded with pus-laden tubes and ovaries, should be removed, the choice of operative procedure being the one that, in the opinion of the surgeon, offers the greatest chances of immediate recovery from the operation, a permanent relief of the constitutional (septic) manifestations, the local symptoms resulting from the presence of these diseased structures, and the repairing of the damage to surrounding organs wrought by their presence.

A cancerous uterus should always be removed, if seen before the disease has extended to surrounding organs. The tubes and ovaries, as a rule, should be taken along with it, thus keeping as far beyond the diseased area as possible.

A uterus known to be tuberculous should be removed along with the appendages, as by so doing a systemic infection may be averted. The cancerous and tuberculous uterus, as a rule, can be removed through the vagina, for, if the disease has advanced so far as to involve the viscera, the case is an inoperable one, and should be left alone so far as surgery is concerned.

The operation that promises nothing more than a specimen and a fee is not within the domain of legitimate surgery.

In an old, recurring, puriform disease of the uterine adnexa, where adhesions are well organized and where the intestinal bladder and the omental attachments are firm, the vaginal method would be fraught with more danger than the abdominal. These cases have established in part a peritonitic immunity by a prolonged and gradual process of auto-serotherapy; consequently the abdominal method is not so liable to inaugurate an acute, dangerous peritonitis or septicæmia, as is often the case in the acute or primary attacks, if operated on.

Some of the advocates of the vaginal method, only a short time ago, maintained that it was an admission of incomplete operation to use drainage, yet they advance the good drainage by the vagina as an argument in favor of the vaginal route.

It has long been an established and demonstrable fact, that in the majority of instances, the uterus is capable of taking care of itself, and that it does not give rise to any trouble by its presence after the diseased appendages have been removed. I do not understand why an organ with a good and free natural drainage should not recover, and yet, as is claimed, an ovarian abscess or parts of diseased tubes, with walls as thick and as shaggy as a cocoon, get well with an opening into the vagina.

To remove the uterus and a part only (as is admitted in many cases) of a diseased tube and ovary, and leave a filthy sequestrum in the pelvis, and expect Nature to cure the case, is not good surgery, and a larger percentage will be found to have imperfect recoveries, fistulæ, and continuance of the pain, than if the work had been completed. This it is possible to do, and it is done by good surgery when operating suprapubically.

The Trendelenburg position and vision surgery took possession of the minds and technique of many operators a few years ago, and numerous articles were written lauding the advantages of that position while doing abdominal and pelvic surgery. The pathology is really confined to the pelvis, but its effect and extension are often found at the umbilical level. Some of the operators (and many of them are skilled and successful in every surgical sense) are now practicing and teaching the dark-route (vaginal) method, where strong instruments, the sense of touch, much muscle, and adhesive or staying qualities are factors in the make-up of the surgeon and his surgical outfit, and essential to getting the specimen or part of it.

The vaginal-route operation is not an easy one, neither is it as quickly performed as the suprapubic.

Pus is not always found in the tubes and ovaries where their removal is demanded. Firm and well-organized adhesions are often found binding the omentum, bladder, uterus, tubes and ovaries firmly together. These adhesions were at one time Nature's breastworks thrown out for the protection of surrounding organs, but, like Nature's works in many other localities, she here fails to undo her imperfect work. The vascularity or limit of these adhesions is only determined at the time of the operation. An omental adhesion to the fundus may be torn across in the beginning of an operation, and scarcely a drop of blood escape, while in another, hemorrhage may quickly prove fatal. A bleeding of this character is

best controlled by a good ligature, such as it is only possible to apply in all cases correctly by the suprapubic method.

A prolapsed uterus, surrounded by inflammatory diseased tubes and ovaries, can best be treated by a vaginal hysterectomy, removing appendages at the same time. In this condition the uterus is not removed because of a fear that its infected state would preclude the possibility of a relief of the symptoms induced by the proidentia. Some of these cases are cured by the removal of the appendages, a ventral fixation of the uterus, and a repair of the vaginal tears.

Occasionally a gynecologist is called to see a case in the first attack, and finds the general state of the patient such that to attempt the major or curative operation would be fraught with a danger of such magnitude that it would be bad surgery to do otherwise than simply to make an incision into the mass in the vaginal vault and drain, with the idea of completing the operation at some future time. All are agreed upon the course to pursue in such a case.

If the case should prove to be a true pelvic abscess, one of those extremely rare cases in which the pus is extraperitoneal, or in other words, between the layers of the broad ligament, this seemingly minor procedure will be found, in the majority of instances, all that is necessary to effect a cure. These cases are rarely met with in practice, and not so often in the literature of today as in that of former years. To remove the uterus in such a case would be a sacrifice unwarrantable, as there is nothing to be removed but the pus.

A failure to discriminate between this rare disease and the more common tubal disease, until in the midst of a vaginal hysterectomy, is extremely unfortunate, as it is then too late to retrace, while, if the incision was made suprapubically, the error would not be so expensive, and the correct course to pursue would be pointed out.

It may be claimed that through a posterior vaginal opening the appendages can be examined, and the same deduction arrived at as though the abdomen was opened; but the fact must not be lost sight of that in these cases (true pelvic abscess) the pelvic peritoneum is clean and uninfected, and that a posterior opening endangers the safety of this structure. A safe rule to apply here would be to cut into the bulging part where the pus is nearest to the mucous membrane.

In the midst of a prolonged and difficult operation for the removal of the uterus and pus-bearing tubes an alarming hemorrhage sets in, the exact source of which cannot be found. The patient's abdomen is opened in the quickest possible time, with an imperfect asepsis, and the bleeding controlled; but three days later the patient dies from a peritonitis.

The operator can not take the necessary time and precaution in preparing his instruments, his patient, and himself, to do a clean abdominal operation, when the question of most importance is to quickly save his patient from hemorrhage. The above remarks applicable to bleeding are of equal force in most instances where an intestine has been opened through the vagina. Very few operators, I am sure, would feel competent or able to put in a row of Lembert sutures, and make a closure of an intestinal rent that could be trusted to keep in liquid and gases.

The mesentery, in cases where many adhesions are

present, will be found thickened and shortened at the time of operation to such an extent that it would be impossible to pull a coil of bowel down into the vaginal opening, already filled with a dozen, more or less, pressure forceps.

In comparing the relative ease with which manipulation can be carried on through an abdominal incision and an opening in the vaginal vault, it must be remembered that the bony resistance met with by the impinging of the hand against the pubes is unyielding, differing very much from the pliant muscle of the abdomen under anesthesia.

A small percentage of post-operative herniæ is found in following a large series of abdominal incisions, but these are discovered by the patient and not by the surgeon, and are not of such frequent occurrence as to be used as an argument against the suprapubic incision. Time and close investigation of the vaginal cases will reveal an equal or a larger number of vaginal bowel protrusions.

The length of the mesentery precludes, in most instances, the possibility of the intestine reaching the outer entrance to the vagina, and many vaginal intestinal herniæ will not be discovered by the surgeon owing to the return of the bowel when the patient is in the usual position for vaginal examinations. In examining for a vaginal hernia, the examination should be made with the patient standing.

It is not sound argument to advance that the woman with a vaginal operation can get up and be about in ten days, as it is not probable that the vault has healed so much more quickly than a smaller, clean, incised wound in the abdominal walls.

One writer says: "The abdominal scar is a source of great worry, especially to the French women, who are great admirers of a fair complexion and unblemished skin." A suprapubic scar and a low-necked dress may be incompatible in Paris. Even some who held other views are made converts to this idea after visiting the French metropolis.

Very few cases in abdominal surgery die from shock if the work of the operator is decisive and quick. "Chronic surgery" and prolonged anesthesia kill many patients, regardless of the character or location of the pathology or route of surgical approach. Septic patients endure anesthetics and slow surgery badly.

One writer, and, by the way, a good operator, in praising the vaginal system, says: "Landau has done good work, but in a great many cases he *opens the abdomen to finish.*" (Italics mine.) Landau is regarded as an expert surgeon, yet in a large number of cases he is compelled, in the midst of an already prolonged vaginal operation, to open the abdomen to finish his work, thus making two incisions instead of opening the pelvic and abdominal cavities. This work can always be completed by the suprapubic route.

Not a week ago, in breaking up universal adhesions, the appendix (which was diseased) pulled off at its cecal end, leaving a ragged opening in the cecum. The discovery and closure of the bowel injury saved my patient. Others have had similar experiences.

A Florid Adage for a Dissectlog-room.—The legend of the old Ohio Medical College dissecting-room was as follows: "Hic locus est ubi Mors gaudet succurrere vitæ"—this is the place where Death rejoices to aid life.

SIGMOID SURGERY FROM THE INTRA-ABDOMINAL AND INTRAPELVIC STANDPOINT.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. G. CARPENTER, M.D.
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Diseases of the sigmoid have remained in practical obscurity, and the sigmoid per se, so far as the rectal specialist and general surgeon are concerned, have been a terra incognita. November, 1885, the sigmoid cavity was first exposed with the light of research, and scientific truths observed in the living subject narrated and made a part of historic discovery by the writer. The pathologist only knew diseases of the sigmoid as concerns malignant growths or benign neoplasms, or a possible sigmoid stricture, ulceration or fecal impaction, and what is now shown by Carpenter's sigmoidoscopy as a sigmoiditis with or without ulceration, was in the recent past supposed to be a proctitis or a colitis, the pathologist only dealing with diseases of the sigmoid as a postmortem observation. Now, with sigmoidoscopy (Carpenter's) we are also able to not only explore the rectum in its entirety, illumine the sigmoid cavity, and with ocular inspection diagnosticate polypus or stricture of sigmoid; diminution of its lumen from encroachment of a tumor by pressure, or even a fecal impaction of sigmoid cavity, as well as the local inflammations peculiar to it. It is surprising how little is known about sigmoidoscopy, or sigmoid surgery from the intra-abdominal standpoint. Even our recent text-books in surgery, gynecology, and on diseases of the rectum and anus, do not mention sigmoidoscopy or sigmoid surgery from the intra-abdominal side, and he who advances must read the journals. It is surprising how long it takes rectal and general surgeons to learn scientific truths about the anus and sigmoid when plainly told how to do so by the country doctor.

Divulsion of the anus for disease is considered by general and rectal surgeons as a muscle operation, when in truth it is primarily a stretching of the nerves, and secondarily a muscle operation. Rectal surgeons must learn that divulsion of the sphincters, besides its parietic and therapeutic effects on the lower end of the rectum and anus, causing rest, making the anus patulous and allaying irritability, curing pathologic lesions and doing massage, has another function, viz., nerve-stretching of the fourth sacral and inferior hemorrhoidal nerves, thereby cutting off connection between the spinal cord, the levator and sphincters, and placing at rest the bladder, rectum, vagina and perineum. It is to be hoped that rectal surgeons will be able to see and learn this great truth and give the author due credit for the discovery. The writer was informed about a year ago that a Louisville surgeon, in trying to illuminate the rectum and sigmoid cavity, punched a hole with what is called Kelly's sigmoidoscope into the sigmoid and entered the peritoneal cavity, and had to do immediate abdominal section to sew up the hole. Had this surgeon used Carpenter's sigmoidoscopy, which is simplicity itself, full of reason and common sense, that hole would have never been punched. He who knows how to do sigmoidoscopy does not need Kelly's superfluous and dangerous outfit, and he who has to use Kelly's ways should never attempt sigmoidoscopy.

A prominent rectal specialist operated upon an aged gentleman about 60 or 65 years for internal hemorrhoids, and said, "Mr. ———, you will be well in three weeks." At the end of this time the patient was a corpse from cancer of upper rectum and sigmoid aggravated by operation on the piles. Had the rectal specialist used Carpenter's position and sigmoidoscopy before operation he would have been a wiser surgeon, and with more reputation, and not a sadder one now, and his prognosis would have been in keeping with his pathologic knowledge and true condition of his patient. There is a vast difference between aseptic palliative surgery with bad prognosis, and complete life-saving surgery with favorable prognosis given, even in rectal surgery.

Volvulus of the sigmoid is often difficult to diagnose, especially if patient has been batted with opium, and even now it is so common for practitioners to give opium to ease pain and conceal prominent surgical symptoms that otherwise would be highly indicative of surgical interference. The symptoms of volvulus of sigmoid are former constipation, difficult to relieve, attended with distention and tenderness of abdomen or alternating with diarrhea, or following free purgation, severe exercise, indigestible food in large amounts; age of patient as a rule about 20 years; more often in the male than female; palpation may outline the volvulus; vomiting is often a prominent symptom, accumulation of fluid in abdominal cavity at a late stage of the strangulation, failure of bowels to act from purgatives or rectal enemata, or inflation with air; inspection with Carpenter's sigmoidoscopy. Rectal enemata, even with patient in the Carpenter posture, will generally return if the hydrostatic pressure from the rectal side of volvulus does not distend and cure it. By sounding, air inflation or hydrostatic pressure the sigmoid may become lacerated on its perineal side, torn, and leakage into peritoneal cavity result, with infection of the comma bacillus communi and other micro-organisms and toxins, and rapidly produce septic peritonitis. As delay and much taxis are highly unfavorable and dangerous to the welfare of patient, and the integrity of bowel in a strangulated hernia, so are palpation and rectal instrumentation with procrastination dangerous to life and integrity of bowel in volvulus of sigmoid. With early prognosis; early diagnosis; quick, early life-saving surgery; short anesthesia, with minimum of shock; under thorough asepsis, and before structural diseases have occurred, in skillful hands the patient's life ought to be saved.

Diagnosis made of an intra-abdominal lesion demanding surgery. Open abdomen in the median line if necessary, tap bowel with hollow needle or do enterotomy to let out gas or contents, with patient on left side; a short mesentery or intestinal adhesions, a constricting band or diverticulum or structural changes in bowel may greatly complicate withdrawal of the loops of intestine. The bowel may not only be highly inflamed with linear tears of the serosa, but with gangrene at and beyond where the two flexures of bowel have been twisted on each other, and demand a section. If bowel is healthy, return it to its normal position and stitch upper end of sigmoid to left side of abdomen, that portion of bowel opposite the mesentery, or as Senn states, shorten the mesentery, establishing a fold parallel to the axis of the gut. If the flexure is gangrenous in spots, they must be resected, if gangrenous in its entirety, resect the whole flexure

and unite bowel end to end by suture. (Senn entero-anastomosis, Murphy button, or do artificial anus.) If the time is short, and anesthesia is making rapid inroads on the vitality of patient, do the latter operation, as it is attended with less shock, done with more haste and suits more cases; then later on do the radical operation.

Stricture of the sigmoid from various causes demands similar life-saving surgery, according to the surgical demands and structural changes that have taken place in the bowel. If a foreign body becomes lodged in the sigmoid and removal per anum is impossible, an abdominal section with enterotomy must be done for its removal.

In malignant disease of the sigmoid we may be able to resect the growth, as Price, Senn, Bull and Hamilton have done, do an anastomosis or an artificial anus, the surgeon deciding on the condition of patient at time of operation and kind of intestinal surgery suited to each case, and his ability to do quick, life-saving surgery.

That the sigmoid becomes seriously involved in intrapelvic disease, there is not an iota of doubt; that it has not been written upon by prominent gynecologists and authors of prominent text-books is surprising, to say the least. Dr. Joseph Price for years has demonstrated in his surgical clinics the lesions of the sigmoid, complicating surgical gynecology, and volumes might be written on surgical complications he has presented from time to time. Those who know Dr. Price best know he does pelvic and abdominal surgery without the Trendelenburg posture, but he has the *tactus eruditus* to a higher degree, and can see more with his fingers through a two-inch abdominal incision and discern more intrapelvic pathology than many surgeons can see with their eyes through a six or twelve-inch incision and patient in the Trendelenburg position. How common is it for the sigmoid to complicate tubal and ovarian disease. The Fallopian tube, through leakage or infection in salpingitis, hemato- and hydro- and pyosalpinx, or ruptured tube in ectopic pregnancy, causes a local peritonitis of the left pelvis with a sigmoiditis serosa and adhesions to ovary, tube, uterus and bladder, or an ovaritis per se may cause adhesion to the sigmoid and become imbedded in the broad ligament, the tube being in part or in total nested with the ovary and sigmoid, or there may exist an ovarian or broad ligament cyst, fibroid or dermoid, and adherent to the sigmoid. Again, a pus-tube may be adherent to sigmoid on the left, bladder in front, uterus to right, intestines above and broad ligament below, or an ovarian abscess, or multiple abscesses with pus-tube may complicate the sigmoid wall and the abscesses encapsulated in the pelvis by the sigmoid, bladder, uterus, broad ligament and intestines and omentum above, or these abscesses may from time to time, through pressure, attenuation and maceration of the sigmoid wall, perforate the latter as well as the vagina, uterus, bladder, or peritoneal cavity, and leak or discharge and drain into the sigmoid cavity, and patient's life be saved by drainage and evacuation per sigmoid, rectum and anus. How often in doing intrapelvic surgery do we find complications of sigmoid, that is, by surgeons, especially Price's students, who have been taught to do thorough, clean, life-saving surgery and to deal surgically with surgical complications, as does Dr. Joseph Price. Often has the writer seen Dr. Price curette the sigmoid wall, removing pyogenic debris down to the

mucosa, healthy tissue, then repair this or these weak places by approximating serosa to serosa with the Lembert or continuous suture. Again, he has seen this illustrious surgeon curette a sigmoid ulcer through a perforated sigmoid wall or excise necrotic spots with the longitudinal axis of the bowel and again repair the bowel with serosa to serosa, taking the Lembert stitch through the serosa and muscularis of sigmoid wall with the finest silk thread and needle. The great reason why some abdominal surgeons have had great mortality following their work is that the needle and thread used to repair intestinal lesions has been too large, more like that of a darning-needle and thread. Again, these surgeons have been afraid to hunt for and find sigmoid lacerations and other intestinal complications, and if found could not sew them. Every physician who contemplates doing surgery should serve an apprenticeship in sewing with some good tailor or seamstress and have a skillful needle and scissors technic that comes only by practice, study and observation. And every graduate should be examined specially on this, and the repair of gut lesions, before receiving his diploma. The writer was raised on a large blue-grass plantation in Kentucky, and his mother used to make him take sewing and tailoring lessons when a young boy to keep him out of mischief and employed, so he was taught hemming, back-stitching, basting, darning, patching, tucking, quilting and embroidery, and his mother's sewing lessons taught him in childhood have been the greatest blessing to him in doing surgery. The most delicate, refined and gentle sewing to be done is sewing the intestine for pathologic lesions, and in plastic surgery one reason why intestinal suturing is so successful in skillful hands, viz., in inflammatory and traumatic lesions is, that if proper approximation of serosa to serosa is done, adhesive inflammation or agglutination of the serosa begins at once, and continues until definitive healing has been done in a few days, then with fine needle and sutures there is no leakage. Furthermore, the writer has been with Dr. Price and seen excision or resection of sigmoid for stricture or malignant disease or benign neoplasm, and anastomosis with the Murphy button, or intestinal suturing or making an artificial anus when the strength of patient, the anesthesia, and the duration of operation would not permit of a surgical procedure of greater magnitude.

The writer had the pleasure of seeing Prof. Nicholas Senn do some of his wonderful surgery in entero-anastomosis and inguinal colotomy for malignant disease of rectum. The best surgeons always try to do life-saving and not "*ideal surgery*," for the latter is *fatal surgery*, and should be done only in the dead house where the amateur surgeons should begin to operate. It is a great thing to know just how much surgery the patient needs, how much can be borne with safety, and one had better do incomplete life-saving and again operate at another time for complete life-saving surgery rather than do the "*ideal*" and lose patient during or after operation. The writer has seen the sigmoid, ovary and tube, and appendix vermiformis adherent in one mass, the appendix stretching across the pelvis to sigmoid; also the uterus retroverted upon the tubes and ovaries in Douglas' pouch and sigmoid, bladder, tubes and ovaries internally adhered, so that it required the gentlest touch and manipulation and caution to find a point of cleavage and proper separation of the diseased organs without perforation. Furthermore, the essayist has

seen in his own and Dr. Price's of Philadelphia, uterine fibroids and dermoids attached intimately to the sigmoid as well as to the transverse and ascending colon and appendix vermiformis, omentum and mesentery; ovarian abscesses opening through the lower sigmoid and upper rectum with subsequent healing and contraction of the fistulous ulcers and scars has produced stricture of the bowel at these points. The writer had the good fortune or misfortune to operate for appendicitis and organic stricture of sigmoid at the same anesthesia. The sigmoid was extra long and the stricture relieved by the Murphy button anastomosis. The appendix vermiformis was dilated size of thumb at its cecal end, inflamed and filled with soft feces and appendoliths, and required immediate appendisectomy.

In conclusion, the essayist must state that all surgeons who do prompt, life-saving surgery must camp upon the domains of pathology in abdomen and pelvis and do life-saving surgery, and will meet sigmoid and other intestinal adhesions that must be promptly separated, and there must of necessity be more or less serious intestinal lacerations that must be surgically repaired with as much precision, judgment and gentleness as a stab or gunshot wound of the stomach or intestine, and he who can skillfully and successfully repair these traumatisms will save more lives than he who does dashing surgery and neglects these intestinal lesions, trusting to nature. To repair these lacerations it takes time, patience and perseverance, strong will-power and fortitude.

The essayist cannot close without expressing the most sincere and profound thanks to Drs. Price, Senn and Murphy for the valuable lessons learned through them in surgery and surgical pathology.

THE TREATMENT OF SEPTIC PERITONITIS BY IRRIGATION.

Presented in the Section of Obstetrics and Diseases of Women, at the Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY T. J. MAXWELL, M.D.

KEOKUK, IOWA.

Septic peritonitis has been, and is now, to the surgeon, the practitioner of general medicine, as well as the obstetrician, a "word of fear." Forty years ago we groped in darkness as to its cause, and now we are about as helpless in its presence as to a curative remedy, as when the fathers practiced blood-letting with a free hand and gave cathartics in heroic doses, or, on the other hand, administered opium to narcotism, keeping the patient in this condition until the disease exhausted the patient or the patient wore out the disease. We are no longer in the dark as to the cause of septic peritonitis, and have made vast strides in the way of prevention, if not yet successful in the cure of the disease when fully formed. We have adopted the consensus of opinion of the best-informed pathologists, that practically all cases of peritonitis are caused by infection, though they do not deny the possibility of its idiopathic origin. It is not possible today to state positively that exposure to cold, strains, and rheumatism never directly cause peritonitis, but that they do is very doubtful.

Septic inflammation of the peritoneal sac is amenable to the general laws that govern septic infection of other tissue. The progress and termination of inflammation in this tissue are modified by its structure

and function. We need but to remind you that the peritoneum is a shut sac lined with epithelium. Underlying this membrane and connecting it with the lymphatic system are numerous lymphatic vessels, to the extent that it has been called a great lymph sac, with large capability for absorption, as well as possessing the function to secretion. The large capacity to absorb is not surprising, when we take into account the extensive surface. In all its parietal and visceral foldings it presents nearly as large a surface for absorption as the integument that covers the body. The older pathologists and surgeons wrote over against this organ "*nole me tangere*." We know that this is a false accusation; in proof thereof we have not only the daily operation of surgeons, in which it is roughly handled, but the interesting experiments of Rinne, who has shown that the peritoneum will absorb large amounts of septic material if not subjected to injury, and those of Pawloki, in which non-pathogenic microorganisms and sterile foreign bodies were introduced into the peritoneal cavity without evil results. Much depends, in all cases, on the general susceptibility of the individual to infection and on the vital resistance of the peritoneum itself. Where the susceptibility is great and the resistance feeble, death follows, and where the opposite conditions exist life is saved.

Another factor that plays a large part in determining the result is the character of the infection, and the culture media in which it may find a ready soil to grow. "The characteristic of primary lesions is the development of hyperemia of the membrane, with formation of more or less copious glairy exudate, which, if it is in any quantity, rapidly becomes organized and produces adhesions," which bind the coils of intestines together, attaching them firmly to adjacent organs. The character of this exudate varies greatly with the severity of the inflammation and its provoking causes. While the plastic element is practically a constant factor in its make-up, its general character may be purely plastic, serous, or purulent, and in very infectious cases, sanious. The purely plastic variety occurs in localized areas as a rule, and follows any simple aseptic injury to the peritoneum, in fact, is nature's response to injury, with the express purpose of repair. It conserves the life by walling off and limiting the spread of septic inflammation, resulting in a circumscribed abscess, as seen in many cases of appendicitis. It occurs after all surgical operations, and rapidly unites opposing peritoneal surfaces, covering up and encapsulating, as it were, intra-peritoneal sutures. The infective bacteria or their ptomains have a peptonizing or solvent power over tissue. So, in infective peritonitis, we have this plastic exudate changed, modified, liquified: no longer endowed with adhesive power of gluing together opposing surfaces. On the other hand, the exudate may be largely serous, sanious or purulent, owing to the nature of the infecting microbes—whether they be pus-producing or not.

A purulent peritonitis is also very distinctly a septic peritonitis, but clinically and pathologically we are forced to recognize the fact that, either through a difference in vital resistance or in the virulence of infection, the same classes of microorganisms produce in one case what we call septic peritonitis, and in the other the purulent form.

Inflammatory processes not only differ in their exudates, but present different morbid processes, for the septic peritonitis is invariably widespread, involving the entire peritoneum, while the purulent form is

often localized through formation of fibrino-plastic exudate, which limits its spread. It is probable, however, that these difference are in degree, not in kind, for, in those cases of septic peritonitis which live long enough, the exudate, which would have appeared serous had an early autopsy been made, is distinctly purulent and often putrid, this difference in degree depending, as we have said, on the severity and variety of infection and the individual resistance. In this form we find not only a copious exudate which covers the viscera, but fluid in large amount in the abdomen, in which float layers of coagulated fibrin. Should death occur in the first twenty-four hours of septic peritonitis, as it often does, no well-marked changes are visible to the naked eye, save in some cases the duskiness of the peritoneum, and the presence of sanious, blood-stained serum in the dependent parts of the abdominal cavity.

In all forms of peritonitis the walls of the alimentary canal in the parts become friable and edematous, while their peritoneal coat is readily detached from the muscular layers. Whatever may be the cause of original disturbance, the pathologic process which results in the peritoneum may be divided into three varieties: It may be localized and plastic, general and sero-plastic, or serous, changing to purulent.

My object in this paper is not to dwell upon the etiology, pathologic anatomy or symptomatology—which is generally acknowledged and well understood by the profession at large—further than to serve the purpose of confirming the rational principles upon which I base the proposed treatment.

There are certain cardinal principles well understood by the profession in the treatment of septic inflammation wherever found, viz: If possible remove the focus of infection, or by free drainage and irrigation dilute and remove the toxic products. This method is generally relied upon rather than the destruction of the pathogenic micro-organisms by germicides. The profession seem to be slow in applying these principles in a radical way to diffused septic inflammation of the peritoneum. Drainage and irrigation are practiced in circumscribed inflammations of the peritoneum with excellent results in many cases. But this method often fails, the infection spreads to areas not drained, and soon the patient succumbs to septicemia. If we could introduce some hot non-irritating fluid into this great lymph sac in such quantities as would reach every square inch of its convoluted foldings, so that it would seek out and dilute the lurking poison, and by a constant inflowing current and a corresponding outflowing current remove the poison, it would fulfill the indications of rational treatment. The normal salt solution fulfills all of these requirements. The following clinical cases will illustrate its use and effects:

Case 1.—Mrs. N., aged 40, was being anesthetized preparatory to the removal of a double ovarian cyst; during the exciting stage of the anesthetic she struggled with great vigor, which produced a rupture of the left larger cyst. The contents of this cyst we estimated would measure one and a-half gallons and it was of a brownish color and mucilaginous consistence, that clung to the abdominal viscera with such pertinacity that it required gallons of warm salt solution poured into the abdomen, and the free use of the hands, before it could be removed so as not to be detected by the sense of touch. The empty sac, together with a smaller right ovarian cyst, was ligated and removed. A large glass drainage-tube was placed in position and kept free by means of suction as often as any fluid accumulated.

There was but little, if any, shock, and not much nausea and vomiting from the anesthetic, for the twenty-four hours follow-

ing the operation, the temperature and pulse remaining nearly normal during the same period. But at the end of thirty-six hours, thirst and vomiting increased, pulse and temperature crept slowly but persistently upward, until at the end of forty-eight hours the temperature was 103 degrees F., pulse 130, thirst intolerable, and vomiting every few minutes a dark brown liquid, restless tossing in bed, with mental faculties wandering. My patient was fast sinking from toxemia and I determined to try what thorough irrigation would do to save her. I had several gallons of warm solution prepared. The glass drainage-tube was drawn up two or three inches and the irrigating tube introduced, but the fluid would not enter the abdominal peritoneum until the wall of plastic limiting exudate was broken up, then the fluid flowed into the abdominal cavity, distending its walls. Another tube was introduced alongside of the irrigating tube through the glass drainage, and the water was discharged through it; about four gallons of the hot (110 degrees F.) salt solution was used in the first irrigation. There was a marked change in the appearance of the patient at the close of the treatment; the face lost its pinched and haggard appearance, the pulse fell from 130 to 212 per minute, temperature from 103 to 101, vomiting ceased, and the bowels moved freely within a few hours; thirst was allayed, and the patient expressed a desire for something to eat, hunger taking the place of nausea. Irrigations were repeated every four to six hours, that is as often as the temperature and pulse began to rise. Each irrigation promptly brought down the pulse and temperature. These irrigations were kept up at lengthening intervals for four days, when the temperature and pulse remained normal.

Case 2.—Miss M., aged 23, was brought to St. Joseph's Hospital with a history of chill, followed by high temperature, irritable stomach, tenderness over lower abdomen, with gradual development of tumor in right iliac space. This tumor suddenly disappeared, discharged without evacuation from vagina or bowels. Pulse kept rapid, temperature 103 and upward. Emaciation progressive. In a few days the tumor began to rise or be manifest to palpation, and was six or seven inches in apparent diameter when brought to the hospital. Her temperature was 102 to 103 degrees F., and pulse ranging from 120 to 130 per minute when she was operated on. On opening the abdomen a tumor was presented, that was adherent to omentum, intestines and pelvic wall, whose cavity it completely occupied. In attempting to separate the adhesions the tumor sac ruptured and a half gallon of very offensive smelling pus flowed; part mingling with the viscera, part externally. The sac wall proved to be separated folds of the broad ligament. The sac wall was emptied and stitched to the lower angle of the wound in abdomen and packed with gauze. There were quite extensive adhesions of the bowels together and also to abdominal wall and omentum. These I separated by introducing the hand into the abdomen, at the same time flushing the peritoneal cavity with liberal supplies of hot solution—temperature of solution about 110 degrees F.—poured from a pitcher. The coagulated lymph that coated the bowels was easily removed by slight friction and came away in flakes with the reflux current. The temperature and pulse dropped very considerably, as observed soon after being put to bed. Drainage of abdomen by glass tube was carried out as usual, by withdrawing the fluid accumulation every forty to fifty minutes. Temperature and pulse began to rise in twenty-four hours, which was promptly controlled by free irrigation with hot salt water. This treatment was repeated every few hours, as often as temperature showed tendency to rise, or pulse to increase in frequency, each time promptly reducing both. This treatment was kept up for four or five days, until there was no longer a tendency to rise of temperature or increased rapidity of pulse.

There was in these two cases prompt reduction of temperature and pulse-rate each time the irrigation was repeated. The salt water acted as it were by transfusion through the peritoneum, producing free liquid evacuation from the bowels. Vomiting ceased immediately after first irrigation, thirst disappeared, and the first patient expressed a desire for food within two hours after treatment. Irrigation of the peritoneal cavity for septic inflammation or infection is in accord with the rational treatment of infection in other tissues, that is, dilution of the infection and removal by free drainage. Disinfection by germicides can scarcely be accomplished in any tissue. We would not think of using a germicide in this great lymph sac. The hot (110 degrees F.) salt solution is non-

irritant to either mucous or serous surfaces; it does not dissolve and remove the epithelial covering from either surface, as does pure water. The heat stimulates the flagging heart and nerve centers. The rapid transudation through the capillaries and lymph spaces of the bowel coats dilutes and flushes out the toxins already there. This is demonstrated by the marked relief so promptly manifest in heart's action, temperature and cerebral function. In order that this treatment be efficient it must be thorough, that is, the irrigation fluid must reach every part of the infected peritoneum. This can only be accomplished by using large quantities, and where there is plastic exudate, sealing the surfaces together. An opening in the abdominal parietes must be made sufficiently large to admit the hand, and with the fingers deftly separate the adherent parts, and with gentle friction detach the coating of coagulable lymph, for it is infected. While this is being done a good stream of the irrigating fluid should be kept constantly circulating, so as to wash away the detached flakes of lymph, as well as the infected culture fluids and pyogenic cocci.

The saline cathartic treatment of septic peritonitis, as practiced to a large extent by modern surgery is rational, and is successful in cases where the focus of infection is limited. It sidetracks the toxins on their way to the general system. But it fails in the prime indication to remove the center of production. Irrigation does both. If the focus of infection be in the sinuses of the uterus or its adnexa, removal is indicated; without hysterectomy irrigation of the peritoneum secures more perfect elimination by way of the mucous surfaces of the bowels than any other method.

THE MEDICAL TREATMENT OF APPENDICITIS.

Presented to the Section on Practice of Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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NEW YORK, N. Y.

There are no new truths, but there may be new phases of that which is old. Progress means the development of new applications through invention and study. Onward and upward is the direction in which the scientific world moves, and no one dares forestall the possibility of discovery in medicine that awaits the higher intelligence. The bases of the unknown triumphs which will be the happy surprises for the future have their preparations in the knowledge and handiwork of the present. The tools increase in delicacy, and number and become more and more adapted to the work of attaining the ideal of crafty man. Methods of using old forces for pleasure or service in the arts and the sciences have greatly changed, and the evolution is for good. The betterment is often a question for doubt by the pessimists, but judged from the standpoint of the universe, not by the little circle in which one mind operates, the roll of the years brings advantages to each succeeding generation which the preceding did not live to witness. Everything moves toward some new standard or away from an old one. Nowhere is the work of change more clearly revealed than in the duties and privileges of the practice of medicine. Education teaches every man to think for himself; the printing press now puts that thought into imperishable tablets.

And what a monster tablet it would require to give a place to all that is said lately on the subject of appendicitis. For one, my belief is that every new thought which is the honest opinion of the mind should be spoken, even if it be but a repetition.

Who among physicians, then, is entitled to speak with authority upon disputed questions, for it is the experience of all of us that we claim the privilege today of correcting the errors of yesterday. My plea is for an open mind in the consideration of medical practice. Exclusive surgery desires to assume the responsibility for the treatment of the inflamed appendix, based upon the belief that it is only surgery which possesses the magic of cure. Some physicians think that too much dependence is placed upon surgery, and that it is in many cases a dangerous intrusion without warrant. These two classes are the extremes and it is well to understand the limitations of the question before us. It is sometimes surgical, but more frequently medical, and as general practitioners it is desirable to examine the possibilities for good that are included in the medical treatment of appendicitis.

The cause of appendicitis is seldom if ever exactly determinable, but as a rule, the health of a part depends upon the vigor of the general system. When the symptoms of a localized disturbance in the intestine or appendix reach a point of sufficient importance to require medical counsel, the highest welfare of the patient calls for a conservative method of treatment which will prevent as far as possible the danger of subsequent complications and surgery. A healthy body will not favor an appendicitis, while a safe and rapid return to health, if it is impaired, will either prevent visceral inflammation or be the wisest course in the cure. General measures first and localized afterward, is a broad and effective plan of action in therapeutics.

An immediate, but not the first, cause of appendicitis, is a partial or complete clogging of the circulation in the vessels of the appendix. No satisfactory explanation known to the profession will cover every case. The first determinable effect is congestion, closely followed by exudation of serum and lymph into the mucous and muscular tissues of the appendix and its environment. The exudate stops both venous and lymphatic circulation, which is naturally followed by swelling of the mucosa and other structures of the organ. Whatever particles of fecal matter happen to be within the canal of the appendix at the moment are either pressed out into the cecum, or they may be dammed off by a stricture and retained, and in consequence, undergo certain chemie changes. The material may be crystallized by chemie action (the appendolith), or dissolved and reabsorbed, or discharged into the intestine if the swelling of the appendix subsides without destructive inflammation and rupture into intestine or peritoneum. With what is happening, pain is likely to be a prominent symptom at the point affected, yet in some cases pain is absent. But in any case there are enough symptoms from which to safely form a liberal and inclusive treatment of the patient, also broad enough to include the local part.

It is probable that vasomotor control of the artery of the appendix and its branches is temporarily either depressed or exalted, and that there is for this reason too much blood or not enough in the affected part, each of which conditions could be the factor of danger in suitable cases. Inflammation ensues upon conges-

tion, destructive changes take place rapidly under the influence of an increase of heat and chemic decomposition of fluids and tissues, and at this stage the bacterial scavengers are present to help remove the retrograde products of inflammation. The microbes are regarded as incidents of disease and pathologic change, and serve a further useful purpose in that their presence in excess occasionally confirms diagnosis. They may confirm but not necessarily affirm diagnosis.

The power to create as well as to cure disease resides in the body and never outside of it. At this stage of appendicitis it is purely medical, and if always rightly treated it could not be surgical, save in certain and rare instances. If neglected or improperly managed, secondary changes follow, such as ulceration, sloughing, necrosis and rupture, and even in these conditions spontaneous cure is possible and frequent. But it must be admitted that in such cases the safer course is to employ the assistance of surgery.

As soon as the physician suspects even that there is a possibility of appendicitis, upon first seeing his patient, the safe course is to be on the guard, and by this is meant to treat the patient, rather than the disease, with the view of preventing that which is suspected, or if too late for that, proceed in such manner as to actually give the best chances for a rapid recovery, and thereby provoke the least damage to the abdominal viscera.

In all acute inflammatory diseases of the intestines my experience proves that food should be withheld from the patient for one, two, three or four days. In cases where fever is a prominent symptom, the precise and life-saving course warrants the forbiddance of all food so long as the elevated temperature remains. All alimentation, either by mouth or rectum, can be but partially digested and assimilated during the active stage of inflammation. Even that amount of food which is capable of assimilation is in excess of the needs of the system at this stage of the case; and such nutriment as is not completely digested is a further increment of danger, together with other waste matter which forms the material for retrograde chemic action and autoinfection. When food is needed a keen hunger will properly indicate it, and at such time moderate feeding is permissible, at regular and long intervals. The hours for meals should be seven, twelve and six o'clock, as nearly as practicable. Food too frequently given is a general mistake for which there is no justification. The selection of food is important. A diet of fresh vegetables and prepared sweet fruits stands highest in effectiveness, besides, it is better relished by the convalescent. Good vegetables are procurable at every season of the year and in almost every locality, and always suitable. The diet need not be exclusive, although a liquid one is freely advocated by some physicians as the best. Nor is it strictly important that meat be omitted, indeed, the diet could be a mixed one if actual hunger is made the guide as to when the feeding should begin. The main point is not to begin alimentation too early, not to give too much or too frequently, and with particular instructions for most thorough mastication. Casciani concludes from experimental studies that:

1. In disease or during convalescence, a diet of fresh, well prepared vegetables diminishes urinary toxicity.

2. Urinary toxicity is greater where the individual lives on a mixed diet and less where a vegetable diet is adopted.

3. A meat diet increases urinary toxicity in direct relation to the quantity consumed.

From the beginning of the treatment, six to eight ounces of fresh, pure water, administered with disciplinary regularity each half hour or each hour for the first, or first and second days of treatment, then if the case improves, let the intervals be two hours, is a therapeutic resource of striking simplicity and exact scientific value. The only valid counterindication is the use of discretion in disturbing the patient should he be asleep; none other exists to my knowledge. Internal hydrotherapeutics are coming more and more to be accepted as the line of investigation upon which a sound basis of treatment is possible. Recently the University of Heidelberg voted this branch of therapy into a full professorship, thereby recognizing the importance of less and less employment of drugs.

It has been observed that a free use of pure water is an effectual laxative, obviating more drastic methods. The laxative effect is aided by dissolving small pinches of common salt in draughts of hot water, given at the regular intervals. Purgation is desirable, but when the intestine is undergoing active inflammation, harsh purgatives are seemingly useful, but actually harmful. This is owing to the irritation excited in the mucous walls of the intestines, and also to the fact that the purgation is at the expense of the constituents of the blood.

The hot saline or soapy enema will free the colon by quickly washing down the fecal contents. The small intestines need no purging, for fermentation and decomposition are generally to be looked for in the ascending and meso-colon. Such cleaning of the small intestine as may be useful will naturally follow upon the administration of hot water by the mouth, and from the effect of hydrostatic enterocolysis. It requires two to three quarts of solution to ascend the colon and reach the cecum in an adult and one-half the quantity in a child. Irrigation is best given in the knee-chest position, though it is immaterial in what position the water enters the colon, so long as the quantity introduced is sufficient to partially distend the bowel all the way up to the cecum. It may not be able to accomplish this satisfactorily in all patients, or perhaps not at the first trial. But the water can be made to go to the cecum and do its bidding as far as the opening of the appendix, if used with a little patience and perseverance. The colon, free of its contents, is an important beginning in the management of acute appendicitis as well as in other forms of enteric inflammation. A short rectal tube, four to six inches long, of large caliber is the one now commonly used, the long tubes are no longer generally employed. Water with pressure behind it will find its way more safely and naturally without the use of a special colon tube, which in practice may get no farther than the rectum or first fold of the sigmoid flexure.

The oil treatment of appendicitis consists of the substitution of either sweet or olive oil for the plain or medicated water enemas, and to some extent oil is administered by the mouth. The results are said to be highly satisfactory, which no doubt they are, though personally, my experience is limited to a few cases.

It is possible and safe to use morphin and codein for the temporary relief of pain without impairing an inclusive diagnosis or the chances for rapid recovery, provided the more important features of the

treatment are faithfully and skillfully instituted and continuously maintained. Of this there can be no doubt in acute cases seen at the beginning or at least early. If the practitioner has not sufficient experience with practical hydrotherapy to feel like placing his whole confidence in it, a moderate administration of reputed internal antiseptics will do no great harm if the foregoing hydrotherapy is not neglected. The advantages from prescribing the so-called internal and intestinal antiseptics are based upon belief and can not stand the test of unbiased experiment. Dr. Turck and others have sufficiently demonstrated the truth of this statement for all time to come.

At the last German Congress of Internal Medicine, April 13, 1898, the addresses on "Intestinal Antisepsis" and "Auto-intoxication" proclaimed the paucity of our knowledge on this subject and the worthlessness of all antiseptics for this purpose. They are only kept in vogue by the advertisements of the manufacturers. Only one or two voices were raised in dissent to this timely and sweeping condemnation, which leaves only prompt evacuation of the contents of the stomach and intestines for our reliance in intestinal auto-intoxication. The German profession has reached this sound conclusion rather late, but still in time to correct an abuse and thereby better serve their patients in the future.

In severe cases of painful appendicitis cold water applied to the affected area of the abdomen is grateful to the patient and helpful in allaying both pain and excessive heat, consequently such applications aid in hastening restitution of the inflamed appendix. My favorite compress is a small napkin saturated with ice water, frequently renewed, with a piece of flannel laid over it as a protective against wetting the bedding. The ice coil and the ice bag, if not too weighty, are convenient and useful. Gentle massage of the abdominal wall contiguous to the appendix is beneficial in cases where the inflammation is not of the fulminating character. Sometimes a cold compress may be advantageously followed by one wrung out of hot water. But where there is excess of local heat with fever, the cold works better, all things considered. The hot poultices of flaxseed and other slimy material confer no important benefit upon the patient; their chief claim for usefulness depends upon an old tradition too sacred to be suspected by the unwise friends of the sick, and unfortunately the medical adviser himself even in some great centers of medical teaching indulges in this ancient but bad practice. Where a hot poultice might benefit one of these cases ninety-nine cases would be injured. The affected area needs no further heating, but on the contrary, the aim should be to arrest the inflammatory process by the cooling and tonic effect of cold water applications. Tonic and stimulating aidance to the nervous system, often badly needed to arouse the bodily vigor and resistance, is assisted by brisk rubs along the spine by the hands dipped in cold water, or with a sponge cooled in ice water. The effect is very frequently a magic influence for which nothing else in therapeutics can be a substitute. The cold shower or spray would be still better if it were convenient, and the patient was disposed to submit, a thing not always to be secured, because of an unnatural fear instilled into the mind against cool water as a remedial agent. Hot water used in the same way would act satisfactorily as a substitute if the objec-

tions against the cold water could not be overcome. It is to be remembered that hot water is next in importance to cold in a therapeutic sense, and may in suitable cases be substituted for it.

Bodily bathing in sickness is today almost uniformly employed; it is therefore but necessary to mention it. If the fever runs high, the greater the importance of speedily lowering it by natural means, and the combined influence of internal and external usage of water in large quantities will more quickly and surely bring about a normal temperature, when safety and permanency are considered, than is possible with chemicals. If there are those who would use the chemicals, let them not omit a full and thorough application of water therapy and its auxiliaries, such as good nursing, pure atmosphere, sunlight and sunshine freely admitted to the sick-room, together with that most urgent therapeutic measure of total abstinence from food during the first few days of the sickness.

General massage has a place in the treatment of appendicitis, in that it supplies the physical exercise essential for the highest interests of circulation, respiration and digestion. Ample resources are possessed by a body whose vigor is conserved during acute localized inflammations to check destructive tendencies and restore order. In fatal cases it is the disordered state of the system that makes death imminent, and not the appendicitis, for the latter is a symptomatic expression of bodily sickness. Ulceration, sloughing and even necrosis are not necessarily fatal in a body fortified with hydrotherapeutic management.

Rupture sufficient to permit of the escape of fecal products into the peritoneum, according to Morris, would seldom happen if medical treatment from the inception was properly understood and directed. The same author and operator further candidly affirms that medical treatment would save all but a few cases from the need of surgery, if medical practice was inclusive and scientific. But if a choice is to be made between an up-to-date, skillful surgeon and an average physician, he decides that the chances of the patient would be better subserved by the former. Under the aggressive teaching of modern surgery many physicians are apt to lose courage in the attempt to control appendicitis, and it is not strange where the sole dependence is placed upon the healing effect of purgatives, opium, poultices and so-called intestinal antiseptics; and in those cases where that mistake of forced feeding at frequent intervals is permitted, together with other errors of medical management, it is quite natural that alarming symptoms should occur leading to a possible surgical crisis requiring an operation. A rupture with escape of fecal filth into the peritoneum is not a pleasant thing, but it would rarely occur, according to the experience of one of the foremost surgeons, if the physician was capable of doing his whole duty properly and at the right moment.

Large abscesses, wherever located, menace health and life, but there are conditions which make the presence of pus less dangerous than an operation would be in an unsuited condition of body. In such cases the physician and surgeon wisely co-operate, thereby justly sharing the responsibility. An abscess which is reasonably accessible in or through the abdominal wall, the same as elsewhere in the body, is easily opened and drained, but amputation of the

appendix for a thickened mucosa or for almost any other reason save rupture, or where there is positive diagnostic certainty that rupture into the peritoneal cavity is imminent, frequently furnishes cases for the surgeon which still rightfully belong to the province of medicine.

Chronic cases should come under a modified plan of treatment based upon the principles herein set forth, and kept within the control of the physician till all the symptoms are long since passed. A healthy colon is the most important salutary factor in every form of appendicitis, for a clean colon is likely to be accompanied by a healthy appendix. If there is a danger of appendicitis or if it has already occurred at some previous date, the successful way to prevent interval and other forms of appendicitis lies within the reach of such an one who happens to have a physician who comprehends, first, the value of regularly cleansing the colon once a week, by the hydrostatic injection of two to three quarts of blood-warm water. The second great requirement for prevention of recurrence is moderate bodily exercise, performed with daily punctuality. The third is moderation in eating. The fourth is the habitual use of a sufficiency of pure water as a drink to satisfy the requirements of a body that is more than three-fourths fluid.

There remains one point more; the experienced and really capable physician is entitled to a fee proportionately important to that which surgery expects, when the equivalent in service is rendered. Medical treatment strives to save and prolong human life, and when the result to the patient is the same, whether through the assistance of surgeon or physician, why need the fee be widely different? The fee of \$500 to \$5,000 may or may not be too much for an appendectomy, but if the same end is safely and satisfactorily attained by the practitioner, why should his fee be less than that of his surgical contemporary? When the emoluments for medical work, skillfully and successfully accomplished, whether by surgeon or physician, are relatively similar, there will be an incentive for closer co-operation, higher medical thought and better treatment than prevails in some places at this time. The practitioner is entitled to the full equivalent in exchange for intelligently performed services in the conservation of human life, and that equivalency should correspond to the measure of success in each case treated, with a proper and due regard for the skill, experience and years in medical practice.

10 W. 49th St.

DISCUSSION.

Dr. E. A. J. ROGERS, Denver—One has no idea how refreshing it is to one who has so long been in the dark to hear a physician offer, with such assurance and confidence, that appendicitis can be treated medicinally with such results as he has stated. I congratulate him upon the successful treatment he has given his patients in this disease. From my standpoint I differ with him; I am in doubt whether absolute medicinal treatment can be relied upon in appendicitis. If any medicinal treatment is good, that which Dr. Lee outlines is the best I have heard. If men would follow more conservative lines many cases that now must be operated upon, sooner or later, would not have to be operated upon.

I find myself diverging from Dr. Lee in regard to the remarks made early in his paper; his points in regard to etiology are different from those I was taught to believe in. The primary cause of appendicitis I formerly believed to be a mechanical one. The mucous membrane of the intestine is cleansed by an antiseptic fluid which is always present. Here may be

found a little defect, and sometimes a little cul-de-sac, and here we find a stasis in the normal cleansing process. Now, the organisms which Dr. Lee has mentioned come in and play an important part. Now then, the important point over which surgeons have been fighting comes in—what is the infection which causes the trouble? So soon as that can be determined, and we can state how the infection comes in, then we can lay down definite rules to guide us; then lay down rules as to what are medical cases, what surgical cases, and what cases are best to let alone. Before this time, we are treating appendicitis in the dark.

Yesterday afternoon, in the Section on Anatomy and Surgery, intense interest was given to the discussion which took place on the subject of appendicitis; this Section should have discussed this subject there in the surgical department and the whole topic studied together.

A great point for us to consider is the nature of the infection. So soon as this infection takes place, swarms of organisms begin their work of destruction. If nature is able to master them, the disease is a trifling one, but if not, death may follow. This point is an all important one, and it is the inability to determine this point that prevents us from forming the rules I just mentioned.

Of course, there are surgeons who claim that this disease is absolutely and entirely a surgical one, but their arguments will not hold. This disease should be treated by the physician and surgeon together. If the surgeon is simply a mechanical one, then Dr. Lee is right in not calling him in the beginning of a case; but a true surgeon is one who avoids the knife. A true surgeon is one who knows how and when to use the knife. If Dr. Lee had a surgeon he could trust and rely upon, he should allow him to see the case in the beginning. I do not believe that Dr. Lee can tell in the beginning what course the disease is going to take, and it is only fair that a conscientious and careful surgeon should be called in the case from its very incipency. I must say in defense of the surgeon, if we trust him, call him early.

Dr. HENRY SEWALL, Denver—From personal knowledge on the subject I can agree heartily with what Dr. Lee has said, particularly on the discussion between the physician and the surgeon. I speak from the physician's standpoint. You are called to see a case suffering from symptoms that suggest to you the idea of appendicitis, at least, it presents itself to you in a manner dependent upon subjective data. If the observer believes pus has formed, then no medical treatment; if the observer believes that inflammation is going on to pus formation, then no medical treatment; these are cases for the surgeon. I suppose the common treatment of today is to eliminate functional disturbances which may give rise to symptoms. There is no one here who has not found typical symptoms of appendicitis disappear like magic when the colon was thoroughly emptied; but, if the symptoms are not relieved, then the case calls for the exercise of judgment. It seems to me that the average physician should take a place mid-way between those who urge that every case of appendicitis should be operated upon and those who do not operate upon their patients until almost the time of death. I will only say this, that suppose you let a case of appendicitis go on to recovery—so-called—under medical treatment, the treatment the reader of the paper suggests in the body of his work, you expose the patient to certain dangers. Not long since I had under observation a patient who had multiple abscesses of the liver; at the autopsy there was found a cecal abscess. The man disclaimed ever having had symptoms pointing to appendicitis. I believe these cases are quite common; in my experience I have seen four or five of such cases. I can not help but think that cases of appendicitis are to be regarded as cases that belong to sanatorium care.

Dr. HERRICK—I have heard the question discussed ably and well from different standpoints; this question was discussed in the surgical Section at great length. The physician and the surgeon are antagonistic in the consideration of this subject, the former dealing with certain phenomena and the surgeon dealing with the facts. I make a point that the physician has different ground to stand upon than the surgeon.

The question has arisen as to the cause of the disease. Are not all processes of digestion due to the secretions? The intestines and their attendant glands are of the first importance and consequence. If that is so, we may well look to the condition of the secretions. As a matter of fact, we generally find in appendicitis disturbances of the secretory organs. Disturbances of the liver and other disturbances causes changes in the whole portal system; disturbances of the natural secre-

tion cause a disturbance of the colon. As a result of irritation we have congestion of the veins of the mesentery; presently we find a cause in the distension of the colon from the impairment of circulation and secretion: a subacute inflammation follows. An impaction of the intestine with fecal matter is then noted. It is this condition of impaction of the colon with arrested secretion that, in all probability, is the cause of appendicitis; at least, it seems to me to be so. Let us not cut off the appendix; let us not give up the idea that we can relieve these patients. Treatment by diet is successful. I have practiced medicine thirty-seven years, and I rarely lose a case of appendicitis. In the last ten or twelve years I have lost but four cases. As to the treatment, one generally applies ice-bags. Do not give opium or anodynes.

Dr. BAILY, Kentucky—I am a little skeptical about Dr. Lee's promising as much as he claims by the methods mentioned. What has he done in this line? How many cases of appendicitis has he treated by the methods mentioned, and with what success? As a general practitioner, I am bound to say that the diagnosis at the very beginning is the most difficult one to make, and it is at a time when it is most important that we should make it. Realizing the responsibility, I am most willing, as early as I suspect the disease, to call in an intelligent surgeon; I have never called one in where I have had reason to regret it. In the majority of cases the general practitioner should have a consultation with a skilled surgeon. Many of these cases get well without treatment; but the surgeon who can do the operation without mortality ought to give the patient a chance for his life.

Dr. TYSON, Philadelphia—I have but a few words to say, and in confirmation of what Dr. Baily has already said. I believe that cases of appendicitis are difficult of diagnosis. My experiences lead me to believe that many cases of supposed appendicitis that get well under medical treatment were not cases of appendicitis at all. In cases of appendicitis I want a skilled and competent surgeon, not for operating, but for his judgment. I have had surgeons who have had more experience than I have had; their judgment will help me. If I am satisfied that appendicitis exists, I am willing the appendix should be removed.

Dr. WALKER, Philadelphia—A gentleman, who lived in Philadelphia was seized with appendicitis; I attended him through the attack, and at no time did the surgeon or I think that an operation was desirable. The gentleman desired to leave the city, and he was advised, therefore, as there might be a recurrence of the attack, that it would be better for him to have an operation performed. The patient was perfectly well, and rode much about the adjacent country, on the street cars, etc., with no temperature or any evidences of trouble. A day was fixed for the operation. At the time of operating, there was found one pint of pus back of the colon; this had given no evidence of its presence or pointed toward any danger to life. To me this was a very interesting case; I thought the patient was cured of his appendicitis, but he was not. The appendix was swollen and perforated.

During the succeeding year I saw a case that no one would admit the necessity of operating upon. He passed through the attack; later, the surgeon again saw him. He was examined, but there was no evidence of disease whatever. This year, in May, he was taken with symptoms of typhoid fever. I happened to be present in the doctor's office when he mentioned the unpleasant symptoms. The doctor prescribed for him, and he was treated three weeks for typhoid fever. I reminded him of the previous attacks of appendicitis, and I thought of a pus collection somewhere. A pus sac was found, and the patient is now perfectly well. The pus had been lying there from June to May. This has been a lesson of value to me. Although I believe that the majority of cases are cured by medicinal treatment, still we can not be too careful.

Dr. JAMES, of Missouri—I have been led to believe that appendicitis was a disease that belonged exclusively to the surgeon, and that the general practitioner had no right to claim any knowledge of the disease. Public sentiment demanded that the cases be all turned over to the surgeon.

Water is of great value in the treatment of this disease both internally and externally; I also like it used per rectum. I have used the cold applications as described by Dr. Lee and I use it especially if there be high temperature. But, I prefer the hot applications, because, as a rule, the temperature is rarely above 102 F. I have overcome the demand for anodynes. I instruct the nurse to keep up the hot applications even at the expense of rest.

Dr. H. A. WEST, Galveston, Texas—I can not conceive any more important subject in medicine than this. I array myself on the side of many here in combatting the idea that any antagonism between physicians and surgeons exists as men-

tioned. The responsibility of the physician arises from the fact that he is usually the first to see these cases; they come to him in the first place. The man that assumes the responsibility to himself of treating these cases as medical ones and imagines antagonism as mentioned is assuming a serious responsibility. His first thought should be the care and cure of his patient. So far as medical treatment is concerned, cases that get well recover by themselves. Medical treatment amounts to extremely little. As Dr. Tyson has said, when the diagnosis of appendicitis has been made, I want the advice of an able and experienced surgeon; I want one who has had the opportunity to see many of such cases. It seems to me that it is the physician's duty to call to his aid a surgeon. I have seen a patient with a normal temperature and pulse and who was feeling perfectly well; yet a perforated appendix was found; nothing short of an operation would have saved that case. Water given internally, externally or eternally would not have saved such a case.

Dr. C. F. AHRER, Fort Madison, Iowa—I desire to say that we are all more or less influenced by our prejudices or peculiar trends. Many men who have a surgical trend or prejudice naturally desire that all diseases may become surgical, and must so be treated, and men who have a medical trend wish to cure everything with pills and powders. In some cases both these men are wrong. The attitude of surgeons toward physicians in smaller cities and country districts, when the struggle for existence is the prime factor is not as charitable as it should be, and when we remember, though we are all good fellows, that in many men the hog principle is not yet all rooted out, this attitude coupled with the trend to cut often works infinite mischief to the physician and to his patient. Again, in these districts outside the large surgical centers where honest and competent surgeons can be had without the drawbacks above mentioned the population are not trained to accept surgical interference when needed. In places where good surgeons are not to be had, if I had appendicitis I would rather trust a good physician than a bungling incompetent surgeon, for in the former case I might recover, in the latter I must surely die. Were we less fallible and more honorable than we are, we would always do the proper thing, but until then we shall have the same troubles which now beset us. So in appendicitis, as well as in other diseases, we are often controlled by circumstances, and under such circumstances we can do only what we honestly and conscientiously believe to be right. If we do this our patients have little to fear.

Dr. ELMER LEE, New York—I recommend the reading of the paper at your homes, because the answers to the questions raised by the gentlemen who have spoken will be found there. I stand before you to plead for the lives of the patients, and in so doing it is my experience after seventeen years of medical practice, that many lives are in jeopardy through the mistakes of the doctor or of the surgeon or of both. I am not an exclusive. I believe the methodical work of the physician is to be considered foremost because he is the one to see the patients first. If the physician did his whole duty in the incipency of the case few cases would go to the surgeon. Recently a child, in Boston, was taken sick with pain in the abdomen. The doctor administered opium in the night. The next day the doctor came again and gave a purge. The next day he came and continued the treatment. The next day he came and the child was considerably worse for the treatment. A surgeon was called—about four or five days after the beginning—and an operation was decided to be necessary. The child was operated upon and died. He had been a healthy vigorous boy, but he ate too much candy and food and took but little exercise. The condition which produced the fatal termination I am sure could have been cured by the intelligent application of the lines laid down in the paper. When I find that I am mistaken in my views I will be happy to come to you and acknowledge my mistakes. The physician does not stand equal with the surgeon in these modern days, and a stigma rests upon the medical profession. I am trying to overcome it, and it seems to me it can be overcome. It appears to me that it is within the range of medical treatment to manage the vast majority of inflammations of the abdominal viscera.

I have not paid much attention to statistics. I plead derelict in coming before you without mechanical statistics. I do not know much about them. If patients do not die that is all sufficient for me. I can not tell if perityphilitis, appendicitis or colitis exists; it is impossible for a physician to verify what was a diagnosis of appendicitis; that is only possible for the surgeon who has a mechanical result; it can not be done in medicine. It is only my opinion that those cases treated by me have been cases of appendicitis; it may involve the colon or the cecum. I do not know how to make an absolute diagnosis; it may be done in this country and in Europe.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT,
IN RECOGNITION OF THEIR LABORS IN THE SURGERY
OF THE PERINEUM.

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The structures involved in the repair of a defective perineum are muscles and fasciæ. The operative procedure consists in denudation with coaptation or flap-splitting methods. Notwithstanding the successful claims in the varied surgical methods of colpoperineorrhaphy the anatomical basis is neither generally nor perfectly understood. It is probable, however, that the essential success lies in the reunion of the separated levator ani muscle by means of its fasciæ superior and inferior with some other fasciæ, and also that this success has been chiefly due to deep suturing. The object of this essay is to demonstrate that the chief factor in successful colpoperineorrhaphy is the restoration by the aid of deep sutures of the fasciæ, especially the levator ani fasciæ, superior and inferior.

The muscles of the pelvic floor may be divided into two classes: *a*, the deep layer—the levator ani coccygeus and pyriformis; *b*, the superficial layer—the transverse perinei, bulbo-cavernosus and sphincter ani externus. A peculiar characteristic of the muscles of the pelvic floor, and one which demands respect in colpoperineorrhaphy, is the extensive fascial attachments of one or both ends of the muscles. The levator ani, the bulbo-cavernosus and the transversus perinei have a fascial attachment. We will consider in detail the muscles and fasciæ involved in colpoperineorrhaphy. The basis of this labor is a careful anatomic investigation with considerable clinic and surgical experience.

THE LEVATOR ANI MUSCLE.

The levator ani muscle is perhaps the most difficult to understand as regards its form, insertion and function. The origin of the muscle is sufficiently plain, and is considered established by anatomists. Few agree as to exact insertion, even at this late day, and opinions vary as to the exact function, form and insertion of this muscle. My own investigations demonstrate that there is a foundation for these varied opinions.

1. The insertion and origin of the levator ani vary as to the extent of distinct muscular loops which embrace the rectum and vagina, as to the tendinous raphæ (between muscle loops and distal ends of the coccyx), also regarding the precise relation to the vaginal wall, whether muscular or connective tissue, and also as regards the exact relations to the muscle of the lower end of the rectal wall. Moreover, its partial fascial origin and insertion is sure to endow the extremities with varying appearances as to the length of the fascial or tendinous conditions; in other words the distance of the red muscular fibers from the extreme origin and insertion of the levator ani vary. Perhaps this variation in insertion may be explained by considering the levator ani as a rudimentary muscle and to be disappearing with the tail. Its double

fascial accompaniments complicate its origin and insertion, as well as the interpretation of its function.

2. The various opinions as to the form of the levator ani are explained by differences as regards sex idiosyncrasies of individuals, disturbances from gestation and parturition, variation of the shape of the pelvis and fascial insertions and attachments.

3. The different views as to the function of the levator ani lie in confusing its function with the levator ani fascia, superior and inferior, in exaggerating its size and attributing to it function and utility belonging to other genital supports. It is especially erroneously inferred that a muscle will act as a continuous tensioned support for any viscus. The knowledge of the levator ani muscle is fragmentary and difficult of access. Its dissection is far from easy and its adjacent relations are complicated. The muscle does not resemble a funnel with the rectum or vagina at the bottom or apex, but is more similar to a sling, a flat loop or a horseshoe, which does not pull the rectum or vagina directly upward, but draws the two canals forward and upward toward the pubic cord.

The muscular loop of the levator ani muscle resembles a horse's collar encircling the rectum or the vagina. In the female it vigorously controls two

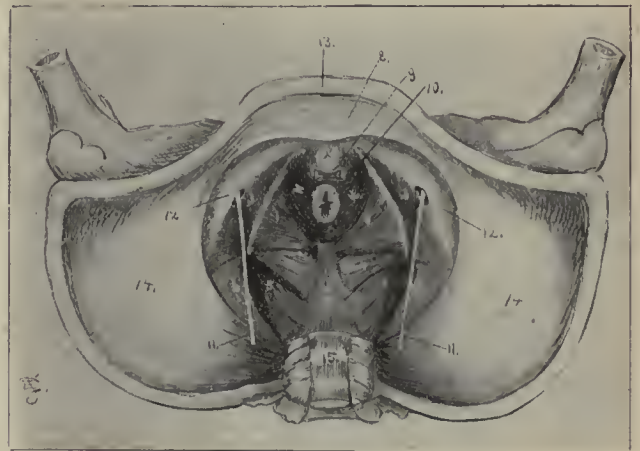


Fig. 1.—(Robinson-Scholer.) This cut is drawn from a female pelvis dissected by the author and intended to show the muscular floor of the pelvis with fascia dissected off. 1, 1, the levator ani muscle; 2, 2, the white line or origin of the levator ani; 3, 3, the obturator internus muscle; 4, 4, the coccygeus muscle; 5, 5, the pyriformis muscle; 6, 6, the inner wall of pelvis; 7, 7, sacrum; H, H, the horse-shoe loop of the levator ani muscle, drawn darker; 8, the Y-shaped urethra; 9, the vagina, cut close to the pelvic floor, whose wall does not flare like the radial wall; 10, 11, 11, the obturator nerves; 12, 12, inner wall of pelvis; 13, pubic crest; 14, 14, iliac fossa; 15, last (5th) lumbar vertebra.

canals—rectum and vagina—yet its control of the vagina depends on that of the rectum. The rectum being forced forward against the middle of the posterior vaginal wall produces the H-shape to the vagina. The excess of vaginal wall is compelled to fold at the sides producing the upright columns of the H. It is very thin. In an excellent specimen which I dissected from a good-sized woman the levator ani muscle is so thin as to be really membranous, and the muscular band between the vagina and rectum is but a few lines in thickness. It is really a pelvic diaphragm. The muscle should be considered as to its origin, course and insertion.

Origin.—The levator ani muscle arises: from bone, from the posterior surface of the pubis and ischial spine; or from fascia, arcus tendineus and vesico-pubic ligament. The bony origin is the posterior surface of the pubic bone and ischial spine. The larger portion of the levator ani of bony origin arises

from the posterior surface of the pubis. It begins about half an inch from the symphysis and one and one-half to two inches below the pubic crest. This point of origin is about two fingers wide or one and one-half inches, and does not meet its fellow of the opposite side, one-half to one inch existing between them on the posterior surface of the pubis, which is filled in by the obturator fascia. The bundle of muscles originating on the posterior surface of the pubis passes downward and backward to embrace the vagina and rectum. This is the pubic sling or horseshoe loop, which is quite thick and strong in some cases, and very thin and membranous in others. The margin of the loop, which is applied against the sides of the vagina and rectum, is often the thickest part of the muscle. The muscular bundles of the horseshoe loop join those of the opposite side of the levator ani posterior to the vagina and rectum without an intervening perineal tendon or raphe. In some dissections it is absolutely plain that no tendinous raphe exists, while in others it can not be told.

The smaller portion of the levator ani of bony origin is from the ischial spine immediately anterior to the origin of the coccygeus muscle. Quite a distinct strip one-fourth to one-half inch wide comes from the

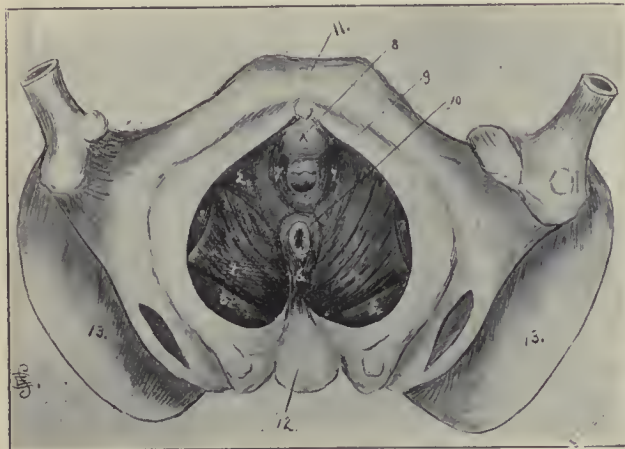


Fig. 2.—(Robinson-Scholer.) This is a cut drawn from a female pelvis dissected by the author. It illustrates the inferior surface of the pelvic floor. On the left side (in the fig.) the levator ani fascia inferior is not dissected off, while it is on the right side, showing the inferior surface of the levator ani muscle. 1, 1, shows the levator ani muscle with its parallel bundles; 2, the levator ani fascia inferior; 3, 3, the obturator internus muscle; 4, 4, the coccygeus muscle; 5, 5, the gluteus maximus; 6, 6, ano-coccygeal structure; 7, 7, the horse-shoe loop of the levator ani, showing some muscular bundles coursing between rectum and vagina. It is not so large on the inferior surface as it is on the superior surface of the pelvic floor. 8, urethra; 9, vagina; 10, anus flaring; 11, pubic arch; 12, sacrum; 13, flaring ilium.

ischial spine, and can be plainly followed by the eye to the horseshoe loop.

The ligamentous origin is from the anterior ligament of the bladder (ligamentum pubo-vesicale) and from the arcus tendineus (white line). The fibers of the levator ani which arise from the ligamentum pubo-vesicale are of little practical importance. The white line extends in a slightly curved direction from the posterior lateral surface of the pubis, over the obturator foramen to the spine of the ischium. The anterior end lies two and three-fourths inches below the ileopectineal line, with a length of about four inches. The white line (arcus tendineus) is a part or an extension of the anterior true ligament of the bladder, a thickening of the levator ani fascia superior. In the white line, the muscular fibers arise as fine tendinous bands, and may show their reddish muscular nature

at the white line or a short distance from it. The muscle may shade into a flat tendinous layer before it reaches the white line. The proximal tendon of the levator ani muscle varies much as to its relations with the white line. It may arise below it as well as from it. The white line may project into the pelvis as a tendinous fold, and be capable of being separated from the origin of the muscle.

The course of the fibers of the horseshoe loop of the levator ani muscle is backward and downward in two fleshy bundles, the smaller to the side and posterior surface of the vagina, and the larger to the side and posterior wall of the rectum. The loops which pass along the sides of the vagina seem to be attached to the vaginal walls by connective tissue only, while the loops of muscular fibers which embrace the rectum interweave with the muscular bundles of the rectal wall, forming a strong connection. The part interwoven in the rectal wall acts as an elevator. It would appear that in some cases the

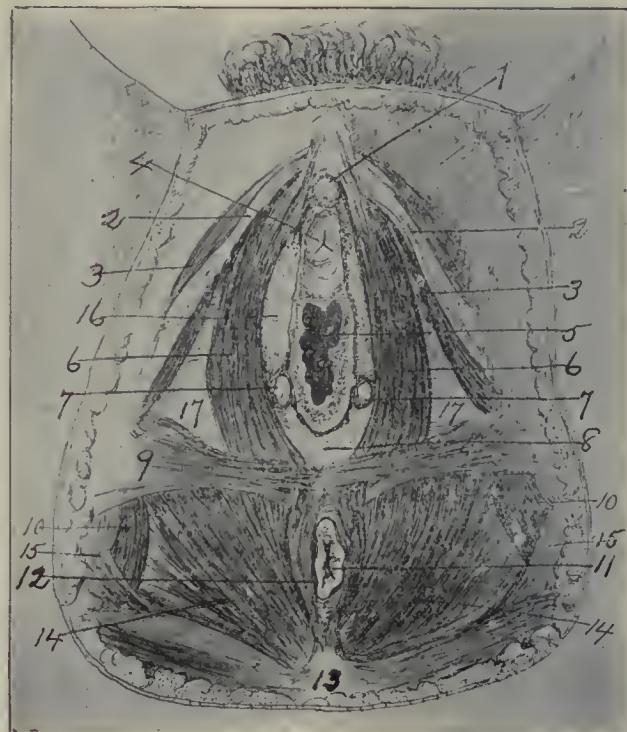


Fig. 3.—(Author.) This figure I drew semi-diagrammatically to illustrate the general view of the pelvic outlet. 1, clitoris; 2, crura clitoridis; 3, erecto clitoridis muscle; 4, urethra; 5, orifice of vagina; 6, bulbo-cavernosus muscle; 7, vulvo-vaginal glands (of Duvernoy, of Bartholin, of Tiedeman); 8, posterior vaginal commissure; 9, transversus perinei muscles; 10, obturator internus muscle; 11, anus; 12, sphincter ani externus; 13, coccyx; 14, levator ani muscle; 15, great sacrosciatic ligament; 16, the bulb of the vagina; 17, deep layer of superficial perineal fascia.

loops of the levator ani interweave with the muscular fibers in the wall of the vagina. The part of the levator ani which passes between the vagina and rectum, is a small, thin band, one-sixth to one-eighth of an inch in width, which arises from the external belly of the muscle to gain their rectovaginal situation. Its relations to the wall of the vagina are very close if not interwoven with its fibers.

The part of the muscle of fascial origin which arises from the white line, passes backward and downward, becoming part of the levator loop and partly inserted in the tendinous perineal raphe and the last bone of the coccyx. Many of these fibers pass

downward in a curve, and when near the median raphe they turn acutely backward to become inserted into the coccyx. A few of the muscular fibers arising from the white line, as well as from the horseshoe-shaped loop, together with some from the ischial spine, embrace the rectum. The part of the levator ani arising from the ischial spine becomes inserted chiefly in the coccyx. Yet one may observe one-fourth of an inch in width pass around the rectum with no intervening tendinous raphe.

The part of the levator ani muscle of special interest to the gynecologist is the two-fingers wide, horseshoe-shaped sling which arises from the posterior surface of the pubis and passes backward and downward to embrace both rectum and vagina. It is the belly of this loop which gives the rectum its forward curve just before the anal end is turned backward. It is the sphincter portion of the muscle. It is this part of the muscle which becomes hypertrophied in vaginismus. It is the portion of the muscle torn and separated in lacerated perineum. It is the



Fig. 4.—(Luschka, 1864.) Redrawn and modified represents a view of the levator ani muscle. L, L, the modification of Luschka's figure consists in magnifying the rectal curve made by the levator ani muscle; C, is a continuation of the levator ani muscle backward, drawn lightly; V, vagina. The grip on the rectum by the horse-shoe sling of the levator is here plain. p, The levator ani fascia inferior, p, is shown rolled up.

portion of the muscle which retards labor, creates vaginal spasms and may prevent coition, and in rare cases prevents the penis from escaping until relaxed by an anesthetic. In most cases the levator ani behind the rectum may be divided into three quite distinct parts, viz., a, the part which is connected to the last bone and fascia of the coccyx. The fibers accompanying this portion of the muscle originate chiefly from the posterior end of the white line or at the ischial spine. b. A portion of the muscle forms a median tendinous raphe for about one-third of an inch immediately in front of the coccyx. c. The portion of the muscle immediately behind the anus, about three-fourths of an inch wide, has no intervening tendinous raphe (not always distinct) and consists of the belly of the loops which originate and

insert on the posterior pubic surface. In other words, the muscular fibers of each side anastomose, forming the horseshoe-shaped loop, with no intervening tendinous raphe. Some of the loops intertwine with those of the sphincter ani, which pass back to the tip of the coccyx, also some of the muscular fibers of the sphincter ani externus are continuous with the loops of the levator ani. The fibers of the levator ani originating from the white line pass backward and downward, but on arriving at the median raphe, many of the fibers turn sharply backward to be inserted into the coccyx, and soon become tendinous. The levator ani fascia superior is not very intimately attached to the muscle, and may be compared to the fascia transversalis. The levator ani fascia inferior is adherent to the muscle.

Deductions in regard to the levator ani muscle may be numerous. Certain practical considerations may be drawn from a careful study by dissection and in gynecologic practice. As it was originally a muscle of the tail it is becoming vestigial in man, shown by its fascial connections. From the origin, course and insertion of the levator ani muscle, it must be viewed as the all-important muscle of the pelvic floor.



Fig. 5.—(Dickinson, 1889.) The levator ani as seen through the skin; the outlet of the pelvis is dotted and the direction and course of the chief muscular bundles of the levator ani marked out.

The levator ani fascia superior is the real visceral support. I think it was Dr. Meyers, a German physician, who first happily named it the pelvic diaphragm. In many subjects it is membranous. The normal muscle has the shape of a boat, and when this boat shape becomes cone-shaped, the pelvic floor is impaired. The levator ani is composed of many muscular bundles coursing chiefly parallel to each other, but also at varying distances. The bundles are flat, ribbon-like, and of a bright red color. The bundles of muscular fibers are held at greater or less distance from one another by collections of fat or connective tissue in varying degrees. Fenestra or apertures are commonly observed between the muscular loops. The capacity of the bundles of the levator ani muscle to separate and reunite without injury, serves a useful purpose in labor, when rapid and wide distension of the pelvic floor may occur. Too many figures illustrate the muscle as a distinct plane with no parallel gaps between the bundles.

The levator ani (the deep muscular layer of the

pelvis) is connected to the external sphincter ani of the rectum and vagina (the superficial muscular layer of the pelvis) and by this muscular connection to the perineal body (the punctum fixum), the deep and superficial muscular layers of the pelvis are brought into intimate relations of much utility. A few fibers are lost in the perineal body. The levator ani is in closer organic relation with the rectum than the vagina, because the rectum requires more frequent and perfect evacuations than the vagina. It is chiefly a sphincter muscle. The weakness of its origin, insertion and direction of its fibers is in accordance with its fading out of existence.

The forward curve of the rectum is due to the horseshoe-shaped loop of the levator ani, which originates chiefly from the posterior surface of the pubis. By the contraction of the lower, stronger fibers of the levator, the lower portion of the rectum is forced against the perineal body, which compels the anus to turn backward and to evacuate its contents.

The levator ani, on account of its shape and size leaves deficiencies in the pelvic floor, which are filled in front by the bulbo-cavernosus and behind by the coccygeus muscles, its continuation backward.



Fig. 6.—(Varnier, after Dickinson.) The distended levator ani. V, bladder; s, p, symphysis; c, clitoris; c, v, constrictor of the vulva; F, fourchette; P, A, anterior perineum; A, O, anus; P, P, posterior perineum; C, R, coccyx; P, S, point of sacrum; B, R, R, is on the muscle with its separated bundles, the middle R is on the strongest bundle. In this figure we observe how the muscle can save itself from rupture by the separation of its various fascioli. It yields better than if it were in one connected sheath.

The palpable rounded edge of the levator ani lies three-quarters of an inch above the anus and three-quarters of an inch above the vaginal opening, making the muscle, in fact, a regulator of the external openings of these two canals. Normally the orifices of the canals are always closed. They remain open only by internal or external force or from trauma.

The levator ani will lift from five to twenty pounds, averaging about ten as noted by Dickinson. Its strength soon tires out assistants in vaginal hysterectomy. From its insertion into the perineal body the external sphincter, post-rectal raphe and coccyx, it draws forward the post-vaginal structures of the pelvic floor. In the excellent work of Savage, he names the portion, from the principal bony origin, pubo-coccygeus. This is erroneous, as these loops do not pass as far back as the coccyx—do not even come in contact with it. The levator lifts the rectum and vagina forward and upward to the pubic arch. The muscle has but limited influence on the sides of the rectum. The

muscular fibers composing the horseshoe loop exercise the chief influence over the rectum, while the portion of the muscle arising from the white line (fascia) serves its purpose by holding the pelvic diaphragm in relation prepared for any immediate action, with its superior and inferior fascia it makes a tense floor for the superimposed viscera.

The levator ani fascia superior and inferior lends the muscle its greatest utility by increasing its strength and also producing harmonious action in its function. The horseshoe sling is inseparably blended with the sphincter ani externus. The levator ani produces the H-shaped condition of the vagina and its puckered or constricted appearance at the orifice. The muscle becomes hypertrophied during pregnancy and vaginismus. It resists the head in labor to a surprising degree. It may be easily observed in slow labor, when, if small forceps sufficient to overcome the tension of the muscle be applied, labor proceeds rapidly.

The comparison of the diaphragm and levator ani, as to the capacity for strength, is in favor of the levator ani. Its strength varies much in different sub-

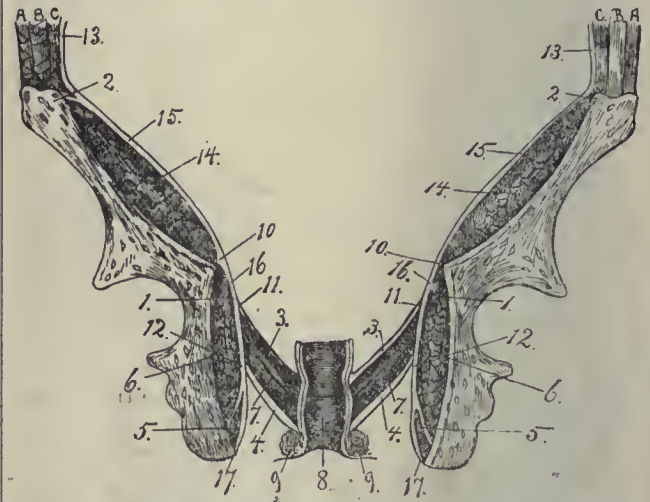


Fig. 7.—(Robinson-Scholer.) A diagram to illustrate the pelvic fascia, with a new nomenclature of same. 1, 1, white line; 2, 2, origin of transversalis and iliac fascia at the iliac crest; 3, 3, levator ani fascia superior; 4, 4, levator ani fascia inferior; 5, 5, Alcock's canal; 6, 6, obturator internus muscle; 7, 7, levator ani muscle; 8, vagina or rectum; 9, external sphincter; 10, 10, ileopectineal line; 11, 11, origin of levator ani fascia superior; 12, 12, beginning of obturator fascia inferior; 13, 13, transversalis fascia; 14, 14, iliac muscle; 15, 15, iliac fascia; 16, 16, obturator fascia superior; 17, 17, ending of obturator fascia inferior on the ischial tuberosity.

jects. The best descriptions of the levator ani muscle are given by Henle, Luschka, Testut and Lesshaft. Hart and Dickinson have made excellent studies on this muscle. Browning wrote an interesting article on the subject. The levator ani may be a rudimentary muscle, disappearing with the tail and in the evolutionary process of an erect attitude. This view may arise from the weakness of its origin, the direction of its fibers and insertion, as well as the requirement of the double fasciæ. It is unphysiologic for a muscle to produce constant support, hence the levator ani can not be considered a support for the viscera; it is rather a sphincter muscle.

The levator ani muscle is analogous to the buccinator muscle. Perhaps from an evolutionary standpoint we may look on the levator ani as having three functions, viz.: a, of a sphincter; b, of an elevator; and c, of a tensor of the levator ani fascia, superior and inferior.

As proof that the levator ani is a sphincter, one

need only introduce the finger into the vagina and request the subject to contract the muscle. Cruveilhier, Henle, Lesshaft and Budge insist that the levator ani is a sphincter of the anus and lower rectum chiefly, and not an elevator. That this muscle is an elevator one need only dissect it to find the muscle ending definitely in the walls of the rectum, and such terminating fibers, when in action, could only elevate the rectum. The horse in defecation illustrates that the levator ani is an elevator, as the rectal wall is elevated, the rectal mucosa everted and completely evacuated. As an elevator, it resists intra-abdominal pressure.

The levator ani appears as well developed in the male as the female, and hence labor does not appear to develop it. The levator ani muscle is greater in those animals with a tail, and originally its chief function was to aid in managing the tail, from which it would appear that as a tensor of the levator ani fascia superior and inferior, these fibers take an active part. They originate at a definite fixed point, lose themselves between the fascial blades and do not reach rectal or vaginal walls. When a muscular fiber neither goes to the rectum nor ends in its wall, it will not act as a sphincter, nor as an elevator.

Lesshaft and Roux divide the levator ani into two layers, viz., *a*, the inner layer, which is an elevator, and *b*, the outer layer, which is a sphincter.

THE INTERNAL PELVIC FASCIA.

The internal fascia of the lesser pelvis has a poor literature, and is not often described. As the pelvic fascia has much to do with the permanent results of the flap or any perineal operation, I will write of it somewhat in detail.

The fascia of the greater pelvis, or that fascia lying superior to the ileopectineal line, is not here considered. The fasciæ, the planes of strong, fibrous tissue here under consideration, lie below the ileopectineal line.

As a teacher of anatomy, I have always maintained that a fascia should be named according to the muscle or other structure with which it is in the most intimate relation. I shall therefore apply this simple nomenclature to the fascia in the pelvis.

The fascia covering the obturator internus muscle will be termed the obturator fascia. As this fascia is divided by the white line extending from the posterior surface of the pubis to the ischial spine, we will call that portion of the fascia above the white line, the obturator fascia superior, and that portion of the fascia below the white line, the obturator fascia inferior. The fascia above the levator ani, originally named by Tyrrell the rectovesicale, and by Carcassone the pelvic aponeurosis, by others the vesical layer of the pelvic fascia, we will name the levator ani fascia superior, and that part of the fascia below the levator ani, the levator ani fascia inferior. The fascia covering the coccygeal and pyriformis muscles will be named after those muscles. The fascia covering the sacrum very naturally takes the name of the sacral fascia. The internal fascia of the lesser pelvis extends from the ileopectineal line on either side to the median raphe of the pelvic floor. It not only lines the pelvic walls and floor, but enters into intimate relations with the pelvic viscera. It is a strong, shiny, fibrous membrane, possessing a very varying quantity and quality. In a certain sense the fascia of the lesser pelvis should be treated as an independent structure, and not as a continuation of the iliac transversalis or other fasciæ.

The ileopectineal line marks an absolute division between the iliac and obturator fascia.

The simplest plan is to describe the obturator fascia superior and inferior and to consider the obturator fascia as distinctly belonging to the obturator (internus) muscle, subsequently to consider the fascia of the levator ani superior and inferior, with a lesser consideration of the coccygeus pyriformis and sacral fasciæ. The fasciæ lining the lesser pelvis are intimately connected with their respective associated muscles and structures by strong connective tissue. The connection of the fasciæ with the peritoneum is not intimate, a thick, loose layer of connective tissue, richly laden with fat lobules, lies between the peritoneum and the fasciæ lining the lesser pelvis. This loose connection of pelvic peritoneum and pelvic fasciæ allows the easy and rapid spread of pelvic abscesses between the pelvic fasciæ and the peritoneum in the subperitoneal tissue.

The obturator internus fascia surrounds the obturator muscle at its origin, from the lateral pelvic surface of the innominate bone, and is the special fascia of the obturator internus muscle. It is attached for a considerable distance to the iliac portions of the



Fig. 8.—(Raney.) Diagram of the fascia of the pelvic floor in a mesial section. It illustrates the levator ani fascia superior and inferior above and below the levator ani muscle. T, L, triangular ligament; P, F, two layers of superficial perineal fascia. Observe that in the anterior triangular perineal space there are five layers of fasciæ, viz.: 1, superficial layer of perineal fascia; 2, deep layer of superficial perineal fascia; 3, triangular ligament, outer layer; 4, triangular ligament, inner layer; 5, levator ani fascia superior. In the posterior perineal space there are two layers of fascia—the levator ani fascia superior and the levator ani fascia inferior.

brim. At this point the obturator becomes attached to the upper border of the obturator membrane. In front, the attached line of the fascia passes below the ileopectineal line to allow the obturator vessels and the nerve to enter the obturator foramen or canal. This portion is fixed to the periosteum and appears as an independent organ. In front it is attached to the body of the pubis and along the upper margin of the obturator foramen by an oblique line, to a point about one-half an inch below the symphysis. Where the fascia dips under to allow the passage of the obturator vessels and nerves it is firmly attached to the periosteum and nerves by strong tendinous fibers. Posteriorly, it is attached to the anterior surface of the great sacrosacral ligament and the anterior margin of the great sacrosacral notch. Inferiorly, the fascia is attached to the margin of the obturator foramen of the descending ramus of the pubis, and it joins the falciform process of the great sacrosacral ligament, which firmly connects it to the inner border of the ischium and its ascending ramus.

With a firm insertion in the ileopectineal line, the

anterior border of the great sacrosciatic foramen, the anterior and inferior margin of the obturator foramen and to the edge of the falciform process of the great sacrosciatic ligament, the obturator fascia becomes a fixed, strong, thick, fibrous membrane, in relation superiorly with the obturator-nerve and vessels and inferiorly with the internal pudic vessels and nerves—Alcock's canal. It has intimate attachments to the obturator internus muscle above, but is quite loose below.

The obturator fascia we divide into two portions, superior and inferior. The obturator fascia superior is that portion above the white line or arcus tendineus. It looks into the pelvic cavity from the lateral aspect and is covered by peritoneum. The peritoneum and obturator fascia superior are separated by considerable loose, fatless, snow-white connective tissue, composed of many shiny, thin, cleavable planes, which become easily dissected by progress of the pelvic abscesses.

The structures of importance which pass over the internal face of the obturator fascia superior just below the iliopectineal line are the obturator vessels and nerves. These structures are liable to be injured by the head soon after its engagement by the brim or fixed bony ring of the pelvis. The obturator fascia superior has a surface of about ten square inches.

The obturator fascia inferior is that portion below the arcus tendineus or white line. It looks internally into the ischio-rectal fossa and externally toward the obturator internus muscle. It forms the external boundary of the ischio-rectal fossa. At the lower part of the ischio-rectal fossa about an inch above the tuberosity of the ischium the obturator fascia planes become separated, producing a sheath—Alcock's Canal—for the transmission of the pubic vessels and nerves. The obturator fascia inferior, has a surface of some five square inches, one-half the size of the obturator fascia superior.

At the lesser sciatic notch, the obturator fascia passes out of the pelvis with the muscles and gains the postero-femoral regions of the thigh. The obturator fascia is inserted into the ramus of the ischium and pubis, where it passes on and blends with the triangular ligament of the urethra, hence the triangular ligament is a continuation of the obturator fascia from each side.

The arcus tendineus or white line appears as an aggregation of tendinous fibers of the obturator fascia. It extends from the posterior surface of the pubis to the spine of the ischium. It possesses a gentle curve with its concavity upward. The white line gives origin to that part of the levator ani muscle, which arises between the lower posterior surface of the pubis and ischial spine. The white line arises out of the ligaments of the bladder; a thickened portion of the obturator fascia is the line of origin of two planes of fasciæ. The upper plane I call the levator ani fascia superior, and the lower plane the levator ani fascia inferior. The white line varies in thickness in individuals—generally is one-sixth of an inch in thickness in the middle, but its greatest strength and width is at the anterior end, where it assumes intimate relations with the pubovesical ligaments. In women the white line is about four inches long. Its origin at the pubis may be chiefly from the anterior and lateral (true) ligaments of the bladder. The white line allows considerable elasticity. It is quite firmly fixed at the anterior end, and definitely at the poste-

rior end, but, like a long, tight rope, allows considerable range of motion and sagging in the middle.

The levator ani fascia superior (rectovesical fascia of Tyrell, rectovesical aponeurosis of Carassone or visceral layer of the pelvic fascia) arises from the white line and passing inward forms the floor of the pelvis. The levator ani fascia superior, as its name implies, covers the superior surface of the levator ani muscle. The fascia finally loses itself in the median raphe behind the rectum in the rectal, vaginal and vesical walls, and in the anterior and lateral ligaments of the bladder. From this relation, the levator ani fascia superior becomes of significant interest in perineorrhaphy. Anteriorly it is remarkably strong and short, being attached to the back of the pubis above the obturator fascia, from which it is separated by the origin of the levator ani muscle; the levator ani fascia superior, the levator ani muscle and the obturator fascia being all three closely adherent to the pubis bone and to each other.

If one carefully removes the peritoneum and loose subperitoneal tissue the levator ani fascia superior may be plainly seen stretching from the white line to the bladder, vagina and rectum. It may be stripped off the levator ani muscle in several thin, cleavable planes. It is reflected on the bladder forming the anterior true and lateral true ligament of the bladder, however the lateral ligaments of the bladder may be assisted by ligaments from the vagina. The levator ani fascia superior begins its anterior attachments at the lower border of the symphysis, continues then along the white line laterally to the ischial spine, continues from the ischial spine on the superior surface of the levator ani muscle to the median raphe. The levator ani fascia superior covers an area of about six square inches on each side of the median line of the pelvis.

The levator ani fascia superior may be divided into the anterior or vesical portion, the vaginal portion and the rectal portion.

The vesical portion of the levator ani fascia superior is reflected from the pubis to the neck of the bladder, forming the anterior true ligaments of the bladder and part of the lateral ligaments. The vesical portion is very thick and strong, even tendinous. It is reflected from the pubis in an arched manner. The vaginal portion of the levator ani fascia superior is analogous to that which surrounds the prostate in the male. In the male, the prostate gland and vesiculæ seminales are surrounded by a strong capsule derived from levator ani fascia superior. This portion of fascia surrounds the vagina in the female, including the large venous plexuses.

(To be continued.)

THE INVASION OF PORTO RICO FROM A MEDICAL STANDPOINT.

BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

The occupation of Cuba and the Philippine Islands by our conquering navy and army in such rapid succession seemed to increase the desire of conquest and opportunities to test the strength of our arms. With the destruction of the weak navy of our enemy there was nothing in the way of sending troops to any of the many Spanish possessions. The fall of the heroic Cervera and his faithful little band, off the harbor of Santiago, before the murderous fire of our well-

equipped fleet cleared the pathways of the ocean of further sources of danger. It was but natural that the beautiful island of Porto Rico, one of Spain's most valuable possessions, should have been selected by the military authorities as the next objective point for contention. Repeated attacks by our navy on its best stronghold, San Juan, had failed to bring about surrender and to gain a foothold on Porto Rican soil. So far the navy had taken the lead in bringing Spain to terms and the army was anxious to do its share in wresting from its greedy grasp another enslaved people. Major-General Miles, who conducted the invasion in person, decided to march upon San Juan from several directions, and, after uniting the forces, attack the city jointly. The experience gained in Cuba had taught us an important lesson in conducting the Porto Rican campaign. General Miles laid his plans wisely and with special reference to gain the desired object with as little suffering and loss of life as possible. Every movement in this campaign was made with a due regard for the welfare and success of our troops rather than a desire for personal gain and aggrandizement, which characterized the Cuban campaign, as every one knows. He was well aware of the depressing effects of the tropical climate on the unseasoned troops and of the necessity of resorting to timely and efficient precautions in preventing disease. From experience and personal observations, he recognized the fact that the unavoidable privations incident to warfare are multiplied many times when the seat of war is a strange and remote country presenting a climate and environments unaccustomed to by the invading force. His actions were clean-cut admissions that he was in need of a medical adviser and that they were influenced by the frequent consultations held with his chief surgeon. The war in Porto Rico was conducted upon the most humane principles, and although no great battles were fought, victory upon victory followed the footsteps of our army and in less than three weeks our flag floated over three of the largest cities of the island. Our troops love and respect their leader and have followed him without fear and grumbling under the scorching sun, full of confidence and trust. The news that peace had been declared reached the headquarters at Ponce, August 14, and the troops are now resting on their arms awaiting the final adjustment of the terms of peace. Eager to fight, yet every soldier in the field received this message of peace with joy and enthusiasm, fully satisfied that the army had done justice to the flag and country it represents. Col. Charles R. Greenleaf, chief surgeon of the army in the field, accompanied General Miles on his trip from Guantanamo to Porto Rico, and has been with the army ever since. He was long enough in Cuba to gain a full insight into the horrors created by infectious diseases, which so constantly follow large armies, especially in a war of invasion. He was amazed when he saw to what extent yellow fever had broken out in the few weeks the troops had been in Cuba. There was no difficulty in tracing the disease to a total lack of precaution on the part of the general in command. Col. Greenleaf had given his directions and advice before the army left Tampa, but they were not heeded. Owing to want of co-operation on part of General Shafter, the medical officers found themselves powerless in preventing and combating the dreaded disease. Col. Greenleaf's prompt and energetic action on his arrival in Cuba did much in repressing this disease,

but it was too late to guard against a general outbreak. The many recent graves in Cuba containing the remains of the victims of this disease are the best proof of what will happen when the leader of an army ignores the health and comfort of his men. In planning the Porto Rican invasion, General Miles availed himself of the invaluable services of his chief surgeon. The expedition was well supplied with medicines, hospital stores and medical officers to meet all possible emergencies. The result has been that the army has been so far singularly exempt from disease, with the exception of typhoid fever and the effects of heat, both beyond the control of the medical officers. Since his arrival in Ponce, Col. Greenleaf has been



General Nelson A. Miles, in command of the Army in Porto Rico. By courtesy of "McClure's Magazine," Copyrighted 1898 by S. S. McClure Co.

the busiest man in the army. He has not been content in simply issuing his orders from headquarters, but he has attended in person to the execution of every detail. He has visited the camps and the hospitals and exercised personal oversight over the distribution of hospital supplies, instruments and medicines. Anxious to serve the sick and wounded, impatient when face to face with a slow, hesitating subordinate, he has more than once performed temporarily the duties of an ordinary hospital steward, to furnish a much-needed object-lesson. His work will justify the confidence reposed in him when he was appointed to the high and responsible position he holds during this war.

FIRST SKIRMISH.

General Miles landed with his expedition, which included a number of war vessels, at Guanica, Monday,

July 25. The harbor was entered by the now famous little gunboat *Gloucester*, under the command of Lieut.-Commander Wainwright. A landing was effected by thirty sailors, the Spanish flag was hauled down, and the stars and stripes raised amid the cheers of the sailors, who knew well that what they had just witnessed meant liberty and freedom for the down-trodden people of the island of which they had just taken possession.

The planting of the flag and the deafening cheers which rechoed from the hills of the liberated island were followed by a volley from the hidden enemy, which was promptly responded to by the guns of the *Gloucester* and a Colt rapid fire gun, which had been taken ashore. The Spaniards fled in confusion and sought shelter among the adjacent hills leaving four killed on the field, while our soldiers escaped without a scratch. The turn of the infantry came soon after landing, in the form of a lively skirmish, in which we lost one killed and fifteen wounded, of whom one died a day or two later. Most of the injuries were flesh wounds, which healed in a remarkably short time. A very interesting incident occurred during this skirmish. The day was hot, and our troops had to ascend a steep hill, from the crest of which the Spaniards defended themselves. One of the volunteer soldiers, outrunning his comrades advanced far ahead of his line and when he nearly had reached the Spanish position was overcome by heat. He fell in a semi-conscious state. A Spanish doctor rushed to his aid with a stretcher and two hospital corps men, administered the necessary restoratives and had him conveyed at once within our line. This one act alone goes to show that the Spaniards have often been unjustly accused of being cruel and inhuman. This certainly has not been the case during the present war. From my own observations I am sure that they have respected the Red Cross. In fact, the Red Cross people of Porto Rico, composed largely of Spaniards, have shown the greatest activity and interest in their humane work during the entire campaign. If anything, they have rather been overzealous, judging from the number of insignia displayed and worn. It was a common thing to see men wear a white cap with an immense red cross on top, another one in front, besides the brassard.

Ponce was taken and occupied without any resistance whatever. The citizens received our soldiers with enthusiasm and manifestations of joy. General Miles was hailed as a long-looked-for friend rather than a conqueror. The next engagement occurred between Arroya and Guayama, between a small Spanish force in ambush and General Haines' brigade, and resulted in eleven wounded on our side. The only death following this skirmish was a soldier of the Third Illinois Infantry who was shot accidentally by an unknown man of the Fourth Pennsylvania regiment. The bullet caused an extensive non-penetrating injury of the chest, from the effects of which he died the next day. Such accidents have occurred too often during the present war, and to prevent repetition in the future this matter should be investigated, as was done in this instance, by the proper authorities. Among the injured was a man who was shot through the pelvis and another one the subject of a gunshot wound of the elbow joint, both of them doing well four days later when I examined the wounded in the brigade hospital at Guayama. The third skirmish took place between the advance column of General

Wilson's division, on the march to San Juan, and a small Spanish force intrenched on the summit of a high and steep hill. Lieut. Haines, the son of General Haines, was the only one who was brought on board the *Relief* August 4. One of the wounded was operated on by Dr. Parkhill in an ambulance. The abdomen was torn open by a fragment of a shell, the intestines protruded and a resection had to be made of a loop for a tearing injury. It was reported that the patient rallied well from the immediate effects of the operation and that hopes were entertained of his recovery. Another engagement took place between the troops under command of General Schwan, on their way from Ponce to Mayaguez, and about 1000



Col. Charles R. Greenleaf, Chief Surgeon of the Army in the Field.

Spaniards ambushed four miles from the latter city. This fight resulted in two killed and eighteen wounded on our side. All of the wounded were brought on board the hospital ship *Relief*, which called at Mayaguez on her way to New York, August 15. Such is a brief account of the casualties sustained by our army during the Porto Rican campaign. The experience here coincided with that gained in Cuba, to the effect of confirming the humane nature of the modern weapon. The proportion of killed to wounded is even smaller than in the Cuban war, as well as the number of seriously injured. Thanks to more elaborate preparations for the campaign, the wounded received prompt and efficient attention. The suffer-

ing of the well, sick, and wounded can not be compared with what I saw in Cuba. War is a great educator, and should we again be called upon to invade a foreign country, we shall profit by the experience of the past.

TYPHOID FEVER IN PORTO RICO.

The native doctors in Ponce, Porto Rico, gave us the assurance that not a single case of yellow fever had been seen in that city for the last three years. We were informed that in San Juan isolated cases occur from time to time. Malaria is present in all of the valleys, more especially in and around Ponce. The large, pendulous abdomen, and the pale faces of the many little naked children in city and country, are the best witnesses in showing the prevalence of malarial intoxication.

Typhoid fever is endemic in certain localities, but at present Ponce is almost free from this disease. Having seen the destruction of life and the indescribable suffering caused by yellow fever in Cuba, Col. Greenleaf naturally turned his attention toward protecting our troops in Porto Rico against this scourge. The proximity of Porto Rico to Cuba, the many pos-

ing from the station by land. This officer should have authority to quarantine all suspicious persons and means of transportation, and to disinfect their belongings, either by fire or such other means as may be deemed necessary.

All persons connected with the Army are forbidden to enter any building whatever on the island without express authority from these headquarters, and all buildings in rural districts that may be suspected of harboring the germs of disease should be destroyed by fire or otherwise thoroughly disinfected.

As woven goods, particularly those of woolen fabric, are special carriers of disease, the purchase or acceptance of articles of this kind from stores or inhabitants of the island is strictly forbidden. Any such property found within the lines will be at once destroyed and the holder subjected to punishment.

That commanders of regiments be instructed to prepare their camping grounds with great care and maintain a rigid police in them; under no circumstances shall they camp on ground that has previously been occupied either by troops or by collective bodies of the inhabitants.

That medical officers be required to make frequent inspections of the commands to which they belong, and that any suspicious case of fever be immediately isolated and the fact of its occurrence reported to these headquarters.

Canteens should be filled daily with tea or coffee, and these beverages used habitually instead of water, unless that has been previously boiled.

Very Respectfully,

CHAS. R. GREENLEAF, Colonel,

Asst. Surg.-Genl. U.S.A., Chief Surg. Army in the Field.



Fever patients in the court of the Spanish military hospital.



Fever patients in the court of the Spanish military hospital.

sible sources of infection, made such a course imperative. That this fear was not unfounded, and that the Chief Surgeon recognized the danger and made use of timely precautions are but shown by the contents of a letter addressed to the Adjutant-General, Headquarters of the Army, and Circular No. 1 issued before the army sailed from Guantanamo to Porto Rico, and a copy of the Quarantine Regulations formulated at the same time.

HEADQUARTERS OF THE ARMY,
ON BOARD U.S.S. "YALE," EN ROUTE TO PORTO RICO,
July 23, 1898.

To the Adjutant-General, Headquarters of the Army.

Sir:—I have the honor to submit the following recommendations for preventing as far as possible the introduction of yellow fever into the command now about to land on the island of Porto Rico:

The assignment of an officer of rank, to be placed in command of the base of supplies, with authority to indicate the sites to be occupied by the various supply depots and the hospital, and to enforce the regulations governing the health of the attachés of these departments and the persons who may visit them on business.

The assignment of a sanitary inspector whose duty it shall be to examine all vessels and persons arriving at our base from seaward ports, and to prepare sanitary regulations for the Government of all transportation and persons arriving and depart-

HEADQUARTERS OF THE ARMY,
OFFICE OF THE CHIEF SURGEON, ON BOARD U.S.S. "YALE,"
EN ROUTE TO PORTO RICO.

July 24, 1898.

Circular No. 1.

1. Medical officers will, upon receipt of this circular, report to the Chief Surgeon of the Army the number of medical officers, hospital stewards, acting hospital stewards and privates of the Hospital Corps on duty with their command. Also the number of ambulances, litters and tents, and if medical supplies are insufficient, note the general character needed. This report will be made upon the following form:

Com. Med. Hosp. Actg. Priv. Lit. Ambu. Hosp. Character of Medical
mand. Offs. Stwds. H. S. ates. ters. lances. Tents. Supplies Needed.

2. A field hospital will be organized at the Army base as soon as possible after landing, and a depot of supplies will be connected with it. As we are widely separated from the source of our supplies a strict economy in their use is necessary; Surgeons of Divisions and Brigades will give their personal attention to this important subject.

3. Extreme vigilance is enjoined upon Medical Officers in the matter of camp sanitation; errors in this particular being promptly reported to the respective commanding officers.

4. The experience at Santiago has demonstrated the efficiency of properly applied first dressings to gunshot wounds; these should be left untouched until the patient arrives at the base hospital, unless the condition of the wound absolutely demands a redressing en route from the first dressing station. All diagnosis tags will be marked "Dressing not to be removed"

or "Redressing required," as the condition demands. Unless an imperative necessity exists, surgical operations will not be attempted at the front.

CHAS. R. GREENLEAF, Colonel,
Asst. Surg.-Gen. U.S.A., Chief Surg. Army in the Field.

QUARANTINE REGULATIONS FOR THE BASE OF THE MILITARY EXPEDITION TO PORTO RICO.

1. Every vessel shall be officially visited by the inspector before communication is made with other vessels or with the shore.
2. A vessel having yellow fever or smallpox on board shall not be allowed to communicate with the shore, or with other vessels, but shall leave the island.
3. Vessels coming from sources of infection shall be detained five days without communicating either with the shore or with other vessels. If at the expiration of this time no cases of fever shall have developed, landing may be made under the following precautions:

All fomites shall be disinfected by one of the following methods: Immersion for one hour in 1-1000 solution bichlorid; sulphur fumigation in a chamber twenty-four hours, four pounds of sulphur being used for each 1000 cubic feet of space; or boiling half an hour with complete immersion. The following need not be disinfected unless directly exposed to infection:

All new and dry material unpacked, all iron and steel implements, all goods in new and original packages, not having been broken or packed in an infected locality. Goods other than textile contained in textile material, such as coffee in sacks, bacon, spices, etc., kept dry and not broken in an infected locality do not require disinfection other than the container, which shall be treated as fomites as above. Fruits, sound, unless exposed in an infected locality need no disinfection. Live stock may be admitted.



Ward in the Spanish military hospital.

Such ships shall be thoroughly cleaned and disinfected by the free use of 1-1000 solution of bichlorid, and by fumigation with sulphur before they may again receive men or supplies.

Ships quarantined shall display the usual flag, and those in detention shall be visited by the inspector daily until the time of quarantine shall have expired.

4. Vessels carrying passengers or having fomites from localities of infection, though they (the vessels) may hail from healthy ports, shall be subject to the same quarantine restrictions as vessels known to hail from infected localities.

5. Due precaution shall be taken to prevent infection of the base of supplies through communication with infected localities along the line of march by teamsters and others. As far as possible they should not be allowed to remain at the base longer than necessary to load and unload, nor to come in such contact as to communicate infection. Stragglers, prisoners and strangers should be immediately sent away.

CHAS. R. GREENLEAF, Colonel,
Asst. Surg.-Gen. U.S.A., Chief Surg. Army in the Field.

Major Woodbury was appointed Sanitary Inspector. He met with the hearty co-operation of the city authorities of Ponce in the performance of his onerous and often unpleasant duties. The sanitary conditions of the city underwent a great improvement in

a few days. The water-supply was found satisfactory. The absence of a sewerage system threw many obstacles in the way. The appearance of smallpox in a village some distance from Ponce made vaccination among the soldiers who were not protected against this disease and the natives necessary. An abundant supply of vaccine virus was on hand and was at once issued and used. When I arrived at Ponce, August 7, I found typhoid fever raging to an alarming extent. It was desirable to trace the origin of the disease. The absence of typhoid fever this season of the year, its outbreak in all the commands, and the short time that had intervened between leaving the United States and the landing in Porto Rico made it probable that the disease could be traced to the infected camps occupied by the troops before leaving for Porto Rico. General Miles was very anxious to obtain reliable information regarding the origin and spread of the disease. Pursuant to the following order I made an exhaustive and systematic investigation:

HEADQUARTERS OF THE ARMY, OFFICE OF THE CHIEF SURGEON.
PORT PONCE, PORTO RICO, Aug. 10, 1898.

Lieut.-Col. Nicholas Senn, Surgeon U. S. V., Chief of Operating Staff of the Army.

Sir:—You will proceed to the town of Ponce, visit the military and other hospitals in that town, and such of the camps in its vicinity as you may deem necessary, for the purpose of



Ambulance train transporting the sick from the Division Hospital to the Spanish military hospital.

investigating and, if possible, determining the cause of typhoid and other fevers now prevailing in this army, and report the results of your investigation in writing to me. Should you find it necessary to have the services of an interpreter, or other civilian, to aid in your work, you are hereby authorized to employ him, sending the bill to this office for payment.

Very respectfully,

CHAS. R. GREENLEAF, Colonel,
Asst. Surg.-Gen. U.S.A., Chief Surg. Army in the Field.

I obtained accurate information of two hundred fever patients, of which number more than 90 per cent. were well-marked typhoid fever, the balance malaria and the results of sunstroke. I estimated the whole number of fever patients in, and in the immediate vicinity of, Ponce at 250. In extending my inquiries to General Brooke's command, with headquarters at Guayama, I found about 145 additional cases; however, in that locality malaria seemed to predominate. Most of the cases came from Chickamauga by way of Charleston and Newport News. The Second and Third Wisconsin Regiments fur-

nished the largest contingent. Almost every soldier in the different hospitals belonging to either of these regiments suffered from typical typhoid fever, and what attracted my attention was that the disease appeared to be of a more serious type than in most of the men belonging to other regiments. The locality from which these regiments came, when encamped at Chickamauga, must have been badly infected. As the result of my investigations, I reported to Col. Greenleaf the number of cases found, and that in my opinion the disease was contracted in every instance before leaving the camps in the United States. In view of the fact that most of the cases came from Chickamauga, I suggested at the same time that the Medical Department should recommend immediate evacuation of that camp. In Ponce most of the cases found shelter and care in the Spanish military hospital, then in charge of Major Ten Eyck, U. S. A. The club-house and a school for girls, of the Sisters of Charity, were also placed at the disposal of the chief surgeon and were soon filled with patients. Miss Chancellor of New York did excellent service as a



Ambulance unloading the sick at the door of the Club House in Ponce used as a temporary hospital.

nurse in the former temporary hospital. A congestion which occurred in the military hospital, and which could not be prevented, took place when General Wilson's division moved forward and unloaded at the door all of the sick in the Division hospital, some 150 in number. The overcrowded condition was remedied the next day, when a large number of the more grave cases were sent on board the *Relief*, anchored in the harbor of Ponce. Medical supplies were in abundance at all times and were freely issued without any formality. The *Relief*, and later the yacht *May*, brought an additional supply, with many delicacies for the sick. Milk was bought and freely supplied to the sick. It is the intention of the chief surgeon to establish an extensive out-door receiving hospital as soon as the tentage arrives, which, according to information received from the Surgeon-General, is now on the way. The number of new cases of typhoid fever in the Porto Rican army will probably be a limited one, and if the troops are recalled as soon as the treaty of peace has been signed, we need to entertain little fear of the indigenous spread of the disease.

Arroya, Porto Rico, Aug. 12, 1898.

TYPHOID FEVER IN THE PORTO RICAN CAMPAIGN.

BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF OPERATING STAFF WITH THE ARMY IN THE FIELD.
[Written for the JOURNAL exclusively.]

In Cuba our army met as its most formidable enemy one of the most dreaded of all infectious diseases—yellow fever. The Cuban invasion was characterized by hasty action, a lack of organization, and inadequate preparation. The last crippled the medical department and is responsible for the early and extensive outbreak of yellow fever. In less than two weeks after our army landed in Cuba, yellow fever made its appearance, and almost simultaneously attacked the troops from Siboney, the base of invasion, to the trenches before Santiago. In less than two weeks from its appearance nearly 500 fever cases, most of them yellow fever, impaired the fighting force and seriously taxed the limited resources of the medical department. Fortunately for the army, that type of the disease was mild, the number of deaths few as compared with some of the epidemics in the past. Under the circumstances, it was fortunate that Santiago surrendered in time, as the fighting force was being rapidly reduced by the invasion of yellow fever and the ever-present malaria. In planning the Porto Rican invasion the possible repetition of a similar experience was taken into due consideration, and timely precautions against such an occurrence were adopted and carried into effect. So far our troops in Porto Rico have escaped yellow fever, but soon after their landing, fever cases came into the hospitals at an alarming rate. Many of the soldiers were attacked on the transports or soon after landing. After landing in Ponce, August 8, I found at least 250 cases of fever in the different hospitals in the city and the division hospital near the city limits. Even a superficial examination sufficed to prove that most of the cases were typhoid fever. The time which intervened between the departure of the troops from the United States and the appearance of fever, made it more than probable that the infection did not have an indigenous origin. In some of the cases it was difficult, in others impossible, to make a differential diagnosis between malaria and typhoid fever without the use of the microscope, and this invaluable diagnostic resource in such cases was unfortunately not at hand. Another difficulty we had to contend with was the lack of recorded thermometric observations, which, when accurately made and systematically recorded, prove of such signal service in distinguishing between these two febrile conditions.

Pursuant to an order issued by Col. Greenleaf, chief surgeon of the army in the field, I investigated for two consecutive days all of the fever cases then in the hospitals, for the purpose of locating the origin of typhoid fever. In this work I availed myself of the kind and able assistance of Dr. M. O. Terry, Surgeon-General of the State of New York, and Acting Assistant-Surgeon Greenleaf, son of the chief surgeon. We made a careful examination of 200 cases of fever as they presented themselves, noted the principal symptoms and tabulated them (see following page).

A careful study of these cases, as well as subsequent developments, furnished adequate proof that 90 per cent. of them were genuine typhoid fever. No further doubt could remain in tracing the infection to the camps occupied in the United States. The great

ORIGIN OF TYPHOID FEVER CASES.

No.	Age.	Company.	Command.	Camp.	Arrived in Porto Rico, via.	Date and Place of Attack.	Tongue.
1	19	F.	16th Pa.	Chickamauga.	July 25, Charleston.	Before embarking.	Furred, red at margin.
2	20	F.	16th Pa.	"	"	"	Furred, red at margin.
3	28	"	2d Wis.	"	"	On transport.	"
4	16	Headqr. cook.	16th Pa.	"	"	July 16, on transport.	Dry, glazed, sordes.
5	23	D.	3d Wis.	"	"	Two days after disembarking.	Flabby, red.
6	21	"	2d Wis.	"	"	Fourth day after disembarking.	Coated, red margin.
7	21	"	2d Wis.	"	"	On transport.	Coated, red margin.
8	21	I.	16th Pa.	"	"	On transport.	Coated.
9	21	C.	2d Wis.	"	"	On transport.	Coated, red at tip and margin.
10	21	C.	2d Wis.	"	"	On transport.	Coated, red at tip and margin.
11	21	C.	2d Wis.	"	"	On transport.	Coated, red at tip and margin.
12	17	A.	3d Wis.	"	"	Three days after disembarking.	Coated, red at tip and margin.
13	22	I.	3d Wis.	"	"	On board, one day before landing.	Red in center.
14	24	G.	11th U. S. Inf.	Tampa.	August 2.	On transport.	Dry, red at tip.
15	19	H.	16th Pa.	Chickamauga.	July 28, Charleston.	Shortly after landing.	Dry, furred, red at margin.
16	21	H.	16th Pa.	"	"	Shortly after landing.	Flabby.
17	28	H.	3d Wis.	"	"	Shortly after landing.	Red, dry, glazed.
18	18	M.	2d Wis.	"	"	On transport.	Coated, red tip and margin.
19	24	I.	2d Wis.	"	"	Before embarking.	Dry, glazed.
20	31	M.	2d Wis.	"	"	Before embarking.	Dry, glazed.
21	30	F.	3d Wis.	"	"	In Charleston.	"
22	20	M.	2d Wis.	"	"	Two days after disembarking.	Large, flabby, coated.
23	22	K.	3d Wis.	"	"	On transport.	Large, flabby, coated.
24	21	N.	3d Wis.	"	"	After disembarking.	Furred, red at tip and margin.
25	18	Driver.	4th Pa.	"	July 25,	After disembarking.	Coated, red at tip and margin.
26	18	B.	2d Wis.	"	"	After disembarking.	Coated, red at tip and margin.
27	23	B.	6th Ill.	Alger.	"	After disembarking.	Coated, red at tip and margin.
28	21	L.	3d Wis.	Chickamauga.	"	Six days ago, here.	Large, flabby, coated.
29	21	L.	3d Wis.	"	"	After disembarking.	Large, flabby, coated.
30	20	A.	17th U. S. Inf.	Tampa.	August 2.	Five days ago.	Slightly furred.
31	29	F.	2d Wis.	Chickamauga.	July 25, Charleston.	"	Dry, fissured, sordes.
32	23	Hosp. corps.	2d Brigade.	"	July 30, Newport News.	Two weeks ago, after landing.	Flabby, red tip.
33	25	A.	17th U. S. Inf.	Tampa.	August 2.	On transport.	"
34	26	L.	2d Wis.	Chickamauga.	July 25, Charleston.	Eight days; Porto Rico.	Coated.
35	18	B.	2d Wis.	"	"	On ship.	Coated.
36	24	I.	2d Wis.	"	"	On ship.	Flabby, coated.
37	26	B.	2d Wis.	"	"	On ship.	Large, flabby.
38	32	B.	6th Mass.	"	July 28, Charleston.	On ship.	Dry, large, cracked.
39	23	H.	2d Wis.	"	"	On ship.	Dry, coated.
40	23	Ambulance.	"	"	August 2, Newport News.	On ship.	"
41	23	D.	2d Wis.	"	August 2, Charleston.	After disembarking.	Coated, red at tip and edge.
42	27	D.	6th Ill.	Alger.	July 25, Charleston.	On ship.	Large, flabby, coated.
43	28	F.	6th Mass.	"	"	Three days after disembarking.	Flabby.
44	21	A.	2d Wis.	Chickamauga.	"	Six days ago.	Dry, margin red.
45	23	A.	5th U. S. Cav.	Tampa.	August 2, Port Tampa.	On transport.	Flabby, coated.
46	22	A.	5th U. S. Cav.	"	"	On landing.	Coated, red at tip and edge.
47	21	"	2d U. S. Cav.	"	"	On boat.	Coated, red at tip and edge.
48	21	A.	6th Mass.	Alger.	July 25, Charleston.	"	Slightly coated, red in center.
49	27	C.	19th U. S. Inf.	Tampa.	August 2.	On boat.	"
50	23	C.	19th U. S. Inf.	"	"	Six days ago.	Coated, red in center.
51	23	C.	2d Wis.	Chickamauga.	July 25, Charleston.	On boat.	Coated, red in center.
52	20	C.	2d Wis.	"	"	After landing.	Coated.
53	32	Officer.	Transport.	Tampa.	"	"	"
54	18	C.	6th Mass.	Alger.	July 24, Charleston.	After landing.	Coated.
55	18	C.	16th Pa.	Chickamauga.	"	On boat.	"
56	19	K.	6th Mass.	Alger.	"	July 6.	"
57	25	B.	6th Ill.	"	"	On boat.	Dry, brown, cracked, sordes.
58	30	B.	5th U. S. Art.	Tampa.	August 2.	One day ago, on boat.	Coated.
59	24	Ambu. corps.	"	Chickamauga.	July 24, Charleston.	On boat.	Coated, red at tip and margin.
60	19	B.	6th Ill.	Alger.	"	On land, two weeks.	Coated, red at tip and margin.
61	19	B.	6th Ill.	"	"	On land, four days.	Coated, red at tip and margin.
62	22	I.	7th Cav.	Chickamauga.	August 2.	On shore.	Lips and tongue dry.
63	26	I.	6th Cav.	"	July 24.	On boat.	"
64	21	I.	Signal corps.	"	August 2, Newport News.	On boat.	Coated.
65	19	B.	11th U. S. Art.	Tampa.	August 2.	On boat.	Sordes, coated, red at tip.
66	29	C.	3d U. S. Art.	"	"	On shore, five days.	"
67	36	D.	6th Mass.	Alger.	" Charleston.	On boat, eight days ago.	Coated, flabby.
68	18	D.	6th Mass.	"	"	At Alger.	"
69	20	E.	6th Mass.	"	"	On shore, August 1.	Moist, sordes.
70	20	"	16th Pa.	Chickamauga.	July 24, Charleston.	On boat.	Coated, lips dry.
71	22	D.	2d Wis.	Alger.	"	On boat.	Coated, red at tip.
72	19	"	5th Ill.	"	"	On shore, twelve days.	Coated, red at tip.
73	24	B.	2d Wis.	Chickamauga.	" 25	On boat.	"
74	20	C.	16th Pa.	"	"	On boat.	Furred, dry, red margin.
75	22	L.	16th Pa.	"	"	After reaching shore.	Moist.
76	26	A.	16th Pa.	"	"	After reaching shore.	Large, coated.
77	18	I.	6th Ill.	"	"	On boat.	Moist, coated.
78	21	I.	7th U. S. Inf.	Tampa.	August 2.	On boat, about two weeks.	Dry, brown, fissured.
79	24	C.	3d U. S. Art.	"	"	On boat.	Coated, furrowed, moist.
80	18	K.	2d Wis.	Chickamauga.	July 25, Charleston.	On boat.	Coated, red at tip and margin.
81	29	M.	6th Ill.	Alger.	"	On boat.	Dry, margins red.
82	22	B.	5th U. S. Art.	Tampa.	" 24, Cuba.	On boat.	Dry, margins red.
83	21	K.	19th U. S. Inf.	"	August 2.	On boat.	Dry, margins red.
84	24	D.	3d U. S. Art.	"	"	On boat.	Coated, red tip and margin.
85	26	B.	2d Wis.	Chickamauga.	July 25	On boat.	Coated.
86	21	A.	3d U. S. Art.	Tampa.	" Cuba	On boat.	Moist, coated.
87	19	M.	3d U. S. Art.	"	"	On boat, two weeks ago.	Dry, furred.
88	21	M.	6th Ill.	Alger.	" Charleston.	On board.	Dry, coated, sordes.
89	20	L.	6th Ill.	"	"	On board.	Dry, coated, sordes.
90	20	L.	6th Ill.	"	"	On board.	Dry, coated, sordes.
91	25	"	4th U. S. Art.	Tampa.	August 1, Cuba.	On board, four weeks.	"
92	26	A.	3d Wis.	Chickamauga.	July 28, Charleston.	On board.	Large, flabby.
93	29	M.	19th U. S. Inf.	Tampa.	August 2.	On board.	Dry, coated.
94	21	L.	2d Wis.	Chickamauga.	July 25, Charleston.	On shore.	Large, white, coated, flabby.
95	22	C.	2d Wis.	"	"	On shore, one week.	Coated, red tip and margin.
96	26	B.	19th U. S. Inf.	Tampa.	August 2	On shore.	Coated, flabby.
97	19	Ambu. corps.	Pa.	Chickamauga.	" Newport News.	On board.	Coated, red tip and edge.
98	21	K.	3d Wis.	"	July 25, Charleston.	On shore, two weeks.	Coated, flabby.
99	28	C.	6th Mass.	Alger.	"	On shore, two weeks.	Large, furrowed, dry.
100	22	C.	6th Mass.	"	"	Four days on boat.	Coated, margins red.
101	20	D.	2d Wis.	Chickamauga.	"	One week on shore.	Coated, margins red.
102	20	M.	6th Mass.	Alger.	" 29	On boat.	"
103	24	F.	3d Art.	Tampa.	August 2	Seven days after landing.	Coated, red tip and margin.
104	21	Hosp. corps.	6th Ill.	Alger.	July 25	7 days after landing, Charleston.	Coated, flabby.
105	20	Hosp. corps.	6th Ill.	"	"	7 days after landing, Charleston.	Coated, red tip and margin.
106	"	"	6th Ill.	"	"	7 days after landing, Charleston.	"
107	24	D.	6th Ill.	"	"	5 days after landing, Charleston.	Large, flabby, white coated.
108	"	C.	6th Mass.	"	"	3 weeks before land., Charleston.	Dry, brown, fissured.
109	"	"	1st U. S. Prov.	Tampa.	August 2	12 days before land., Charleston.	Dry, red, glazed.
110	24	D.	4th U. S. Art.	"	July 30	Before landing, Cuba.	White.

ORIGIN OF TYPHOID FEVER CASES.

Temp.	Pulse.	Chest.	Abdomen.	Roseola.	Spleen.	Epis-taxis.	Diarrhea.	Remarks.
101	72	Bronchitis.	Tender...	Present..	Enlarged.	No.	Yes.	
101	96	Bronchitis, slight.	Tender...	Present..	Enlarged.	No.	No.	Moribund.
99.3	160		Tender...	Not pr's nt	Enlarged.	No.	Yes.	Great emaciation.
102.2	110		Tympanitic..		Enlarged.	No.	Yes.	
101.3	100		Gurgling in right iliac fossa	Marked..	Enlarged.	No.	Yes.	
102.2	105	Bronchitis, slight.		Present..	Enlarged.		No.	
102.2	105				Enlarged.		Yes.	
102	92			Present..	Enlarged.		Yes.	
103.1	100	Bronchitis, slight.					Yes.	
102.1	80	Bronchitis.	Gurgling in right iliac fossa	Present..		No.	Yes.	Chills at first.
99	98		Gurgling in right iliac fossa	Present..	Enlarged.	No.	Yes.	
100.3	88	Bronchitis.	Gurgling in right iliac fossa	Present..	Enlarged.		Yes.	Had measles two weeks ago. No chills.
101.3	80				Enlarged+		Yes.	
102.2	100			Present +	Enlarged+		Yes.	Intestinal hemorrhage.
100.3	76		Gurgling in right iliac fossa	Present..	Enlarged+		Yes.	
102.3	80		Gurgling in right iliac fossa		Enlarged+	Yes.	Yes.	
101	72		Gurgling in right iliac fossa		Enlarged+	Yes.	Yes+	
101.2	72				Enlarged+	Yes.	Yes.	Doubtful.
99.1	76						Yes.	
102.1	73	Bronchitis.			Enlarged+	Yes.	Yes.	
102	75				Enlarged.	Yes.	Yes.	
102	74		Gurgling in right iliac fossa	Present..	Enlarged.	Yes.	Yes.	Chills.
104.3	84			Present..	Enlarged.	Yes.	Yes.	
101.2	80		Gurgling in right iliac fossa	Present..	Enlarged.		Yes.	
99	64				Enlarged.		Yes.	Doubtful.
103	80				Enlarged.		Yes.	Doubtful.
101.4	96	Bronchitis.	Gurgling in right iliac fossa	Present..	Enlarged.	Yes.	Yes.	Delirious.
101	78		Tender	Present..	Enlarged.		Yes.	Chill at first; abscess over left olecranon process.
99	76		Tympanitic..		Enlarged.		Yes.	Doubtful.
100.2	72		Gurgling in right iliac fossa	Present..	Enlarged.		Yes.	
102.2	84		Gurgling in right iliac fossa		Enlarged.		Yes.	
100.2	78		Gurgling in right iliac fossa		Enlarged.		Yes.	
102	81	Bronchitis.	Tympanitic..	Present..			Yes.	
104.2	84		Tympanitic..	Present..	Enlarged.		Yes.	
103	84		Tympanitic..	Present..	Enlarged.		Yes.	
99.4	60		Flaccid...				Yes.	Doubtful.
104	84			Present..	Enormous.		Yes.	Doubtful.
102	72		Tympanitic..	Present..	Enlarged.		Yes.	
104	86		Gurgling in right iliac fossa	Present..	Enlarged.		Yes.	
100.3	96				Enlarged.		Yes.	Doubtful.
104	106		Tympanitic..				Yes.	No chills.
102	80		Tender		Enlarged.		Yes.	
104.2	84		Pain in iliac fossa		Enlarged.		Yes.	
102.1	92		Pain in iliac fossa		Enlarged.		Yes.	
104.2	88		Tender		Enlarged.		Yes.	
102.2	80	Marked bronchitis.	Tender		Enlarged.		Yes.	
101.2	108				Enlarged.		No.	
101.1	76		Gurgling in right iliac fossa		Enlarged.		Yes.	
103.3	80		Gurgling in right iliac fossa		Enlarged.		Yes.	Doubtful.
101.4	120	Pneumonic at apex.					Yes.	
102.2	80		Gurgling in right iliac fossa		Enlarged.		Yes.	
103.2	90						Yes.	Abscess in trochanteric region.
98.2	70						Yes.	
104	96	Bronchitis.	Tender and gurgling..	Present..	Enlarged.	No.	Yes.	
101	80		Gurgling in right iliac fossa		Enlarged.		Yes.	
102	70		Gurgling in right iliac fossa	Present..			Yes.	
103	80				Enlarged+		Yes.	Doubtful.
103	90				Enlarged+		Yes.	Doubtful.
103	96			Present..	Enlarged.		Yes.	Doubtful.
98	70				Enlarged.		Yes.	
102	98		Tympanitic..		Enlarged.		Yes.	Chills.
103	90		Gurgling in right iliac fossa		Enlarged.		Yes.	Convalescent.
98.2	70						Yes.	
102	80				Enlarged.		Yes.	No typhoid symptoms.
100	70						No.	
103	112		Gurgling in right iliac fossa		Enlarged.		Yes.	
102	100		Tender		Enlarged.		Yes.	
102	100		Tender		Enlarged.		Yes.	
104.2	112		Tympanitic..		Enlarged.		Yes.	
100.3	80						Yes.	Doubtful.
104	120	Bronchitis.	Tympanitic..	Present..	Enlarged.	Yes.	Yes.	
101	80				Normal.		Yes.	Convalescent.
101	80				Enlarged.		Yes.	Convalescent.
102	100				Enlarged.		Yes.	Convalescent.
102	100	Bronchitis.		Present..	Enlarged.		Yes.	
101	80				Enlarged.		Yes.	
102.2	108	Bronchitis.	Pain and gurg. in iliac fossa		Enlarged.		Yes.	
98.4	100		Pain and gurg. in iliac fossa	Present..	Enlarged.		Yes.	
104	112		Pain and gurg. in iliac fossa	Present..	Enlarged.	Yes.	Yes.	
103	112		Pain and gurg. in iliac fossa	Present..	Enlarged.	Yes.	Yes.	
101	90				Enlarged.		Yes.	
100	85		Tympanitic..		Enlarged.		Yes.	Yes.
103	100				Enlarged.		Yes.	Yes.
102	98		Tender	Present..	Enlarged.		Yes.	Yes.
102.2	95		Tender	Present..	Enlarged.		Yes.	Yes.
103	90		Tympanitic		Enlarged.		No.	Yes.
103	100		Tympanitic				No.	Yes.
102.1	70				Enlarged.		Yes.	
102.4	70	Bronchitis.	Tender and gurg., r. i. fossa		Enlarged.		Yes.	Yes.
101	60				Enlarged.		Yes.	Doubtful.
101.2	88				Enlarged.		Yes.	
102.1	92		Tender		Enlarged.		Yes.	
102.3	82		Gurgling in right iliac fossa		Enlarged.	Yes.	Yes.	
103.1	80		Gurgling in right iliac fossa		Enlarged.		Yes.	
102.2	100		Gurgling in right iliac fossa		Enlarged.		Yes.	
102	72	Bronchitis.	Tenderness		Enlarged.		No.	Chills.
104.1	124		Tympanitic		Enlarged.		No.	Chills.
104.4	100		Tenderness		Enlarged.		Yes.	
102.1	80		Gurgling, right iliac fossa		Enlarged.		Yes.	
100.3	80				Enlarged.		Yes.	
103	80		Gurgling, right iliac fossa		Enlarged.		Yes.	
100	120				Enlarged.		Yes.	Not typhoid fever.
103.3	88				Enlarged.		Yes.	
103	84		Gurgling, right iliac fossa		Enlarged.		Yes.	
103	84		Gurgling, right iliac fossa		Enlarged.		Yes.	
101	92				Enlarged+		Yes.	

ORIGIN OF TYPHOID FEVER CASES.

111	21	D	2d Wis.	Chickamauga.	July 25	Before landing, Charleston	Large, flabby, coated.
112	24	Band	2d Wis.			Since landing, Charleston	White coat
113	25	K	19th U. S. Inf.	Tampa	August 2	Sixteen days before landing	Coated, red at tip
114	23	K	19th U. S. Inf.			Before landing	Moist, clear
115	31	D	6th Mass	Alger	July 25	Since landing	Slightly coated
116	31	F	2d Wis.	Chickamauga.		Since landing, Aug. 1, Charleston	
117	32		2d Wis.			6 days since landing, Charleston	Coated, indented
118	32	B	4th U. S. Art.	Tampa		Two weeks since landing	
119	21	D	5th Art			Five days since landing	
120	23	f	19th U. S. Inf.		July 30, Cuba	Since landing	
121	21	C	16th Pa	Chickamauga.	July 27, Charleston	In Chickamauga	Irregularly coated
122	23	A	2d Wis.			One week since landing	Red at tip and margin, coated
123	18	B	19th Inf.	Tampa	August 2, Cuba	Eight days before landing	Herpes, sordes, dry, brown
124	22	A	2d Wis.	Chickamauga.	July 25, Charleston	Nine days since landing	Slightly coated
125	32	G	19th Inf.	Tampa	" 31	Since landing	Slightly coated
126	23	C	19th Inf.		" "	Since landing	Coated, red tip and margin
127	28	C	6th Mass		" 27, Charleston	Since landing	Coated, red tip and margin
128	21	C	1st Provincial		" 25, Cuba	Three weeks before landing	Coated, dry at tip, lips herpes
130	23	C	3d Art		" "	Ten days since landing	Coated, red at tip
131	25	G	19th Inf.		August 2, "	Ten days before landing	Dry, coated, sordes on teeth
132	21	F	19th Inf.		" "	Six days since landing	Coated, red at tip and margin
133	29	F	16th Pa	Chickamauga.	July 25, Charleston	Day before embarking	Coated, red at tip and margin
134	23		2d Cav	Tampa	" "	At Tampa	Clear, moist
135	22	H	3d Wis.	Chickamauga.	" 27	One week since landing	Coated, red tip and margin
136	26	G	6th Mass	Alger	" "	Before landing	Pale, flabby
137	21	E	6th Mass		" "	Five days since landing	
138		C	3d Art	Tampa	" Cuba	Ten days after landing	Coated, flabby
139	28	I	2d Wis.	Chickamauga.	" Charleston	Before landing, July 25	Coated, moist
140	22	A	6th Mass	Alger	" "	Two weeks since landing	
141	19	Hosp. corps.	1st Brigade	Chickamauga.	August 2, Newport News	Before landing	Large, coated, flabby
142	21	A	6th Mass	Alger	July 27, Charleston	One week since landing	Flabby, margin red
143	21		2d Wis.	Chickamauga.	" 25	Ten days since landing	Coated, red tip and margin
144	18	C	3d Art	Tampa	" Cuba	Ten days before landing	Coated, red tip and margin
145	18	I	2d Cav		August 2, "	Before landing	Coated, red tip and margin
146	35	C	3d Wis.	Chickamauga.	July 27, Charleston	Ten days since landing	Coated, red tip and margin
147	22	F	2d Wis.		" "	Since landing	Coated, red tip and margin
148	23	I	2d Wis.		" "	Three weeks since landing	Glazed, ridged, red
149	22	M	6th Ill.	Alger	" "	Before landing	
150	23	B	4th Art	Tampa	August 2, "	Three weeks before landing	
151	26	L	2d Wis.	Chickamauga.	July 27, Charleston	Since landing	Red, moist
152	20	D	2d Wis.		" "	Six days since landing	Coated, red margin
153	23		2d Wis.		" "	Since landing, July 27	Glazed, moist
154	22	B	3d Wis.		" 29	Before landing	Large, coated
155	20	D	16th Pa		" "	Five days since landing	
156	22	C	3d Art	Tampa	" 27	Ten days since landing	Coated
157	19	F	16th Pa	Chickamauga.	" "	Before landing	
158	24	H	3d Wis.		" "	Before landing	Coated, margins moist
159	19	B	3d Wis.		" "	Since landing	
160	22	B	4th Art	Tampa	August 2, "	Since landing	
161	19	C	3d Wis.	Chickamauga.	July 27, Charleston	Before landing	
162	21	E	2d Wis.		" "	Since landing, July 28	Clear, moist
163	24	C	3d Wis.		" "	" "	
164	32	E	4th Art	Tampa	" "	Seven days since landing	Coated, tip red, lips herpes
165	21	I	19th Inf		August 1, Cuba	Before landing	
166	24	A	2d Wis.	Chickamauga.	July 27, Charleston	Since landing	Slightly coated, fissured
167	24	B	2d Wis.		" "	Two weeks since landing	Pale, margins, indented
168	28	A	5th Cav	Tampa	" "	When he left Tampa	Slightly coated
169	37	Teamster			" "	When he left Tampa	Large, flabby, indented
170			6th Ill.	Alger	July 27, Charleston		Coated, red tip and margin
171			6th Ill.		" "		Coated, red tip and margin
172	23		16th Pa	Chickamauga.	" "		Flabby, pale, coated
173	23		2d Wis.		" "		Flabby, indented
174	23		6th Ill.	Alger	" "		
175	18		16th Pa	Chickamauga.	" "		Furred, dry
176			2d Wis.		" "		
177	24		6th Ill.	Alger	" "		
178	21		6th Ill.		" "		Slightly furred
179	25		6th Ill.		" "		
180		Signal corps.			" "		
181	26		16th Pa	Chickamauga.	" "	Twelve days before landing	
182	21	C	16th Pa		" "		
183	23	K	16th Pa		" "	2 days before leaving Charleston	Coated, red tip and edge
184	29	B	2d Wis		" "	Two weeks since landing	Coated, red tip and edge
185	23	A	2d Wis		" "	Two weeks since landing	Coated, dry
186	19	B	19th Inf.	Tampa	" 25	Two weeks since landing	Furred, dry, margins red
187	20	A	2d Wis	Chickamauga.	" "	Two weeks since landing	Coated, flabby
188	22		6th corps U. S.	Newport News	" "	Two weeks since landing	Coated, pale, flabby
189	21		19th Inf	Tampa	" "	Since landing, August 2	Coated, red edges and center
190	21	H	11th Inf		" "		
191	23	B	11th Inf		" "		Dry, cracked, sordes
192	23		11th Inf		" "		
193		Staff	16th Pa	Chickamauga.	July 25, Charleston	When he left Chickamauga	Dry, cracked, sordes
194	41	Staff	4th Pa		August 2, Newport News	Before landing	Moist, glazed, red
195	30	Staff	6th Ill.	Alger	July 25, Charleston	Before landing, July 19	Heavily coated
196	32		2d Wis	Chickamauga.	" "	Before landing	Heavily coated (white)
197	24	H	3d Ill.		August 2, Newport News	Before landing	Coated, red at tip and margin
198	22	H	3d Ill.		" "	Before landing, August 1	Dry, brown, fissured
199	25	C	3d Ill.		" "	Before landing	Coated, red tip and margin
200	20	D	3d Ill.		" "	Since landing, August 4	Coated, red tip and margin

prevalence of the disease among the troops, affecting as it did, more or less, all of the regiments, was a source of uneasiness and anxiety on the part of those who were in charge of the invasion. Measures were taken to secure ample hospital room and facilities for the accommodation and proper treatment of those on hand and such as might be brought in later. The order to General Wilson to take up the march toward San Juan made it necessary to evacuate the division hospital. All of the patients were transferred to the Spanish military hospital in Ponce, which caused the temporary overcrowding to which I referred in a former communication. The Spanish military hospital

is a substantial, square, one-story building with a large court in the center. It is built of stone, the floors being made of cement or brick tiling. It is on a high hill near the city limits, from which a magnificent view of the city, harbor and surrounding country can be obtained. It has a capacity for about 150 beds. It required a good deal of labor to make this building fit for the reception of patients. Major Dooly and his force worked persistently a whole day in removing the dirt and filth which the Spaniards had left, in their haste in evacuating the city, as an undesirable legacy. The hospital was at once supplied with cots, bedding and hospital stores. The club-house of the

ORIGIN OF TYPHOID FEVER CASES.

103.4	88		Tympanic		Enlarged	Yes.	
102.2	84			Numerous	Enlarged		
103.1	84				Enlarged+		
103	92				Enlarged+	Yes.	Doubtful.
101	92				Enlarged+		Doubtful.
100	88						
104.3	92		Tenderness, right iliac fossa		Enlarged+	Yes.	
98	88						Convalescent.
99	64						Convalescent.
99.2	100						Convalescent.
102.3	100		Tender		Enlarged		
101.3	68		Tender	Present..	Enlarged+		
104.2	98		Tympanic	Present..	Enlarged	Yes.	
102.1	80					Yes.	Doubtful.
102.3	80			Present..			
102.3	80				Enlarged		
104	84				Enlarged	Yes.	Chills, doubtful. (Mustered in on day of sailing.)
101.4	84		Tender	Present..	Enlarged		
102.4	80			Present..	Enlarged	Yes.	Pulse dichrotic; hemorrhage (intestinal).
104.3	88				Enlarged	Yes.	Yes.
104.1	84		Tender	Present..	Enlarged	Yes.	Yes.
101	76				Enlarged	Yes.	Yes.
102	72				Enlarged		
102	72						Doubtful.
100.2	86						Sunstroke.
100	72						
99.2	76				Enlarged		Malaria.
101.2	72				Enlarged	Yes.	Doubtful.
							Sunstroke; treated by Spanish doctor at Guanica.
			Tender, gurgling rt. il. fossa		Enlarged	Yes.	
103	99		Tympanic		Enlarged		
102	70		Tender, right iliac fossa		Enlarged	Yes.	
102	96		Tender, right iliac fossa				
104	100		Tender, right iliac fossa				
100.4	80		Tympanic		Enlarged	Yes.	
102.2	85		Gurgling, right iliac fossa		Enlarged	Yes.	
103	80	Bronchitis	Gurgling, right iliac fossa		Enlarged		
99.4	74					Yes.	Overcome by heat; chills (6); malaria.
100.2	80				Enlarged	Yes.	Convalescent.
102.2	80		Tympanic		Enlarged		
101.2	74		Tympanic		Enlarged		
102.1	90	Diffuse bronchitis.	Tympanic		Enlarged	Yes.	
102	72		Tympanic		Enlarged	Yes.	
92	98						Doubtful; convalescing.
101.2	82		Gurgling, right iliac fossa		Enlarged		
101.3	70						Convalescing.
101.2	84				Enlarged	Yes.	
98	68						Convalescing
98	84				Enlarged	Yes.	One chill.
99	70					Yes.	Sunstroke; convalescing.
101.4	68	Bronchitis	Tender, right iliac fossa		Enlarged+	Yes.	Yes.
98	68				Enlarged+		Convalescing.
103.2	70		Tender, right iliac fossa		Enlarged	Yes.	
99	72				Enlarged+		
99	64				Enlarged+		Convalescent.
102	81		Tender, right iliac fossa		Enlarged		
102	80		Tender, right iliac fossa		Enlarged		
					Enlarged	Yes.	
101	85		Gurgling, right iliac fossa	Present..	Enlarged		Malaria.
102	72		Tympanic		Enlarged		
100	110	Bronchitis			Enlarged		
102					Enlarged		Doubtful.
98.4	98						Epididymitis right side; doubtful.
98.4	99						Sunstroke.
Nor.	Nor.				Enlarged		Convalescent.
Nor.	Nor.				Enlarged		Nostalgia; convalescence.
100	84				Enlarged		Malaria; convalescence.
Nor.	Nor.				Enlarged		Malaria; convalescence.
Nor.	Nor.				Enlarged		Malaria; convalescence.
99	55				Enlarged		Malaria; convalescence.
					Enlarged		
102	84		Gurgling, right iliac fossa		Enlarged		
102	98		Gurgling, right iliac fossa		Enlarged	Yes.	
102	102				Enlarged	Yes.	Three intestinal hemorrhages.
102	78		Gurgling, right iliac fossa		Enlarged	Yes.	Yes.
204	98				Enlarged	Yes.	
102	80		Gurgling, right iliac fossa		Enlarged		
100.4	92		Gurgling, right iliac fossa		Enlarged	Yes.	Hemorrhages.
100.2	80		Gurgling, right iliac fossa		Enlarged	Yes.	Yes.
104.4	124	Pneumonic condition	Gurgling, right iliac fossa		Enlarged	Yes.	Death.
103.4	104	Bronchitis		Present..	Enlarged	Yes.	
104	90		Pain in hypogastrium			No.	Gastric fever.
101	80				Enlarged	No.	Not typhoid.
102	72			Present..	Enlarged	No.	
103	80	Bronchitis	Gurgling, right iliac fossa	Present..	Enlarged	Yes.	
103.1	100		Gurgling, right iliac fossa	Present..	Enlarged+	Yes.	
103	80		Gurgling, right iliac fossa	Present..	Enlarged	Yes.	No.

city, and a school for girls in charge of the Sisters of Charity, were offered to the authorities for hospital use, and courtesy was promptly accepted. For over a week the sick officers occupied the club-house and about fifty patients found comfortable quarters and excellent treatment in the school-house. Ponce has a large charity hospital, the "Tricoche," with 200 beds, under the care and management of the Sisters of Charity. The hospital is a model of cleanliness and comfort. Col. Greenleaf made arrangements with the city authorities to open the doors of this excellent institution for sick officers. I am sure that every one who will enjoy the kind treatment and excellent care

of the Sisters in these great institutions of charity will have a good word for this ancient and worthy order. Out of the 200 cases of fever examined in the different hospitals in Ponce, and which appear in the table, the following diagnoses were made at the time: Gastric fever, 2; effects of sunstroke, 6; malaria, 9; doubtful, 21; typhoid fever, 162—total, 200.

I am satisfied that of the doubtful cases a sufficient number developed typhoid fever to bring the whole number of cases up to 280. In reference to the time the disease developed the following can be gleaned from the table: The first symptoms appeared before leaving the United States, 8; on transports, 86; within

ten days after landing, 68, out of a total of 162.

As regards the place of infection the cases came from: Chickamauga, 90; Tampa; 48; Camp Alger, 23, Newport News, 1—total, 162.

The small number coming from Camp Alger, where the disease gained such a firm foothold, which led to the abandonment of the camp, is to be explained by the fact that a large number of fever cases, coming from that camp, were returned to the United States soon after landing, by order of Col. Greenleaf. All regiments were not affected alike by this disease. Among the troops in Porto Rico the typhoid fever cases were distributed as follows:

2d Wisconsin	42
3d Wisconsin	17
16th Pennsylvania	17
6th Massachusetts	15
19th U. S. Infantry	15
6th Illinois	11
3d Artillery	10
4th Artillery	5
11th U. S. Infantry	5
1st Provisional Corps	4
Hospital Corps	4
17th U. S. Infantry	3
2d Cavalry	3
5th Cavalry	3
3d Illinois	4
4th Pennsylvania	2
Signal Corps	2
5th Artillery	1
Total	162

In tabulating the symptoms the following facts appear:

Tongue.	Dry, coated, red at tip and margin.	10.
	Coated, white fur.	21.
	Coated, pale, flabby.	17.
	Coated, red tip and margin.	56.
	Dry, brown and fissured.	20.
Abdomen.	Moist, glazed, red.	13.
	Sordes, lips and teeth.	12.
	Tympanites.	29.
	Tenderness and gurgling right iliac fossa.	71.
	Rose spots.	37.
	Spleen enlarged.	141.
	Spleen markedly enlarged.	20.
	Epietaxis during prodromal stage	28
	Diarrhea	87
	Intestinal hemorrhage	3
Bronchitis	20	
Delirium	1	

The absence of delirium in all cases but one is remarkable, but it must not be forgotten that nearly all of the cases were examined during the early stages of the disease. In quite a number of cases this symptom appeared later. From the symptoms and the death-rate, ascertainable at this time, it is evident that the disease pursued a comparatively mild course. Nearly 200 of the more grave cases were transferred to the hospital ship *Relief*, which sailed from Ponce for New York August 15. Of this number fourteen died en route and twelve were buried at sea. In two of these cases death resulted from complications. In one case gangrene of the penis, which assumed a progressive form, was the direct cause of death. In one case a fatal termination threatened during the third week of the disease from laryngitis and lobular pneumonia. A metastatic abscess of the submaxillary gland, which developed in one case, deserves mention as a rare complication of typhoid fever.

RETURN OF THE HOSPITAL SHIP "RELIEF" FROM PORTO RICO.

The *Relief* sailed from Ponce, Porto Rico, August 15, for New York, and called on her way at Mayaguez

to complete her precious cargo of sick and wounded. All of the wounded at the last port were taken on board. The entire number of patients on leaving Porto Rico was 255, the full capacity of the floating hospital. It is probably the first time in the history of the world that so many fever cases were treated on a hospital ship and conveyed from a foreign country to their homes. The first day out a brisk breeze caused considerable rolling and pitching of the ship, which induced some cases of seasickness among the patients, but did not seem to unfavorably influence the disease. The female nurses worked faithfully and proved of the utmost value to the sick. Fourteen of the more severe cases of typhoid fever died on the way to New York. Many of the patients improved rapidly during the voyage. The *Relief* has done all and more than was expected in serving as a temporary hospital and as an ambulance ship in the treatment and transportation of the sick and wounded.

New York, Aug. 20, 1898.

SOCIETY PROCEEDINGS.

The Fourth International Congress for the Study of Tuberculosis.

Held at Paris, July 27 to August 2.

The Congress was not distinguished by any striking communication, but showed a general awakening on the part of the public and the authorities in many countries, to the necessity of prophylaxis in regard to tuberculosis. The official resolutions adopted by the Congress have already been published in the *JOURNAL*, page 483. It is remarkable that France is behind the rest in the matter of legislation requiring isolation of infected cattle. Norway is the most advanced of the European countries in this respect, but has very few animals infected. She requires animals seriously affected to be slaughtered at once, and animals that react to tuberculin to be branded and only sold for slaughter. No indemnity is paid to the owners. The regulations in Denmark are somewhat similar, but the owner receives an indemnity of one-quarter to one-half the value of the animal when condemned by the inspector. The calf of a tuberculous cow must also be taken away from her and raised on milk that is boiled, or from a healthy cow. The proportion of tuberculous calves has fallen from 15.5 in 1895, to 10.6. Professor Bang of Copenhagen delivered the address on this subject, and stated that the rigorous measures adopted are bearing fruit, as the disease is not increasing, but the reverse. He considers the *first* tuberculin test the most reliable, and adds that animals should rest a few days after a journey or other exertion, as otherwise the test is not trustworthy. It is not infallible at the best. The regulation has quite recently been adopted in Denmark, that no dairy can sell skimmed or buttermilk without first heating it to 85 degrees C., which does not affect the taste of any milk if cooled rapidly afterward. The Danish law of March 26 requires the immediate slaughter of a cow affected with tuberculous mammitis. Siegen of Luxemburg urged the more general adoption of the practice of sterilizing very much infected meat by cooking with steam under pressure at 110 to 125 degrees C. for two or three hours, as is now done in some places in Germany and Holland. The meat and gravy thus obtained is nutritious and savory, and is eagerly purchased by the poor at half a franc the kilo. No other process actually sterilizes meat from animals with generalized tuberculosis. Magnan of Nice described the fine results obtained there by giving official certificates to dairies found free from tuberculosis, with tags for the animals to wear that had passed the tuberculin test. He hopes to get the daily papers to call attention to these model dairies often, and the public to patronize them, also to have the public institutions refuse to purchase milk except from certified cows.

The members of the Congress first gathered at the new model Boucaut Hospital, where they witnessed the operation of the frigor or cryotherapeutic service which is fulfilling expectations and brings back the appetite, even in the most pronounced cases of anorexia (*vide JOURNAL*, xxx, 1116). The ozone generator was also inspected, and a couple of meetings during the Congress were devoted to radiology and radiography of tuberculous subjects by skilled experts. Finsen's treatment of

"Lupus with Concentrated Light" was also described at one meeting, with projections (*vide* JOURNAL, August 6). The address of the President, Professor Nocard, stated that out of 140,000 deaths every year from tuberculosis in France, 100,000 could be averted if contagion could be prevented. The difficulties of

HOME DISINFECTION AMONG THE POOR

were graphically portrayed by MARTIN, who described the work accomplished in a certain quarter of Paris where 100 tuberculous subjects resided. Their rooms, linen, etc., were disinfected every week, but from lack of fuel to make a fire, the subjects were frequently unable to sterilize daily the cuspidors provided, and frequently they had no linen to disinfect. In some cases they were turned out of doors by the family from fear of contagion. E. Guiter of Cannes described the success of the measures adopted along the Riviera to prevent contagion. The out-of-door life in the sunshine minimizes the danger, and the chambers of tuberculous patients are built to be flooded with sunshine; dry sweeping is prevented as much as possible; all unnecessary drapery and padded furniture is banished; hygienic cuspidors are in universal use, with pocket cuspidors for each patient who seems to be favorably impressed by them (Dettweiler, Vaquier or Petit models). The Medical Society of Cannes has organized a disinfecting service, not only for rooms in which deaths have occurred, but for those occupied temporarily by persons with "open tuberculosis"; all transportable articles that will not be injured by steam under pressure, are disinfected in a Heischer and Geneste sterilizer; the toilet stand, marbles, etc., are washed with sublimate, and the room disinfected with formal vapors generated by a Trillat autoclave; one liter of 38 per cent. formo-chlorol to each hundred cubic meters; the contact prolonged twelve hours. The experiences of Berlioz, Nicolls, Ristsch and Aronson have established the practical value of formo-chlorol for this purpose (see especially the *Marseilles Méd.* Nov. 1, 1897). Disinfection in this manner has been performed 258 times at Cannes during the season of 1898. The physician notifies the proprietor on a slip furnished by the Board of Health, when he considers disinfection necessary. The proprietor notifies the disinfecting service, which proceeds to the task under the supervision of a city employé. The Board of Health then remits to the physician his original slip, signed by the disinfecting officer, thus securing a dual supervision, municipal and medical.

Dr. HIRSCHFELDER described his Oxytuberculin, summarizing his communications to the JOURNAL in the last volume. In several of the addresses his name was coupled with Behring's and Koch's, when speaking of recent improvements in tuberculin. He reports seventy cases successfully treated, and stated that the oxytuberculin also cures local tuberculosis.

THE MODEL SANITARIUM

was discussed from every point of view. Bernheim recommends a large central building, with two pavilions connected by wide galleries, with immense piazzas facing the south. The bed-rooms also face the south, and are finished like a surgeon's operating-room. The building is planned for 360 patients, two in each room, and if a four months' residence is sufficient, 1080 can be accommodated during the year. The isolation of tuberculous patients in the hospitals is an important and beneficial measure, now being carried out at the Boucicaut, but it is incomplete and cruel unless supplemented by country sanatoria to which patients can be transferred. As Letulle observed: "the sanatorium will prove the hope of those who are waiting their chances to go there; the delight of those who enter and find themselves regaining health, and a school of hygiene and prophylaxis for all who are so fortunate as to have passed through it."

Prof. LANDEUZY delivered an address on the

PRESENT STATUS OF SERUMATED TOXIN TREATMENT OF TUBERCULOSIS.

concluding: "the conclusions of Koch in regard to the results accomplished by his new tuberculin T. R., have not been confirmed by others, even restricting its use, as he insists, to the non-febrile forms. It is generally acknowledged to be harmless, and to have a favorable effect on the general health, but its action on the tuberculous lesions is less easily established. Its effect on cutaneous tuberculosis is more decided, and the dermatologists of Germany and England unite in proclaiming that the facts already observed justify further investigation. Koch has succeeded in depriving his first tuberculin of its deleterious properties. Others have modified it, like Hirschfelder, by oxidizing it, or by passing it through the blood of an animal to accumulate antitoxic properties, like Maragliano. Broca and Charrin have also secured favorable results with injections of serum from dogs inoculated with

tuberculosis, in patients with surgical tuberculosis. Babes and Proca have also succeeded in manufacturing a serum by injecting animals in turn with tuberculin and dead bacilli, which has proved immunizing and bactericidal *in vitro*. Behring believes that the combination of the resources of serum and toxin therapeutics will, in some distant future, lead to the discovery of the specific remedy for tuberculosis, and Maragliano adds that every effort should be applied to hasten the day. Behring has succeeded in curing a tuberculous cow with repeated injections, and he found that the serum of this cow contained a new substance, a true antitoxin of tuberculosis, as her serum would neutralize a considerable dose of specific toxin. He is at present engaged in investigating whether certain kinds of birds are not better adapted to the production of a tuberculosis antitoxin than mammals. He dissolves the mucin with sodium to extract the toxin from the bacillus more readily, and also dissolves the fatty matters with ether or chloroform, obtaining thus a tuberculin so powerful that one gram will kill 12,500 grams in healthy guinea-pigs (*vide* JOURNAL, xxx, 1482). But even admitting that serum or toxin treatment, or both, will ever produce an actually specific remedy for tuberculosis, we must not expect of it more than it is able to accomplish, i. e., the cure of the specific lesions, and of these alone. This treatment will never be able to cure the secondary infections that invade the tuberculous foci as soon as they become "open." Hence, this specific treatment will never be really effective except in the first stage of the disease. It is evident, therefore, that hygiene will always retain its importance in the treatment of tuberculosis, which, even at the best, is more easily avoided than cured."

Prof. Fournier called attention to the danger of ascribing to tuberculosis what does not really belong to it, and cited an instructive case of mutilating syphilis of the extremities long supposed to be a tuberculous affection. Gsillot of Menton reported his remarkable success in curing repeated hemoptysis in the early stages of tuberculosis with hypodermic injections of iodoform as follows: oil of neutral vaselin, 25 centigrams; eucalyptol, 5 grams; iodoform, 75 centigrams. Inject two centigrams daily. Boureau of Tours has found phosphoric acid combined with creosote very effective in improving the general condition of tuberculous subjects. It creates an artificial hyperacidity like that of arthritis, thus modifying the hypoaacid tendency which is a favorable soil for tuberculosis. Calot proclaimed the value of puncture and injections of camphorated naphthol and iodoformed ether in tuberculous arthritis except of the hip-joint. Reporting thirty-nine out of forty cases cured without surgical intervention. M. Desprez of Saint Quentin again confirmed the value of small doses of chloroform combined with hygienic measures in the treatment of tuberculosis and appealed to others to test this "harmless and truly marvelous antibacillary substance" in epidemic and contagious diseases, especially tuberculosis. Berlioz of Grenobles announced marked improvement in the general health and gain in weight,—12 kilos in three months in one case, and 4 kilos in fifteen days in another, in a large number of tuberculous patients he has been treating with a medicated serum consisting of normal beer serum, phosphate of guaiacol and extracts of the testes, liver, brain, lungs, thus combining sero- and ophoterapeutics. He administers 30 grams a day of this mixture, per rectum, and finds the sweats, expectoration and cough subside with the remarkable improvement in the general condition. He continues the treatment several weeks or months. Fever is not a contraindication. Two febrile cases thus treated showed the same subsidence of the symptoms as the others.

SELECTIONS.

Ancient Medical Fees.—Bombaugh presents a study on "Medical Fees in Ancient Greece and Rome" in the *Johns Hopkins Hospital Bulletin*, for August. The first such fee of which he finds specific record was one recorded by Herodotus as given by Darius to Democedes of Crotona, a slave of Oroetes, and consisting of two pairs of fetters of gold. "In his day, in Greece, the usual fee paid to physicians for incidental visits was very small, in fact not more than two groats, sixteen cents, or about one-thirtieth of the customary fee in England in our time, one guinea." It was customary for physicians to be engaged by the year, by the municipality, and paid from public funds. In Ægina, Democedes received one talent a year, about \$2000; in Athens his salary for a year was 100 minæ, \$2400, later receiving a like sum when residing at Samos. According to

Pliny, Cleombrotus received 100 talents for the care and recovery of King Antiochus—£24,375, if the Attic talent is meant, \$156,000 if the standard of the coin of the Ptolemies." Every Greek city had not only one or more public medical men in the municipal service, whose duty it was to visit the sick in the city and suburbs, but there was also a large dispensary, *iatrium*, where the practitioner, aided by his pupils, held consultations, performed operations and distributed the needful medicines. Beds were reserved for patients who could not be removed, or for very serious cases. The rich being able to be cared for at home, those who needed the aid of the public dispensary were the poor. Yet in the state of society at that period, the isolated poor, those without patron and without brothers, as the phrase went, meaning those who were not members of a society having a mutual benefit fund, were not numerous. But what poor there were, we are assured by historians, were faithfully attended to in accordance with the precept of Hippocrates. Inscriptions show that it was an obligation that was gracefully and generously fulfilled. In the Roman Empire, "no Roman till Pliny's time had ever vouchsafed to practice physic; that office was only performed by Greeks," says Montaigne, in his Essays, "and medicine, therefore, was in the hands of the slaves. In order to attract the Greek physicians to Rome, Cæsar gave them the *jus Quiritium*, and afterward Augustus exempted them from taxation." Under the superintendence of the *archiatri*, Romans later became practitioners, the first physician bearing the title being Andromachus the medical adviser of Nero. During the reign of Nero the *archiatri* were divided into two classes, the physicians of the different quarters of the city, *archiatri populares*, and the physicians of the palace, *archiatri palatini*. The former were assigned to the relief of the poor, and each city was provided with five, seven or ten, according to its size. Rome had fourteen, besides one for the vestal virgins and one for the gymnasia. The latter, the *sancti palatini*, were men of elevated social position, and of high rank, not only in the exercise of their profession, but as counsellors of the government. Both were paid salaries and were allowed special immunities and exemptions. Later on, in the time of Hadrian and Antoninus, such concessions were made still more liberal, and the chief *archiater* ranked as a viceregent. While the *populares* were obliged to attend their poor patients gratis, they were allowed to receive fees from the rich. They were not appointed by the municipal authorities, but were elected by the people, and while their office was less honorable than that of the *palatini*, it was more lucrative. In the time of Vespasian they had a retiring pension. According to Pliny, at the beginning of the imperial reign eminent physicians made 250,000 sesterces, or about \$9750 per annum and Quintus Stertinius, the favorite of the Emperor Claudius, "was content with the honor of serving the Emperor at the rate of 500,000 sesterces (\$19,500) per annum, though his fame was such that he might have made 600,000 sesterces, or \$25,000 in private practice." Today, in the Vatican, "among the clustered family of the Cæsars," may be seen a statue of Musa, the physician of Augustus, placed among "his family group of bronze and marble memorials as one of the highest honors he could bestow."

Report of the Committee on the "United States Pharmacopœia."—In the "Proceedings of the Missouri Pharmaceutical Association," for 1898, G. H. Chas. Klie, Chairman, St. Louis, gives the report, of which the following is an abstract: Since the revision of the next "Pharmacopœia" is only a few years off, and since, if changes or improvements are to be made in the work, it would certainly be appropriate if the parties most concerned, the medical and pharmaceutical professions, gave their opinions, it was decided to approach the medical profession of Missouri this year and let our successors canvass the pharmacists of Missouri next year. Fifteen hundred circular

letters and the same number of postal cards were sent to physicians residing in and around Kansas City, Sedalia and surroundings, Jefferson City and surrounding country, St. Joseph and vicinity, St. Louis and suburbs. The circular letter read as follows:

St. Louis, Mo., Dec. 1, 1897.

DEAR DOCTOR: In the year 1900 A.D., the eighth decennial revision of the United States "Pharmacopœia" will take place. The seventh decennial revision of the "Pharmacopœia" was an improvement on the sixth. The sixth revision marked a very decided advance on any of the previous revisions. It can truly be said that with the sixth revision a new epoch in pharmaceutical revision opened in this country. There is no doubt that the present "United States Pharmacopœia" is as much in advance of that of the seventies as surgery of the present day is in advance of the time indicated. The policy of the Committee on Revision is to place the "Pharmacopœia" well abreast of any issued.

The "United States Pharmacopœia" is the only recognized standard as to the purity and strength of all drugs, chemicals and pharmaceutical preparations.

In an age of polypharmacy when purity and quality in therapeutic agents is often sacrificed to elegance, it is necessary that a standard be adhered to. Inasmuch as therapeutic agents conform to the standard, will the science of therapy be benefited? It is the multiplicity of standards or no standard at all which renders advancement in the science of medicine exceedingly difficult in this country.

A new line of therapeutic agents has been used in this country quite extensively for many years: The German coal-tar preparations. They have been refused entry in the "United States Pharmacopœia" because they are manufactured under patent processes; however, many men think they ought to be given a place in the "Pharmacopœia" and made to conform to a certain standard of purity. Furthermore, serum therapy is becoming prominent, and would it not be about time that all antitoxin serum against diphtheria be made to conform to one universal standard?

This Committee is gathering material for the next revision of the "United States Pharmacopœia" and would be much pleased and thankful to you to receive your aid. By answering the questions inclosed herewith you will lend your valuable aid. Any of the questions which you do not wish to answer you can leave blank. With assurance of highest esteem.

Yours very truly, G. H. CHAS. KLIE, M.D.

The postal card accompanying the letter had ten questions printed on it with sufficient blank space to answer yes or no. But very many of the answers are not confined to these monosyllables and assume more the character of a commentary. Of the 1500 cards sent out, 311 or 20.6 per cent. were returned with all or more or less of the questions answered; 207 of these had signatures; 104 had none.

Question No. 1, The United States Pharmacopœia, Is it your Standard? was answered by 300. No answer was given by 8, and 3 were non-committal. Of the 300 affirmative answers 277 are "Yes"; 3 say "Yes, also National Formulary"; and 6, "It is." One each gave the following; "It is, except additions of new proprietary remedies that have become standard on continent." "Partly." "In part." "Yes, partly." "Sure." "Most certainly." "It is excellent." "Yes, to a certain extent." "Yes, so far as it goes." "Generally." "So far as it meets demands." "Very good, United States Dispensary mine." "Yes, if I have any." "In general, yes." "Yes, if it still continues as it is." "Yes, unless otherwise designated." "Yes, no." "No, the general and lamentable incompetency of average country druggists forces doctors to ready-made remedies." "Prefer German."

Question No. 2, Do you Recommend Changes? brought a total of 153 answers; affirmative 85; negative 49; non-committal 19; no answers 158. Some say, "Yes, all latest." "Yes, some." "Yes, in the hands of those that are practical." "Yes, such changes as mark the trend of progressive therapeutics." "In keeping with the times, yes." "Yes, simplify as much as possible." "Yes, more uniformity in therapeutic strength of tinctures that the dose of one in quantity may be the same with all." "Yes, additions possibly omissions." "Some additions." "Any change that is good." "Such as

are necessary." "This is a progressive age." "Add new remedies." "Such as Committee may deem wise." "Keep up with progressive advance." "Revision right up to date." "Sure, Apothecary's weights and measures." "Only those necessary to keep up with the advances made." "Only such as are new." "Additions no changes." "Make it more American." "Dosage should be given." "Give maximum also minimum dose, also frequency of dosage." "It should be more elaborate and be in two volumes." "Only such as are necessary from further experience with any drug or preparation omitting such information as may be useless or obsolete." "I shall be glad to see the time come when the 'Pharmacopeia' has only to do with the regulation of strength of tinctures, extracts, fluid extracts, simple solutions and strength and purity of chemicals; would judge the time has come for doctors to write their own prescriptions and not Brown mixture, Dewee's carminative, etc." "Leave that to Committee." "No preparations of different potencies should be allowed of any one drug. Equivalent doses of tinctures, fluid extracts, the solutions of respective alkaloids should be mentioned." "I request that manufacturing chemists be requested to put minimum and maximum doses upon every package sent out." "I think there is room for improvement in all these particular directions and in others also." "Let well enough alone."

Question No. 2, a, Additions. The total number of answers was 94; affirmative, 81; negative, 13; no answers, 217. Additions suggested were, in part: "Antipyrin, phenacetin, antitoxin, acetanilid." "Add some of the coal-tar preparations that can be tested for purity." "German coal-tar preparations, salol and some others." "Tuberculin and antitoxin." "Acetanilid and acetanilid compound." "Dangerous dose in black-faced type." "Keep up with present advancement, add to or drop as proved successful or worthless." "Compel all druggists to dispense from one formula." "Scientific prescriptions." "Should embrace every useful article." "A complete dissertation on urinalysis." "More concerning medical properties." "Give more space to physiologic action and therapeutic indications of drugs and remedies." "Give both systems of measures." "All new remedies that are good." "Reliable and established new remedies." "New drugs." "New drugs when tested." "Proprietary remedies that have become standard in continent." "Table of dosage for different ages." "Thyroid extract and organic iron compound." "Salol, salicylate bismuth, coal-tar preparations, diphtheria antitoxin, etc." "Alkaloids and active principles." "Syrup of compound licorice powder, elixir or syrup salicylate of iron, also liquid or sodium phosphate." "Palatable fluid extract cascara and also palatable preparations for disguising quinin preparations." "An aqueous tincture of cannabis indica, T. chinoidin, liq. ammon. anisati." "Echinacea, formaldehyde, hydrogen peroxid, codein, thujah, ichthyol, ferri et titanium comp., eucain hydrochl., glouvin, spiolin, papoid, arsenauero, calauro, mercauro, antifebrin, strophantus, sulph. spartein, cocain, methyl chlorid." "Vaselin." "Yes, e.g., fl. extr. euphorbia pilulifera, terpinol, colchicin and some of new hypnotics." "Very few, substitute fluid extracts for tinctures." "The 'United States Pharmacopeia' should have a preparation similar to the syrup hypophosphit. comp. of the 'National Formulary,' but containing more quinin (gr. one-tenth), and strychnia (gr. one-fiftieth to the drachm). We need a preparation of this kind to take the place of Fellow's syrup hypophos. which is prescribed so much, but should not be, as its formula is not given fully, therefore it should be considered a patent medicine." "Orrhotherapy and a description of the different antitoxins, the amount to be used for children of different ages, minimum as well as maximum doses, should have a prominent place in the 'Pharmacopeia'."

Question No. 2, b, Omissions. The total number of answers was 61; affirmative, 28; negative, 31; non-committal, 3; no

answers, 250. Of the 27 affirmative answers, 6 say, 'Yes.' Others say: "Leave out the metric system." "Old and obsolete remedies and mixtures." "Lard." "Decocta, emplastra, arnica—belladonnae, ferri et picis Burgund, etc." "Tinctures from all except gum resins and iron." "All tinctures of which there are fluid extracts." "Devote less space to the history and description of drugs and make everything as practical as possible for the busy doctor." (This doctor writes in red ink across the card: "I am decidedly opposed to polypharmacy, substitution and drug counterfeits.")

To question No. 2, c, Changes in Formulæ or Manipulations, etc., total number of answers was 59; affirmative, 23; negative, 20; non-committal, 6; no answers, 252. Of the answers some say: "More tincture from solid extracts." "Both." "All should be metric." "Make remedies more palatable." "Use no foreign terms." "All fluid extracts to represent minim for grain of crude drug in therapeutic effect."

To question No 3, If the "United States Pharmacopeia" is not your Standard what is your Standard? Three hundred acknowledge it as their standard, and 8 give no answer; 2 give no standard, and 1 says he prefers German.

To question 4, Shall the "United States Pharmacopeia" give Maximum Doses? the total number of answers, was 291; affirmative, 264; negative, 23; non-committal, 4; no answer, 20.

To question 5, Do you Prescribe Proprietary Remedies? the total number of answers, was 294; affirmative, 178; negative, 116; non-committal, 2; no answers, 15. Some say: "When they are definite compounds such as coal-tar preparations." "Some coal tar combinations." "Those that are prepared specially for the medical profession." "Can not always avoid it in the case of new chemic agents, or important new pharmaceutical products or combinations requiring skilled manipulation" "The prescribing of proprietary preparations is objectionable. Shows a lack of acquaintance with the 'United States Pharmacopeia,' but also with the art of prescribing, and is therefore a *testimonium paupertatis*, so to speak, on the part of the physician. In order to check this tendency to prescribe proprietary remedies on the part of the physicians, it might be well to teach physicians how to prescribe nauseous medicines, and to refer at the conclusion of the description of the remedy, to the different ways in which that particular remedy may be given in order to render it less objectionable to the patient." "Rarely, and am ashamed each time I have prescribed them. They are only fit for lazy physicians and quacks."

Question 6, If so, Why? The total number of affirmative answers to question 5 is 178. Of these 147 give reasons why they prescribe proprietary remedies. The total number of negative answers is 116. Of these 10 give reasons why they do not prescribe proprietary remedies. Of the affirmatives, 29 give "convenience" as the reason; 33, elegance, superiority, palatability, agreeability, brevity, adaptability, applicability, uniformity, neatness, usefulness, readiness, discovery, combination, placebo. Forty-one give as reasons: Good results, good effects, beneficial, do my patient good, satisfactory, available, eligible, handy, excellent, valued, useful, suitable, necessary, supply a long-felt want, fill the bill. Eight give as answers: Are better and more accurate; answer modern requirements; many are scientific; formulæ are scientific; are pure and up to standard; made in well-equipped laboratories; made with ample facilities and scientific care. Some refer to the "Pharmacopeia" and to the druggist as follows: "Because their appearance is less repulsive than when prepared by pharmacists." "There is nothing I can find in the 'Pharmacopeia' to take its place." "Many of the official drugs of the 'Pharmacopeia' are less reliable." "Only when pharmacopeial drugs can not be compounded in palatable form by druggists." "Right manufacture is expensive and druggist can not do it."

To question 7, "Shall coal tar preparations, as antipyrin, phenacetin, acetanilid, *et id omne genus*, secure a place in the

United States 'Pharmacopeia'?" the total number of answers was, 298; affirmative, 238; negative, 60; non-committal, 5; no answers, 8. Some answered: "Yes, they have come to stay." "Yes, in proper hands valuable." "Yes, with due discrimination." "Yes, where nature and mode of manufacture is known." "Yes, if they can be sufficiently defined." "Yes, the most important ones." "Yes, acetanilid only." "No, except antifebrin." "If they do only in an appendix." "Not without formulæ." "Not till we know more about them in every way."

To question 8, "Shall antitoxin serum be given a place in the United States 'Pharmacopeia'?" the total number of answers was 293; affirmative, 224; negative, 69; non-committal 5; no answer, 13. Some say: "Perhaps so, although I do not consider it as reliable a remedy as some do." "Antitoxin serum will probably not be used ten years hence, but while it is used the manufactory should be watched." "Yes, especially diphtheritic." "Yes, if it can be sufficiently defined." "Yes, one standard." "Not till its value is fully and definitely determined." "No, druggists should keep on hand and dispense closed packages." "No, unless more exactness is obtained." "Emphatic—no. Classify them as poisons and place with their class."

To question 9, "Shall fermented and distilled liquors be dismissed from the United States 'Pharmacopeia'?" the total number of answers was 287; affirmative, 67; negative, 220; non-committal, 2; no answer, 22. Some said: "Yes, except alcohol." "Yes, as I consider them very seldom indicated and very often used improperly." "So far as possible they should." The two non-committals give interrogation points as answers.

To question 10, "Are you in favor of introducing the metric system in prescribing?" there were 301 answers; affirmative, 138; negative, 163; non-committal, 4; no answers, 6. Some say: "Yes, but not discarding the old while our people continue to think in $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{2}$, etc., instead of $\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{100}$, etc." "Yes, when done by an act of Congress, for it is of the utmost importance, and to avoid mistakes." "Yes, if made universal." "Yes, for all except grains and fractions thereof, *i. e.* no decimals." "Yes, if made compulsory by law." "Yes, I think it the most correct system." "Yes," think both should be given in the United States 'Pharmacopeia.' "Yes, both systems should be used." "Decidedly. As I am an American and our system suits me; let others come to ours if they so desire." "It should be optional for a time, but certainly would be best, and no doubt will be fully adopted." "Established it in the St. Louis City Hospital many years ago. Have used it exclusively ever since 'in practice'." "I have never been able to see any great advantage in it." "Not to the exclusion of the old system." "Not until generally used by law of Congress." "Hundreds of physicians do not understand it and would cause many serious mistakes. All who desire can use it anyway. Therefore leave the old system in vogue and all will be pleased." "No, errors in dispensing would be multiplied by use of the metric system." "No, English for Americans." "No, America good enough." "No, no, it's un-American." "No!!! Be Americans and for God's sake quit aping other nations. It's no more scientific than our own." "Not to make it compulsory upon the physician or to exclude the use of the old weights and measures." "No, I am in favor of more light being given the intelligent public than now obtains. There is far too much empiricism." "No, but the system should be given and taught in our schools."

Lamaistic Practice Among the Mongols.—A French army surgeon, J. J. Matignon, resident at Peking, has given an account of Mongolian medicine, based on information received from a native who was for a time physician to the living Buddha of Ourga, an important town some 800 miles northwest of the Chinese capital. Medicine among the Mongols is a monopoly of the Lamas. There is a school of medicine at Ourga, where,

after a prolonged course of philosophy and Buddhist theology, three years are given to the study of the art of healing. Mongolian medicine is largely derived from Chinese and, through that, from European medicine as it was two centuries ago. The European strain comes from the old treatises translated into Chinese by the Jesuits in the reigns of the Emperors Kien-Long and Kan-si. Mongols do not dissect, and their knowledge even of the position of the internal organs is vague. The number of diseases is fixed at 440. Works on medicine are very numerous, the chief one being a kind of encyclopedia, entitled "Khlantap," which is divided into eight sections and consists of 156 chapters. Their methods of physical examination are full of marvels. Thus more than seventy varieties of pulse are described. The urine is examined with great minuteness in respect to its color, smell, and clearness, samples passed at many different hours of the day being used. It is also subjected to a kind of auscultation, being beaten with a wooden spatula, and the vessel then quickly applied to the ear. In the case of rich patients the examination is made more thorough by tasting, a procedure which naturally is made the ground of a special charge.

Mongols, like practitioners of former days in Europe, profess to be able to diagnose and treat all sorts of cases on the strength of an examination of the urine alone. The treatment is largely internal, and their pharmacopeia is mainly composed of vegetable substances. Every year, in September, the students make excursions under the direction of their teachers, for the purpose of culling samples, which are dried, classified and catalogued. Aromatic plants, such as cinnamon and benzoin, play a large part in their therapeutics. Animal and mineral substances are also used, but to a much less extent. The Mongol doctor carries his drugs about with him. Each medicament, dried and triturated, is put into a small leather bag, which is properly labelled; some practitioners carry as many as three hundred of these bags enclosed in a larger one, or in a box with a spoon to measure the doses. Like the ecclesiastic physicians of the Middle Ages, the Lamas are forbidden to practice surgery, although in cases of crushed limbs or other severe injury necessitating amputation, they may direct a butcher how to use a knife. They practice venesection, however, use poultices for the maturation of abscesses, and vigorous massage for the relief of headache and other pains. Recent wounds are dressed with lichen of the steppes or with deer fat. They use counter-irritation by moxas, acupuncture and ignipuncture, and they practice wet-cupping by means of ox-horns.

Preparations of sulphur and lead are used as applications in diseases of the skin, and bathing in hot sulphur springs, in syphilis. Fish's bile is credited with the power of curing cataract. Human bile, and that of the bear and of the hyena, also frequently enter into the composition of their medical preparations. Mongol doctors seek to restore vigor to old men by the internal administration of ram's testicles. "Organotherapy" is also employed. Thus, the flesh of the sheep is given for vertigo, that of the antelope for diarrhea, that of the water-rat for nephritis and dropsy, that of the marmot for dysmenorrhea, that of the beaver for spinal disease and impotence, that of the wolf in diseases of the stomach. They are acquainted with the parasiticide properties of mercury, and use it to destroy the vermin with which their countrymen are generally infected. The most prevalent diseases at Ourga are syphilis and skin affections, but typhus, typhoid, malaria, and other fevers are very common. In treating fevers they purge with rhubarb, and when that fails they give enemata or suppositories, the latter being composed of salt and sugar. They also give nux vomica sudorifics, and ginger, and juniper is burnt round about the patient. Cholera is treated chiefly by acupuncture under the nails, on the tongue, and around the anus; and as a last resource by burning the pit of the stomach.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, SEPTEMBER 10, 1898.

CONCERNING THE IODIN REACTION (FLORENCE'S
REACTION) WITH SEMINAL AND
OTHER FLUIDS.

Three or four years ago FLORENCE¹ of Lyons secured a peculiar formation of crystals when semen was brought into contact with concentrated solutions of iodine. While he failed to find this reaction in other fluids from the human body and in semen from animals, he nevertheless wisely refrained from claiming an absolutely diagnostic importance for these crystals. He looked upon the crystals as indicating the probable presence of semen, and that in such cases one should look so much more carefully for the absolutely positive evidence, namely, the presence of spermatozoa.

The medicolegal importance of demonstrating that stains are due to seminal fluid is of course very great. The investigations of FLORENCE were painstaking and extensive, and his results have received abundant corroboration. In America, W. JOHNSTON and WHITNEY² have studied the reaction extensively. RICHTER³ tried all the substances which are demonstrable in the semen, and obtained the iodine reaction only with lecithin and cholin. He also found the reaction occasionally in decomposing body fluids, and expressed the suspicion it did not concern any specific body but the presence of lecithin and cholin.

GUMPRECHT⁴ has attempted to more closely demonstrate the chemic nature of the body which leads to the formation of the crystals.

The technic of FLORENCE'S reaction is very simple. The solution consists of water, 30 parts; iodine, 1.65 parts; potassium iodide, 2.54 parts. Other iodine solutions do not give as constant results. The reaction is produced under the cover-glass. The drop of iodine solution is placed upon the slide; a drop of spermatic fluid, or a watery extract of a suspicious spot, is placed near by, and then the cover-glass is so placed that the line of contact of the two fluids meets near its center. At the point of contact of the two fluids there is immediately formed a layer of granules and crystals. The crystals are in reality of a long, rhombic form, about three times as long as broad. Sometimes they are much longer and look like needles. These crystals are brown in color.

The most important peculiarity of the crystals is their dichroism. They separate polarized light in their long axis, but allow it to pass through in their transverse axis. The slight polarization of the reflected light from the mirror or the microscope is sufficient to enable one to recognize this characteristic optic phenomenon in connection with many crystals: dark color when the long axis is placed parallel with the entrance of the light, and light coffee-brown color when the long axis is placed transversely to the direction in which the light enters the field.

The substance in question was found to be soluble in water, alcohol, ether and chloroform. Lecithin resembles this body in its solubility, and GUMPRECHT corroborates the fact demonstrated by RICHTER that lecithin gives the reaction. But lecithin nevertheless differs from this body in the semen in so far as it is not soluble in water, but only swells up, and also in the fact that it is precipitated by chlorid of cadmium. It was further found that fresh lecithin mixtures did not give the reaction, so that it seemed only natural to suppose that the body is not lecithin itself, but a derivative of that substance.

Further experiments showed that in all probability the body which caused the reaction is very closely related to cholin, which can be derived from lecithin. Lecithin is ubiquitous, and it therefore seemed peculiar that a derivative of lecithin should be found in the spermatic fluid and not in other tissues. The explanation of this problem is to be found in the degree of disintegration of the lecithin and in the concentration of the fluids. GUMPRECHT found that a whole series of human tissues and secretions give the iodine reaction very beautifully as soon as the splitting up of the lecithin takes place and the solution becomes sufficiently concentrated from evaporation. He therefore reaches the conclusion that this reaction is dependent upon a certain period or step in the lecithin disintegration, and about the same period at which cholin appears.

In spermatic fluid, even the fresh, this state of affairs is physiologic, and so cholin is demonstrable by the usual reagents. In manifold other fluids and

¹ Arch. d'Anthropol. Criminelle, 1895 and 1896.

² Boston Medical and Surgical Journal, 1897.

³ Wiener Kl. Wochenschr., 1897.

⁴ Centralbl. f. Path. Anat., 1898, Nos. 14 and 15.

tissues containing lecithin, the necessary splitting up of the compound can be produced artificially or through bacterial influences (decomposition). The small amount of albumin in semen in all probability favors the appearance of the iodine reaction, whereas in other fluids, such as pus, sputum, milk, and the fluid of organs, the large percentage of albumin rather prevents the reaction.

Having thus, in a measure at any rate, cleared up the reaction, it remains to examine into its medico-legal importance: fresh semen and dried seminal spots, even of considerable age, have always been found to give positive reaction; decomposed semen, as well as older solutions of semen even when not decomposed, give none or but a feeble reaction. The juice of the testicle and the contents of the seminal vesicles give no reaction; the juice of the prostate varies in its behavior. Organs from the cadaver, such as the brain, thymus, spleen, kidney, liver, often give the reaction, even very soon after death. Sputum, pus and fat do not give the reaction, except after preparatory treatment with $Ba_2(OH)_2$; it would seem, then, that the value of the reaction in the preliminary study of seminal spots can not be denied. Its value in the positive as well as in the negative direction becomes, however, somewhat limited on account of decomposition, which may destroy the reaction in the seminal fluid, and which may produce the reaction in other organs and fluids of the body. Furthermore, there are very many other substances outside the body, such as plants, butter, and eggs, which in a decomposing condition, may give the reaction, and this would seem to be the greatest weakness of the test, because butter, eggs, as well as various vegetable substances, often give rise to spots upon clothing, a fact which should never be lost sight of in studying suspicious stains.

BRACES IN SPINAL CURVATURE.

What greater mistake can there be in medicine than that of fitting a brace to a child suffering from spinal curvature? Yet this very mistake is repeatedly made by both physician and instrument-maker, to the extreme misfortune and permanent deformity of the child. There are in medicine and surgery a number of conditions which are hidden from observation and palpation, perhaps they are further obscured by a feeling of uncertainty in the anatomy of the part, and at no time in the course of the disease can we see, feel or measure in millimeters the exact extent of the lesion. The physician will invariably draw down the curtain of obscurity before such a case, lose his clearness of vision and make haphazard thrusts at both diagnosis and treatment. Such a region is the spine. It is very difficult to examine the spine, the part that is usually diseased (the body of the vertebræ) it is impossible at any time to palpate, and nerve symptoms are characteristically confusing. In an uncertain case of skin disease we may make a diagnosis of

eczema and be correct in a large percentage of cases, but in diseases of the spine we *may not* make a diagnosis of tubercular caries because it likewise is a common affection of the spinal column. The two conditions of tubercular caries and spinal curvature differ so widely in their causation, symptomatology and treatment that each must have a clear-cut picture in our mind when examining spinal cases.

Tubercular caries is a condition of osteomyelitis of the bodies of the vertebræ caused by the presence and growth of the tubercle bacillus. There is a progressive destruction of the supporting column of the body and an invariable train of symptoms must follow. These symptoms are, briefly: a reflex rigidity of the muscles to fix the affected region; pain in the distribution of the nerves emerging from such vertebral segments; pain on motion, preventing the child from stepping hard or jumping; fixation of the spine; the child holds to furniture as it walks around; angular deformity in an antero-posterior plane; lastly, abscess and paralysis from characteristic features of the later stages of the disease. While no age or class of children is exempt from spinal tuberculosis, it is found most frequently in poorly nourished children between the ages of three and ten years.

Lateral curvature of the spine, on the other hand, is, as a rule, not a disease of the vertebræ, but a lack of symmetry between the two sides, with a rotation of the bodies of the vertebræ on a vertical axis. The causes of such a condition possess such decided importance, and are best divided into predisposing and exciting causes. The predisposing causes are prolonged ill-health, rapid growth and rickets, occurring in girls between 12 and 20 years, while the exciting causes may be a one-sided position at school, a faulty position in standing, an obliquity in the pelvis, and it would seem from the fact that it is usually right-sided that a hypertrophy of the muscles on this side acts as a prominent factor. The symptoms of this disease are likewise at variance with those of Pott's disease. The first symptom is noticed by the dress-maker, who finds it necessary to pad one shoulder. She observes an "angel wing" (a prominent scapula) or a high hip, and very soon a prominence of the ribs on one side appears because of a rotation of the vertebræ on their vertical axis. At once a lack of symmetry is produced between the two iliocostal spaces, the one deep, the other long, and an S curve made by the spinous processes completes the picture. There is no pain at any time, no tenderness on pressure, no fixation of the spine; the curvature is always lateral and paralysis or abscess never appears. The one point that these two conditions have in common is the involvement of the spine.

What folly, what total lack of reason it would seem then, to put a splint on a weak muscle! The fault is entirely one of nutrition and development. The ligaments are lax and insecure, the muscular development

on one side is greater than that on the other, and a natural result from such inequality of forces will be a shortening on the side of greatest muscular power. When the condition is once established, the added leverage only serves to increase the deformity. Indications for treatment are positive. An out-door life in a tonic atmosphere, regular hours for eating and sleeping, baths, no apparatus and systematic gymnastic exercise prescribed by a physician, represent the measures best calculated to give results. Apparatus only defeats the objects of the treatment in a great majority of cases, by preventing development, and apparatus, no matter how skillfully constructed, can not correct a deformity of this kind.

THE CURABILITY OF EPILEPSY.

Epilepsy, which is commonly treated of as a spinal disease in the text-books, is also there usually considered as a curable one, at least to a certain extent. Practically, however, well-marked cases in adults are commonly estimated as incurable, and there are neurologists who seem disinclined to admit even the small percentage of recoveries that others allow as possible. Dr. WHARTON SINKLER, for example, in a recently published paper, appears to take the ground that a suspension of epileptic symptoms for a term of many years is to be considered rather as a remission than a cure; in fact, he apparently considers it hardly justifiable to put down any case as cured. He has collected a series of twenty-four cases altogether, in which the epileptic symptoms failed to reappear for various periods ranging from two to twenty-nine years, including eight cases in which they were lacking from five to nine years, and four cases of even longer intervals. The surprising feature in his figures is that they do not include a larger proportion of cases with the shorter intervals of two and three years; which it would appear ought to be more common than those of the longer periods, and this suggests the possibility that these latter include some of those instances that are not so infrequent after all, when a single epileptic attack, or possibly a series of such occur at a certain time in an individual's life, it may be under some special toxic influence or condition of mental or bodily over-strain, and then fail to recur, perhaps for the remaining period of his existence. Almost every one, it would seem, who has had large experience with epileptics ought to have met with some of these cases, and it is not uncommon even in asylums, where the patients are under close observation, to meet with cases counted as mild dementis in whom an occasional epileptic attack occurs at intervals of several, or possibly a number of years. Such cases are not commonly considered as cases of cured epilepsy, or sometimes are hardly reckoned among the epileptics in the classification of the institution. There are still other cases known to asylum physicians, where epilepsy has passed into chronic insanity, sometimes of the delu-

sional type without any pronounced dementia, and which has continued for many years, indeed through the whole remaining life of the patient without any epileptic symptoms whatever.

When we consider what epilepsy really is, viz., a symptom or a collection of symptoms of cortical irritability or excitability, in all probability dependent upon a very wide range of pathologic conditions, from irreparable organic changes on the one hand to slight vasomotor disturbances from various causes on the other, there seems to be no good *a priori* reason for holding it to be invariably incurable. It would appear, indeed, more reasonable to admit that what is pathologically indistinguishable from epilepsy that undergoes recovery should be classed with epilepsy, and that well-marked cases of the disorder may therefore be counted as curable. The infant's cortex is particularly unstable; it may be irritated to the extent of producing general convulsive phenomena with every symptom of epilepsy in the adult, and yet its recuperative power and developmental possibilities are such that it does not by any means follow that infantile eclampsia implies later epilepsy. They are practically the same thing, and the distinction that is made between them is a purely arbitrary one based on the fact that one is recovered from, while the other, as a rule, is not; there is certainly a logical defect in every argument for the incurability of epilepsy founded upon such a distinction as this. In children past the age of actual infancy the progress of epilepsy is still relatively favorable, and most practitioners of experience with nervous diseases have had cases in such that they felt justified in considering as cured. The more complete the development of the brain, the more serious is the prognosis as a rule in the disorder; it is true that we do not often meet with a cure of so-called idiopathic epilepsy in the adult, and yet it would be unjustifiable to say that it does not sometimes occur. The question is what we shall call a recovery; according to Dr. G. M. HAMMOND, in the discussion of Dr. SINKLER'S paper in the American Neurological Association, a complete absence of epileptic symptoms for the space of three years ought to be reckoned as a cure, and any subsequent recurrence should be considered as another attack from a different cause. There is reason in this, though others might demand a larger interval of freedom from symptoms; it is usually little more rational to call such an occurrence in epilepsy a remission than it would be to say that the interval between a first and a second attack of pneumonia, for example, is a remission. The morbid excitability of the cerebral cortex, of which epilepsy is a manifestation, once allayed, the patient is practically well, and there is no inherent presumption against the permanency of the recovery. If external irritation could be avoided the cures would be more numerous, but the continuance of an even slightly greater susceptibility to excitation than is exactly

normal renders a relapse the more possible. In a certain proportion of cases, not a large one it is true, there undoubtedly is a restoration to an approximately normal condition, and there is reason to think that in a smaller proportion the morbid process may produce an obtunding instead of an aggravation of the excitability thus tending to dementia or insanity without characteristic epileptic phenomena. In the majority of cases, however, the epileptic symptoms continue in spite of the brain deterioration and the disorder is accounted as incurable.

The proportion of actual cures of epilepsy is small. Dr. JOSEPH COLLINS estimates it, however, as high as 5 per cent. under proper and steady treatment. When we take into account the juvenile cases this is probably not too large, and if we include infantile eclampsia in epilepsy, not large enough. Add to these the cases where only one or two attacks occur in a lifetime and the patient survives them many years, even without treatment—and there are many such cases that hardly come under the care of physicians—and the proportion is still further increased.

It is beyond question that there is a risk of too early estimation of cures in epilepsy, but three to five years' freedom from attack ought, it would seem, to justify the counting a case as recovered. Post-operative cures are in fact very commonly reported far within such a length of observation, but they ought to be subject to the same rules as to interval and observation as others, and will not be likely to alter the statistics in the way of making them any more favorable. Organic disease and serious developmental defects are probably responsible for the majority of epilepsies, but there remains a proportion that are probably due to conditions that are themselves not altogether incurable, or are at least amenable to treatment, and in these there is at least a possibility of cure. Still others are due to temporary intoxications or overstrains, and if there be not irreparable damage set up they may even undergo a spontaneous cure which may escape medical observation. The dictum of the incurability of even adult idiopathic epilepsy is, therefore, not fully warranted by observation or based on well-established pathologic facts.

THE CHAIR OF PHYSIOLOGIC CHEMISTRY IN MEDICAL COLLEGES.

What produces the symptoms of epilepsy, of hysteria, of gout, lithemia, uremia and rheumatism? What is the nature of antitoxin and how is the morbid agent of acute infectious diseases destroyed by its action? We are beginning to know something about pathology, therapeutics, and physical diagnosis, and we know a great deal about anatomy, surgery and bacteriology. A system of diseases has been built up from the knowledge of micro-organisms. We have reached that point of knowledge in bacteriology, where it becomes possible to extract wax from the tubercle bacillus, to

stain its spores and the flagellæ of the bacillus icteroides Sanarelli. We believe that typhoid fever is due to the Eberth bacillus and that its introduction into the small intestines gives rise to manifold symptoms. But we do not know to what all these symptoms are due. When there is a disturbance of the metabolic activity of the liver, of the pancreas, of the stomach and small intestines in typhoid fever, a complex condition supervenes and it may be an open question whether the toxin given off by the specific organism is in the ascendancy or whether the other ptomains together with leucomains play the principal part. If we start out with the proposition that the symptoms of hemicrania, lithemia and asthma are due to uric acid, and the symptoms of uremia to members of the creatinin group of leucomains, we again meet with extreme difficulty in proving the proposition by exact experiment.

In the United States two conditions confront the original investigator at the outset: 1. There are few laboratories fitted for this work and, 2, there are comparatively few competent to instruct in chemistry from a physiologic standpoint. In Germany, where institutions for original research are aided by the Government, and where men are guaranteed a certain income or salary to conduct one series of observations, we necessarily hear a great deal of the "Congress für innere Medicine," and of "internal medicine," during the summer and winter semesters. The migration of medical students to the old world can not be effectually stopped until the teachers in the colleges of North America write the text-books used by those across the water.

In our rapid stride, searching for the cause of disease, the department of bacteriology has been pushed with extreme vigor and we become discouraged on further inquiry to find that the cause for the many symptoms of disease lies hidden within a labyrinth of physiologic and chemic problems at present beyond our comprehension. The United States does not lack investigators in these problems. There are thousands of younger physicians here eager to undertake this work if they only had the training and the opportunity. The time has long since passed when, by simply injecting hypodermatically a certain drug, one could ascribe certain definite symptoms as the resultant. We have passed beyond that stage, and things are now on a surer foundation capable of withstanding the flings of unrelenting criticism.

If we should take an inventory of the different medical colleges in this country in which there is a department of physiologic chemistry, we would find that there would be comparatively few fitted for giving proper instruction in this department, notwithstanding a four-year course is a prerequisite for graduation, and for which necessary expense the student, be it said, should in return get value received. The student can not undertake these experiments alone. His mind

must be under the supervision of one fitted to detect the occluded sparks which lead toward the hidden goal. Another thing: Those who would undertake to conduct original research in internal medicine, more especially with leucomains for instance, must not be surprised that these all-important bodies can not be purchased in the open market, and that in order to get a few grains of them the first prerequisite is to secure from fifty to seventy-five gallons of urine. Truly it must be said that in our zeal for the exploration in other fields in the different medical colleges of the land, the coming study of the day lies buried in the mist which only time and necessity will brush away.

Let us have a Department of Public Health!

THE INDIFFERENT ANESTHETIST.

There is something essentially wrong in the methods of administering anesthetics when the laity begin to revolt against existing methods and prepare to dictate to the anesthetist how he shall administer an anesthetic. During the past few months the *Nineteenth Century* has contained articles condemning certain existing methods of administering chloroform in England, and that of June concludes as follows: "Let each one of us refuse resolutely to take chloroform or allow any member of our family to take it without first obtaining a guarantee from the anesthetist that he will administer it in an open cloth held at a given distance from the nose and that the time taken to put us under shall not be less than eight minutes." There is a further proposition that the violation of any one of these rules be an act punishable by law.

The mind of every medical man must needs revolt against the layman dictating methods to the profession and presuming to say that he shall do his business in this way or that. Disagreements among doctors as to diagnosis, prognosis and treatment in a given case have done far too much already to give the layman an incredulous mind and furnish him with grounds for criticising the physician in charge because he does not agree in his methods with his (the patient's) preconceived ideas of the proper conduct of the case. This attempted dictation as to the administration of chloroform would call for an answer that would confine itself to a dignified request to "mind their own affairs," were it not for the fact that there is a great fault just where the criticism falls, and justice does not permit us as medical men to ignore it within the profession. The "stiflers" among anesthetists are made the point of attack, and a visit to many of our hospitals will demonstrate just what is meant by the term. The fault in this country is for the most part limited to the administration of ether, where the most inexcusable indifference to the patient's comfort is often demonstrated. The man who gives the anesthetic in a hospital is regularly the youngest man on

the staff, a fresh graduate with theoretic teachings alone, or the example of another interne, as his guide. The cone, soaked with ether, is crowded down over the patient's face and he makes a courageous effort to stand it for a time. Very soon, however, he struggles to save himself from what these patients afterward describe as a feeling of imminent suffocation and death, and gains a breath of fresh air only in those cases where the orderly or orderlies are unable to hold him down. When the patient is under, the anesthetist, who has given ether two or three times, wishes to demonstrate to the assembled students and spectators his entire familiarity with etherization by indifferently gazing around the room or at the field of operation, or he exchanges jokes with a bystander. This is essentially wrong and it is a wrong to be corrected by the operator himself. No operator should permit any man to administer his anesthetics unless he is competent to do so and willing to direct his undivided attention to the patient. The suffering of the patient alone is sufficient reason for the gradual administration of any anesthetic, and the dangers, immediate and remote, are sufficiently great to demand the minimum dose and the proper regulation of the dose. As long as the system of the hospital internes exists there will continue to be "swell heads," and the operator alone can remedy his fault of feeling that he knows everything about etherization.

CORRESPONDENCE.

A Defense of Music.

CHICAGO, Aug. 25, 1898.

To the Editor:—In the *JOURNAL* of July 23 appears an editorial upon the "Hygiene of Music," which, while judiciously advising against the abuse of the art, contains some statements that I would like to reply to. From the general tone of the article I would almost infer that the writer is one of those unfortunate, over scientifically trained individuals who, in their zeal for "utilitarianism" have lost their artistic sense. Darwin, to whom he refers as attributing the love of music to the sexual sense, clearly stated in his own writings, that though he possessed a lively artistic temperament in his youth, his constant application to science had so warped his mental faculties that in later life it was torture for him to read a great novel, and it was simply impossible for him to enjoy a line of Shakespeare. I know an individual whose sexual appetite (from his own confession) is as excessive as any I have ever heard of and yet he is absolutely deficient in the sense of music. Libertines and prostitutes are not, as a rule, particularly musical, while, on the other hand, the great composers, with some few exceptions, have led lives as virtuous as the average. If music is the "food of love," and love is to be reduced to mere sexuality, it can rejoice at least in being in good company in its misery. Some scientists reduce man to two appetites, the sexual and the alimentary; and accordingly love, friendship, dancing, music, Christmas-merry-making, and about everything in life that gives enjoyment is an offspring of sexuality or gluttony. *Honi soit qui mal y pense!* Weissmann (quoted in the editorial) thinks the musical sense is "abnormal," which is indeed a very consistent conclusion to reach after the teachings of Darwin, that music is so innate that it is even related to the love-notes of the birds. Alas!

how science does wobble when it attempts to dissect the *beautiful*, or that which is not strictly *utilitarian*! If the sense of music be abnormal, then how many abnormal people there are in this world of ours. Perchance the birds and some of the tamer animals that reveal at times a kind of musical sense are also abnormal. The clergy tell us that there will be music in heaven, but who would want to be in heaven if it is to be abnormal? Would that the "abnormal" Darwin, if he is so unfortunate to be now where there is music, would only come to the theorizer about heredity, so that for the credit of "science" a better consistency might be obtained between their present hopelessly divergent views, for our logic is inadequate to reason out the harmony between the theories of these men "whose opinions," the editorial writer shows, "are best worthy of respect." If, as Weismann says, "music is a secondary effect on the organs of hearing induced by cultivation," how, pray, does it happen, as Darwin said, that it is a concomitant of sexuality and "analogous to the love notes of song birds." It seems to me somebody's opinion here is not "best worthy of respect." It has been agreed by the evolutionists that, in the development of the human race, the musical sense, of all the senses, is the last to have been acquired. If my memory serves me, I think they state that it is about thirty thousand years old. Surely what the human race has possessed for thirty thousand years can not by this time be so awfully abnormal! The same evolutionists have calculated, I believe, that about 47 per cent. of human beings are lacking in the musical sense. Therefore, I take it, *a la* Weismann, that the majority, 53 per cent. must be all abnormal. Our lively and entertaining friend, Nordau, would probably rise up with a sneer and exclaim "true," for he seems to find degeneracy and abnormality quite rampant amongst us. I marvel, however, that a *scientific* editorial writer should quote Max, for after the same manner Juvenal might be made to testify that there was no virtue whatever in Rome, and Rabelais will prove that every churchman in his day was a libertine and a wine-bibber.

"Music in itself is not intellectual," says the editorial writer. Neither is a quiet stroll on the boulevard, or rowing or tennis or even sleeping, and a goodly number of other things which we do in life, and yet find mors or less essential. Some things minister to the intellect, even if they are not strictly intellectual. Hear what that arch-utilitarian, John Stuart Mill, has to say about it: "the only one of the imaginative arts in which I had from childhood taken great pleasure was music; the best effect of which (and in this it surpasses, perhaps, every other art) consists in exciting enthusiasm; in winding up to a high pitch those feelings of an elevated kind which are already in the character, but to which this excitement gives a glow and a fervor, which, though transitory at its utmost height, is precious for sustaining them at other times." If intellection is so supreme a desideratum, would it not be well then for some of us to stir up our intellects with music! Almost the first requisite of intellection is imagination. One can not think without, to a certain extent, imagining; and all other things being equal, the man with the clearest insight (imagination) will reason the most clearly. Faraday, Liebnitz, Dalton, Newton, Columbus, Laplace, and nearly all the *great* scientists were men of vivid imaginations, and with some of them music awakened the imagination and from their imaginings sprung the great intellectual ideas with which they have endowed the world.

Again the editorial declares that "one of the greatest poets has said that to appreciate poetry a trace of morbid mentality was essential." Strange that the author should quote a poet, a kind of musical man, against poetry; for one would think he would not care much for what a *poet* says! As a fact, however, he is quoting Macaulay ("Essay on Milton"), who is scarcely "one of the greatest poets"; who wrote his "Essay on

Milton" when he was a very young man, this being his first essay; and who, according to his writings elsewhere, never intended that his words should be construed as literally as the editorial writer takes them. If the musical faculty is "compatible with a profound degree of dementia," so is the mathematical faculty, the memory and almost every department of the mind. As an argument for the "morbid mentality" associated with the musical faculty, Blind Tom is about as weak as even the imagination can conceive of. For one Blind Tom, who after all represented not the best type of musician, there are thousands of rational beings richly endowed with the musical sense, as witness an army going into battle to the strains of soul stirring music, or a throng of people cheering for Old Glory and singing their patriotic songs. Is not that utilitarian enough and are not those people rational enough, to suit our friend, the writer of the editorial? What is after all *utilitarian* and what is *rational*? We hope he will some day give us a definition of these terms so that we may know *exactly* when we are crossing the Rubicon from the useful to the useless, from the rational to the irrational. Milton sings:

"Thers let the pealing organ blow
To the full-voiced choir below
In service high and anthems clear
As may with sweetness, through mine ear
Disolve me into ecstasies
And bring all heaven before mine eyes."

And likewise Wordsworth:

"Where music dwells
Lingering and wandering on, as loath to die,
Like thoughts whose very sweetness yieldeth proof
That they were born for immortality."

If such be the office of music, is it therefore less "utilitarian" than the act of cooking, of buying and selling corner lots, of digging trenches and reading stock quotations? Well, perhaps it is, but, frankly, I have seen some real estate men and stock-brokers, genuine utilitarians—yea, and even some scientists—men of one idea and that a utilitarian idea—that I strongly suspected of being on the verge of a "*morbid mentality*" more than I ever suspected the whole troop of musical enthusiasts put together. I think I have even heard them talk (as for instance in reasoning about some patent medicine and its marvelous curative powers in their own cases) more *irrationally* and less *intellectually* than the great Beethoven or Mozart must have communed with themselves when evolving their sublime symphonies and concertos.

Our editorial friend has fallen into the error, too common with scientists, of supposing the merely utilitarian, the tangible, to be of the greatest value. St. Paul was a great thinker and he declared that the unseen things were eternal. So that which stirs the soul—whether it be music or poetry or painting, whatever tends to lofty ideals and noble acts—is utilitarian in the highest and best sense of the term. To be sure it may be abused and here the editorial is notably commendable in warning against the abuse of art. The readiness with which it may be abused is only another evidence of its nobility. The more delicately a watch is constructed, the more carefully it should be handled. Because we all do not understand its mechanism and because it is quickly shattered in the bungling hands of some of us, let us not condemn it as the offspring of "a morbid mentality" or as not utilitarian, or as always the outcome of sexuality and gluttony. When I listen to the depressing, materialistic, utilitarian mutterings of "science," I am inclined to exclaim with Carlyle, "what in these dull imaginative days are the terrors of conscience to the diseases of the liver! Not on morality but on cookery let us build our stronghold; then brandishing our frying-pan as censor, let us offer sweet incense to the devil and live at ease on the fat things he has provided for his elect."

L. HARRISON METTLER, M. D.

How to Suppress Quackery.

ROLLA, Mo., Sept. 1, 1898.

To the Editor:—Ever since the 4th of March, 1897, when Governor Lon V. Stephens put his fist to the bill entitled "An act to regulate the practice of the science of healing disease and

injuries without the use of drugs, known as osteopathy," and sent the congratulations by wire, of himself and wife, to the father of the imposition, praising him for "the wonderful advancement he had made in medical sciences." Missouri has had to confess with shame, that she is the mother of one of the grossest frauds that has ever been imposed upon the sickly and weak-minded people. This bastard to science has been advertised in the daily and weekly newspapers, and the laity has read only one side, until rational physicians are looked upon as "jealous cranks who oppose scientific progress."

I was a member of the 38th General Assembly of Missouri, when Edward Higbee introduced and championed this freak of science, known as House Bill No. 445. I had to suffer the intense pangs of seeing a large majority of the members in both houses misled by an organized lobby telling how that wonderful man at Kirksville cured sore eyes by replacing a nerve on the back of the patient's neck; how he cured consumption instantaneously by stretching the pneumogastric nerve; how he cured Pott's disease by untying the spinal cord; how he made the lame walk by pulling their legs, etc. The large vote by which this bill passed both houses only proved the ignorance of the average legislator on medical subjects; and the able manner in which Governor William J. Stone wrote his veto to it, proved that Missouri was then fortunate enough to have a Governor possessed of a good education, good judgment, love for the people, and executive ability and nerve enough to do the right, whether it be popular or unpopular. Whilst I am a Republican in politics, I do not believe that Governor Stone has received all the honor from rational physicians due him. I would like to see every honorable physician in our State keep a life-sized portrait of this able statesman hanging in his office, in token of the high appreciation of the medical fraternity for the friend to science and truth. But it is not my intention, in this article, to condemn or to eulogize any individual, but to suggest a method by which empiricism, charlatanism, osteo-hypno-humbug-ism, or any other fad or false theory calculated to deceive and swindle the sick, can be suppressed.

So long as a rigid "Code of Ethics" prevents educated and honest physicians who strive more to get knowledge of how to relieve the sick, than they do to accumulate wealth, from using the newspapers for the purpose of enlightening the people, quackery will have the advantage; for the people who can read will read, and they will read such things, as they find in the newspapers. It is not necessary to state that the newspapers contain a large amount of paid-for quack advertising, gotten up for the purpose of misleading the sickly and weak minded, and after swindling them out of their last dollar, something that is easily done, when they read only one side, but will not stand the test when the truth is printed; for one word of truth can explode one hundred words of false theory, when properly applied.

The method to subdue quackery which I propose is this: Let every physician in each county in the State require his candidate for the legislature, to promise that he will vote against all forms of quackery and humbuggery, and that he will vote as advised by the leading physicians of his county and district, on all subjects pertaining to medicine and surgery. This promise should be required irrespective of party affiliations; and our party prejudices should never be so strong as to allow us to ever vote for any man who has supported quackery, or who is likely to do so.

Partisanship is one thing, and politics is another. It is the duty of a physician to exercise a reasonable amount of interest in the politics or government of his State and nation, especially for the protection of citizens in their rights, with the preservation and improvement of their morals; but he should never become a partisan to the extent of voting for any person who favors charlatanism.

Missouri has about 5000 regular physicians. This number is sufficient to resent the insults of both political parties, which have been thrust at the regular profession in the 38th and 39th Assemblies, and repeated at the Democratic and Republican State conventions recently held in Springfield and St. Louis.

If the medical press, the medical societies and the State Board of Health will take a united interest, and furnish to all physicians of our State a list of all men who have supported, or are apt to support, the fads and frauds above mentioned, and furnish a few suggestions on the subject, I think I am safe in predicting that within from two to four years' time, osteo hypno-humbug-ism in Missouri will be numbered with the slain.

The following members of the 38th General Assembly supported House Bill No. 445, introduced by Edward Higbee, entitled "An Act to Regulate the Practice of the Science of Healing Diseases and Injuries Without the Use of Drugs, Known as Osteopathy:

House.—Armstrong, Arnett, Atkins, Best, Bittinger, Bothwell, Bourn, Breit, Cape, Carroll, Cherrington, Collins, Copledge, Carroll, Cox, Crisp, Daneri, Davidson, Davis (Taney), Davison, DeFord, Denslow, Drum, Dyer, Ferguson, Freeman, Fuson, George, Gill, Gmelich, Griffiths, Grubb, Hammond, Harrison, Hart, Higbee, Hinde, Johnston, Jones (Hickory), Jones (Jackson), Juliau, Kasey, Kline, Kyler, Lane, Leroy, Lynch, McCollum, McKearley, McKee, McPherson, Marsh, Middleton, Moore (Mississippi), Moore (Stone), Moran, Mueller, Murray, O'Dell, Odneal, Old, Phipps, Porterfield, Pratt, Rohne, Sachse, Sartin, Schoppenhorst, Schumacher, Sherrill, Smith (Buchanan), Smith (Howell), Steel, Stickney, Sullinger, Swanger, Tartar, Walton, Warner, Waymeyer, Weaver, Weinhold, Wetzell, Young (St. Fran.), Young, Texas, Mr. Speaker.

Senate.—Amelung, Ballard, Bledsoe, Brewer, Busche, Davison, Drum, Dunn, Kennish, Klens, Lancaster, Landrum, Love, Lyman, McClintic, Madison, Mortoo, Mott, O'Bannon, Peers, Powers, Seaber, Walker, Williams, Wurdeman, Yeater.

The following members of the 39th General Assembly supported the same bill when introduced by Mr. Pickler and Mr. Seaber:

House.—Aldredges, Armstrong, Averill, Aydelott, Barnett, Bittinger, Bohart, Bradford, Bradley, Breit, Brueur, Burroughs, Caldwell, Cashion, Christy, Clarke, Clymer, Cock, Coffey, Cole, Collins, Cox (Lewis), Cox (Oregon), Crisp, Curry, Daugherty, Davault, Davidson, Davis (Chariton), Denslow, Dougherty, Dunn, Dyer, Ehrhart, Erman, Fitzgerald, Frost, Hale, Hamilton, Hart, Hawkins, Hays, Hendrickson, Hess, Hood, Hopkins, Ijams, Jenkins, Johnson (Cooper), Johnson (St. Louis), Koch, Kramme, Lee, London, McCullom, McKim, McMonigle, McPherson, Martin (Barton), Martin (Callaway), Mashburn, Moeller, Morris, Mueller, Neville, O'Dell, O'Fallon, Organ, Pickler, Piner, Piper, Pope, Prather, Pyeatt, Rebo, Regan, Rohns, Ross, Rubey, Russell (Dade), Sawyer, Schumacher, Sessinghaus, Shewmaker, Sickles, Smith, Snidow, Spofford, Tandy, Taylor, Thomas, Truitt, Tubbs, Vanderhoef, Vandiveer, Wade, Walmsley, Ward, Weaver, Williams (Jefferson), Wood.

Senate.—Anderson, Brewster, Burkhead, Childers, Davison, Drum, Gray, Hohenschild, Klens, Landrum, McClintic, Major, Marshall, Matthews, Miller, Morton, Mott, O'Bannon, Orchard, Peers, Powers, Schweickardt, Seaber, Vandiver, Wells, Williams.—Lon V. Stephens.

The foregoing is a correct list of both Republicans and Democrats who supported osteopathy in the two last General Assemblies of Missouri, as shown by the Journals of the House and Senate, which I desire to have printed in each medical journal in the State, and all others that are read in the State.

J. L. SHORT, M.D.

The Physiologic Approach to Education.

NEW YORK CITY, SEPT. 1, 1898.

To the Editor:—Some one has said recently that there are three avenues to the approach of education, the physiologic, the sociologic and the psychologic. The college settlement and university settlement laborers are grappling with possible social reform in education; the pedagogue and psychologist with

their respective portions of the same great problem. Who will best develop and clear the physiologic pathway?

In a generation's time the aim of education has been completely transformed. In years past our boys and girls were trained for too circumscribed spheres, the one for the special trade or profession perchance selected, the other for lines far narrower, the purely domestic or social routine. Today the projectors of education are satisfied with no scheme that aims not at the development of every faculty, lurking or alert. There has been achieved great advance in the true direction, but there are also recognizable defects even in present day systems and possible threatenings of mistaken gains.

Life has been defined as the relation of incident forces and external environment. School life, educational life, follow the same law. Yet too often we see environment neglected and little heed paid to coincident forces, the result being an asymmetric development of material. A minor proportion of our children may be as carefully nurtured in their physical as in the mental growth; the vast majority are less fortunate. Go with me into any school of average size in a cosmopolitan city, where children of all grades of society commingle. They show quite alike, irrespective of social condition, too evident marks of malnutrition, of defective home hygiene, of faulty trained or neglected eye and ear, of neglected muscles, of universal errors in dress. Add thereto many faulty conditions of school hygiene, of over-crowded classrooms, ill-lighted, worse ventilated; of dark playground or of none at all; of ill-suited furniture for little aching spines and developing hips. Few large schools are found in over-crowded New York City, that are not over-topped by many-storied factories, whose noises do not aim to rise above those already hideous of city streets. Is it sweetly reasonable to expect from like environment, well-developed mental foundations?

What may be said of the incident forces? In all revisions of schemes of study of recent date, generous provision is made for mathematics, for language and literature, for music and drawing, for botany and biology. Of what use be these, if the child acquiring them be not most familiarly acquainted with himself and the laws that regulate all his efforts to acquire and attain? In truth, the course of study providing with sufficient liberality for this first great science, physiology, is yet to be discovered. Within the last two decades there was conceived the idea of its being essential to instil into growing youth a "popular knowledge of stimulants and narcotics." The intention was excellent, but its accomplishment inefficient. For the purpose physiology was introduced into the school curriculum, but in so defective a manner, and with so narrow a presentation, that the only impression produced on the mind of the irreverent student, is a frivolous regard for the "liquor books." Is it justifiable that outside of the medical profession, there should be no persistent and thorough investigation of physiologic laws and no proper presentation of them? In not half a dozen of the numerous public schools of New York City, is physiology taught by a physician. I presume this to be a fair average of similar conditions in other cities. In the medical college of the least pretension, there is a theoretic course of two years in this subject. In addition, many months of practical laboratory work are obligatory. Moreover, the entire four years' college work is a continual round of emphasis and review of the fundamental physiologic problems of the first year. All the wealth of clinical instruction now available to any student, is abounding with practical demonstration of physiologic laws. For example, the abstruse problems of blood pressure and vasomotor mechanism are solved in every case of organic disease; the trophic nerves and their function in every case of even the superficial skin lesions. Yet with all the constant iteration and reiteration of important truths, but few physicians feel qualified to aspire for the chair of physiology in their own Alma Mater. Contrast the conditions cited with those encountered

in the majority of our best secondary schools, where the teaching of these same important facts to minds far less prepared to receive them, is intrusted to one who has had no more than elementary training in "Science Lessons."

I am confronted with the argument that our school children are not in training for the medical profession. I am no less sure that this fact itself makes it important that the necessary modicum of knowledge be presented by one familiar with its deepest bearings. In other details are our incident forces sadly inefficient. Too little attention is paid to the selection of proper text-books covering the sciences. So glaring are the errors found in instances, that within a month the medical society of a neighboring State discussed the necessity for presenting to the AMERICAN MEDICAL ASSOCIATION a petition for the official supervision of such books. In pursuit of such investigation no less than seven differing publications were found, each pleading guilty to positive errors of fact, or to loose and unscientific presentation of important problems. There is no work more fascinating, more interesting than that of human osteology. Yet in not one text-book is there consideration given to the wonderful architectural principles demonstrated in the physiology of the skeleton. In speaking of the chemistry of bone, custom is universal in calling the mineral matter found therein phosphate of lime; this is a loose bit of chemic inaccuracy, for lime is more correctly the phosphate of calcium. In the chemistry of the blood many are the lapses of accurate statement. In but one book have I found any attempt at satisfactory explanations of the oxyhemoglobin and its really wonderful composition and function; very many careless statements are made describing the circulatory and respiratory systems; in but one authority is it distinctly stated that the nose and not the mouth is the proper entrance to the respiratory passage. In none can I find any distinction between active and passive organs of respirations, laying full stress on the value of each. By one only, are the important vasomotor and tropic nerves studied. Assuredly there is need of reform in this "physiologic approach" to education. With the best of material, is it rational to expect an intelligent acceptance of the science within the scope of one year, and that usually a year of immaturity? Is it not worth a struggle to put within the reach of our boys and girls a scientific knowledge of the laws of life and health, to foster at least an incentive to the admonition now ages old, "know thyself?"

53 Washington Square,

FRIEDA E. LIPPERT, M.D.

Examine Railway Employes' Eyes Periodically and in a Scientific Manner.

CHICAGO, ILL., August 31, 1898.

To the Editor:—The importance of railway signals and their correct observation by employes is a matter the subject of which has been given a great deal of study by all railroad officers, to the extent that every conceivable form of signal that genius, talent and mechanism can contrive has been tried and each in turn served the period of its usefulness and relegated to the background, the cruder machine being supplanted by a more perfectly constructed one until today our railway signals are equal in construction to those produced in any country. The medical profession has not kept pace with these mechanical students in their teachings of how to correctly observe these signals and thereby avoid accidents.

The average railway surgeon is provided with a few crude tests as to color vision and is taught how to correctly operate them by a superior medical officer totally unfit and incapable of giving such instruction, the superior medical officer in many cases being incompetent himself to pass judgment upon the interior of an eye as viewed with an ophthalmoscope, therefore, since he does not know anything about the interior of an eye as viewed with an ophthalmoscope, he is unable to ferret out

the cause of the color-blindness and is unable to give advice or instruction concerning it. In this regard the medical profession has not kept pace with these railway officials in this line of study.

To correctly observe a signal means to avoid the accident and is therefore of vital importance to all railroads. Vast sums have been expended by railroad officials to attain this success in the perfection of their various signal contrivances. Why, then, should not the medical profession teach the railway men the proper *modus operandi* to be pursued in correctly observing them.

The average railway surgeon is provided with a few skeins of yarn and taught that if the employe can not ferret out the various colors, but confuses them, he is color-blind and must be rejected by the railroad officer examining him. Now these skeins are all right in their place, but there is a difference sometimes in the luminosity of these colors and in the wave lengths of the ethereal vibrations producing them, giving to the color a different hue when mixed with other colors and thereby causing the employe examined to be rejected when the color-blindness is only temporary and apparent and no pathologic condition present to produce it, and blindness which could not be again produced. Again, very many railway men have learned that they confuse red and green and that they must upon examination call red green. Here the man has a pathologic lesion discoverable, it may be, only by the aid of the ophthalmoscope or by an accurate mapping out of the color field by the perimeter, which few if any of the surgeons have, and which is equally important with color-blindness as to lesions producing it.

No man is capable of judging an employe's color perception who can not correctly survey the fundus, noting the probable cause producing it or map out his color field or make the various tests for spinal cord or brain lesions that might produce it. Very many eyes are rejected because they can not read $\frac{20}{20}$ (that is see at 20 feet what they should see at 20 feet), all this because the medical examiner does not know the healthy organ when he sees it and does not know, that it is, perchance, simply a slight refractive error easily remedied by the proper refractive correction. Moreover, very many diseases prevalent among railway men, such as syphilis, rheumatism, Bright's disease, tuberculosis, etc., not sufficiently marked to lower acuity of vision at the time of examination, which later produces total blindness in the organ, go by undiscovered by the railway surgeon and a grave accident results. The railway surgeon should be correctly instructed concerning positive and negative scotomas, how detected, and their significance as to the correct observation of signals. I said in a recent paper published in the *Railway Age*, that, "If any man can not read $\frac{20}{20}$, that is, see at 20 feet what he should see at 20 feet, which for practical purposes is infinity, he should not be at the head of a passenger train freighted with human lives." If he can not read $\frac{20}{20}$ and his fundus is normal, why not give him the proper correction and let him wear it. Periodic examinations by competent oculists would remedy the defects, if refractive, and ferret out the poor-sighted employes, and, where possible, correct their vision by properly adjusted glasses.

I am aware that railroad officials are loath to part with trusty employes and for that reason keep their old employes in the most hazardous positions. This is as it should be, save that if upon frequent examinations it becomes a known fact that the particular employe has diminished acuity of vision from any source unremediable, he should be substituted by a younger but equally trusty employe, whose acuity of vision can be made perfect or nearly so. I believe that the older employe with lessened acuity of vision should be given the less important positions where signals are not observed.

Another condition is that of hemeralopia and nyctalopia,

night and day blindness, where an individual may see perfectly for twelve hours out of the twenty-four and indistinctly the other twelve. These symptoms are manifested in certain retinal affections, and discoverable, it may be, only by the aid of an ophthalmoscope the individual, if being examined, declaring that he sees perfectly, while the ophthalmoscope shows an acute or chronic, traumatic or albuminuric retinitis or retinitis pigmentosa. Another condition is that of tobacco amblyopia, sooner or later to affect the optic nerve by causing atrophy of it, scotoma, contracted field, color-blindness and finally total blindness of the eye. The same condition is possible by imbibing too freely in spirituous beverages. Who is to pass judgment on this condition? No one but the skilled physician who is able to survey the interior of an eye.

Very many other conditions might be cited, prevalent among railroad men, which lower the acuity of vision, and which therefore necessitate a periodic examination of all employes' eyes by competent oculists, especially employes having to do with signals. Every railroad should have a competent oculist with enough assistants to correctly examine, periodically, both subjectively and by means of an ophthalmoscope, the eyes of all employes having to do with signals. This will, if properly executed, lessen the railway accidents the first year by one-half and relieve the railway surgeons of one of the supposed functions of their respective offices. I am aware that all railways employ oculists in name, but not in fact, their supposed function being to examine the fundus of all feigners in railway accidents and pronounce them healthy eyes and to be a general consultant in case the railway surgeon accidentally suspects some fundus lesion.

Recently in a medical journal I noted an expression from a railway surgeon of note in which he claims that the employe's character is of vastly more account to the railway employing him than is his eyesight. In my judgment both should be good and no employe placed who can not demonstrate that he has both good character and good eyes. A law should be passed in every State in the Union compelling the railway companies to periodically examine all their employes having to do with signals and especially those in the train service. This would prove no injustice to any, but would be a boon to humanity in the saving of lives and a saving to the railroads in thousands of dollars spent annually on accidents.

JNO. RANSOM HAMILL, M.D.,

Ass't Surgeon Illinois Charitable Eye and Ear Infirmary.

The Association and the Colleges.

LOUISVILLE, KY., Sept. 5, 1898.

To the Editor:—In the *JOURNAL* of September 3, page 337, Dr. T. J. Happel, ex-vice-president of the AMERICAN MEDICAL ASSOCIATION, says: "After carefully reading the notices sent out by Dr. Wm. B. Atkinson to the deans of the several colleges in the United States, I am satisfied that the ASSOCIATION has attempted to reach a point which it should attain, in an unconstitutional manner. Had this point of order been made against the resolution at the time it was offered, as the presiding officer of the ASSOCIATION on that day, I would have decided the point well taken, and have ruled it out of order."

Dr. Happel presided on Wednesday, at the time the resolutions were offered. He referred them to the business committee. On Thursday the business committee recommended their adoption; Dr. Happel, again presiding, put the question, and decided the resolutions unanimously adopted. He was then the only person authorized to decide. He was at that time under solemn obligation to execute all the provisions of the constitution of the AMERICAN MEDICAL ASSOCIATION. He decided then as an officer clothed with full power.

It is now about three months since he ceased to be an officer,

and it is an unheard of proceeding for him to undertake, after he has passed out of office, to decide that his conduct in office was irregular, unconstitutional and void. Does not Dr. Hap- pel know that ignorance of the law can never be pleaded as an excuse for its violation?

The resolutions are an ordinance of the ASSOCIATION, and not a constitutional amendment; and, whilst they affect the qualifications of certain persons holding membership, they are, in fact, intended merely as an addition to the by-laws.

The constitution says of delegates, and other members, that they "shall continue such so long as they remain in *good standing* in the body from which they were sent as delegates, and comply with the requirements of the by-laws of the ASSOCIATION;" and of the permanent members, "so long as they shall continue to conform to its regulations." The constitution, therefore, decides that the provisions of the by-laws are to determine the qualifications of membership, or rather, the conditions upon which membership may be continued. See Art. ix of the by-laws, entitled "Conditions Excluding Representation."

The resolution to which Dr. Hap- pel makes reference does not alter or amend the constitution of the ASSOCIATION. It amends Art. ix of the by-laws by adding to the specifications of conduct which shall exclude from representation.

Article viii of the by-laws formerly contained this paragraph (Transactions, Vol. xxvi, page 491): "It shall be the duty of every member of the ASSOCIATION, who learns that any exist- ing medical school departs from the published conditions of graduation, to report the fact at the annual meetings; and, on proof of the fact, such school shall be deprived of its represen- tation in this body." The by-laws, in relation to the condi- tions excluding representation, have been amended so often that it would require a large octavo volume to contain all of them. The only rule with which I am familiar, concerning amendments to the by-laws, is that set forth in the first Article, which says: "the order of business shall, at all times, be subject to the vote of three-fourths of all the members in attendance."

I am sure the ASSOCIATION will enforce the provisions of the resolution; it must do so or stultify itself. The technical quibble about attempting to make the resolution appear as an amendment to the constitution is both unreasonable and absurd.

The profession of medicine can not have more than one stand- ard of qualification. The minimum curriculum of the College Association, which has been unanimously adopted by the AMERICAN MEDICAL ASSOCIATION, is the lowest that can be accepted of any candidate for admission to the regular medical profession in the United States. The Degree of Doctor of Medicine must be of equal dignity and effect, whether conferred in the North or the South, the East or the West; there can be but one standard.

DUDLEY S. REYNOLDS.

An Osteopathy Assertion.

CHICAGO, Sept. 4, 1898.

To the Editor:—The recently-issued circular of the Chicago College of "Osteopathy" contains the assertion that the "officialist" E. H. Pratt (one of the faculty) is a member of the Chicago Academy of Medicine. He has never been a member nor (as the Chicago Academy of Medicine is affiliated with the AMERICAN MEDICAL ASSOCIATION) would he be eligible.

JAS. G. KIERNAN, M.D., Secretary.

NECROLOGY.

JAMES K. HOGAN, M.D., Long Island College Hospital, N. Y., 1888, died at his home in New York City, September 3, aged 42 years. He was a native of Ireland and a graduate

of Queen's College, Cork, before he arrived in this country. Two small children are his survivors.

GEORGE MCCREERY, M.D., Bellevue Hospital Medical Col- lege, 1877, died on board the transport *Catania* and was buried at sea. He was appointed an Assistant-Surgeon, U. S. Army, and attained the rank of Major at the beginning of the present war.

Dr. L. v. DITTEL, in his 83d year. The Vienna school loses in him one of its most brilliant minds, and the science of urology one of its modern founders. His name is, perhaps, best known by one of his minor achievements, the elastic ligature of hem- orrhoidal nodules.

Dr. G. ZANCAROL, at Alexandria, Egypt. A prominent phy- sician among the European colonies in Egypt and writer on medical and surgical subjects and international hygiene.

Dr. BONSDORFF, aged 83. Formerly professor of anatomy at Helsingfors.

WILLIAM H. BENNETT, M.D., N. Y. University Medical Col- lege, 1870, died at his home in Brooklyn, N. Y., September 1, aged 54 years.—J. P. Fryer, M.D., Ypsilanti, Mich., August 26.—F. S. Hilbish, M.D., Fremont, Ohio, August 25, aged 56 years.—W. B. Scales, M.D., Sedalia, Mo., August 27, aged 57 years.—John Stearns, M.D., Washington, D. C., August 26, acting U. S. Surgeon Fourth Mass. Heavy Artill- ery, during the civil war.—Richard Townsend, M.D., Phil- adelphia, August 28.—William Vannuys, M.D., Anderson, Ind., Rush Medical College, 1855, August 28.—J. M. Wilk- inson, M.D., Dover, Del., August 25, aged 48 years.

PUBLIC HEALTH.

Reduction of Typhoid Fever in the French Army.—One of the chief factors in the reduction of the number of cases of typhoid in the French army is the regulation forbidding the men frequenting saloons, cafés, etc., where non-sterilized water is used. The consequence is that the proprietors vie with each other in the work of sterilization.

Unlowered Death-Rate in Diphtheria.—The discussion following Professor Kassowitz's arraignment of antitoxin treatment and the Klebs Loeffler bacillus, mentioned in the JOURNAL, page 257, lasted four weeks and packed the rooms of the Vienna k. k. Medical Association to the doors, in spite of the midsummer heat, at each session. In conclusion Kassowitz stated that he had accomplished his purpose if he had called attention to the fact that antitoxin treatment is not a *res adju- dicata*, but is still on trial, and required scientific weighing of actual facts, instead of blind laudation.

The Mosquito and Leprosy.—The mosquito is now credited with the transmission, not only of malarial infection but of leprosy. Prof. Sommer of Buenos Ayres in an article on "Leprosy in the Argentine Republic" (*Semana Médica*, June 23), notes that in hot countries leprosy is more frequent in localities where there is much water and hence larger numbers of mosquitoes. He considers this the explanation of the prevalence of leprosy among fish-eating populations, which used to be ascribed to the fish. Kaposi reported at the recent Leprosy Congress the case of a tourist on a steamer passing through the Suez Canal who was stung on the finger by a mosquito and a leproma developed at the spot.

How to Exterminate Mosquitoes.—An almost imperceptible amount of potassium permanganate—1 to 1500—is fatal to the mosquito, according to the *Public Health Journal*. By scatter- ing the crystals here and there, a handful of potassium per- manganate will oxidize a ten-acre marsh and kill all the mos- quitoes and their embryos in it, thus freeing man from the pest for thirty days. *Janus* for August states that an oil medium is better than an aqueous for insecticides, as the oil works its way into inaccessible crevices. Another communication de-

scribes the peculiar behavior and evident epidemic among ants, in the course of the bubonic plague in India.

Acclimatization in the Tropics.—Dr. Koerber proclaims in the *Deutsche Med. Woch.* of July 7, that if Europeans would leave their pork fat, their meats and their alcohol at home with their furs and heating stoves, when they go to reside in the tropics, they would avoid all the disturbances that are erroneously ascribed to the climate, but which are, in fact, only due to the failure to conform to natural laws. He considers that nature makes the food conform to the climatic conditions—from the fish-oil polar zone, through the pork-fat temperate zone to the olive-oil and vegetable tropic zone. He writes from an experience of several years in the tropics, and adds that he never saw a single case of sunstroke nor impending symptoms, and that he felt better subjectively when actively employed than when lounging, no matter how high the temperature.

Prophylaxis of Tuberculosis.—One of the Paris dailies observed in reference to the Tuberculosis Congress: "The scientists now tell us that thousands of lives will be saved every year if we will only spit in our pockets." . . . It has been suggested that the "family plan" might prove as beneficial for tuberculous children as it has proved for the mildly insane. It would be cheaper to board children in families in the country than to provide special sanatoria for them, of course restricting the plan to children with ganglionic or osseous tuberculosis, not open lesions. . . . Andvord considers it more than probable that the seeds of tuberculosis are implanted in early childhood in an overwhelming majority of the cases that develop later, especially in children. Hence true prophylaxis is to guard the children from infection, and cure at once all serofulous and catarrhal symptoms and tendency to a contracted chest, cough and rapid pulse.

Military Status of Medical Officers.—"The medical officer should be the commander-in chief in campaigns in hot countries" are the concluding words of an article by Professor Le Dantec of the French navy, in the *Arch. Clin. de Bordeaux* for July. "The real enemy is the climate, and none but natives or negroes should occupy the lowlands. White troops should never be called upon for garrison duty or work in hot countries except in elevated regions." He quotes the popular sayings: "In the tropics, every white man who tills the soil digs his own grave"; and the Madagascar boast, "Our country need not fear invasion, as it is defended by General Tayo, the fever." In the northern hemisphere, he adds, there is no country exempt from paludism south of the sixtieth parallel, while in the southern hemisphere all the countries south of the thirtieth parallel are free from it, i. e. persons coming to reside there are not affected with intermittent fever, including La Plata, Patagonia, New Zealand and even New Caledonia. While stationed at Bourail, the chief agricultural center of the French colony in New Caledonia, he had no call for a single grain of quinin during the entire year. He considers the terms paludism, tellurism, malarial infection, etc., unscientific and suggests "Laveran's disease" as the most appropriate term.

The Royal Tuberculosis Commission Report.—The recent report of the British Committee on tuberculosis is to be regarded as an epoch-making document which will undoubtedly lead up to valuable life-saving legislation in the near future. This is the third commission within the last ten years to inquire into the subject. The last was the Royal Commission of 1890, which established the foundations of our knowledge as to the relation between tuberculosis in man and the means by which it is imported through the flesh and milk of tubercular animals. The chief recommendation to secure the purity of milk is that notification of every disease in the udder should be made compulsory, under penalty on the owners of all cows; and this is followed by a recommendation that local authorities should be

invested with powers of systematic inspection and analysis. Medical officers should also be empowered to suspend the sale of milk of any suspected cow and to prevent the sale of milk from a cow with a diseased udder. Then come important recommendations with regard to the regulations of cow-sheds and byres. Certain leading principles are laid down under this heading, including the provision of proper water-supply and drainage facilities, of a minimum cubic space of from 600 feet to 800 feet and a minimum floor space of 50 feet for each adult beast and of sufficient light and ventilation, the last-named being the most essential requirements. These requirements are directed chiefly to dairy accommodation in populous districts; the conditions in rural districts vary so widely with local circumstances that no minimum cubic space can be specified, the one end to be kept in view being the maintenance of reasonable ventilation without draughts. All these precautions, however, are recognized to be but temporary and uncertain palliatives so long as no attempt is made to eliminate the disease from the animals themselves, and this part of the inquiry may therefore be regarded as the groundwork of the whole. The commission is of the opinion that if the tuberculin test is skilfully applied and the animals which react are carefully separated from the healthy ones, the disease may be reduced to small proportions in a limited time and at a moderate expense. The precedent set them by the Danish Government forms the basis of their recommendation that funds should be placed at the disposal of the Board of Agriculture for the preparation of commercial tuberculin, and that stock-owners should be encouraged to test their animals by the gratuitous offer of a veterinary surgeon to see the test applied. This offer is, however, to be conditional on the owners undertaking to isolate reacting animals from healthy ones, and to keep their stock under satisfactory sanitary conditions, especially in regard to air, space, light and ventilation. In Denmark the results of the government's experiment have been most encouraging, and if similar results are obtained in this country we may hope to see our agriculturists gradually eliminating the scourge of tuberculosis from their herds and enabling us to look forward to the day when we may be able to check the spread of the disease among mankind.—*The Sanitary Record.*

SOCIETY NEWS.

Tri-State Medical Society.—The tenth annual meeting of the Tri-State Medical Society of Alabama, Georgia and Tennessee will be held at Birmingham, Ala., Tuesday, Wednesday and Thursday, Oct. 25, 26 and 27, 1898. Frank Trester Smith, M.D. secretary.

MISCELLANY.

A New Midwife Institute.—A midwife institute is to be erected at St Petersburg on an enormous scale, to cost nearly two million roubles, the present small institute for the purpose having been found inadequate.

Congress of Hypnotism.—The second international congress of experimental hypnotism is to meet at Paris in August, 1900, immediately after the International Medical Congress. It is already well under way, with Dumontpallier, president, and Berillon, secretary-general.

New Publications.—Two new candidates for the approval of the medical profession are: the *South African Journal of Health*, Cape Town, which began publication July 15, and the *Therapeutic Digest and Formulary*, published at Kansas City, Kan., at \$1 a year, the August issue being Vol. i, No. 1.

Maggots in the Ear.—Sampson reports the strange case of a woman affected with suppuration of one ear causing torturing pain. Over twenty fly-maggots were removed from the ear and

a couple more emerged from the depths when air was blown into the tube.—*Deutsch. Med. Woch.*, July 7.

Syphilis in Physicians.—Brandis has collected ten cases of syphilis in physicians, all infected professionally in the fingers, and all extremely violent cases, only yielding to prolonged and repeated treatment. The diagnosis was made very late in each case.—*Deutsch. Med. Woch.*, No. 21.

To Avert Collisions in Fogs.—The catastrophe to *La Bourgogne* recalls the suggestion made a while ago by a French physician, that every swift ocean liner should have among its crew a couple of men born blind, as their phenomenally acute hearing would detect the approach of a vessel even in the densest fog.

Preservation of Cholera and Typhus Vaccin.—Pfeiffer and Marx have established that cholera and typhus vaccin for preventive inoculations can be kept for a period of at least four to ten weeks by the addition of 0.5 per cent. phenol, and that the effect of high temperatures, as high as 37 degrees C., does not impair their efficiency.—*Deutsche Med. Woch.*, August 4.

Pyonephrosis of Ectopic Kidney.—A pyonephrosis of an ectopic kidney in the tissues of the mesentery of the small intestine is the unique observation reported by Dartigues in the *Presse Méd.* of June 29, diagnosed a hydatid cyst of the liver. Severe hemorrhage followed ablation, controlled by a Mikulicz packed with gauze. Patient died following day. Tumor first noticed forty years before.

Merited Honors.—The University of Michigan has made Dr. A. Jacobi of New York an LL.D. The University of Edinburgh on July 30 conferred the same degree upon Drs. Henry P. Bowditch of Boston, William Osler of Baltimore and Roddick of Montreal. The last-named was President of the British Medical Association which met during the summer of last year; the other two were delegates in attendance.

Osteomata of the Frontal Sinuses.—Nine deaths followed surgical intervention in the twenty cases on record. A. S. Tauber describes another case in which he removed three from a 32-year-old patient, which had developed subsequent to a traumatic injury above the left eye and caused pronounced ocular disturbances. He found several polypus growths in the mucosa with the osteomata, one still growing and two dead.—*Cbl. f. Chir.*, July 23.

Velling Taste of Boiled Milk.—According to Professor Gärtner of Vienna the cooked taste of boiled milk can be prevented by keeping it from the contact with the air. He accomplishes this by dropping a small piece of paraffin into the milk, which melts at 70 degrees C. and spreads out in a thin layer on top of the milk, allowing the escape of gases, while preventing the ingress of air, and forming an air-tight, hard cover over the top as it cools.—*Munich Med. Woch.*, July 19.

Peculiar Parasitism.—Flouquet describes the case of a woman of 53, who never had had a serious illness, but complained of continuous pain in the stomach, with frequent acute exacerbations only relieved by drinking cold water, and terminating by the vomiting of certain vegetable fibers and grains presenting the characteristics of phanerogamia angiosperma growing deprived of light.—*Journ. des Sc. Méd. de Lille*, July 16.

Bone Elimination per Urethra.—The elimination of fragments of bone through the urinary passages is always consecutive to a suppurative ostitic process or traumatism, in some cases after an interval of many years. G. B. Schmidt reports two personal cases and reviews the eleven on record. All but two were men. In some cases the bone passed through comparatively rapidly; in others it became encrusted and required an operation.—*Munich Med. Woch.*, July 10.

Etiology of Caseous Pneumonia.—Auclair has demonstrated that the lesions in this affection are produced by the toxins of the Koch bacillus alone. He states that tuberculous pneumonia in all its stages—red hepatisation, gray hepatisation, cas-

eous degeneration—is the work of the Koch bacillus and not of any superadded microbe. It is produced by the action of the toxin secreted by the bacillus of human tuberculosis: ethero-bacilli and also chloroformo-bacilli, whose specific action he is the first to establish.—*Progrès Méd.*, July 23.

Gen. Leonard Wood and lately Colonel of the Rough Riders, before the war a physician, now military governor of Santiago, is proving himself a sanitarian of no mean capacity. He causes the streets of the captured city to be daily flushed by means of a fire engine and gives a wage of a dollar per diem to each sweeper of the streets. These "American notions" are not much relished but simply tolerated, inasmuch as appetites are keener for the government rations and labor is now becoming as good a fad as golf.

Sterilized Milk for the Infants of Brooklyn.—Ex-Commissioner of Health Nathan Straus of Manhattan is to give Brooklyn the benefit of his Manhattan plant for the supply of Pasteurized milk. He writes to the Board of Health as follows: "Although my twelve milk depots in New York City tax my laboratory to very nearly its full capacity, I have decided to place at your disposal, to be distributed as heretofore in Brooklyn, 1000 bottles per day, and as many more as the capacity of my laboratory will permit, until the heated term is over. I am ready to begin supplying you at a moment's notice, and it will give me pleasure to have the distribution begun at the earliest hour the necessary arrangements will allow."

Partial Thyroidectomy, according to a report by Booth (*Medical Record*, August 13), in eight cases of Graves' disease cured five. One died, and in one there has been no change, while there has been improvement in one where the operation has only been performed six months and a greater improvement with a possible cure may be expected. His conclusions are: 1. Cases may be entirely cured by operative measures. 2. Pathologic and clinical evidence is in support of the view that the symptom complex is the expression of a primary neurosis multiplied by a secondary glandular intoxication. 3. While the ultimate cause of the disease of the gland is still a matter of speculation and a mortality of 7 per cent. after operation is reported, we can not justly recommend it as a routine plan of treatment. 4. Sudden death may occur in or soon after operation, and has not as yet received a satisfactory explanation.

A Lying-in-Hospital in Moscow, according to Dr. F. O. Donahue (*Transactions of the N. Y. State Medical Association*, Vol. xiv, 1897), affords accommodations for 4,006 patients. This particular institution is for the almost exclusive use of parturients whose children are born out of wedlock. In Russia, criminal abortion is unknown, notwithstanding that a high degree of morality does not exist in the sexual relations. There, although the regular soldiers are not allowed to marry, the government takes care of their children. Foundling hospitals bind out the children to foster-parents and the mother in each instance is allowed occasional communication with her child. Thus does Russia look after her population, in marked contrast with France, where there has been no increased census during the past decade, and yet no claim for the latter country is urged on the score of morals. Practically, therefore, Russia is wiser in her generation.

Protection Afforded by the Organs.—The *Presse Méd.* of June 15 contains the report of experiments by H. Roger, who injected 163 rabbits and 16 guinea pigs with various microbes at five different points in the circulation, to study the protection afforded by the liver and other organs. He found that the microbes are always arrested in the first capillary network they encounter and that the liver disposes of the anthrax, staphylococcus aureus and oidii introduced into the portal vein, so that they disappear and none can be found after a brief interval, but the reverse is the case with streptococcus and coli bacillus which seem to find the liver a favorable soil and flourish in it,

producing extensive lesions. The lung opposes a feeble resistance to the anthrax staphylococcus aureus and oidii, but has a marked bactericidal effect on the streptococcus, although not beyond the limit of neutralizing a fatal dose. The kidney disposes of the oidium albicans.

Forcible Reduction of Deformed Spine.—According to Calot this causes such laceration and gaps in the bones and tissues that many think repair would be difficult even in healthy persons, and that it must be adding fuel to the fire in diseased conditions. L. Wulstein has devised an apparatus that accomplishes the same ultimate results by a slow gradual process instead of Calot's one startling performance. The spine is gradually pulled straight by continuous traction, the patient reclining suspended in an iron-frame bed with a dynamometer to regulate the traction. The face, lower jaw, arms, abdomen, chest and some other parts are left free. Radiographs taken before, during and after treatment show the remarkable beneficial action of the various factors employed in the reduction. The apparatus is described in full and illustrated in the *Cbl. f. Chir.*, July 9.

Suprasymphysar Implantation.—Mikulicz recently performed the operation of suprasymphysar implantation of the urethra and penis in the bladder on a young man whose anal and perineal region had been shot away with the upper part of the scrotum. The urethra was entirely destroyed above the end of the pars bulbosa. The roots of the corpora cavernosa of the penis were severed and the dorsal artery and vein tied, while the corpora cavernosa urethræ was detached whole and lifted into a channel cut for it in the edge of the pubis. The bladder was then opened and the urethra in the pars bulbosa sewed into the bladder with a wire suture, and a catheter introduced. The patient recovered rapidly. He can now—twelve months later—retain his urine two hours, and urinate in a stream. A fistula in the perineum is not yet entirely healed; evidently there is some small sequester still left from the original traumatism. Otherwise the results are so satisfactory that Mikulicz recommends the method in case of extensive traumatic destruction or neoplasms.—*Cbl. f. Chir.*, July 20.

Corks and Labels.—Eisen (*Journal of Applied Microscopy*, July) uses paraffin to counteract the destruction of labels and corks. After the labels have been written and have become perfectly dry, he dips them in melted paraffin long enough to allow the paraffin to soak through and make the paper semi-transparent—a few seconds to a minute. Taking the label out, the paraffin is drained off and in a few seconds has hardened sufficiently to allow the label to be placed in the bottle with the alcoholic specimens, without deteriorating in color or composition. The paraffin prevents the writing being tampered with or other writing added. In the case of corks, he places them in the boiling or melted paraffin for a few minutes, when the paraffin will fill up the pores. In placing the cork in the bottle he places a string at one side to allow the air to escape, or the cork will not stay in the bottle. The corks should be perfectly dry and new. After placing the name and number of the specimen on a label, which is stuck on the cork by a couple of pins, he dips the neck of the bottle and cork in the paraffin, hermetically sealing it. Bottles treated thus do not require refilling, as the alcohol does not evaporate and the labels remain clean and neat.

Rachitic Deformities.—Reginald H. Sayre (*Pediatrics*, August 15) believes cod-liver oil of benefit in the treatment, except possibly in hot weather. He has found phosphorus, together with correction in diet, advantageous, and administers it in the form of the elixir of the "National Formulary," devised by Dr. Chas. Rice of Bellevue. He finds that children a year old can take $\frac{1}{100}$ grain of phosphorus three times a day with no bad results, and in somewhat older children he has given a

grain three times a day with great benefit. "Small children with rickets ought to be kept in the recumbent position and receive daily massage, as the soft tissues of their bodies are as much below the normal tonicity as are their bones. In many of these cases slight antero-posterior or lateral curvatures of the spine can be detected, and in such cases I know of nothing so useful as the wire cuirass. It is far better than confinement in bed, as it permits the child to be carried out doors for fresh air and sunshine—two great aids in cases of malnutrition, whose effect seems to be often overlooked, while too much importance is attached to drugs."

Surgery of the Brain.—Baudet reports a case of supposed tumor, patient comatose, operated upon and no lesion found, but the intervention relieved the patient and cured the epileptic attacks, paralysis, etc. He reviews four similar cases in literature. *Rev. Int. de Therap.*, No. 3. . . . Thœl notes a case of pure hyperthermia at 40 degrees C. for forty-five days, in patient trephined for old fracture of the skull, causing epilepsy. He considers it the result of direct irritation of the corpus striatum by the operation, as the latest investigations seem to indicate that the corpus striatum is the chief heat center. *Mitt. a. den Grenz.*, ii, No. 1. . . . Braun relates a case of epilepsy cured by extirpation of the center for the left hand, after cyst had been removed and the skull scraped without curing it. The thirty cases on record treated by ablation of a motor center have resulted in eight failures, nine improvements and thirteen cured—three over three years.—*Deutsche Ztschr. f. Chir.*, Vol. xlviii, No. 3. Abstracts in *Cbl. f. Chir.*, July 23, and *Munich Med. Woch.*

Dural Infusion.—Jacob (of Leyden's clinic) considers himself justified by the results of his experimental work on dogs, in recommending the utilization of lumbar puncture for direct therapeutic applications in cerebro-spinal diseases in man, when the method is perfected by further research. No reaction followed injections of 50 c.c. of $\frac{1}{4}$ to $\frac{1}{2}$ per cent. carbolyzed water, nor subarachnoid injections of 35 c.c. of $\frac{1}{2}$ per cent. solution of chloral hydrate, but severe transient symptoms of endocranial pressure and of intoxication followed the injection of 25 c.c. of a 4 per cent. solution of potassium iodid, which lasted from ten to twenty-four hours. Pain and agitation also followed the injection of phys. solution, although as much as 75 c.c. of a 1 per cent. solution of sodium chlorid could be injected without reaction. The iodine is rapidly absorbed and retained by the brain matter and spinal cord, not appearing in the urine until long after the usual interval when administered *per os*. The fact that a small amount of a non-irritating fluid injected is nearly all absorbed, while a large amount—50 c.c.—is not, suggests the existence of a system of valves in the subarachnoid spaces. His experiments also confirm the theory of the incompressibility of the cerebral substance, the symptoms ascribed to pressure from an increased amount of cephalo-rachidian fluid being really due to anemia caused by the pressure of the fluid on the artery.—*Gaz. d. Osp. e d. Clin.*, from *Berlin Klin. Woch.*, 21 and 22.

Anomalies of the Bladder From Ovarian Tumors and Fibro-Myomæ.—O. Bloch contributes a comprehensive study of this subject to the *Nordsk. Med. Ark.*, 1898, No. 2, including a study of the lesions occurring in such cases during laparotomies. He has found the bladder abnormally shaped in five out of his 106 laparotomies, and has collected 33 other cases of lesions due to the abnormal shapes, which he groups as the "leaf-shape," the "hour-glass," the "triangle," perpendicular or inclined, and the "sausage." The bladder, in most of these cases, not only extended up to the umbilicus, but its appearance and texture were so altered that its identity was never suspected. Careful examination beforehand; vigilant attention during the operation, bearing in mind the 38 cases of anomalies recorded, and that 14 out of the 36 injured, died; the cautious introduc-

tion of a hard catheter, or better still, the injection of boric acid water through a soft catheter in case of doubt, will aid in the diagnosis and forestall injury. If, when the peritoneum is opened, it does not look normal, leave that point and incise elsewhere. Lunggren reports in another issue the case of a twelve-year-old boy, upon whom he operated on account of a vanishing and recurring tumor, causing intense pain at times. The tumor was found to be a second normal bladder, but with no communication with the first. An anastomosis was made between the two and all disturbances ceased.

Cancer of the Breast.—Warren (*Boston Med. and Surg. Jour.*, August 15) tabulates 72 cases covering a period of fifteen years, of which 21 are known to be alive at the present time and 38 dead. Of those dead, 2 were from other diseases than cancer and that long after the danger limit had passed. Of the 26 living, 3 now have recurrence of the disease and 4 have had, but remain well at present. His figures show that the disease is more frequently found in the upper and outer quadrant than in any other quadrant, in the upper oftener than in the lower hemisphere, and in the outer rather than in the inner hemisphere. The date of recurrence could not be learned in 9 cases, but in 41 it occurred within three years in 37, between three and four years in 2, and between five and nine years in 2. Considering three years as the limit, as a gauge of the success of the operation there are 17 cases: Two of these are dead, "one dying, ten years after the operation of apoplexy, and one dying of sporadic cholera six years after the operation"; 3 had recurrences, from which they are at present well; one of them three years, one four years and one ten years after the operation." He considers retraction of the nipple an unreliable symptom, it being present in only 13 of the cases, and there may be extensive disease of the breast without nipple retraction. The dimplings of the skin over the nodule are more significant and in marked contrast to the protrusion of the growth, in the case of a benign tumor or cyst above the surface when the patient is in the recumbent posture."

Experiments Regarding the "Setting" of Plaster of Paris.—J. A. Belcher reports (*Treatment*) the results of experiments undertaken to determine the effects of various agents on the "setting" of plaster of Paris: "Two drachms of plaster, mixed with one drachm of a 5 per cent. solution of sodium chlorid, hardened in two minutes. Mixed with one drachm of a 5 per cent. solution of sugar, it hardened in three minutes and a half. Mixed with one drachm of a 1 per cent. sodium chlorid solution, it hardened in five minutes. Mixed with one drachm of a 0.5 per cent. sodium chlorid solution, it hardened in five minutes. Mixed with one drachm of a 5 per cent. calcium chlorid solution, it hardened in six minutes and a half. Mixed with one drachm of tap water, it hardened in nine minutes. Mixed with one drachm of distilled water, it hardened in nine minutes. Mixed with one drachm of saturated solution of sodium chlorid, it hardened in eighteen minutes. Mixed with one drachm of a 5 per cent. solution of glycerin in distilled water, it hardened in nineteen minutes. Mixed with one drachm of a 5 per cent. solution of white of egg in distilled water, it hardened in twenty minutes. Mixed with one drachm of a 10 per cent. solution of white of egg in distilled water, it hardened in twenty-five minutes. Mixed with one drachm of a 10 per cent. solution of glycerin in distilled water, it hardened in thirty-five minutes. Mixed with one drachm of a 25 per cent. solution of glycerin in distilled water, it hardened in sixty minutes." The figures tell, says Belcher, their own tale, and show that where it is of importance to make plaster of Paris set rapidly it should be mixed with a five per cent. solution of common salt, and this may be made roughly by adding a tablespoonful of salt to a pint of water.—*Scientific American*, August 13.

Gloves in Surgery.—McBurney (*Annals of Surgery* for July) gives a detailed report of the results which have followed in

his surgical work since his adoption of the use of india-rubber gloves in all operations, last October. The fact that the glove can be boiled and so made absolutely sterile is a matter of especial moment, and being non-absorbent, they remain sterile throughout the operation. By their use, no matter to what previous use the operator's hands may have been put, he may begin his operation without dread that they may cause infection, and may even operate with a suppurating lesion on his own hand, with impunity. The rubber gloves add greatly to the operator's comfort, and avoid loss of time and the annoyance caused by a prolonged effort to sterilize his hands. He simply washes his hands in soap and water and puts on his sterilized gloves, and when he removes his gloves the hands are perfectly clean and soft and the nails free from any discoloration, while no cracking occurs. By them there is always protection against infection. The operator soon accustoms himself to the use of the gloves, being able to thread needles, handle instruments, tie ligatures, as well and rapidly as without them. As to the sense of touch, he does not find it blunted by the use of gloves. Probably the fact that the hands are never hard and callous or roughened by irritating disinfectants accounts somewhat for this acute sense of touch. He boils the gloves fifteen minutes in a 1 per cent. soda solution, after first washing them thoroughly in soap and hot water, to which a little aqua ammoniæ has been added. From the boiling solution they are removed by sterilized forceps and placed on a sterilized towel, which is then folded over them and not opened until the individual who wishes to wear the gloves is ready to put them on. A fresh pair is afforded for the operator, assistants and nurses in every operation. If the hands are rubbed with dry, sterilized starch, gloves damp in the interior, can be quite easily drawn on, as can wet gloves, if the hands are moistened with glycerin. The inexpensiveness of the gloves is a favorable factor, although they last from four to six weeks under daily operating. (*Vide JOURNAL* for November 1897, p. 1060; March 19, 1898, p. 672; June 25, 1898, p. 1522).

Legal Restraint of Marriages.—Russell recently presented "A Plea for Posterity," before the Washington County (Pa.) Medical Society (*Phil. Med. Jour.*, August 27), a paper in which he cites statistics of many present sociologic conditions and makes a plea for legal restraint of marriage among certain classes. He says: "Some would deny the right of existence, claiming that this right has been forfeited by the inferior mental, moral, or physical status of himself or his ancestors. As the existing order of things involves the visiting of the father's sins upon the children, even the most conservative must admit that the defective has no right, either natural, moral, or legal, to produce a posterity cursed with his affliction, to be a danger and a burden to your posterity and mine. There are, however other fountains feeding this stream of corruption, and we can never hope to stay the tide until they are controlled through heredity itself, by denying to the defective the right to propagate his tainted species. These fountains are alcoholism, syphilis, tuberculosis, epilepsy, insanity, and gonorrhœa." He then considers these several "fountains" in detail and concludes with a bill prepared by him for the Legislature of Pennsylvania, with a view to securing such State laws as will prevent the issuing of a marriage license to any person "contemplating marriage unless he or she shall have received from the persons so appointed a certificate setting forth that such applicants are free from the following diseases, any of which shall be deemed sufficient cause for refusing a license: Syphilis, gonorrhœa, dipsomania, hereditary insanity, true insanity, or insanity resulting from vice, epilepsy, hereditary consumption or tuberculosis." He says that the State of Texas already prohibits the marriage of epileptics; Massachusetts, the epileptic, alcoholic and syphilitic, while Ohio has a similar law to the one proposed, and the same bill has been introduced in the Maryland Legislature.

Sense of Feeling in a Lost Limb.—Dr. Hervis A. Dobson of Washington writes of his own experiences following an amputation of his left leg. He states that the limb was amputated at the middle third of the thigh over thirty-four years ago. The sensation of knee, foot, heel, hollow of foot, and toes being present is stronger than in the other limb. In fact, when at rest one is not conscious of any sensation in his limbs in a state of health; but in the stump the sensation is ever there, sometimes painfully so. This is no hallucination, but is due to anatomic and physiologic reasons. "Nerves of sensation pass out from the spinal column to every part of the surface of the body, each nerve having its own particular part to supply and each conveying to the nerve-center knowledge that its terminal point is being irritated. Thus, a nerve terminating in the end of the big toe, no matter where it is irritated between the nerve-center and the end of the toe, will say to the nerve-center, 'The end of the big toe is touched or hurt.' " Just before storms, when the barometric pressure is light, the air within the tissues expands and presses on these nerve-ends, causing intense pain sometimes, and there is no relief but to reamputate the limb and see that the nerves are not caught in the cicatrix. It is generally the stump that perished away and becomes small that gives the most annoyance. He adds, "My leg was amputated in such a position that when I stand it seems to be flexed with the foot behind me, and I have often tried to remove it from the way of persons passing and have even tried to put it out to prevent the slamming of a door behind me, and much to my surprise the door did not stop. I have had many a fall in trying to walk, when springing up quickly I tried to put my foot to the floor. I have seen comrades whose legs were amputated below the knees, when on crutches, try to put the foot down and so come heavily on the end of the stump. As I grow older there is a sense of shortening in the leg, the foot seeming to come nearer the body. If I move the muscles of the stump, as in the effort to extend the knee, a sensation of great heat occurs at once in the stump, when it may be almost frozen with cold. Dry heat sometimes relieves pain in these stumps, but nothing will relieve permanently except an operation, as above stated."—*Literary Digest.*

Mydrin, the New Mydriatic.—Dr. S. Snell writes to the *London Lancet*, July 16, saying that he desires to confirm "my observations on this mydriatic in the *Clinical Journal* in 1895, which were, I think, the first published in this country. I would like to add that I again refer to the value of mydrin in my volume on the 'Examination of the Eye' (Pentland), published this year. My object in writing now is to reiterate my opinion of the efficacy of mydrin as a rapid pupil dilator without affecting the accommodation, and the effects of which quickly pass off, features marking it as specially adapted for producing mydriasis for ophthalmoscopic purposes. The present price of the drug is, however, almost prohibitive of its use. I understand that it still costs something like \$6.25 a drachm, but of course a demand for it would soon bring about a reduction in price. It is further to be desired that some firm should furnish the drug in the form of gelatin discs."

Washington.

REPORT OF THE HEALTH OFFICER.—The report of the Health Officer for the week ended August 27 shows the total number of deaths to have been 100, of which 66 were white and 34 colored. The principal causes of death were: Nervous diseases 16, circulatory 7, intestinal 6, genito-urinary 8, diphtheria 2, typhoid fever 4. There were 36 cases of scarlet fever and 25 cases of diphtheria under treatment at the close of the report.

TO IMPROVE THE WATER-SUPPLY.—The last appropriation bill included an item providing for the water-supply of the District under the chief of Engineers, as follows: "To enable the proper officer of the Government having charge of the Washington aqueduct and water-supply to the city of Wash-

ington, to make an investigation into the feasibility and propriety of filtering the water-supply of Washington, and to submit to Congress a full and detailed report thereon, and to meet all necessary expense of said investigation \$3000. Said report shall be accompanied by a detailed estimate of the cost of the work required and in making the investigation, and in the preparation of this report, the Chief of Engineers, U. S. A. shall be associated with the proper officer of the government in charge of the aqueduct as consulting engineer. Chief Engineer Wilson has arranged through the Secretaries of War and State to be supplied with the history and latest information concerning the filtration systems adopted by the principal European cities. The Secretary of State has called on the consuls of the prominent European cities for all material data relating to the operation of their systems of water-supply. The unfinished and abandoned water-tunnel and new reservoir of the city is to be repaired and put in operation.

TO INSPECT CAMP WIKOFF.—Dr. H. L. E. Johnson, one of the Citizens' Committee, has gone to Camp Wikoff, Montauk Point, L. I., to inspect the sanitary conditions of the camp and the medical and commissary care of the District Volunteers.

Louisville.

HOSPITAL CHANGES.—Drs. T. J. Potest and G. B. Jenkins assumed places on the resident medical staff of the Louisville City Hospital, September 1. Dr. Potest is the second honor man from the Kentucky School of Medicine, and Dr. Jenkins the first honor man from the Hospital College of Medicine. Dr. Sidney J. Meyer, who received the first honor from the Kentucky School, refused the appointment to the Hospital to accept the position as Acting Assistant-Physician in the Army. Drs. Ross and Forsyth are succeeded as internes. Dr. Ross goes to Leavenworth, Ind., and Dr. Forsyth to Harrodsburg, Ky., to practice.

SCHOOL.—The Louisville School Board at a recent meeting decided that the public schools would not begin their sessions until September 15, instead of the first Monday, on account of the extremely hot weather. Last year the severest heat of the season occurred during the first sixteen days, when the thermometer showed a minimum of 93 and a maximum of 100 degrees.

SMALLPOX.—The State Board of Health has raised the quarantine of Jackson County, as all smallpox cases are under control and no new ones have developed. The quarantine was raised upon the recommendation of Dr. M. R. Gibson of that county, it having been left to his discretion by the State Board at a recent meeting.

MUENCH.—Dr. Albert Muench is lying quite ill of typhoid fever at his residence in this city. His assistant, Dr. Allan McNally, was prostrated by the heat on the street, but has again resumed his practice.

NURSES.—Kentucky has furnished a large number of nurses as volunteers in the Army hospital, among whom may be mentioned Misses Caroline Diehl, Maris Lustnauer Tweed, Elizabeth Hilf and Mary C. Laughlin.

CORONER.—The Coroner of Jefferson County, Dr. H. M. McCullough, has submitted his report of inquests held in the county from January to July. Total number of inquests, 300; males, 188; females, 102; white, 167; colored, 133; deaths due to homicide, 22; suicides, 20; accidental drowning, 16; railroad accidents, 13; accidental poisoning, 4; wagon accidents, 4; street-car accidents, 2; sunstroke, 1; lightning, 1. This shows about the same proportion of deaths due to lightning as given by other statistics.

HEALTH OFFICER'S REPORT.—Health Officer Allen has just issued his yearly report, which contains some interesting reading. He calls attention to the ordinances which have been put in force since his incumbency, among which may be mentioned the following: Registration of births and marriages;

regulating the burial of the dead; creating an embalming board to pass upon the qualifications of embalmers; regulating the sale of milk; empowering the Health Officer to abate nuisances; giving right of way to physicians; providing against overcrowding in boarding-houses and tenements. A number of recommendations are made, which, if the Board of Safety and Council will grant, will place the Health Department upon a sound footing and great good can be accomplished. He requests an increase of the Health Department force; the appointment of Health Inspectors for each ward in the city, they to assume the duties of inspection now performed by the police; a veterinarian as live stock inspector; a competent chemist; a milk and food inspector, and additional clerical assistance in the health office. An increase in the appropriation is asked, double of that for 1897. It is recommended that consumption, whooping-cough and typhoid fever be included among the diseases which have now to be reported to the department. He recommends the establishment of public baths in those districts where the poorer tenements are located. Not much can be expected from city taxes for the accomplishment of this, but it is to be hoped that private philanthropy will actuate the establishment of this needed reform. It is recommended that all school children be vaccinated annually, regardless of the presence or absence of small-pox. The teaching of sanitary science in the schools is recommended. The public drainage is declared inadequate, and an addition to the eighty-five miles of sewerage is asked for. Cremation of public garbage is recommended and urged. He favors an insane ward at the city hospital, which can be accomplished as soon as the colored patients are moved to the building now occupied as a male high school, shortly to be vacated, this insane ward to be used as a temporary detention ward for the insane or suspects.

KENTUCKY SCHOOL.—An injunction has been granted Dr. S. E. Woody and C. W. Kelly against Dr. W. H. Wathen, preventing him from in any way claiming he is Dean of the Kentucky School, and against Drs. Sam Cochran and Arthur Boyd from claiming they are Professors in the School. This disposes of the contention in regard to the mail, it being the order of court that all mail addressed to Dr. S. E. Woody, Dean, or Dr. W. H. Wathen, Dean, be delivered to Dr. Woody.

Philadelphia.

PENNSYLVANIA HOSPITAL.—The 147th annual report of the above hospital contains statistics of interest to all medical men, especially to those connected with institutions of similar scope and objects. Since the foundation of the hospital in 1751, there have been admitted to beds in the wards 140,144 patients, of which number 96,369 were poor persons supported at the expense of the institution. During the past year there were treated 3241 patients in the wards and 13,535 in the out-patient department. The average cost per day for each in-patient was \$1.21, and average expense to the hospital of each out-patient, \$0.48. The average cost of each in-patient compares most favorably with that of many other large hospitals in which the average expense ranges from \$1.40 to \$2.50. During the past year there were 23 amputations and 83 abdominal sections. Herniotomy was performed 25 times. In the Department for the Insane, the patients treated numbered 584, 266 men, and 318 women; 53 recovered, 30 improved, and 18 remained stationary. Regarding the "causes" of insanity since the opening of the new hospital for insane in 1841, the report says: "Of 10,888 admissions, 55 per cent. of the causes might be placed in the preventable division, and 45 per cent. in the non-preventable. It may be affirmed of the whole number that more than 50 per cent. of the admissions acquired their mental disease from some ill of life *not transmissible* and but a small proportion can be ascribed to heredity." During the past year the Hospital received in gifts, lega-

cies, etc., the sum of \$33,808.60, and in addition is advised of legacies amounting to \$110,000. The total receipts for the year just closed were \$453,650.45, and the total expense \$398,275.87, leaving a net cash balance on hand of \$55,384.58.

HOSPITAL TRAINS IN VOGUE.—As the result of the recent successful trip made by the city hospital train which brought home from the different army camps soldiers sick with typhoid fever, the movement has resulted in stirring up the city and State officials. Governor Hastings sanctioned the movement and gave his support for the equipment of another train to go to the front and bring home those patients too ill to travel otherwise. The Medico-Chirurgical Hospital has also equipped a train of its own and sent physicians and nurses along, and it is believed that before many days every sick soldier will be cared for in well-equipped hospitals. Of those first brought home, all have improved, some so much that they have already been discharged cured.

MORTALITY STATISTICS.—For the week ending at noon, August 27, there were 429 deaths reported, a decrease of 17 over last week and an increase of 42 over the corresponding period of last year. The following are some of the causes: Apoplexy, 17; Bright's disease, 11; cancer, 8; cholera infantum, 19; consumption, 54; croup, 4; heart disease, 21; dysentery, 5; inanition, 17; marasmus, 36; old age, 13; suicide, 3; sunstroke, 6; uremia, 1.

INFECTIOUS DISEASES.—This week: Diphtheria, 56 cases, 8 deaths; scarlet fever, 17 cases, 2 deaths; typhoid fever, 118 cases, 9 deaths. Last week: Diphtheria, 45 cases, 16 deaths; scarlet fever, 10 cases, 1 death; typhoid fever, 78 cases, 8 deaths. This rapid increase in typhoid fever is due to the return of the soldiers, brought to the city from army camps.

PRESERVATION OF MILK.—In an interview, Dr. Henry Leffman, City Chemist, recently stated that there was a rapid increase in the rôle of salicylic acid as a preservative of milk and other articles of food. Owing to this cause much harm is being done, as the drug is especially dangerous to children. The artificial form used by brewers in the preparation of bottled beers is poisonous and should be prohibited. Dr. Leffman was of the opinion that prompt measures should be enacted for the suppression of the evil.

"TYPHO MALARIAL" FEVER.—Dr. S. Solie Cohen, Medical Chief of the Jefferson Medical College Hospital, states that the fever of soldier patients was being examined thoroughly in suspected cases in order to find out whether or not the cases of typhoid fever were also infected with the plasmodium malaria. In an interview, Dr. Cohen criticises the proper authorities quite severely for allowing preventable diseases to spread with such rapidity among the soldiers.

DEATH FROM CHLORFORM.—As the result of a coroner's inquest upon the case of Catharine Montague, 36 years of age, who died at the Polyclinic Hospital of Philadelphia, the jury pronounced the death due to chloroform administered prior to a surgical operation.

Medical and Hospital Service in Cuba.—The following extracts from a report by First Lieut. Guy C. M. Godfrey, Assistant-Surgeon, U. S. A., will convey some idea of the difficulties contended with, and the efficiency of the medical and hospital service at the front:

SANTIAGO DE CUBA, July 29, 1898.

To the Surgeon-General, U. S. Army, Washington, D. C. (Through proper channels.)

Sir:—As commanding officer of the Hospital Corps Company of the First Division, Fifth Army Corps, I have the honor to submit the following report:

This company was organized at Tampa, Fla., June 5, 1898, just two days previous to the departure of the troops of the First Division for the transports, at Port Tampa, Fla. On the day of organization the strength of the company was eighteen privates. No non-commissioned officer was assigned to it until June 7, 1898, when Acting Hospital-Steward McGuire reported for duty. He was at once assigned as first sergeant of the company, which place he has held up to the present date. A cook and an assistant cook, orderlies for the medical officers and a clerk were at once detailed.

When the order came to move, the men of the company per-

formed the work necessary thereto, and the enthusiasm and *esprit du corps* with which they labored added greatly to the celerity and facility with which the task was accomplished. The personnel and supplies of the division hospital, as well as the hospital company, was placed on board the transport *Santiago*, and arrived off the coast of Cuba, near Santiago, June 30, 1898. The day before landing, all of the material was brought up from the hold by the men of the company, and stored on the main deck of the ship near the forward starboard port. This was done by direction of Major W. W. Wood, chief surgeon of this division, and proved a wise and efficient measure.

We landed on June 15 at Siboney, Cuba, and pitched camp on the beach. On this day thirteen of the privates of the hospital corps of the Seventy-first New York Vols. joined the company. During the night of June 25, Acting Hospital Steward McGuire and five of the men worked all night unloading the material for the hospital, and storing it upon the beach under canvas. This was done by using small boats drawn by steam launches, and, owing to the high swell, it was at times quite dangerous. I remember several occasions where the men narrowly escaped injury from falling boxes.

On June 26 the men were given a short drill to perfect organization. Hurried preparations were made for a forward movement, and as absolutely no transportation could be obtained from the quartermaster's department, these preparations consisted principally in selecting such necessary dressings and drugs as the men could carry on their backs, and litters. On June 27 the First Division moved forward, and the Hospital Company followed in rear of the Third Brigade, taking the road toward Seville. Owing to the possibility of an immediate skirmish or battle, none of the medical officers rode their horses, but made pack-mules of them, and carried as large a number of dressings, etc., as they could. The divisions camped in columns of brigades, and the Hospital Company and division hospital pitched camp near the headquarters of the division commander. On the following morning twenty men, with the steward and two medical officers, returned to Siboney, and brought up four litters, and as many medical supplies as possible, returning about 2 o'clock P.M. After a soaking rain the company broke camp, and was ordered to move forward two miles. This they did, marching over a rocky, yet muddy road, carrying the hospital supplies with them. They pitched their shelter-tents on the soaking ground, while the officers, who had no shelter, slept in the open air, exposed to dampness and poisoning. On June 29 the company moved forward a quarter of a mile farther to a beautiful spot with the Aguadores River on one side and the Siboney road on the other. Here on the 29th the division hospital was established, and here it remained all through the terrible carnage that followed. On this day six wagon-loads of our supplies were brought up from the beach at Siboney, and tent flies were pitched and everything arranged for the coming battle. On June 30 the work of establishing the division hospital continued, and more of our supplies were brought from Siboney.

On the evening of July 1, the writer rode in the direction of the firing toward El Caney, and while searching for an ambulance, rode to the extreme right and visited the firing line of the Twelfth Infantry. He then returned and reported to Major Wood, who directed an ambulance to be at once sent in that direction. Owing to the very small number of hospital corps men present with the division, and as the number of ambulances for the entire army was limited to three, it was impossible to expect them to convey the total number of wounded from the collecting stations to the First Division hospital. It was soon apparent that the entire force of the hospital corps would have to be used to man the hospitals, but about noon Acting Hospital-Steward McGuire, two litter squads and an ambulance went forward up the San Juan road. As the Spanish shrapnel were bursting around the battery on El Paso hill, near the road, it was not deemed prudent to take the ambulance beyond that point. There it remained, while the two litter squads pushed forward up the San Juan road. One wounded man was found, who was not able to walk, about 400 yards before reaching the farthest crossing of the Aguadores River. He was at once dressed and conveyed to the rear by a litter squad. The other litter and the steward advanced about four hundred yards farther, to the east bank of the Aguadores, and there found a wounded man who could not walk. At this time the Sixth and the Sixteenth Infantry were immediately in front, and were making their advance toward San Juan hill. It can therefore be seen that the hospital litter squad in rear was under the hottest kind of fire, and the bullets were cutting the leaves all around, but not one of these men faltered, or showed the least sign of fear.

At this time the wounded were coming back in a constant

stream, and such as needed stimulation or dressing were at once attended to by the roadside. Many of them returned alone, others walked, supported by the arm of some comrade, while the more seriously wounded were borne upon litters of various kinds. A few of those who returned had not received medical attention, but the majority of them were dressed with first-aid packages by the regimental surgeons and their hospital corps men.

At about 1 P. M. Major Valery Havard, chief surgeon of the cavalry division, established an ambulance station on the east bank of the Aguadores near El Paso. At this station many dressings were readjusted and a few patients were dressed for the first time. Stimulants, medicines and dressings constituted the stock at this station, which was about a mile in advance of the First Division hospital. No point farther to the front was safe from the enemy's fire. The ambulances were worked constantly, and, considering their number, did remarkably well. Late in the afternoon ambulances were taken forward to near the farthest crossing of the Aguadores, but it was rather dangerous at all times, as the enemy kept the San Juan road enfladed all day long. It was also very dangerous on account of Spanish guerillas, who were located in trees overlooking the road. Several men carrying wounded were shot, and, indeed, in a few cases the patients themselves were hit.

Later in the afternoon a dressing station was established at the farthest point where the San Juan road crossed the Aguadores. At this place there was a vertical bank about four feet high, beneath which was a gravel beach. Here a certain amount of shelter was obtained, but bullets frequently cut through the bushes, or splashed up the water in the creek. At one time it was enfladed by Spanish sharpshooters in trees up the creek. Several horses were killed here, but no patients, surgeons or attendants were injured that afternoon. It was at this place on the following morning that Dr. Danforth was killed. Late in the afternoon several escort wagons, having carried ammunition to the front, were turned over to the writer by Lieutenant J. D. Miley, General Shafter's aide-de-camp. These were taken to this station and filled with the wounded, who were transported to the First Division hospital. Empty army wagons that could be found were used for this purpose, and the wounded kept coming into the hospital all night. On the following morning an ambulance and two wagons were taken to the dressing station just described, and the wounded brought in, among them being Acting Assistant-Surgeon Danforth, who was shot through the head. Major S. Q. Robinson had assumed command of this station on the previous afternoon, but at this time he, with Captain W. D. McCaw, rejoined their regiments, and left the station in charge of Captain Paul Newgarden. Major V. Havard arrived later and established an ambulance station at this point, which was then comparatively safe. It was customary during the battle for the writer to send litters and dressings to the front in the empty ambulances. During and after the battle, the men of the hospital corps company did much of the work in the First Division hospital. They assisted in operations, helped in applying dressings, made soup and coffee, carried patients to and from the operating tables, and acted as nurses to the wounded. With but few exceptions, they worked all day, all night, all the following day, and most of the next night. They were assisted by members of the bands of the regiments and by some of the hospital corps men of the regiments.

During the battle the first-aid work was very effective, and was done mostly by regimental surgeons and their hospital squads. Many dressings were applied by the line officers, by soldiers on the firing line, and in some instances by the wounded men themselves. Major S. Q. Robinson, who commanded the Aguadores dressing-station on July 1, says that only about ten patients came there who had not been dressed by first-aid packets. Words can hardly express the appreciation which the officers and men of the line have for the first-aid packets. They realize now, as never before, the value and importance of instruction in first-aid work. The very small number of suppurating wounds can readily be accounted for prompt applications of these dressings.

Pyramidal Bandages for Postpartum Hemorrhages.—A very simple and easy method of arresting hemorrhage has been devised by E. Fava, who hopes to see it generally adopted by obstetricians and midwives. The uterus is first cleared of clots by compression from without. After retraction, the fundus is pressed downward toward the symphysis until the posterior surface is on top, which is easily accomplished in its relaxed postpartum condition. Linen cloths are then packed directly over

the uterus in such a way that they form an inverted pyramid, pointing toward the spine, bound tight with a bandage around the body. The external surface of the uterus and the nerve terminals are stimulated, while there is no chance for infection as all the manipulations are external.—*Arch. di Ostet. e Ginec.*, May.

THE PUBLIC SERVICE.

The Surgeon-General of the Army and the American National Red Cross.—Owing to the pressure of my official duties I have not heretofore felt justified in taking the time to make an explanation with reference to my attitude toward the American National Red Cross.

It has been repeatedly charged in the newspapers that I am hostile to this organization and have refused to accept its assistance in the care of our sick and wounded soldiers and that as a result of this refusal there has been unnecessary suffering.

These charges are without foundation, except in so far as I objected to the sending of female nurses with troops in the field engaged in active operations. We have a Red Cross Hospital Corps in the army, of enlisted men whose duty it is to render first aid to the wounded upon the field of battle and to care for the sick in our division field hospitals, and I have been of the opinion that female nurses would be an incumbrance to troops during active operations; but so soon as serious sickness developed in our camps and it became necessary to treat typhoid fever cases in our field hospitals, I gladly accepted the services of trained female nurses for the division field hospitals and in our general hospitals we have employed them from the first. The general testimony from the surgeons in charge of these hospitals has been that their services have been of great value. Very many of these trained nurses have been obtained through the Red Cross Society for the Maintenance of Trained Nurses, Auxiliary No. 3, and I desire to express my high appreciation of the valuable services rendered to the Medical Department of the Army by this organization.

My attitude toward relief organization is shown by an endorsement dated May 5 upon a letter addressed by Rev. Henry C. McCook of Philadelphia to the President and referred to me for remark:

"May 5, 1898. Respectfully returned to the Adjutant-General of the Army.

The plan proposed for the organization of a relief association seems to have been well considered and the object in view will commend itself to every patriotic citizen. But it is a question whether the President should give special privileges to any particular organization. Other prominent individuals in different parts of the country may be organizing for the same purpose. One such proposition has come to me from Chicago. While I approve in a general way of organization for the relief work proposed, it appears to me that it will be best not to give, in advance, exclusive privileges to any one particular organization. In case of need assistance should be accepted from any organization prepared to give it."

This has been my guiding principle throughout, that relief when needed should be promptly accepted without reference to the source from which it comes. The relief afforded by the National Red Cross at Siboney was promptly accepted by the surgeons on the spot, but it is evident that it was entirely inadequate to meet the emergency.

A committee of the American National Red Cross Association called upon me in my office in Washington some time in advance of the landing of our troops in Santiago, making an offer of assistance. I received them most courteously and advised them to use their resources in fitting up a hospital ship, telling them that a hospital ship was then being fitted up for the use of the Medical Department, but that it was not at all improbable that an emergency would arise which would overtax our resources, and that in such an event a hospital ship properly

equipped, having on board a corps of doctors and nurses would be a most valuable auxiliary.

Furthermore, the American National Red Cross Association has had full authority to send agents and supplies to all our camps since June 9, 1898, and if there has been any suffering for want of proper supplies they must share the responsibility with the Medical Department of the Army for such suffering.

The following letter was sent by me to every chief surgeon of a department or independent army in the field on June 9, 1898:

"The Secretary of War has approved of the following proposition made by the American National Red Cross Association, and the chief surgeons of army corps and divisions will cooperate with the authorized agents of this Association for the purpose indicated.

"We can put any desired amount of hospital supplies—ice, malted milk, condensed milk, Mellin's food, etc.—into any of the volunteer camps in a few hours. Will you be kind enough to bring this letter to the attention of Secretary Alger and ask him if there is any objection to our appointing a Red Cross representative to report to the commanding officer and the chief surgeons in every camp, confer with them as to their immediate needs, and, if anything of any kind is wanting, open there a Red Cross station and send in supplies? We can do this, not in a few weeks or a few days, but in a few hours, and can furnish any quantity of any desired luxury or delicacy for hospital use. We hereby tender our aid and put our organization at the War Department's service for co-operation in this field."

To show my cordial relations with the National Red Cross relief committee I venture to quote from a letter of August 11, received by me from Mr. Cleveland H. Dodge, chairman of the supply committee. Mr. Dodge says:

"I want again to assure you personally, and on behalf of our committee, of our earnest desire to assist you in every possible way and to thank you for calling upon us so frankly."

In a recent letter from Mrs. Winthrop Cowdin, Vice-President of the Red Cross Society for Maintenance of Trained Nurses, she says:

"We greatly appreciate your courtesy to us and feel most grateful to have been permitted to serve you in any way."

GEO. V. STERNBERG, Surgeon-General, U. S. A.

CHANGE OF ADDRESS.

- Burns, E. J., from Gidding, Tex., to Sweeney, Okla. Ter.
 Carveth, C. B., from West Superior, Wis., to Port Hope, Ont.
 Carter, G. D., from New London, to Saverton, Mo.
 Hertel, L. L., from 2212 Dearborn Street to 3000 Groveland Avenue, Chicago, Ill.
 Klein, H., from 791 So. Halsted Street to German Hospital, Chicago, Ill.
 Lamb, D. H., from Owosso, Mich., to U. S. Gen'l Hospital, Ft. Meyer, Va.
 McCurdy, J. G., from 136 Park Avenue to 2069 W. Congress Street, Chicago, Ill.
 McDonald, H. N., from 411 9th Avenue S. E. to 901 4th Street, S. E., Minneapolis, Minn.
 Russell, R., from Knoxville to Glen Mary, Tenn.
 Roberts, U. R., from Littleton to 3206 Williams Street, Denver, Colo.
 Spangenthal, J., from 108 E. Geuesee Street to 631 Main Street, Buffalo, N. Y.
 Smith, C. B., from Lovington to Sullivan, Ill.
 Sheldon, J. G., from New Haven, Ia., to 204 So. Lincoln Street, Chicago.
 Tyler, J. A., from 268 N. Champion Avenue to 229 N. Champion Avenue, Columbus, Ohio.
 Wright, John, from Clinton, Ill., to Roseburg, Ore.

LETTERS RECEIVED.

- American Sports Pub. Co., New York, N. Y.; Atkinson, Wm. B., (2) Philadelphia, Pa.
 Brown, F. F., New York, N. Y.; Burns, H. H., Athol, Mass.
 Clark, Dan'l, Toronto, Can.; Cheney, J. V., Chicago, Ill.
 David, E. L., Louisville, Ky.
 Graham, Mrs. S., Butler, Pa.
 Hall, H. C., Detroit, Mich.; Haktoen, L., Chicago, Ill.; Houghton, Mifflin & Co., Boston, Mass.
 Jackson, J. Arthur, Dansville, N. Y.
 Kiernan, J. G., Chicago, Ill.
 Merrill, Willard, Milwaukee, Wis.; Munro, A. T., Hanley Falls, Minn.; Mattison, J. B., Brooklyn, N. Y.; Mann, F. W., Detroit, Mich.; Manitou Mineral Water Co., Manitou, Colo.
 New York Condensed Milk Co., New York, N. Y.; Newell & McPhail, Osseo, Wis.; Newell & Heldman, Chicago, Ill.; Newberry Library, Chicago, Ill.
 Phenique Chemical Co., St. Louis, Mo.; Phillips Chemical Co., The Chas. H., New York, N. Y.; Pritchard, J. M., Yale, Ky.
 Reed, R. Harvey, Rock Springs, Wyo.
 Senn, N., Camp Wikoff, Montauk Point, N. Y.; Schuster, B. L., Milwaukee, Wis.; Stringfield, C. P., Chicago, Ill.; Subscription News Co., Chicago, Ill.
 Thompson, J. A., Cincinnati, Ohio.
 Wilkes, B. A., St. Louis, Mo.; Winter, J. H., Chillicothe Mo.

The Journal of the American Medical Association

Vol. XXXI.

CHICAGO, ILLINOIS, SEPTEMBER 17, 1898.

No. 12.

ADDRESS.

ON THE PREDOMINANCE OF GERMAN INFLUENCE IN MODERN MEDICINE AND SURGERY.

Address of the Chairman of the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. GIFFORD, M.D.

OMAHA.

That the Germans do take a disproportionately large part in the furtherance of medical science will not, I think, be questioned by those who have attempted to look up any medical subject thoroughly. In one ophthalmologic monograph, by an American, which I happen to have at hand, there are quoted sixty-five papers by Germans (including Austro-Germans) as against forty-two from other nations, while in another, also by an American, but more strictly concerned in original research, of twenty-two authors quoted, twenty are Germans. I do not mean to say that such figures give a fair idea of the actual share in medical progress taken by non-German nations, for a large part of such progress is the result, not of original research, in the ordinary sense of the term, but of clinical acumen and inventive talent; qualities in which the French and English-speaking nations are certainly in no way inferior to the German. But when one examines the solid basis of facts upon which modern medicine rests, facts dug out of Nature's storehouse by hard, patient work, the preponderance of German contributions is overwhelming. In looking for an explanation of this fact it can not be claimed that it is due to any marked superiority of the German intellect. In the roll call of the highest types of scientific ability, France and the English-speaking nations certainly do not suffer by comparison. The race which has produced Newton, Dalton, Darwin, Thompson and Edison certainly ranks second to none in intellectual vigor. And while not for a moment denying that Germany, too, has produced many first-class scientific minds, it is plain, I think, that the great bulk of work to which she owes her medical prominence is the work which the majority of well-educated, intelligent medical men in this or any civilized country, could do if they would devote the necessary time and energy to it. In other words, it is work which they would do if they only had sufficient incentive.

Now, admitting that the Germans may have an especial genius for painstaking, accurate, detail work, the difference in the amount of their output in medicine, as compared with England or this country, is certainly far greater than any race difference will account for. It can only be explained by the greater incentive furnished by the German environment; and of this environment the prime factor in the stim-

ulation of scientific research is the plan pursued in the appointment of university professors. We are apt to think of the Germans as a nation of savants, but the rank and file of medical men in Germany do little if any more research work than is done by the average in this country. The great part is done by the younger professors or those who hope to become such. A considerable amount of first-class work is done by candidates for the doctor's degree; still more by the assistants; but most of all by the privat-docenten, young men who for the best years of their lives defer matrimony and financial advancement and devote their whole energy to original work, each one knowing that with good ability, if he is industrious and sincere, he is sure to be rewarded in time by a professorship or some other important position.¹ If the first position is in one of the smaller universities, the young professor, once installed, renews his work; knowing that only by so doing can he hope for a call to a larger field. Called from Giessen, Marburg or Erlangen to Breslau, Halle or Munich, some men find their ambition satisfied, relax their efforts and are but seldom heard from again, but a fair proportion, either from habit or love of the work, or in the hope that on the rare occasions of vacancies at Berlin or Vienna they will be the chosen ones, keep hard at work adding to the magnificent pile of German learning. Of the numbers who start in the race for academic preferment, many must fall behind, but all are encouraged, at the outset, by the knowledge that the work which they do, even if it fail to be rewarded with a professorship, will be the best passport to one of the numerous positions at the head of hospitals or in public health departments; these institutions acting thus as powerful auxiliaries of the universities in the work of inciting to original research.

The most important differences between Germany and America in the matter of medical appointments are the much higher standard of the Germans and the custom of their university faculties of filling vacancies from other institutions than their own. Much has recently been done in this country toward elevating the standard for admission to the medical profession, but until much more is done to raise the requirements for medical professorships, anything like an approach to Germany's scientific output is entirely out of the question. I think it is no exaggeration to say, leaving the smaller institutions out of the question, that in the best twenty of our medical schools more than one-half of the professors, taken in the aggregate, have *received* their positions for considerations which in Germany would hardly entitle them to the rank of privat-docent. To be sure, the best men, as a rule, get the best places to be had in the city in which they live; and while in many instances the men thus obtained are as good as could be

¹ This, of course, does not apply to some of the privat-docenten in the larger cities, who do little work, but retain their positions for the prestige which it gives with the laity.

obtained anywhere in the world, the fact remains that even in our larger medical centers, while the average of ability, is high, that of scientific achievement is not. This is partly because the appointments being made, in the great majority of cases, from the local profession, various influences, social, political and institutional, aside from the scientific attainments of the candidates, are bound to enter into the case. In the German university, on the contrary, a most important and distinctive feature is the general rule to call some one from another institution or town when a vacancy occurs. This not only allows a much more unbiased judgment of the merits of the men under consideration than is possible where the plan common in this country is followed, but also acts as a powerful incentive to original work throughout the entire country.

It may be questioned whether the German system could be made to work in this country without a decided change in the ideals of a large part of our medical men. Whether, for instance, a man who had built up a lucrative practice in one of the smaller cities would feel tempted to give up his position and go to a somewhat larger place at the other end of the country, with the prospect of repeating the removing process several times within ten or fifteen years, simply because these moves might be steps toward a permanent location in some great metropolis; or whether, even under the stimulus of such a reward, any large body of young men would spend many years in unremunerative original work; or if once in the way of doing such work, whether they would continue it amid the exacting vicissitudes of active practice.² In other branches of science there are no such difficulties; the zoölogist, for example, not only feels free to use upon original work whatever time and energy his routine work may leave him, but he does so in the conviction that he can in no other way so certainly advance both his spiritual and his material welfare. The result is that in zoölogy, physics, botany and astronomy America turns out a mass of work which compares favorably with that of any country in the world. The physician, on the other hand, however strongly inclined toward the purely scientific side of medicine, finds that its pursuit constantly clashes with the practical side. If he has a large practice he finds it hard or simply impossible to do more than keep up his reading and attend to his patients; while if it is small he is apt to think, perhaps rightly, that pulling various social and political strings will do more to increase it than anything he can do toward the advance of scientific medicine. Laboratory work not only is generally unremunerative and often, for immediate purposes, impractical, but it is entirely possible for an unworldly man who has a passion for it both to neglect his practice and to actually get behind the times as a practicing physician.

It may be said that in offering lucrative professorships and other valuable positions as rewards for original work we are not appealing to those highest motives which should animate the scientific mind, if the best work is to be done. This is true; the very best work is apt to be done only when a man of the highest intellect, energy and single-mindedness has the leisure and opportunity to seek the truth solely for the truth's sake or for the sake of his fellow-creatures; and of this most fortunate combination I know of no more shining example than the Anglo-

Saxon, Charles Darwin. But what concerns us now is to find some means for getting a large amount of useful work done by men who are entirely competent to do it, but who will not do it unless some more powerful incentives than love of truth and man can be brought into play. In Germany such an incentive is the university system. I do not say that the same plan can be made to work equally well here, but simply that if it can not, so much the worse for the future of American medicine.

It may seem that the foregoing lines lay too much stress on experimental and laboratory work as factors in medical progress, and to avoid this misconception let me state that I fully appreciate the necessity of all other kinds of serious research. The man who for years crowded with experience gives accurate and keenly objective reports of his cataract operations, or the man who gives systematic thought to any of the more abstruse problems of ophthalmology or who works at the careful collection and sifting of the literary and clinical testimony on any particular subject may be doing original work of a much higher and more useful kind than he who spends the same time with his eye glued to the large end of a microscope. I also appreciate the fact that the inventor of an ophthalmoscope, or an intestinal button, or a new lid-stitch, may do more for suffering humanity in a few moments than another who delves for a lifetime in the laboratory. But such fortunate flashes of intuition come rarely and do not alter the fact that the only sure way for the average man to contribute to medical progress is by the patient and systematic search for new facts.

ORIGINAL ARTICLES.

GLIOMA OF THE RETINA.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. L. THOMPSON, M. D.

INDIANAPOLIS.

In the eye section of the Ninth International Medical Congress, an eminent specialist of Paris said: "I have seen but four cases of glioma of the retina." This struck me as being a very small number, and led me to look over my records of the years 1871 to 1898, inclusive. I shall, therefore, briefly report them as follows:

Case 1.—Girl, aged 1 year, was brought to my office August 29, 1893, with glioma of the right eye, which was described in Vol. iv of Knapp's Archives of Ophthalmology, in 1874, the clinical history by myself, the anatomic by Dr. Knapp. As the subsequent history was not published, I recently wrote to the child's mother for data concerning other members of the family who have since died of this disease. Her letter, which I here produce, will explain the whole matter:

"At your request I will try to give you the desired information. First child affected with cancer of the eye was a boy, born Sept. 9, 1869. Disease noticed when born. No medical attendant. Died August 27, 1871. Second child, girl, born August 23, 1872. Disease noticed in right eye June, 1873. The eye was removed by yourself, Sept. 2, 1873. Cancer came in the other eye about seven months later and she died August 11, 1875. Third child, boy, born October 29, 1880. Cancer discovered in the eye at the age of three months. Died January 24, 1882. Fourth child, girl, born Sept. 8, 1883. Disease noticed in right eye in February, 1885. Died March 5, 1887. Fifth child, girl, born Sept. 29, 1888. Disease noticed in right eye February, 1890. Died July 5, 1891. I am fifty-five years old, the mother of fourteen children—seven boys and seven girls. I have always had good health. I have lost no other

² Perhaps a still more doubtful question is, whether young men with a good start in some large city would accept calls to small towns with the readiness of the Germans.

children but the five who died of the cancer of the eyes. I did not know my husband's people, but an old lady who did, told me that a great-uncle died of cancer of the breast, and that she had three children who died of cancer of the eye. My last three children's eyes did not get so large as the first two, but they suffered with their stomachs. It was impossible to get any food to stay on their stomachs."

(Comments on these cases will be reserved for closing remarks.)

Case 2.—Girl, aged 4 years. Parents negro. Brought to me April 28, 1874, with a gliomatous tumor, which entirely filled the right eye and so pressed upon the iris as to cause much pain. The pupil was widely dilated. The eye was enucleated, simply for the purpose of relieving pain. Death three months afterward.

Case 3.—Boy, aged 5 years. Parents German. No cancerous history is found. Consulted me January 9, 1877. Glioma of right eye. Vitreous chamber entirely filled with the growth. Pupil widely dilated (T+3). Child suffered greatly. Enucleation January 11, 1876. Death from brain trouble, July, 1876.

Case 4.—Boy, aged twenty months, was brought to me Sept. 10, 1878, for the purpose of having what the parents and their physician supposed to be a cataract removed from the right eye. But when I told them that it was a malignant tumor, which should be treated only by removal of the eye-ball, they went home. I learned afterward from a physician that the child died of brain disease in the following year.

Case 5.—Girl, aged 4½ years. The parents consulted me May 21, 1880. They had noticed the peculiar metallic reflex from the fundus of the right eye some months before. The growth entirely filled the eye-ball and pressed upon the iris. No anterior chamber. Pupil widely dilated; pain great; enucleation May 25, 1880. Child died in the following December.

Case 6.—Boy, aged eight months. Glioma in both eyes. Parents healthy; had noticed the growth in the left eye soon after birth, but had only seen it in the right eye a few weeks before they consulted me, on July 12, 1883. No operation. I learned that the eyes protruded from the orbits soon after they returned home, and that the child died of brain disease about ten months after their visit.

Case 7.—Boy, aged 4 years, brought to my office July 5, 1884, for the purpose of having an operation for cataract. The growth filled about half of the posterior portion of the eye. When told that it was cancer, and that the eye should be removed, the parents objected, returned home, and, as I learned from their physician, the child died in convulsions nine months afterward.

Case 8.—Boy, aged 2½ years. The parents, who consulted me, had noticed a peculiar shiny appearance in the eye several months before they brought him, which was on February 9, 1886, when the tumor filled about three-fourths of the vitreous chamber, and seemed to contain two lobes of unequal size. The pupil was a trifle larger than that of the other eye, but quite movable (Tn). Enucleation the following day. I saw the child two years afterward, and there was no sign of the disease in any other organ, and he is now in perfect health, twelve years after the first consultation.

Case 9.—A fine-looking boy, aged 2 years, of very intelligent German parents, who brought him to me on October 11, 1888. They had noticed the bright reflection from the eye some months previous to their visit. The pupil was but a trifle larger than that of the other eye. After dilating it, a well-marked lobated glioma was found. When the parents were told that it was a cancer, they were terribly agitated, and they immediately commenced consulting all the prominent eye specialists of neighboring cities. I removed the eye-ball on Nov. 23, 1888. He had an artificial eye put in about ten months afterward, and I occasionally see him upon the streets in perfect health, ten years after the enucleation.

Case 10.—Boy, aged 2 years, was brought for examination on October 11, 1890, with gliomatous tumor, which filled about two-thirds of the vitreous chamber of the right eye. The pupil was normal in every way. I advised the immediate removal of the globe; but the parents objected, went home, and did not return until eleven months afterward, when the tumor had pierced the back part of the sclerotic coat, forcing the globe partly out of the orbit. My son enucleated the eye-ball simply to relieve pain. The child died six weeks afterward with brain symptoms.

Case 11.—A beautiful girl, aged six months, with fine-looking, healthy parents, who consulted me on December 26, 1896. The gliomatous growth filled a little more than half of the back part of the vitreous chamber of the right eye. The pupil was slightly dilated, but movable. It was a typical case of gliomatous tumor, with its well-marked lobes, as usually seen in such

cases. When the parents were told that it was cancer, and I asked about the family history, I learned that the father's grandmother died of cancer of the uterus. The eye-ball was taken out on December 26, 1896. The child returned home on the fourth day, and is now perfectly well, eighteen months after the operation.

Case 12.—Boy, aged 2 years, was brought to me for consultation November 10, 1897, with well-marked gliomatous tumor, which filled three-fourths of the vitreous chamber of the right eye. Dr. Thomas of Logansport, an eye specialist, who sent the case for my opinion, enucleated the globe the next day. He wrote me a few days ago that the boy is now in the best of health, with no sign of a reappearance of the disease in any of the tissues. But as only six months have elapsed since the globe was removed, it is too soon to state the result.

Case 13.—Girl, aged 3 years. Her mother, who is a delicate-looking woman, brought the child from an adjoining state, just as I was finishing this report, May 20, 1898, with a gliomatous tumor of the left eye. The parents first noticed it about one year before, but as their physician told them that it was a cataract, they put it off until it caused great pain, and made the eye to protrude. When first seen there was much inflammation of the conjunctiva, and three-fourths of the globe was prolapsed. The eye-ball was removed simply for the relief of pain. Of course the child will die.

REMARKS.

The first point which calls for inquiry is the large per cent. of cases met with in my practice. The gentleman referred to as having seen only four persons suffering from glioma of the retina is known to have then examined fifty thousand patients. My private records show a trifle over twenty-four thousand five hundred patients examined, and thirteen cases of this disease. (It is possible that I have overlooked one or more.) Add to the thirteen four cases reported by the mother of my first case, and we have seventeen cases of glioma.

Can climate, or soil, or temperament have anything to do with its causation? Two of my patients were of German parents, one negro. All the others were native born, as were their parents. All but one family had lived long in Indiana. The one out of the State resided in the adjoining State of Illinois, both of which contain very flat lands. In the seventeen cases, ten were found in boys, seven in girls. The right eye was affected in thirteen, the left in two, both in one case, and in one the eye affected was not mentioned.

In seven of these children the eye was not removed, and they all died within a year after they were examined. Ten eyes were removed, but in three of them it was too late to expect anything from the operation, except the relief of pain. Three of them are cured. Of the two others now living, one which had the eye removed six months ago has no symptom of the disease left; but it is too early to speak of a cure. The last one, which had the eye-ball removed but eleven days ago, will doubtless die.

It will be seen that three of these patients were supposed to be troubled with cataract by their attending physicians.

One question arises: Were the cases which recovered true gliomatous tumors? The answer is: They were, most undoubtedly. Indeed, I can not conceive of the possibility of a mistake being made by any practiced and careful observer. How could one fail to differentiate between a gliomatous tumor, with its anfractuosities and well-rounded convolutions, and any condition of the fundus of the eye which has resulted from inflammatory conditions?

Pseudo-glioma is a misnomer, and should have no place in ophthalmic literature. Not only were these cases examined macroscopically, but they were sent

to some of our most expert microscopists and pathologists. Dr. Weeks of New York and Dr. Wynn of Indianapolis pronounced them to be true cases of glioma.

In presenting these cases for your consideration, my chief aim is to emphasize the fact that glioma of the retina is not necessarily fatal, but that many cases have been, and can be, cured by early enucleation.

DISCUSSION.

Dr. C. M. HOLMES, Cincinnati—I have seen four cases of glioma, and unfortunately the first three were not operated upon in time, that is, they refused operation, although I believe the cases were seen early enough. I have one case that was operated upon about one year ago, and in which there has not been the slightest return so far, but statistics prove that even that is not sufficient time to warrant pronouncing a cure. The question as to whether there is such a thing as glioma, or whether these tumors should be classified with the sarcomata, is now under discussion by the microscopists. In the last case I had very careful microscopic sections were made, and it seemed to demonstrate the opinion of some expert pathologists that the glioma, as we call it, nearly always arises from the inner, granular layer of the retina. Hence there is now a desire to reclassify this tumor and put it with the sarcomata. It is not yet a settled fact, for recent German pathologists still classify it by the old name.

There is one thing certain: we must see our cases early, and we should insist upon operating or have nothing more to do with the case, and if we do this I believe we will get the consent to operate more frequently than we have done. I think one reason for the frequent refusal has been that we have not been firm enough.

Dr. FRANK ALLPORT, Chicago—I have seen two cases of glioma of the retina, and both were examined microscopically by Dr. Holden of New York. Both of these cases occurred in children, one a child about 3 years old, who was operated six years ago by enucleation. That child is well today and has had no signs of a recurrence. The glioma did not extend beyond the globe. The other case came to me three years ago, and when first seen the glioma had extended beyond the globe. The eyeball and tumor were removed and the child died of a recurrence of the disease one year ago. So one of my cases died and the other has not, though six years have elapsed without any apparent evidences of recurrence.

Dr. J. E. MINNEY, Topeka—I have seen four cases, of which two are living. One was seen in consultation with Dr. Longnecker some six years ago and was proved by pathologic examination to be that form of cancer. That little girl is living today.

The most interesting case I had was that of a little girl 12 years of age, in whom we diagnosed glioma of both eyes. One of the eyes was giving considerable pain and we removed it. We exhibited it to a pathologist and it proved to be the characteristic glioma, or sarcoma, as some call it now. The second eye was affected in the same way and total blindness occurred in six months. That eye was removed four years ago and the girl is in a blind asylum today.

Dr. E. C. ELLETT, Memphis—I should like to report two cases. The first occurred in the practice of a friend of mine who enucleated both eyes of a child 1 year old. All the orbital contents were removed and one eye was sent to Dr. Prudden of New York, and the other to a pathologist in Brooklyn. They agreed in the diagnosis. The patient is now, after eighteen years, a healthy individual.

The other case was a child 2 years of age, brought to me in April, 1897, with the history that since birth the right eye had been noticed to greatly enlarge and, as the mother expressed it, "something white could be seen in the pupil." The eye

had begun to shrink some weeks before I saw it. I thought it was a case of detachment of the retina, and as the examination did not cause me to suspect anything more than detachment, I advised taking the child home. In August of the same year the process began in the other eye and they brought the child to Memphis to consult another oculist, who made the diagnosis of glioma and enucleated that eye. The child died this year of a recurrence.

The eye which was affected when I saw her did not up to the time of death present any evidence of further advancement of the process, whatever it was, and of course it must remain a question whether it was detachment or glioma in the first eye.

Dr. GARTEN—Dr. Thompson quoted an authority who had examined 50,000 cases and had seen but three cases of glioma. My impression is that there is not a man here who can not report one or more cases that have come under his notice, and the question arises, are we all wrong in our diagnoses? I have seen four cases myself and would report about the same results as given by the other gentlemen.

Dr. T. A. GRIGG, Butte, Mont.—I would like to say a few words upon this subject and would like the gentlemen who discuss it further to give an opinion along these lines, that is whether in operating for glioma they simply enucleate the eye, or whether they remove all the orbital contents at the same time; would not the results be better by removal of all the orbital contents?

I have had two cases operated upon in this way, one of three years' standing now, and there has been no recurrence. Dr. Thompson did not state how his operations were done, whether enucleation simply was done and the orbital tissues left for cosmetic effect, or whether the contents had been removed.

Dr. H. V. WÜRDEMANN, Milwaukee—I am pleased to learn from Dr. Thompson's large experience that there has been such a large proportion of recoveries after operation. I have seen out of about 8000 cases, 5 of glioma of the retina and 3 of these have come to operation. All of these cases have died within six months after the first diagnosis. The trouble with most cases of intraocular tumor, as you all know, is that many of them come to us too late to insure a satisfactory prognosis. They come when inflammation has set in and the eye has become infiltrated with new cells. The question of diagnosis of glioma is one that it seems to me is readily determined by the history. There are a number of inflammatory affections of the eye that on ophthalmoscopic examination, may seem to look like glioma, but the diagnosis can be made from the history, together with the existing conditions. As a rule there is no tension, there is inflammation, and the ophthalmoscopic appearances are almost characteristic. The cases are all fatal if not operated upon.

I have a specimen of glioma here, which I pass around for examination. It was diagnosed within a few months of its inception but an operation was refused. Three months later the patient came with an eyeball full of the tumor mass, and I enucleated with slight hope of saving the patient's life. The tumor reformed in the orbit and the child died within three weeks. This section shows very well why, when we operate at so late a date, we meet with failure.

Dr. CHARLES H. BEARD, Chicago—I have had several cases of glioma occurring in dispensary practice upon which no report has been made, and in only one of which did we get a microscopic examination. That case was a little baby less than two years old. The patient recovered and reports to me now from time to time. Another case which occurred in my private practice is that of a little girl who also reports to me occasionally. Those are the only two cases that I have treated which I know to have been glioma and which I know to have recovered.

Dr. C. D. WESCOTT, Chicago—I wish to mention one case of interest from the standpoint of the diagnosis. The patient was

a child $3\frac{1}{2}$ years of age, first seen when the symptoms had existed for one year. The clinical diagnosis of glioma was made. The tension was up and the eye slightly painful at times. Microscopic examination demonstrated the fact that the tumor was a non-pigmented sarcoma of the choroid. Tumor cells were found in the optic nerve and in three months the tumor was visible in the orbit. I exenterated the orbit after six months, but the child died six months later of another recurrence.

Dr. J. O. McREYNOLDS, Dallas, Texas—I have been very much interested in this subject, especially with reference to pseudo-glioma, because I have recently had a case which seemed to belong to that type. I have seen only four or five cases of glioma, about half of which have been fatal. The case of pseudo-glioma occurred in my practice about two years ago and was observed by others. I advised removal of the eye, the growth having been in progress about three years. I saw the patient about a week ago, and he is in perfect health without recurrence. An examination of the eye afterward showed it to be a pseudo-glioma, that is, it was not regarded as true glioma. I would like to know whether there is such a thing as a pseudo-glioma. This case was first diagnosed as detachment of the retina and progressed for several years without increase of tension.

Dr. H. M. STARKEY, Chicago—I will pass around to go with Dr. Würdemann's specimen, two cells containing the hemispheres of an eye enucleated by myself one year ago last March. Macroscopic and microscopic examination shows it to be glioma. As there has been no return of the growth, we may reasonably hope that there will be none.

The eye was removed the day following that upon which the child was first seen. The tumor had not penetrated the globe, nor had it extended along the optic nerve, which was severed well back in the orbit.

The statements of the comparative rarity of glioma have been a little surprising to me, as the proportion of cases of this disease coming under my observation is much greater than that given by most of the German writers.

In two of my cases the removal of the eyeball has seemed to have entirely eradicated the growth; the case mentioned above and another seen in perfect health sixteen months after the operation.

Dr. D. S. REYNOLDS, Louisville—I do not wish to prolong the discussion, but I am amazed at the opinions expressed and am tempted to cull just a little from memory, for I have no record with me now to quote from. It seems to me that in thirty years I have seen more than a dozen cases of glioma. In 1869 I saw my first case in a child about two years of age. She still had sight in the eye, but it was noticed that there was a little yellow reflex on looking into the shaded pupil. Examination showed a tumor by the side of the optic nerve entrance. I pronounced it in all probability a glioma and suggested enucleation. The late Dr. Sloan, of New Albany, advised that we wait a few weeks and see the child again. That was done and the tumor had almost doubled in size. I operated and the other eye did not show any manifestation of trouble until 1873, when she began to have a little irritation in that eye. An examination showed the same kind of golden colored tumor, clearly within the retinal substance. The eye was enucleated and microscopic examination showed it to be a glioma purely within the retina and not invading the other structures except the contiguous portion of the choroid.

As to there being such a thing as a pseudo-glioma, I take it for granted that diagnosis was not clear; it means something else, and not glioma.

I am sure Dr. Wescott's case can be duplicated by many other gentlemen. I have known them to invade not only the globe, but all the orbital tissues, as I have more than once reported cases of this kind. I have stood as almost the single

advocate, in my part of the country, of enucleating all cancerous eyes, and scraping out the tissues of the orbit for cancerous growths.

I had an old blacksmith upon whom I operated in 1875, and who recovered his health, went back to work and enjoyed comparative comfort for five years, when the tumor again appeared and he finally died of cancer in other organs. At the time of operating a mass of cancerous tissue as large as the patient's head protruded from the orbit.

The exact counterpart of these tumors is found in the optic nerve and in the brain. It is essentially a tumor of nerve structures, and if not, it is not a glioma. I have operated in cases of glioma and had the misfortune to see the tumor appear elsewhere and the patient die. I know of no complete recovery except the first mentioned case and she, for many years, was a teacher in the institute for the blind.

Dr. FLAVEL B. TIFFANY, Kansas City—In my experience of twenty years I can recall eight cases that I have had, three of them double. In these cases all were under seven years of age, and I believe that it is the experience of all of us that glioma appears in the young only. My cases, with the exception of two, were negroes, and it has occurred to me that this disease may be more frequent in that race than in the white, and that perhaps that would account for our seeing more cases in this country than are seen in Europe.

When the eye is ruptured and the tumor protruding I exenterate all the orbital contents, but if the tumor is confined to the eye I can only enucleate.

Dr. BOYD—I can only report one case but that is a rather peculiar one, for I found that two others in the same family, brother and sister, had died of the same cause. The father and mother were both healthy. My case died, making three out of five children to die of glioma of the retina.

Dr. R. F. LEMOND, Denver—I have seen three cases of glioma of the retina and can not agree with Dr. Tiffany that they occur only in the young, for of my cases one was 52, one 55, and the third, now under treatment, 53. I operated upon two of them and one died.

Dr. HERBERT HARLAN, Baltimore—One of the gentlemen laid some stress upon the importance of urging upon the patient the necessity of having the operation performed. I have lately seen a case that has caused me to give much consideration to that point. The patient is a child 8 months of age, and in March last the mother noticed something white in both pupils. The pupils were partly dilated and the child could see objects and take hold of them. The diagnosis of glioma in both eyes was made and I have seen the child every three weeks until a few days ago. There is no evidence now of perception of light, though the pupils react slightly to strong illumination. This happens to be the child of an intelligent physician, who understands the matter thoroughly, for he has had the opinions of three oculists, and he declines to permit interference in any way. So while it is well to advise operation there are some cases in which it is impossible to do what we think best.

Dr. D. C. BRYANT, Omaha—I would like to add about a half a dozen cases to those reported. Three of them were seen after perforation had taken place, but before any extensive growth had occurred outside. In these cases all the contents of the orbital cavity were removed, but a short time afterward recurrence took place and death followed. In the other three cases, where there was no perforation, two had a return a short time after enucleation and died. The remaining case was enucleated four years ago, has had no symptoms of return and the patient is well. This was a child about $1\frac{1}{2}$ years old.

R. L. RANDOLPH, Baltimore, Md., said that Greef had recently made some observations in regard to the histology of these tumors which he has been able to confirm. Randolph has noticed that in sections of gliomata stained with hematox-

ylin the cells immediately about the blood vessels are more deeply stained than those lying at points remote. This gives to the tumor almost the appearance of angioma. This condition is to be accounted for in a large measure by the high intraocular tension, which has the effect of squeezing out the life of the cells remote from the blood vessels, and consequently these cells appear in the sections necrotic, while those surrounding the vessel retain their vitality and stain deeply. Recent work has shown that the tumor does not originate, as was once thought, from the external or from the internal granular layers. It will be remembered that the cells in a glioma morphologically resemble those in the granular layers of the retina, and this seemed a strong reason for supposing that here the tumor originated. Improved methods of staining, however, have shown that the tumor cells are not only like those in the granular layers, but that they are of different sizes and shapes, some being oval and some having processes and resembling a rosette. The theory as to the origin of these tumors is new. It is not an uncommon thing to find in a normal retina cells which are out of place, that is to say, cells in one layer which morphologically belong to another layer, as, for instance, ganglion cells in the internal granular layer, and vice versa. These cells have been called by Cajal, Wintersteiner, Greef and others, misplaced cells, and these observers have noted that gliomata are made up largely of these misplaced cells. The conclusion is then that a glioma originates from a cell which is misplaced in fetal life, and which misplacement may occur in any one of the retinal layers.

Dr. THOMPSON—In closing I would like to say that those cases which have returned have done so inside of seven months. I have never had a patient over 6 years of age with glioma. I can recall tumor after tumor of a sarcomatous type, but they have been after 7 years of age, so I conclude that age assists in the diagnosis. One gentleman asked whether I took out all the tissues of the orbit in my operations? No, I do not think of any such thing if the tumor is confined to the eyeball. I enucleate, cutting the nerve as far back as possible, if the growth has burst through the globe then I remove all the orbital contents. If I could have taken the time to have read all of my paper you would have seen why I operated differently in different cases.

I can not conceive of a person confusing glioma with detachment of the retina if the patient is seen in private practice. Such a mistake might be made in the hospital, where in seeing a large number of cases you make a snap shot.

As regards pseudo-glioma, as one gentleman has said, it is either glioma or it is not glioma. It is glioma I was talking about. If any gentleman here should mistake these two conditions I should be inclined to pay no attention to him at all.

I think we should advise early enucleation, and tell them they will die just as sure as can be if they do not have the operation performed. Then I presume those that die are glioma, and those that do not are pseudo-glioma.

A CASE OF "MATHEMATICALLY-PERFECT EYES."

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEORGE M. GOULD,
PHILADELPHIA, PA.

On Oct. 12, 1897, I was consulted by a gentleman 50 years of age, whose chief complaint was of subconjunctival hemorrhages, which had occurred on an average every two weeks during the past year. I found that he had consulted a great many oculists during this time who had either given general treatment for gout (of which there was some slight evidence) or had sent him to the general practitioner, or had only

prescribed reading-glasses, etc. The hemorrhages seemed to come on spontaneously and were bothersome chiefly because they gave the man such a frightful appearance, and caused mental worry, rather than any decided pain or trouble of vision. One eye was generally affected at a time, and as the hemorrhage only stopped when the subconjunctival space was thoroughly filled with blood, the appearance of the eye and patient is easily imagined. I frankly asked the gentleman what he supposed I could do for him when the large number of the best men of the city had failed. His own faith was plainly little, but I was compelled to try. General disease of any pronounced type was excluded by thorough examination; the family history and personal history were beyond reproach, and one of our most careful "internists" had treated him on general principles for this one ocular symptom without influencing it in the least. The muscular co-ordinations of the eyes were as perfect as they could be, and by all nonmydriatic tests both eyes were absolutely emmetropic; the visual acuity was 20/20 +. Indeed the man had soon told me that he was an optical curiosity, other oculists having marvelled at the emmetropism of his eyes, and one especially—a man of large practice and scientific ability, had repeatedly said that his was the only pair of "mathematically perfect eyes" he had ever seen. It was certainly a gloomy outlook for the man with a fad—the "oculist hobby rider."

Relying however upon the results of many experiences, I proceeded to work upon the basis of what have become axioms with me, viz.: *No mydriasis, no diagnosis of refraction, and, all presbyopia is only relative.* Under a mydriatic I found the visual acuity as perfect as it had been without it. Then I comforted myself with another maxim: *Perfect visual acuity is no proof of the non-existence of an error of refraction,* and I was soon able to demonstrate an error as follows:

R. — Cyl. 0.25 D. ax. 90°
L. — Cyl. 0.25 D. ax. 180°.

Now I did not say to myself that this tiny error of refraction was the cause of the conjunctival hemorrhage; I did not then dream that it was, and told the patient that if any local cause for this existed I believed it to be due to the failure to use presbyopic glasses while eating meals, card-playing, etc. With this end in view I ordered bifocal spectacles, for distance the cylinders as above, and for near a proper spherical added. Then came downright rebellion; the man was mad at the idea of wearing the "hideous things." I said, then, that this was my prescription, and, unless followed, I stood discharged. He went away savage and disgusted, but did order the bifocals, wore them part of one day, and more wrathful than ever, ordered the optician to turn them into separate pairs of eye-glasses. As I had washed my hands of the case, I allowed the optician to do as the man desired, and not seeing him again I supposed he had left me for another and a less dogmatic adviser. I had quite forgotten about the matter, when in two months my office-boy brought up a bill my secretary had sent the man, with a check to pay it, saying the gentleman had asked to have the receipt signed, would not come up, etc. Luckily I remembered the name, and returned the receipt by my own hand, impelled by a certain quizzical curiosity. He was evidently in a very different mood, said he did not want to trouble me, intended writing, etc., but was glad now to tell me how happy

he was with his eye-glasses. I have seen him several times since and to shorten an overlong story I will say that not only has there been no recurrence of the hemorrhages, except one very small one, since getting the glasses, but a previous discomfort, uncomplained of, and hardly recognized, is completely relieved, but returns at once if the low cylinders are not worn; this discomfort is now so decided that he has had made heavy steelspectacles to wear in his bath, the sense of pressure and irritation becoming so great even in a time so short as that.

I shall not now attempt to explain the *modus operandi* of a low astigmatism producing so severe and unwonted a result as these hemorrhages. That it did produce them I have not the shadow of a doubt, and the method is perhaps readily enough divined by all of you. There is only a single negative I wish to emphasize, and this is the reason I have gone into the rather gossipy details of this case; there is not the least crevice through which may creep the suspicion of hypnotism or autosuggestion. The man was mad at me, and I was provoked at him; he refused to follow orders; had no faith in the diagnosis or the doctor, and as a last climax-clap, I was utterly mistaken in my diagnosis! It was not the need of bifocals, or of presbyopic correction, that was the true etiologic factor, but simply the low myopic reversed astigmatism. The fact of this only came out through unfaith and indirection, by wearing the forbidden eye-glasses.

This has led me to entitle this report a case i. e., an instance of disease of emmetropically-perfect eyes, and so many lessons are suggested by it, lessons which I myself have long needed, and which, perhaps, one or two of you may profit by, that I have been moved to report the case, chiefly for the fun of the *hæc fabula docet*. These shall be most briefly recapitulated:

1. The most important lesson that springs into view, one which every day, and in every journal, and in every other case-report, should be printed in double-caps is this: Although a patient has been examined by one or more good oculists, and glasses prescribed, or reported as not needed, the fact has no significance whatever. It does not prove that eye-strain does not exist, nor that it is not a source of any of the results that eye-strain may produce. This seems extreme and even revolutionistic, but it is literally true. In this case the proof of the pudding is not in the eating. There are a hundred qualifications needed to the bald statement that "glasses did not lessen the symptoms," or "the oculist reported the eye-examination was negative," or "eye-strain was ruled out by careful tests," etc. I do not care a button for such assertions; they are simply meaningless unless very many other considerations go with them. Do not for an instant think I make an exception of myself, or wish to cast any slur upon the work of others; that would be simply silly. What I mean is, that in these infinitely delicate matters, in these calculations of infinitesimals, slight differences, inobviable personal equations, etc., may indeed occur and be the reason of failure; but beyond all this there are numberless questions: e. g., as to correctness of make and accuracy of adjustment of the glasses; as to methods of wear or non-use; as to habits and peculiarities of eye-work; as to length of disease; as to suddenness of consequent refraction-changes; as to the frequent impossibility of curing a result by curing its cause; as to complicating causes; as to intercurrent general diseases, etc. Not only in the case reported but in hundreds more I have

learned that my own errors, mistakes and blunders, as well as those of others, may show the fallacy of a single judgment; a multitude of provisos must be excluded and the subsequent history closely scanned in order to prove or to disprove the lumpish dictum, "glasses gave no relief." Facts are stupid and useless things without an intellect to discriminate, marshal and use them. It takes more than a lot of rocks to make a lock or a breakwater.

2. A very slight uncorrected error of refraction may be the cause of strange and serious reflexes and results, and this is especially true if it be unsymmetrical astigmatism, and still more surely if it is a low-degree myopic astigmatism, in which there are no means of escape by blunting into amblyopia, or by shunting into heterophoria, and no possibility of ciliary-muscle contraction overcoming the defect.

3. Low-grade myopic astigmatisms are hard to diagnose, and are in practice too commonly overlooked and neglected, although they must be as common relatively as hyperopic varieties.

4. It is only by the mydriatic, combined with infinite patience, delicacy, and skill, that such astigmatisms are correctly diagnosed. Perfect visual acuity is no disproof of coexisting ametropia.

5. The mydriatic is more necessary in prebyopia than previously. All the text-books and teaching is wrong in this. Precisely when the compensatory mechanism is being narrowed by presbyopia, is then the greatest need of accuracy in the correction of the smallest degrees of anisometropia and astigmatism. Then, also, the vital powers are failing and the cataract-age is nearing, so that precision in refraction is doubly and trebly imperative. Presbyopia is always relative, never absolute, particularly if proper glasses have not been worn during many previous years. Without a mydriatic there is no accurate estimate of errors of refraction, and between the ages of 40 and 55 the estimate should be painstaking to the uttermost degree, especially if any suspicious reflexes exist.

6. Absolute emmetropia, "a mathematically perfect pair of eyes," does not, I believe, exist. A perfect leaf has not been found, nor absolute symmetry in any organic thing. The report of perfect emmetropia is a confession of negligence and unskillfulness. I have made such reports myself and can therefore speak dogmatically. If such a diagnosis has been made without a mydriatic the negligence deserves a much harsher naming.

7. And even if there were such a mathematically perfect pair of eyes, I can easily imagine circumstances in which the use of such eyes might be the cause of morbid results. As othophoria is always a disease, so emmetropia, in a seamstress or in almost any hard-pushed eye-worker, in a neurasthenic, in a heterophoric, or in a presbyope, may functionally be a disease and require correction by glasses. Emmetropia is nature's unrealized ideal for the animal, savage, and primitive man. A low-degree simple myopia, alike in both eyes, is the desideratum of the slave of civilization.

To focus this long-winded reading into a sentence, I should say that when a possible or suspicious ocular reflex exists, painstaking mydriatic refraction and correction are necessary both in presbyopia and in "a mathematically perfect pair of eyes." And when this has been admitted comes the rider that even after all has been done it can not, with utter certainty, be said that the eye-strain was not, or is not, the ultimate source of the morbid symptom.

Since writing the above my friend, Dr. H. O. Reik of Baltimore, sends me the following note:

On Feb. 1, 1898, a lady, aged 30 years, consulted me because of slight subconjunctival hemorrhages of both eyes, which, she said, had recurred a number of times without any known cause. She was otherwise in perfect health. She remembered that during her high-school life she had been subject to somewhat similar attacks, which came whenever she was doing an excessive amount of reading and study. Lately she had been using the microscope very constantly and had also been reading a good deal. These were none of the usual asthenopic symptoms. Vision was perfect, and there was no manifest hypermetropia. The muscle-balance was also good. Examination under homatropin showed the following error:

R. E.—C. 0.50 D ax 90°

L. E.—C. 0.50 D ax 180°

The above glasses were prescribed, and since that time she had no more trouble of the kind.

I find in my record-book the diagnosis "subconjunctival ecchymosis due to refraction error."

It is noteworthy that the error causing the trouble in both the case of Dr. Reik and my own, was a low degree of myopic astigmatism at reversed axes.

DISCUSSION.

Dr. C. B. WESCOTT, Chicago—I am sorry we could not have heard the last page of this paper. I have always been a firm believer in the use of mydriatics after the age that they are usually thought of by my brothers and fathers in the profession. Since my visit to Philadelphia, last year, I have been using them in my older patients. I think the oldest was 64, and I must say the more I use them the more satisfactory I find them. I quite agree with Dr. Gould, that it is fully as important to correct the low degrees of errors of refraction after forty years as before, and I am doing it with great delight.

Dr. J. E. MINNEY, Topeka—I want to emphasize one point the doctor made. I was two years getting proper glasses when my error was very small. Secondly, I believe the blood-vessels of that man's eyes were not normal, and I would suspect that there would probably be in the future some brain lesion, and if it was a case of mine I should warn the patient to be on guard.

Dr. G. C. SAVAGE, Nashville—The question of why astigmatism should be more troublesome if vertical in one eye and horizontal in the other, has not been fully set forth, so far as I know. I believe the increased trouble experienced by patients of this kind is due to the fact that the visual axes, in order to harmonize images, throw upon the recti muscles the necessity for breaking their regular movements. We all know, as set forth in a paper by Dr. Jackson, that the image is elongated in the direction of the meridian of greatest curvature. If elongated horizontally in one eye and vertically in the other, the superior rectus of one eye rises to one point and that of the other must go a little beyond it; and, so in going from side to side, for there must of necessity be fusion of images of the part looked at. If one axis has to go so far and the other farther, you can see there is at once a disturbance of harmony. I believe that astigmatism against the rule in one eye and according to the rule in the other, is of more importance to patients on this account.

Dr. HAROLD GIFFORD, Omaha—While I started out as a skeptic concerning the correction of so small a degree as one-quarter dioptre, I want to report that I have obtained a good result in one case, that of a homeopathic physician, by prescribing a one-eighth dioptra glass.

To Protect Animals from Flies.—According to the *Journal d'Hygiène*, flies and insects will not molest an animal if it is smeared lightly every morning with a salve made by boiling a large handful of laurel leaves in a kilogram of lard. Follow the direction of the hairs.

THE GALVANIC CURRENT FOR THE TREATMENT OF PTERYGIUM.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY HORACE M. STARKEY, M.D.

CHICAGO, ILL.

Since electricity has been used in almost every diseased condition of the eye and its appendages, from senile cataract to stricture of the nasal duct, a brief enumeration only of these various uses would consume all the time allowed. This will not be attempted, but attention will be confined to the use of electricity in one condition—pterygium.

Six years ago at the Detroit meeting of this Section, the writer made a brief statement concerning the treatment of pterygium with a weak galvanic current, which he had been employing with apparently good results for about two years, and requested members of the Section to give the method a trial. While he is not aware that that request has met with any response, he has continued to employ the method then outlined, and longer experience has convinced him that it has decided value in suitable cases.

In September, 1889, the writer, who was at the time much interested in the study of electricity, saw a pterygium that it appeared to him at once would be favorably influenced, if not entirely removed, by the galvanic current. The pterygium was small, the apex just commencing to encroach upon the cornea, and was composed of a few large blood-vessels with a minimum amount of connective tissue and thickening of the conjunctiva. The patient was seen but for a few moments and promised to return in a few days for further examination and treatment. He did not, however, return for nearly a year, and in the meantime no other case was seen in which the conditions seemed favorable for the treatment.

June 2, 1890, however, the patient, S. J. F., age 36, machinist, referred by Dr. Creighton, returned, and the proposed treatment having been explained to him, he consented to a trial of it, and the positive pole, a platinum needle, carrying a current of three milliamperes was used in the method to be described. The current was passed through the pterygium in three lines for one minute at each place, with the inevitable result that the lumen of the enlarged vessels was closed. The patient was to have returned in a few days for observation and further treatment, but nothing was seen of him for nearly a year, when he was met upon the street. In answer to inquiry as to why he had not come back, he said that the eye had been entirely cured by the one treatment, and that he had not thought it necessary to return. An inspection showed that the enlarged vessels had disappeared and that there was but a very slight thickening of the sub-mucous tissue remaining. The patient has been seen from time to time as late as 1896 when, notwithstanding several attacks of mild conjunctivitis, the pterygium remained unchanged. For two years now he has passed from observation. This case is given somewhat in detail, and while it is the first case treated in this way, it is the most brilliant in its results.

Since this first case from two to four pterygia have been treated in this manner each year in private practice, nineteen in all, and about the same number in dispensary and hospital work. In every instance the pterygium has been reduced in size, and in most

cases the growth has been entirely checked; and while in about 50 per cent. of the cases the cure has been radical, in about 20 per cent. the growth has recommenced at a later period, and some form of operation has been necessary. The percentage of recurrences has been less than after excision or other operations commonly employed, and the recurrences have been nearly all in cases that were unsuitable for electrolysis and where some other form of operation should have been adopted.

The cases which seem to be suitable for electrolysis are those with small pterygia, not encroaching much upon the cornea, and particularly those in which there is considerable enlargement of blood-vessels. Experience seems to show what a knowledge of the action of electricity upon the tissues would lead us to expect that commencing pterygia that are as yet too small to be harmful may be entirely checked by two or three treatments so that they remain quiescent indefinitely. A number of cases have also been treated in old and feeble people who evidently had but a short time to live and in whom the dread of operation was very great. In these cases the sight has been improved, irritation allayed and both the patients and their friends have been very grateful for the relief obtained. The way in which the electricity acts upon the tissues is as follows:

1. It coagulates the blood in the vessels, thus stopping the blood current and causing the vessels to disappear. 2. It produces a mild adhesive inflammation of the sub-conjunctival tissues, thus forming a firm cicatrix between the conjunctiva and the sclera, so that the gliding of the former over the latter is prevented, and 3, it destroys micro-organisms in the tissues, so that, if the claims advanced by certain investigators that micro-organisms are the cause of this disease should prove to be well founded, this treatment would still be rational.

These effects are all produced by the positive pole when used as the active agent. When the negative pole is used we get solution and absorption of the submucous hyperplasia and of the thickened conjunctiva.

The method of employing the current is as follows: Any source of electricity may be employed, provided it produces a smooth, constant and certain current of sufficient electro-motive force to overcome the resistance of the body, and provided further that it can be so controlled as to deliver a current of from one to five milliamperes. The current should be completely under control and should be accurately measured by a reliable milliamperemeter, which should measure fractions below five milliamperes. The current at the terminals should be tested before each operation. The apparatus being in good order, the eye to be operated upon should be cocainized and a fine platinum needle, connected with the positive pole of the battery, should be introduced through the conjunctiva near the apex of the growth, and passed close to the sclera through and beneath the pterygium, and at a

NOTE.—Doubtless it is well understood by all that it is not the direct action of the electric current that produces these effects. The current decomposes the salts in solution in the tissues into their acid and alkaline constituents, the acids appearing at the positive pole and the alkalies at the negative pole. The acids at the positive pole have a charring, contracting and hardening effect upon the tissues of the body and coagulate albuminous fluids, while the effect of the alkalies at the negative pole is to soften, dissolve and liquify those tissues.

right angle to the direction of the growth. The circuit may now be completed by having the patient press a well wetted sponge connected with the negative pole against the palm. The currents should be turned on till the meter shows that one, two or three milliamperes are passing.

This current should be maintained for one or two minutes. A second puncture should be made in a line parallel with the first and two millimeters distant, and if it is thought desirable a third may be made. The immediate effect seen is the formation of gas, which appears in bubbles upon the surface at the points of entrance and exit of the needle, and which cause some puffiness of the conjunctiva along the line of puncture. Considerable hyperemia of the conjunctiva is occasioned, but large vessels with which the needle comes in contact are more or less collapsed. The pain occasioned is insignificant, and while there is some feeling of irritation and fullness in the eye for a few days, this has not been sufficient in any case to prevent the patient going about his regular duties. The treatment may be repeated in four or five days, or it may be delayed as many weeks, at the convenience of physician and patient.

The advantages of this method are: First, it avoids any loss of tissue; second, it is painless; third, it does not incapacitate the patient; fourth, it stops the progress of pterygia seen in the early stages. With these advantages is coupled the fact that it seems quite as free from recurrences as any other method. It is not advised except as a palliative in broad, fleshy pterygia or in those encroaching much upon the cornea.

NOTE.—It is well to use a small current at the first application that the irritability of the eye may be noted.

THE VALUE OF FARADISM IN CHOROIDITIS.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ROBERT F. LEMOND, A.M., M.D.

PROFESSOR OF DISEASES OF THE EYE AND EAR, GROSS MEDICAL COLLEGE, DENVER, COLO.

The title of my paper is one that would naturally be called somewhat rare among ophthalmologists. I have in the last few years come in contact with a great many cases of the various kinds of choroiditis, and have studied the pathology of all the cases very closely. The various kinds of choroiditis are more or less akin, that is, in regard to the puzzling problems that they so often present to the oculist, from the fact that choroiditis has been so hard to completely cure. We have choroidal affections, some of the most common of which it might be well to mention, namely: the areolar, atrophic, disseminated, simple, plastic and suppurative. Now it does not matter a great deal about the different names of these troubles, for they differ more than the real conditions of the choroidal layer, from an etiologic standpoint. I have often been very much puzzled to know what has caused this condition of the eye; we so rarely get a history of the case that helps us out, and so frequently we can get no syphilitic history at all, when often that is the real source of the trouble. But I believe that choroiditis results from various conditions. For instance, we have it in extreme cases of myopia, in the various brain tumors that we come in contact with, which we know are conducive to this character of trouble, and

in other cases where the system is depleted and run down. So far as my experience goes, I find the majority of cases over 40 years of age, but have treated a number under 30, and my record book shows that about two to one of these cases are in favor of the male sex, as they are more often contaminated with syphilis than the female, and I believe that the majority of these cases originate from syphilis. The opacities in the vitreous excite various influences on the vision and in different ways. For instance, opacities veil the entire visual field, while a large floating opacity interrupts the luminous rays by moving between the retina and the object, thus destroying perception of smaller objects altogether and very much impairing the visual acuity. In the last condition the patient will frequently learn to hold his eye still for a moment, looking directly in front, when the vision improves, the laws of gravity intervening. So far as treatment is concerned, we know it has been for a long while a well-blazed road, and that we should be very careful and guarded in the prognosis that we give, for fear we make it too flattering and lead the patient to believe that there is nothing the matter. The object that would naturally present itself would be to have these floating bodies in the vitreous destroyed, and reasoning upon this from a scientific standpoint, we come to the conclusion that the only way to do this is to absorb them, as we have found from long experience that leeching, scarification and paracentesis of the anterior chamber do not help us out of our dilemma. Then we must give something that will absorb this coloring matter from the vitreous, if it can be done. The next question is, what are our best medicines for this purpose? We at once decide that the kali iodidi is one and the bichloridi hydrargyri corrosive is another, and the stimulation of the circulatory system, especially the heart, if not at its full normal strength. I think the influence of the infusion of digitalis about three times a day is about as good as we can use for this purpose; aside from this it is thought well to stimulate the nervous system also, and a favorite nerve tonic is sulphate of strychnia. But we learn from experience in many cases in which these medicines have been used that they will fail to do the work. Then we naturally look and inquire in some other direction for a remedy that will do the work; we ask ourselves the question: What is electricity? Is it not a stimulant? Stimulate the circulation and nerve centers, and all the functions of the body are excited, and if it is given to anything like full toleration it is certainly one of the greatest stimulants that we know anything of. Now I have investigated and looked over a great many authors, and been able to find but little encouragement for using faradism in this character of eye trouble. I find that Girard-Teulon, Lefort, says in Meyers' work on the eye, that "the constant current has been recommended for the rapid absorption of these opacities," but the constant current is negative. Later, in the Philadelphia Polyclinic of April 24, 1897, Dr. de Schweinitz of Philadelphia insists upon the value of faradization of the eye in interstitial keratitis. If it is good in keratitis of this character, why not use it in choroiditis, as we know that the cause is the same in both troubles? In fact, many writers claim that keratitis is dependent entirely upon syphilis. I do not claim to say that in connection with these absorbents which I have mentioned, electricity will cure all choroidal troubles.

I want to say in justification of my position regarding the treatment of these cases, that I have used electricity for the past three years and in the past few months I have given this treatment a thorough test, and we can not get anything that will substantiate us like living facts. In conclusion, I will report three cases which I have had in the last eight months, as follows:

Case 1.—A lady, 55 years of age, had been treated for about twelve months before she came into my hands. She told me that she had taken iodid of potassa in very large doses almost the entire time, also strychnia, and that she had gone blind during this time. I examined her with the ophthalmoscope and I found that the vitreous was literally full of floating bodies, and the fundus oculi could not be discerned at all. The vision in the right eye was light perception only, in the left she read sixty feet type at 30 inches. I could get no history from her case that was worth anything at all to me; she was a strong, seemingly healthy woman, had never had any eruption on the body at all. I told her that I would give medicine internally and apply electricity to the eyeballs externally. She at once objected to this and said she was afraid of electricity; I tried for several weeks with the internal treatment, when I had increased the kali iodid to 50 grains three times a day and the bichlorid hydrargyri to $\frac{1}{20}$ grains three times a day. She got no better, but grew worse. I then insisted that she allow me to apply the electricity, to which she finally consented, as I refused to treat her longer unless she would abide by my directions. In her case I commenced giving her the positive pole faradic current, from five to eight cells, in each eye five minutes daily through a wet sponge. Within a week's time she began improving; I kept this up for four months, at the end of which time her vision had gained in O.D.V. $\equiv \frac{1}{20}$, in the O.S.V. $\equiv \frac{1}{50}$.

Case 2.—A Mr. R., aged 30 years, eyes had been failing for several months. Diagnosis choroiditis, syphilitic, although no history of syphilis. I found with the ophthalmoscope that the vitreous was literally full of floating bodies; his vision in the O.D.V. $\equiv \frac{1}{200}$, O.S.V. $\equiv \frac{1}{50}$. I put him on kali iodid, 20 grains three times a day and increased it until he reached 60 grains three times a day, and bichlorid $\frac{1}{30}$ grain per day, increasing the doses until I gave him $\frac{1}{15}$ per day. I also gave him the faradic current (eight cells) in each eye five minutes every day. At the end of one month's treatment his vision was O.D.V. $\equiv \frac{1}{20}$, O.S.V. $\equiv \frac{1}{40}$, and he thought he was well enough to quit and went home.

Case 3.—A man aged 30. Seemed to be in fair health, with no syphilitic history; ophthalmoscopic findings the same as the former case—the O.D.V. $\equiv \frac{1}{20}$, O.S.V. $\equiv \frac{1}{20}$. He gave this history: His eyes had been failing for two years and he had been treated for months during that time without any benefit, but was gradually growing worse until his vision was growing so bad that he was almost compelled to give up his business, being a merchant. I put him on the kali iodid and bichlorid in increasing doses as in the former cases, with a faradic current of eight cells applied to each eye every day. In the meanwhile he told me, after taking the first dose of my medicine, that he had been taking this medicine and that he had no confidence in it, as he had tried it for nearly two years. I asked him if he had had the electricity applied to his eyes before. He replied, no. I told him that we would watch the case for fifteen days, and if he was not improved by that time that I would not advise him to continue the treatment; at the end of that time, however, he had gained about 25 per cent. At the end of two and a half months his vision measured O.D.V. $\equiv \frac{1}{50}$, O.S.V. $\equiv \frac{1}{20}$. He was dismissed, as he thought he had vision enough to get along with very nicely.

I have reported three of the latest typic cases of this kind that I have had, but I could give you twenty cases, if necessary, in which this treatment has proven to be just as effectual as in the three cases I have reported.

DISCUSSION.

Dr. F. T. ROGERS, Providence—I question the advisability of discussing the use of electricity when quoted in such indefinite terms as the writer of the last paper uses. To say that you used twelve cells does not mean anything. You may have a cell of 4 milliampères or one of 15. The milliampère is the important feature and not the number of cells used. I have used the galvanic current on my own eye as a matter of exper-

iment and I find that 3 or 4 milliamperes is all I care to stand. Such generalities are worthless in a scientific report.

Dr. J. E. MINNEY, Topeka—Not knowing anything about the subject I may be able to give you some information. It struck me the Doctor gave larger doses of anti-syphilitics than the other fellows and that there was the secret of his success.

Dr. C. E. NORTON, Lewiston, Maine—I do not know anything about this subject but rise to make inquiry of the reader of the first paper. I did not understand the direction in which he inserted the needle in his operation for pterygium. I think, too, I understood him to say that he used the positive pole and got bubbles of gas around the needle. According to my experience in electrolysis this would not be true, it would be the negative pole that gave the bubbles of gas, and the needle after having used this current would be extracted with some difficulty, as it would be held firmly by the hardened tissues.

Dr. LEARTUS CONNOR, Detroit—I have used electricity in a few cases of choroiditis, but I was not able to determine that it had any appreciable effect upon the course of the disease. I am glad that somebody else has had success. Possibly my method of using it was faulty. I have not used electricity in the treatment of pterygia, but I shall be induced to do so by Dr. Starkey's experience.

Dr. GEORGE M. GOULD, Philadelphia—My friend, Dr. Allman of Brooklyn, N. Y., was several years ago interested in clearing up corneal opacities by electricity. I visited him at about that time and he was very enthusiastic in showing me several cases that had greatly improved in vision. On a visit there last year I asked him if he was still keeping up this treatment. He said no, that the patients got very tired of the treatment before much could be accomplished, and gave it up through lack of patience and perseverance. I believe he never applied more than two or three milliamperes at one time.

Dr. R. L. RANDOLPH, Baltimore—I would like to ask what experience the gentlemen have had in the use of electricity for removing eyelashes? My own experience is that it is painful and in many cases fruitless.

Dr. MELVILLE BLACK, Denver—Some few years ago I read a paper wherein the writer describes the effects of the negative pole of the galvanic current for reducing tension in glaucoma. I tried it on a few cases and think in one or two I could see an appreciable reduction. In several other cases there appeared to be no action whatever and it was a waste of time. For the removal of eyelashes the method is satisfactory enough if you can keep the lids quiet, but that is hard to do.

Dr. T. A. GRIGG, Butte, Mont.—I have had quite a little experience with the electric needle in removing cilia and wild hairs. In some of my cases the results have been very satisfactory and in others not so much so. In one case of wild hairs it seemed to me that for every one I killed two came to the funeral. I usually find that by using 5 per cent. cocain solution applied to the lids on absorbent cotton and then using a fine needle with a stop on the handle so that you can keep the lid still by drawing it up while the current is being turned on I get very good results. I use a magnifier to see where the needle is going in and have the patient hold the sponge in the hand corresponding to the same side being operated upon. In a second or two I get a few bubbles, and then with a pair of cilia forceps I can easily extract the hair. If it does not come easily it will generally recur, and it takes a good while to make a complete cure.

Dr. J. O. McREYNOLDS, Dallas, Texas—With regard to the question asked by Dr. Randolph I have had considerable experience but I have not used this method so much during the last three years as I did previously. My main reason for discontinuing it was the intense pain produced. The operation can be perfectly successful in removing the cilia and they will not return if thoroughly removed. My method is to have the patient hold the positive pole in one hand and steadying the

head I insert the needle well down beside the hair, turn on the current gently and wait until the bubbles rise round the hair, when I can pull it out with my fingers. If the hair is still sufficiently firm to require forceps it will generally recur. The bubbles will always appear if the needle is in the hair follicle.

Dr. GRIGG—Can you always remove the hair with the fingers?

Dr. McREYNOLDS—Yes, if I have done the work properly. The smaller the hair, of course, the greater the difficulty in removing it.

Dr. J. L. THOMPSON, Indianapolis—I reported a case some years ago in Knapp's Archives, which I might refer to to impress upon you the importance of using the positive pole. It was a case of cure when I knew nothing about the use of electricity and I must say my method was a good bit like operating upon a cataract with a nail.

Dr. HINCKLEY—I use a 20 per cent. solution of cocain, with 10 per cent. carbolic acid, inject about 2 drops, and have no pain in removing lashes.

Dr. H. M. STARKEY, Chicago—At the outset of this paper I thought to make a brief review of the general uses of electricity but later concluded it must be restricted to three things, the use of electricity in trichiasis in ocular neuralgia and in pterygium, and finally it was found that the latter alone would take all the time given for the paper.

It is well known that it had been recommended to use the negative pole in glaucoma. I can see a rational reason why the negative pole, which through cataphoric influence tends to withdraw fluids from the tissues should lessen tension, and I can readily see how by reversing the current we might in some cases favor glaucoma. Especially in elderly people have I on this account been careful in the use of electricity.

As to the question of gas appearing at the positive pole, we know where the gas comes from when electrolysis is used. If the poles be placed in water decomposition of the latter occurs, hydrogen appearing at the negative pole and oxygen at the positive—twice as much, however, of the former as of the latter. When the platinum needle is used and the current concentrated at the point we get a liberation of gas through decomposition of water and the tissue salts at that point and may have corrosion of the needle.

I have used the negative pole in some cases to assist in dissolving off cicatrices. In these cases of corneal opacities we use the negative pole, because we desire its dissolving action. The first case I used it upon was a man, who, through an explosion, had lost one eye, and the other seemed to be in a hopeless condition. By using 1 or 2 milliamperes at a time for a period covering the greater part of a year, sufficient vision was secured that he was able to do a certain amount of work and later he became a gatekeeper at the shops where he had formerly worked. He could also read coarse print. I have not used it very much of late, but would again in a similar case to that.

The direction of the needle in operating upon pterygium is at right angles to the growth, or in other words it is passed in the same direction that the knife is passed in an excision.

Dr. R. L. LE MOND, Denver—I felt almost sure that I would not have a great many to agree with me on this paper and I am sorry that Dr. de Schwinitz is not with us, for he has given this subject much attention and claims that it has been very beneficial in his hands.

I have used the potassium iodid and the bichlorid of mercury in a number of cases without any practical results at all, and in one of these cases I used it until the patient continued to grow worse, and saying that she had gone blind under the identical treatment and had no confidence in it, I put her on electricity. I used the faradic current and she began to improve at once.

I do not think we understand as much about electricity as we should. In galvanism one pole is negative and the other less so, while in faradism, one pole is positive and the other

less so. That is the difference in the two kinds of electricity. As regards the number of cells, I understood the instrument maker that each cell represented 5 milliamperes.

PHLYCTENULAR KERATITIS.

Presented to the Section on Ophthalmology, at the Forth-ninth Annual meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY DUDLEY S. REYNOLDS, A.M., M.D.

Professor of Ophthalmology, Otology, and Medical Jurisprudence in the Hospital College of Medicine, Medical Department of the Central University of Kentucky, Surgeon to the Eye and Ear Department of the Louisville City Hospital; Surgeon to the Gray Street Infirmary; etc.

LOUISVILLE, KY.

At the meeting of the AMERICAN MEDICAL ASSOCIATION in 1893, I had the honor to introduce the subject of phlyctenular ophthalmia. My paper elicited extended discussion, embracing many divergent views both as to etiology and treatment. The result of that discussion determined in my mind the necessity of more painstaking observations. For reasons beyond my control, I was not able to begin my work until August, 1894, and I am now indebted to the painstaking labor of my friend, Dr. Travis A. Bullington, for the first part of what I intend to be a continuous series of observations concerning the nature, causes, and the treatment of phlyctenular ophthalmia.

The first series of observations by Dr. Bullington, and which I have the honor now to present for your consideration, is taken from my clinical record at the Hospital College of Medicine, beginning August 25, 1894, and extending through the first one thousand names on the list at my clinic. These persons have been kept under observation for a period of three years, ending August 24, 1897.

CASES OF PHLYCTENULAR KERATITIS.

Occurring in one thousand consecutive names, on the Clinical Register of Prof. Dudley S. Reynolds, at the Hospital College of Medicine, Louisville, Ky., beginning August 25, 1894; compiled by Travis A. Bullington, M.D.

No.	Age.	Sex.	Race.	Present Complications.	Recurrent Conditions.
1 19	M.	C.			Phlyc. conj.
2 25	F.	C.		Phlyc. conj.	
3 4	F.	W.		Phlyc. conj. eczema nasalis.	Bleph. marg.
4 11	F.	C.			Phlyc. conj.
5 2	M.	C.			Phlyc. conj.
6 20	F.	W.			
7 4	M.	W.		Bleph. marg.	Bleph. marg.
8 32	F.	W.			Phlyc. conj.
9 28	F.	C.			Iritis and phlyc. conj.
10 3	M.	W.		Phlyc. conj. eczema nasalis.	Bleph. marg.
11 14	F.	C.			
12 10	F.	C.			Phlyc. ker.
13 3	M.	W.			
14 47	F.	C.		Phlyc. conj.	
15 5	F.	W.			Phlyc. conj. and bleph. marg.
16 35	F.	W.			Phlyc. conj.
17 17	F.	C.			
18 56	F.	C.		Phlyc. conj.	
19 57	F.	W.			Phlyc. conj.
20 1	F.	W.		Bleph. marg. et ecz. nasalis.	
21 20	F.	C.			Phlyc. conj.
22 2	F.	W.		Eczema nasalis.	
23 18	F.	C.		Phlyc. conj.	Phlyc. conj.
24 3	M.	W.			Eczema nasalis.
25 2	M.	W.		Phlyc. conj. et bleph. marg.	
26 3	M.	W.			
27 16	F.	W.			Phlyc. ker.
28 27	F.	W.		Bleph. marg.	Bleph. marg.
29 10	F.	W.		Eczema nasalis.	Phlyc. conj. and bleph. marg.
30 14	F.	C.		Phlyc. conj.	
31 12	F.	W.			
32 9	F.	W.		Phlyc. conj.	
33 8	M.	W.		Bleph. marg. ecz. cap. et Facialis.	Bleph. marg. eczema nasalis.
34 2	F.	C.		Phlyc. conj.	
35 34	F.	C.			Phlyc. conj. (2)
36 12	F.	W.			Phlyc. ker. et conjunctivis.
37 29	F.	C.			
38 1	F.	W.			
39 5	M.	W.		Phlyc. conj.	
40 20	M.	C.			
41 3	F.	W.			
42 35	M.	C.		Phlyc. conj.	
43 30	F.	W.			
44 18	M.	W.			Phlyc. conj. et eczema nasalis.

There are in this list 44 cases of phlyctenular keratitis. In 12 of these cases phlyctenular conjunctivitis coexisted at the time of registration. In 14 of the cases phlyctenular conjunctivitis subsequently appeared at varying periods of two to twenty-seven months from the date of the first attack. In but 3 of these people did keratitis reappear. In 5 eczema-nasalis was present as a complication at the beginning. In 2 other cases it appeared subsequently. In 5 persons blepharitis marginalis was present as a complication in the beginning. In 3 other persons blepharitis marginalis occurred subsequently. In 1 case iritis, with phlyctenular conjunctivitis, appeared twenty-one months after the phlyctenular keratitis. In the whole 44 persons not one received any local treatment, whatever, during the continuance of the phlyctenular keratitis. The greatest period of treatment extended through three weeks; the shortest period five days. In every case bichlorid of mercury, and sulphate of quinin were relied upon, with such additions as were suggested by complicating states of the patient's general health, constipation being overcome by saline aperients, and by regulation of the diet and habits of the patient. Those cases amenable to discipline, and which could be traced after a lapse of three years' time, are alone included in the table. Happily there are no more than three in the list of a thousand persons which had to be eliminated from Dr. Bullington's record.

Under the head of recurrent conditions, will be found diagnosis in each case, on subsequent return to the clinic after recovery from the first attack. In every case lymphatic engorgement, or other manifestations of the strumous diathesis were present. Blepharospasm and photophobia were often relieved by a single dose of Rochelle Salts or an antiperiodic dose of sulphate of quinin. A child of from seven to fourteen years of age, after an aperient, may take a single dose of 10 grains of sulphate of quinin, with marked amelioration of the condition of the eye. The subsequent treatment should include both mercury and sulphate of quinin, in minute doses. For a child under ten years of age, 1/10 gr. of sulphate of quinin, and 1/50 gr. of bichlorid of mercury may be given together every hour, every two hours, or every three hours, according to the intensity of the blepharospasm and photophobia. Above ten years of age, 1/4 gr. of sulphate of quinin should be given with 1/50 gr. of bichlorid of mercury, every hour, every two hours, or every three hours, according to the urgency of the symptoms.

Eczematos eruptions of the face and scalp yield readily to the application of ammoniated mercury. Similar eruptions in the anterior nares are relieved by a mixture of yellow oxid of mercury ointment, and liquid pitch; whilst mucopurulent inflammations of the Schneiderian membrane demand the use of sprays, the best of which contain bichlorid of mercury, and chlorid of sodium. Where a tendency to inspissation of accumulating matters in the nasal passages exists, a powder composed of borate of sodium 1/2 ounce, chlorid of sodium 10 gr., camphor 15 grains may be advantageously employed as snuff frequently during the day. Children under 12 years of age, however, are not likely to use the snuff; in such cases an aqueous spray of borate of sodium 2 1/2 drachms, chlorid of sodium 1/2 drachm, distilled water 8 ounces, camphor water and mint water, each 4 ounces, carbolic acid in crystals 4 grains. This mix-

ture makes a most agreeable spray, and is valuable not only as a cleansing fluid, but is soothing and agreeable to the sensibilities of the patient, and the child which at first rebels at the spray, will usually in a day or two, not only yield without contest, but often seek the application.

To sum up, I wish to say that Horner's notion of the relations existing between eczematous eruptions of the skin and anterior nares to the phlyctenular diseases of childhood is not always apparent, but nearly constant. The conditions which predispose to these local disturbances are essentially constitutional, and no local treatment is, in any large proportion of cases, to be regarded with favor. Per contra, constitutional measures are of the first importance, and may alone be relied upon, even in complicated cases, so far as the eye is concerned as a participating organ.

DISCUSSION.

Dr. C. R. HOLMES, Cincinnati—I am very glad to have heard this most excellent paper. We all know that unless we treat this class of cases as Dr. Reynolds has outlined it, the results are not very satisfactory. We have all of us had cases come from very good men who treated them without any results because they neglected the nose and the constitutional symptoms and relied too much upon local treatment. I have been following for several years the same routine treatment, though using perhaps a little more local treatment than Dr. Reynolds called attention to, and I also like to use in this class of cases a weak solution of eserin, with cocain. I do not use atropia except in rare cases. I use eserin, $\frac{1}{10}$ of a grain to $\frac{1}{2}$ ounce, and a 2 per cent. solution of cocain, having it instilled into the eye two or three minutes before the salve is applied, because the cocain will enable the parents to put the salve in better than they could otherwise do.

Dr. J. L. THOMPSON, Indianapolis—This paper is much more valuable than a consideration of 500 cases of cataract operation. In our section of the country we have phlyctenular keratitis from spring until late October. This is especially so with children, and I find that constitutional treatment is above all others. If the patient can stand it I have them change climate, make a trip to Bayview or Petoskey. It is astonishing, also, how a change of diet helps. With a correction of diet, and after three or four days of a changed climate they report favorably, while if compelled to keep them in Indianapolis they hang on for a long time.

Dr. T. A. GRIGG, Butte—Do you ever notice that these elevated spots on the eye sometimes break down to form ulcers?

Dr. THOMPSON—Yes, frequently, and if they stay in a hot climate they will persist for a long time.

Dr. BOYD—We have with us a great deal of this disease, and I want to say one thing in the line of treatment. We are always compelled to use quinin. I think we always have in these cases some malaria, and quinin and arsenic should be used in the treatment. I should think the use of eserin or atropin would depend upon the location of the phlyctenular. We ought to be very careful as to the use of cocain in our treatment and if used it should be in very small doses.

Dr. E. C. ELLETT, Memphis—I come from a district that is very malarious, being low and damp, and I would not give much for anybody's diagnosis of a malarial condition unless it is confirmed by an examination of the blood. While we give small doses of quinin, it is done as a tonic, and I should like to know whether or not these gentlemen have verified their diagnosis of malaria by examination of the blood and, if so, what form of the organism they found. Dr. Ziegler once said before this section, "No tea, coffee, cakes or candy," and that comes mighty near covering the things in diet that should not be allowed.

I do not see many cases of phlyctenular keratitis or conjunctivitis that run a course of three or four weeks, most of them being over in one week. With regulation of the diet, attention to constitutional treatment and the local use of the yellow oxid ointment they get along very nicely. I have seen a great many cases of this trouble among negroes we can not send to another climate. Those practicing ophthalmology in the south know that corneal troubles are particularly common among this race, and this disease is especially common among negro children.

Dr. LEARTUS CONNOR, Detroit—As bearing upon the remarks of Dr. Thompson it occurs to me to report that in Detroit we have very few cases of phlyctenular disease and very many less since our Island Park was opened some seventeen years ago. It is an island of 700 acres in the center of the Detroit River, and children of families in moderate circumstances are taken there in large numbers and very frequently. It is for them a Petoskey or Bayview. A point that occurs to me is that the keeping of those children out of doors as much as possible has aided materially in their improvement, and another observation along the same line is that in our children's hospital, which is one of the most perfectly lighted and ventilated buildings that I know of, the children recover from this affection in a very small fraction of time compared to what the same case would do in the private home. There the children are so cared for as to be made happy, whereas in most of the homes they come from the mental depression produced by the surroundings is disturbing to the reparative process.

Concerning the local treatment, while in former years I used eserin and am not entirely opposed to it now, I find that the use of atropin seems to be more satisfactory in allaying the pain and irritation, so I have almost stopped the use of eserin and cocain.

If we could make the conditions of child-growth anything like what they ought to be these cases would not occur.

Dr. H. B. YOUNG, Burlington—I agree with what Dr. Connor has said and with what others have said concerning the constitutional treatment, but we should not overlook the blood making qualities of small doses of calomel. I have found more benefit from the use of this drug in small doses than from any other treatment. Of course, properly speaking, mercury is not a blood maker, but in these cases we have a condition of malnutrition, with poor digestion, and the intestinal secretions are interfered with in some way or other, so that small doses of calomel, avoiding the cathartic effect, bring about rapid improvement.

As to the use of the yellow oxid ointment most of your prescriptions bring forth a preparation that ought never to be put between the patient's eyelids, and it is due to the imperfect method of making it. I usually prepare mine myself. I take the yellow oxid, put it on a slab with my menstrum, white vaselin, and mix them, rubbing it and rubbing it with a spatula, always allowing the spatula to clean itself by continued rubbing, and I get a smooth preparation.

Dr. MELVILLE BLACK, Denver—We do not see many cases of phlyctenular keratitis in Denver, but we are not free from it. One thing I have noticed is, if pains be taken to trace the cause, that these children are universally spoiled and have been allowed to take anything they pleased to eat and to drink coffee and tea at a very early age. I believe that bad feeding is responsible for nearly all the cases we see.

I want to call attention to a very nice base for the yellow oxid ointment, known as cold cream or rose water ointment. It is, as you know, an emulsion of white wax and rose water with a small amount of oil. It is better than vaselin alone because it mixes more readily with the tears and does not flow out of the conjunctival sac. It is harder and does not melt in summer as does vaselin.

Dr. J. L. HIERS, Savannah—I listened to Dr. Reynolds'

paper with interest because I come from a malarious district where we have a great deal of such troubles, and I heartily indorse the constitutional treatment outlined, but I would like to add something to the local treatment. It is my custom to give the yellow oxid of mercury ointment before the phlyctenular breaks, but after it breaks down I treat the ulcer with iodine. My mode of application is to cocaineize the eye thoroughly, scrape the ulcer with a spud and apply the iodine on a small cotton tipped probe. After this I wash the eye with saturated solution of boracic acid and to overcome the reaction as much as possible and set the eye at rest, a good sized pledget of cotton is saturated with this solution and applied to the eye with a bandage. The eye is kept closed for from six to twelve hours and I rarely find it necessary to use atropin. My first experience with iodine in the treatment of corneal ulcers occurred about three years ago and I find that it seems to destroy the germs and convert the ulcer into a healthy wound.

Dr. FLAVEL B. TIFFANY, Kansas City—I have had a great many cases of phlyctenular keratitis in my practice. I very rarely go to my clinic without finding one or two cases of this disease. I have never regarded these cases as being of a malarious nature, but rather as being strumous. You always find them among the poorer class of people and often in the offspring of syphilitic parents. I never use quinin in the treatment of these cases, nor do I think as a rule it is indicated. Phlyctenular keratitis is not ulceration of the cornea, it is papule not pustule. The phlycten contains a fluid and that fluid probably contains a specific bacteria, I believe it is claimed by some that they have found the specific germ. Mercury not only acts mechanically in rupturing the phlycten, but it acts further as a germicide. I also use atropin and cocaine but as systemic treatment I rely almost entirely upon the syrup ferri iodidi, with cleanliness, good food and good air.

Dr. R. F. LEMOND, Denver—Dr. Reynolds was my first teacher on the eye and I always love to hear him talk for he always means something.

I believe that this trouble is due very largely to malnutrition and lymphatic engorgement. Invariably they occur in children whose parents are not strong and I think it would be irrational to treat these conditions without resorting to constitutional remedies. I practiced medicine in Texas a good while and saw much of this trouble there. I found the children suffering with general engorgement of the whole lymphatic system and if that is corrected by small doses of calomel and they then be put on a good tonic like iron, quinia and strychnia, the phlyctenular trouble soon disappears. For local treatment I prefer a wash of 1 to 15,000 or 1 to 20,000 bichlorid, to be followed by a saturated solution of boracic acid. If the phlycten is trying to mature into an ulcer I use atropia unless I see some chance of cyclitic engorgement. Eserin often acts nicely in these cases where there is much photobia.

Dr. J. O. McREYNOLDS, Dallas, Texas—It seems to me the discussion has taken a turn that is exceedingly important, and I feel that I ought to emphasize the remarks made particularly by Drs. Thompson and Conner regarding the sanitary condition of the patients. My own experience has been that we have only a little phlyctenular trouble in Dallas, and when we do have it I seldom see a case that is obstinate. I have noticed that there was a marked contrast with the large amount of phlyctenular troubles in other cities, and I attributed it to the fact that we have a salubrious climate where the children live out of doors a great deal. All of the recognized forms of treatment, it seems to me, are entirely satisfactory in Dallas, for the cases generally get well in a few days with different forms of treatment.

Dr. J. E. MINNEY, Topeka—I thank Dr. Reynolds for this practical subject. It is almost invariably our practice to give

1 grain of calomel in ten tablets, one of these to be taken every hour, and in addition we dust the phlycten with the mild chlorid and it disappears like snow before the morning sun. Respecting the blood-making power of calomel, I think it has been pretty well demonstrated that in $\frac{1}{10}$ grain doses, given three times a day, it will increase the red blood corpuscles.

I am very much pleased to learn how to make the yellow oxid ointment. We have in Topeka a hundred druggists, and perhaps three or four make it properly.

Dr. W. C. BANE, Denver—It is my habit to order the oxid of mercury rubbed up with a drop or two of olive oil, then with lanolin or vaselin.

Dr. C. E. NORTON, Lewiston, Maine—In our country we have no malaria, so that can not be a cause for our phlyctenular keratitis. We use quinin in the State of Maine only as a tonic, unless our patients have come there from a malarious region. The majority of the cases I have had occurred among the poorest children in town, who did not have proper nutrition. The question of what should not be given has been brought up, but nothing was said about the kind of food the children should take. One of my instructors, Dr. C. R. Agnew, used to prescribe the food the children might take, and it consisted of bread and milk.

As to bandaging the eye, it seems to me that is bad treatment. I am careful to do all I can to get the children to open the eyes, and for this reason I believe that cocaine is of sufficient benefit to counterbalance its destructive influence upon the cornea.

Dr. R. L. RANDOLPH, Baltimore, Md.—In all forms of keratitis, especially the phlyctenular variety, we have irritative symptoms. In phlyctenular keratitis we have exposure and inflammation of the nerve endings and as a consequence spasms of the accommodation and contracted pupil. It would seem that eserine in such cases would only intensify this condition. Complete rest of the accommodation and removal of the irritative symptoms is demanded, an end which is best obtained through atropin. The more he employs eserine the more he is convinced of its very limited usefulness outside of its value in glaucoma.

Dr. REYNOLDS—I am very much complimented by the character as well as the amount of the discussion. In a brief paper a man can not bring out all the points he might consider essential. I am so well known as a crank on the subject of foods and digestion that I refrained from mentioning much that I perhaps should have said on this subject. I believe, as Dr. Norton said, that when we have to deal with a case that is badly fed and wants to eat sweet things, which I always forbid, that a diet of bread and milk is best for the child. I frequently prescribe alternate cupfuls of malted milk and beef tea, and I prefer the Armour extract of beef because I find it of uniform quality and reliable strength. I am one of the few that believe in beef tea for its nutritive value and do not consider it as merely a stimulant. I insist that the child should have plenty of pure water and fresh air and if it buries its head in the pillow it is all the more reason why it should be taken out of doors. I give the mercury, not because it makes blood, for I know it does not, but because it relieves the engorged glands, and I use quinin, not because of any malarial condition, but because it is a reliable stimulant of the emunctory organs. It is more reliable and less debilitating than any other sudorific and diaphoretic known to me.

Adenoid Vegetations.—G. Zimmermann attributes the etiology of recurring pseudo-croup to adenoid vegetations, and states that in his experience, extirpation always cures the croup.

Bilhaut also emphasizes the frequency of curvature of the spine, scoliosis, kyphosis and lordosis in children affected with adenoid vegetations, and has observed all these troubles vanish after their removal. He claims that this should always be the first step in the treatment of any defective development of the spine or thorax. . . . Lauffe has also recently reported the cure of a distressing case of prolapsus ani in a boy of five, cured by removal of his adenoid vegetations.—*Munich Med. Woch.*, July 12 and 18, and *Vienna klin. Woch.*, July 14.

THE USE OF FORMALIN IN THE TREATMENT OF BLEPHARITIS.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY H. MOULTON, M.D.
FORT SMITH, ARK.

During the past year I have employed formalin in all cases of blepharitis. To apply it I use a tooth-pick with a small cotton mop wrapped on the tip so that it does not take up enough solution to run into the conjunctiva. The solution is made of the strength of .2 per cent. to 1 per cent., beginning with the weaker. It must be frequently renewed or prepared extemporaneously at the time of using, in order to insure uniformity of strength.

The lid is drawn away from the eye-ball. The mop dipped in the solution is rubbed gently along the margin among the lashes until all the scales and crusts are removed and until the surface of any little pustule is rubbed off. The site of disease is thus left clean and smooth. The mop is renewed a time or two during each operation. A little bland oil may be applied afterward, or the formalin may be used in the oil. The applications are made daily if possible by the physician's hands. Otherwise they may be made by the patient at his home.

The correction of all retractive errors I hold to be of prime importance; likewise the improvement of local or general conditions which may predispose the margins of the lids to disease. With these precautions taken, it is gratifying to note how rapidly patients will improve under formalin treatment. It will invariably improve all cases and cure many of them. Some of those cured will relapse, but a renewal of treatment again relieves them. Several of my cases had been treated by myself by other means with little or no benefit, but improved rapidly under formalin.

One, a school girl, had been under observation for six years. She had been treated for two months by an eminent man in St. Louis, and for various periods by myself with the full catalogue of salves and solutions, without result. In one month under formalin the edges of the lids were smooth and white, and have remained so for four months, though the girl continued in school.

Another case was that of a young lady whose blepharitis had produced a trichiasis, requiring the Hotz operation for its relief, the blepharitis having been previously cured with formalin. From January to the present writing her lids have remained well. Other agents than formalin had proven valueless.

A clergyman, aged 27, had worn glasses and been treated for many years for blepharitis without a month's relief. A month's use of formalin left his lid margins healthy. They remained so from July, 1897, till April, 1898, when with over-use of the eyes he suffered a relapse, which again yielded promptly to formalin.

Some cases do not seem to get entirely well for longer than a few days, but the use of the formalin is so effective in keeping the disease in check that such patients are glad to keep up its use by their own hand. I do not wish to say that I have not found benefit in many cases from the use of other drugs, or that formalin is a permanent cure, but the proportion of cases benefited and the measure of relief afforded

by this remedy is so vastly superior in my hands to other remedies, that I cannot do otherwise than call attention to it.

521 Halliwell Building.

AN UNUSUAL CASE OF RUPTURED TUBAL PREGNANCY; OPERATION AND RECOVERY.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. E. COWLES, M.D.
LOS ANGELES, CAL.

This case of tubal pregnancy is worthy of record on several accounts: First, because of its early rupture, being but about four weeks advanced in pregnancy; second, because of recovery from such a dangerous state of collapse as occurred during the operation; and third, on account of the severe complication—left lobar pneumonia—which set in on the second day after the operation, and would seem to have barred what little chance of recovery was still left to the patient.

Mrs. M. L. J., American, age 30, married seven years, mother of two children, never had a miscarriage, abortion or any serious sickness before this, but was delicate in childhood. Began to menstruate at 15 years of age and first suffered severe pain with her periods at 17, which continued until after the birth of her first child, when the pain lessened in duration and severity, lasting only during the first day, where previously it had continued two or three days. Has always been fairly regular, but on several occasions went over a week, and once last winter ten days. Her last period, before this accident, began on January 20 and continued for a week as usual. During February she felt well, no nausea or other symptoms of pregnancy being noticed, except swelling and tenderness of the breasts, which always occurred as her menstrual period approached, and consequently did not impress her as auguring anything unusual. On March 1, 1898, at 10:30 A.M., while sweeping a room, she stooped, and while in that position was seized with a severe pain. I saw her at 2 P.M. and observed her ghastly pallor and look of distress; not a particle of color in cheeks or lips, pulse 110 and thready, respirations rapid and shallow, temperature subnormal, abdomen very tender and the patient evidently suffering exquisitely. I gave hypodermically a combination of atropia and morphia containing a quarter of a grain of the latter, and repeated the dose in half an hour, no relief having been experienced. This making the pain tolerable, I left 1/10 grain morphia to be given every hour until my return. I returned at 5:30 P.M. and gave another 1/4 grain dose of morphia hypodermically, the pain continuing atrociously severe, being steady rather than of a spasmodic character. Bimanual examination revealed nothing of a positive nature. Being satisfied that a severe hemorrhage had taken place, thinking that it came from a ruptured tube, counsel agreeing with me, I proposed operation for an early hour next morning, but the patient declined, until her mother could arrive that night. Accordingly, at 8 o'clock the following morning, a celiotomy was done in the patient's bedroom, with the best antiseptic precautions available, but with the dangers and difficulties usually attending operations in private apartments, not the least of which, from the patient's standpoint, was a cold room.

The recorded temperature of patient at 6 A.M. was 99.8 degrees F., with pulse at 118, small and thready, although fortified beforehand with strychnia and digitalis.

Patient being etherized, I made a three inch incision in linea alba just above the pubes. On reaching the peritoneum, it pouted into wound and showed dark underneath. On opening it, dark blood squirted upward several feet. A quart or more of liquid and clotted blood was removed and a rupture in the right tube, close to uterus, was discovered. After tying off tube and ovary on right side, the left was brought up, examined, found healthy and dropped, and the toilet of peritoneum about completed, when considerable oozing of blood, from stump and broad ligament, was noticed. Great difficulty was experienced in controlling it, final resort being had to the cobbler stitch with catgut. Abdomen was closed without drainage, the peritoneal cavity having been filled with hot

normal salt solution. When the operation was completed, the patient was in extremis, with a pulse of about 180 and almost imperceptible at wrist.

By the aid of hypodermics of strychnia, atropia, digitalin and nitroglycerin given to the limit of safety and enemas of hot salt solution, coffee, whisky and aromatic spirits of ammonia, the patient reacted and at 6 P.M. exhibited a pulse of 138, of fair tone and volume and a temperature of $100\frac{1}{2}$ degrees F., respirations 30. March 4, 6 A.M. (next morning), pulse 120, temperature $100\frac{1}{2}$, respirations 30; March 4, noon, pulse 122, temperature $101\frac{1}{2}$, respirations 30; March 4, 3 P.M., pulse 140, temperature $102\frac{1}{2}$, respirations 32; March 4, 10:30 P.M., pulse 137, temperature $103\frac{1}{2}$, respirations 36. (At this time the decidua membrane shown in the photograph appended was expelled from the vagina, no shreds or bloody discharge being noticed before.)

March 5, 6 A.M., pulse 136, temperature $102\frac{1}{2}$, respirations 38 with some cough. Examination revealed crepitant râles at base and posterior part of left lung. From this date to the 14th as a complication of the already serious condition, there was a typical left lobar pneumonia, the pulse gradually coming down to 118, at which it stood on the latter date. After March 14 there was practical defervescence, with the patient rapidly improving in strength and looks. About this time



1. Fimbriated extremity of tube. 2. Ovary. 3. Point of rupture of tubal pregnancy. 4. Decidua membrane, surface of attachment to uterine wall.

every alternate suture was removed from the abdominal wound and the balance a week later. No suppuration or trouble of any kind occurred about wound or sutures, silkworm having been used externally and the patient was sitting up in three weeks from date of operation.

April 22 her period reappeared with the usual pain and lasted a week. May 7 inspection of the abdomen revealed a firm scar, two and three-fourth inches in middle line just above pubes and natural contour of the abdomen. Bimanual examination shows uterus of normal size, slightly anteflexed and freely movable *without pain*. May 23 began a repetition of pain and period with usual length of flow. The specimens being hardened in formalin solution, were submitted to Dr. Stanley Black, pathologist, to whom I am indebted for a careful examination, and who reported the following: I have examined the specimens, find chorionic villi in the Fallopian tube and decidua cells in the membrane.

I append a photograph showing the specimen before mutilation. No. 1 points to the fimbriated extremity of the tube. No. 2 is the ovary, apparently normal in every way. No. 3 indicates the point of rupture; and just above No. 4 is seen the decidua membrane, presenting its shaggy surface of attachment to the uterine walls.

If I may be allowed a few observations in regard to this case, I will recall to your attention the fact that from the last day of menstruation, January 27, to March 1, the day of rupture, is but twenty-nine days. From quite a search of the literature of these early cases, I have been unable to find a case of so early rupture as this, though I doubt not for an instant they may have occurred even earlier. One of the earliest cases that I have run across is one of five weeks reported by Tait, in which death occurred in seven and one-half hours from hemorrhage, the rupture, as stated by him, from which the fatal hemorrhage took place not being larger than a pea. As diagnosis and treatment are the most important considerations in all pathologic conditions, they are practically the only ones in this class of cases. If one waits for a classic array of symptoms and refuses to operate until such an array is present it is my opinion that the patient is to be commiserated on account of her too conservative (?) medical attendant. Dr. Henrotin says: "The diagnosis of primary complete rupture prior to the seventh week is the diagnosis of intra-abdominal hemorrhage."

Given a woman just previously in a state of health within the child-bearing period, with the physical signs of internal hemorrhage and the characteristic pains, if she be conscious, even though no coincident signs of pregnancy exist, I maintain that the medical attendant is not only justified in, but criminally negligent if he refrains from, operating (*i. e.*, making an exploratory laparotomy), thus increasing the woman's chances of recovery and demonstrating true conservatism, the conservation of life, always premising a fair degree of skill in the operator and a strict adherence to the details of asepsis and antisepsis. Dr. E. S. Boland of Boston in an excellent article on this subject "from the standpoint of the general practitioner," courageously remarks, "although I have never performed a laparotomy, I should not hesitate to attempt it if I met one of these cases so remote as to require many hours to get greater skill," and concludes, "that prompt laparotomy after rupture is the only safe and conservative course." I think in a case such as the one reported, where the time on the operating table should be as short as possible, that it would be better to quickly remove the hematoma and bring together healthy surfaces with continuous catgut sutures, not removing tube and ovary if not otherwise diseased, and thus save an amount of added shock that might prove fatal. It goes without saying, that the interests of such cases as this are better conserved in a hospital or sanitarium, for I am sure that the pneumonia here reported resulted from the too cool rooms, and the danger of transportation thither will no doubt be doubly compensated to the patient by the better operating facilities and comforts there to be had.

As to the frequency of these cases compared with those of natural pregnancy there can only be surmise. One author reports from his own experience 1 in 170 cases of normal pregnancies, while another reports 1 in 1500 cases. Again, as to which tube is most frequently impregnated, that is, I dare say, purely a matter of accident, but I have noted in my search for these cases that it has most frequently occurred on the right side, and merely record the fact without attaching significance to it. When we consider the large mortality of these cases if left to nature or medication (see Baldy's report of Formad's autopsies) and the brilliant results obtained by the early opera-

tion, we are constrained to recommend the rule: When in honest doubt, operate. In a letter dated April 22, 1898, Dr. M. D. Mann of Buffalo, N. Y., writes me: "I have operated forty or fifty times for that condition, four times within the last three weeks, and so far all have recovered except one, which was operated on through the vagina." This brings up the question as to the choice of route by which to reach the diseased condition. In *recent* cases my own choice is for the abdominal route, as giving one absolute control over hemorrhage and enabling him to see all that is to be seen, and if vaginal drainage is desirable it can be easily added.

THE INFLUENCE OF SEX ON DISEASE.

Presented to the Section of Obstetrics and Diseases of Woman at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY LOUIS FAUGÈRES BISHOP, M.A., M.D.

NEW YORK.

Curiously enough, while the tendency in modern civilization is to eliminate the distinctions in the political and economic status of men and women, that of medicine has been to exaggerate the natural difference of the manifestation of disease between the sexes.

The object of this essay is not so much to show how many as how few are the differences. The influence of sex on the course of general disease is wholly a matter of soil and environment; that is, the disease is the same, with the same tendencies and possible terminations, but modified by the constitution of the person and not by sex. Granted that individual constitution does affect the course of disease, we must determine whether its characteristics differ according to sex, or whether they differ among individuals regardless of sex. To predict our conclusions it will be found that the course of general diseases is not affected materially by difference of sex, except in a few instances that are easily defined and pointed out. Apart from variety of occupation and greater or less exposure there are few factors which alter the percentage of men and women who acquire infectious diseases. Typhoid, typhus and the exanthemata affect the sexes equally.

Mortality is indeed greater among males when pneumonia is considered, but that is undoubtedly due to the greater abuse of stimulants by men. In diseases of the nervous system the effect of sex upon the form of disease is more marked. Men are more liable to the structural diseases, especially sclerosis, while women are more liable to functional disease. As notable as any is the predominance of Graves' disease among women. Especially is this marked when we include in Graves' disease many cases of tachycardia, in which the eye and thyroid symptoms are not markedly developed. The inference is therefore justified that, barring pelvic disease due to organs belonging exclusively to women, and those nervous diseases traceable to the acknowledged greater instability of her nervous system, the manifestation of disease in woman does not differ markedly from that seen in man under similar circumstances. Nor can it be said that the influence of the pelvic organs in one sex has a much greater tendency to reflex manifestation in distant organs than those of the other.

The influence of sex on disease as depending chiefly upon habits of life is well illustrated in the case of cardiac lesions. The quieter life eliminates much of the danger of strain. In women, who, as a class, do

not abuse alcohol, there is less tendency to arterial disease, and to all those symptoms that follow arterial sclerosis. In old age the factor of arterial degeneration is apt to be less marked. In young women, the tendency of the sex to chlorosis should influence diagnosis, prognosis and treatment of patients presenting cardiac and pulmonary or nephritis symptoms. Thus in a young man, dropsy of the feet would be more readily thought to be of kidney origin than in a young woman.

The tendency to specialism is to treat the male and female as separate species. This is so grave an error that it has seemed worth while to point out that men and women have most points of physical constitution in common; with only those modifications necessary to distinguish sexual function. The diseases of infancy are exactly the same in both cases; the cardiac, pulmonary, renal, gastric and most general diseases are the same. Nervous diseases are indeed modified by a higher degree of direct and reflex excitability of the nervous system, but rarely by any disease of the uterus or ovaries. Indeed, the belief is well founded that neurasthenia and hysteria are often aggravated by local therapeutics directed to their cure.

It can be stated on the authority of nearly all those competent to study epilepsy from the neurologist's point of view, that this disease is hardly ever cured by operation. The uterine and ovarian element in the general diseases of women is largely, at the present time, the unnatural growth of distorted public opinion, that has been led to attribute many conditions to local diseases of women, that are, in fact, common to both sexes, or at least only modified by the natural difference in general physique and nervous organization. The fact that women are more liable to functional nervous disease is not due to disease of the pelvic organs, but easily and wholly traceable to the physiologic difference of the general nervous system. So the appreciation of the difference in the course of disease in individuals, of whatever sex, need only be modified, as it always is by the variation of constitution, whether between one man or another, or one woman and another, or between a man and a woman. A woman leading a healthful outdoor life, with her muscles in use and her muscular tissue thoroughly active in its oxygen-absorbing and heat-producing functions, is more of a man in one sense of the word than the confined, undeveloped and anemic city clerk. This difference in physical stamina between the sexes is not due to the influence of any set of organs, nor is it to be modified by any degree of health of these organs that can be attained independently of the rest of the body. What small difference there is in disease is due to the minor difference in nervous irritability, but far more to the influence of habits of daily life.

The influence of sex upon the course of internal disease is not, therefore, to any great degree influenced by sex, as such, but by the influence on disease of those external conditions which are common to both sexes, but which by custom may have come to predominate in one sex or the other. Thus a woman is more protected from violent accidents, exposure to the weather, and suffers less frequently from the results of alcohol, tobacco and some of the infections. On the other hand, she is more liable to the evils of a sedentary and confined occupation, and the abuse of tea and sweets is much more frequent. These circumstances are not necessarily the accom-

paniments of sex, because they are reversed in a great many individual cases.

In the same way with character. The female character and the male character, as composites of persons grouped by sexes are undoubtedly different, yet it is not a question of sex but of character. So the course of disease in individuals is a question of constitution, not of sex.

In therapeutics it will be those measures that most tend to overcome the deficiency of general vitality manifested in the circulation, nutrition and blood formation of women that will be most successful in removing the symptoms now so often referred to a trivial local disease that frequently, in itself, requires but little treatment. The result of an impartial consideration of this topic leads inevitably to the conclusion that the influence of sex upon disease has been exaggerated, and that the great fundamental principles of physiology and medicine are the true supports of sound therapeutics in childhood and in old age, in men and in women.

30 West Thirty-Sixth Street.

FALSE LABOR PAINS.

Presented to the Section on Obstetrics and Diseases of Woman at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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As I believe there are important points in the diagnosis and treatment of false labor pains which are not mentioned by the majority of obstetric text-books, I desire to present this minor subject and obtain your opinions. As we are called to our dispensary cases as soon as the pains occur every ten minutes, we have seen a proportionately large number of patients suffering from false labor pains. At times calls to such cases have been nearly as frequent as to real labor.

Synonyms.—Premonitory pains, dolores presagientes, and, if you will allow me, threatening premature labor.

Definition.—False labor pains are pains which simulate true labor pains but are not at the beginning the result of compression or tearing of the nerves of the birth canal.

Time.—Generally in the last weeks of pregnancy, but they may occur any time during pregnancy or even in the non-pregnant to a less extent. The pains frequently accompany sinking of the uterus or occur at the time for a menstrual period.

Causes.—Originally the cause is generally intestinal colic or some reflex local or peripheral disturbance. Toothache is a peripheral disturbance that may result even in labor. Rheumatism of the uterus, irregular contractions of the abdominal or uterine muscles, are given as causes. In fact, any of the causes of abortion may produce false labor pains.

Synonyms and diagnosis.—It is said that none of the premonitory symptoms of labor are present. Sinking of the uterus and other premonitory symptoms are often present. A great majority of writers state that in a case of false labor pains the pains are irregular, do not occur at the same time as the painful uterine contractions of pregnancy, that the pains are felt all over the abdomen and do not progressively increase as do labor pains, and that they do not dilate the cervix. Now, this may be true at the onset, but sooner or later the pains may be only in the back or

groins, occur regularly, be as severe as labor pains and often accompanied by painful uterine contractions which may cause from one to three fingers' dilation of the cervix.

These uterine contractions are, however, generally only progressive for a time and disappear when the cause is removed. It is sometimes impossible to differentiate them from true labor pains without waiting an hour or two to note the progress of the dilation of the cervix or the effects of the therapeutic test. To determine if the uterus contracts at the same time as a pain, the text-books say to place the hands very gently to the fundus, but it may be necessary to feel the lower uterine segment per vagina to exclude the possible contraction of the abdominal muscles. The symptoms of threatening premature labor are identical with those of false pains when painful uterine contractions are present. A painless uterine contraction may occur at the same time as the colicky pain in the intestines. The irritation caused by the colic may bring on uterine contraction, at first painless, later painful. Effacement and one to two fingers' dilation of the cervix may occur in multiparæ, with lacerated cervices from relaxation, independent at least of painful uterine contractions.

Prognosis.—The pains generally disappear rapidly if the cause be removed. Rarely premature labor follows. Some cases of tedious labor supposed to be at term and lasting two or three days are probably due originally to the irritation of false labor pains which have produced enough irritation to excite a little prematurely true labor pains, and finally expulsion of the uterine contents. When the false pains have excited threatening premature labor pains and some dilation of the cervix, labor at term is frequently easier as a consequence.

Treatment.—As soon as false labor pains are suspected a four-quart enema should be given at once, and then a fourth of a grain of morphin hypodermically. The morphin may be repeated by the mouth in an hour or two if the pain lessens but does not disappear. Nothing stops the pain so rapidly as an enema. Do not think of cathartics. They take too much time and may increase the irritation. In some cases it is impossible to stop the colic until after hot drinks, as ginger and peppermint, or inhalations of chloroform, and even hot fomentations and flaxseed meal poultices have been used.

ILLUSTRATIVE CASES.

Case 1.—Sinking of uterus and dilation of cervix to three fingers. Physician remained all night because previous labors had only two or three hours' duration. Just three weeks later patient confined, labor lasting only about two hours.

Case 2.—Very severe bearing-down pains, regular in frequency and severity; no dilation of cervix. About one week later patient confined; pain not nearly so severe and bearing-down efforts less.

Case 3.—Patient eight months pregnant, severe toothache last two weeks, last twelve hours labor pains, cervix dilated two fingers. Morphine and chloroform given and tooth extracted. The cervix closed. Confinement one month later.

Case 4.—Cervix dilated three fingers, previous slight pains absent. One week later patient delivered after a few pains.

Case 5.—Severe colic, no dilation or painful uterine contractions; enema, morphine, hot fomentations, flaxseed meal poultice and finally chloroform for over two hours before colic under control.

Case 6.—Colic; enema and morphine not effective. A teaspoonful each of tincture of peppermint and ginger in half a cup of sweetened hot water relieved.

Case 7.—Patient examined at about the eighth month to see if placenta previa was present. (Placenta previa complicated her last labor.) Bag of waters found projecting through the effaced cervix dilated to two fingers.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT,
IN RECOGNITION OF THEIR LABORS IN THE SURGERY
OF THE PERINEUM.

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Continued from page 594.

The vaginal portion is endowed with considerable strength and it becomes blended with and is lost on the vaginal wall. The rectal portion of the levator ani fascia superior passes to the rectal wall, becoming continuous with the fibers and blending with it. There is a strong fillet passing between the rectal and vaginal canal. The part of this fascia which passes to the rectal wall, has been termed the ligament of the rectum. This fascia forms a strong support to the muscular wall of the rectum.

It is not an argument very rich in facts to say that the perineal body is to fill in the space in that region. It serves as an attachment for one end of the levator ani muscle. A subject which I have not found mentioned in the books is that in many parts the fascia of the pelvis consists of many distinctly defined layers, which can be cleaved from each other. For example, the fascia over the coccygeal muscle may be cleaved off in several layers, and the same may be said,—but not to such a degree—of the levator ani superior. Several thin, transparent planes of fascia may be cleaved off of the obturator fascia superior. Even the levator ani fascia inferior, which is very thin and compact, may be cleaved into two or more planes. The obturator fascia inferior is a very powerful fibrous plane of fascia and may be cleaved on each side into thin planes but the central plane is a thick, powerful, individual, somewhat coarse, fibrous membrane. The powerful obturator fascia inferior is cleaved, split, for the transmission of the pubic vessels and nerve. The canal formed by the separation is known as Alcock's canal. The several membranous planes of some of the fascia in the pelvis endow it with much more utility. One plane may tear without the other. Several cleavage planes are characteristic of fascia in other localities and are more capable of resisting trauma than a single plane.

The coccygeal muscle arises from the spine of the ischium and lesser sacrosclatic ligament, becoming inserted into the side of the coccyx and two lower sacral vertebræ. It is a flat musculo-tendinous triangular plane, aiding to close the posterior pelvic outlet. Its anterior border is in contact with the posterior border of the levator ani muscle, of which it is practically a continuation backward and covered by the same fascia, viz., the levator ani fascia superior. The posterior border bounds the anterior margin of the great sacrosclatic foramen. The lesser sacrosclatic ligament, which is formed by a degeneration of the superficial muscular fibers of the coccygeus, takes the place of the continuation of the levator ani fascia inferior. The coccygeus muscle is fading out of existence, belonging originally to a large tailed animal. The origin and insertion of the coccygeus muscle and lesser sacrosclatic ligament are identical.

They are so strong that practically they never yield so as to be involved in colpoperineorrhaphy. However, the coccygeus muscle is described in order to show that its fascia should be named the coccygeal fascia, which can not admit of confusion. The inferior surface of the coccygeus muscle is doubly strengthened, not only by the lesser sacrosclatic ligament, but by the superior surface of the great sciatic ligament which represents the proximal tendon of the long head of the bicep femoris. The tendon of the long head of the biceps formed an attachment at the tuberosity of the ischium. The coccygeus fascia covers the coccygeus muscle and has an area of about $3\frac{1}{2}$ square inches on each side of the median line of the pelvis. The pyriformis muscle arises from the lateral portions of the second, third and fourth pieces of the sacrum, from the inferior border of the great sacrosclatic notch and from the great sacrosclatic ligament. It passes out of the pelvis through the great sacrosclatic foramen, becoming inserted into the upper border of the great trochanter. It is the most posterior muscle which aids in closing the pelvic outlet. It serves as a bed on which the sacral nerves may rest. It is covered by the pyriformis fascia, which is a continuation of the obturator fascia above and the coccygeus fascia anteriorly. After leaving the obturator and coccygeus fascia it rapidly thins out into a transparent thin membrane. It is perforated by the internal iliac vessels which leave the pelvis by the great sciatic foramen. The pyriformis fascia is attached to the surface of the sacrum internal to the origin of the pyriformis muscle from the posterior border of the coccygeus muscle to the ileo-pectineal line which passes along the border of the wing of the sacrum to the sacro-iliac joint and finally it is attached to the superior margin of the great sacrosclatic foramen from the ischial spine to the sacro-iliac point. The pyriformis fascia covers an area of about five square inches on each side of the pelvis. The sacrum is lined by a thin fibrous membrane which we will name the sacral fascia; hence, the internal pelvis is lined by the obturator fascia superior, the levator ani fascia superior, the coccygeal fascia, the pyriformis fascia, and the sacral fascia. This nomenclature we recommend as simple, and as facilitating the easy acquisition of the internal fasciæ of the pelvis.

The use of the levator ani fascia superior is: *a*, to sustain the pelvic viscera, and is analagous to the fascia transversalis-abdominalis; *b*, to form a pouch on each side for the pelvic viscera, which assists in closing the pelvic outlet above the muscular floor; *c*, to fix the pelvic viscera; *d*, with its superior pad of fat and snow-white connective tissue, to support the pelvic peritoneum; *e*, to resist the pressure of the abdominal muscles and the diaphragm, and *f*, to serve the useful purpose of separating the perineal tissue from the peritoneum.

This latter anatomic condition limits inflammatory and infective processes from either perineal or peritoneal spaces. Further, the levator ani fascia superior forms the pelvic floor, and by its strength prevents pelvic hernia. The blood-vessels are placed superior and the nerves inferior. The levator ani fascia superior and inferior limits nearly all fistulæ in and to one-half inch above the anus. A disadvantage of the levator ani fascia superior is that it is perforated by nerves and vessels which carry sheaths of connective tissue; these sheaths allow infective pro-

esses to pass from the perineal tissue to the subperitoneal tissue and vice versa. Deficiencies occur in the fascia, excavations which are filled with fat. The fascia of the pyriform muscles consists of an extension backward of the obturator superior and levator ani fascia superior. Both fascial planes blend, the one from the anterior margin of the sacrosacral foramen and the other from the posterior margin of the coccygeus into a thin membrane which covers the pyriformis muscle and the sacral plexus of nerves. The pyriformis fascia is perforated by the gluteal vessels and nerves to gain the gluteal region. This plane of fascia is so thin and delicate that one can scarcely dissect it without tearing it. The levator ani fascia inferior (anal or ischio-rectal fascia) lies in immediate and intimate contact with the inferior surface of the levator ani muscle. This fascia begins at the white line and becomes lost on the rectal wall. It is very intimately connected with the muscles. The levator ani fascia superior and inferior blend with the rectal wall about one-half to three-fourths inch above the anus, and rectal perforations generally occur below the insertions of the above fascia. The fibers of this fascia

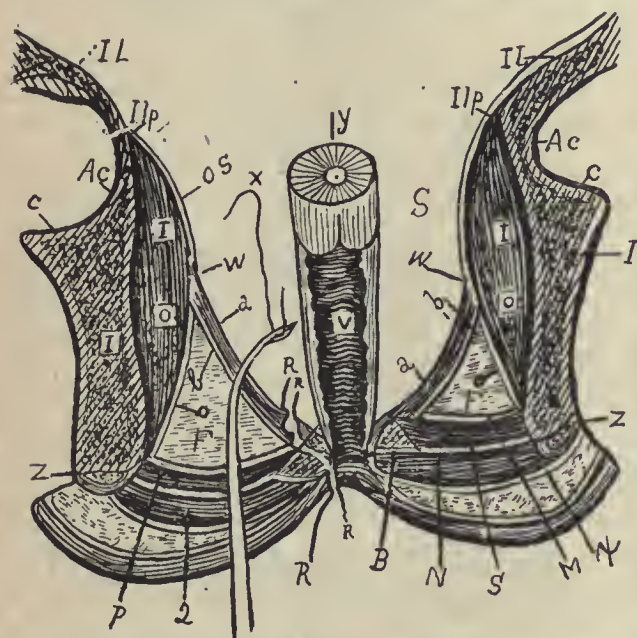


Fig. 9.—(Author.) An illustration to demonstrate that in deep lacerations of the pelvic floor the levator ani fascia superior and inferior is torn with its intervening muscle, the levator ani. The rent or tear is shown by R, R, and R, R, on the right side. The needle armed with the thread (X) will pass through the muscle and its two layers of fascia in order to restore the integrity of the pelvic floor. IL, iliac fascia; IIP, the beginning of the obturator fascia superior at the ischiopectineal line; OS, the obturator fascia superior; W, the white line; O, the obturator fascia inferior divided by the white line; I, O, the obturator internus muscle; F, the fat in the ischio-rectal fascia; A, the levator ani fascia superior; B, the obturator fascia inferior; V, the vagina; S, intrapelvic space; Y, the cervix; P, deep transverse perineal muscle, and 2, the superficial; B, the sphincter ani externus; M, deep layer of triangular ligament; S, superficial; N, deep layer of superficial perineal fascia.

are included in all deep suturing of extensive colpo-perineorrhaphy. By including its fibers in the sutures, the relations of the levator ani may be partially restored to the normal relations. The sacral and coccygeal fascia lines the anterior surface of the sacrum; it has localized thickenings and thinnings. The thickest portions are those located along the lateral margins of the sacrum and especially around the anterior sacral foramina. The triangular ligament (deep perineal fascia) closes in the pelvic floor in front. It is the result of the union of the obturator fascia extending from both sides toward the center. It is a prolongation of the obturator fascia across the

pubis, and Winslow called it the ligamentum inter-ossei pubis; Carcassone, the ligamentum perineale; Colles, the ligamentum triangulare urethrae. It is the deep blade of the fascia perinei and is an integral part of the obturator fascia. It is the middle fascia of the perineum, or Camper's ligament. It fills up the deficiency found between the anterior or pubic insertions of the levator ani muscle. It is a wonderfully powerful structure in fixing the lower end of the vagina. It is stronger in males than in females. It is the structure which retains, with powerful grip, the anterior end of the vagina forward and upward. The vagina pierces the triangular ligament whose fibers fix themselves in and around the vaginal walls. It joins posteriorly with the lower margin of the inferior edge of the superficial perineal fascia. If one dissects away all structure from the vagina except the triangular ligament it will become apparent at once what a powerful support it is to the lower end of the vagina. The triangular ligament, as its name implies, is triangular in shape, aponeurotic in structure, extending as a tense septum between the anterior part of the perineum and pelvis. It is attached on either side to the rami pubis and ischium. Its inferior or posterior inferior margin is ill-defined, blends with the superficial perineal fascia at the ischio-perineal fascia, where it gradually loses itself on the lower surface of the levator ani muscle. It sustains and fixes the urethral canal. It is pierced by the vagina at its base or weakest portion. It serves the useful purpose of connecting the bladder and vagina to the pubis, and of retaining adjacent organs in fixed relations. By its connection with the ischio-perineal ligament (fascia) and levator ani muscle it serves to strengthen the inferior region of the pelvis posteriorly, and aids to fortify the rectum with its muscles. By dissection, it is plain to see how the triangular ligament closes the anterior perineal triangle, and the levator ani closes the posterior perineal triangle. The triangular ligament extends posteriorly on each side of the vagina and blends, not only with the lower ledge of the superficial perineal fascia, but very intimately interweaves and blends with the ischio-perineal ligaments, making a powerful fixation for the vagina at its lower end. The triangular ligament in conjunction with the ischio-perineal ligaments lends to the perineal body a "Punctum Mobile." In perineorrhaphy much attention should be given to the factor of including considerable parts of the triangular ligament and the ischio-perineal ligaments in the deep suture, which secures a forward curve to the vagina, and also, by forcing medially adjacent tissues, it aids in producing the normal curve of the rectum backward. This ligament is a very important structure, serving many purposes of support, and aiding in repair. It is continuous with the levator ani fascia inferior, and above it is the levator ani fascia superior. The superficial layer of the deep perineal fascia of Colles is a strong fibrous membrane. It extends from one ischiopubic ramus to the other. This membrane blends posteriorly with the lower margin of the triangular ligament, producing partly ischio-perineal ligaments. The superficial layer of the deep perineal ligament is less in extent in females than in men, on account of being pierced by the vagina. In perineorrhaphy it is of considerable aid in restoring the relation of the parts by allowing the deep sutures to draw the fascia medianward. The ischio-perineal ligaments extend from the ischial

tuberosities to the perineal body. They are strong aponeurotic bands of a very resisting character. They result from the union of the lower border of the triangular ligament with the deep layer of the superficial fascia. The fibers of these ligaments play an important rôle in extensive colpoperineorrhaphy. These ligaments form a conspicuous structure in every dissection of the female perineum. In the advancing head the ischioperineal ligaments are put on the stretch and gradually forced backward. Should they rupture, by extensive flap-splitting and deep suturing the two layers of fascia which blend to make the ligament could be partially restored.

Having examined the structure of the pelvis in detail we may now combine the anatomic factors which explain successful colpoperineorrhaphy. The first is the restoration of damaged fascia. A second important factor is deep suturing. A third element in a successful operation is the restoration of function by means of restored muscular relations. A fourth is the forcing in the median line of adjacent perineal tissue, and a fifth factor is the flap method of operation whereby there is no denudation or loss of tissue, and the flaps (skin and mucosa) avoid infection and insure primary healing. The flap method enables the operator to reach the seat of the lesion, either by splitting tissue or deep suturing with a handled needle with an eye in the end. Silk-worm gut which is used in suturing, being non-septic, may remain for weeks in position, like a splint, before removing. Among the fasciæ of importance are: The levator ani superior and inferior, the triangular ligament and deep layer of the superficial fascia, and the ischioperineal ligament. The operation of colpoperineorrhaphy is the result of evolutionary processes of failures and successes. In the beginning, it was considered sufficient to unite the superficial or external tissues at the site of the lesion. This experiment soon demonstrated its own failure, and later it was deemed essential to restore the deranged and lacerated muscular elements in the pelvic floor. The attempt at successful colpoperineorrhaphy by reuniting external tissue at the site of the lesion or restoring deranged or lacerated muscles to normal relations proved a failure to such a degree that it was evident that some other factor played a rôle; this factor was the fascia. The restoration of the lacerated tissue at the site of the wound, with the deranged and ruptured muscles, and the restoration of the deranged fascia are the three factors on which successful colpoperineorrhaphy rests. To Dr. T. A. Emmet must be given the credit of the view that the pelvic fascia played an important rôle in successful colpoperineorrhaphy. Experimental labors on the perineum, in a desultory manner, have been carried on for fifty years. But only lately have experimental and anatomic data been judiciously combined so as to render clear what are the useful methods in colpoperineorrhaphy. All successful surgical procedures demand an anatomic basis. The deranged and lacerated parts in colpoperineorrhaphy must be restored in a manner similar to that in operation for hernia. The successful surgical procedures in colpoperineorrhaphy have passed through the same evolutionary process as have the various operations for hernia. In hernia we must restore the anatomic relations, the obliquity of the inguinal canal, so that its valve-like action makes it impossible for the viscera to again protrude. In colpoperineorrhaphy, not only the anatomic parts should

be restored, but the various canals and outlets must also be restored, to ensure permanent success. Deep suturing, so essential, is only groping after an anatomic base to restore the ground work. The same ideas are involved in the views of discerning surgeons, who suggest that if the sutures include sufficient of the rectovaginal septum, or if they are introduced deep enough to make forward traction, or if they include the sulcus on either side of the bulging vaginal wall, the operation will be successful. Dr. W. R. Wilson wrote a short but comprehensive article on the subject, suggesting excellent principles, but modestly claiming that the anatomic basis is still imperfectly understood. In the subject of colpoperineorrhaphy the origin of the lesion demanding operation should be studied. The cause of the lesion, requiring repair, is almost always the result of (the first) labor, more rarely other forces produce sacropubic hernia. The lesions of the perineum may come from the forward movement of the head lacerating the levator ani fascia superior and inferior, with damage to the ischioperineal (ligament) fascia and tearing of the triangular ligament, with consequent inevitable lesion of the deep perineal fascia. This will destroy the tone of the posterior vaginal wall, because the fascia has been separated from the vaginal wall near its outlet. If the distinct ischioperineal (ligament) fascia be torn, which is quite frequent in labor, the vulvar end of the vagina falls backward and begins its condition of rectocele; its fascial (and doubtless muscular) supports have been torn away. With a torn levator ani fascia superior the pelvic viscera will inevitably descend, for it is unphysiologic for a muscle to act as a continuous, tensionized support for viscera. But it must be remembered that the fascial layers of the pelvis are not only of value as visceral supports by separate and distinct connection in themselves, but they are of significant importance as serving a means of visceral support and for a point of attachment for muscles lying between their blades. The levator ani, which is the most important muscular apparatus on the pelvic floor, serves by its fascial attachments as a visceral support to the rectal and vaginal walls as well as to the pelvic floor, for the uterus is supported by the intact pelvic floor.

The pelvic floor may be considered as composed of two widely overlapping valves (Hart). Whatever disturbs the relations of these valves tends toward sacropubic hernia. The anterior pelvic valve is composed of the bladder, urethra, anterior vaginal wall and retro-pubic fat. The posterior pelvic valve is composed of the posterior vaginal wall, perineum and rectal wall. The pubic segment is attached to the symphysis pubis and composed of loose connective tissue. The retro-pubic fat is loose and spongy, the peritoneum may be easily stripped away from the bladder, and the bladder from the vagina. In labor, this segment becomes elevated and is the one which easily becomes deranged, or acquires pathologic conditions and especially is liable to prolapse or sacropubic hernia. The levator ani fascia superior becomes torn away from the walls of the bladder and vagina, allowing the intra-abdominal pressure to force the bladder and vagina downward.

When the uterus prolapses (sacro-pubic hernia) the anterior vaginal wall appears at the vulva first. The strong levator ani fascia has been torn from its walls and when the same fascia has been extensively torn from the bladder it prolapses also. In vesical prolapse the peritoneum with its many cleavable

planes of subperitoneal (fascia) tissue becomes torn from the bladder. The sacral valve of the pelvic floor, consisting of the posterior vaginal wall, the perineum and rectum, is attached by strong fascial connections interwoven by muscles to the coccyx and sacrum. In labor, this segment is forced backward and straightened out. If it becomes defective by laceration at the perineal body the vagina loses its normal curve and sacro-pubic hernia is initiated, i. e., retroversion begins, which is the inevitable factor in sacropubic hernia. The uterus itself has nothing to do with prolapses. Intra-abdominal pressure and defective sacral and pubic segments account for prolapse; the sacral segment is fixed; the pubic segment is movable.

The functions required of the pelvic floor are to resist intra-abdominal pressure and to allow rectal and vesical functions. The structural anatomy of the pelvic floor must not only be studied in general as to its segments, valves, muscles and fascia but each individual organ should be studied as regards its supports. The uterus has its individual supports, which, though not separate from the fascia and muscles, should be well considered, for colpoperineorrhaphy may be required for (prolapse) sacro-pubic hernia without visible lacerations. The first elemental individual supports of the uterus are the uterorectal (sacral) ligaments. They consist of two folds of peritoneum embracing muscular and connective tissue extending from the posterior surface of the cervix to the rectum (perhaps some fibers do extend to the sacral fascia). These ligaments are an extension of the muscular connective tissue fibers of the upper end of the vagina backward. As Dr. Frank Foster notes, the vagina and uterorectal ligaments form a balance beam on which the uterus rests. Yet it should be borne in mind that organs do not rest on bases, but are swung on supports or mesenteries. The brain, liver, heart and uterus are all suspended by supports and do not rest on other organs or bases. The uterorectal ligaments are powerful, peritoneal, muscular and connective bands which vigorously suspend the uterus by the neck. Careful dissections and vaginal hysterectomy will demonstrate that the uterus could not descend without the uterorectal ligaments became elongated.

These ligaments are a part of the musculo-fascial support of the pelvic viscera. The vaginal tube supports the uterus by being well embraced by the levator ani fascia superior and the levator ani muscle, and also by being well padded and surrounded by fascial planes of connective tissue fixed in its walls and adjacent structures. Fat pads and acts as a support by stiffening folds.

In colpoperineorrhaphy, it is well to remember that we have a fixed pelvic segment and a movable or displaceable segment. It will aid in repair. The movable pelvic segment comprises the urethra, bladder and vaginal walls. This segment is bound together by peritoneum on a very mobile base and by a considerable mass of loose connective tissue.

This segment becomes displaced by labor, distended bladder, vagina or rectum. If its fascial connections become torn, sacropubic hernia is inevitable. The fascial connections are considerable above the vulva, consisting of the levator ani fasciæ superior and inferior and to some extent of the levator ani muscle. Sacropubic hernia, arising from lacerated fascia of the movable pelvic segment is recognized by the

vagina and bladder bulging downward at the vulva and making the vulva appear as a waist with the puckering string gone. The worst and most damaging cases of laceration are those which begin from the inside and progress outward, i. e., the fascia begins to tear high up in the rectovaginal septum, on the sides of the bladder and vagina. These are the cases which present distressing symptoms; when standing are worse on account of disturbed circulation and are pronounced "prolapse" by the general physician. In such cases the anterior vaginal wall appears first at the vulva, then the cervix and finally the posterior vaginal wall. The bladder gradually sags downward and difficult urination is added to the already existing train of symptoms. In lacerations of the sacral segment of the pelvis the lesions are more visible. The perineal body suffers especially. It straightens out the fixed sacral segment and retroversion and inevitable subsequent sacropubic hernia results. The visible laceration of the perineal body was originally considered the chief requisite for repair and also the type of colpoperineorrhaphy. But the study of the pelvic fascia shows why the operation failed or succeeded. Frequently it may be observed that the perineal body is visibly torn, but no evil consequences follow, because the fascia remains intact. The rectum belongs to the fixed segment. It does not prolapse, but its wall stretches, elongates. As the advancing head forces forward and tears the levator ani fascia superior and inferior as well as the ischioperineal ligaments, the levator ani muscle also becomes deranged but practically the restoration of the fascia restores the muscles. The muscular layers of the pelvic floor are two—superficial and deep connected—and blended at the perineal body both by the muscular and fascial relations. The deeper layer is the levator ani muscle which descends from the sides of the pelvis in the form of a boat or bowl to its attachments on the pelvic floor. The superficial layer consists of the transverse muscles of the perineum, which extend from the tuberosities to the center of the perineum and also the bulbo-cavernosus, which surrounds the vaginal outlet. All the muscles are related to fascia, as the levator ani inclosed in double blades of fascia, i. e., the levator ani fascia superior and inferior. The deep transverse muscles lie between the triangular ligament and Colles fascia. The bulbo-cavernosus and superficial transverse muscle lie between the two superficial perineal fasciæ. The ischioperineal fascia is but the thickening of the lower border of the triangular ligament and Colles fascia. The significant importance of the fascia of the pelvis becomes at once apparent, not only in maintaining the integrity of the pelvic floor, but in all repair of the same. The pelvic fascia is the chief element in maintaining perineal muscular relations. The pelvic fascia may be divided into deep and superficial layers, according to the deep and superficial layers of muscles. The deep pelvic fascial layers are united to the more superficial pelvic fascial layers in the perineal raphe, holding the pelvic fascia as a unit. The superficial fascial layers of the pelvis are attached from the ischial tuberosities to the pubic rami and stretch across the anterior perineal triangle. They shut off the pelvic outlet except at the vulvar orifice. Fascia may be torn without its associated muscle being torn. In perineal laceration the muscles lying between the fascial layers may become separated as to loops or as to the attachments of one or both ends. Also the fascia ani muscle may be lac-

erated in different localities and this allows complete repair.

When the muscular layer between the fascial layers separates, the muscular fibers retract irregularly toward the proximal end, leaving gaps which are difficult to effectually repair. The rupture and retraction of the levator ani with its fascia makes the deep sulcus found on each side of the bulging rectocele, because the fibers of the levator ani retract laterally toward the pelvic walls. It is evident there is a deeper factor in perineal lesions than visible lacerations. The deficiency in perineal lesions is not in proportion to the apparent extent of the injury. Every physician has noticed multipara with considerable external laceration of the perineum, with apparently little discomfort, and with the pelvic organs but slightly disturbed, while in other cases, with slight apparent lesions, complaints are serious. I have seen extensive visible lacerations with almost no complaints and apparent health. Again, we may observe cases when the perineum does not appear lacerated, but the prolapsed vagina, the bulging rectocele and vesicocoele appear at the vulva in a remarkable degree. In fact, as Dr. Emmet remarks, it looks like a bag which has lost its puckering string. There is a different explanation for each of the above classes. In one, the pelvic fascia has suffered in the lesion, and in the other, only a few muscle loops and possibly the perineal body. When the lesion involves the pelvic fascia its consequent result is that the circulation is deranged seriously, because the vessels are held in definite relations by the fascial planes, hence the discomfort on standing and exercising is from congestion. Baker Brown simply united the torn tissue at the vaginal outlet. Seldom does this simple measure afford any real relief from perineal laceration, for subjects with such visible slight traces suffer but little. In general the operations for the relief of perineal laceration are a failure. If the rectovaginal septum (fascia and muscle) be not brought in the grasp of the deep sutures success will not be obtained even though the vulva be closed. The secret of Emmet's success lay in the denuding of the vaginal septum, i. e., utilizing the tissue posterior to the vaginal wall. In fact, if the levator ani fascia superior and inferior be not lacerated the subject suffers but little from the lesion, though the perineal body be torn through to the rectum. The levator ani fascia superior forming the gutter or sulcus on each side of the vagina is firmly blended with the vaginal canal as the same strong fascia in the male surrounds the prostate. In labor, in perineal laceration we should not merely look for lesions in the posterior commissure of the vulva, for that is done by the escaping head and shoulders, and is visible, but we should look for concealed lesions of the strong fascia, the sulcus on each side of the vagina. The most serious lesion of labor may occur without visible external injury. This lesion is in general a separation of the fascia from the vaginal wall. If the fascia be torn from this, the posterior vaginal wall will not be drawn against the anterior and the canal will be filled within; it will be like an open collapsed bag. The fascia together with the muscles holds the vaginal and rectal canals in a closed condition, excluding air. The ballooning out of the vagina with but little injury to the perineal body is indicative of fascial lesions within the pelvic cavity along the vaginal canal. The vaginal rectocele is due to the drawing aside of the levator ani

fascia superior and but little to the external laceration. The beginning of discomfort on assuming exercise is due to deranged pelvic circulation, to dilatation and straightening out of veins, to non-uniform support of the blood-vessels and nerves by the proper connective tissue. The advancing head crowds the fascia forward, and if the labor is terminated without forceps, the rents begin chiefly in the rectovaginal septum. It is well to decide what and where the laceration is, so that tissues may not be either denuded or split unnecessarily, for it is not unfrequent to see tissues united which were never involved in the lesion. Perhaps sufficient has been demonstrated, anatomically and clinically, to show that the lesions of the perineum which disable and discomfort the patient are chiefly lacerations of the fascia and secondarily of the muscles. On this view we base our labors. If this be the case, we can easily see that Emmet secured success by denuding an elliptical area of the vaginal mucosa on each side in the vaginal sulci. The curve of the denuded area corresponds to the posterior curve of the rectovaginal septum, and is situated within the introitus. Now, by introducing deep antero-posterior sutures, the levator ani fascia superior and inferior may be reunited, restoring the curve of the posterior vaginal wall and the fascial layers at the vulvar outlet. In reuniting the levator ani fascia superior and inferior the levator ani muscle becomes also reunited, but in an imperfect degree. The levator ani is closely embraced by its superior and inferior fascial planes, as from its origin, insertion and relation it depends on its closely associated fascia. The restoration of the function of the levator ani muscle must be accomplished through restoration of its intimate planes of fascia. If success depended on the muscle chiefly, it would be necessary in rectocele to reunite the separated levator ani loops anterior to the rectocele in the median line or raphe, so the symmetrical muscular action would be restored. It is true that to secure muscular action of the levator the loop must be so repaired that the fibers shall start to act approximately from the raphe on both sides, but this is accomplished by reuniting the levator ani fascia as near as possible in the median line, which brings the muscular loops with it. The levator ani fascia superior and inferior is really a sheath for the levator ani muscle to accomplish its functions. The sheath can not be torn without creating damage to the muscle. In rectocele, this fascia is so torn and stretched that the anterior wall of the rectum loses its muscular support and bulges forward. Whether the sutures be introduced antero-posteriorly or transversely, it matters but little, if they include in their grasp the levator ani fascia existing in the lateral sulci of the vagina, and whatever is done, to be successful, the rectovaginal septum, composed chiefly of fascia, must be restored to reproduce the normal curve of the posterior wall of the vagina. Mr. Lawson Tait's flap operation on the perineum accomplishes exactly what Emmet's operation in the lateral vaginal sulci does, with the exception of denudation. Both operations, when properly and successfully executed, result in the restoration of the continuity of the deep and superficial fascial layers of the pelvic floor, with the establishment of partial or complete muscular function. The deep sutures reunite the structures (fascia and muscles) at or near their normal points of attachment. Anatomically then, the objects to be obtained in an operation for coloperineorrhaphy are

1, the restoration of the levator ani fascia, superior and inferior; 2, the reunion of the fibers of the levator ani muscle so that it will functionate—both fascia and muscle must have relations at the perineal attachment; 3, the restoration of the transverse perinei muscles which draw the vagina lateralward, causing it to remain open; 4, the restoration of the ischioperineal ligaments in regard to the perineal body; 5, the posterior curve of the vagina must be reproduced by restoring the rectovaginal septum; 6, a new perineal body should be restored so that the natural backward curve of the rectum and forward curve of the vagina should persist; i. e., normal relations should be established between the perineal center or body, on the one hand, and fascia and muscle on the other. The perineal body—"punctum fixum"—of vulvar surface relations should be restored.

The pelvic floor is composed of muscles, fasciæ, areolar and elastic tissue. These structures are interwoven into distinct though complicated relations and fill the gap of the pelvic outlet. The pelvic floor is composed of two halves, whose structures arise from the lateral walls and join in the median line. There are two muscles, two fasciæ and two ligaments of each kind. If one will carefully study in dissection the levator ani and the bulbo-cavernosus muscle he will be impressed with their functional comparison. Both are sphincter muscles. Both have connection with skin as most true sphincter muscles possess. The three points of insertion of the bulbo-cavernosus may be considered as one muscle. They contract together and have a similar function. The common feature of the two muscles is their attachment to the terminal fibers of the rectum and vagina. The sphincter ani is closely united to the muscles of the pelvic floor by tendons and fascial attachments. The object of the muscles of the pelvic floor is to control the lower ends of the vagina and rectum. Fascial structures are common to muscles which have to afford sustaining power, as those of the abdomen, back and thigh.

(To be continued.)

A STORY OF CHICKAMAUGA.

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My apology for intruding upon the columns of the JOURNAL is multiple. I am a veteran of the Civil War, and I did duty upon the battle-field of Chickamauga, upon which I have been again on duty since the 7th day of July. My knowledge of hospitals is of long duration, and extends to the hospitals of Europe as well as those of our own country. Moreover, while the hospital under my command needs no defense for its efficiency under my own administration, I feel that my colleagues in the army and in other hospitals have been most unrighteously abused—from the Surgeon-General at Washington to the humblest lieutenant serving as an assistant-surgeon in the regiments. In this defense of a noble profession, I do not excuse dereliction of duty or stupidity in any medical officer. Occasionally a medical officer is found who is incompetent, not always because of want of medical knowledge, but by reason of his disposition, which disqualifies him for his position. Such men are in the army, but they are few.

Let me photograph for you the pictures in my mind as they were registered. On July 6th I reached Chat-

tanooga at 8:30 P.M. My hotel for the night was the Read House. At 5 A.M. of the 7th I arose, put my head out of the window and counted twelve soldiers lying drunk in the street. At the Central Depot, a few hours later, waiting for a train to Lytle, where I must report for duty, I observed soldiers drunk and in the company of prostitutes. A police officer at the depot, of whom I made many inquiries suggested by my knowledge of Chattanooga at the time of the Civil War, told me that the town was full of drunken soldiers and prostitutes, the latter numbering many hundreds, of all shades of color and damnation.

A railroad ride of an hour, between Missionary Ridge and Lookout Mountain, southward, and the station of "Lytle" or "Battlefield" was reached. Wooden sheds surrounded a space opposite the depot, forming an aggregation of restaurants, fruit and nut vendors, variety shows and houses of prostitution. An hour later I reported for duty and was assigned to the staff of Brigadier-General Rosser, of Confederate army fame.

In the afternoon I returned to Chattanooga and slept that night in the Southern Hotel; at 8:30 next morning I counted, from the window of my room, seventeen soldiers lying drunk in the street. Hundreds of others lay about the town in the same condition. Who was responsible for this? I ask the honest reader if the sickness in the army springing from drunkenness and prostitution was due to the carelessness of the medical staff of the army? This loose military and civil government had been prevailing for weeks, and the army was suffering from dissipation and prostitution. Not less than 5 per cent. of about 50,000 men were incapacitated for their full duties by syphilis or gonorrhœa or both. They flocked in at the sick calls, the quarters were besprinkled with them, and they furnished fully 80 per cent. of the surgical patients of the field hospitals. How did they conduct themselves there? Their appetites were not inspired; they craved full diet, and, because they were in the hospital, wanted all the delicacies provided for sick men who could eat but little and drink soup and milk. They resented their grievances by writing letters to newspapers abusing the hospitals and the doctors. An anxious mother from the far North becoming alarmed, came down to Chickamauga. She had read these letters. Her own son had written her his views and told her of the horrors of the army hospital. Upon her arrival she poured out her seven vials upon the hospital and the staff, and then demanded that she be conducted to her "darling boy." The surgeon addressed, by this time a little warm under the collar, said: "Your son is out in the woods under the trees; he is doing very well, but he has had a very bad attack of gonorrhœa." "What's that," she snapped out. "Clap, madam, if you please." Many examples of the outrageous behavior of this class of patients might be given. But the subject will not bear investigation in the daily press, notwithstanding its libelous and criminal attacks upon the hospitals and their medical staffs. Can you accuse the doctors for not preventing this? You can not do it. The civil authorities of Chattanooga, to their eternal disgrace, are largely responsible for this matter. They bowed down before the brazen image of cupidity and resolved to do nothing that would stay the draft upon a soldier's pocket in their morally rotten corporation.

On July 8 I took the position of Brigade Surgeon on General Rosser's staff. I remained on this staff

as Brigade Surgeon until August 1. General Rosser is a man who has been educated in the art of war from West Point through all the wars of the last and present generation. He is kind and resolute, companionable and pure in his daily conduct, indefatigable in the pursuit of his duties despite poor health. Not a drop of spirituous liquors of any kind were ever seen at his headquarters, and as we stood about our mess table, with its plain and simple food, frequently in the rain without cover, General Rosser, with all heads uncovered, never failed to invoke the blessing of God upon the table and its participants. But General Rosser, like all old generals of the army, was physically impaired. Their livers are bad, their digestive organs generally are permanently deranged, and the dynamo in every one of them has begun to fail. General Rosser broke down and returned to his home in Virginia, and General Poland, Division Commander, died. Other old generals, whom I saw, had seen their best days, and altogether would have formed a magnificent advisory board, but their places in the field should have been filled by younger men. Surely the medical profession of the army were not responsible for this.

Within a week after I joined General Rosser's staff, I was struck with the difference in the morning sick reports of the different regiments forming the brigade. It stood in the relation of 1, 2, 3. Why was the First Pennsylvania regiment first, the Fourteenth Minnesota second and the Second Ohio third, or 10, 20, 30 sick? The camp was the finest I had ever seen; the food was good and abundant. The weather was then fine; later it became atrocious. The Pennsylvania regiment was an old National Guard regiment, their officers and men were city-bred, and before entering the service they had culled out of the regiment every man and officer of doubtful health. They slept in the company streets, when they were dry, and kept their camp like a pin. The Fourteenth Minnesota physically were apparently in advance of the Pennsylvania regiment, but they were largely country-bred, slept in their tents, three and four to the tent. The tents were not ventilated by window slots at either end of the ridge pole, and they usually dropped the flies at the entrance. The Second Ohio stood below both in health record. A hollow in the land stretched through the camp. The First Pennsylvania and Fourteenth Minnesota were at its head, the Second Ohio at the foot. Later they got the wash from the rains, and in spite of magnificent efforts, like the other two regiments, concluded to move. This brigade, officers and men, numbered about 3600, with but one medical officer to a regiment. The colonels, Good, Van Duzee and Kertz, were able men, ever vigilant, kind and devoted to their duties, and I consider it a great privilege and honor to add them to the list of my many army friends.

A regiment of troops in the field are too much for a single medical officer. Each regiment was originally provided with three, but two out of each regiment were detailed to other duties. At the field hospital these detailed surgeons were busy, hard-working men. But many of them were detailed to the ambulance corps, where they did nothing but play poker, crack jokes and watch the mules switch off flies, or sometimes do other amusing things such as mules will do. I sent a remonstrance through military channels to corps headquarters, setting forth my complaint, and asked that the medical officers of the brigade at the

ambulance station be sent back to their regiments. Lieutenant-Colonel Huidekoper, the corps surgeon, refused to return my medical officers. The division surgeon interfered and got one of them back—Lieutenant Dorsey of the Fourteenth Minnesota.

I will digress here to speak of the physical character of the soldiers of the entire Division—13,000 men. Serving as a member of the Discharge Board, I was almost daily examining soldiers for discharge from the army. Among these men I found no end of hernias, many of them existing at time of enlistment. One man had inguinal hernia and club-foot. Many had severe astigmatism. Some were deaf, scores of them had constitutional syphilis, and many had tuberculosis. A great many had organic disease of the heart, and a host had bad feet or bad teeth. How could a lot of physically bad men fail to make a large sick list? Were the doctors responsible for this? The medical men who passed these men into the service certainly were, but they got only forty cents per capita for examining these men as recruits. They had an excuse for poor work. It was the same as that attributed to Mark Twain when a pilot on the Mississippi River, when he was upbraided by the captain, to whom he replied that he thought he was "pilotin" very well for \$12 a month.

On August 1 I was detached by higher authority and put in command of the Second Division, First Army Corps Field Hospital of 263 beds. At the hospital I found 162 patients, six medical officers, a lieutenant, a commissary of subsistence, and 39 out of 96 men who should have composed the hospital corps. Out of these 39, I was to find kitchen men, laborers, guards, clerks and nurses. Of the number on hand some were physically ill-suited or actually ill. Six noble doctors were on duty—Majors Charlton, Bagerly and Myers, Captain Dutton, Lieutenants Little and Nesbit—taking all the three watches of eight hours each, and 162 patients. I was cut down to depend upon twelve or fourteen nurses for day and night duty. These were soldiers with only accidental experience, and but little of that, in civil life. Seventeen sick soldiers lay upon the ground. There was poor preparation of food; a limited supply of proper food for the very sick. Major Charlton, whom I relieved, was ill. The fault in this instance was twofold. The division surgeon and the purveyors of lumber, cots, etc., were to blame. I soon, but after much perplexity, got over the difficulties and the hospital flourished. Typhoid fever, next to venereal disease, has been the scourge of the army at Camp George H. Thomas. What was its origin? Why its prevalence?

Let us take a side view of the subject. The typhoid bacillus is a specific germ. If introduced into the intestines of man it produces a train of symptoms known as typhoid fever. Now, was it in the water or was it in the food? Suppose for a moment that it was not in either the water-supply or army rations. How did it reach the soldiers? It is a fact that typhoid fever was prevailing in the neighborhood of Chickamauga Park before the army camped there. It is also stated that it developed in the first regiments who camped in the park. The people in the neighborhood sold milk and farm products to the soldiers, and if they had typhoid fever, as it is known they had, they likely conveyed the typhoid germs in their milk-cans and probably in their fruit. They watered their milk probably with infected well water, and handled their

sick and their fruit. Typhoid fever was not epidemic at Camp Thomas, and its spread was not rapid until within two weeks. It was spread from detached foci of infection and not from one focus. I am convinced, after no little investigation, that the water-supply from natural springs and the pipe-line at Chickamauga was good and did not contain the typhoid germ. It was not in the army rations. I believe that it was first introduced by the hucksters; that troops arriving brought soldiers infected at home or in other camps, and that it spread from one to another in other ways than through the pipe-line or commissary department. But were the doctors responsible for its introduction? Not at all. Were they responsible for its expansion? They fought it as well, probably, as they could in army life and under the difficulties attending camp practice. In the hospital which I had the honor to command, out of more than 900 patients we had 14 deaths from all causes, probably 8 from typhoid fever. The mortality in the Second Division, 1st Army Corps, was certainly not excessive.

The Red Cross Society, the National Relief Association and the United States Government provided more than enough. The combination was lavish. Some things I would have liked to have had more of. Wine, brandy and whisky were shortages, but of everything else to eat and to wear in a sick-bed, I had an abundance. On the 26th of August, I turned over a surplus of nearly half a ton of materials to the Red Cross Society. My work was done at Camp Thomas, and the day following we moved to Knoxville. As I left Camp Thomas, I received a check from the Red Cross Society at Pittsburg, Pa., for \$500.

The hospitals and camps have been full of blooming liars, who have filled the newspapers with the most alarming stories of cruelty and neglect. And for the sake of justice they must be met and denied. Cots and lumber were hard to get about August 10, but we soon broke the blockade and got all we needed.

At Camp Thomas or Chickamauga Park the Sternberg Hospital is now open. It is designed with the expectancy of reaching 1000 beds. It is a field hospital. The quarters are the army hospital tents and wooden barracks. The beds are iron, mattresses hair, mosquito canopies over all, and trained female nurses are in attendance. The world has never seen such a field hospital. Hundreds of soldiers will there find more luxury than they ever knew at home, yet the day when the public press will put the Sternberg Hospital in the crucible will likely arrive.

Let the noble fathers and mothers of this Nation know that the medical profession have been as devoted to their sons on the historic field of Chickamauga in this war as were our colleagues to the Nation's sons during the Civil War. It has been God's meroy in prolonging my good health and love of country and giving me the ability to say that I witnessed the devotion to duty of the surgeons in the Civil War and in this war upon the same field of Chickamauga. The soldiers of this war have had their trials, but I can call upon my comrades of the Civil War who are out again now to say whether the following assertion is true or not: The soldiers, sick and well, at Chickamauga Park, have had a picnic as compared with the soldiers there in 1863 and 1864.

The park is infected now and will be rapidly abandoned, as it should be. The sink problem has been mentioned by the newspapers. It is a very difficult one to discuss. The problem in ordinary soil, with

plenty of help and good tools, is easy enough. But in Chickamauga Park conditions of soil prevail which make it very difficult to construct a sink with ordinary labor and tools. The soil is tough clay deposited in a bed of rocks of all shapes and sizes. The clay stratum is deep. It is possessed of poor absorbing qualities, and if the rain fills the sink with water it holds it like a barrel. To get a sink a few feet deep is of little consequence. It is necessary that the depth of the sink be 12 feet, and for working space, it is therefore necessary that they be 5 feet in width and 12 feet long. Such a sink requires many reliefs of labor. After completion it must be surface-ditched; when to this you add the ditching of nearly three acres of ground for a hospital site, one may gain some idea of soldiering.

To the regimental commanders of the Second Division, First Army Corps, I return many thanks for the large details of men to aid me in putting the grounds of the hospital in good hygienic condition. When I left the hospital site on the morning of the 27th of August, the entire plant having been delivered for shipment at Rossville, the grounds were ready for a picnic, not a shred of anything being left unburned, not a sink being left otherwise than in a perfect state of innocuousness, all being filled, and banked with lime and earth. If your readers have had some of the deceptions removed from their minds and will kindly turn their wrath from the medical officers of the army, I will be well repaid for the time spent upon this communication.

THE RETURNING ARMY.

BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

The war is over and the heroes who freed the Western Continent from Spanish despotism are returning home. The first war of invasion on our part has been a short, decisive one. Only four months have passed by since the Chief Executive issued the first call to arms, and more than we expected has been accomplished. The outside world, which has sneered too long at our fighting strength as a nation, has been convinced that it is dangerous to trifle with Americans in matters of war. In less than two months after war was declared we had more than two hundred thousand men in the field, eager and anxious to face the dangers of active warfare. Less than one-half of this army took part in the invasion. The enemy's navy was entirely destroyed; not a single ship that came within range of our guns escaped. The proud Spanish fleet is a total wreck in American waters, a source of pride to our navy and a significant object lesson for all foreign nations. Santiago fell before our victorious army; Porto Rico yielded after a few skirmishes and Spain accepted our terms of peace without much argumentation, after the hopelessness of her cause had been demonstrated by our invincible army and navy. Peace has been restored, and the returning soldiers of the volunteer army will soon return to citizenship and resume their ordinary vocations of peaceful life.

What a contrast between the invading and returning army! This contrast has reference not only to size but also to appearance. Thousands have died from wounds and disease. Yellow fever, dysentery, malaria and typhoid fever have been and continue to be our most formidable enemies. We had no great

difficulty in silencing the Spanish guns, but we have been less effective in preventing the origin and spread of these, the greatest terrors of camp life. We can calculate with some degree of precision the loss of life sustained in battle, but it is impossible today to estimate the ultimate damage inflicted by disease. The naval forces scored the greatest victories with little loss of life; they escaped disease and its consequences, to a large extent, and were subject to little or no privations. The invading armies suffered the brunt of privation and discomforts incident to an active campaign. The troops in camps who were denied the privilege of taking part in the invasion of Cuba and Porto Rico had their share of deaths, sickness and hardship. It is safe to say that not half of the soldiers engaged in this short war are in a fighting or working condition on their return home. It is a sad sight, indeed, to witness the disembarkment of a transport arriving from Cuba or Porto Rico. Every one of the vessels brings from fifty to one hundred and fifty disabled men requiring medical treatment. All of the men left on the outgoing transports in good health and cheerful mood; all who arrive show the effects of the campaign. Many have died in our new possessions, many have been consigned to the sea on their way home, others have reached the shore in a dying condition. The crowded transports, the inadequate provisions for proper food, have made the voyages to and from the seat of war a source of hardship instead of health and pleasure. The emaciated forms, the sunken eye, the hollow cheek, the pale, bronzed faces, the staggering gait, show only too plainly what can be done by disease, a tropic climate and improper food in disabling an army in a few weeks. In this respect our experience is a repetition of that of our enemy. It is well known that the Spanish army lost 50 per cent. of its fighting force from the same cause in two months after landing in Cuba. The Spanish surgeon I met inside of the lines of the enemy, four days before the surrender of Santiago, when we delivered to him, under a flag of truce, sixteen wounded Spanish soldiers, informed me that when his part of the army reached Cuba the men were all in good health, and that now many were sick and none well. He drew a sad picture of how their ranks were thinned out by yellow fever, malaria and dysentery. The outbreak and spread of typhoid fever in our home camps, so early during the campaign, is responsible for more deaths and suffering than any other cause. Many of our soldiers carried the infection with them to Cuba and Porto Rico, and were taken ill on the transports or soon after landing. It is much more difficult to keep typhoid fever out of the army than yellow fever. The yellow fever which our troops in Cuba encountered was of a mild type. Comparatively few died and most of the cases recovered after an illness of but a few days. Typhoid fever runs its typical course of three weeks or more, little influenced, as far as time is concerned, by medication. It is a disease which, above all others, requires careful nursing. The necessary attention to typhoid-fever patients in nursing and treatment is a matter difficult to obtain, even in a well-equipped hospital with all needful appliances. The management of such cases in field hospitals is necessarily attended by many difficulties which tax to the utmost the experience of the medical staff and nursing corps. Considering the limited resources at our command in the treatment of this disease, in our home camps and our

new possessions, it is surprising that the mortality has not been greater. The Sisters of Charity and the trained female nurses from different cities, have done most satisfactory work in our home camps, crowded with typhoid fever patients. Many a soldier on his recovery from the disease will feel grateful for their faithful services.

CAMP WIKOFF.

Camp Wikoff is now a great hospital. It is located on Montauk Point, L. I., a narrow strip of land surrounded on both sides by salt water. The country is hilly and treeless and the sandy soil is covered with a scanty growth of grass. Between the hills are cup-shaped depressions with a marshy soil, which after rains are filled with stagnant water. These diminutive marshes threaten danger in case of a prolonged encampment. They are undoubtedly, all of them, the natural breeding-places of the plasmodium malariae. They will soon become contaminated with the fecal discharge from hundreds of typhoid fever cases, as many of the sinks drain directly into them. I am told that the water-supply from the artesian wells, while not ample, is otherwise satisfactory. The small railroad which terminates here from New York, monopolizes the whole business of transportation, as this exclusive right was made conditional in securing the ground for camp purposes. This is greatly to be regretted, as steamer communication could be readily established, which would facilitate the present unusually large passenger and freight business between the camp and New York. Politics and personal interests have figured conspicuously in the management of the present war. Departments have been severely criticised, when a thorough investigation would often reveal a power behind the throne. If we had steamer traffic between here and New York we would not have to wait for days for the so much needed supplies. The little railroad has had sufficient influence in cutting off competition and in increasing correspondingly the value of its stock, and we here are suffering the consequences of this Judas Iscariot bargain. The whole little peninsula is a tented field. Regiment after regiment is arriving, day after day, seriously testing the quartermaster's department. All the troops that came from Cuba must land here to comply with the quarantine regulations. A detention hospital has been established near the landing, to which all suspects are consigned for the required length of time. Near the hospital a large disinfecting plant has been erected. So far no cases of yellow fever have been imported. The general hospital contains at the present time (August 26) nearly one thousand patients and all the sick in the camp will swell the number to 1500. The landing of so many sick in such a short time has brought about an overcrowding which, with the present facilities and resources could not have been prevented. Colonel Forwood, Assistant Surgeon-General, selected the camp site, and was the first man on the ground. His immense military experience, gained during the War of the Rebellion, fitted him in an admirable way for the difficult task imposed upon him. Colonel Forwood is an authority in military surgery and endowed with excellent administrative talents. His work here will be the crowning effort of his life. He has worked night and day since he has assumed his duties here. He is a friend of the soldier and will not leave a stone unturned to be of service to him. He has exclusive charge of the hospital construction, and his work

was much admired by two staff surgeons of the German army, Drs. Steinbach and Wildemann, and by Lieutenant-Commander Tomatsuri of the Japanese navy, who came from New York to the camp with me. As they expressed themselves, the field hospitals here were the best they had ever seen. Colonel Forwood is ably assisted in his arduous duties by Majors Heitzmann, Brown, Nancrede and Wing and a large staff of acting assistant-surgeons. The writer, on his arrival, was placed in charge of the surgical work. An operating tent was erected and placed in working order with the assistance of two Sisters of Charity and Acting Assistant-Surgeon Greenleaf. The tent is floored and divided into four sections. The front part is the operating-room, with two side tables two feet in width the whole length of the room. The tables are covered with rubber cloth. An army operating-table and a few stands constitute the balance of the furnishing of the room. The next section is open on the sides to allow a free current of air and serves as an office. The next compartment is the preparation-room, fitted out with formaldehyde and steam sterilizers and sufficient shelf accommodations. The last section is used as a storeroom for dressings, splints, antiseptics and drugs necessary for the treatment of surgical cases.

Gen. Joseph Wheeler is in command of the camp, and although debilitated by the campaign and disease, he attends to his duties with a regularity and devotion which have characterized his whole military career. The sick are being cared for at the present time by fifty Sisters of Charity and sixty trained female nurses. One of the things that was greatly admired by the foreign military surgeons was the efficient work of the hospital corps. They were charmed with the way in which the patients were handled and the gentlemanly conduct of the litter-bearers. Less praise was bestowed on the military bearing of the men in camp, from the highest officers to the ordinary private. The military spirit seems to have been fully subdued in the enemy's country. The sentries move about sluggishly and seldom deem it worth while to come to a "present arms," no matter who may come within saluting distance. Men walk about in clothes showing only too distinctly the absence of whisk-broom or brush since they left Cuba. Guns, bayonets and scabbards have become rusty and show an entire lack of proper care. All drills are suspended and the whole camp presents more the appearance of a picnic ground than a military post. Officers and men are evidently impressed with the idea that their work is done, and while away their time in a way requiring the least amount of energy and exertion possible. In this respect our troops form a strong contrast with the German army when it entered Paris, after one of the most bloody wars and after a prolonged siege full of hardship and privations. On that occasion every soldier was in a condition to go on parade and to pass with credit the inspection of the most exacting officer. Such looseness of discipline as seen here at this time is not calculated to inspire the outgoing army with the proper military spirit that should be maintained and cultivated under the most adverse circumstances. Strict military bearing is also sadly lacking among the medical officers—a source of disappointment and surprise to the corps of acting assistant-surgeons, who entered the service with the full expectation that the reverse would be the case.

Camp Wikoff, Montauk, N. Y., Aug. 27, 1898.

THE NATIONAL CRY.

BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

Unrest, criticism and grumbling are the accompaniments and heritage of every war. These symptoms of war fever have been unusually well developed during the war just ended, and they will be discussed for a long time after the treaty of peace has been signed. After an uninterrupted reign of peace for more than thirty years, the war cloud that came upon us so suddenly and unexpectedly provoked a commotion among the people unparalleled in degree and extent since the War of the Rebellion. All eyes were turned in the direction of the seat of war, and the contents of our enterprising and prolific newspapers were devoured with an eagerness unknown in any other country. It is strange that with all this great national unrest the current of commerce and business pursued its natural course. While our troops were engaged in war in foreign lands, the tilling of the soil, the hum of industry and the ordinary avocations of life continued as though harmony and peace reigned universal. The American never forgets that patriotism is not limited to the battlefield. The conscientious performance of duties at home, the fireside, the farms, the workshops, the manufacturing and business places, is one of the things essential in the successful prosecution of a war. This fact was recognized by our people, and the result has been that the prosperity of our country has suffered little, if any, during our first war of invasion. Criticism is a part of human nature. It is seen everywhere. It affects the educated as well as the ignorant, it extends from the cradle to the grave, it involves one sex as much as the other, it moves the well as much as the sick, it infects the pulpit as well as the stage, and it comes to the surface in the army from the commanding general down to the lowest of all privates. It is amusing to listen at a camp fire to the remarks made from all sources as to how the campaign should be conducted. The average private discusses the most complicated strategic problems with an ease as though he were repeating the multiplication table or the Lord's prayer. The generals high in command ease their conscience by criticising their subordinates most unmercifully, if any thing has gone wrong. Wise as well as ignorant men, a thousand miles away from the seat of war, have their convictions as to what should be done and are free to express them. Criticism increases in severity and extent in proportion as confidence is weakened and undermined. As we live in a free country criticism finds a fertile and productive soil everywhere and anywhere. The unbridled liberty of the press encourages and fosters it. Like swearing and other vices it is engendered by environments. Just and wrathful criticism is legitimate; criticism the outpouring of impure selfish motives is baneful. Our energetic, enthusiastic press is entitled to a great deal of credit in giving to the public the war news so promptly and completely, often at an enormous expense and severe danger to life. The American reporter has no equal in any country for obtaining news regardless of cost and risk. The reporters not only culled the news, but often took a hand in supplying the sick and wounded with fruit, tobacco, and delicacies. How quickly the reporters sniffed the latest news, I learned in Porto Rico. I arrived from Arroya in the harbor of Ponce, August 13. Rumors of peace were rife for a number of days.

The *Herald* dispatch boat, then in the harbor, got up steam at about 3 o'clock in the afternoon. Soon the little craft put to sea, and I watched its course with intense interest. I said to my friends, if the boat, after leaving the harbor, turns in the direction of Arroya, it means war; if in an opposite direction, toward New York, peace has been declared. The proud little steamer turned its nose toward the United States and made a bee line for New York. It was not until the next morning that the welcome news reached headquarters. This is only one of the many instances in which the reporters came in possession of the latest news before they reached the officials. The reporters were also instrumental in exposing many irregularities and defects of the military service from headquarters in Washington to the seat of war. I have no doubt that many wrongs were corrected under the pressure of the press.

It is not strange that many of our influential newspapers went a little too far in representing the grievances of the soldiers and in criticizing the action of departments and officers. A tinge of sensationalism is common more or less to all of our great dailies. Interviews that never occurred will continue to appear as long as the reputation of a reporter depends largely on his ability to satisfy the cravings of morbid curiosity. The statements made to reporters are always susceptible to more or less reconstruction. Again, it must be remembered that some men in the army, as elsewhere, are likely to exaggerate the true conditions, believing that by doing so, their services will be the better appreciated. As the result of my own observations, I can say without fear of contradiction that the best soldiers do the least grumbling. The most heroic and patriotic soldiers have the least to say of what they did and in relating hairbreadth escapes. It is the drone that does the complaining, and who rides in ambulances, and overcrowds the hospital, and puzzles and vexes the hard-working doctor. To the credit of the armies of invasion I must say that I heard but few complaints when the days were darkest and the food scantiest. One day I visited the fever camp near the division hospital of the army before Santiago, where I found two hundred patients literally lying in the mud, with nothing but a wet blanket, most of them under a shelter tent, some of them even without this slight protection against the pouring rains. Food was of the plainest kind, yet little or no complaint here. The men expected hardships, and when they came they were not disappointed. Grumbling became more marked and widespread with the progress of the war, after the men had become worn out by the campaign, and homesickness had gained a firm foothold. The severest complaints have originated with camp followers. The Medical Department has been criticized repeatedly, and yet it would be found very difficult to find among the returning soldiers any one who would be willing, or who would have reason to complain of the treatment he received at the hands of medical officers. In case of war, the machinery of our government is a very complicated one. The executive power of the Surgeon-General is indeed an extremely limited one. Everything of importance has to pass through the hands and by sanction of the Secretary of War. The Secretary of War is a busy man in keeping track of what is going in his department outside of the Surgeon-General's office. On the other hand the Medical Department depends entirely on the quar-

termaster's department in forwarding and distributing medical supplies. No wonder that many collisions between these departments occurred during the present war. Our experience has taught us in a most forcible way that the Medical Department should have charge of everything pertaining to the sick and wounded, in order to accomplish that for which it is intended. The Secretary of War is not supposed to have any knowledge of medicine or surgery or other wants of sick and wounded, and yet the Surgeon-General is powerless in the execution of his orders without his co-operation. If the forwarding and distribution of the medical and hospital supplies were directly under the control and management of the Medical Department we would have heard less of well-founded complaints of the scarcity of medicines and hospital supplies. To make a department strong and efficient it must be independent. It was not difficult to foresee when this war broke out that the greatest danger the troops had to expect was disease and not the Spaniards. The importance of the Medical Department was never more keenly apparent than at the present time, and yet what was done? The highest official in the Medical Department is a Brigadier-General, and only five medical officers with the rank of Colonel, and seven Lieutenant-Colonels. For the army major-generals were in abundance, brigadier-generals by the dozen, and colonels were turned out by the hundreds. Many of the brigadier-generals in brand new uniforms and glittering staffs never found a command, but their names remained on the pay roll just the same. Many of our newly fledged colonels could not handle a musket to save their lives and some of them even attempted the unusual feat of mounting the horse from the right side. In the face of all these appalling defects of army service the brunt of criticism continues to fall on the Surgeon-General and his hard working officers in the field. Much has been said of the mismanagement of Camp Wikoff. Considering the limited transportation facilities, and the fact that in less than three weeks more than 3,000 patients have been cared for, it is a source of gratification that so much has been accomplished, largely through the energy of the Chief Surgeon, Colonel Forwood, and Majors Brown and Heitzman. A corps of more than one hundred female nurses, including fifty Sisters of Charity, do the necessary nursing with a will and efficiency that astonish the many visitors. The hospital tents go up like mushrooms, day after day, and at the present time 2000 patients are well sheltered and well cared for. No lack of medical supplies at this time. The surgical ward in my charge was completed today and is already crowded with patients. The liberal contributions sent here by different relief societies supply the sick and well with an abundance of delicacies of all kinds. The diet of the convalescents is luxurious, much better than what is furnished by the officers' mess. The Red Cross is doing excellent work here, as elsewhere, in the distribution of clothing, medicines and delicacies. Mrs. A. Tscheppe, who represents a relief society of New York, is a familiar figure among the soldier patients and has been of much service in adding to their comfort and speedy recovery. Most of the patients are suffering from malaria, typhoid fever or dysentery. The number of deaths average from ten to fourteen daily, a small percentage considering the number of patients in the whole camp. The patients here enjoy fresh air, good nurs-

ing and excellent treatment, all of which will be conducive to rapid recovery. The conditions here for the successful treatment of the fever cases are, in my opinion, far better than in any of the large hospitals in cities. It is to be hoped that the entire camp will be vacated in from four to five weeks, as after that time the soil will be thoroughly infected, in spite of all precautions, and the indigenous spread of typhoid fever would follow as an unavoidable sequence. The surgical work consists in the treatment of large abscesses, occurring in patients whose general health has been undermined by disease, or the hardships of the campaign, and operations for hemorrhoids and rectal fistula. Unjust and unnecessary criticism has a demoralizing effect on those directly or indirectly concerned. It is prone to intimidate and confuse those who are criticised and embolden those who look for undeserved sympathy. In this camp there is no further ground for complaint of any kind. It is generally known that the Medical Department was not consulted in locating the camps. For reasons known only to those in power, the camps were selected regardless of sanitary conditions. Our troops have been exposed to malaria since they left the State camps, and almost every man shows evidences of more or less malarial poisoning. As the essential cause of malaria enters the body by inhalation, malaria could not be avoided as long as the camps were located on a soil which breeds the plasmodium. Typhoid fever made its appearance in the State camps and followed the army to Chickamauga, Tampa, Alger, Cuba and Porto Rico. It is a repetition of what has happened during all campaigns under similar circumstances. Let the national cry subside now and let the press and people await the results of a thorough investigation by Congress, which will place the responsibility for any mismanagement where it belongs. The Medical Department courts such investigation, fully confident that the blame will be fixed outside of its legitimate jurisdiction.

Camp Wikoff, Aug. 31, 1898.

OUR RELIEF SOCIETIES.

BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF OPERATING STAFF WITH THE ARMY IN THE FIELD.

War, pestilence, famine, floods and other great national calamities, are the most reliable tests to bring out the true philanthropic spirit of individuals as well as of nations. The good Samaritan is to be seen everywhere under ordinary conditions on his errands of mercy, following the footsteps of his Master in bringing comfort to the poor, the sick, the maimed and the oppressed, but his energies are taxed to the utmost, and his work is appreciated most keenly, when the masses are in distress. The American people are noted for their charitable disposition, and have gained a well-deserved reputation for humanitarian work. Our numerous ideal charitable institutions speak for themselves. Many national catastrophes have demonstrated the liberality and good-will of our people. The War of the Rebellion furnished an interesting object lesson to the outside world of the way in which patriotism is estimated here. During the war just ended many different relief societies have rivaled with each other in supplying our soldiers, sick and well, with many comforts of life beyond the limit of the government supplies. The government itself set a

noble example by sending to the camps and the invading armies all kinds of supplies, unparalleled in quantity and quality in the history of the country. I am sure no one regrets more keenly than the government officials that these liberal supplies did not always reach their destination in time. The work of the many auxiliaries corrected many of these defects. Individuals as well as organized societies have labored incessantly and faithfully in coming to the aid of the government, in furnishing the troops with underclothing and delicacies usually beyond the reach of armies when engaged in active warfare. Miss Anabel Clarestes, a little girl in Lagrange, Ill., has been busy ever since the war commenced in preparing and sending to camps and the front home-made jellies, the product of her own hand. She had no difficulty in collecting money to purchase the necessary materials, but it was left for her to labor in the humble kitchen to prepare the incomparable delicacies for the soldiers in the field. This little American girl is a heroine worthy of the praise and admiration of the returning heroes who have been benefited by her modest, unselfish work. Many a patriotic woman, unknown to newspaper notoriety, has done her share in minimizing the sufferings of this war. It was not an uncommon thing for officers to receive a box containing the contributions of some female friend of the army who sent all she could spare for the alleviation of the troops in the field. In many such instances the name of the benefactress remained unknown to those who benefited by her donation. I have opened many such boxes, containing as a rule underclothing, bandages, reading and writing material, towels, handkerchiefs, and a few jars of jelly or canned fruit. The soldiers who were made the recipients of these gifts felt that they were remembered at home, an assurance which contributed much in intensifying their patriotism and in sustaining their courage under the most trying circumstances. The intense interest manifested by the government and the people in the care and comfort of the returning army remains unequaled in the history of our country. Every soldier was met with a reception given to an intimate and long-looked-for friend. The sick received the most tender care from all sides, and the well were given food that reminded them that they had reached home. The hospitals and many private houses threw the doors wide open to receive those who required medical treatment. Transportation home was made easy and comfortable by the active intervention of thousands of friends who were strangers when the troops left for the seat of war. In all large cities committees were organized to look after the comforts of the returning troops. In short, it may be safely stated that no army ever received a more enthusiastic, kind and cordial reception than the troops that have reached us from the seat of war.

RED CROSS SOCIETY.

Miss Clara Barton, President of the American Red Cross Society, has performed her onerous duties during the entire war with a devotion and earnestness that merit universal recognition at home and abroad. She has been tireless in her efforts to bring comfort to the soldiers at times when her services were most needed. The *Texas* and the little steamer *Red Cross*, under her command, made their appearance at Siboney at a time when outside help was most appreciated. Ice, medicines, dressings and hospital supplies were freely distributed among the sick and wounded.

After the surrender of Santiago the *Texas* was the first vessel to enter its harbor on its errand of mercy in bringing food for the hungry Cubans and delicacies for the sick of the victorious and vanquished armies. The Red Cross Society established supply depots in all of the large camps and the good work done everywhere will live in the memories of all who were engaged in the conflict. Miss Barton has the confidence of the American people and she has sustained it through the present war by the thoughtful and timely distribution of the innumerable and liberal donations to the society she so well represents. An appropriate idea of what this Society has done can be gained from the fact that in Camp Wikoff alone two thousand dollars of supplies are distributed daily. Miss Barton has been assisted in her widespread humanitarian work by a large staff of physicians and nurses who came to the relief of the medical officers at times when their services were most needed. After peace was declared, Miss Clara Barton immediately sailed for Havana to bring much-needed aid to the starving reconcentrados of the long-besieged city, while her numerous helpers continued their faithful work in the home camps. The work of the Red Cross received the moral and substantial support of the charitably disposed citizens throughout the United States and liberal donations from abroad. Recent experience has again demonstrated that this society is the most important auxiliary in war as well as other natural disasters in bringing prompt relief to the sufferers.

WOMEN'S PATRIOTIC RELIEF ASSOCIATION, NEW YORK.

This benevolent Association has extended its work from the camps to the needy families of soldiers who enlisted and went to the front, leaving families behind them, worthy objects of well-deserved charity. It was founded in the City of New York at the outbreak of the war, at the residence of Mrs. Egbert Gurnsey, with Mrs. Howard Carroll as president and well-organized committees and advisory board, consisting of prominent business and professional men. The Association has provided food and house rent, as well as medical attendance, monthly, to no less than 2444 families. A free eatinghouse was established at 711 Eighth Avenue, where these families received food and clothing. Mrs. Charles Carroll, a member of the Association, was made president of the Naval Reserve Relief, and by contributions and a garden party given at her residence in New Brighton, Borough of Richmond, the sum of \$2500 was secured, which was expended for the benefit of the New York Naval Reserves. This special function of the Association did much for the comfort and efficiency of this otherwise neglected branch of the military service. The hospital work of the Association has been under the management of Mrs. Charles Carroll, Mrs. Adolph Tscheppe and Mrs. Seymore. The ladies of the Association, with Mrs. William McDonald as chairman, gave an outing to the convalescent soldiers from the different hospitals in Central Park, which proved to be one of the most memorable occasions in the annals of the history of this famous park. Mrs. Charles Carroll and Mrs. Tscheppe erected a tent in Camp Wikoff when the soldiers from Cuba commenced to return, and have been busy in distributing without any red tape an enormous amount of most valuable contributions among the sick and convalescents. Their donations of different stimulants and

artificial waters have proved most acceptable and timely. From this tent ice cream has been furnished daily. A special messenger has done excellent service in distributing mail and in looking up soldiers inquired after by anxious relatives. So fertile have been the resources of this modest little tent that it has been designated "The Gold Mine." Mrs. Tscheppe represents the ladies of the "Liederkrantz," and her popularity among the Germans of New York has brought not only the most liberal donations but likewise cash in large amounts. Only the other day she received from a single source a check for \$500, which she was asked to use at her own discretion in the care of the sick and convalescent in the camp. The German press of New York has used its influence in supplying Mrs. Tscheppe with ample means on her errands of mercy.

ILLINOIS ARMY AND NAVY LEAGUE.

This relief association was organized soon after war was declared. It is composed of representative men and women throughout the State of Illinois, with headquarters in Chicago. The secretary, Dr. F. H. Wines, had an extensive experience in dispensing charity throughout the War of the Rebellion, and was consequently well prepared in assuming the laborious and trying duties of his office. While it was the principal intention of the association to look after the interests and comforts of the State Volunteers, many of the contributions reached soldiers outside of the Illinois troops. The State of Illinois, and the City of Chicago in particular, have been very active in minimizing the inevitable sufferings incident to active warfare by sending to the camps and the front large quantities of the most desirable articles of diet, delicacies, underclothing and medicines. The League made special arrangements for transportation at reduced rates, so that the donations reached their destination promptly and at small expense. The League has had from the very beginning a handsome bank account, and cash was sent to different points for the purchasing of the most necessary articles. The citizens of Illinois will have the satisfaction of showing that by concerted action of the members of the League the work of charity and benevolence has been accomplished in the most satisfactory manner.

MASSACHUSETTS VOLUNTEER AID ASSOCIATION.

There has been an impression prevailing among the regular troops, that while the soldiers of the regular army have fought the hardest and have been subjected to the greatest privations, they have not received the recognition to which they are entitled, and have been more or less ignored by the different relief associations. There is undoubtedly some truth concerning these statements. The Massachusetts Volunteer Aid Association has recognized the validity of this complaint, and has directed its surgeons toward correcting the oversight. The work of this association in this direction has been particularly notable in Camp Wikoff. A number of ladies representing this Association came to the camp, and have done all in their power to render the soldiers belonging to the regular army comfortable and happy.

A light diet kitchen was established, provided and equipped at the First Division Hospital, in charge of Major Wood, in conjunction with the Red Cross Society, under the superintendency of Mrs. M. H. Willard. The kitchen is an ideal one, and is presided over by a competent chef. Mrs. Dininger is the lady mana-

ger. The bountiful donation for the sick of the Regular Infantry Division was brought to the camp by Mrs. Leach, wife of Major Smith S. Leach, of the Engineer Corps of the Regular Army, and was contributed by the ladies of New London, Conn., and the Pequot Society. It consisted of a well-assorted collection of soups, eggs, lemons, oranges, butter, crackers, sugar, barley, cocoa, farina, beef, ham, corn-starch, codfish, breakfast food, chocolate, gelatin, tobacco, pipes, keg of whisky, writing and reading material, towels, pajamas, night-shirts and underclothing. The light-diet kitchen is one of the attractions of the camp. The relief societies that I have mentioned are only a few of the hundreds organized throughout the United States for the same purpose, notably among them the "Daughters of the Revolution" and the "Colonial Dames," all of which did their good share in alleviating the sufferings of our army in camp and at the front. The charity that has been practiced so bountifully and so generally during the present war, must satisfy our victorious army that the patriotism they carried into the field has been cultivated at home in words and action to a degree and extent unparalleled in the history of the world. War in a just cause begets patriotism, and nothing can demonstrate this more clearly and forcibly than our experience in the field and at home during the last five months.

□ Camp Wikoff, Sept. 8, 1898.

SOCIETY PROCEEDINGS.

Society of Ophthalmology of Paris.

Meeting of July 7, 1898.

[Translated by DR. FLAVEL B. TIFFANY, Kansas City, Mo.]

M. BOUCHERON, vice-president, in the chair.

M. A. DARIER presented a paper on

SOME THERAPEUTIC INDICATIONS FURNISHED BY THE BACTERIOLOGIC EXAMINATION OF CONJUNCTIVAL SECRETIONS.

Several years ago, a short time after the works of Neisser, I made a series of researches in the endeavor to determine under what conditions the gonococcus produces the grave, virulent form of ophthalmo-blennorrhoea. During two years I submitted to microscopic examination the secretion of almost all the conjunctivites who presented themselves at the clinic of my master, Abadie. I was able to acquire thus the conviction that there is no true purulent ophthalmia without gonococci but all gonococcal ophthalmias are not equally virulent. There are involved special questions of individualities both on the part of the patients as well as upon the part of the microbes themselves. Now the microscopic examination gives us only an approximate indication, which, moreover, the clinical observation, for a long time practised, procures us in a degree equal if not superior. So for several years I have renounced as a basis for therapeutic indications, the searching for the pathogenic microbes from the secreting affections of the conjunctiva. I would not say as much of the pseudo-membranous conjunctivitis in which the serotherapie is of a wholly different action, according to whether one has to do with the Loeffler bacillus or with streptococcus. Now at this moment I am very greatly interested in the study of the therapeutic efficacy of a new salt of silver, the protargol. The results which I have obtained from this agent are so favorable that I could only confirm the conviction by bringing irrefutable anatomic and clinic proofs, so I caused to be undertaken by Mr. Valençon, my chief of clinic, a series of microscopic researches for confirming the diagnosis clinically put forth. From these studies, which will very soon be given, in an inaugural thesis, I can already draw the following conclusions, which are, moreover, the very same which I had already put forth from simple clinical observation.

1. Acute catarrhal conjunctivitis characterized by the presence of the bacilli of Weeks is cured generally in two or three days by the daily cauterizations of protargol.

2. Subacute conjunctivitis with diplobacilli (of Morax) is at first rapidly ameliorated; but relapses are so much the more frequent in proportion as the time between the cauterizations is extended. Moreover, at the end of a certain time, it comes

about that, as with the nitrate of silver, a sort of accustoming to it, and the action of the medicament becomes, so to say, null and void. It is necessary to change the treatment. Following Mr. Morax, I have tried the sulphate of zinc, but I have not been very well satisfied with it. On the other hand I have been well pleased in these cases with the use of the acetate of lead, and with ichthyol $\frac{1}{6}$ whether in solution or pomade.

3. Gonococcal purulent conjunctivitis seems to be the affection called upon to draw forth the most brilliant results from the protargollic medication. I sought to give the reason for this in two previous works. (See the Clinique Ophthalmologique, 1898, Nos. 1 and 6.) Up to this time in all the purulent ophthalmias which I have treated for seven months by protargol I have not seen one in which the suppuration has not been dried up at the end of a few days by bi-daily cauterizations, and that, too, in the most virulent forms. But if one ceases the treatment before fifteen days the suppuration reappears.

4. In two cases of acute pseudo-membranous conjunctivitis, non-diphtheretic, the protargol, contrarily to nitrate of silver, has led in three or four days to a complete disappearance of the false membranes. What effect would be obtained in the forms truly diphtheretic? I shall occupy myself ultimately with blepharo-conjunctivitis with trachoma and with dacryocystitis.

Mr. VALUDE—Gonococcus does not always produce the same form of ophthalmia. I observed lately in a family of five cases one only presented a grave purulent conjunctivitis, the others were only affected in a slight degree, and all, nevertheless, had gonococci in the secretions. It is then very important to find a means of diagnosing the gravity of the affection, and this is what I hope to find in the researches of Dr. Darrier.

Mr. SULZER—The gonococcus is not the sole agent capable of producing purulent ophthalmia, as the remarkable descriptions of Larrey on the subject of Egyptian ophthalmia (seasonable or climatic gonococcus) prove.

Mr. PARENT—I am surprised that Mr. Darrier employs still in certain grave conjunctivites (and consequently susceptible to ulcerations) the solution of acetate of lead, which exposes to metallic deposits not only upon the ulcerated parts but even in certain cases upon the conjunctiva, where it is deposited under the form of little grainy particles. Then, too, when our therapeutic arsenal is so rich in astringent and caustic substances, of what use is it to employ acetate of lead, which presents such inconveniences? When one speaks of purulent conjunctivitis, it is necessary in point of view of the gravity and the efficacy of treatment to make a difference between the adult and the baby. In general the latter is less grave and not so liable to corneal complications. It is then, for the more rapid cure of blenor-rheal ophthalmia of the adult that we must establish the superiority of protargol over other treatment, and especially over nitrate of silver. For, as to purulent ophthalmia of the baby, one may cure it (if the child is cared for immediately) by many different medications, and that with sensibly the same results. Another important point to know is the following: Does it dialyse or diffuse in the conjunctiva more deeply than nitrate of silver, and above all than of silver (naissant)? An excellent therapeutic agent recommended about fifteen years ago by Dr. Sedan, the iodid of silver (naissant) is formed in the cul-de-sac, even by the double decomposition of alkalin, iodine and salt of silver introduced into the cul-de-sac, by means of two glass pipets. In the point of view, especially, of the dialysis or of the thorough penetration of the deep layers, this iodine d'argent (naissant) presents some advantages, and I call the attention of Mr. Darrier to it that he may experiment comparatively with protargol.

Mr. SPEVILLE—I have employed protargol only in catarrhal ophthalmia, and have obtained excellent results from it in such cases. Purulent ophthalmia of the new-born is not so benign as M. Parent would have it, and for that I have seen recently two cases of babes treated with free washings with permanganate, who came back to me with both corneae quite gravely compromised.

Mr. MORAX—It is very easy to convince one's self that all conjunctivites with purulent secretions are not due to gonococcus. The conjunctivitis produced by the bacillus of Weeks often presents a purulent secretion. It may even be accompanied by corneal lesions, as I have demonstrated, and on this subject I recall the case of a patient who had been attacked by an intense, acute contagious conjunctivitis with the bacillus of Weeks, which presented from the very first days of affection, and before the beginning of treatment, quite a grave corneal lesion, since it left after it a central leucoma, and M. Darrier had to make ultimately an optical iridectomy. The eyes of this patient had objectively the aspect of a purulent conjunctivitis, but I repeat we had not to do with the gonococcus, but with the bacillus of Weeks. I believe that I have demonstrated that the classification of conjunctivitis based

solely upon the objective aspect of secretion was erroneous. We may make clinical diagnosis of the different conjunctival infections, by basing not only upon the objective aspect of the inflammation (as has been the custom), but also upon the commemoratives, the evolution, in other words, upon the whole assembly of the symptoms and not upon one single sign, so variable as the aspect of the anatomical lesion. I am surprised that Mr. Darrier has not succeeded in curing subacute conjunctivitis by sulphate of zinc. The solution $\frac{1}{40}$ has the disadvantage of provoking a quite intense irritation, but the patients who can tolerate it are rapidly cured. In very sensitive patients I replace it by the pomade of ichthylol. I have only a very short experience with protargol, which, in subacute conjunctivitis seems to me to be insufficient, as likewise nitrate of silver.

Mr. KOPFF—I rise to support what Mr. Parent has said on the subject of the danger presented by the salts of lead in ocular therapeutics. I have also had opportunity of seeing a certain number of patients treated by acetate of lead, who presented some plumbic incrustations upon the cornea and conjunctiva. In presence of results of this kind we must consider acetate of lead a disastrous agent and proscribe it from our therapeutics. As to protargol, I have not experimented with it, but I ask myself why we seek other medicaments when we have nitrate of silver at our disposition, which is the true specific of purulent ophthalmia of infants. I have had the opportunity of seeing a great number of purulent ophthalmia of infants in the clinic of Mr. Galezowski, who treated them all by his method of bi-quotidian cauterizations with nitrate of silver $\frac{1}{40}$. The results are always rapid and excellent; cure is the rule when the infants are brought at first, before corneal complications. I employ, also, at St. Joseph's hospital, Dr. Galezowski's method, and I have only to congratulate myself with its results. That is why I do not see the necessity of seeking other medicaments, since the nitrate of silver, well and timely employed, has as sure action as possible. Has Mr. Darrier employed protargol in blenorrhoeal ophthalmia of adults?

Mr. DARRIER—If I have not entered upon more details concerning different pathogenic agents of conjunctivitis it is because I wished to confine myself to the province of daily practice. I know that purulent ophthalmia may be provoked by other microbes than the gonococcus; but today, clinically, three forms of conjunctivitis are established, they are: Blenorrhoeal ophthalmia; acute catarrhal conjunctivitis of Weeks, which, as Mr. Morax told us, may be accompanied by ulceration of the cornea, and finally sub-conjunctivitis with diplobacilli of Morax. It is upon these three forms only that my actual work bears. I reserve for later study, diphtheritic conjunctivitis, trachoma, etc. Certainly, I would not arraign nitrate of silver. We ought to have for this product the gratitude which we owe to an old servant who has rendered us signal services, in spite of his faults, with which we have in the end familiarized ourselves. But it is of the debutants, of those who do not yet understand the delicate handling of this agent, caustic in the highest degree, that we must ask their opinion on this subject. Many of them will reply to us that it is a sword with two edges, which may do as much harm as good. How many corneal ulcerations, how many productions of conjunctival false membranes have had for real cause cauterizations too energetic and too untimely? Well, these inconveniences do not exist with the protein of silver. The solutions of this salt form a mucilage, the more onctuous, the more they concentrate. Applied upon the mucous membranes, there is very little irritation, as they do not coagulate the albumina, neither are they precipitated by them; they impregnate and penetrate the epithelial cells, carrying into the depths of the tissues the bactericidal action of the argentic preparations. Nitrate of silver, on the contrary, applied upon the conjunctiva produces a destruction of the epithelium, while at the same time it is precipitated from its solutions, which limits its action to the surface of the mucous membranes. I have given up entirely weak solutions of protargol, and I no longer employ for cauterization with the brush any except the following solution: Protargol 5 gr., distilled water 10 gr. Let it dissolve spontaneously. This solution is of syrupous consistency, adheres to the brush, and does not drop upon the linen and upon the vestments. The cauterizations are made once or twice a day, and in the interval I instill three or four times, one or two drops of collyrium, 5 per cent., in order to sustain and prolong the effect of the cauterization made with the brush. Thanks to this treatment, regularly and promptly applied, all the conjunctivites due to gonococcus and to the bacillus of Weeks will be promptly cured; those, on the contrary, which are due to the diplo-bacillus of Morax will be rather respondent to the sulphate of zinc or to ichthylol. For my part, I

think that until the discovery of the anti-gonococcal serum we must consider the salts of silver as the most active against purulent ophthalmia, and it is our duty to seek that which with an equal efficacy shall present the greatest innocuity.

Mr. BOUCHERON—Is it the silver which acts specifically; is it the acid of the salt? According to what we have just heard said by Mr. Darrier, it would seem that the protargol, which is not painful, would act everywhere by contact rather than by depth (penetration).

Academy of Medicine, San Francisco.

At the meeting for the month of August, Dr. J. Henry Barbat presented a case of tubercular peritonitis in a child of fifteen months. The child had exhibited only the symptom of abdominal enlargement with ascites. The fluid was not freely movable in the abdomen, but was sufficiently so to indicate its presence. There had previously been a neoplasm of the skin on the chest, posteriorly, which had been removed when the child was about nine months old; this showed a microscopic appearance strongly resembling sarcoma. There was a difference of opinion as to whether the abdominal tumor was a sarcoma of the spleen, or abdominal tuberculosis. Operation revealed the nature of the disturbance. Three months after the operation the child was still doing well. Dr. Douglas Montgomery said that he had seen this child in consultation before the neoplasm was removed, and had examined specimens of the mass and found they were very much like sarcomatous tissue. He was therefore of the opinion, when he again saw the child after it had developed the abdominal trouble, that the latter was caused by a recurrence of the growth previously noted on the skin. Dr. E. E. Kelley reported a case of similar trouble occurring in a child three and one-half years of age, on which he had recently operated, but without so good a result as in the case of Dr. Barbat. The case of Dr. Kelley was, however, somewhat different in that in Dr. Barbat's there was a considerable amount of ascites in the abdomen, but in his case there was practically no ascites, the disease being of the fibrous variety and the whole abdominal viscera were practically glued together. The peritoneum was thickened as much as an inch in places by this fibrous material. The feces, examined for some days before the operation, showed tubercle bacilli in very great numbers. As in Dr. Barbat's case, the abdomen was treated to a stream of oxygen while open, but the result was as bad as had been expected, for the child died on the following day. Dr. Montgomery reported that he had examined some of the tubercles in the case reported by Dr. Barbat, but that he could not find any tubercle bacilli; this did not show that there were no bacilli there, but that they were few if present. Dr. H. M. Sherman mentioned a somewhat similar case that had occurred in his practice recently. There was slight enlargement of the abdomen, somewhat disturbed digestion, slight temperature, but no tumor and no ascites. For some time he was of the opinion that he had to deal with a case of disturbance resulting from intestinal infection, possibly due to malarial poisoning. On consultation the question of tubercular peritonitis was raised and it was decided to open the abdomen. The condition was found to be one of miliary tuberculosis. Dr. Dudley Tait mentioned two cases which had been operated on for some other cause, and the peritoneum found on examination to be the seat of tubercular peritonitis. Both cases did well after the operation. He called attention to the great discrepancy between the findings of this disease at operation and on postmortem, and was inclined to believe that many cases of so-called tubercular peritonitis were self-limited and had a tendency to spontaneous cure. He mentioned some recent experiments on animals as to the absorptive action of the peritoneum and its relations to germs of disease, the experiments going to show that the peritoneum has a very strong tendency to throw off bacilli. Dr. Kreutzman was of the opinion that the question of diagnosis was not made sufficiently clear, and that a large number of cases reported as tubercular peritonitis were really something else. He certainly found that where there were tubercles containing tubercle bacilli, the disease proved inevitably fatal, but where there were simply tubercles without the presence of bacilli, opening the abdomen would often produce a cure. The pathology, he urged, should be more clearly studied and all efforts made to eliminate the doubt which was now present when the diagnosis of tubercular peritonitis is mentioned. Dr. MacMonagle said that in his opinion these cases were often benefited but never cured; that the tubercular condition once established, the fatal termination was inevitable. The simple operation of opening the abdomen was followed by improvement for from five months to eight years in his cases, but in no case had he noted a cure. He recognized two distinct classes

of the disease; one with ascites, miliary tubercles, and few or no bacilli to be found in the tubercles; the other, with no ascites, the formation of large amounts of fibrous tissue in the abdomen and the presence of bacilli; while the former class was usually much improved by opening the abdomen, the latter class of cases did not benefit from this procedure. With Dr. Kreutzman, he believed that the diagnosis was by no means always clear, and that tubercular peritonitis was frequently given as the diagnosis when careful pathologic investigation would show some other etiology. Adults did better after operation than children. Dr. Kreutzman reported a case of "Diabetes and Carcinoma of the Uterus." He first reviewed the recent literature on the possible connection between the two diseases. There may be three explanations of the occurrence of these diseases together in some subjects; the diabetes may be the cause of the disease in the reproductive organs; it may be the effect of this disease in the uterus or adnexa; the diabetes may simply occur in a patient already having some disease of these organs. After considering these three possibilities, he reported a case of a woman of 60 years who had been referred to him some time ago. He found that she was voiding large amounts of sugar in the urine, and that there was evidently a carcinoma of the cervix and of the body of the uterus. On diabetic diet and treatment the amount of sugar rapidly decreased. Operation was decided upon, and the uterus removed by the vagina, the abdominal route not being chosen for the reason that more time was required in that case, and the diabetic condition contraindicated a long anesthesia. Recovery from the operation was very rapid and satisfactory, and three days after the operation the sugar disappeared from the urine and was not again present, except at rare intervals and in small amounts, for the remainder of the patient's life. The disease recurred in the right broad ligament about six months after the previous operation and was rapidly fatal. The operative feature of the paper was discussed by Dr. Huntington of Sacramento, and Dr. MacMonagle of San Francisco.

PRAGTICAL NOTES.

Dilute Caustic Potash in Lupus.—This dressing has been found so effective by Unna that he now recommends it as superior to all other dressings used to date. It never smarts, and the beneficial effect is actually remarkable in some cases.—*Semaine Méd.*, July 20.

Application of Formol.—To preserve and harden the central nervous system with formol in situ, insert a trochar in the nasal cavity, open through the lamina cribrosa, and introduce the formol through this passage.—*Munich Med. Woch.* from *Deutsche Arch. f. Klin. Med.* x, No. 5.

Gall-stone Diagnosis.—The *Deutsche Med. Woch.* of August 4, contains a communication from Czerny's clinic stating that in forty cases of gall-stones tested (with one exception), the amount of sugar in the urine was more than normal—0.4 per cent. and over—and fell much below normal after the removal of the stones.

New Hemostatic.—The comelina tuberosa was prized by the Aztecs for its remarkable hemostatic properties, and the Mexican physicians have recently rescued it from the oblivion of ages. They find that it arrests epistaxis immediately, even in severe cases of traumatism, purpura hemorrhage, etc. Several observations are reported in the *Gaceta Méd.* of July 14.

Electric Conductibility of Antitoxin.—It has been established from a comparative study of normal horse serum and antitoxin that the freezing point, the osmotic pressure and the electric conductivity are all diminished proportionately to the amount of antitoxin contained. The electric test may therefore possibly prove useful in testing the curative value of antitoxin serum.—*Deutsche Med. Woch.*, July 7.

Goslo's Rapid Test for Arsenic.—The penicillium brevicautum grows with extreme rapidity and a penetrating odor of garlic in the presence of arsenic. Abba detected arsenic by this means in one hundred and fifty hides from India in less than twenty-four hours. He recommends it as the most rapid, certain and cheapest test we possess for the detection of arsenic.—*Munich Med. Woch.*, July 12.

Treatment of Trachoma with Iodin.—R. Roselli of Rome reports 78 patients completely cured out of 100, with nascent iodine generated by administering potassium iodide internally, and when the iodine begins to be eliminated in the lachrymal secretions, he paints the upturned lid with oxygenated water. Another method is to apply to the lid a 1/5 solution of the potassium iodide and then apply the oxygenated water. The generation of iodine causes a slight smarting at first, which passes away in a few seconds to five minutes.—*Semaine Méd.*, July 20.

Somatose in Syphilis.—In syphilis and mercurial cachexia somatose is warmly extolled by Professor Fournier in the *Journ. des Mal. Cut. et Syph.* for March. He has found it extremely effective in restoring strength and appetite in the anemic condition and nervous troubles that frequently develop in the course of syphilis. It is especially valuable in the anorexia caused by mercurial cachexia and in cases of ulcerative processes in the throat and mouth, preventing the ingestion of solid food.—*Vienna klin. Rundschau*, July 31.

A Useful Device.—A stand to use in applying casts and bandages to the pelvis, hips, etc., that has been in use a couple of years at Halle, has proved so satisfactory that it is described and illustrated for the benefit of others in the *Cbl. f. Chir.* of July 9. The patient's back rests on a solid wooden stool, 20 by 20 cm. and 30 cm. high, beyond which projects an adjustable support for the head. A tripod slides on a rod extending along the other side of the stool and the pelvis rests in a von Bruns' saddle mounted on this tripod. The body is thus supported in three places, while an assistant holds the feet. The stand can be adjusted to fit either a child or an adult.

Picric Acid Intoxication.—Picric acid is now used in certain industries, and intoxications from it are becoming more frequent. The principal symptoms are a yellow tint over the whole body and in the mouth, pain in the epigastrium, dryness of the throat, depression, anuria and continuous cephalalgia. In a case described by P. Schwarz in the *Vienna Klin. Rundschau* of July 31, a workman drank twenty grams, but prompt lavage of the stomach and intestines, with a diet of milk, white of egg and lemonade restored the patient. The prognosis is usually favorable; permanent disturbances have never been observed.

Irreducible Inverted Uteri.—Duret treats this with: 1, incision of the posterior cul-de-sac; 2, a median, posterior, vertical incision in the entire uterus from the vaginal incision to the fundus; 3, reduction of the inversion; 4, the incision in the uterus sutured down to the isthmus; 5, reposition through the vaginal incision, the lips of the incision protected by the forceps; 6, suturing the cervix from the isthmus downward. The vaginal incision is drained and left open, with gauze tampons inserted to prevent possible retroversion. His patient, a woman of 22, had no hyperthermia and left her bed the fifteenth day.—*Journ. des Sc. Méd. de Lille*, July 9.

Salicylic Acid and Salol in Pneumonia.—De Becker of Antwerp proclaims that salicylic acid will cure and abort pneumonia with no other medication. Besides its antiseptic action on the lungs, it liquefies and favors the expulsion of the sputa to a remarkable degree. He gives 10 cg. to children, every one or two hours, adults, 50 cg. every two to three, or three to four hours, watching the heart, and varying or suspending the doses as the desired results are accomplished. (Quoted in the *Cronica Méd.*, June 15.) R. Liegel also announces that he has been successful in curing seventy-two cases of pneumonia with salol, 8 gm. a day, always combined with 50 gm. peppermint water, 200 gm. water, and 5 gm. "bitter" or any other tincture. He gives a little ipecac to loosen the cough, with ice to the head when temperature rises above 39.5 degrees C.—*Vienna klin. Woch.*

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

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Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, SEPTEMBER 17, 1898.

SPLENOMEGALY WITH CIRRHOSIS OF THE LIVER.

In 1894 BANTI of Florence described a new type of disease, which has since been known as splenomegaly with cirrhosis of the liver, or as BANTI'S disease. The various instances of this disease which have since been reported, particularly in Italy and in France, now offer a good opportunity to study its principal clinical and anatomical features, and in a recent article BANTI¹ summarizes the knowledge of the disease.

As regards the etiology it may be said that the real cause is entirely unknown. The disease develops especially in young people and in the adult; as yet not more than one case has ever been observed in the same family.

The clinical course is divisible into three stages: first, the anemic; second, the transition stage; and third, the stage of ascites.

First there is noticed an enlargement of the spleen: in quite a few cases it has been demonstrated that this precedes all other symptoms. The spleen may reach a very considerable size; it has a smooth surface, rounded edges, hard, and, as a rule, it is painless. Then come symptoms of anemia of the usual character. The blood shows a corresponding diminution in the number of red cells and in the amount of hemoglobin; poikilocytes and microcytes have been observed, but nucleated red cells are said to be always absent. There is no leucocytosis, and the proportion between the different kinds of leucocytes is normal. There is no trace of swelling of the lymph glands. The temperature is usually normal, but occasional

attacks of chills, followed by fever, may occur at irregular intervals. This stage of anemia usually lasts from three to five years, but it may run along for as many as ten years.

The transition stage is marked by changes in the urine, the quantity of which is diminished, while urates, urobilin, and often bile pigments, occur; a mild general jaundice develops; the digestive functions are disturbed. This period lasts only a few months and is followed by the stage of ascites, which develops slowly and painlessly. The liver diminishes in size, the jaundice increases, the general symptoms of anemia become worse; very often there is an evening temperature. The changes in the blood also increase and death usually occurs in from five to seven months.

The pathologic changes consist in, *a*, the enlargement of the spleen; the capsule is usually thickened; perisplenic adhesions are, however, rare. On section the surface is deep red, with whitish lines and round, white, and hard nodules, which correspond to the Malpighian bodies; and *b*, the interstitial process in the liver.

In the ascitic stage, the liver is small, granular and hard; in the transition stage the surface may be just a little uneven, and the organ of normal volume. BANTI has not yet had an opportunity of examining a case postmortem that died in the first stage, but in cases in which splenectomy has been performed in this stage, the liver presented a normal appearance. Ascites does not occur until the last stage. In all cases examined the splenic vein and the portal vein, from the mouth of the splenic vein to the liver, have been found covered with dried, elevated patches, very similar to the sclerotic plaques so often seen in the aorta. The lymph glands are healthy. In the third stage the gastro-intestinal tract presents the well-known changes characteristic of atrophic cirrhosis. The marrow of the long bones is red and lymphoid.

Histologic examination of the spleen has shown the following changes: A few Malpighian bodies have normal structure: in others the periphery is composed of normal cells, while the arteries are surrounded by a zone of varying width, sometimes occupying three-fourths of the extent of the body, which consists of thickened connective tissue with few nuclei. This connective tissue is homogeneous and hyaline, and presents small spaces or slits in which may be one or two compact nuclei. Toward the periphery of the body the spaces become wider and contain more cells; the connective tissue becomes thinner, and at last there is formed a coarse network which resembles somewhat the normal reticulum. The walls of the arteries in the Malpighian bodies have coalesced completely with this periarterial, hyaline, fibrous tissue. The extent of the sclerotic zone is greater the further the disease has progressed. In some cases entirely fibrous nodules are found, which represent sclerotic

¹ Splenomegalie mit Lebricirrhose, Ziegler's Beitrage, xxiv, p. 21, 1898.

Malpighian bodies. These changes begin around the arteries, as has been demonstrated in the spleens from early stages of the disease, and they consist, as will have become clear from this brief description, of a hyaline degeneration of the connective tissue. Irregularly-shaped, larger and smaller hyaline scales have also been observed, but their source and nature are not explained; in some cases thrombosis of the vessels of the Malpighian bodies has been found. In the pulp the veins present, in the early stage, large cells upon their intima, so that the venous channels look in cross-section somewhat like gland ducts. Similar cells may occur in the reticulum around the veins. The network of the pulp is thickened, fibrous, of hyaline appearance, and the cells enclosed in the spaces are fewer than normal, but otherwise without any changes.

The principal changes then, in the Malpighian bodies as well as in the pulp of the spleen, consist in a marked increase in the thickness of the reticulum, while the peculiar structure of adenoid tissue remains; hence the lesion has been labeled fibro-adenia by BANTI. The exact genesis of this thickening has not yet been made clear.

In the liver there is the usual interlobular proliferation of fibrous tissue characteristic of the so-called alcoholic cirrhosis, but the process does not seem to reach the intensity of the latter disease. In the marrow of the long bones which presents the characteristics of fetal marrow, the number of nucleated red corpuscles is not very great.

BANTI has made numerous cultures upon a large number of different media, but without any results. Microscopic examination of the blood, the spleen juice, and of the tissues have failed to demonstrate the presence of bacteria or other parasites.

The only drugs which seem to have any influence for the better upon the disease are arsenical preparations, but the improvement is only transitory. In three cases splenectomy has been performed by COLZI in Florence. One patient died from independent puerperal complications; one young man recovered completely. He was operated upon in the anemic stage, the disease having then lasted about six years. The third patient, a woman, was operated upon between the seventh and eighth year of the disease. At the operation the liver was found somewhat granular, but the patient recovered completely, and twenty-one months after the operation she presented no symptoms of anemia, or of disease of the liver.

It is evident that this disease has nothing in common with LAENNEC'S cirrhosis of the liver. On the other hand, splenomegaly with cirrhosis of the liver, in the anemic stage at any rate, presents great similarity to a disease which is known in the Italian and German literatures as splenic anemia. It might be claimed, for instance, that splenic anemia represented only a stage of splenomegaly. The exact nature of

the so-called splenic anemia, and of another condition, or possibly the same condition under another name, namely splenic pseudoleukemia, remains very obscure, and the various conceptions of what is to be included under the term, or terms, are somewhat confusing, and BANTI is not able to clearly define the relation between splenomegaly with cirrhosis of the liver and splenic anemia or pseudoleukemia. The only decisive means of differentiation would have to be sought in the etiology of the processes, which is as yet completely unknown, in all three.

BANTI looks upon a chronic intoxication proceeding from the spleen as the most reasonable cause of the anemia which characterizes this disease. This view he finds is supported by the fact that when the spleen is removed the anemia disappears. Furthermore, he looks upon the chronic sclerotic splenic and portal endophlebitis, which in the early stages is confined to the splenic vein, as indicating that poisonous substances are carried in the blood passing along this route. He regards the cirrhosis of the liver as a direct result of the disease of the spleen. If poisonous substances are elaborated in the spleen, then they are constantly carried through the liver and result in the end in hyperplasia of the connective tissue, in somewhat the same way as the poisonous substances absorbed from the intestinal tract in chronic alcoholism are supposed to produce typical atrophic cirrhosis. Finally, BANTI calls attention again to the fact that the only curative measure known is the removal of the spleen.

The literature concerning this interesting condition described by BANTI is not very extensive. In the bibliography attached to BANTI'S article, which is presumably complete, there are only ten references. It is to be hoped that new cases may soon be described in American literature, and that the relation of splenomegaly with cirrhosis of the liver to splenic anemia and splenic pseudoleukemia may be more definitely established.

A NEW PATHOLOGY IN EPILEPSY.

Epilepsy, one of the oldest diseases of the nervous system of which we have knowledge, is, as regards its etiology, and particularly its pathology, practically but little known. The names given it by the Father of Medicine, "sacred malady" and "malady of children," show in what light it was regarded by the ancients. For centuries the most ridiculous and incredible theories were advanced by the best men of their time with truly commendable zeal; but real progress can not be said to have begun previous to the statements of reflex irritation advocated by MARSHALL HALL. Since then decided advances have been made along many lines, due especially to the magnificent work of HUGHLINGS-JACKSON, but even to this day authorities differ greatly as to causation in a vast majority of those afflicted. Age, sex, hered-

ity, insanity, organic brain disease, trauma, syphilis, chronic alcoholism of parents, must all be regarded as important considerations. Many curious facts in respect to etiology have been reported of late years; errors of refraction, especially astigmatism, are of common occurrence; compression of the carotids producing cerebral anemia; bradycardia; diabetes; the diminution of the toxicity of the urine previous to an attack; pressure upon an undescended testicle; all in a considerable number of instances by eminent observers. The rôle of trauma in the causation of epilepsy is too well grounded to be easily shaken, but undoubtedly too many cases are classed under this head. Almost every individual, whether epileptic or not, can give a history either known to himself or narrated by his parents or friends, of a fall upon the head during childhood or at some later period, and yet but a small proportion of the population suffer from epilepsy. Probably only a small ratio of epileptics, not over 2 per cent. could rightly attribute their affliction to this cause. There remains then the major portion of the sufferers, in whom the etiology of their affliction and certainly pathology, is obscure, that must be classed under the term—for want of a better—idiopathic epilepsy. For the clearing up of obscure points of this disease, too much attention has doubtless been directed to the nervous system, as is the case of insanity, with a passing over with but trifling consideration other pathologic conditions existing in the body.

For the study of epilepsy, both the clinical manifestations during life and the pathologic findings after death, there is probably no better place in the country than the Ohio State Hospital for Epileptics at Gallipolis. There are usually from six to seven hundred inmates, twenty to thirty of whom come to the autopsy table during the year. Lately a well-appointed laboratory has been fitted up, and the research work placed under the able direction of Dr. A. P. OHLMACHER. The latter, in his researches into epilepsy, determined to examine not only the central nervous system, but all other parts of the body as well, with the hope that some constant pathologic lesion might be found upon which statistics of some value could be compiled. His efforts have been crowned with considerable success, as demonstrated by his report in the *Columbus Medical Journal* of July 19, "The Persistent Thymus and Other Morbid Anatomic Peculiarities in Certain Cases of Epilepsy." His studies comprise eighteen cases, in eight of which more or less constant pathologic features were presented. All the victims were in the young adult period of life. Six of the eight were undoubtedly grand mal, therefore "idiopathic." A curious fact is that three of the eight died suddenly. One other committed suicide and one died of exhaustion after an attack of mania. Four of the eight had attacks of mania at more or less regular intervals. The sum-

mary of his findings can be perhaps best stated in his own words: "Persistent and enlarged thymus gland; a pronounced enlargement of the intestinal and splenic lymph-follicles; a more or less pronounced hypertrophy of the lymphatic glands, and the lymph-adenoid follicles of the tongue, larynx, trachea, esophagus, tonsils and even of the stomach; a narrowing of the arteries; an abundant development of fat; and certain osseous changes indicative of old rickets. Not all the abnormalities comprehended in this summary were present in a single case, though the persistent thymus, with one or several features added, was constant." OHLMACHER, in conclusion, calls attention to enlarged thymus occurring in two other conditions, namely, "laryngismus stridulous" and "sudden death in adults with no assignable lesion," and lays special stress upon the sudden death of his three epileptics, in all of whom it might again be remarked that the thymus was enlarged. He regards the "lymphatic constitution" occurring in these three affections and the sudden dissolution that appears so commonly as more than a mere coincidence. It is to be hoped that other institutions will direct their attention to the findings of OHLMACHER, so that the great pedestal for the successful treatment of any disease, a morbid anatomy, may in this most obscure of affections be founded upon a firm basis.

BLOOD EXAMINATIONS IN SURGICAL AFFECTIONS.

While medical men were glad to seize the opportunity of increasing the strength of their diagnoses by examination of the blood, the surgeon, until late years, has always held rather aloof, trusting more to the physical signs and constitutional reaction than to anything else. With the difficulty often accompanying the diagnosis of appendicitis, he at last became eager to accept any additional evidence that might be offered, and the hematologist has often been called upon for help. So frequent became these examinations in appendicitic affections that several important points, both in prognosis and diagnosis, have been fairly well established. As one would naturally expect, purulent appendicitis is usually accompanied by leucocytosis. This symptom is very common, and in a way may be looked upon as a good prognostic sign for this reason: If your diagnosis is reached by other symptomatology, and no leucocytosis is present, the prognosis is bad. The size of the leucocytosis is of some importance. A count in the neighborhood of ten thousand means that the purulent collection is walled off from infecting the general peritoneal cavity, that the case, even if no adhesions have formed, is a mild one, or, as hinted above, the patient is in a serious condition, the economy reacting very little if at all to the infection. The increase in the number of leucocytes may be looked upon as the massing of an army to resist invasion. On the other hand, a high leucocyte count is not necessarily a bad prog-

nostic sign; but this one point must be considered, whether or not there is a steady and progressive increase. This latter symptom is a dangerous one and urges instant operative interference. If after a leucocytosis has become stationary and, of a sudden with increased severity of the constitutional symptoms, we find a sudden increase or marked decrease in our count, we are safe in concluding that a purulent collection, once walled off, has burst its bounds and is invading the peritoneal cavity, the increase or decrease depending, as mentioned above, upon the reaction or the reverse of the system to the increasing infection. Many cases of appendicitis, especially where no tumor mass can be discovered, are confounded for a time with typhoid fever, on account of the abdominal pain and febrile reaction. In the early stage the Widal test would not be of much value, but the presence of a leucocytosis would be in favor of appendicitis, unless the typhoid were complicated with pus formation, in which case the count would give us no aid. If an attack of appendicitis is progressing toward a favorable termination, the number of leucocytes will fall steadily, so that the daily examinations of the blood in this disease are of the greatest service. The importance of a leucocyte count will be the more appreciated when it is taken into consideration that the presence of this symptom alone will differentiate appendicitis from the various forms of disease and colics accompanied by pain in the right iliac region. The one exception is pyosalpinx.

A problem that has been puzzling surgeons for many years is what to do in the condition known as "shock." Of course the causal factors must first be considered. The next important point is the question of concealed hemorrhage, so often the forerunner of shock. If we know that such hemorrhage be present the indication would be to in some way re-establish the normal amount of fluid in the arterial tree; and the best way of accomplishing this is by transfusion of the normal (six-tenths per cent.) saline solution. On the other hand, if shock is due to compression of the brain, transfusion would work in most cases irreparable harm. Whether or not blood has been lost in any considerable amount, can be absolutely determined by the blood count, in previously healthy subjects the number of red corpuscles and amount of hemoglobin being diminished in direct ratio to the amount of blood lost from the vessels. The leucocytes are diminished but a short time; with the slightest reaction on the part of the system, leucocytosis, both relative and absolute is soon induced. It is astonishing what an enormous amount of blood can be lost from the general circulation before death supervenes. DAcOSTA says that one-half of the blood can be lost before fatal syncope comes on. MIKULICZ, than whom no surgeon is better authority on hematologic subjects, advises never to undertake operation

"when the hemoglobin is under 30 per cent.," so that it is probable that he has had cases in which the blood has been below the limit of DAcOSTA, and yet not have perished immediately.

In malignant disease, blood counts and examinations have been reported without number. Until lately, however, not much of any practical diagnostic value has been offered. It has been known for some years that after an operation of any magnitude, involving the loss of some blood, some time elapsed before the hemoglobin percentage began to rise. This interval of time was known as the "regeneration time" and was usually reckoned between two and three weeks. In malignant diseases, as demonstrated recently by BIERFREUND, it is fully a week later before the hemoglobin begins to climb the scale, and at that never reaches the point it held before the operation, even though that point may show grave anemia.

THE SANITARY RESULTS OF OUR CONQUESTS AND ANNEXATIONS.

The addition of tropical territories and population to our national dominion has certain medical and sanitary bearings that are well worthy of careful consideration. This statement does not necessarily imply that such additions involve any elements of national peril in a medical point of view, though that has been urged as a fact by those opposed to such territorial expansion, but simply that it enlarges the range of our national hygienic supervision and brings some sanitary problems more nearly home to us than was formerly the case. Instead of involving new dangers the extension of our rule ought to eradicate existing ones to a large extent and favorably modify others where their complete avoidance is impossible. Warm countries are commonly regarded as unhealthy, and they certainly have some special disadvantages in a hygienic point of view, but it is a fact that ordinary sanitary precautions are hardly anywhere so habitually disregarded as they are in every tropical region, especially by the whites there residing. Dr. MANSON and others have shown that most of the formidable disorders peculiar to the tropics are more or less avoidable, even by those who have no inherited or racial immunity, and that there is no good reason to assume that the white race can not flourish there, so far as their physical welfare is concerned.

Whatever influence the United States may have over the future of Cuba, whether as a friendly or protecting power, or as exercising actual dominion, should be for the mutual good, and this is particularly true as regards matters of public health. The sanitary reformation of Cuba will be for us an even greater blessing than its political redemption, for heretofore and up to the present it has been a continued threat of impending pestilence, solely on

account of neglect of sanitary precautions and decent hygienic regulations. With yellow fever endemic in Havana and Santiago, there will always be a chance of its introduction into our Gulf ports, and whatever arrangements are made as to the future of Cuba, it is the duty of our government to see that adequate guarantees are given that the there existing anarchy in sanitation is to be quickly and thoroughly abolished. This will be a result of the war that will be well worth a large part of its cost.

Porto Rico, as a territory of the United States will come directly under our laws and whatever dangers to health exist there can be met with our own resources. It is said to be a comparatively healthy island for a tropical one, and it may be no serious sanitary questions will be raised.

Much was said by the opponents of Hawaiian annexation about the danger from the leprosy infection, of which it is a center. Whether this danger will be in any degree increased by annexation is open to question; our commercial and other relations have always been close, and especially so of late years, since the reciprocity treaty has been in existence. Hawaii has been practically an American dependency for many years, and political union can not very materially alter the conditions. So far as it can have any effect it should be for the better, as it puts matters under our own control and gives us the power to remedy any existing defects in hygienic conditions or sanitary laws. That we can improve upon the present régime is perhaps doubtful as far as leprosy is concerned, as it does not appear that more precautions are taken anywhere against the spread of this disease, or a more thorough system of isolation carried out than is the case in Hawaii. The fact, also, that there are only about a dozen white lepers in the settlement on Molokai and these presumably all that could be found in the islands, would indicate that the extension of the disease is almost exclusively among the natives, whose habits seem especially to favor its spread. In any event the danger of leprosy infection to our people would seem to be slight, less indeed than from the Louisiana lepra focus, where a much larger number of whites appear to be infected. In other respects Hawaii is certainly a healthy region and the white race appears to flourish there; aside from the leprosy question no serious sanitary problems are involved in its annexation.

The Philippines, which may also come under our rule, present the usual hygienic conditions of warm countries with large rainfall. Some of the islands, like Mindoro and a few others of the group, are notably unhealthy, and the uncultivated portions of some of the larger ones are also subject to fevers, etc. In other respects, however, there seems to be no reason why with proper precautions Americans who may go there should not be as well cared for as anywhere else within the tropics. If they come under our flag

we may find that we have to meet some new conditions, but the sanitary problems will probably not be the most serious ones.

The results of the war ought not, in a medical point of view, to be on the whole otherwise than beneficial, as it will put it in our power to remedy existing abuses, and it should not be anticipated that new ones will be created. A decent military administration of Santiago has, it is said, already stamped out yellow fever in that city, where it has existed endemically, and a like result may be anticipated under perhaps greater difficulties in Havana and elsewhere.

A STORY OF CHICKAMAUGA.

Members of the AMERICAN MEDICAL ASSOCIATION have no doubt been troubled in mind during the progress of what we may now call the late war, by the continued attacks in the press on the Medical Department of the Army, from the Surgeon-General at the War Department and his officers of every grade in the general and division hospitals down to the gallant medical men who dressed the wounded under the fire of the Spanish sharpshooters at the crossing of the Agudores river. The sanitary conditions in the home camps have also been severely criticised, and the onus laid on the shoulders of the Medical Department. The injustice of this criticism has led Major R. STANSBURY SUTTON, Chief Surgeon U. S. Volunteers, to discuss with a free pen the conditions existing in the camps in Chickamauga Park (see p. 650). It takes a man of large experience and mature mind to deal with these subjects, for some of them are of a nature so delicate that the average man would probably pass them over in silence because unwilling to suggest the existence of a stain on the moral character of any of the gallant young men who volunteered to carry our flag to victory. Dr. SUTTON charges much of the sickness that prevailed in the Volunteer camps at Chickamauga to the dissipation of the men. It would probably be difficult to verify the alcoholic excesses by any official record, as men on pass usually sober up before returning to their commands, and the men reported as seen by the Doctor were probably all on pass. Whether his estimate of the prevalence of venereal disease will be substantiated by the official statistics remains to be seen; but we recall the fact that these diseases were so prevalent in certain army corps camped near Memphis and Nashville during the Civil War that special military methods had to be adopted for their suppression. The medical officers on duty with the ambulance corps at Chickamauga no doubt did their duty in drilling the men of the hospital companies in first aid: and if they spent their leisure otherwise than in medical reading and study, allowance must be made for the deteriorating influences of camp life. The Red Cross and other national relief associations receive due credit for their work, and the stories of cruelty and neglect that have filled the newspapers are shown to be false.

CORRESPONDENCE.

A Grave Menace to the Public Health.

NEW ORLEANS, Sept. 8, 1898.

To the Editor:—Without entering into the unseemly wrangle that the Medical Department of the Army is engaged in, I would like to call the attention of the profession through its own JOURNAL to two new diseases—new to the physicians who have spent their lives in the United States, but old to those experienced in diseases of tropical countries—I allude to tropical dysentery and tropical anemia, the former being due to the ameba, the latter to the ankylostoma duodenale. Our soldiers returning to their homes along the many railroads that ramify in every direction over our country, are liable to infect the entire country with the germs of these two insidious and apparently, in their incipiency, ordinary affections. If it be true, and I think every intelligent physician holds that view, that typhoid fever is pre-eminently a preventable disease, and consequently its alarming prevalence in all of our camps is criminal and due entirely to ignorance, which has been said to be worse than crime, how much more than criminal is it for our medical department to aid and abet the incompetent war department in scattering broadcast over our fair land two of the most deadly diseases of the tropics? It is claimed with the amplest authority that every case of typhoid fever originating in a camp is due to the criminal neglect or ignorance of the medical officer, some colonel or major, in charge of that camp. Now, without questioning the right of army surgeons, who, by the way, resent being addressed as physicians, to allow their charges to become infected with death-dealing germs, I do protest as a civilian, a plain doctor, to their scattering these germs all over the country among civilians, who have no captains, majors or colonels to treat them. I claim that one case of typhoid fever, amebic dysentery or tropical anemia traveling from Montauk Point to California, is liable to infect any or every stream between the Atlantic and Pacific that he crosses. It is high time our distinguished Surgeon-General warned the bargain-counter politicians in the war department that such things must cease, and cease at once. None know better the grave danger that confronts us than Dr. Sternberg. I beg pardon General, for calling you Doctor, but your reputation as a scientific, accurate physician is so well known that I had forgotten the measly little star on your collar. Now the regular army, medical and lay, let no opportunity slip of finding fault with the volunteers and the civil surgeons, so let them bear the blame as they claim the glory in this matter; for let it be distinctly understood that none but surgeons in the regular army have a word to say about this matter. The Secretary of War, if he consults any medical men, consults those in authority. I hold that the time has come when the medical department of the army should be governed by common sense founded on mere known facts, facts known to the medical and lay world alike today.

Today there are said to be cases of yellow fever in this section of the country. Do we gather up all the cases and divide them up in all adjoining States? No. The Marine-Hospital Service establishes camps of detention for those who have been exposed to the infection and keep them there ten days before allowing them to invade healthy territory. The sick are strictly isolated and kept so until recovery or death. Eight hundred marines were camped for many weeks at Guantanamo and their health remained excellent, and why? Because the surgeons of the Marine-Hospital Service not only understand preventive medicine, but they practice it. Every man in that Service is qualified for the work he is assigned to. The War Department seems to defy all known laws of sanitary science in pursuing a course diametrically opposite to that adopted by the Marine-Hospital Service, as well as all State and municipal health officials. All soldiers suffering from dysentery, ane-

mia (tropical) or typhoid fever, should be confined in suitable hospitals and kept there as long as the microscope shows them capable of being a source of infection to others. All their dejecta, urine as well as feces, should be subjected to sufficient heat to destroy germ life.

All red tape should be brushed away, and instead of moving camp every time the camp becomes infected through the grossest neglect of all hygienic and sanitary laws, the medical officers responsible for such a condition should be removed on the ground of incompetency, and in their stead should be appointed men of known ability, men who are major-generals in the warfare against filth and filth diseases. In every large city on this continent can be found physicians who have spent years of their life in this branch of medicine. The Government should employ such men at salaries commensurate with their ability. Good physicians are cheap at any price, and our Government should promptly employ the best. What would happen to the health officials of Chicago or Washington if 10 per cent. of their population should be stricken with typhoid fever within sixty days? The residents of those cities could not conveniently change the location of the cities every sixty days, but they would most assuredly change health officials, who, in turn, would change the sanitary conditions.

Before closing, I wish to state that this article was not written to criticize the army surgeon, for I know full well his worth, his faithfulness and his ability. The gifted head of the Service needs no one to defend him. His many contributions to medical literature entitle him to say with Horace: "*Exegi monumentum perennius ære.*" What I have written is purely in the interest of the public health of the nation. I refuse in advance to enter into any controversy with bureau doctors, whose time is paid for by the government and hence worth nothing to them.

"Facts are far superior to reasoning."—*Hippocrates.*

Very respectfully, T. S. DABNEY, M.D.

The Treatment of Typhoid Fever.

CHICAGO, Sept. 10, 1898.

To the Editor:—While much, of late, has been written on the treatment of typhoid fever, I feel that a brief statement of my experience may be of some value to others, especially as I seem to have met with greater success than anyone else whose reports I have read. I have thus far hesitated to relate my experience, because of the fact that when I changed my location several years ago, to adopt a more exclusive practice, I destroyed some of my records. However, I can recall at least twenty-eight cases in my last four years of general practice, and I think there were more in that period. But one can easier recall deaths than cases. Two deaths occurred among my typhoid fever cases during the four years in question, but one of these two cases was moribund when I first saw it. It was the case of a young man brought home from the pineries, suffering with the fever. When I first saw him he was delirious, and he died two or three days later. The other case was a middle-aged man who was allowed to get out of bed frequently, but contrary to my instructions, and suddenly expired, although his condition had not been particularly alarming. No postmortem was held.

One of my cases of typhoid was a robust farmer, who recovered, but prematurely left home for a week to attend to some business. He returned sick, having a premonition of pending death, with what I took to be diphtheria. He died in a few days. Postmortem revealed the intestines normal, but kidneys greatly congested. Thus it will appear that in reality I only had one death among the cases which I treated from start to finish.

My treatment had special reference to the following dangers: loss of vitality; germ breeding in the intestine; perforation and hemorrhage.

The first evil was met by isolation in as quiet a room as

accommodations afforded. I strictly prohibited visiting by friends on penalty of my quitting the case. Relatives were allowed to visit for a few moments during certain hours of the day. I often had much fighting to do on this point, but I pushed my demand with severity and invariably won respect in the end. A glassful of milk was given punctually every four hours, sipped from a spoon. When half the glassful was taken a few minutes' rest was given before the remainder was sipped. Sometimes a dose of lactopeptin or liq. pancreatic followed the milk. Grapes, if procurable, were allowed freely, as was also cold water to drink in small quantities at a time. Every four or six hours, and sometimes oftener, the entire body was gently wiped with a soft piece of muslin dipped in lukewarm water containing a teaspoonful of bicarbonate of soda to the pint. The wiping and drying was done in patches, and the proceeding was not only gently but patiently accomplished. This process of cleansing and cooling had the effect of mild massage and was invariably refreshing if done *gently* and *slowly*. Frontal headache was usually relieved by dipping a piece of muslin in a solution of cyanid of potash in laurel water (10 grains to the ounce) and laying it on the forehead for ten or thirty minutes.

The second point was supposed to be met by increasing the flow of bile into the intestine with one to three grains of calomel twice a day. Codein was given if griping was experienced. The calomel was kept up until the crisis was over.

The third danger seemed to be met by giving three or four drops of rectified turpentine every four hours, to diminish the gas in the inflated bowel and thus reduce the liability to perforation from distention of the bowel and the pressure of the gas on its ulcerated surfaces. Kidney complication was watched for, but the turpentine was seldom suspended if the bowel was markedly tympanitic.

The fourth point—hemorrhage—seemed to be forestalled by giving a dram, more or less, of the fluid extract of hamamelis every four hours. About twelve years ago I read an article in the *British Medical Journal*, by Shoemaker of Philadelphia, on "Hamamelis as a Vascular Constrictant, etc." I then began to use it in a variety of varicose and hemorrhagic cases and was so favorably impressed with it that I concluded that its constrictant, astringent and tonic properties would be serviceable in typhoid fever, as a preventive of hemorrhage, if nothing more. I therefore adopted the following prescription, which was only modified to meet the factors of the personal equation:

R. Spts. Terebinth. Rect.	5i
Spts. Juniper.	5 ^{ss}
Fld. ex. hamamelis (P. D. & Co.)	3ii
P. acacia	3 ^{iss}
Aq. qs. ad	3vi

Sig.—Dessertspoonful every four hours while awake.

All the cases ran a moderate course and seemed to be abbreviated, as compared with my experience for ten years prior. The diarrhea seldom called for interference. Medicines and milk alternated every two hours, but were, as a rule, not allowed to interrupt sleep for two hours more if sleep continued that long. The cases were mostly sporadic and mostly in the country. Several families had three or four cases at the same time. A few were fat, flabby women of very low physiologic tone.

J. SANDERSON CHRISTISON, M.D.

The "New Interpretation of Operative Principles"—A Pertinent Question.

KANSAS CITY, MO., August, 1898.

To the Editor:—What should be the attitude of the "science mind" in regard to discoveries and theories, revolutionary in their character and tendencies in medical science; in other words, the duty and obligation of the scientific physician in respect to "new interpretations of long-accepted basic principles in medical science now being promulgated? Unfortunately

our wording of the subject is wordy; we trust our discussion of it will not be found mere words. It is said, history repeats itself. Up to the beginning of the fifteenth century the Ptolemaic system was the accepted astronomic science. All discoveries of new planets or fuller knowledge of known ones was adjusted to the recognized Ptolemaic plan of the earth as the central body. Many "hitches" in the workings of the scheme and anomalies arose here and there and again and again, but they were silently ignored or explained on some hypothesis, or openly confessed as something needing illumination and elucidation. This was the condition of astronomic science for many centuries. Meanwhile patient investigators had been at work studying the difficulties that presented and the theories of explanation given. Light dawned here and there; more-rational, yet still crude, ideas were conceived, until at length Copernicus, gathering the converging rays of light, discovered the error of the ages and installed the sun as the central orb, and promulgated what has since been accepted and termed the Copernican astronomic plan. With the sun as the center, all the planets fell into their natural places, and harmony and beauty reigned. The disagreements in the various theories and hypotheses soon disappeared; untenable ones were discarded, and though there have been added by discovery new worlds to the system, and more exact computations of distance and of plane of orbit, etc., yet no absurd theories have been projected, no fanciful hypotheses have been conjectured, agreement and harmony have prevailed from that date, because, at length, a complete science of basic principles had been constructed.

Notwithstanding all the acknowledged crudities and inad-justable inharmonies of the Ptolemaic theory, "It required one-hundred years to develop a comprehension that any scientific advantage would accrue from a review of the alleged situation" (Dunham). So of course the new theory was ignored or ridiculed and combated, and only slowly, tardily and laboriously commanded, and finally obtained, recognition.

The question underlying the inquiry with which this paper began, is, Will the scientific medical man ignore and neglect, or will he boldly face and investigate "A New Interpretation of Operative Principles," which are to the last-degree revolutionary and iconoclastic? It will not take a hundred years to develop a comprehension of the scientific advantage to be derived from a review of the prevailing theory of medical science. That review has long been in progress. A medical unrest has long been apparent. Dissatisfaction with the old and long-established views and principles has been stirring the minds of many for years. Medical literature, especially as seen in medical journals, presents an aspect of confusion and fanciful speculation, the most absurd and groundless theories being entertained.

The scientific mind asks, Why all this? and foundation principles are being examined. The results of this will soon be apparent, in fact, are already appearing. As voicing what we here surmise or affirm—impatience with the unscientific, dissatisfaction with the crude and imperfect, ambition for and attempt to reach the ideal—read the magnificent address of Dr. Musser before the AMERICAN MEDICAL ASSOCIATION at Denver, on "The Essential in the Art of Medicine." Polypharmacy and a blind following of precedent, with any practice of the "art of medicine" not founded upon and suggested and also justified by the "science of medicine," must certainly have received its death-thrust from his well-aimed dart.

And now comes that to which we call special attention, and which we confess aroused our question and suggested this paper—Dr. Dunham's Lecture in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of July 2, 1898, "A New Interpretation of Operative Principles." This is a part only of the title, but abundant for our purpose. The Operative Principles, "A New Interpretation" of which is all Dr. Dunham in his mod-

erty claims, are as old as medicine itself, and are to be found in medical literature all down the ages to the present. Yet the theory of medical teaching up to the present day is one of confusion as to the nature and limit of these operative principles. A new, that is, a correct, interpretation has been sadly needed, and to the want of which may be charged the fanciful, erroneous and absurd theories and isms and schools of the past and alas of the present.

The status of medical science as taught and accepted today justifies the following arraignment of its position: 1. It is unsettled as to any consensus of view of the nature of vital force. 2. It assumes that positive conclusions in regard to this essential point are impossible in the present condition of medical knowledge (Mandsley). 3. There is confusion as to recognized operative principles, because these are supposed to be vital and otherwise. It is accepted that operative principle is inherent to and active within the vital domain; it is also assumed and understood that operative principles, from without become active within the human organism. "Active medical principles; active causes of disease, may be introduced and take part in operating the human organism" (Dunham). Now here we run into a labyrinth of confusion. For, back of the study of the nature of the forces which present disease phenomena, is the consideration of the nature of the forces which operate the machinery of life (Dunham). This is the question of vital force, of which, confessedly, there is at present no solution. The most vital question in medical science of the hour is, as to the precise nature and limitations of the forces operative in the living organism. Despite the fact of the acceptance—and assumption of their correctness for ages—of the medical principles stated, we must go over the ground again as to the nature of vital force. Do all operative principles inhere in the vital domain or are there supplemental forces which can be introduced from without? Now here lies the serious error of operative plan, as set forth by Dr. Dunham: "The teaching of medico-biologic science as being based on functions and operative principles derived from both within and without," while he maintains that true "medico-biologic science is based entirely on the functions and operative principles, which originate and control all the activities of the human organism, physiologic, pathologic and therapeutic, and those arise from, inhere in and are confined to the human organism." There is no operative principle outside the vital domain which may be imparted or conveyed to it. Drugs contain no operative principle by which disease can be removed and normal conditions regained. They do not act. In illustration take the law of physics: "A body at rest tends to remain at rest." It remains at rest until some force outside itself moves it, but it has no "tendency" anyhow or anywhere; it is absolutely inert and forceless. Drugs are inert and inoperative so far as any operative principle or force in themselves is concerned. In the realm of nature the higher dominates the lower. In the natural kingdoms, animal, vegetable, mineral, the higher is closed to the lower. The animal reaches down to the vegetable and takes it up into itself. The reverse is never the fact (Drummond). A transition of inorganic into organic, even by chemico-electric operation, is not tenable. The belladonna test of death illustrates the argument. A drop or two in the eye will dilate the pupil if vitality remains, no response is obtained if life be extinct. Even if cerebral trauma vitiate a part of our test, eliminate that from the case and the point we make is established; the operative principle is alone in the vital force energies. *Vis medicatrix nature* will express the true doctrine of therapeutics. A handful of seeds were found in an Egyptian mummy hand; transferred into suitable soil they produced a beautiful plant. Vital force in the seed required conditions not found in the dead hand, but supplied by contact relation with the soil. So the drug in the living eye is inoperative in itself, yet its presence and contact with the living tissues sup-

plied the condition on which sensation arises; sensation being a life function, dilation ensues, and since sensation is a life function only and not a mind function, dilation is involuntary (Dunham). There is truly a place for drugs. Therapeutics may as truly use medicine as vegetables use mineral, and in the same general way; the operative forces initiating from the higher. Dr. Musser is mainly right when he says: "I thoroughly believe in drugs, I am sure I have seen an effect produced." The difference is merely in the standpoint of the operative forces involved, but a vital difference, for all the "vicious therapeutics" (Dunham) of modern practice arise from this error.

This "New Interpretation of Operative Principles," a part only of which is touched upon, is the outcome of that unrest and dissatisfaction so long felt. Glimpses of this true science were dimly and hazily, yet nevertheless really, seen by one and another in the centuries past. Probably Sydenham; certainly Stahl, whose "Mysticism" contained the idea of the "anima" as the cause of both disease and cure, had more than a glimpse. His teaching (supposed to be a hybrid, having as parentage the physiology of Descartes and the psychology of Van Helmont) that the "anima" or "force" forms the body, directs in all its functions and, mayhap, by negligence or want of wisely directed effort originates disease, which it at once attempts to cure by the activities and functions of its various parts, when modernized a little further, will find a place in the science now building on "The New Interpretation of Operative Principles." Blumenbach was not far out in his reckoning when he esteemed Stahl as one of the most profoundly wise physicians the world had ever seen. The men who half a century ago talked of "vitality," which when once "expended can never be regained," who proposed by therapeutic effort to "correct nature or help nature," and oftener it may be "let nature alone" were wiser than their generation. Yet it was reserved for today for the clearer and fuller discovery of these central principles. "Vitality is a distinct force and every pathologic change is consequent upon vital action," was a profound thought, prophetic of consequences in the near future, which Dr. Lionel S. Beal of London launched forth at an opportune moment two years ago. Von Virchow, a year later, seeking in the mazes for "the point at which medicine begins to form a part of biology" and devoting the last days of his life to "establish and spread the idea that pathology should be considered a branch of biology"; the American editor who, later yet affirmed, "there is no drug yet discovered, unless it be alcohol, which adds to the forces of the body," were pioneers in the field where Dr. Dunham realized his "find." And now, in place of the unsolved problem of vital force; in place of confusion as to the nature and limitations of operative principles; with all the theories and hypotheses ingeniously contrived to make a whole of three halves, we shall have the rational and completed twentieth century science of medicine.

Cuvier's teaching that "the first question in science is always a question of method," when accepted, revolutionized the previous systems of natural history, at least the classifications, and installed the method of investigation and experiment in place of mere "long distance" observation. So this change in the "interpretation of operative principles" will work as great a revolution in medical teaching and science. The same line of thought which we have pursued in therapeutics will be found equally applicable to pathology, and will overthrow much of modern theory and speculation as to the causes of disease. Not to pursue the theme further, we maintain that it is absolutely incontrovertible that the "new interpretation of operative principles" is correct. Whether the science built up to harmonize with the new operative plan be complete or not remains to be seen. And yet this does not fairly state the point, for the "new interpretation of operative principles" grows out of the science itself and is part and parcel of it.

JOSEPH CLEMENTS, M.D.

1113 West Seventeenth Street.

The Troops in Santiago.

NEAR SANTIAGO, July 13, 1898.

[Delayed in Transmission.]

To the Editor:—Since my last on the 2d inst., yellow fever with its usual attendant scare has made its appearance in the camp of our army, nor is it anything but as a natural sequence of the violation of both the laws of health and ordinary precaution.

After notification to Spanish authorities that Santiago would be bombarded after twenty-four hours the foreign consulate in the city asked permission to let non-combatants and foreigners pass out. General Shafter granted the request, which was perfectly proper and most humane, but the great and inexcusable mistake was to allow them to pass through and disseminate among our camps and to have them hauled in our commissary wagons to Siboney, some nine miles distant, where is located our general hospital and the point of debarkation of troops and the embarking of our sick and wounded. There are two roads leading to the northwest and north of Santiago where refugees could have gone and our troops would have been safe from contagion.

Now to slightly recapitulate, for in my last I mentioned the want and great need of proper army sanitation. On landing, both at Baiquiri and Siboney, our soldiers were allowed to enter and dwell in abandoned shanties, for that is true of the so-called houses. At Siboney two of the houses were converted into hospitals for the reception of the wounded from the battle of La Guacima. In one room were four cases of measles within six feet of the wounded. No doors closed any of the openings in the house. Soldiers were pushed rapidly along, advancing without sufficient food, as the commissary department was landing supplies very slowly indeed. There was and is bitter complaint about the commissary department. The sun was quite warm and the troops marching rapidly on scant food—frequently a few hard tacks and water their only sustenance for twenty-four hours or more—were unable to carry their rolls, hence they threw them aside; the result is that many soldiers are sleeping in the open air and on the damp ground. Hospital tents had been established by Dr. Cooke two miles and a half west of San Juan Hill, where General Hawkins made his brave charge, but the conflict was so fierce that the tents were soon inadequate for the wounded, and as tents were still on board the ships, poor wounded soldiers were compelled to lie on the wet ground for days, when they were removed to Siboney to the general hospital. Ambulance service was very good, but the supply of ambulances was too limited; the result was that one-half the wounded were hauled from the temporary field hospital to the division hospital in commissary wagons, which caused great suffering. As I dressed the wounded for two successive nights I speak from observation.

The pits for feces were not dug for several days after the canvas was pitched, hence an unpleasant odor from every thicket. The wounded were compelled to go from twelve to twenty-four and in some cases thirty hours without sufficient food. Their appeals for soup or something to eat when I would go among them can never be forgotten. The attending surgeons did all in their power to relieve the distress, but they had not the supplies sufficient.

The fever cases, not yellow fever, but fever caused by hot sun, bad water, sleeping unprotected, and last, but not least, from scant food, are now in little shelter tents only a hundred feet from my tent. The number of this class of cases is increasing rapidly. At this writing there are over 200 cases. Just across a little pathway there are eight more shelter tents and in these there are six cases of yellow fever and two cases of suspected fever with no precautions whatever to prevent contagion, for along this path soldiers all pass every few moments. Just to the east and not 200 feet away, is where the pack mules and commissary wagons camp nightly, all on a level and open

ground where the water is now standing from one inch to four inches deep; this water slowly drains along between and into the tents of the sick. There are plenty of hills and mountain sides near where comfortable tents could be located. No pest house has yet been established at this camp. At Siboney one has been established for nearly a week. Just south of the general hospital at Siboney and across the railroad track is a coral reef too high for the sea waves to wash over it. This reef is the nocturnal privy, and is one extended mass of filth, and effort is made to prevent it, although two pits are near. Despite all the bad hygienic conditions the wounded are improving more rapidly than under more favorable conditions at home. Of the surgery and fevers will write in my next; will state however that perhaps up to date 200 cases of yellow fever is a large estimate. With rare exceptions the cases are very mild.

The scare is worse than the disease, and want of hygiene worse than all.

ORLANDO DUCKER, M.D.

Dr. Scheppegrell's Book.

NEW ORLEANS, Sept. 6, 1898.

To the Editor:—On my return to the city, a few days ago, I noted the reference to my recently published work on "Electricity in the Diagnosis and Treatment of Diseases of the Nose, Throat and Ear," among the Book Notices in your issue of August 20.

An author naturally expects various kinds of criticisms, but the writer in medical literature has reason to believe that his work will receive fair attention at the hands of the more important medical journals, and that the criticisms will be made by some one competent to judge of the merits or defects of his work.

In the case of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, there is, according to my opinion, more than the usual relation between subscriber and editor. This journal is the official organ, in fact the mouth-piece, of the AMERICAN MEDICAL ASSOCIATION. In other medical publications, if the reader objects to the methods of the periodical, he simply cancels his subscription; with the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, however, the journal is part of the organization, and cancellation of the subscription is practically a resignation of membership. The editor, in fact, holds his office, not through the good-will of the publisher, but by the vote of the members or their representatives. When, therefore, an article is submitted for publication, or a work for criticism, it is entitled, not only to the courtesy of the editor to a subscriber, but also of an officer of an association to one of its members.

In the case of my work, which was sent you, I will admit that it refers to a special part of medicine, namely, of the nose, throat and ear, to which a physician devoting his time to general medicine would scarcely be expected to make a fair criticism. Not only is this the case, but it refers especially to *electricity* in this department, of which even a specialist in nose and throat diseases might hesitate to venture an opinion of its merits. Under the circumstances, therefore, had the JOURNAL simply given the name and title of the work, this would have answered the purpose, and it would not at least have given an erroneous impression. On the other hand, there are many men in Chicago who would have been able to criticize this work with credit to themselves and with justice to the author.

In your criticism, the only part that refers to the work is the first paragraph: "The illustrations in this book are fair, and the printing is well done. The book is printed on good paper." This is as much to the point as if an artist had submitted a painting and the critic had reported that the canvas was fair, the paint well prepared, and the frame good.

The other paragraph has no reference to the work whatever. It is simply a succession of generalities, which might refer to

any work on electro-therapeutics, and which belongs to a method now out of date. The reader expects not generalities, but a weighing of the good and bad points of the work which a journal undertakes to criticise.

Not only is the criticism vague, but it is limited to the subject of electro-therapeutics, which forms but a minor part of the work. Had the critic, instead of limiting his attention to the "illustrations, printing and paper," read the work, or at least looked over the table of contents, he would have convinced himself that electro-therapeutics forms but a small part of the work; a large proportion refers to the subject of electro-physics, which has been reduced to a scientific basis as any other department of physics. The subject of electric illumination and transillumination is no longer one of controversy, but is now almost universally advocated. Electrolysis, cataphoresis and massage, by means of electric appliances, belong more to electro-surgery than to electro-therapeutics, and the subject of the X-rays has passed beyond its experimental stage, and is now admitted as a useful procedure in hospitals and medical colleges.

The book has only recently been published, and I have thus far seen but three criticisms in addition to a number of simple notices. Of the three criticisms referred to, one is in your journal, August 20; the second is in the *Journal of Eye, Ear and Throat Diseases*, Baltimore, July, 1898, and the third in the *Memphis Medical Monthly*, September, 1898. I herewith enclose a copy of the second and third criticisms, which bear on their face the evidence of a careful reading of the matter and a weighing of its merits. They form a strong contrast with the rapid generalities in the official organ of the AMERICAN MEDICAL ASSOCIATION. Yours very truly,
(Dictated.) W. SCHEPPEGRELL, M.D.

[Enclosures: Extract from *Journal of Eye, Ear and Throat Diseases*, July, 1898. Extract from *Memphis Medical Monthly*, September, 1898.]

ANSWER.—This journal has not space to do more than give brief "notices." It rarely prints "reviews." The aim is to inform the reader what the contents are. In this case the title was sufficiently explicit. The manner in which the publisher performs his part of the book-making is not a matter of indifference, but a proper subject of praise or censure. Nothing was said to the detriment of Dr. Scheppegrell's excellent work in our notice, which is now given the additional notice its author desires.

Hospital at Fort Myer.

U. S. GENERAL HOSPITAL, FORT MYER, VA.
Aug. 30, 1898.

To the Editor:—We have here a magnificent hospital under the command of Major and Surgeon W. B. Davis, U. S. A., whose earnest work is making this one of the finest hospitals in the country.

We have about four hundred patients, and one ward containing 200 beds as yet not entirely filled. This ward I believe to be the largest in the world.

Most of our patients are typhoid, and every material is at the hands of the surgeon in charge with which to do his work.

The charges and criticism relative to improper food and attendance is, in the case of this hospital, a falsehood, and I believe it to be so in the others, for as rapidly as possible every thing is being accomplished for our sick soldiers.

Respectfully,
D. H. LAMB,
Acting Assistant Surgeon, U. S. A., formerly of Owosso, Mich.

Is there Danger in Employment of Female Assistants by Dental Surgeons?

LA PORTE, IND., Sept. 12, 1898.

To the Editor:—Should dental surgeons employ female

assistants? It would seem not if the following cases can be proven to be more than a coincidence. Some years ago a dentist in our city had a young woman in his employ to assist in his surgical operations. After remaining in the office several years she was married, and in due time an infant appeared upon the scene with a hare lip and cleft palate. The young woman who next assumed her duties in the office remained eight years, when she became a wife, and recently gave birth to a daughter with the same horrid deformity. I would like to hear from the profession if similar cases are on record.

E. L. ANNIS, M.D.

PUBLIC HEALTH.

Governor Tanner has appointed Dr. A. C. Corr, of Carlinville, to the vacancy in the Illinois Board of Health. He was last year President of the Illinois State Medical Society, and it is understood that he will be the next President of the Board.

How to Use Millions Usefully Against Tuberculosis.—The editor of the *London Practitioner* reminds his readers that some years ago a millionaire, burdened beyond most of his kind with a sense of the duties of his position and fortune, asked through a newspaper for suggestions as to the employment of his wealth in the way likely to be most beneficial to the public. For some reason or other nothing came of it. If such a question were asked again, I should unhesitatingly answer that there could be no better object than the foundation of properly equipped sanatoria in this country for poor sufferers from phthisis. That the public, if appealed to in the right way, would help liberally is not to be doubted. The manner in which they support consumption hospitals shows that their help might be counted upon in an active crusade against the disease. But the question is not one of merely philanthropic interest; it is of national importance, as it closely concerns the maintenance of the vigor of the race. On this ground the co-operation of the State might well be asked. In this country it is notoriously difficult to get even enlightened statesmen to attend to anything out of which party capital can not be made. But even here the day is surely, if somewhat slowly, coming when ordinary legislators will be brought to recognize that the public health is the first and greatest of political questions. Let us, in short, have a national crusade against a national disease.

The Plague in India.—It is discouraging to learn, as we do by telegraph, that after all that has been done for Bombay in the way both of curative and of preventive measures, the plague has broken out afresh in that unhappy city. As yet, it is true, there is nothing alarming in the reports that have reached this country; for these speak of an increase of mortality from this source of only about 20 per cent., as compared with the figures for the corresponding weeks of last year. But the distressing thing is that there should have been an increase at all, when we might so reasonably have looked for a decrease, if not even for an entire stamping out of the germs of this disease. For the most recent advances in the science of bacteriology have been brought to bear by some of the most skilled European experts, on the vital problem presented by the condition of Bombay. All the tried and prophylactic measures have been put into force there and the whole power of the government has been placed at the disposal of the health officers, who have been doing such valiant battle with their insidious foe; but the results show that when it has once found a congenial environment the expelling of it is very far from being an easy task. Some parts of the city, it is said, have been so completely changed by the clearing away of plague-infected dwellings that it would be difficult for an old resident, in paying the place a visit after an absence of a year or two, to recognize localities with which he was, until recently, most familiarly acquainted. It

is to be hoped that the monsoon now prevailing will effect a cleansing both of the air and of the soil; and in any case the good fight must continue to go on. It is all the more distressing to learn of this recrudescence of the disease when the reports tell that it has spread in rather a serious form to Southern India, and that in Madras the situation is complicated by an outbreak of cholera.—*Sanitary Record*, Sept. 5, 1898.

The Plague in Central Africa.—Hitherto three of the homes of Asiatic plague have been recognized, two of them in Central Asia, and the third in Southern Arabia. Now, according to a correspondent of the *Medical News*, the range has been extended, for while in German East Africa, Koch found that a fourth focus of plague, a locality in which, according to the natives and missionaries, the disease has been endemic for as long as there is any tradition exists on the northern shores of Lake Victoria Nyanza in Uganda. His attention was called to the fact by the recurrence in Kisiba, the most northwesterly district of German East Africa of certain suspicious cases. At his request an army medical man investigated the disease directly in the infected district, and sent the specimens of a number of cases to Koch on the coast, three month's journey away. The specimens were in excellent condition when they arrived, and Koch came to the absolute conclusion that genuine plague was endemic at least in this part of Central Africa. From here he thinks that certain epidemics have gone down the Valley of the Nile and so invaded Europe. The otherwise inexplicable epidemic of the disease at Tripoli in the seventies probably had its origin in some such way as this. This plague-spot is, in the progress of civilization, gradually becoming less segregated as it was. Caravans often come from this district, and the English in British East Africa are engaged in building a railroad from the coast into this Victoria Nyanza district of Uganda, which will be completed in two years, and will still further add to the danger of the importation of the disease into Europe.

Disinfection of Sputum.—It is a serious wrong to allow the sputum of any consumptive to go undisinfected or undestroyed. Destruction by fire should be the rule as far as practicable. Comparatively few chemic disinfectants can be trusted to destroy the bacillus of tuberculosis in fresh sputum. An abundance of experimental work has established this fact. Solutions of corrosive sublimate are wholly unsuitable. Milk of lime, a valuable disinfectant for some purposes, is too slow and uncertain for the disinfection of tuberculous sputum. Chlorid of lime is too irritating to be kept in the vicinity of the patient. Ascoli states that solutions of formaldehyde are efficient disinfectants for fresh tuberculous sputum, but its action, somewhat like that of corrosive sublimate in coagulating albuminous matter, dictates the advisability of awaiting a wider research in this direction. Among the agents which may be trusted in this particular line of disinfection, the experiments of Shill and Fischer, Jäger and others show that the phenol preparations, carbolic acid, lysol and solutol, have a special activity when applied to the destruction of the tubercle bacillus. Of these, the work of Buttersack for the Imperial Board of Health of Germany indicates that lysol is distinctly superior to carbolic acid in the disinfection of tuberculous sputum, and the statement of the same investigator is supported by that of most of those who have tested it, that solutol is a still more active disinfectant than lysol. For the disinfection of tuberculous sputum in spittoons, a 5 per cent. solution of carbolic acid or a 4 per cent. solution of lysol or solutol may be used. The disinfecting solution should act twenty-four hours before the sputum is thrown out. When no other disinfectant is available, hot lye, made from wood ashes, may be used, or a tablespoonful or so of washing soda may be thrown in, and the vessel may then be refilled with boiling water, covered, and set

aside to cool. The same rules should be applied to the disinfection of sputum in pneumonia, influenza; and their application in chronic bronchitis is also desirable, for the reason that a tubercular cause remains long unrecognized in some of these cases.—*The Sanitary Inspector*.

The Scarification in Vaccination.—The New York City Board of Health, having had occasion to revise its circular on information as to vaccin and vaccination, has dealt with the subject of the latter operation in the following terms: "The part of the body to be preferred for the vaccination is at the insertion of the deltoid of either arm. When the leg is vaccinated (possibly on account of the greater difficulty of keeping it quiet and clean) inflammatory complications are more frequently present and are apt to be more severe. The skin at the place chosen should be made clean. It is doubtful if attempts at more than simple cleanliness are of value; reports of series of cases in which one arm has been vaccinated with only ordinary attention to cleanliness and the other arm vaccinated after most rigid antiseptic measures had been carried out, indicate that no greater freedom from inflammatory complications resulted in the antiseptic arm than in the other. The scarification should be made with a sterile instrument. The Department of Health recommends the use of an ordinary cambric needle, because a new one may be used for each case and there is thus no possibility of the transference of an infection from one person to another. When, however, the necessary precautions can be taken to render the instrument aseptic, any other sharp instrument serves as well. It is of great importance that the scarified area should be not more than one-eighth of an inch square, because the larger the area the greater the tendency to subsequent infection and to inflammatory complications. Moreover, with the more concentrated virus at present issued by the Department of Health, a small scarification is ample for invariable success. It should be noted that a vaccin vesicle enlarges peripherally, and the resulting crust always covers a considerably greater area than that originally scarified. The virus should be rubbed in thoroughly and allowed to dry for at least ten minutes. It is a convenience to blow the virus from the capillary tube in which it is contained on to the accompanying piece of wood and then rub the wood on the scarified area, instead of blowing the virus directly upon that area.

Increasing Demands for the Sanitation of Creameries.—This subject is a theme of a paper in *Public Health*, July, by Dr. Lippincott of Hopkinstown, Pa., who is himself a veterinarian and a dairyman. "As is customary, at such establishments, the wagoner brought the milk can filled with 'slop' that is supposed to be good enough for hog feed. It is generally understood on the outside that the farmer who sends his milk to the creamery gets skim milk in return, but when it comes to reality, they are only entitled to the slop out of the out-wells where all refuse of the creamery is conducted. This is exposed to all kinds of weather, but nothing affects these wells as does the sun and hot weather. They are never cleaned out, and having run into them each day skim milk, water, dirt and washings from the buildings and utensils, this mixture came home in our milk cans. Imagine my surprise when the man emptied the return cans of slop, which had the foulest odor, not unlike the very worst kind of a water closet or human excreta. After a few returns of this kind my man refused to wash the cans, and no one could blame him. If I could present a sample to this meeting your noses would suggest that one dose would suffice. Yet the farmer continues to cart this home, and his swine are forced to drink it or starve. This is not only true of our creamery, but all over the State. In our experience, after washing and rewashing, the cans retained the filthy odor two or three days, yet the farmers fill the same cans in the evening with fresh milk for the next trip; this is

repeated daily; from this milk comes the butter to your table and mine. I am informed that the State Board of Health is unable to remedy this evil for lack of legislation. New Jersey is fully prepared to meet and correct any such matters. Imagine my surprise upon receiving from Dr. Lee, the secretary of the State Board of Health, a reply to my suggestion that an inspector be sent, that this great Commonwealth has no such inspector. If Dr. Pitfield is looking for a fertile soil for bacteria, a visit to one of these blind wells on a hot day would show him all he needs. I engaged the attention of the proprietor, pointing out the facts and the easy means of correction, but I am met by the remark it is time enough when such becomes a law. They can easily be kept clean at little expense by having an outlet making such a flush well in a place of a stagnant pool."

Preventive Measures Against Tuberculosis at New York City.—Dr. Herman M. Briggs gives in the *London Practitioner*, June, the latest account of the results in New York consequent upon health board measures for the restriction of pulmonary phthisis. He divides the efforts of the Department of Health under the three heads of notification, education and other preventive measures. While still far from complete, especially among that class under the care of private physicians, the notification of cases of tuberculosis shows a marked and continuous increase. Thus, during 1894, the year in which registration was begun, 278 cases were reported by physicians and 3985 by institutions, while in 1897 1919 cases were reported by physicians and 7653 cases by institutions—9572 cases altogether. Another evidence of increasing confidence on the part of the profession in the attitude of the Department of Health with regard to the control of this disease is afforded by the increase in the number of specimens of sputum sent in for examination, each specimen which contains tubercle bacilli representing, as it does, a report of a case. These specimens have increased from 511 in 1894 to 2703 in 1897, while during the four years since the work was begun, a total of 6897 specimens has been examined. The educational influence and value of the measures adopted by the Department have been marked. The inspectors report a most gratifying increase of intelligence among the better class of the tenement-house population with regard to the true nature of the disease and the usual method of its transmission to others. They find in many instances on their first visits to consumptives that efficient means have been taken to properly care for the sputum, through the use of rags (which are afterward burned) in place of handkerchiefs, or of cups containing water or some disinfectant, etc. Another evidence of the increase of popular intelligence is found in the requests from citizens, now received by the Department almost daily, for the disinfection of infected clothing, etc., and for the inspection of premises occupied by consumptives. Where the premises occupied by consumptives are vacated by death or removal and are, in the judgment of the inspectors, probably infected, recommendations for their renovation are made to the Board of Health, and on the basis of the recommendations, orders are issued by the Department on the owners of the premises, requiring such renovation. It will be observed that *renovation*—not disinfection—is required. This involves the application of simple, and in tenement houses, inexpensive measures, i. e., scrubbing painted woodwork and floors with a hot soda solution and repainting, repapering or rekalsomining the walls. These measures are certainly efficient in ridding an apartment of tubercular infection (while efficient disinfection in such apartments is difficult or impossible), and at the same time they are easily understood, leave the premises in an improved condition, and as a consequence are cheerfully acquiesced in by the tenants, and are promptly carried out in almost every instance by the owners of the buildings. Where the consent of the owners can be obtained (and there is but little difficulty in this), infected bedding, clothing, carpets, etc., are removed by the Department, on the recommendation of the inspectors, to the disinfecting station and disinfected by steam or destroyed at the option of the owner, without expense to him.

Bubonic Plague Spreading.—Advices from Simia, dated August 29, announce that there were 2300 deaths last week in the Bombay Presidency. The epidemic is spreading and there has been a fresh outbreak in the Province of Hyderabad.

Consumption Among the Negroes.—Dr. James Evans of Florence, S. C., writes that the susceptibility of the colored race to phthisis, and its extreme fatality among them, has made a deep impression on every observant physician in the South, and the subject is invested with peculiar interest, as the excessive mortality has overtaken the race since emancipation, showing that the disease is more prevalent now than it was during the period of slavery. In investigating this phase of the subject several years ago, I made inquiries among the rice planters dwelling on the coast, who were the owners of a much larger number of slaves than elsewhere in South Carolina, as to the frequency and mortality of consumption among their slaves. The result of this inquiry was that phthisis in any of its forms was an exceedingly rare affection among negroes on the plantations. Many of these planters had no recollection of seeing a plantation slave affected with the disease, and it was even seldom seen in those who visited in the towns and cities where they were more exposed to the infection. The negro engaged in the cultivation of rice is employed for a large part of his time during the winter months in repairing the dykes and cleaning and digging ditches, and the consequent exposure in the performance of this work often gives rise to the acute forms of pneumonia and bronchitis. Yet they were singularly exempt from consumption. The slave represented so much invested capital, and was warmly clad, well fed, comfortably housed, and when sick had the best medical attention. Consequently the mortality among them did not exceed that of white men. The death-rate in Charleston in 1860, of the negro, was exactly that of the white man, 12 per 1000. In 1895 it was 29.10 colored, 18.70 white, per 1000. A comparison of the phthisis death-rates in the city of Charleston among whites and colored in decimal periods from 1865 to 1895 inclusive, reveals some startling facts. The deaths from consumption, in the period from 1865 to 1895, were as follows: In 1865, whites, 26; colored, 74; in 1875, whites, 54; colored, 132; in 1885, whites, 57; colored, 209; in 1895, whites, 39; colored, 194. Total deaths in 31 years—whites, 1525; colored, 4975. Estimated population in 1895: whites, 23,870; colored, 36,295. The police regulations in force on most plantations did not permit the slaves to visit adjoining places without a permit, and they usually retired early at night and arose at an early hour next morning. As soon as emancipation occurred, there was an exodus of the negroes from the rural districts to the small towns and cities, where they congregated in large numbers, and there was overcrowding in every place that could afford the least shelter. And even now, on farms remote from the towns, they evince the same tendency of overcrowding their little cabins with more people than they can possibly accommodate with comfort or safety. There is no disease which claims as many victims among the negroes as consumption. And the prime cause of this excessive mortality is room-density, too many living in the same room.—*Bulletin of the Ohio State Board of Health*, June.

NECROLOGY.

THOMAS SEXTON ROBERTSON, M.D., University of Vermont, 1879, of New York City, died at his home September 7, aged 44 years. Born in Glasgow, Scotland, he took a medical course in London, and after graduation in this country, began practice in New York as a specialist in nervous and mental diseases.

W. S. McNAIRY, M.D., a graduate of medicine of the University of Pennsylvania, died in his 82d year in Washington, D. C., September 3. He was forty-six years a government clerk in the U. S. Naval Department, and continued at his desk until within a week of his death.

JOHN L. NEILSON, M.D., Medical College of Ohio, 1866, died suddenly in Boston, Mass., September 1, in his 54th year. He

served twenty-nine years in the Medical Corps of the U. S. Navy, was a member of its examining board and at the time of death was a medical inspector at the Charleston navy yard.

Major GEORGE MCCREARY, surgeon, United States Army, who died August 23 on the *Calania* en route from Santiago to Camp Wikoff, from dysentery, following yellow fever, and who was buried at sea, was a native of New York. He entered the army as an assistant-surgeon, with the rank of captain, on Feb. 17, 1880. He reached the grade of surgeon with the rank of major last year and accompanied the army to Santiago de Cuba, where he rendered excellent service until he was stricken down with the disease which resulted in his death.

LEVI J. RICE, M.D., of Hillsdale, Mich., August 31, aged 94.—Fred A. Harpold, M.D., of Lower Salem, Ohio, August 31.—L. K. Garfield, M.D., of Algona, Iowa, September 2, aged 78.—Franklin Burr, M.D., formerly of Buffalo, at Greeley, Colo., September 1.—C. J. Covey, M.D., of Grand Ledge, Mich., September 1, aged 73.—W. V. Camp, M.D., of Hoxie, Ark., August 30.—C. B. Carneth, M.D., of West Superior, Wis., September 2.—A. J. Coward, M.D., of Clinton, Tenn., September 7.—Robert Jordan, M.D., of Jordan Springs, Va. September 4, aged 75.

MISCELLANY.

Habitual Luxation of Lower Radio-Ulnar Articulation.—This produces much functional disturbance, which is often ascribed to every cause but the right one. Hoffa has treated three cases by fastening the two bones together with three deep sutures embracing the periosteum of each, thus affording a firm support to the head of the ulna. The functional results were perfect in less than three weeks.—*Cbl. f. Chir.*, July 2.

The Zambaco Prize.—Zambaco Pasha of Constantinople has endowed the French Société de Derm. et de Syph., with funds for a biennial prize of 900 francs, to be awarded first in 1900, for the best article in French on the Contagiousness of Syphilis at All Stages of the Disease. Communications must be sent in to the secretary, Dr. Hallopeau, Boulevard Malesherbes, 91, Paris, France, before November 30, 1899.

Nude Out-of-door Life in Therapeutics.—An editorial in the *Gazette Méd. de Paris* of August 13, describes a sanitarium at Veldes in Austria, in which the patients—mostly neurotic subjects—live in shelters open to the air and discard all clothing except a pair of bathing trunks and a straw hat. They dine and lounge on rugs spread on the green sward, after games and exercises that recall the South Sea Islanders. A physician is connected with the establishment, appointed by the Austrian Government, and no undue license is allowed. The sexes are treated in separate quarters. This retreat is reached from Innsprück in the Tyrol, via Toblach and Villach in the Oberkrain.

Paresthetic Meralgia.—The *Revista Méd. de Chile* for February, contains the observation of three cases that confirm Roth's recent description of this affection. After walking or fatiguing the legs even slightly, the external muscles are the seat of strange sensations of heat and cold, amounting to actual pain. Hairless patches are also to be distinguished in the region, with normal sensibility, "smooth as parchment." (Roth.) No benefit was derived from any treatment. According to Roth's experience diabetes or tabes invariably followed in the course of a few years. In the new cases there were diabetic or neurasthenic family antecedents and one case had an inextinguishable thirst that suggested diabetes.

Direct Bronchoscopy.—Prof. G. Killian of Freiburg announced at the recent South German Congress of Laryngology, that he has succeeded in visually inspecting the bronchi below the bifurcation. The bronchi, he finds, are much more flexible

than usually supposed. After cocain anesthesia, he introduces a stiff tube into the bronchus, which straightens it until he can inspect it with the eye and examine even into the branches. The subject does not find the experience particularly disagreeable. He sits erect, the head thrown back and to the left, while he breathes easily through the tube, the observer standing on the right. Killian has tested it until he has established its entire harmlessness. For a man he uses a tube 9 m.m. in diameter. Once past the throat, the tube slides down by its own weight.—*Munich Med. Woch.*, July 5.

Electric Treatment of Epithelial Cancers.—Fabre-Domergue asserts that the orientation of the epithelial elements determines the character of the tissue; with a centrifugal orientation the elements develop with a continuous exfoliation of the horny layer and renewing of the rete mucosum, without any tendency to break through the basement membrane, while centripetal orientation is abnormal and leads to partial or total infiltration of the tissues below the basement membrane. He suggests that we utilize the property possessed by the electric current of turning certain unicellular organisms until their long axes parallel the direction of the current. Galeotti has also recently established that cellular division in the epidermic elements of the salamander is affected by the electric current. "It may be possible to restore the disorganized cells of epithelial cancers to their normal centrifugal orientation and arrest the growth of the neoplasm."—*Bull. de l'Acad. de Méd.*, June 28.

In Honor of Berzélius, the Swedish Savant.—A great memorial fête will be held in Stockholm, October 7 next, on the occasion of the fiftieth anniversary of the death of the savant Berzélius. Every scientific society in Europe will be represented, it is expected. In 1819 Berzélius was the guest of the City of Paris. He was an intimate of Laplace, Bertholet, Gay-Lussac, Ampère, Arago, whom he visited in Arcueil when every Sunday they met and sat under the trees and discussed the scientific questions of the day. Three years later Berzélius was made a member of the Institut de France, but he found the ceremonious display there less amusing than the little gatherings at Arcueil, and he was seldom seen at the Institut. Berzélius, who was born in East Gothland, Sweden, in 1779, studied chemistry and medicine at the University of Upsal. His most important work is "*Lärebok i Kemien*" ("System of Chemistry"), in three volumes, which has been translated into every European language. He was Professor of Medicine and Pharmacy at Stockholm from 1807 till 1832.—*N. Y. Times*.

Bones can be Introduced for Inspection of Experts.—In a malpractice case where negligence was charged in the treatment of a broken leg, causing gangrene to set in, and requiring an amputation of the leg, the court of appeals of Kentucky holds, *Williams vs. Nally*, that it was not improper to allow the bones of the fractured leg to be introduced for the inspection of the experts. It also maintains that the testimony of those not professing to be experts with respect to the actual condition of the leg was competent, because they spoke only of what they saw and knew, expressing no opinions. Nor does it think that it was improper to allow counsel for the plaintiff to incorporate into some of his questions quotations from medical works, as part of his questions, when catechising experts as to their technical knowledge. Finding no reversible error, it affirms a judgment for \$750, against the physician, who, by the way, was sent by a justice of the peace to attend the case, under instructions to give his patient all necessary attention, but not to run the county to unnecessary expense.

Estate Liable for Support of Lunatic.—The supreme court of Tennessee says, in the case of *McNairy County vs. McCoin*, an action brought to recover payment for the board and maintenance of a lunatic admitted to a county asylum for the poor,

that the duty imposed by the common law upon the guardian to maintain and support his ward is no less obligatory than that imposed upon the husband to support his wife; and if the guardian, with means of the ward at his disposal, breaches his duty, and permits his ward to become a charge upon the county, it should be reimbursed for expenses incurred in supplying necessaries to said ward. It is true, the county asylum established under the laws of Tennessee is a charitable institution. Still, it was designed for the care and maintenance of indigent paupers, and not for the benefit of those who have means sufficient to support themselves. If, therefore, it appears that the county, through the neglect of the guardian, has been compelled to provide for one who was not a pauper, it would seem but just that the county should be indemnified out of the funds belonging to the ward, as the court holds; and to this effect, it says, is the great weight of authority, a contrary view of the supreme court of Indiana being pronounced out of line with the current of authority, and but the decision of a divided court.

The Neuron Theory Tottering.—Franz Nissl publishes in the *Munich Med. Woch.* of August 2, 9 and 16, an account of his recent investigations in regard to the nerve-cell and gray matter. He has established a number of important facts which undermine the neuron theory and demonstrate that the nerve tissue consists of nerve cells and a specific nervous substance, (the gray matter), a fibrillary substance, originating in the nerve-cell protoplasm. It evidently represents the highest stage of differentiation in the animal organism and is an especial functional factor in the mechanism of the nervous system, the functioning element, while the nerve cell is the forming and nutrient element from which the other is developed. It is interesting to note in his cuts how this functioning element predominates in man—the higher the development of the mammal, the less nerve cells there are in corresponding perpendicular sections of the cortex. . . . Among the facts on which he bases these assertions are the discoveries of Apáthy and Bethe of a co-ordinated reflex in an invertebrate (*carcinus mænos*), without any central nerve cell, also that this reflex rapidly subsides, having no continuing power. Further, his and others' demonstration of fibrils in the unstainable portions of the cell body show that these primary fibrils undoubtedly constitute the conducting element. Another fact is the classic lack of proportion between the alterations in the nerve cell after intoxication or other injury and the functional disturbances; the cell may return to a perfectly normal condition, while the function is still lost. . . . His own research has been principally in the line of the effect of various poisons on the nerve cell. He finds that each poison affects the nerve cell of the cortex in a special, almost a specific, manner (except in case of very slow, gradual intoxication), and that the alterations produced are chemic or physical or both, and are primarily merely the expression of the disturbances produced by the toxin or other injury in the material equilibrium of the nerve cell.

Heart Disease from the Standpoint of Life Insurance.—Dr. Robert H. Babcock, *Medicine* Vol. iv, p. 177, *American Medico-Surgical Bulletin*, in discussing the attitude of the companies toward their examinees as one of distrust regarding the liability of reports accurate enough for a basis of expectancy, says that tachycardia of 90 or 100 is often due to the perturbation of an examination, the use of tea, coffee or tobacco, and may hap the naturalness of some individuals. A cardiac murmur is the least important; its intensity is no criterion of its gravity; on the other hand, a dangerous lesion may declare no murmur at all. Robust men of large frame, ample chests, eaters of meat thrice daily, who take comparatively little out-door exercise, with the handicap of active mentality or great responsibilities, are the risks which die unexpectedly in the fifties or early sixties. An examination of the heart in these cases may

reveal an absolute dullness usually normal, while deep percussion may prove an increase of relative dullness sufficient to constitute cardiac enlargement. Dwelling upon some of the conditions which should determine one's opinion of the likelihood of an applicant with a compensated mitral insufficiency or aortic stenosis living out his expectancy, the writer regards the tendency to recurring attacks of articular rheumatism, or a gonorrhœa, or some other infectious disease present, and liable to set up fresh endocarditis as of unfavorable prognosis. Age also influences the prognosis, as if the person be beyond middle age it is probably of sclerotic origin and progressive. The occupation is of utmost importance, since, if it subject the individual to vicissitudes of weather, or to cardiac strain from undue exercise or physical tax, compensation is not likely to be long maintained.

Obscure Sources of Poisoning.—Dr. Clement Dukes, physician to Rugby School, refers to two cases of the above nature. The first of these was an adult male having the symptoms of plumbism. The patient was a gardener, and the physician minutely searched every possible source of poisoning in his house without discovering the cause. Failing in this, inquiry was made into his habits from rising to retiring, and the cause was traced to this: he breakfasted early, went to work, and between 8 and 9 A.M. visited a certain ale-house to have a glass of beer, where he was usually the first customer. As the beer was drawn by the beer pump from the barrel in the cellar through a lead pipe he evidently imbibed with his, often probably hard, beer his daily dose of lead. This visit was at once given up, he recovered from his poisoning, which has never recurred, and he now allows some one else to have the first glass. A few weeks ago a young woman, who evidently had something on her mind and was suffering considerably, which apparently arose from morphism, called to consult Dr. Dukes. After considerable patient inquiry the following facts were elicited: Some years since she had suffered from a painful rectal trouble for which morphia suppositories had been prescribed, which not only relieved her local pain but doubtless produced other general peaceful effects. Feeling very wretched from too long a ride on her bicycle, which made her quite ill, she remembered her suppositories and resumed them, using several daily for a considerable time, with the result I have stated.—*London Lancet*, April 2.

County has no Right to Discharge Physician Without Cause.—The first of several questions deemed important enough to be specially certified up to the supreme court of Texas, in the case of Galveston County vs. Ducie, was as to whether the commissioners' court had authority to appoint a county physician, at a stated salary, to perform duties comprising the giving of medical attention to the prisoners at the jail, both the criminals and the pauper insane and county paupers at the poor farm and any one sick within the jurisdiction of the county, confined as a prisoner, pauper, or lunatic, and to attend inquests whenever anybody was found dead. The answer of the supreme court, handed down May 9, 1898, is that the commissioners' court of Galveston county was authorized to make the contract for medical services to be rendered to paupers and prisoners for whose care and support the county was required to provide, but that it had no authority to make the contract for the physician's services at inquests, and that to that extent the contract made was not binding upon the county. The explanation of this is that counties are not liable for the services of medical men at inquests which may be held under the provisions of the Texas Code of Criminal Procedure. Yet, as already suggested, the court holds that, although the stipulation in the contract for the physician's services at inquests was ultra vires, or beyond the power of the commissioners' court to contract, it did not render the agreement invalid for that part which the county had the power to con-

tract for. And it insists that, so far as the commissioners' court had authority to make the contract referred to, the county was bound to the same extent an individual would have been, and it had no right to discharge the physician without cause. If wrongfully discharged, he would be entitled to recover the amount contracted to be paid him, less so much as attendance upon all inquests in the county would be reasonably worth, and less any additional sum the evidence might show that he could make in the practice of his profession by being relieved of attending to the county cases. But the contract in question, not contemplating that the services to be rendered for the county would occupy all of the physician's time, but that he might give what spare time he had to private practice, the court holds that, when wrongfully discharged he would not be obliged to seek other employment, to reduce the damages against the county, because that would not be consistent with his regular business, some weight also being attached to the fact that it did not appear that there was any other business of like character in which he could have obtained employment.

Practice of Medicine by Clergymen.—The *Lancet* states that the Roman Catholic bishop of Augsburg has recently made a communication to the clergymen of his diocese on the subject of the increasing tendency of the clergy to give advice in cases requiring medical treatment, a practice which he condemns as being at variance with the ordinances of the church, and he charges his clergy to avoid anything which may have the appearance of interfering with the work of the medical profession. This order is the more remarkable because Woerihoffen, where the late Father Kneipp lived and his successors still continue his work, is in this diocese. The expression of similar views by other clerical dignitaries would no doubt have a beneficial influence as tending to prevent misunderstandings between the two professions. That quackery has its most fervent adherents among the upper classes was clearly shown by a recent occurrence. One of the leading newspapers of Berlin published a letter written by a medical man showing that a so-called "magnetopath" had pretended to cure patients by means of magnetic fluid coming from a well-known Berlin medium now resident in America. This medium had formerly caused a certain amount of sensation in connection with spiritualist meetings, but eventually left the city when it was shown by some medical men that she had been carrying on a system of imposture. A few days after the insertion of this letter a public declaration appeared in the advertising columns of the leading Berlin journals, signed by a great number of patients of the quack. The signatures were for the most part those of members of the nobility and of the upper classes, who solemnly stated that they had been cured by this man after having been attended without success by legally qualified medical practitioners. The great popularity of every kind of quack treatment among the upper classes leaves little ground for hope that unqualified practice will be made illegal.

Leprosy in Hawaii.—A pamphlet on this subject has been published by Dr. Ashburton Thompson. He quite fully considers the question of imported labor from leprosy areas, but finds little evidence in support of the theory that the disease was introduced in that way. The first reliable observations on the occurrence of leprosy in Hawaii were made between 1855 and 1863, but the rate of its diffusion is very uncertain. Dr. Thompson remarks: "All competent witnesses hold the following opinion—that there is no record or distinct tradition of the invasion of the disease. When attention was first attracted to it cases existed in every island of the group; it is not known or suggested either that any island was attacked before the rest, or that any remained free after the rest were known to suffer." It is thought at the present date by those at Honolulu, who are in the best position to judge, that the outbreak

is now declining. The evidence that this is so is not as yet such as can be easily apprehended by the foreign visitor, and it is the case that during the last thirty years a similar opinion has been expressed, from time to time, only to be contradicted a little later by acknowledged facts. Great difficulties have been experienced in carrying out a policy of isolation. In 1865 the necessary land was acquired, which thenceforward became known as the Settlement, but for many years constant communication was carried on between the lepers and their friends on the other islands. Consequently, the author says, no account of the fluctuations of this endemic can be written; all that can be furnished is a statement of the number of persons annually removed to the Settlement, and this is given for the term of years from 1866 to 1895, in a table. But these numbers stand in no known relation to the total affected in the whole group, and fluctuate largely, if not exclusively, in correspondence with terms of greater or less executive energy, and are hence of little scientific value. In fact, as Dr. Thompson himself observes, the value to etiology of the present case must be classed scientifically as "unobserved," as no records were kept of the original inhabitants of the islands who became lepers, but the vast majority of cases were observed in those families whose ancestors had been imported into the islands.

An Emergency Call Required by Prosecution and Fine.—Dr. Leichtentritt, a practitioner of Berlin, has had a very disagreeable personal experience, the details of which he has published in the *Aerztliche Sachverständigen-Zeitung* for the benefit of his professional brethren. Dr. Leichtentritt when on his way home and near his residence, one evening, was asked by a policeman to see a woman who was giving birth to a child, in a water-closet. He did so, and found that the woman had just been delivered of a girl, the placenta being still in the uterus. A crowd of women was present to watch the proceedings and to give advice to the patient. The surroundings not being the most suitable for obstetric manipulations, Dr. Leichtentritt only tied the umbilical cord and ordered that the woman, whose name and address he did not ask for, should be conveyed by the policeman to the nearest hospital for the removal of the placenta. He then went away, feeling inwardly content with the charitable act which he had performed under such strange conditions. Some weeks afterward the woman called on him to ask whether he had notified the birth of the child to the registrar. She told him that she wished the child to be baptized, and according to law it was necessary for the clergymen to see the certificate of the registration of birth. Dr. Leichtentritt said that he had not notified the birth and explained to the woman that it was the duty of the hospital officials to do so. Not long afterward he was officially summoned before the registrar, who drew up a long report of the case, and his troubles were supposed to be at an end, but to his great disappointment he received an order from the magistrate to pay a fine for infringement of the registration laws. Dr. Leichtentritt refused to pay, not feeling that he had committed any offence, and rightly believing that he did not deserve to be fined for help freely given to a poor woman. Legal proceedings were taken against him, but judgment was given in his favor on the singular ground that he had not been "present" at the delivery, as the child was already born when he arrived on the scene. The law is to the effect that medical men or midwives or other people "present" at the birth of a child are bound to notify the birth to the registrar, but it was not applicable to the present case. In future Dr. Leichtentritt and some other medical men will probably be less ready to respond to appeals for their assistance.

The Profession and the Interviewer.—The *Scalpel* reprobates the action of certain practitioners in supplying the press with bulletins and interviews regarding the sicknesses of the great,

and as an example instances the fact that day by day the press described the progress of Mr. Gladstone's illness; day by day with ghoulish eagerness the press detailed the varying phases of his malady; and Mr. Gladstone literally was killed by inches. What useful purpose could be served by such details?—save the selling of a few extra copies, and the making of a few extra half-pennies. Still worse, in our opinion, are the reported interviews as to the exact nature and progress of the patient's illness; how he consulted Dr. So-and-So, how he actually saw Dr. Carter of Liverpool, how he then went under care of Dr. Blank and Dr. Blank. If such interviews and such actions are sanctioned in high places, why should not Dr. Minimus give the reporter details of the illness of the local great man and advertise himself. There is only a difference in degree. In each locality the big man of the place is as important to the place as Gladstone was to the larger circle. Bulletins are, however, condemned in the case of the smaller man. But the question resolves itself into a small compass. It is not a question of the high or low position of the patient. The medical attendant is consulted in a confidential capacity, he has no right to let the public into his confidence. He should say to all reporters and interviews—"I have told the relatives my opinion of the case, if you want any information you must go to the relatives. I can not enter into details which I obtained in my professional capacity." We have seen in some of our illustrated journals ghastly pictures of the death chamber of Mr. Gladstone. The Ex-Premier is almost at his end, his wife holds his hand and his family are round his bed. This picture has no merit from an artistic point of view, and it certainly appears to us to be in the worst possible taste. The inner life of our great men may sometimes be legitimately peered into, but certainly their death chambers should not be invaded—a veil should be hung over this last solemn act. We trust that the College of Surgeons and Physicians or some other official body will in some way express an opinion in general terms upon the proper attitude of medical men when attending distinguished patients.

Prior Removal of Ovaries Ground for Annulling Marriage.—The exceedingly novel and important question was raised in the case of *Wendel vs. Wendel*, whether the husband is entitled to the annulment of a marriage contracted without knowledge on his part that his wife was physically incapable of conception as the result of a surgical operation, such as the removal of her ovaries, known to her, but concealed from him. Section 1743 of the New York code of civil procedure provides that an action may be maintained to procure a judgment declaring a marriage contract void, and annulling the marriage, among other causes existing at the time of marriage, where one of the parties was physically incapable of entering into the marriage state. In deciding the question presented, under this provision, Mr. Justice Hirschberg of the special term of the supreme court of New York, Kings County, follows, in part, this line of reasoning: Was the defendant wife, at the time of the marriage, physically incapable of entering into the marriage state, within the meaning of this statute? The answer depends in great measure upon what are recognized by law as the objects and purposes of marriage. If sexual intercourse alone is so recognized, then it must be conceded that the defendant in this case was physically capable. But the creation of a family is also regarded as one of the chief purposes of a matrimonial union, and it is difficult to see how an individual can be physically capable of performing the contract who has lost the organs essential to conception. The question is different from that presented by sterility or barrenness. It is well settled that a marriage will not be annulled for the mere barrenness of the wife. Not only is such a condition and its continuance difficult, if not impossible, to prove, but its existence, if established, may not be innate, but only peculiar to an inharmonious combination. In such cases, whether the power to conceive or to impregnate be at issue, the question of the condition and its permanence rests on hypothesis and speculation, and is practi-

cally beyond the pale of judicial scrutiny. Impotence in such cases is the sole and settled ground of nullity. Continuing, the judge says that it seems to him that the question is vitally distinct where the barrenness is absolute; is not a constitutional quality or a functional failure, but a physical incapacity, resulting from congenital malformation or the total loss of the organs of conception by disease or the surgeon's knife. So he holds, December, 1897, that a person destitute of child-bearing organs is physically incapable of the chief and higher purpose of matrimony, and consequently of entering the marriage state. And it follows, he holds, that in concealing from the husband the fact and extent of her misfortune, the defendant in this case procured his consent to marry her by fraud, which constituted a good ground for divorce. But had the plaintiff married her with knowledge that the surgical operation performed on her involved the removal of her ovaries he would, of course, be estopped from action because of her physical condition. The fact that in this case the prospective husband had asked whether she was physically and mentally capable of being a wife, and that the judge says that good faith required that she should have then disclosed the fact that the surgical operation involved the removal of the ovaries, perhaps casts some doubt on whether the judge would have decided as to the fraud and divorce therefor as he did, though his reasoning set forth would seem to have required it, had not the inquiry been made of her.

San Francisco.

Now that the war is so nearly over, and that the proper thing to do is to seek for "who is to blame," it would perhaps not be amiss if some inquiry were set on foot in the effort to establish the blame for the many instances of alleged mismanagement in the camps in and about San Francisco. When the volunteer regiments gathered at this point a few of the companies were camped at the Government Post called the Presidio; but afterward most of these and all subsequent arrivals were encamped on the other side of the city, in some sand lots which have heretofore been given up to the trade wind and the fog. Of sewer facilities there were none, and of water there was a very meager supply in this new location, called Camp Merritt. On account of the cold winds and the heavy fogs almost constantly prevailing, that section of the city had been but little built up. Here the men were camped and here they built their privies, just about fifty feet from the camp kitchens; at the end of a month the stench from the combination of kitchen and privy was painfully evident to passengers on the cars which pass that side of the camp and perhaps a hundred feet from the camp limits. Who permitted the locating of the privies so near to the camp kitchens? And who, indeed, was responsible for locating the camp in these wind-swept and foggy sand lots, where water is scarce and sewers there are none? Who supplied musty straw for the bedding, with the result that there was an epidemic of otitis media from micro-organisms infecting the straw, which resulted in several deaths from mastoid disease and meningitis? Who is responsible for supplying the zoölogic collections called bacon, which sometimes have been issued to them for rations? These and a few more questions might well be asked, in view of the very high death rate and the large sick list. It was rumored that the Southern Pacific, which corporation controls all the street-car lines running out to Camp Merritt, was largely instrumental in having the camp located in the sand lots, for it has no car lines running to the Presidio, and its rivals have no lines giving service in the vicinity of Camp Merritt. This rumor was denied, but that is but what one could expect, and in view of the weight which political pull and corporation influence seems to have, the denial means nothing. At present there are about three hundred and fifty men on the sick list among the troops which were recently removed to the Presidio from Camp Merritt, and the death rate is not what one could conscientiously call small. When investigations are being urged with greater emphasis from day to day, why not look into some of these things which, in view of the results, may be called outrageous blunders?

IT IS STATED, on good authority that the joint committee of

the Board of Regents and the Faculty of the Medical Department of the University of the State of California have in contemplation a plan for making the medical department one of the leading medical schools of the country. They have entered into correspondence with Johns Hopkins, to ascertain the data of the plan of operating that famous school, and the necessary expense of conducting a school on very similar lines. Certainly the plans as outlined by a member of the joint committee will, if carried out, put the medical department of the university in a place second to none in this country. A medical library that will be a library in the fullest sense of the word, is already decided upon and will have been commenced by the time the new buildings are in use. Through the instrumentality of Dr. Philip King Brown and the generosity of the widow of the late Dr. Richard John Hall, almost the entire library collected by Dr. Hall is to be given to the university for the use of and to be placed in the building of the medical department. This library includes a large number of complete files of medical journals, American, English, French and German, and is of considerable value. Other notable accessions are in view and it is to be anticipated that before the first of the coming year there will be at least five thousand volumes in the library. A large and excellently adapted room has been set aside for this purpose and the shelving is now being made.

Philadelphia.

SIX HUNDRED SOLDIERS lie ill in the hospitals of Philadelphia. And yet this large number of sick represent but a proportion of the total number now being treated elsewhere.

PHILADELPHIA MORTALITY REPORT.—The number of deaths for the week ending at noon, September 10, was 537, an increase of 124 over the previous week, and of 148 over the corresponding period of last year. Of the total number 172 were in children under the age of 5 years, cholera infantum being very prevalent owing to the excessive heat. The principal causes of death were: Apoplexy 18, dysentery 5, cancer 16, diarrhea 3, inanition 10, cholera infantum 50, marasmus 25, consumption 57, old age 25, heart disease 41, suicide 8, uremia 15. Infectious diseases: Diphtheria 64 cases, 10 deaths; scarlet fever 12 cases, 1 death; typhoid fever 222 cases, 28 deaths. Total 298 cases, 39 deaths, a decrease of 47 cases and 14 deaths from preceding week.

SEPTEMBER HAS BEEN HOT IN PHILADELPHIA.—Physicians who have remained in the city during the summer will not forget the past few months for years to come. While the weather man stated some time ago that it had been the hottest for thirty years, it was a source of much pleasure to feel that the hottest was over after the first of September had been passed. But on the 5th inst. a temperature of 91 was reached with the humidity at 83 per cent. ending in 6 deaths and 20 prostrations. On the 6th there were 6 deaths and 18 prostrations. On the 7th 4 deaths occurred. Since August 31 there have been 41 deaths attributed to the intense heat.

QUARANTINE STATION IN PHILADELPHIA CAN BE QUICKLY ESTABLISHED.—Owing to yellow fever scare now prevalent along the Gulf States the State Quarantine Board of Pennsylvania has become quite active of late and is preparing itself for emergencies which may arise. It was recently announced by Dr. Henry C. Boenning that complete arrangements had been made by the Board of Quarantine whereby the station at Marcus Hook could be provisioned and equipped for 200 persons, within six hours if the emergency arose. The Hon. John Wanamaker offered to equip the station with bedding, tableware, etc., also cooking ranges. Prompt delivery of 100 to 1000 pounds of meat has also been provided for.

CONTRIBUTIONS FOR RELIEF OF SICK SOLDIERS.—Mr. George C. Thomas, treasurer of the National Relief Commission, acknowledges the following contributions received at the banking house of Drexel & Co., Philadelphia: Cash previously acknowl-

edged, \$56,178.56; amount cash to date, \$621.16; total, \$56,799.66. The St. Agnes Hospital acknowledges receipt of \$1048, and the Medico-Chirurgical Hospital \$3580.50 for the relief of the sick soldiers. Contributions have also been received by all of the hospitals of the city.

HOSPITAL TRAINS SENT OUT FROM PHILADELPHIA.—The following number of hospital trains have been sent to the different army camps by the various hospitals of this city: University of Pennsylvania, five; Medico-Chirurgical Hospital, five; St. Agnes Hospital, one; St. Joseph's Hospital, one. The German Hospital is in communication at the present time with the Surgeon-General in regard to dispatching a train for a similar purpose. Of the soldiers brought home, about eight deaths have occurred from typhoid fever. Dysentery, diarrhea and malarial fever account for the illness of a large proportion of the troops, many of whom have been discharged cured.

AVOIDING VACCINATION IN PHILADELPHIA.—Dr. Ott of the 29th sectional school board questions the genuineness of many vaccination certificates filed at the district school by pupils attending. Believing that many papers were irregular, Dr. Ott visited the school to make an examination of the scars upon the children, but in many instances refusal was encountered on the ground that the parents objected. A resolution, however, was passed by the board that the principals of the schools be instructed to make the examination, and also to compare the certificate with that of an accepted medical register.

PERSONAL MENTION.—Dr. Ernest Sangree, formerly pathologist to the Philadelphia Hospital, but late professor of pathology and bacteriology in the Vanderbilt University, has returned from a trip to Europe via Philadelphia.

BEQUEST TO CHARITY.—By the will of the late Harriet B. Evans of this city, a bequest of \$5000 has been made to the Presbyterian Hospital as an endowment for a bed in memory of her husband.

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward for the week ending September 3, shows the total number of deaths to have been 109, of which 58 were white and 51 colored. Among the principal causes of death are noted, circulatory, 11; intestinal, 7; genito-urinary, 3; respiratory, 9. There were 25 fatal cases of the zymotic class, 7 of which were from inflammation of the bowels, 2 from diphtheria and 8 from typhoid; 3 of the latter cases were soldiers in the Army Barracks. There were 43 cases of diphtheria and 39 cases of scarlet fever under treatment at the close of the week.

DRS. ALBERT R. COLLINS and F. F. Repetti have been appointed physicians to the poor.

WOMAN'S CLINIC.—The regular monthly meeting of the Board of Directors of the Woman's Clinic was held on the 3rd instant at the hospital; important business was transacted and the hospital shown to be in a flourishing condition.

ASSOCIATED CHARITIES.—The regular monthly report of the Board of Associated Charities shows a marked diminution in the number of applications for help and medical treatment. The number of applications for free treatment made to the Central Dispensary and Emergency Hospital was 147; of this number 109 were granted, 26 were refused and 12 were found to have given false addresses. The hospital authorities are very much pleased by the fact that certificates were granted to only 74 per cent. of applicants, thus relieving the hospital from the care of about 26 per cent. of applicants who would have otherwise imposed upon the institution. Ten applicants for treatment at the Woman's Clinic were investigated, 3 of whom were rejected.

NO MORE NURSES REQUIRED.—The following communication was sent to the D. A. R. Corps by General Sternberg:

Dr. Anita Newcome McGee, director D. A. R. Hospital Corps, Dear Madam:—I desire to express to you and to the members of your committee my high appreciation of the valuable assist-

ance rendered me in the selection of trained female nurses for duty at our general and field hospitals. The results have been entirely satisfactory, and I have received most favorable reports with reference to the value of the services of the trained nurses selected through you. The demand for nurses is probably about over, and in my opinion you could now discontinue your labors in this direction without injury to the service. I will therefore make other arrangements for the selection of female nurses, if more should be required, in order that you may be relieved from the arduous labors which have occupied your time so completely during the past four months. I desire to express my sincere thanks to you and to each member of your committee, for your patriotic and unremitting efforts, and for your valuable assistance in enabling me to provide for the care of our sick soldiers.

Very truly yours,

GEORGE M. STERNBERG, Surgeon General U.S.A.

DISTRICT SURGEONS RETURN.—Surgeon and Major R. A. Pyles, and Assistant-Surgeon J. H. Cox returned to Washington today with the District of Columbia Regiment from Camp Wikoff. Both surgeons show the effect of hardship and overwork, but have stuck to their regiment faithfully ever since they left Washington. They were warmly welcomed in parade by thousands of friends and admirers. Assistant-Surgeon Weaver returned some time ago, but has been very ill and confined to bed. At one time grave doubts were entertained for his recovery.

Detroit.

WAXNE COUNTY MEDICAL SOCIETY.—The regular meeting of this Society was held on Thursday evening, September 8. Dr. David Inglis read a paper on "Dietetic Points." The essayist's first point was what he called the very common and very dangerous fallacy that fruits should be eaten for breakfast. He regarded the habit, in city life, of eating fruit for breakfast as pernicious, for the reason that the person who indulges the appetite with such diet is just getting steam for the day's work, his digestive power is at the lowest ebb and the food is of a highly indigestible nature, and must be digested while all of the person's energies are devoted to business and as little as possible to digestion; besides, one who fills his stomach with raw fruit has taken in very little really nourishing food and consequently his body goes hungry. The second point in the Doctor's paper was, fruits and vegetables should be cooked before eating as they are more readily digested. He said: "In plain terms, it takes an admirable digestion to digest uncooked food and the man or woman who has not a fine reserve of digestive power brings on indigestion by the use of uncooked food. Oddly enough, the moment a patient has a bad vomiting spell or an attack of cholera morbus, he searches as probable cause for some raw food or other, but at all other times he quotes medical authorities to prove that it is so very wholesome to eat lots of raw fruit." His next point was regarding the drinking of water. He said: "Our city men and women, or many of them, go along with barely enough water to keep from drying up. Then they become addicted to pills, tonics, massage, electricity and Christian science—dying for water while the hose is playing in front lawn. . . . Our patients need to be ordered to drink systematically, not what they want but what they need." The Doctor next took up the point of feeding typhoid fever patients with milk. He condemned the practice in very strong terms, because milk is a solid and not a liquid food; it is a fine culture medium for many bacilli and especially the bacillus typhi abdominalis. Pure water, he said, should be given instead of milk.

HEALTH REPORT for the week ending September 10: Deaths, 112; births, male 40, female 35; contagious diseases, diphtheria 1, scarlet fever 18.

Societies.

A regular meeting of the Polk County (Iowa) Medical Society was held in Des Moines September 6. Papers were read by E. E. Dorr, J. W. Cokenower and James T. Priestley.—A regular meeting of the Lucas County Medical Society was held September 2.—The quarterly meeting of the Rhode Island Medical Society was held in Providence September 1.—The McLean County (Ill.) Medical Society held a regular meeting in Bloomington September 1.—The St. Clair County (Mo.) Medical Society held a regular meeting in St. Louis Septem-

ber 1.—The Belmont County (W. Va.) Medical Society held a quarterly meeting in Wheeling August 31.—The semi-annual meeting of the Middlesex County (Conn.) Medical Society was held in Hartford September 7.—A regular meeting of the Lyon County (Kan.) Medical Society was held in Emporia, Kan., September 7.—The regular meeting of the Hornells-ville (N. Y.) Medical and Surgical Association was held September 6.

THE PUBLIC SERVICE.

Major Charles M. Gandy, brigade surgeon, will proceed to Huntsville, Ala., and report to the commanding General, Fourth Army Corps, for assignment to duty.

Passed Assistant-Surgeon D. L. Parker, U. S. N., is honorably discharged, from August 26.

Passed Assistant Surgeon N. J. Blackwood is detached from the *City of Peking* and ordered home.

Surgeon W. H. Rush is detached from the *City of Peking* and ordered to the naval hospital, Mare Island.

CHANGE OF ADDRESS.

Blitz, A., from Sidle Block, to Medical Block, Minneapolis, Minn.
Becker, E. C., from 1751 Milwaukee Ave. to 385 W. Diversy Ave., Chicago.
Bryan, G. J., from Syracuse to Fayetteville, N. Y.
Caspers, P., from 2107 Michigan Ave. to 53d and Cottage Grove Ave., Chicago, Ill.
Cole, F. M., from Hull to Arthur, Iowa.
Dahl, S., from 667 N. Oakley to 822 N. Western Ave., Chicago, Ill.
Dal, J. W., from 482 Milwaukee Ave. to 499 N. Robey St., Chicago, Ill.
Elgin, W. F., from Bethesda, Md. to Glenolden, Pa.
Frost, C. A., from Almond to Stevens Point, Wis.
Gordon, R. N., from Ann Arbor, Mich. to Realty Block, Everett, Wash.
Gibon, A. L., from Sykesville, Md. to 233 Fifth Ave., New York, N. Y.
Gunn, J., from 70 State St. to 5127 Cornell Ave., Chicago, Ill.
Gilbert, J. R., from Dallas to Ranger, Texas.
Husk, C. E., from Chicago, Ill. to Tepazala, Mexico.
Hupp, A. L., from West Union to Cherry Camp, W. Va.
Kadlubowski, S. L., from 343 N. to 212 E. Forest Ave., Detroit, Mich.
Little, W. J., from Ann Arbor, Mich. to Madison, Nebr.
MacRae, Jno., from Central Mine, to Box 46, Calumet, Mich.
Munson, S. E., from Rochester, Ill. to Göttingen, Germany.
McCurdy, G. M., from 136 Park Ave. to 637 Madison St., Chicago, Ill.
Mott, B. F., from Sykes Block to 1 E. 17th St., Minneapolis, Minn.
McLeod, J. A., from Ironwood, Mich. to 291 Farwell Ave., Milwaukee, Wis.
Noyes, A. A., from 1910 Hawthorn St. to 423 Plymouth Ave., Minneapolis, Minn.
Petzke, E. A., from Evanston, Ill. to 139 W. Wilson St., Madison, Wis.
Rumpf, W. H., from 2006 Indiana Ave. to 4720 Kenwood Ave., Chicago, Ill.
Smith, E., from Burehard, Nebr. to Lawrence, Kansas.
Tait, Dudley, from 326 Geary to 1043 Post St., San Francisco, Cal.
Woolsey, M. H., from 404 to 1017 Sutler, San Francisco, Cal.
Whetstone, A. S., from 505 to 408 Nicolette Ave., Minneapolis, Minn.

LETTERS RECEIVED.

Anderson, Winslow, San Francisco, Cal.; Alma Sanitarium Co., Alma, Mich.
Beagle, H. B., Blue Island, Ill.; Bentz, H. G., Buffalo, N. Y.; Biedler, H. H., Baltimore, Md.; Brown, J. Y., St. Louis, Mo.; Boelinger & Soehne, C. F., New York, N. Y.; Bonney, Vena D., Chicago, Ill.; Balke, R. F. & Co., Louisville, Ky.
Charles Roome Parmale Co., New York, N. Y.
Denver Chemical M'fg Co., Denver, Colo.; Daniel, J. B., Atlanta, Ga.; Dabney, T. S., New Orleans, La.
Egan, J. A., Springfield, Ill.
Gosselt, W. B., Louisville, Ky.; Goodman, N. M., Boston, Mass.; Griffith, J. P., Crozier, Philadelphia, Pa.
Hummal Advertising Agency, A. L., (2) New York, N. Y.; Hanawalt, C. G., Lisbon, Ill.; Hodges, F. J., Ashland, Wis.; Hull, E. M., Idaville, Pa.; Haldenstein, J., New York, N. Y.; Hektoen, L., Chicago, Ill.; Huston Bros., Chicago, Ill.
International Subscription Agency, Pen Yan, N. Y.
Jarvis, A. A., Faulkton, S. D.
Kempson, J. F. & Co., New York, N. Y.
Maltbie Chemical Co., The, Buffalo, N. Y.; McClurg & Co., A. C., Chicago, Ill.; Mogg, W. A., Ann Arbor, Mich.; Madden, Jno., Milwaukee, Wis.; McReynolds, J. O., Dallas, Texas; Metz, A. L., New Orleans, La.
Norris, W. L., Toledo, Ohio; Nungesser, Jno. J., Cleveland, Ohio; Nutrolactis Co., (2) New York, N. Y.
Parker, E. E., (2) Maxinkuckee, Ind.; Pearce, A. L., Chicago, Ill.; Prichard, J. M., Yale, Ky.; Pelton, E. R., New York, N. Y.; Pfister, Frantz, Milwaukee, Wis.; Pratt, C. S., Brattleboro, Vt.; Pulvora Chemical Co., New York, N. Y.; Paquin, Paul, Denver, Colo.; Patterson, J. A., Salem, N. J.; Pacific Medical Journal, San Francisco, Cal.; Prudential Insurance Co. of America, Newark, N. J.
Robertson, J. D., Cambridge, Mass.; Robinson, S. E., West Union, Iowa; Reichart, F. Alfred & Co., New York, N. Y.; Ruhl, W. D., Fort Wayne, Ind.; Reig, J. B., Wyandotta, Mich.; Richards, G. A., Philadelphia, Pa.; Roeder, Philip, St. Louis, Mo.
Stover, E. E., Essex, Iowa; Smart, Charles, Washington, D. C.; Spalding, J. S., Chicago, Ill.; Spencer Lens Co., Buffalo, N. Y.; Sager, B. E., Cleveland, Ohio; Smith, H. D., Lovington, Ill.; Saunders, N. B., (2) Philadelphia, Pa.; San Gabriel Sanitarium, San Gabriel, Cal.; Smith, J. Weldon, Cumberland C. H., Va.; Scott & Bowne, New York, N. Y.; Starkey, H. M., Chicago, Ill.; Short, J. L., Rollo, Mo.
Thielen, M. H., Chanute, Kansas; Tyree, J. S., Washington, D. C.; Thomas, C. P., Spokane, Wash.
Van Devur, C., Grand Rapids, Mich.
Watts, C. W., Moberly, Mo.; Warren, W. M., Detroit, Mich.; Walker, F. E., Bigelow, Minn.; Woldert, E. A., Philadelphia, Pa.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, SEPTEMBER 24, 1898.

No. 13.

ADDRESS.

THE CHEMICAL RELATIONS OF REMEDIES IN SCIENTIFIC THERAPEUTICS.

Address of the Chairman of the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY JOHN V. SHOEMAKER, M.D., LL.D.
PHILADELPHIA, PA.

The blood is a nutrient fluid tissue, rich in corpuscular elements. The health of the tissues depends upon the health of the blood. In the act of nutrition the cells of each organ select their appropriate pabulum. The cells are the essential and active components of any organ or tissue. In health and disease alike it is the influence of the blood upon the cells that we must study. We witness perverted cell action as the result of disease. The normal composition of the blood is maintained by the steadily renewed supplies of aliment.

As the constituents of normal blood influence the cells according to the type of health, as in disease the activity of the cells is so modified that their functions are very imperfectly performed, so when in disease remedies are given it is still upon the cells that their action is exerted. Thus as regards their mode of production, a close analogy exists between the nutrition of health, the disturbances of disease and the action of remedies.

As food is obtained from the animal and vegetable kingdoms and includes certain necessary mineral constituents so our remedies are taken from the vegetable and mineral worlds together with some from the animal kingdom, which, however, until recent years were comparatively few in number. Within a few years past a variety of preparations have been more or less extensively and successfully employed. It is of these and the principles of their employment that I would say a few words today, believing that the subject of tissue therapy and serum therapy is often misunderstood and misrepresented.

It was undoubtedly a great advance in scientific medicine when the chemists began to isolate the active principles of vegetable drugs. The possession of alkaloids, glucosides, etc., enable us to administer drugs with a precision and efficiency which were formerly impossible. A second and, I am disposed to believe, a greater, advance has begun in the introduction of animal tissues, extracts, serums and antitoxins into medicine. These methods are yet in their infancy; we are not sure concerning every step in our progress; they are, no doubt, subject in many directions to revision, but they are based upon the experimental work of modern science and may be modified according to future experience. When we examine this class of remedies we find that they may be divided into three groups, viz., extracts of glandu-

lar and other organs, serums and antitoxins. The serums, again, are taken from animals naturally immune to certain diseases and from those who have been rendered artificially immune. Correspondingly, as regards their application, extracts are used in the diseases of nutrition and the serum and antitoxins in those due to infection.

The doctrine of internal secretion, announced by Brown-Séquard, has been prolific of practical benefit; it has been shown experimentally and clinically that the ductless glands perform a very important office in the economy. They elaborate from and return to the blood a material which is necessary to the maintenance of health. Other glands which possess ducts for the discharge of their secretions, have been shown, nevertheless, to produce also an internal secretion. In the latter class are the testicles and pancreas. The testicles were the first organs to be utilized in the treatment of disease. When we consider the highly vitalized and specialized character of their secretion we need not be surprised that its loss or suppression should be attended with depression of the physical and mental force. Brown-Séquard, therefore, conceived the idea that orchitic extract might be of service in arresting failing nutrition of old age. You are all familiar with the incredulity with which this proposition was received. Some who tested the new remedy, however, supported the claims which had been made on its behalf and believed themselves warranted in extending its application. It has been used with advantage in a number of organic diseases of the nervous system, as locomotor ataxia, chorea and different forms of paralysis. In cardiac debility it has also been of service.

The most brilliant victory was next won by a ductless gland in the treatment of myxedema. The value of thyroid extract in that previously intractable disease has been so conspicuous that negative criticism has been forestalled. Under the influence of thyroid therapy the skin softens, the mucoid infiltration lessens or disappears, perspiration returns, the mind clears, the strength increases, the temperature rises and the features lose their deformity. Thyroid extract has likewise been of value in relieving cretinism. It has been applied to the management of certain other diseases accompanied by depressed nutrition, but although it has accomplished good in some cases it has not been so remarkably successful as in myxedema. It was hoped that we might find in the thyroid gland an efficacious remedy for exophthalmic goiter, but our expectations in that direction have not been realized. The reports have been scarcely favorable to its use in that disease.

The thymus gland has been employed likewise in various disorders of the blood and nervous system, but we are unable to report any decided success from its use. Addison's disease stands in much the same relation to lesions of the suprarenal capsules that

myxedema does to incapacity of the thyroid gland. An extract prepared from the glands has been tentatively used in this disease. Experience is not as yet, perhaps, sufficiently extensive to justify the expression of any categorical opinion. In a number of instances it has been of undoubted efficacy. In some it has increased the strength and relieved the nervous manifestations without exerting any influence upon the pigmentation. In others, it has caused a decrease in the coloration as well as improvement in the subjective symptoms. The truth probably is that suprarenal extract will benefit such cases as are at all susceptible of improvement. When carcinoma or tuberculosis is the cause of suprarenal disease, little can evidently be now expected from any therapeutic measure. Nevertheless, some of the cases of Addison's disease which have been ameliorated by this method have apparently been of tuberculous nature. The prospect for Addison's disease will brighten if the experiments constantly carried on as regards tuberculosis shall be rewarded by distinct success. There are other pathologic alterations to which this disease is sometimes due, and which will probably prove more amenable to the treatment. In conclusion, I would say that in a given case it would certainly be worth while to make a trial of suprarenal therapy.

Extracts obtained from other than glandular organs have been employed in the thought that a more direct nutritive supply to the cells might be possible by this means than by those ordinarily employed. Extracts of brain and spinal cord have seemed, to competent observers, to have a good effect in neurasthenia, locomotor ataxia, progressive motor dystrophy, senile debility, etc. Preparations of cardiac tissue have been injected for asystole, but the most remarkable temporary improvement was in the case of uremia under the care of M. Dieulafoy, and to which nephrine was given. The case, unfortunately, was too far advanced to be benefited by any mode of treatment, but the temporary results were very striking.

Attempts have been made to influence the course of diabetes, more particularly pancreatic diabetes, by using extract of pancreas in such cases. Although this treatment had little or no effect upon the quantity of urine passed, yet it often had a favorable influence upon the patient's general condition. Pulmonary, ovarian and prostatic juices have been made use of in diseases of the corresponding organs. Bone-marrow has given some very excellent results in pernicious anemia.

It is fair to ask whether suggestion does not play an important part in the improvement under such methods. This may, indeed, be a great factor in the care of functional nervous maladies, but pains were taken, in most instances, to eliminate its influence, and in organic disease suggestion would have less effect.

We seem now to stand upon the brink of a new era in therapeutics. We look to organic chemistry to furnish us with the active principles of tissues and serums, as it has given us the active principles of vegetable drugs. As the active principles of all plants have not yet been isolated, it need be no wonder that in a new field and dealing with complex animal tissues, this problem, for most substances, remains unsolved. A beginning, however, has been made. The efficacy of orchitic extract depends upon the presence of an organic crystalline substance called spermin, which exists in combination with hydrochloric acid. The

active principle of the thyroid gland is believed to be the substance isolated under the name of iodothyryn. In the same way the antitoxins, in so far as they have been discovered, may be looked upon as the active principles of the immunizing or curative serums. Schaefer and Oliver have obtained from the medullary portion of the suprarenal bodies an organic principle which has a powerful action upon the heart, voluntary muscles and peripheral arteries.

The serums obtained from animals rendered artificially immune, contain antitoxins, and have proved of more value than those from animals naturally immune to certain maladies. The typical instance of success in this form of therapy is diphtheria antitoxin. The wonderful reduction in the mortality from diphtheria which this preparation has effected can not be gainsaid. Every physician should seriously debate in his own mind whether he has done his duty in a case of diphtheria if he has neglected to take advantage of the immunizing and curative properties of diphtheria antitoxin. As diphtheria is such a wide-spread disease, every reason, humanitarian and sanitarian, as well as scientific, should combine to make us welcome this important advance in the treatment.

Though by no means as common as diphtheria, tetanus is a justly dreaded malady. Its terrible manifestations, and the failure of other methods are in glaring contrast to its improved statistics under an antitoxin treatment.

I shall merely allude to the progress of laboratory and bedside studies with serum therapy in suppurative diseases, leprosy, cholera and the plague. They depend upon similar principles and may require modification as regards many matters of detail, but we may hope that in the end much good will be accomplished by these means. The problem concerning tuberculosis has not yet been solved. Notwithstanding the great and deserved scientific reputation of Professor Koch, his methods have failed to achieve the desired results. Nevertheless, it seems probable that he is working upon correct principles and that success will at length reward his efforts, or if not his own, those of some other-observer.

Sanarelli is now complementing his brilliant investigations into the bacteriology of yellow fever by the attempt to treat the disease by means of an immunized serum. Some favorable clinical results have been reported and it is possible that the coming summer may see some experiments on a large scale among American troops on the island of Cuba. It is well known that Surgeon-General Sternberg is personally interested in the subject of the yellow fever bacillus. Professor Chantemesse has recently read a paper upon the soluble typhoid fever toxin and antitoxic serum of typhoid fever. In this important communication the author describes his experiments upon animals, and concludes in these words: "Fortified by these experiments, I injected some antitoxic serum into a patient suffering from typhoid fever. The value of this new method of treatment can only be determined by a statistical study and numerous observations. I may say, however, that the serum acted well in an antitoxic manner, diminishing and suppressing the nervous symptoms, lowering the temperature and promoting the recovery."

A few years ago Drs. G. and F. Klemperer endeavored to obtain an immunized serum capable of curing

pneumonia. Some encouraging clinical trials were made, but the serum did not seem to have sufficient strength to be practically useful. Others have labored in the same direction, and it has recently been announced that Professors de Renzi and Pane, of the University of Naples, have devised a method by which large quantities of a powerful serum can be obtained. A series of cases was observed in which very excellent clinical results were obtained in Professor de Renzi's service, and in the *New York Medical Journal* for May 7, 1898, Dr. Antonio Fanoni of New York describes a case in which he made use of this method with success.

As analogous to the antidotal action of antitoxins and serums, may here be very briefly mentioned the antagonistic action sometimes seen between different diseases. Thus, a fever has been known to cause the disappearance of new growths or glycosuria, and impaired eyesight has been improved by an attack of smallpox.

It seems that at this juncture we must look to physiologic chemistry for assistance in further progress. With the isolation of the active constituents of the various glands and serums which have been thus far experimentally employed, we should be in a position to administer such remedies with greater precision and greater advantage. The chemistry of bacteriologic products has already given us a number of substances of definite composition. It is now highly desirable that all the organic juices, extracts and serums should be analyzed in order that we may be able to estimate the comparative value of their constituents and study their physiologic action. The effect of the animal extracts upon the healthy animal has been the subject of an elaborate series of experiments by Professor Isaac Ott of the Medico-Chirurgical College of Philadelphia. What is next of importance in the study of these extracts is that we should be able to determine the substance or substances upon which their activity depends in precisely the same manner as we have learned that morphin is the active principle of opium, strychnin that of nux vomica, ptyalin of the saliva, pepsin of the gastric juice, pancreatin of the pancreatic secretion, etc. As, however, pancreatin is not the sole digestive ferment of the pancreatic juice, or morphin the sole alkaloid of opium, so, it may be, the complex organic tissues may contain principles having various actions. If these various constituents can be separately prepared and their individual values estimated we may be able to administer them separately or combined, according as they may be indicated. This would constitute a step in advance and would enable us to prescribe the active principles of animal extracts with exactitude, just as we can now, at our discretion, order pilocarpin to represent jaborandi, or caffein to represent coffea, etc. Another important advantage which would result from the chemical analysis of this class of remedies would be in obtaining standard or uniform products. As it is at present, we have a number of animal products obtained by different discoverers and prepared by different processes and having, perhaps, rival claims to our favor. Have we not reached such a point in the evolution of this subject that analogous preparations can in this way be standardized? It is necessary that the exact degree of the virulence of the toxins and antitoxins of therapeutic serums should be accurately known and should be maintained at a certain fixed standard, and this point was urged at the recent Ninth International

Congress of Hygiene and Demography by Professor Behring. It appears that it should now be possible to determine a standard type of serum, especially antiphtheritic serum, according to which the therapeutic results reported by observers in different countries might be fairly comparable. At the congress referred to it was decided that a committee of experts should be appointed to consider whether there would be any advantage in having a uniform international standard of strength in the case of antitoxic serums.

The processes by which all these preparations are made should be the common property of the scientific world, just as we have in the United States Pharmacopeia directions for preparing all the official products. Different specimens of any crude drug of vegetable origin will give quite a notably different percentage of the active constituent. No matter what this variation may be, however, we know that when we make use of an alkaloid or glucoside we are dealing with a substance of definite chemic composition, the same under all circumstances and by whomsoever manufactured. Has not the time now arrived when such a work should be begun in reference to glandular extracts and curative serums? We should then appreciate more exactly upon what basis we stood. Finally, those which have been proved of value, as, e. g., iodothyron, should be made official and adopted into the United States Pharmacopeia, with full instructions regarding the mode of their preparation. The physiologic and therapeutic effects of these active principles of extracts and serums could then be separately determined. Their utility in medical practice could be more justly estimated and this new branch of applied therapeutics be placed on a more scientific foundation.

This, it seems to me, is the line along which future progress is to be made. The entire evolution of the subject under discussion is so recent, it is based upon conceptions so essentially modern, that we need not be surprised if all its promises have not yet been realized. The good which has been accomplished in diphtheria alone is an ample reward for the labor that has been spent in its development and a justification for the hope which is entertained of the success of this method of therapy in other diseases. It is based upon the most modern doctrines concerning bacterial activity, immunity and mode of cure. A powerful trend has for several years been setting in in this direction, and the present status is the outcome of numerous independent or collateral lines of investigation.

Immunity is better than cure. If an immunized serum is capable of conferring immunity against a certain infection, it will be very readily comprehended that an immense boon has been conferred upon humanity.

If it be found that this immunity against an infection is not permanent, but lasts only for a certain time, it will be an easy matter to repeat the operation at stated intervals upon a fresh exposure, just as we now hold ourselves prepared to repeat the process of vaccination upon the outbreak of smallpox or after the lapse of a certain number of years. This is, indeed, nothing more than we observe in nature, for although an attack of one of the eruptive fevers generally confers immunity for life, this rule is by no means universal. Other species of infection, as is well known, far from bestowing future immunity, predispose to successive attacks.

ORIGINAL ARTICLES.

MODERN TREATMENT OF TUBERCULOSIS.

Presented to the Section of Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CHARLES DENISON, A.M., M.D.

DENVER, COLO.

I am requested by our Chairman to formulate the theories and conclusions on the modern treatment of tuberculosis. The object is to bring out your thoughts and excite discussion, and I trust I shall not fail in this purpose. As there are no two cases of tuberculosis in a thousand alike in all their various phases, so I might almost say there are no two physicians who will treat these manifestations in the same way, even if they are all recognized, which is a question. Our mental appreciation of this most important of the diseases which afflict the human race is in a formative state. I fancy one would only have to announce a set plan of management, which he would carry out as suitable to the great majority of his own patients, and the desired controversy would at once be set in motion in opposition thereto.

Taking 100 per cent. as a basis of what we, as physicians, can do by advice and treatment, and allowing a margin with regard to the great variety in cases, the accompanying table gives the estimate of treatment which I propose for your consideration. You may say it is my own conclusion based upon my personal experience with the disease and twenty-five years' practice in Colorado. You may also assert that experiences all differ and you can not vote as I do. That is just the kind of discussion I am after.

Since it is assumed—in which I trust you all agree with me—that the best make-up of the "modern treatment of tuberculosis" is a composite affair, I may state the divisions or heads, with this admission, namely, that they naturally run into each other, consequently some concession is needed in making any divisions at all. Notwithstanding the difficulty in pinning medical men down to positive conclusions, which peculiarity may have been brought to your notice, I have tried to make these divisions of our topic fair and just for the purpose in hand, namely, to bring out discussion and, if possible, arrive at some definite conclusion as a basis of a successful fight against this terrible scourge.

TUBERCULOSIS TREATMENT TABLE; APPROXIMATE ESTIMATE OF RESULTS.

Proportion of benefits due to	Range of per cent.	Average per cent.
1. Climate and change, involving mental influence.	15 to 45	30
2. Exercise and out-door life	10 to 20	15
3. Good feeding, special dieting and attention to alimentary canal	10 to 20	15
4. Medical supervision and medical treatment	5 to 25	15
5. Inhaling, local medication and surgical interference	5 to 25	15
6. Specific medication, based upon anti-toxin treatment	0 to 20	10
Totals; per cent	45 to 155	100

100

I shall devote most of the time allotted to me to the consideration of the last two divisions of this combined treatment. Therefore let me save the repetition of my own arguments in substantiation of

so large percentages given to the first three of these means by referring to papers I have written.¹

It must also be borne in mind that the physicians' services extend all the way through the last four of these remedial means; *i. e.*, have to do especially with a calculated 55 per cent of all that can be done in the way of treatment.

The third and fourth divisions should naturally be grouped under a combined head, giving an average of 30 per cent. of the total benefit. This is perhaps a sufficient concession to this important part of the individualizing process, which it is the duty of the medical adviser to see to in every case.

To the fourth division—medical supervision and medical treatment—to which a proportion of 15 per cent. is given, it may be objected by some that too little credit is given the professional adviser for what can be done. The physician at best is but an aid or guide. Mostly all is due to the energy, faithfulness and perseverance of the patient himself. To be sure, tonic treatment, strychnia, arsenic, hypophosphites, etc., for "toning up," and guaiacol or creosoted preparations for antiseptic effect, chiefly in the upper portion of the alimentary canal, are entitled to recognition and should be granted a limited per cent. of the good we can do. The possibility of so saturating the blood with an antiseptic or germicidal agency, such as creosote, that the tubercle bacilli will be stopped in their sporing or growth, and the patient not be injured thereby, is a mere speculation. The efficiency of this method, which is at the present time very attractive to a large proportion of the profession, has not yet been demonstrated, further than to show an antiseptic effect in the alimentary canal and upon the lining membrane thereof.

The fifth division of our aid—inhalation, local medication and surgical interference—naturally covers a more uncertain field, for not all cases are equally suitable for their employment. When the tuberculosis is centered in the upper air-tract, it has been very generally admitted that through inhaling and local treatment medicaments may be made to reach the affected parts, and a staying of the progress of the local disease be accomplished.

The doubt has been, however, whether inhaled antiseptic or germicidal agencies ever reached the alveoli and bronchial terminals, where the disease is oftenest located and has its strongest intrenchments. This futility of the ordinary and old-fashioned plan of inhaling is a fact. It is true that the more a lung is diseased with tuberculosis and the usually accompanying infiltrating and shrinkage process, the less possible is it that inhaled medicaments can reach the affected parts. The treatment, whether it be pure or ozonized air, or etheralized or atomized germicides, all goes to the flexible, the healthy, lung.

Here again, for lack of time to fully elaborate the argument, I shall have to refer to papers I have written upon this subject.²

¹ For the first means—climate and change, involving mental influence—see article on "The Climate of Colorado for Respiratory Diseases," published in the JOURNAL for May 7 and 14, 1898. I believe this argument warrants the 30 per cent. of advantage allotted to this agency of climate.

For the second means—exercise and out-door life—to which 15 per cent. of the total benefit is given, reference is made to the essay on "Exercise for Pulmonary Invalids," read before the Congress of Medicopneumatology of the World's Fair Congress, June 1, 1893.

For the third division—good feeding, etc.—to which an average of 15 per cent. of all good is attributed, reference is made to "Food for Chronic Pulmonary Invalids," read before the Colorado State Medical Society, June 20, 1894.

² "Exercise for Pulmonary Invalids," *op. cit.* "The air-pressure Inhaler and Exhaler," N. Y. Medical Record, Feb. 10, 1894; "New uses of the Inhaler and Exhaler," *Dietic and Hygiene Gazette*, June, 1897; and espe-

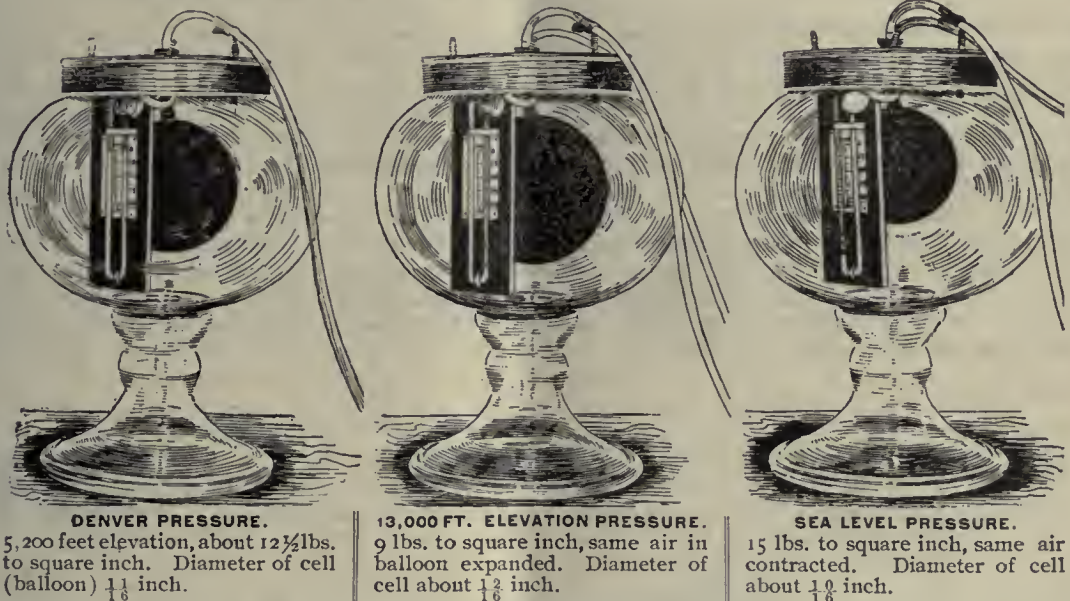
I desire to demonstrate more clearly than has been done heretofore the fact that the correct system of inhaling, or more properly, exhaling; altitude above the sea, and rightly directed gymnastic training, all work upon the same principle, namely: the *mechanical distention* of the air-cells. The reciprocal relation of diseased and healthy lung in the same thorax, and of the air and blood within a given chest with reference to respiration, does not seem to me to have been sufficiently recognized by anybody that I know of; unless it be Dr. T. N. McLean of Elizabeth, N. J., in his late paper "Personal Observations in Pulmonary Phthisis."³

This is perhaps a bold statement, but I believe it is fundamental to a proper understanding of the incipency, the progress and the control of pulmonary consumption. It is quite possible that our inability hitherto to account for the localization of so much of tuberculosis in the lungs, is due to our own fault, because we have failed to recognize the mechanical conditions within the chest which govern respiration and blood circulation.⁴

Now, I blow up the air-cell, and the condition of air-pressure in the globe, but outside the air-cell, is exactly similar to the pressure upon the blood current within our chests, *i. e.*, greater during expiration than during, and in fact, the reverse of, inspiration. To prove it pull out the plug and hear the whistle in the vessel's exit opening. How well this shows that the blood does not flow alone because the heart pumps it, but because the lung mechanism draws it in and forces it out again. How strikingly it shows the preponderance of the expiratory over the inspiratory power of any individual, indicated by the manometer records, proving that it is only during expiration that we have any power at all to distend the air-cells, mechanically closed either by inaction or disease. How important then is the use and control of expiration (not inspiration) to maintain the health of the lungs. You see how it is that gymnastic training and any system of inhaling, to be of use, must depend upon the habitual mechanical distention of the air-cells, and that from the nature of things, can only occur

THE ILLUSTRATING AIR-CELL. (DENISON.)

To show the expanding effect of lessened atmospheric pressure upon the pulmonary organs by toy balloon and manometer inside a sealed glass globe.



DENVER PRESSURE.
5,200 feet elevation, about 12½ lbs. to square inch. Diameter of cell (balloon) ¼ inch.

13,000 FT. ELEVATION PRESSURE.
9 lbs. to square inch, same air in balloon expanded. Diameter of cell about ½ inch.

SEA LEVEL PRESSURE.
15 lbs. to square inch, same air contracted. Diameter of cell about ⅛ inch.

The *illustrating air-cell*, which I here show you, I have devised to suggest more clearly to the mind these intrathoracic mechanical conditions. This three-gallon glass globe is to represent the thorax. It is, as you see, rigid and should be air-tight. The muscular force, to represent living conditions, is transferred to the interior of the globe by an air-pump or by our own breathing power. The record of that force, or air-pressure, is given by a manometer inside the globe. There is an opening in the cover to represent the exit or entrance of the blood-vessels which are in the thorax. This has a valve in it which will whistle when the current is outward. Finally, in the center, connected by a tube with the outside, is this rubber balloon representing a flexible air-cell, which you may imagine, if you will, to be one of your own air-cells magnified a million times, more or less.

during expiration. The will power given us to prolong and intensify expiration with a fixation of the chest and a lateral expansion of it, due to muscular effort, is our main reliance. It enables us to imitate, yes and to healthfully exaggerate, the natural remedial effect of high altitudes in phthisis.

A total increase of expiratory power, more than any other agency, can account for the benefit which results to an invalid arriving at the height of 6000 feet in a climate like ours. You can see by this illustrating air-cell how it is that he *has* to breathe a fifth more air than he did at sea level to get the same amount of oxygen here as there.

It only remains for us to draw out about three pounds of the pressure there is in our glass globe, and you will see the air-cell expand nearly to the approximate conditions on top of Pike's Peak. I can then show you the biggest jump that an air-cell ever took—from the summit of Pike's Peak into the Atlantic Ocean! It is simply done by letting into the globe again our Denver air-pressure, and then adding three pounds.

cially one just read before the American Academy of Medicine upon "The Advantage of Physical Education as a Preventative of Disease."

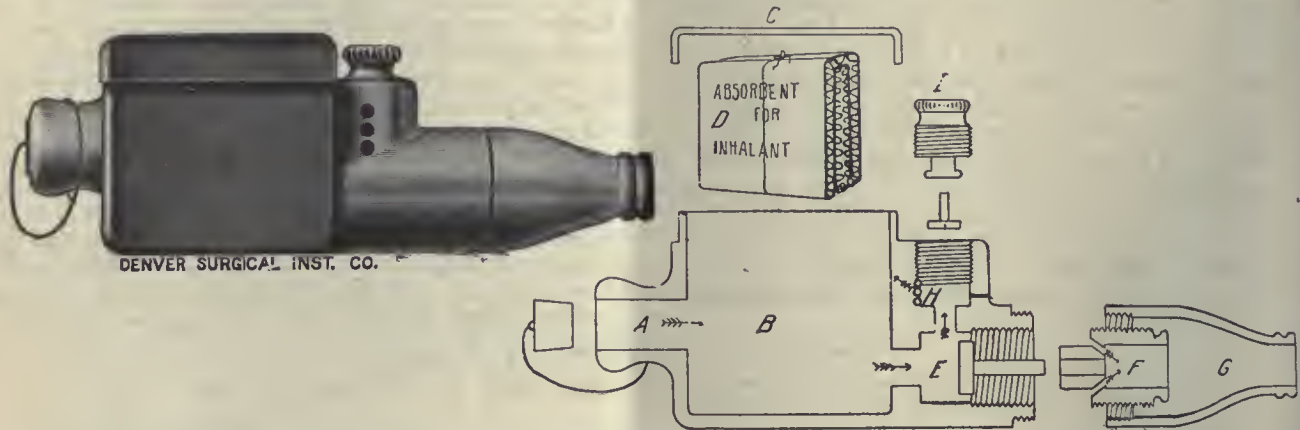
³Journal of the American Medical Association, Feb. 5, 1898.
⁴"Abnormal Intrathoracic Air-pressures and Their Treatment," by the author. President's address, American Climatological Association. See Transactions for 1890.

thereto. The contracted air-cell shrinking from the increased pressure around it, immediately suggests to the mind why it is that low altitudes favor lung inactivity, as it also suggests why it is that the contents of closed cavities, the brain and spinal cord, become congested with blood in the caisson disease.

It was not only as a possible substitute for, but as an imitation of and an aid to, the good mechanical

effects upon the spirometric capacities and manometer records of invalids, who have used it according to directions as to persistence and energy, have been indeed gratifying.

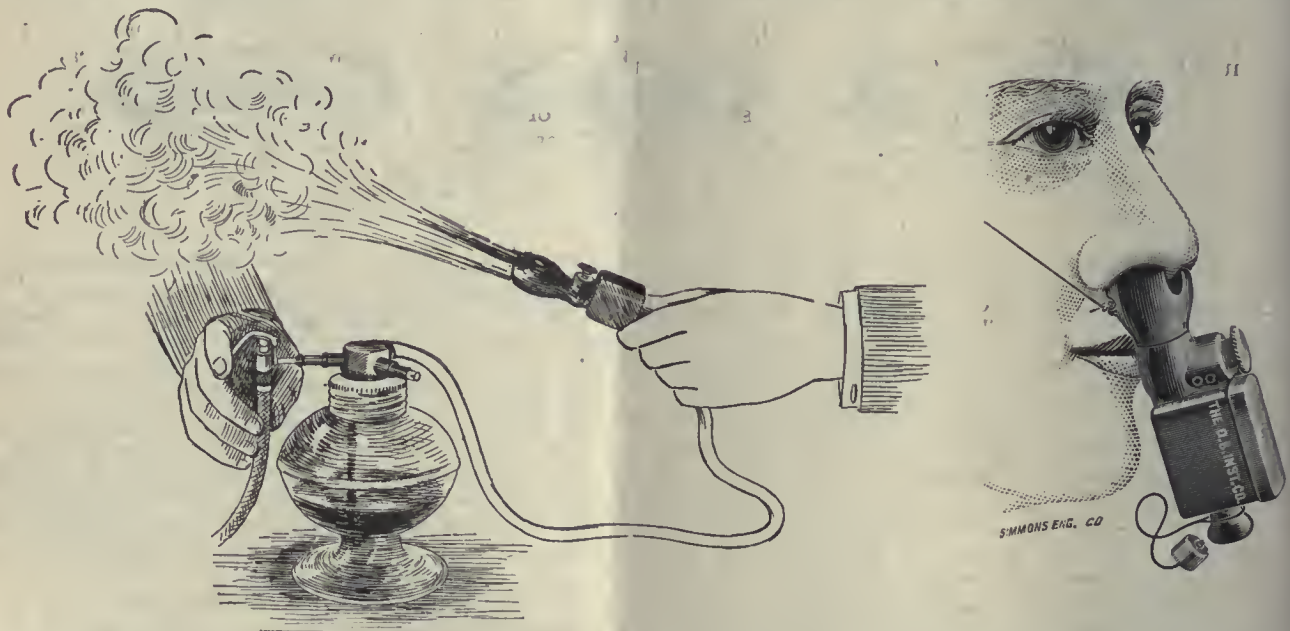
I have to show you here my own modification of the inhalation of finely atomized volatile oils, a method which is very popular with some physicians as an office means of treatment. Suppose you have



effects of the lessened atmospheric pressure of high altitudes upon the pulmonary air-cells and blood-vessels in disease, that I devised the Inhaler and Exhaler⁵ first described in the *Medical Record* in February, 1894. For convenience in pocket form, so that the desired mechanical distention of the air-cells and the needed lateral expansion of the thorax may be had every half-hour or hour in the day; for adjustability, possible according to the strength of the user, whether bedridden or an athlete; and for a means of reaching the air-cells and bronchial surfaces with volatile oils and salts, nothing that I know of has been contrived to equal this device.

by water, or other power, a pressure of 30 or 50 lbs. in your office compressed-air reservoir. This is connected thus with a globe inhaler bottle, having an instant cut-off interposed, and this vaporizer in turn is connected by another rubber tube with the Inhaler and Exhaler with nosepiece on instead of the mouth-piece. The delivery is made only during long, full inspirations, and the patient breathes back into the inhaler under a mild resistance of the exit valve, so as to get impingement of the medicated inhaled air against all bronchial, throat and nasal surfaces.

There are any number of combinations of volatile oils and germicidal salts possible to be employed by



Physicians who have faithfully used this inhaler, have asserted that 15 per cent. of the benefit a pulmonary invalid may get from an average treatment, such as here outlined, is too small an allowance for the good received from this method of inhaling. The

⁵ The Denver Surgical Instrument Co.

this method, but something like the following combination I have found to be most satisfactory for average cases:

R. Ol. eucalyptus (Tyndale's) 20 to 40 per cent. ; carbolic acid crystals 10 to 30 per cent. ; oleum pinus Pumilio (Merck's) and liquid guaiacol (Schring & Glatz), of each 5 to 10 per cent. ;

oil of cloves and cedar, of each 2 to 5 per cent.; and formalin one-half to one per cent.

With this combination medicate your vehicle, whether it be liquid vaselin, glymol or albolin, to suit mild, ordinary uses. Then, for extra antiseptic or stimulating effect, the absorbent in the medicament box can be additionally medicated with formalin or other germicidal means for temporary use. This finely atomized spray you can see, as one who breathes it can feel, reaches all open spaces even to the ultimate air-cells, for considerable of the vapor returns with expiration, thus showing that some of the medicament has not been condensed. What proportion of it has been we do not know, but the results in tubercular affections, especially with "grip cold," hypertrophic rhinitis, ozena, laryngitis, bronchitis, etc., are quite satisfactory.

I have included an allowance for surgical interference, which is an important field in bone and joint tuberculosis, so-called scrofulous gland affections, lupoid skin diseases, laryngeal ulcerations, adenoid growths, tubercular pleuritis, etc. I must, however, here put in my protest against the surgeon's hasty interference in operating upon fistulæ-in-ano while tubercular infection is at all active in the lungs. I believe we should consider these fistulæ as eliminating means on the conservative order, and unless substitutive elimination is provided for, an operation should not be performed.

There is certainly no lack of opportunity for discussion with reference to our sixth and last subdivision of treatment, that of specific medication, for the very fact of there being any specific or antitoxin treatment of tuberculosis will be called in question. This opposition exists, notwithstanding there are on every hand around us, instances of acquired immunity to tuberculosis, though perhaps limited in degree. Wise professors will confidently state that it is "a will-of-the-wisp" to even seek such an agency as may be termed a specific for tuberculosis. Yet if the disease is due to a special toxin working in the system, it must be only through the development in that system of the appropriate antitoxin, or by the addition of it when created outside the body, that sufficient resistance can be had to stay the progress of the disease. Such resistance is what these opponents are after, whether by the means of tonics, exercise, or climates. Yet they would seemingly call in question the very source of that natural resistance, namely: the natural or artificially created antitoxic condition of the blood or tissues, which is antagonistic to further tubercular infection. These opponents then seem to admit the existence of a toxin, but deny that of an antitoxin.

Leaving open for discussion the question of fact as to the existence of an antitoxin or specific (for tuberculosis), created or existing outside the human body, I am going to assume that the creation of such an antitoxic agency in the affected or infected system is admitted, and that that existence or mode of resistance is in perfect harmony with nature's methods in eliminating other specific diseases.

We will then divide the antitoxin treatment of tuberculosis into two distinct methods: the *direct* and the *indirect*. These two should not be confounded with each other, as is the habit of some men in speaking of the tuberculin treatment.

The former, the direct method, is that inaugurated by Koch as the outcome of his discovery of the bacil-

lus—the reputed cause of tuberculosis. Under the limited knowledge of the agency and of the disease it was to cure, this remedy soon demonstrated the need of an advanced chemistry in the technique of its preparation, and an enlightened skill in its administration beyond anything which existed in the scientific world. Since this discovery, the eight years of study and investigation of a few faithful observers, under most difficult and discouraging conditions imposed upon them by an onlooking and rather belligerent professional brotherhood, have served to develop a limited improvement in the particulars just named. I might say that this improvement in chemical technique, and afterward in administrative skill, had been considerable, if any due recognition of it had been manifest on the part of the medical profession as a body. This I will say, however: I firmly believe that tuberculosis could be held in check, if not cured, by this means, up to the proportion of, and even beyond, the 10 per cent. allotted to it in our table, if, with the present advanced technique in the manufacture of these direct tuberculin preparations the physician using them had the required knowledge to discriminate what patients could be treated by this method, and how far the treatment should be pushed. He should not only know the strength of his remedies, but also the *percentage of infection* with which he has to deal. It is a most gratifying and successful method of treatment if the condition favorable to its success can be secured. But the technique must be exact, and the general and individual objections to the use of such an antitoxin-creating remedy must be recognized. Thus, a knowledge of the applicability of the treatment narrows down its use to a small field. For instance, if the powers of nature are already overtaxed in an antitoxin effort, as in acute or military tuberculosis, nothing but harm can come from any increase of nature's burden.

It is likewise absurd to expect to reach with this treatment, closed or open spots, as cavities in the lung, or shut-in ulcerated regions where the blood does not circulate. And, yet, most cases of pulmonary consumption harbor these conditions, many of which I believe are never recognized. If the treatment is inadvisable in caseous pneumonias and acute conditions, then I conceive it is quite possible that in some serious cases not acute, the massage, first recommended by the Germans as an auxiliary aid, may do damage by loosening up toxic material, and surcharging with it the blood already overloaded. However, if either incipiency of tuberculosis, or a chronicity, which is its equivalent—and chronicity brings equivalence because of some already acquired immunity—is known to exist, there is then no question but that the direct tuberculin method is the natural method of cure.

If time permitted I would elaborate this theme. However, I trust it will be acceptable to show a few of the cases I might call upon in this vicinity, who have become pretty thoroughly immunized against tubercular infection chiefly through this method. I have chosen ten cases, mostly those treated with Koch's crude tuberculin, from three to over six years ago, and have asked them to be present that you might verify their healthy appearance. These cases are purposely selected as those upon which the influence of climate has been very slight.

Case 1.—Miss N. S. over five years ago treated with Koch's tuberculin. Diagnosis then made with tuberculin, there being

no expectoration. Physical diagnosis then indicated: First stage both apices, and tubercular disease of the right hip-joint, due to injury four years previously; took as high as 160 mg. of tuberculin to the dose before a four months' course was ended. Had walked on crutches for over three years previously, but soon, and while under treatment, discarded them. Finally could step up-stairs, raising the injured limb first, something she had been unable to do for four years. Weight, strength and all symptoms improved during treatment—weight then 110½ pounds, now 146 pounds, and she walks without the limp she used to have. She has lived in Colorado since 1881, and climate had very little to do with it. This case is the same reported as case 2. "Favorable Results of Koch's Tubercular Treatment in Tubercular Affections that are not Pulmonary," in the *New York Medical Journal*, Aug. 3, 1895.

Case 2.—C. F. M. had been four years ailing, and had lived in the Rocky Mountain regions most of that time, when I first saw him in July, 1892. He was shown to be tubercular by microscopic examination of sputum; had a large cavity in right infrascapular region, say 2 by 4 inches in size and softening to the extent of excavation on opposite side, from which spots he was bleeding on any exertion. Had been confined in bed five weeks on that account. His hemorrhages were stopped by mechanical means; a properly adjusted harness or chest corset and tuberculin treatment was gradually instituted. This was distributed over different periods during the following two years, and he took as high as 240 mg. crude tuberculin for the largest dose. Accidents have occurred from mechanically straining the large cavity in his right lung, which cavity two or three years ago assumed the shape of a cucumber or banana. Three years ago, when, under protest, he went to live in Leadville, Colo., he had hemorrhages, and they have been repeated at other times, but his remarkable vitality and considerable immunity each time have brought him through. Of late years, without tubercular activity, this case has assumed the conditions of purulent bronchitis, *i. e.*, coexisting contracted cavity and bronchiectasis. There are now purulent evidences, but seldom any tubercle bacilli found in his abundant expectoration. Both of these cases are remarkable, and each by itself sufficient for a whole paper had we time to elaborate them.

Case 3.—S. T. B., in April, 1893, was brought to me by his father, who had come to take him home to Pennsylvania, as in Colorado Springs hope of his recovery had been abandoned. He had reached the stage of tubercular softening in both lungs and had been affected three years, the last six months of which time he had lived in Colorado. The susceptibility to crude tuberculin was gradually overcome and he took considerable quantities of this or the antiphrisins (Kleb's). Since his immunity became established he has enjoyed excellent health.

Case 4.—F. E. D. Period of incipency uncertain, perhaps two years. Arrived in Colorado in July, 1895, when he had "mixed infection" bacilli in sputum and first stage of tuberculosis in left lung. Soon thereafter a small nodule came on scalp, in which, when it softened, a tubercle bacillus was found. While undergoing the first immunization with tuberculin he injured his elbow in a fall and that joint became tubercular during the resulting inflammation. The periosteum of the ulna was affected, with probably some implication of the elbow joint, as, in a subsequent operation performed by Dr. C. A. Powers, some of the joint fluid exuded. After laying bare and scraping the bone, healing was greatly aided by a continuation of the immunizing process. This did not entirely remove the difficulty, and some two years ago a second operation was performed, at which time the ulna was drilled through and quite a piece of necrosed bone removed. The recovery under antiseptic packing and the treatment with antiphrisins was most excellent, only slight evidences of bone and joint disease remained and no trouble whatever with his lungs. A year ago he returned to his Vermont home. On coming back to Colorado last winter he had an attack of la grippe and that focusing agency in tuberculosis seemed to excite the latent disease of the affected elbow joint into activity. The swelling, immobility, pain and ulceration portended the possible necessity of resection or amputation. A very satisfactory test was made with crude tuberculin, warranting a renewal of specific treatment, this time with Von Ruck's purified tuberculin and ending with the "watery extract." Nothing could be more positively demonstrative of the good effect of the course pursued than the subsidence of swelling, soreness, lessening of the local discharge and general improvement which immediately resulted, in fact apparent complete recovery. Here is a study for those surgeons who scoff at tuberculin. It should convince them that there is a mild and immunizing power in this agency beyond their ken—something which may prevent the necessity of the use of the knife in many cases and perhaps warrant its use in others previously considered inoperable.

Case 5.—Miss N. McK. is another surgical case in which the influence of climate seemed to have already been exhausted, for she had nearly recovered from the lung disease for which seven years previously she had come to Colorado. This is the scrofula gland and first stage case previously reported.⁵ In February, 1896, Dr. Powers, assisted by Drs. O'Connor, Pedersen and myself, removed from the right side of this woman's neck sixteen or seventeen glands which together filled a teacup. On that side they had commenced to ulcerate and there were nearly as many more on the left side, filling the depressions from the ear to the clavicle. These latter not being so far advanced, were deferred for a future operation. Encouragement to continue this immunizing process was afforded in the gradual shrinkage of the remaining glands and general improvement of the patient as treatment progressed. You see now, after two years only the remnants of those scrofular swellings on this left side.

Case 6.—J. T. U., treated March, 1892, for tuberculosis (bacilli in sputum), which seemed to have reached the second stage in the rear base of left lung. He had had some trouble, combined with pleurisy there, coming on for four years. Now he is a fine specimen of health. His treatment with considerable doses of crude tuberculin was before the discovery of any improved modification of the drug.

Case 7.—G. T. S. Treatment commenced before the last-named, six and one-half years ago. Reacted profoundly to 2 mg. crude tuberculin giving from the normal a temperature rise to 103 degrees F. The treatment was pushed and there were no reactions to the 20 mg. dose. It was continued to 50 mg. and then stopped. He has had little medical attendance since.

Case 8.—C. R., affected half a year when he came to Colorado, three and one-half years ago. He had pleurisy at base of left lung, in the apex of which softening had occurred, and there were first stage symptoms on right side, bacilli in sputum, etc. Since immunization three years ago he has gone through typhoid fever. His condition of health at the present time is something to recommend any course which will accomplish so much, even admitting climatic influence, physical exercise and faithful co-operation of the patient as aids.

Cases 9 and 10.—Husband and wife. Wife first treated four years ago and husband two years. Both had excavations; wife in apex of right and husband in upper part of the left lung toward axilla. Wife first treated with crude tuberculin; husband with antiphrisins. Both of these, for seeming loss or insufficiency of immunity, were again treated last fall with Von Ruck's "watery extract of the dead bacilli." Others of this list besides these two have shown the happy return to the tuberculin effect when a renewal of the treatment seemed necessary. A patient once benefited by tuberculin may in three months to two years reveal a certain loss of his acquired immunity, thus showing how relative to one's infection is his own resistance.

If a reason is required why so small a ratio of possible relief is attributed to this specific treatment by one who believes in it as I do, let it be understood that only a small proportion of the tubercular cases coming to Colorado are selectable for this method. It ought also to be recognized that the failures with tuberculin have been due not so much to inefficiency as to the lack of knowledge on the part of the physician how to discriminate cases fit for its use, as well as to a disinclination to attend to needed details in the technique of its administration.

I regret the lack of time to go more fully into details, and the necessity, therefore, to somewhat summarily dispose of the second method of the antitoxin treatment. This is the indirect method, wherein, instead of exciting in the human body a resisting antitoxin to a given disease, it is created in an animal and then given gratis to the invalid. In the former (the indirect) method there are two speculations which are severe enough tests to be sure: 1, the toxin remedy, and 2, the uncertain patient; while in the latter (the indirect) method there are three additional speculations. These are: 3, the choice of the animal, chiefly with reference to its natural immunity to tuberculosis, *i. e.*, whether the dog, goat, ass, horse or lion is best. In fact, to what extent a natural immunity to this disease, admitting that it must be relative to surrounding conditions, can be conferred

⁵ The Microscopic Proof of a Curative Process in Tuberculosis, Transactions Colorado State Medical Society, twenty-sixth annual meeting.

through the blood serum to a human being, is an open and undetermined question. 4. The quantity and quality of the immunizing toxin to be administered to an animal whose serum is to be used. This is a reasonable speculation not yet removed from the realm of uncertainty. 5. The time said animal should be treated, both before the injections are stopped and afterward, before the blood is drawn, is an important speculative point. Dr. G. T. Hunter, who is present, has kindly presented me with some lion's serum, which was taken from an animal kept under the most favorable immunizing conditions up in the mountains of Germany. Treated nine months, at first with highly virulent doses of tuberculin toxin, with gradual cessation as immunity was reached, and a whole month allowed to intervene between the last injection and the taking of the serum. Whether that procedure is the proper one or whether with different animals this may not be waiting too long for the best results, is a question of speculative nature. The burden of proof as to these three extra objections rests with the advocates of this indirect method. My own good success with horse serums during the first four to six weeks' treatment of a dozen or more patients was perhaps due to personal precautions, *i. e.*, not increasing any dose which gave a reaction to the previous treatment, and not, as directed by the manufacturers, giving daily, but instead, every-other-day injections. The after evidence of the possible cumulative effect of such mixed foreign substances, introduced into the blood of a patient, led to a fear that the resistance to the disease in individual cases was overtaxed. The unfavorable results of other physicians, who crowded this treatment according to recommended rules in printed directions, served to confirm the conclusion that an antitubercular serum is a mixture, the exact proportions of the converted toxins or antitoxins in which we do not fully understand. The serum treatment of tuberculosis, as yet, is a beautiful dream, which I for one profoundly hope will be realized.

Pardon the extension of this paper and do not lose sight of the arbitrary divisions of treatment given in the table presented for the purpose of bringing out in discussion your various views.

To sum up, the following conclusions are advanced:

1. As a part is greater than the whole, the combined method is superior to any given branch of the treatment. The individualizing process, and the adaptation of all methods to the needs of a given case, is the preferable plan.

2. The seasonable change of residence to a well-selected high-altitude climate, with its dryness, sunshine, possibilities of out-door life, and its stimulating qualities, gives the best possible resistance to the advance of consumption.

3. Exercise is most essential and necessary to promote both cell activity and the needed mechanical distention of the air-cells.

4. Local treatment and proper inhaling methods bear important relation to exercise, cell stimulation and the climatic effect by the high altitude method.

5. A great and most valuable addition to our curative means comes through the skillful determination of the proportion of infection, in order to know the balance between bodily resistance and the disease. This balance is the key to the as yet preferable—direct—method of specific treatment.

6. It is a mistake to overwhelm the body with fre-

quent injections of undetermined animal serum, thereby producing either a severe reaction or a possible cumulative toxemia.

ANTITUBERCLE SERUM (PAQUIN) IN TUBERCULOSIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM HUTSON PRIOLEAU, A.M., M.D.

SUMMERVILLE, S. C.

At the forty-seventh annual meeting of the South Carolina Medical Association, held in April, 1897, I had the pleasure of making a detailed report of cases of tuberculosis treated with antitubercle serum (Paquin); this report was afterward published in the *New York Medical Journal* of June 26, 1897. In this paper I shall endeavor to add to that report by giving my conclusions as drawn from a three years' experience with this serum. I shall try to point out when to use it and when not to use it; also that it is not a specific, but a treatment of inestimable value when used in conjunction with good climate, diet, etc.

A careful observer can not fail to notice that one by one the diseases which in years gone by have produced the greatest mortality are now slowly but surely yielding to science and scientific treatment. This is all the more true because we are giving up empiricism for rationalism; drugs are used less and antitoxins more. All of us rejoice in the antitoxin for diphtheria, and use it because the American Pediatric Society has put the stamp of approval on it; many of us use antitubercle serum (Paquin) because we have tried it and found out its value from clinical observation and by actual experience. Dwelling as I do in a winter resort for consumptives, naturally I see a great many cases each year. Since beginning the practice of medicine at Summerville, S. C., I have been anxiously looking for some treatment to benefit these poor unfortunates, if not cure them. Various kinds of treatment have been vaunted to the skies, but none has given me the real satisfaction that antitubercle serum (Paquin) has. I have used it for three years, and during that time I have alleviated the sufferings of many, prolonged their lives and seemingly in some cases have produced cures. I say seemingly, because three years is too short a time to say positively whether one has been cured or not. In order to test the serum thoroughly, I used it on all cases that came into my office, irrespective of the stages. In this manner I treated twenty or more, only one being in the incipency; out of this number all but two were benefited, some being temporarily cured, others apparently cured. The cases were pulmonary, laryngeal, glandular and joint, and the serum acted equally well on all. It is, however, as well to know when not to use the serum as when to use it, because on its proper application depends its value. From my own experience I have come to the following conclusions, *viz.*:

1. That antitubercle serum (Paquin) is nearer a specific for all kinds of tuberculosis than any other treatment.

2. That it is most valuable in pure, unmixed tuberculosis; that is, tuberculosis uncomplicated with some infection.

3. That it ought to be used in the pretubercular or incipient stage and in the beginning of second stage.

4. That it ought not to be used with great hopes

when there is a daily rise of temperature to 102 degrees.

5. That given by the rectum the results are equally as good as when given hypodermically.

6. That rectal injections never cause any unpleasant symptoms, as are occasionally produced hypodermically.

These conclusions, as I say, are based on actual experiments in private practice, and necessarily must be of value to any one using the serum. Most of us, when giving a new treatment a trial, are apt to use it on an old case as a last resort, everything else having been tried. This helps neither the patient nor the treatment; perhaps it may benefit the former a little, but most assuredly injures the latter. It is also of great importance for us to make an early diagnosis in all cases, and if possible to begin treatment in the pretubercular stage. Each and every year many precious lives are sacrificed on the altar of physicians' carelessness in examinations. No matter how slight the trouble may be, he ought to be able to locate it. Our examinations should be both physical and microscopic. It not infrequently happens that on physical examination we detect a lesion, and at the same time a microscopic examination of the sputum fails to show up the tubercle bacilli. One examination in such a case should not suffice; we should make them at stated intervals until some positive diagnosis can be made.

In tuberculosis all of us recognize a wasting disease; such being the case, we must not only endeavor to arrest or destroy the germs by antitubercle serum, but also endeavor to surround the patients with such conditions as are most conducive to convalescence. I shall not dwell on this point, I only wish to call your attention to the fact that this antitubercle serum deals only with the tubercle bacilli, and that it is also necessary in addition to put the patient on flesh-producing food, tonics, and in a good climate. It has been my experience that tubercular patients improve more rapidly in a low altitude than in a high, because as a rule they all have weak hearts, and the higher the altitude the more strain on the heart. I shall not weary you with a detailed report of all my cases, but there are four to which I would like to call special attention:

Case 1.—Young man, aged 28. First hemorrhage in October, 1897, followed by fever and night sweats. Cough troublesome. No appetite. Came to Summerville in March, 1898. Put him on the serum treatment—rectal injections. Improvement began almost immediately. He was allowed to return to his home in Georgia to carry on the treatment. Last reports of his condition are good. Says he has never felt better in his life and weighs more than his average weight.

Case 2.—Male, aged 28 years. Family history good. Contracted phthisis pulmonalis in February, 1895, after having been weakened by two successive attacks of grip. Physical examination showed one spot on apex of right lung, and another in lower part of upper lobe of left lung, posteriorly. It was a typical case, with fever, cough, night sweats, hemorrhages, etc. The patient was ordered in May, 1895, to the mountains of North Carolina, where he passed the summer with little or no benefit. He then came to Summerville in the autumn and remained for two months, when tuberculosis of the hip and testes developing, he was advised to go to Charleston for the purpose of having an operation performed. There his testes were operated upon, but he refused to have his hip joint opened. The pain in the hip had become so intense that the slightest movement in bed would cause extreme agony. At my earnest request the physician in charge kindly consented to treat him with Dr. Paquin's serum, and it was not very long before his hip became much improved. So great was this improvement that in a few months the patient was enabled to walk without the help of crutches and with absolutely no pain.

In every respect he continued to improve and finally in March, 1896, he returned to Summerville. There I continued the serum treatment until the hot weather set in, at which time, for numerous reasons, I stopped it. Not three weeks after its discontinuance the patient developed tuberculosis of the brain, which in the space of two weeks caused his death.

This case is interesting in many points. First the development of tubercles in the lungs, followed by tubercles in the testes, hip and brain; also because of the marked and immediate relief furnished him by Dr. Paquin's serum. And lastly, because it was the only case in which I have observed alarming symptoms caused by a hypodermic injection of the serum.

Case 3.—Woman, aged 35 years. Family history negative. Patient had suffered from repeated attacks of the grip. In the last four years it was her custom to come south for the winter season. An examination revealed a lesion in the upper part of the right lung, I could not say whether it was tubercular or not. A careful examination of the sputa did not show tubercle bacilli. There had been no improvement in health during the last three winters, so in 1897, I placed her under the serum treatment. Immediately after using this serum improvement became quite noticeable, and after three months' treatment I allowed her to return home; not, however, without cautioning her to be extremely careful with herself, and for the next year to use twice a week rectal injections of Dr. Paquin's serum, forty minims at a dose. In March, 1898, this patient reported continued improvement.

Case 4.—Male, aged 25 years. Family history poor. Father and sister had died of phthisis pulmonalis. Patient has had a cough all his life. In June, 1896, he had several hemorrhages; also fever, night sweats, cough, etc. On examination I found consolidation in upper part of lower lobe of left lung. I immediately put him under the serum treatment, with no other medicines. Very soon his hemorrhages ceased, his night sweats were arrested, and his fever left him. His appetite was restored and his strength renewed. Improvement continued until the summer, when the injections of serum were discontinued because of the great difficulty in keeping the serum fresh. In the fall I commenced to inject him again, and since that time he has steadily improved. His gain in weight is eleven pounds, and he coughs only when the atmosphere is damp and moist. I advised him that he could return to his work, but that for the next year he must use the serum by rectal injections twice a week. This case is worthy of observation, because of such a brilliant and successful result in one who so strongly inherited a predisposition to tuberculosis.

April, 1898.—During the past winter he has coughed a great deal, owing to a discontinuance of the serum contrary to my advice, but is now better and at work again, having resumed the serum treatment.

Finally, I want to say again that another year's experience with antitubercle serum (Paquin) has convinced me more than ever of its merits, and I feel sure that after giving it a fair trial you will likewise be convinced.

THE STUDY OF MATERIA MEDICA AND THERAPEUTICS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY HENRY M. BRACKEN, M.D.

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MINNEAPOLIS.

My views upon the subject were given under this title in the *New York Medical Journal*, May 2, 1896. Some points set forth will be emphasized in this paper. The object of study is twofold: first, to train the mind; second, to give the student knowledge that he can make practical use of. In this age of utilitarianism, the first object is often lost sight of. Teachers of medicine and surgery may even speak of the study of materia medica as useless. Their opinion is based upon the fact that the older one is in the

practice of his profession the smaller will be his list of therapeutic agents. They argue that a student will pick up the necessary knowledge relating to important drugs, in connection with his clinical studies. This is certainly a mistake. The best therapeutists are men who are thinkers, not machines. The practitioner who uses a therapeutic agent because he was trained to do so by his clinical teacher in his student days, will soon become a back number. The agent may have been the best of its kind in his student days, but the rapid progress that is now possible in therapeutic knowledge may soon displace supposed valuable products by others which prove themselves of greater value. Therapeutic knowledge is becoming more exact each year, and this is due largely to the work of the pathologist and the physiologist.

There are three methods of teaching materia medica: by lectures; in the pharmaceutical laboratory; in the physiological laboratory. It is quite common for a school to adopt one or the other of these three methods, to the exclusion of the other two. This is a mistake. No student should commence the study of materia medica unless he has had at least a year's work in chemistry and physiology. This would prepare him to understand the terms that are in constant use in the study of drugs. The lecture room is the place to begin the study of materia medica. The process here is one of general instruction, of bringing together the important chemic, physiologic and pharmacologic facts. Drugs that have little value can be described briefly by the lecturer, and then receive but little further consideration by the students—possibly never be thought of again, or possibly be brought out and used to good purpose at some future opportune moment. The important drugs should be given due prominence by the lecturer. It would be hard for the student to grasp the necessary points connected with the study of drugs were he to depend upon his own judgment, but a few words from the lecturer should make the way clear to him. Without such help the student would have to wade through a mass of material, and would be unable to separate the wheat from the chaff. For example: consider the study of opium. Without a guide a student would be thoroughly confused by the number of active principles and pharmacologic preparations. Let the lecturer go over this subject with his class, drawing attention to the fact that a knowledge of a few of these preparations is quite sufficient; that, in fact, it would be no great loss if one knew nothing of the opium preparations, provided his knowledge of morphin was accurate. The use of any opium preparation is to secure the action of morphin, so that direct dosage with morphin should be more satisfactory in every way than the use of opium in any form. So also with the preparation of iron. The uncertainty as to the true therapeutic explanation of the action of iron, together with other bases for theories, has been an excuse for introducing a remarkable list of preparations, official and non-official. The student is quite embarrassed by this display of titles. A few words from the lecturer, however, may reduce this confusion of the iron preparations to a few simple principles—stability, local action, remote action, etc.—and thus make the actual knowledge required an easy matter. All these points are as easily given, by lecture, to a room full of students as to small sections of a class. There is also a great saving of labor by this method. The lecturer thus paves the way for the laboratory

instruction. In laboratory instruction, pharmaceutical work should be taken up first. This should be taught by a medical man with a pharmaceutical training, rather than by a pharmacist with a medical training, otherwise the pharmaceutical knowledge imparted to medical students is apt to be overdone. The teaching should be most practical. The course must necessarily be short, for there are many other important things to take the student's time. The medical student does not need to be a pharmacist, but he must have sufficient pharmaceutical knowledge to enable him to write prescriptions intelligently.

After the pharmaceutical training, the student is ready for the physiologic laboratory, where he may study drug action. This should be the most interesting part of his work in materia medica. It is the most difficult part for the instructor. The work must be done by the class in small sections. The experiments, even in the hands of trained men, are often failures, for one reason or another. This work often takes a great deal of time and yields very poor return from the student's standpoint. The study of the physiologic action of drugs is by no means a simple task, and it is an open question whether it might not be better for the general medical student to accept the conclusions of some eminent physiologist, as to the physiologic action of drugs, rather than try to demonstrate such action for himself. It is a question whether the study of drugs in the physiologic laboratory should not be limited to demonstrations, by the instructor, of a few important truths. It certainly is a question whether the student's individual work along this line should not be classed with the advanced work of the senior year, if taken up at all. He may then be able to apply his combined student's knowledge to the task before him. It is even a question whether the special physiologic laboratory study of drugs should not be made an elective course, so that only those who have a special liking for such work would take it up.

Thus we have the work of the lecturer and of the laboratory instructor combined. The lecturer is an educator in the broadest sense; the laboratory instructor is a practical demonstrator, more important, in a way, than the lecturer, but more restricted in his work.

The student is now prepared to take up his work in therapeutics. This naturally comes in the third year of a four years' course. Therapeutic agents are best studied first in groups, according to action, as anodynes, antipyretics, analgesics, etc. The demand for a therapeutic agent naturally suggests one of these groups. In each group there will probably be but three or four important therapeutic agents. The student learns naturally, through this arrangement, to eliminate those that are unimportant. At the same time, a little reasoning will enable him to appreciate the advantages one agent may have over another of the same group, in any given case. It will also prepare him for the necessity, which sometimes arises, of changing from one agent to another of the same group, under certain conditions, in order to secure the best drug effect, and at the same time, to avoid establishing either a drug tolerance or a drug habit. When the student learns his therapeutics in this way, he will have little inclination to become a prescription copyist, and his tendency will be toward the writing of simple prescriptions, rather than toward polypharmacy. In this system of teaching therapeutics, it becomes unnecessary for the instructor to

devote time to the therapeutics of each and every drug separately. He gives, in common, the points to the whole group, and then points out the advantages and disadvantages, the importance or the uselessness, of each agent in the group. Naturally, he would devote a considerable time to the therapeutic properties of the important agents. In connection with this course, the student must become familiar with prescribing. Three methods of using drugs are now in vogue: the hypodermatic method; the bedside dispensing of drugs; the use of prescriptions. The student would readily become familiar with the first and second methods. The third method is a little more difficult to follow. Instructions should, therefore, be given in prescription writing, drawing attention, not only to the action of drugs prescribed, but to the form of prescription, compatibility of parts, both chemically and physiologically, and last, but not least, if the prescription is for internal use, its palatability. This work should place the student in good form for his duties at the bedside.

The work that I have so far outlined, as belonging to therapeutics, should occupy time extending through the third year of a four years' medical course. In the senior, or fourth year, the work in therapeutics should be continued, but along very different lines from those pursued during the previous year's study. There should now be an application of the knowledge which the student has already acquired. The therapeutic teaching should be connected with clinical work. It is not enough to study a case simply to arrive at a diagnosis. That may satisfy the physician's curiosity, but it will not satisfy the patient. Something must be done to cure the patient, if possible. If this is not possible, it is at least necessary to do all in one's power to guard against complications, to pilot the patient through to a safe termination of his troubles, or to at least produce euthanasia when dealing with those cases where death is the only ending for suffering. There are nihilists in therapeutics, but these are men who are not willing to consider the comforts of their patients. We should take great pains not to have any therapeutic nihilists among our students. The instructor in therapeutics for this final work should be a clinical teacher, one who appreciates the points I have just referred to as bearing upon the comfort of his patients.

I have thus outlined the teaching of materia medica and therapeutics to extend over a period of three years. This has not been with the purpose of loading a great deal of work upon the medical student, but rather of giving him a little at a time, in order that he may understand the subject thoroughly. The work could be done in one year, as far as time is concerned, but it would then be simply a process of cramming, and the results could not possibly be satisfactory.

SOME PREPARATIONS OF THE NATIONAL FORMULARY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY C. LEWIS DIEHL, Ph.M.

LOUISVILLE, KY.

At the meeting of this ASSOCIATION in 1893 I had the honor to read a paper¹ before this Section, in

¹"The National Formulary." Read by invitation in the Section on Materia Medica and Pharmacy at the Forty-fourth Annual Meeting of the American Medical Association.

which I outlined some of the conditions that have had marked influence upon the practice of pharmacy in its relation to that of medicine. I pointed out that the modern practice of prescribing medicaments of special manufacture had become a burden upon the pharmacist which, if not relieved, would surely end disastrously to those who, adhering to the ancient landmarks, strove to supply their patrons with medicaments of their own manufacture or of generally recognized and officially accepted composition. Indeed, the thought has impressed itself more and more upon my mind, that if physicians had entered into a conspiracy to drive the educated and qualified pharmacist out of business, they could not have pursued a more certain method than that which has become a common practice during the last decade. In my personal experience, drugs, chemicals and pharmaceutical preparations which were considered indispensable under the older practice now remain unused on the shelves or become ruined before they can be disposed of; and this in face of the fact that these same drugs, chemicals or preparations are the component parts of, or are represented by, the preparations of special manufacture now popularly prescribed.

So simple a drug as gentian root is made into a palatable and slightly preparation by the aid of some aromatics, wine and glycerin, and, with the assurance of the manufacturer that it has taken years of study to perfect the formula, it is at once successfully launched into popular favor among prescribers, and takes the place of old and well-known preparations over which the new one possesses no tangible advantage. But a more serious manifestation obtrudes itself as a consequence of the modern practice. Formerly the physician, confining his prescription to drugs, chemicals and preparations of officially recognized quality and composition, knew exactly what he was prescribing and the patient accepted his prescription without inquiry. Now, the patient is familiar with the name or title of the medicament that is being prescribed for him, and is more than likely to ask for it without prescription, while neither he nor the physician has a true knowledge of its composition; for such knowledge is in most instances based upon more or less obscure or misleading statements borne upon the label or upon the circular accompanying the preparation.

Under these conditions it is not to be wondered that the purely commercial element has overwhelmingly gained ascendancy in the practice of pharmacy and that the professionally inclined are largely in the minority, I was about to say hopelessly so, but I am unwilling to concede that. I have occasionally met with the statement that, as applied to politics, the minority is always in the right. However this may be of politics, I am not sure that it applies with like force to the revolution that has invaded the practice of pharmacy; but I do believe that, with persistent effort, and with the aid of thinking men in the medical profession, the minority will eventually lead the majority into channels in which the commercial shall be subservient to the scientific and professional qualifications. Among these efforts perhaps the most important is the successful introduction of authoritative formulas for the preparations that are now popularly prescribed, and the acceptance by physicians of the preparations made in accordance with such formulas by reputable pharmacists everywhere. This has been the aim of the American Pharmaceutical Asso-

ciation in compiling and issuing the "National Formulary," a work which has been completely revised since the date of my paper initially referred to, and which has in some degree at least met with recognition by the medical profession. In fact, in some localities, where its merits have been properly presented to physicians, it has been accepted as authoritative for many preparations to replace those of special manufacture, and as the work becomes better known its usefulness will doubtless be extended. In furtherance of this object, and with the hope that the work may become more generally known and appreciated by prescribers, I therefore venture to again call the attention of the AMERICAN MEDICAL ASSOCIATION to the "National Formulary," illustrating its utility and scope by brief comments on a few preparations that seem to merit attention and to serve as types of the general contents.

With a list of eighty-six formulas for elixirs, forty-seven for syrups and forty-four for liquors, one should consider the ground of modern so-called elegant pharmacy pretty well covered; but the list utterly falls short of the number which enterprising individuals have succeeded in introducing to the notice of practitioners of medicine, and which must be kept in stock in a modern pharmacy. The difference between the one and another is in many cases that between "tweedle-dee and tweedle-dum," the selection by the prescriber being quite as much due to convenience or whim, and in neither case justified, when the identical components on the shelves of every properly appointed pharmacy may expeditiously be compounded into a palatable and acceptable preparation. It is true that to construct his own formulas will put the prescriber to some inconvenience! In some cases he will probably be compelled to consult with his neighboring pharmacist so that the resultant prescription may be slightly and palatable as well as efficient. But the trouble is well worth the taking, for his results in the treatment of disease will be based entirely upon his own selection of the medicament instead of, as is too frequently the case, upon that of the manufacturer. If then, the prescription having become established to his satisfaction, the physician will take the trouble to write out the components when prescribing, he can reasonably hope to have his prescription prepared acceptably at any respectable pharmacy; or in case the formula is too lengthy and circumstantial, its publication in some of the numerous medical and pharmaceutical journals will make it public property, as it should be, and the preparation may then be prescribed under a selected title. Unfortunately the practice has gained ground modernly that formulas constructed under the conditions named are being withheld from publicity and a new child is thus born to enrich the modern materia medica, in most instances under a coined name and with the corner druggist as its sponsor.

It would necessitate a far more lengthy paper than is contemplated or useful at this time to go into details concerning the composition of the preparations of the "Formulary," for these details mainly concern the operator to whom the compounding is entrusted. The prescriber, however, should fully understand that the operations involved are in most instances of the simplest character, the formulas are constructed on simple lines, and the directions are given in terse diction and with such precision that the merest tyro, so long as he has the ability to weigh and measure cor-

rectly, can follow them to a satisfactory end. It is otherwise, however, when the exigency for a new formula arises, whether it be for the purpose of simply combining an additional medicament with a preparation already made, or whether it be with the object of exhibiting one or more medicinal agents in a more acceptable form. Here a thorough knowledge of compatibles, both in a chemical and physical sense, is necessary, and the opportunity arises for consultation between the prescriber and the pharmacist. Take, for example, Elixir of Ammonium Valerianate. (Formula No. 33.) It is important that this should be perfectly neutral or slightly alkaline, so that the odor of valerianic acid may be completely overcome. Properly prepared, it may be combined with any neutral or basic medicament without impairing its quality, but if we were to add an acid substance, the odor of valerian would be immediately developed and the utility of the preparation impaired. Again, the finished preparation may require the presence of a free acid, for example, the Compound Digestive Elixir. (Formula No. 59.) This preparation containing both lactic and hydrochloric acid in a free state, it will not do to combine it with basic or alkaline substances, though neutral or acid compounds are perfectly compatible. In other cases the judgment involved may concern the physical character, such as taste and odor only, an example of which is the Compound Cathartic Elixir. (Formula No. 45.) In this we have the problem before us to make a palatable preparation from a number of bad-tasting or malodorous drugs, such as senna, mayapple, leptandra, jalap, etc., which is successfully solved by the judicious use of the Elixir of Taraxacum (Formula No. 111) and of Elixir Glycyrrhiza (Formula No. 76). Numerous other examples might be cited, but sufficient has been said to point out how the physician and pharmacist, with the material provided in the "Formulary," may acceptably produce almost any combination that may be desirable.

The "Formulary" also commends itself on the score of economy. Many of the preparations can be made extemporaneously, or at short notice, with such materials as are on the shelves of every well-appointed pharmacy, there being only a list of ten preparations—in themselves inexpensive—which for the convenient preparation of the others are advised to be kept in stock. This facility to make palatable preparations at short notice also commends itself on the ground that they will reach the patient in an absolutely fresh condition, and particularly so in the case of two classes of preparations—the "Emulsions" and the "Effervescent Powders." Possibly both of these have had their day, for they are not prescribed with nearly the frequency they were formerly. But for that very reason it is desirable that the pharmacist should be placed in position to dispense them in a fresh condition, since both of these classes of preparation rapidly undergo change and become unfit for use; and being usually dispensed in original containers and under seal, it becomes practically impossible to insure their quality. The "Formulary" makes excellent provision for both. With regard to

Emulsions, it observes that "the successful formation of emulsions, whether of fixed or volatile oils, is most successfully and expeditiously accomplished with acacia as the emulsifying agent." Hence, preference is given to acacia, though other emulsifying agents, such as mucilage of Irish moss, mucilage of dextrin, glycerite of egg and tincture of quillaya, are not

ignored, their use and application being exemplified in a number of alternative formulas for preparing Emulsion of Cod Liver Oil. The directions given are so plain and explicit that they may be readily followed by the operator with assurance of the production of an emulsion containing 50 per cent. by volume of the oil, together with such other medicinal ingredients, hypophosphites, flavoring, etc., as it may be desirable to incorporate. In the case of "Acacia Emulsion" the amount of the acacia need not exceed 12 per cent., while the emulsification is as perfect as in the best emulsions of the market, and far more so than is the case with the most of them. Good, pure material is easily obtained in the market, and will certainly be supplied by the pharmacist if the physician will take the trouble to make the demand for the pharmacist's rather than for the manufacturer's product. As to

Effervescent powders, the "Formulary" maintains that they are most conveniently and efficiently dispensed in the form of *fine powder*, because in this condition they can be made extemporaneously and with an assurance of their freshness and efficiency. The popular demand for "Granular Effervescent Powders," however, is not ignored, and formulas are given for their preparation under modifications which are important only in so far as they enable the dispenser to granulate the powder in a convenient and expeditious manner. But the granulation of the powder is admissible only if it is contemplated to prepare the effervescent preparation for stock; and the liability of such to deteriorate on keeping, being the same as that of manufactured effervescents, should prompt the physician to discourage their use, by confining his prescription to extemporaneously prepared effervescents *in fine powder*. The latter can be made as quickly as any prescription that requires the admixture of several powders. To make the plain (non-medicated) effervescent powder, two stock powders, the one composed of sodium bicarbonate and sugar (Saccharated Sodium Bicarbonate, Formula No. 341), the other of tartaric acid and sugar (Saccharated Tartaric Acid, Formula No. 8), are mixed in equal quantities by weight, the proportions of acid to sugar and of alkali to sugar being such that, weight for weight, the two powders represent molecular proportions, and when so mixed form a neutral solution. Both of these powders, when made from dry and anhydrous material will keep indefinitely, but may be prepared expeditiously if not in stock. The medicinal agent having been weighed and finally pulverized if necessary, with a small portion of the plain effervescent powder, a sufficient quantity of the latter is then incorporated to make four grams for each dose contemplated, and the resultant powder may then be dispensed in bulk, to be given in doses of a teaspoonful, or, better, divided into doses of sixty grains, each dose to be enveloped in wax paper. Obviously, any desired medicinal combination of dry, soluble substances can be thus prescribed, a typical prescription being as follows:

R Citrated caffein 12 gr.
Lithium citrate 24 gr.
Saccharated tartaric acid (N. F.)
Saccharated sodium bicarbonate (N. F.) aa 3 dr.

Mix intimately and dispense in twelve equal parts (or in bulk) each enclosed in wax paper.

The advantages resulting from the practice of so prescribing are:

Accuracy, because the composition is determined by the prescription.

Celerity, because the prescription can be prepared from stock at hand, and there is no delay in searching the market for a speciality.

Efficiency, because the medicine is freshly prepared.

Economy, because the prescription need not exceed a single dose, and there is no loss from deterioration. But not the least of the advantages to be gained from this practice is that the physician and pharmacist are kept in touch with each other, instead of—as is inevitably the case under modern practices—drifting asunder.

THE PONNS ASINORUM OF THERAPEUTICS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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BROOKLYN, N. Y.

In the fifteenth century one Johannes Buridan published a treatise which he called the *Summula de Dialectica* and set forth to the public that it would enable any person, however stupid, to easily and rapidly discover the "middle terms" for syllogisms. On the strength of this claim it came to be known as the *pons asinorum* or bridge for what our Colorado friends call "burros."¹ At a later date the fifth theorem of the first book of Euclid came to bear the same title, and still later the forty-seventh proposition of the same book bore this name because they enabled dull students to master otherwise very difficult problems. In modern parlance a *pons asinorum* is a bridge over a mental difficulty that enables ordinary mortals to cross. Geniuses can, of course, get over without such aid. In using it in therapeutics the writer denies any intention of intimating that there are any members of the medical profession whom he feels justified in cataloging as belonging to the genus *Equus*, species *asinus*. We merely use it for the purpose of forcibly indicating the sad need of such a bridge at this point of medical progress. Without it we have the choice of resting entirely in a fool's paradise, taking wings and soaring with the geniuses over the muddy stream of ignorance or remaining mental grallatores floundering in the deep waters of that practically unfordable stream. It is not the first time in the history of science that such alternatives have been placed before mankind. As a rule the majority prefer to remain within the fool's paradise. The subjective method of the metaphysician is much more congenial than the experimental, objective method of getting at truth or what the world considers truth. In therapeutics we are all as anxious to discover a law of cure as were the alchemists to discover the elixir of life, but we of the regular school prefer the inductive, slow method of chemistry to the wild dreams of alchemy. Any pretended therapeutic law that fails to come down to the bed-rock of cause is a mere hallucination. When we can trace by cause and effect exactly how remedies produce their results, then and not till then will we have a true law of cure. We are already sufficiently far

advanced to see the way in which it is likely to be found and to observe where our pons to it is being built. The caissons have already been sunk through the muddy bed of ignorance, and we shall soon see its graceful arch spanning the stream below. In this essay the author hopes to be able to show: 1. That all effective therapeutic measures are preventive ones, depending almost wholly on our ability to make a correct diagnosis. 2. That our present paucity in successful results is due to defective diagnosis. 3. That we cannot overcome this defect, so far as the great majority of medical men is concerned, until we are supplied with a binomial or trinomial nomenclature of diseases.

The therapeutic bridge we need is a scientific system of naming diseases so that the average medical man will be able to know what he is trying to get rid of by the remedies he uses. Our present lack of system is a sad hotchpotch, that if merely useless might be tolerated, but that being positively misleading should be consigned to oblivion as quickly as possible. In medical matters we stand today precisely where botanists and zoölogists stood before the immortal work of Linneus was accomplished. Our confusion is as great as theirs was and our gain from a similar revolution would be far greater. Now is the time for us to inquire "where we are at" and try to get order out of the awful chaos that surrounds us. If something is not done soon, we will all be constrained with Cicero to exclaim, "*O dii immortales! ubinam gentium sumus?*" (Ye immortal gods! where in the world are we?)²

The number of causes capable of producing bodily ailments is infinite. Fortunately there is a natural grouping by which it is possible to place them all in a few convenient classes. Some are due to mechanical, some to chemic and some to biologic (usually microbial) injuries. If we add to these causes those due to errors of development, we will probably have covered every possible form. In consonance with this grouping of causes there can be a corresponding grouping of effects, thus enabling us to have what we are pleased to call distinct diseases. There are in reality no such things as distinct diseases. Disease in all its protean forms is but the resultant effects of a multitude of causes, being resisted by the organism. As effects often mimic each other, it is never possible for us to be absolutely sure of the nature of any disease until we have discovered its exact causes. The first step toward a rational course of treatment is the step that leads us toward knowing what we have to treat. Until we discover that, what we happen to do is little better than blind guess-work.

To make clear our meaning consider for a moment two illustrations. Suppose we go home and find our window broken and go in search of the cause of the break. It may have been the wind, it may have been a stone, or it may have been any one of a multitude of causes. To discover that it was done with a stone does not in any way help us toward a knowledge of how to mend it. In cases of this kind a knowledge of the cause of the disease or damage does not help us to a knowledge of the remedy required. Now let us change our supposition a little. Instead of a broken window let us choose broken ice on a skating pond. Being anxious to see that pond frozen over we look out upon it from time to time on a cold winter's day and each time discover a huge hole at the same point on its surface. We go out near it in order to discover

the cause and find that it was being pelted with stones. No sooner was new ice formed than it was broken again by a large stone being thrown through it. To discover the cause in this instance is to discover how to remedy the evil. As soon as we stop the stone-throwing the break closes.

Here we have a case of cause and effect exactly like those with which physicians have to deal. The same class of forces can operate to damage organisms as operate to damage ice, and the process of mending, healing or curing is exactly analogous in both instances. Observe here that the mending in the one case and the curing in the other is accomplished by inherent forces. All that we can do in either instance is to remove some continuously operating cause or causes and then nature does the rest. In the case of the broken ice a cure of the evil occurs when we stop the stone-throwing. In the case of our patient the cure occurs when we stop the action of the damaging force. The ice can cure itself by freezing so fast that between the intervals of stone-throwing it becomes thick enough to resist the blow. The body can cure itself if its repairing forces work with sufficient vigor to render nugatory the attacking causes. Both the human body and the ice do their own repairing of damage always. We can only remove the obstruction and overcome the causes that hinder their inherent activities. Whenever any cause interferes with the development of a clear crystal of ice or a pure healthy body that cause must be removed or no cure is possible. Sometimes many causes may be at work simultaneously damaging the ice or damaging the body and then all of the morbid causes must be removed before nature can assert herself by a cure. At other times different damaging causes may succeed each other, the first, second and third having disappeared and a fourth having come in to keep up the mischief. In the case of the ice a succession of stones may have been succeeded by a fire and this again by sulphuric acid. All of these may have done their share toward damaging the ice until finally a mass of salt may have been placed upon it. To cure the damage it will do no good to remove the spent stones, the extinguished fire or the saturated acid. We must know that there is fresh salt there and remove it. Thus it is in the body. The first injurious cause may have gone when we are using remedies for it. It is necessary to know the cause now acting and seek to remove it. If we find a person being burnt we can extinguish the flames. If we find that acid has been thrown upon him we can stay its ravages by removing it or neutralizing it. When there is no longer any fire or acid present we must see that the damaging air does not affect the wound and when this is looked after we turn our attention to the invading bacteria so as to arrest their destructive work.

The kind of microbes that invade the wound may have an important bearing upon the healing of the wound. To successfully treat each case we must know the kinds that invade it. All obstructions to the proper healing of the body must be discovered and a way found for their removal, otherwise we will continually keep failing to cure our patients. Where we do not know the causes we can not hope to be able to always remove them. An accidental discovery may in some cases give us a method, but as a rule we must grope in the dark until the causes have been discovered. In the majority of such cases we leave the matter to nature and then take to ourselves the credit of

doing the work. We speak of some remedies as "almost specifics," because they succeed in a large proportion of cases and in a way that leaves no doubt of their efficiency. The writer believes that where such remedies fail other causes than the one thought responsible are at the bottom of the failure. If we knew how to overcome these unknown causes that lead to failure we would be successful every time. When we give quinin in malaria, mercury in syphilis and serums in their respective diseases their failure is due to the presence of causes that they were never intended to treat. All successful medication is preventive medication. Prophylaxis is the very soul of cure in every form of sickness. When we give quinin we kill the plasmodiums and prevent a new attack of the malaria. When we give diphtheria antitoxin we produce conditions unfavorable to the Klebs-Loeffler bacillus and so prevent a continued attack of the diphtheria. When we give a cathartic we force toxic substances out of the body and prevent auto-intoxication. When we can not get at the root of a disease we are content to attack and prevent the evil consequences likely to flow from some dangerous symptom. By thus being able to, as it were, lop off the tentacles of the disease we often cripple or destroy it as a dangerous enemy of the patient. Where sleeplessness is leading toward death, by the use of sulphonal or morphin we prevent this much of the disease from developing. We obviate the serious outcome. The deeper down our prophylactic measures can be carried among the bad symptoms the more likely are we to save our patients. To know how to prevent a tetanic spasm is not as good as to know how to antidote the poison of tetanus but it is well to be able to accomplish the lesser feat when for any reason we can not do the greater. There is no breach in continuity between sanitation and treatment. The aim and method of the one is the aim and method of the other. The method of each is summed up in the one word "prevent." To give drugs for any other purpose than the preventing of untoward effects is foolish. Beneficial symptoms should be let alone or encouraged. It is therefore important for the physician to be able to tell what symptoms of a disease are beneficial and what damaging. Grave blunders are committed by not knowing which to encourage, which to let alone and which to oppose.

The one important duty of the physician always is to fight or remove everything that he is sure is leading his patient toward a disastrous termination of the disease. He must at all times be on the alert for causes of evil and in their succession the deeper he can go the better will be his results in all kinds of cases. Skill in diagnosis is imperative, whether the inquiry relates to a baneful symptom or a specific cause. To give remedies that have been recommended for diphtheria, pneumonia, nephritis, mumps or measles because we have concluded that these are the ailments from which our patients suffer may by a sheer lucky hit be what they need, but the chances are very many against us in the matter. Superficial diagnosis, that knows no more about these diseases than is implied in the ability to give them these names, is wholly inadequate as an aid to proper treatment. Much more must be known, and the idea that disease is an entity, which our present nomenclature fosters, must be destroyed. An examination of the present trend of bacteriologic discovery will help us to a clearer conception of what is here meant and perhaps illuminate the subject in a number of important directions.

Let us for a moment consider the bearings of the fact that adaptation is a fundamental law of life. A study of the distribution of plants and animals throughout the globe shows us that the leading factor in placing them where we find them has been fitness. Water plants and water animals can not live in dry places while plants and animals able to live in dry places can not, as a rule, thrive well in wet places. The same is true for extremes of heat and cold, richness and poverty of soil, sunlight and shade, windiness and calm, with all other extremes of telluric conditions. Between the extremes of adaptation are all possible intermediate degrees. The range, too, of all plants and animals varies widely in extent in every environment. Some have a very wide range and others are restricted. What is true of the gross fauna and flora of the earth is equally true of the microscopic. The latter, like the former, develop vigorously where adapted, not at all where wholly unadapted and with intermediate degrees of vigor amid intermediate degrees of fitness. Microbes that are classed as non-pathogenic are such as are unable to spread to a damaging degree within the tissues of the body or such as are unable to produce poisonous substances within the body to its detriment. Pathogenic microbes produce poisonous substances or multiply within the body in a way that is injurious to it. They bear a similar relation to the body that weeds do to a garden. While there may be parts of the body that can resist their development, other parts are more favorable to them, permitting of their development. A given microbe may be able to develop in the lungs but not in the spleen. Another may find a favorable place of development in certain glands but be unable to multiply in the meninges. To some extent there is certainly reason to believe that most tissues have some degree of protection from some forms of disease germs. To hold, however, as many have done in the past and as some seem to do now, that but one kind of disease microbe is capable of developing in the kidneys, another in the brain, another in the spleen, another in the liver, another in the bones, another in the heart, another in the lungs, etc., seems extremely absurd.

The final settlement of the question regarding which microbes are capable of developing to a dangerous extent in the lungs and which in the liver or other organ must be arrived at by actual experiment. Analogy and probability seem now to lead to the conclusion that there are many pathogenic microbes capable of development in dangerous numbers in any one of all the tissues and organs of the body if they can only gain access to the same in any manner. It does not seem reasonable to think that nature should have given a monopoly of the lungs to some one kind of coccus, of Peyer's patches to a single kind of bacillus or of the liver or intestines to a single kind of spirillum. It is much more reasonable to believe that soil that will grow one kind of plant is likely to be able to grow many kinds. It would, indeed, be a singular plot of ground that, while containing many patches of differing soils, could only grow one solitary kind of plant on each kind of soil. Imagine if you can such a plot. In it the potato corner could grow neither peas, onions, weeds nor other plants, the pea patch could grow nothing but peas, and the onion region would be an inhospitable home for anything but onions. Is not such a supposition absurd on its face, and yet it is no more absurd

than the assumption that meningitis is due to but one kind of microbe which by diligent search is going to be discovered some day. Is it not much more reasonable to think that there are twenty or more kinds of germs capable of producing meningitis? To us it would not be at all surprising if future investigation should show that there are twenty or more kinds of pneumonia, hepatitis, meningitis, cystitis, enteritis, tonsillitis, carditis, gastritis, nephritis, etc. Is it not also quite reasonable to suppose that the cause of the pathologic condition in any one of these may be the cause in many of them? In other words, may not the nephritis of one patient have the same specific cause as the meningitis of another, the pneumonia of another and the carditis of another? If more than one kind can develop in the same region at the same time may not two or more kinds of microbes combine at various times to produce conditions of disease very like those produced by only one? Again, as microbes are known to have a sort of succession among themselves, may it not be possible that in some diseases the latter symptoms are due to a different set of germs from those at the beginning? All of these questions can only be finally answered by an appeal to nature.

Now let us inquire about the facts in the case as developed by bacteriologic investigation up to the present time. Dr. Kanthack, the pathologist of St. Bartholomew's Hospital, London, in Allbut's System of Medicine says that "undoubtedly the same morbid lesion may be produced by several different microorganisms." "Strictly speaking, then, there is no specific organism of infective endocarditis; any one of a number of cocci may produce a disease, bacteriologically different from, but anatomically, pathologically and clinically identical with that produced by another member of the same group of organisms. Similarly, suppuration may be produced by any one of a large number of bacteria; and in the malady clinically recognized as erysipelas, instead of the streptococcus of erysipelas, other organisms may often be found. Septicemia and pyemia, again, may be produced by more than one kind of bacterium, and the same applies to pneumonia."³ To these words there is no uncertain sound, although the author of them still clings to the belief that some kinds of germs are specific. It is always in regions of ignorance that old expiring notions take their final refuge. There are diseases of which we know little that may appear to possess the old quality known as specific and that we will have to consider such till we know more about them. Phthisis pulmonalis was at one time deemed a specific disease, but Koch's discovery of the tubercle bacillus showed it to be but a single form of tuberculosis. We now know that there is tuberculosis of the lungs, tuberculosis of the brain, tuberculosis of the skin, tuberculosis of the bones, and tuberculosis of almost every part of the body. If we consider the group of symptoms, including the lesions, as the disease then there can be no such specific disease as tuberculosis. It is only by claiming that the presence of the bacillus gives it a specific character that we are able to maintain such a position, but that would make every disease specific in a similar sense.

Dr. S. Flexner tells us that phthisis pulmonalis, or a disease with all of its symptoms, exists, in which there are no tubercle bacilli. In it we find a streptothrix instead.⁴ Prof. Edgar M. Crookshank has

pointed out that many of the lesions of actinomycosis and those of tuberculosis are alike.⁵ Dr. Karowski of Berlin says the early stages of actinomycosis and of tuberculous phthisis require a bacteriologic examination to be sure of their difference.⁶ Dr. A. Gouget reports a pseudo-tuberculosis of the spleen, liver, kidneys and other organs due to a streptobacillus and not to Koch's bacillus.⁷ On the other hand, Dr. J. W. Moore tells us that the tubercle bacillus can cause pneumonia.⁸ With this last-named, so-called disease we have abundant evidence to show that it has a multitude of causes. In the paper of Dr. Moore we learn that pneumonia is caused by the microbes of erysipelas, influenza, typhoid fever, tuberculosis, diphtheria and anthrax. Dr. Peter of Paris sustains this claim of there being an erysipelas of the lungs that we class as pneumonia.⁹ Drs. Flexner and Anderson have also shown that diphtheria of the lungs is a pneumonia.¹⁰ Wright and Stokes reported that in nineteen cases of bronchopneumonia the diphtheria bacillus was present.¹¹ Constanzo Zenoni reports cases of pneumonia due to a streptococcus.¹² Flügge gives Friedlander's bacillus as a common cause of pneumonia.¹³ Dr. Moore gives evidence that typhoid fever of the lungs is pneumonia. He holds that in such cases the bacillus of Eberth gains entrance through the lungs as the initial lesion of the disease.¹⁴ Whitelegge tells us that Friedlander's micrococcus, Fraenkel's diplococcus and Klein's bacillus have all been, on apparently conclusive evidence, established as causes of pneumonia.¹⁵ Palamidessi of Florence reports cases of pneumonia from a micro-organism resembling those of fowl cholera and which was imported with parrots.¹⁶

It is apparent from the evidence now in our possession that typhoid fever is as protean in its forms as is tuberculosis or pneumonia. A number of cases have been studied that give evidence of the power of the typhoid germ to attack the body through various channels when there are no evidences of intestinal lesions. Dr. Keen reports cases of meningitis, pleurisy, goiter, hepatitis, pneumonia, and other affections occurring as sequels of typhoid fever, and others as occurring when there were no typhoid lesions in the intestines, but the typhoid germs were present in the organs affected.¹⁷ An editorial note in the *Medical Press* reports five cases of typhoid infection without typhoid lesions.¹⁸ Dr. Taty describes a case of melancholia with mental alienation of a double form due to typhoid germs.¹⁹ Drs. Flexner and Harris describe experiments and cases of typhoid infection without typhoid lesions.²⁰ These authors also quote the evidence of DuCazal,²¹ Kühnau,²² Guinon,²³ Pick,²⁴ and especially Chiari and Krous,²⁵ as bearing in the same direction. Keen mentions the fact that pure typhoid cultures have been prepared from points of suppuration in many parts of the body.²⁶ The same author refers to cases of mumps as due to the typhoid infection²⁷ and of diseases of the bones as having the same cause.²⁸ Gasser describes a case of orchitis due to typhoid infection,²⁹ and Girode gives evidence of epididymitis having occurred from the same cause.³⁰ DuCazal and others have secured pure cultures of the typhoid bacillus from the spleen when there were no intestinal lesions.³¹ In this connection it is interesting to learn that in a case of Dr. R. D. Mason's where the patient had swallowed some lemon seeds and they had sprouted in the intestines, the symptoms produced were like those of typhoid fever.³² We thus learn that other things than the typhoid germs produce the

characteristic symptoms of typhoid fever, and that the typhoid germs sometimes produce symptoms not at all characteristic of typhoid fever as usually recognized.

If we turn next to as apparently specific a disease as gonorrhoea, every physician knows the danger to the eyes of the newborn by infection with the coccus of this filthy affection, and now Dr. F. R. Hagner tells us that he has found cases of arthritis and tenosynovitis giving cultures of gonococcus.³³ In catarrhal conjunctivitis Dr. Gifford found that in an epidemic in Omaha, Neb., and surrounding country Fraenkel's pneumococcus was the cause, while in another in New York which he had had experience with a wholly different microbe was the cause.³⁴

The discovery of the Klebs-Löffler bacillus and the study of its characteristics have within a short time completely altered our conceptions concerning diphtheria. Now there are cases, which a few years ago would not have been considered as even related to diphtheria, that are classed with that disease, and a number of anginal affections that we called diphtheria are now excluded from such recognition.³⁵ Dr. W. P. Herringham of St. Bartholomew's Hospital, London, says that "it must be remembered that membranes, produced by other bacteria besides the diphtheria bacilli, may appear in the throat, and that in many cases the clinical phenomena prove to be of but little assistance; a careful bacteriologic examination is therefore required."³⁶ Anders tells us that "diphtheria may exhibit a number of variations as regards the seat of attack and the severity of the poisoning." He mentions nasal diphtheria, wound diphtheria of lips, tongue, vulva or glans penis, laryngeal diphtheria, etc.³⁷ S. Gee refers to latent diphtheria, in which the poisoning occurs without the appearance of a membrane of any kind.³⁸

Turning now to meningitis, we learn from the last report of the Massachusetts State Board of Health that in ten cases examined they found it due to the pneumococcus, in eight cases to streptococcus, in twelve cases to tubercle bacilli and in one case to anthrax.³⁹ Dr. J. A. Ormerod says that in some cases of purulent meningitis there has been found a micrococcus, in others the ordinary streptococcus pyogenes, and where the meningitis occurs "in connection with some acute infectious disease, such as typhoid, the organism proper to that disease."⁴⁰ If we next consider endocarditis we find the same state of affairs. Dr. Julius Dreschfeld, Professor of Medicine in Owens College, Victoria University, tells us that in most cases of this disease only one kind of organism was found in each case, but that they vary in kind for different cases. The organisms that have been found in this disease have been in some cases streptococcus pyogenes, in others streptococcus of erysipelas, in still others staphylococcus pyogenes aureus, and thus through different cases were found the pneumococcus of Fraenkel, the pneumobacillus of Friedlander, the typhoid bacillus, the bacillus of tuberculosis, the bacillus of diphtheria, the gonococcus, the bacillus endocarditis griseus, the micrococcus endocarditis rugatus, the bacillus endocarditis capsulatus, the bacillus immobilis et foetidus, the bacillus of Gilbert and Lion, and a few other microbes with less definite character.⁴¹

Some of the names in this formidable list indicate the discoverer's idea that there was but one microbe of endocarditis. This antiquated notion is a vestige

of demonology, which taught that every disease was an entity due to one simple cause, and that cause a demon or ghost obsessing the patient. The deeper we study the more clear the evidence becomes that no absolute specific character belongs to any disease. Many causes can produce symptoms in common, and as the sums of symptoms constitute the disease, we may expect to find no lines of demarcation in which disease does not merge with disease. There are specific causes for every diseased condition and the knowledge of these causes is what we need, to be able to treat them successfully. Dr. Stephen Mackenzie, in his presidential address in the Section of Medicine of the British Medical Association, at its Montreal meeting, expressed this idea in the following words: "Until the exact nature of disease is fully understood, a truly scientific treatment is manifestly impossible."⁴² But now the question arises as to how we are going to reach an exact knowledge of diseases as long as we continue using a nomenclature that is a source of daily deception and misunderstanding? Nomenclature is the mental tool of every diagnosis. Imagine our trying to study botany without our present nomenclature. Professor Allbutt of the University of Cambridge in the introduction to his "System of Medicine" has, we are quite certain, made the one error of that ably edited set of volumes when he throws the weight of his great influence against the naming of diseases by a system of nomenclature analagous to that used in botany and zoology.⁴³ Does he propose to have us forever remain without names to indicate those "groups of certain degrees of constancy" among symptoms? If the grouping and exciting causes are united in a double or triple name all of Professor Allbutt's objections disappear at once. We are already drifting naturally toward it. We can not avoid it if we desire to. No man is strong enough to stay the current for very long. Any system of naming diseases by a single name will perpetuate the wholly false notion that a disease is a something like an entity. The single name and the demon notion were conceived together and will by association always suggest something of each other. A new system that would not only do away with that suggestive association, but that would also force the mind toward a knowledge of the congeries of symptoms would check the very tendency which Dr. Allbutt fears. In the names "typhoid pneumonia" and "tuberculous meningitis" we have already developed the germ of a truly scientific nomenclature. Let us agree to make the existing cause or causes, as soon as known, the generic name of the disease and the lesion or primary seat of the infection the specific name. As our knowledge grows more profound we will be able to group the causes into families if we desire to do so, but at present it is unnecessary.

It is a pity that our bacteriologists have not yet discovered the specific causes of such common diseases as measles, scarlet fever and smallpox. They should have been among the first properly named, but as it is they could only be named provisionally. As soon as we hear of diphtheria pneumonitis, typhoid pneumonitis, erysipelous pneumonitis, streptococcus pneumonitis, diplococcus pneumonitis, etc., we naturally form a mental image of an inflammation of the lungs due to the general cause which the generic title indicates.

With a pliable nomenclature such as this we can have not only diphtheria or diphtheritic pneumonitis,

but we can have diphtheritic meningitis, diphtheritic hepatitis, diphtheritic cystitis, diphtheritic nephritis, diphtheritic carditis, diphtheritic enteritis, etc. In the same manner we can have with typhoid pneumonia all such combinations as typhoid meningitis, typhoid cystitis, typhoid enteritis, typhoid hepatitis, typhoid gastritis, typhoid carditis, typhoid nephritis, etc. Should we discover that in some form of typhoid infection the skin was the chief lesion, we would call it typhoid dermatitis, and if the blood should be found the chief seat of the disease we could call it typhoid hemocytolysis. In case there is no particular localization of the damage, a general name could be supplied to express this idea, and where two, three or more distinct points of infection exist simultaneously this too could be expressed in a name. Where the specific microbe has a double or triple name these would have to be united and shortened, about as chemists shorten long organic chemic names. *Amœba coli enteritis* might be shortened into the name *amcol enteritis*. In this way the binomial system could be maintained for all ordinary affections and a trinomial kept for varieties. We already know that there are varieties of cholera answering to various kinds of spirilla and varieties of malarial affections due to different kinds of plasmodia. In such cases a triple naming would be a better means of telling the cause. As soon as such a system of naming diseases has become current it is but a short step to a corresponding system of analysis as applied to symptoms for the discovery of causes.

No effort has ever yet been made to classify symptoms in a scientific manner so as to aid the physician in making his inductions. As there is really but one disease, varying with the cause or causes and with the extent and location of the lesions, symptoms naturally arrange themselves in interblending groups. There are symptoms common to every disease, symptoms common to large groups of related diseases, symptoms common to small groups of diseases, and symptoms that belong to a single disease. Without a proper system of naming diseases their proper groupings is impossible. Correct the former and we can soon have the latter. With a proper nomenclature we can soon tabulate the symptoms as they appear. First we can find the most general ones that every form of disease manifests as soon as it has reached a certain degree of intensity. Next we can get a list of the symptoms common to the large groups, then to the small ones and finally to the single ones. The last-named symptoms, if correctly gathered, will tell the exciting cause, and when it is found, treatment is simplified to its utmost.

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POTASSIUM IODID IN CEREBRO-SPINAL MENINGITIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. A. MOODY M.D.

MOBILE, ALA.

The object of this brief paper is to emphasize the value of potassium iodid in meningitis, especially in that severe and fatal form known as cerebro-spinal meningitis.

Since deciding to present this subject I have looked through quite a number of the authorities most frequently consulted by the general practitioner, to form an approximate estimate of the appreciation in which this drug is held in the treatment of meningitis. I find that its use is recommended by many of them, but seldom during the stage in which I have found it most efficient. Biddle does not mention it in this connection; neither does Hare in his shorter work, the one most frequently consulted. Potter recommends a longer course of it during convalescence. Wood does not recommend it; neither does Stillé. Bartholow recommends it to remove adventitious products after the acute attack has subsided. Skinner reports Dr. Valten as asserting that it acts almost as a specific in epidemic cerebro-spinal meningitis. Flint says that symptoms of oppression call for potassium iodid. Von Ziemssen states that in a later period of the disease it is of great service. Osler merely remarks that iodid of potassium is warmly recommended by some authors. Aitken says, "no real proof of its utility has yet been brought forward." From the above it will be seen that we are not much encouraged to employ it by those authors most frequently consulted by the general practitioner.

Thirty years ago Tanner said: "With regard to medicines directly modifying the morbid action I know only of one in which the least reliance can be placed—the iodid of potassium." My own experience in the treatment of meningitis leads me to endorse the position of Dr. Tanner. I have witnessed two epidemics of cerebro-spinal meningitis, in the first of which the iodid was not used to any efficient extent, while in the second it was the principal element in the treatment.

In the first epidemic the treatment was purgation, morphin, chloral, the bromids, ergot, blistering and venesection. Nearly all the patients died; some in a few hours, others after many weeks of suffering. Venesection received the credit of saving a few lives, but as a rule both doctor and patient lacked the courage to employ it with sufficient boldness for efficiency. In the protracted cases the iodid was used to promote absorption, but seldom proved effectual.

Ten years later I was called to visit another community stricken with cerebro-spinal meningitis. To illustrate the violence of the epidemic, I will briefly relate its history. It originated in the home of a farmer whose house was a log cabin containing two rooms with an open passage-way between and a detached kitchen. It was built on low, damp, alluvial soil, and was much too close to the ground for the ventilation needed in southern climates. The family consisted of a man, his wife, and five children aged from 8 to 18 years. Water was procured from a well near the house, and the earth was so wet from spring rains that the water could be dipped out at the top of the well with a dipper made from a gourd. The man told me that before his family was attacked he noticed that some half-grown hogs running loose about the premises acted as though they were sick. He said that some of them "took fits and died."

His youngest boy, about 10 years old, was taken with severe pain in his head, back and limbs. The physician who was called to attend him noticed a peculiar flea-bitten appearance on the wrists and chest. He suspected some eruptive disease, but the absence of any considerable rise of temperature puzzled him. The patient soon became comatose, and on the second day of his illness he died. Immediately after his death his mother was stricken and on the following day a brother and a sister developed the same symptoms. The physician became alarmed and sent for me to assist him.

I found the mother dead. The two living cases were suffering with severe pains in the head and back. Any touch upon the limbs provoked shooting pains; temperature but little over 100; pulse very soft and compressible, but regular and slow; there was a peculiarly soft, watery look of the eyes, as though there was lack of tension. There was a rose-colored eruption, thickest on the wrists and arms, but present in varying degrees all over the body. The spots varied in size from that of a pin-point to a fourth of an inch in diameter. They were evidently extravasations. Upon examining the body of the dead mother I found them much larger and darker than on the living, but the doctor informed me that until her death the spots had been rose-colored. I learned that in three other families living near by the same disease had appeared that morning. Each of these new cases occurred in persons who had spent a night or two in waiting on those first attacked. I visited all the cases, and could not doubt the existence of that most terrible of diseases, epidemic cerebro-spinal meningitis. Many kind-hearted neighbors had assembled to help the afflicted family, but when the dreaded name, "spotted fever," began to be whispered among them all left the place except some five or six men who deemed it their duty to bury the dead and remove the survivors from the infected locality. There was a general stampede from the neighborhood, and it is interesting to note that although the disease developed in some of the fugitives it was not communicated to those among whom they had come. Extreme caution, however, was exercised to prevent any unnecessary communication with those who had been exposed.

Remembering the unsatisfactory results of the treatment employed in my previous experience, I decided to give the iodid of potassium a thorough trial as recommended so highly by Tanner. The adults were given from 6 to 10 grains every two hours, children receiving proportionate doses. Pain was controlled

by morphin hypodermically administered, and ergotin was also given. Each case had a cantharidal blister on the occiput and the back of the neck. Light was almost excluded, as a matter of comfort and protection to the eyes, and liquid nourishment was given in small quantities.

The number of cases thus treated under my observation was ten, and other cases which I did not see were similarly conducted. One of the early cases, far advanced before recognized, died. There was no further mortality; the disease seemed to yield visibly as the patients came under the influence of the iodid. Few of them recovered without some permanent injury. Several had the sight of one eye destroyed by suppurative choroiditis. Some lost their sense of hearing. In one case there was paralysis of a limb. I attribute the preservation of life to the iodid, because the ergot, morphin and blisters had utterly failed in my previous experience. During the subsidence of the epidemic another case died in a town six miles or more from the point where it originated. How the disease was contracted is unknown, as there was no traceable communication with infected persons or places. The nature of the case was not recognized by the physician for several days. The treatment was first calomel and then quinin, then morphin, chloral and bromids. I saw the case a few hours before death; there was no eruption, but otherwise the symptoms were well marked.

Since the experience above related I have tested the usefulness of potassium iodid in quite a number of cases of sporadic meningitis, and my confidence in its utility increases with experience. Quite recently I administered 50 grains a day for six days to a child 18 months old. Its father is a thoroughly equipped physician. He agrees with me that the iodid was the first medicine to exert any appreciable influence over the morbid process. The child recovered with the loss of its sense of hearing.

INFLUENCE OF AGE IN CAUSING OPACITY OF THE CRYSTALLINE LENS, AND THE PROPER USE OF THE WORD "CATARACT."

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The subject of the pathology of cataract is too extensive to be profitably considered in the time at our disposal for the purpose; I shall, therefore, confine myself to one or two phases of the influences which determine opacity of the crystalline lens.

The common use of the phrase "senile cataract" argues a general consent in the view that advanced age has some fixed relation to the condition. That it can not be a necessary, or the only causative factor is demonstrated by the large number of young persons that we see with opacity of the crystalline lens, and by the other fact that many reach even an advanced age without suffering from such opacity.

Of recent years much attention has been directed to certain other probable or possible factors. Among these there can be little doubt but that eye-strain exerts an important influence. Many times where there had been recent impairment of vision, and upon

examination lens opacity found to be the cause of it, with the cessation of eye-strain the progress of the opacity has been absolutely checked. In a few, not only has the opacity ceased to increase, but there has been noticeable diminution of it. Such an occurrence is probably not very rare.

It has doubtless happened also to all of us to have encountered cases of lens opacity that have followed acute disease. The most striking cases of the sort that I have seen have been in connection with the grippe or epidemic influenza. In one of these cases three successive attacks of grippe in three different years were each followed by very rapid increase in lens opacity. After the first two there was slow improvement until the patient regained useful vision. The third attack left the vision reduced to the perception of moving objects, rendering extraction necessary.

With regard to renal disease as a cause of cataract, my experience would indicate that it was not very important. The routine of examination of the urine before cataract extraction has shown a comparatively small proportion of cases suffering from albuminuria, or showing casts. Angiosclerosis usually attended with occasional traces of albumin in the urine is quite common among people old enough to be especially liable to cataract. And contrary to what I had before supposed, a recent examination of the history of a series of cataract cases has not seemed to support the view that albuminuria was especially frequent.

The matter of surprise to me was that this study of the subject showed such great frequency of lens opacity in advanced age. The statistics of an ophthalmologist's practice can not always be regarded as reflecting the frequency of certain conditions throughout the community; and yet, it seems to me, that even in that direction the following statistics have some significance, since a large proportion of the patients did not come for the opacity of the crystalline lens, but for other conditions, as acute or chronic conjunctivitis, or the fitting of glasses.

Among 10,000 patients attending my clinical services at the Philadelphia Polyclinic and the Wills' Eye Hospital, all of whom were examined ophthalmoscopically, except those in whom the use of the ophthalmoscope was impossible by reason of opaque media, or closure of the lids, there were 1544 over 50 years of age. Arranging these by five-year periods I find:

Age.	Lens clear.	Some lens opacity.	Totals.	Percentage of opacity.
50 to 55	460	81	541	15
55 to 60	260	50	310	16.1
60 to 65	196	85	281	30.2
65 to 70	99	83	182	45.6
70 to 75	60	71	131	54.2
Upward of 75	23	77	100	77
Totals	1098	449	1545	29

These figures, especially the percentages, strikingly point toward the importance of age in the production of cataract. Yet if we take an affection like toxic amblyopia, especially varieties caused by the abuse of tobacco and alcohol, and arrange the statistics in similar age periods up to the age of 60, the influence of age is quite as striking. Thus the age of twenty successive patients affected with toxic amblyopia, arranged in ten-year periods was as follows:

Under 30	none	in 4627
30 to 40	3	in 2116
40 to 50	8	in 1412
50 to 60	4	in 851
Above 60	5	in 696

Yet we hardly think of toxic amblyopia as due to age. So with senile cataract. While age is certainly a very important factor, it probably for many cases only constitutes a predisposing cause. Before the age of 50 cataract, aside from the result of traumatism, is rare: even at that age and for some years afterward, the cases giving a history of injury constitute a rather large proportion.

It has seemed to me that at this time eye-strain produces a decided effect in increasing the number of cases of lens opacity, since just before that age all patients suffer some strain from their loss of accommodation. The history of individual cases points still more strongly in this direction, many times it includes the rapid increase of the opacity during the period of severe strain from presbyopia, and after that the opacity becomes entirely stationary and remains so under proper supervision of the eyes for years.

Strain of the eyes from presbyopia is one way in which age may predispose to cataract. It is possible that later, in quite an opposite direction, the same influence may be exerted. The connection of cataract with choroidal disease and myopia is one of the few established points of its pathology. Now, the senile and the myopic eye have this in common: that there is less use of normal accommodation and whatever influence it may exert upon the nutrition of the eye is to that extent lost. It is certain that myopic and senile eyes show the same tendency to thinning of the choroid and loss of the retinal pigment layer, and it seems not unlikely that intermittent accommodation has some influence in maintaining the nutrition of the lens. There is besides these specific influences the general failure of nutrition that occurs in old age and it is not surprising that transparency, a highly specialized character, should be lost simply through the general lowering of nutritive activity.

But these statistics suggest another important thought. Of patients upward of 75 years of age, 77 per cent. show some opacity of the lens. Are all such patients to be informed that they are suffering from cataract?

Gould's Dictionary gives as the definition of cataract: "Diminished transparency or opacity of the crystalline lens, or of its capsule." This is substantially the definition given in other works of reference. But cataract, to the general public, means a disease of the eye leading to blindness, and only curable by a capital operation. So long as this condition was not discoverable until it had caused great impairment of vision and was perhaps approaching the proper period for operation, the discrepancy was not great. But now that we recognize the first beginnings of opacity in the crystalline lens, the use of the term "cataract" to indicate slight opacities, when it will be understood to mean early and complete blindness is seriously misleading. The introduction of the phrase "incipient cataract" is doubtless intended to meet this difficulty, but it does it very imperfectly, as must any phrase that retains the objectionable word. Many people have been rendered skeptics as to the honesty of the surgeon by a diagnosis of "cataract" which has not, after many years, been followed by blindness or any serious impairment of vision. Many have been rendered extremely unhappy by dread of blindness from which they were never likely to suffer. There has even been some confusion of thought in the profession upon the subject. I once.

heard a surgeon announce in a State medical society that he favored operation on cataract in all cases when the vision fell to 20/70. I have known a surgeon of respectable antecedents to propose and urge such an operation for a patient who had some lens opacity but who could still see to do fine sewing and read ordinary type with either eye.

If the question of the significance of slight opacities of the lens were one rarely of practical importance, this subject might not be worth while discussing, but where it arises in more than three-fourths of our patients who have reached the age of 75 years it is of great practical importance. My own custom has been not to use the word "cataract" unless the opacity was causing serious impairment of vision, or likely to require operation. In the other cases I have informed the patient of the existence of "lens opacity," and have explained its probable significance, only speaking of "cataract" in response to some direct inquiry as to whether it or anything like it was present. I believe that such a course gives patients a far truer idea of their condition than one which calls all lens opacities "cataract." It seems likely that some such distinction of terms will in time arise. It is probably useless to attempt by recommendation or resolution to introduce such a term, but if the need for it is clearly recognized and appreciated on the part of the profession, the differentiation of language will naturally follow.

DISCUSSION.

Dr. F. C. HOTZ, Chicago—I am sorry that I came in too late to hear the paper and only caught the closing remarks, from which I infer that Dr. Jackson recommends the use of the term cataract only for rather advanced state of obscuration of the lens, so advanced that an operation will soon be necessary, and not to apply it to those slight opacities of the lens which may remain stationary for a great many years. So far as the patients are concerned, I fully agree with the reader of the paper, and just as he has been in the habit of not calling it a cataract when it is only a slight peripheral opacity, so have I restrained myself from using that term in conversation with patients. Certainly these opacities remain stationary for many years; for instance, I had this winter the opportunity to examine the eye of a lady 69 years of age for a readjustment of her glasses, and she told me that thirty years ago she consulted Dr. Agnew in New York, who told her that she had a cataract in one eye. I was surprised at the information, because the vision in that eye was still $\frac{20}{40}$. At the examination in the dark room I found some short, equatorial streaks in the lens, so that evidently, if the information was correct, and I have no reason to doubt the lady's word, these equatorial streaks existed thirty years prior to my examination. As cataract is a condition which in the public mind is considered as a sign of advancing life, and as this lady after receiving the information from Dr. Agnew might have gone to some of these renowned healers, or to that institution in New York State that cures cataract by absorption, or if she had meddled with Christian scientists, who claim to stay the threatening blindness, she certainly would have had apparently good reason for giving credit to such healers for the fact that her eyesight had been preserved for thirty years. From such considerations I think it is a good suggestion on the part of Dr. Jackson that we should not use the term cataract for all conditions of opaqueness or disturbance of the lens transparency.

Dr. G. C. SAVAGE, Nashville—I should like to say a word relative to the causation of cataract. I think that one cause is a diminution of the nutrition of the lens because of failure of ciliary power. Whether we agree with Collins or not, that there are glands in the ciliary body which secrete fluid essen-

tial to the well-being of the lens, we must agree that the lens gets its nourishment largely from the ciliary body in some way. The more active the muscle of the ciliary body the better will be the nutrition of that body and the lens. I believe it is just as possible to develop a ciliary muscle which is weak, or to prevent its growing weak, as it is to develop any other muscle of the body, and it seems to me that the patient should be given the advantage that can be derived from restoration of the ciliary's power. I am approaching the age at which presbyopia usually comes; and more than a year ago I found it very difficult to extract foreign bodies from the cornea. I was beginning to hold my paper and book farther from me than was comfortable. I began then the exercise of my ciliary muscles and have now full restoration of power. I mention this to show you that the ciliary muscle can be developed and old sight be delayed, perhaps indefinitely. In this way may not the lens be made to retain its transparency as well as its elasticity for a long time? Thus we may be able to prevent the development of cataract. This exercise is effected by means of weak, concave, spherical lenses (—S. O. D.) in simple spectacle frames. For ten minutes each night I sit down, with the light turned low, and with the view of keeping my young sight and maintaining lens transparency, I exercise my ciliary muscles. I sit eight or ten feet from the light with my astigmatic glasses on; I raise and lower the exercise lenses at intervals of three seconds, for ten whole minutes. I can read without the use of old-sight glasses and I hope to be able to do so for years to come; and also hope to keep the nutrition of my lens so good as to prevent cataract.

Dr. LEARTUS CONNOR, Detroit—It occurs to me that if Dr. Savage's rule is correct, there need never be any increase in the inorganic matter in our tissues if we only exercise enough. It ought to be true of the biceps muscle as well as of the ciliary muscle. All should retain the proportion of organic matter that exists in youth. I should be very glad to think that my friend is right and that we have arrived at the basis of an elixir of life and need not die, for death comes from the increased proportion of inorganic matter in the several tissues of the body.

I think, though, that the doctor is right in one point; that is that the improved nutrition of the lens, however effected, is a feature in preventing the increase of these opacities. I have under my observation several persons in whom I recognized opacities in the lens, at times, varying from ten to eighteen years ago, who at that time had errors of refraction that were corrected, and the result of that correction has continued to the present time while the lens opacities scarcely changed. I think it was from Dr. Risley's paper, calling attention to the relation between the eye strain and the production of a cataract, that I got my suggestion on this point. At any rate it seems rational that if you can prevent abnormally disturbed nutrition you can retain its normal transparency. I think Dr. Risley at one time collected a vast amount of statistics in Philadelphia showing the proportion of cataracts as seen many years before and the slight change that had occurred. The result was that the greater attention to errors of refraction had diminished in Philadelphia the proportion of cataracts.

The only objection I see to Dr. Jackson's method, which I think is entirely sound, is that some other person may see the patient, tell him that he has a cataract, and the patient thinks the first examiner knew nothing about it. Perhaps that might be overcome by telling some of the patient's friends.

Dr. FRANK ALLPORT, Chicago—I suppose that a recitation of extreme cases in this particular might be valuable. We all see cases, from time to time, of opacities of one kind and another in the lens that do not increase from year to year, but Dr. Hotz's case reminds me of an instance, which I re-

ported in one of the journals, though I do not remember now just where.

A lady almost similarly situated came to me a year or two ago, and while under ordinary circumstances I would not have paid so much attention to what she said, I was forced to believe what she said because she was the wife of a physician and a woman of unusual powers of observation. She came for a correction of refractive error, and in the course of examination I noticed quite a considerable opacity at the periphery of the lens of both eyes. I spoke to her about it and she said that twenty-five or thirty years before she had been examined in New York, I think by both Drs. Agnew and Knapp, at least the former, and he told her to prepare herself for a cataract extraction in the course of a year or two. Her vision never decreased and she could see just as well at the time I saw her as she did twenty-five or thirty years before. This shows that we might allow these patients to retain their mental equipoise for a long time rather than disturb them with the information that they have a cataract, which is synonymous in their minds with the rapid approach of blindness.

I think we should tell them they have an opacity of the lens and not mention the word cataract, or else tell some of the friends of the family so as to protect ourselves. We all know that the correct adjustment of glasses and the building up of the health will put off the full development of the cataract in many instances for a number of years and it seems too bad to have sensitive patients disturbed for many years unless it is absolutely necessary to tell them.

Dr. JACKSON—I recall one case that is perhaps worth mentioning because it was seen by three or four prominent oculists. It was an old lady, then about 60 years of age, who had lost vision rapidly until she could not see to read at all. She had extensive lens opacity and it was expected that within a few months the cataract would be ready for extraction. All her eye work ceased. Pretty soon her vision began to improve somewhat, and it was found that it could be further improved by the aid of glasses, and in the course of a year or two she got back to reading. Now, after over twenty years, she reads magazines, newspapers, etc., for several hours a day and does not suffer from her impairment of vision. The condition is now one of almost entire opacity of the periphery of both lenses, with a small tunnel of clear lens substance right back of the pupil. It is not a peculiar form of opacity, but I think it might happen in almost any case of cataract that the progress of the opacity might be checked, or so far as we know, cease spontaneously. The point raised by Dr. Connor that the patient may be alarmed by somebody else and think we had overlooked the condition might occur, is an important one. I have discussed cataracts with my patients for the distinct purpose of preventing their being frightened by some one else. Where I have watched the lens for some months or years, where I knew the cataract was not progressive and where it was likely the patient might pass into other hands, I have gone out of my way to give the patient a full account of the condition of his eyes, to guard against that risk. I think this is just as important as it is to avoid the term cataract in many instances.

A FORM OF CORNEAL TURBIDITY EASILY OVERLOOKED.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. GRADLE, M.D.,
CHICAGO.

The form of corneal cloudiness to which I wish to call your attention escapes detection when the eye is examined by either direct or ophthalmoscopic inspection. Apparently the cornea has its normal lustre

and transparency. The turbidity is only detected on using a highly magnifying lens with lateral illumination. It is of course known that the normal cornea is a turbid medium. This can be shown strikingly when we use an electric light for focal illumination, and throw a sharp image of the incandescent filament upon the corneal surface. It seems to be less well known that the turbidity revealed by the focal illumination can be resolved by a strong lens into a granular appearance. There are differences in this respect between apparently normal eyes. The more turbid the cornea, the better defined the grain. I may add that by this method of examination other anomalies of corneal transparency may be found, which escape detection otherwise. A strong lens will reveal quite an amount of diffuse cloudiness around opacities, which, even with ordinary lateral illumination, seem well circumscribed. I have observed too, after some cataract extractions, that imperfect vision may be due to a corneal haze which I was unable to demonstrate by other modes of examination.

The form of corneal turbidity which is the object of this paper, appears simply as an exaggeration of the normal cloudiness. When both eyes are alike, it is difficult to say whether we observe the normal haze or a moderate exaggeration, unless the turbidity, and especially its granular nature, is very pronounced. If, however, the trouble is one-sided, the comparison between the two eyes proves decisive.

I have observed this corneal turbidity in patients complaining of asthenopic symptoms, with, however, more burning, smarting, or a feeling of "foreign body" than is usually mentioned in connection with refractive errors. The eyes become blood-shot on continued exertion. While the turbidity can not be seen with the ophthalmoscope, it still interferes with vision enough to lower it below the normal, even after the most painstaking correction of existing errors. It has seemed to be somewhat characteristic that these patients were uncertain in their answers regarding the influence of glasses, to an extent rather striking in view of the nearly perfect vision.

I will first quote the one-sided instances, as they are the most conclusive. Both the patients had bilateral errors, but complained essentially of the one eye. It was noticeable that the eye was irritated, as it presented a slight, but unmistakable inflammatory ptosis. There was no ciliary injection, but the deep scleral veins next to the upper and lower transition folds were prominently distended. On focal illumination and inspection through a short-focused lens, the cornea of the irritated eye presented distinctly more interstitial haze and fine "dottings" than the other eye; otherwise the eye showed no anomaly that could account for the lowered vision.

Case 1.—Mrs. L., 53 years of age. Complained since many weeks that the left eye feels weak and gets tired on exertion, and ultimately begins to burn and becomes slightly blood-shot. She has changed her formerly satisfactory glasses to 3, 5 D, but without benefit. The right eye appears externally normal. The lid aperture of the left eye is slightly smaller, and the left lids are a trifle more vascular than the right. On exposure the scleral veins next to the transition folds are visible in the left eye. The conjunctiva is normal, but everting it causes a trifling superficial injection on the eye-ball. Tension, pupils and fundus normal in both eyes. Lateral illumination and the use of the lens show an unmistakable difference in the turbidity of the two corneæ.

R. E. V $2\frac{1}{100}$ Sph +1.5 = $2\frac{1}{25}$.

R. E. V $2\frac{1}{100}$ Sph +1 & Cyl +1 axis 180 = $2\frac{1}{30}$.

Being somewhat uncertain how to interpret the condition

which I did not think was fully accounted for by the astigmatism, I advised rest of the eyes and the inspersion of calomel in the left eye. One week later the same objective appearances, but with comparative comfort except on use of the eyes. She was advised to use for work;

R.E. +3, 5.

L.E. +3, & Cyl. +1 axis 180.

One week later she expressed herself satisfied, but the objective appearances were unchanged. One month later she admitted that she had even less discomfort in the left eye than at first when she began using her glasses. The objective difference between the two eyes still existed, but was less pronounced than originally. The calomel had been continued during this time.

Case 2.—Miss S., 35 years of age. Has noticed since years a small, faint spot of circumscribed redness on the external part of the sclera of left eye. Four years ago there appeared a "blister" on this spot which soon healed. On account of headaches, she received glasses (R. Cyl.—1, axis 180; L. Cyl.—1, 25 axis 180 & Sph.—0.5), which gave her relief. The left eye has, however, remained smaller than the right, and is sometimes bloodshot. Lately she has had more or less burning pain in the left eye only. The right eye is externally normal, with the exception of slight distention of scleral veins next to the transition folds. The left lid aperture is smaller, the lids a trifle more vascular, the scleral veins at the periphery a trifle fuller than in the right eye. On the sclera of the left eye external to the cornea, there is a small, red spot made up of separate dilated vessels, but without any inflammatory appearance (hence, no episcleritis). The conjunctiva is slightly vascular in the superior transition folds in both eyes. Lateral illumination with magnification shows the left cornea decidedly more turbid and "dotted" than the right. The only ophthalmoscopic anomaly is a large cone downward in both eyes.

R.E. $2\frac{3}{40}$ Cyl.—1, 25 axis 180= $2\frac{3}{20}$ —

L.E. $2\frac{3}{40}$ Cyl.—1, 25 axis 165= $2\frac{3}{30}$ —

(With some uncertainty.)

Her glasses were changed, and one week later she expressed herself as nearly satisfied. She was ordered to insperse calomel. Eight months later she returned. She had lost all complaints after using calomel for a few weeks except the objective appearance, but since some weeks she has again more or less steady discomfort in the left eye, in the form of burning and scratching, increasing on exertion. The objective appearances are the same as the previous year except that the difference between the two eyes is not so pronounced. As far as one can judge in such subtle matters, there is less haze of the left cornea than previously, but a little more scleral vascularity on the right side. There is, however, still slight but unmistakable narrowing of the left lid aperture. She has now been under observation three months, and has nearly lost the objective appearances as well as the subjective discomfort; yet the treatment was hardly more than expectant. She has used calomel in both eyes, paid some attention to general hygienic measures, but has not abstained from moderate eye work. Although the left cornea seems to have cleared slightly, the vision has not improved, but her answers on refractive examination are more positive than formerly.

In the following cases the disease was not one-sided, but more pronounced in one eye than in the other. The cases are, therefore, not as clear as the two previous instances.

Case 3.—Mrs. K., 27 years of age. The eyes get tired on use, and exertion gives her dull frontal headache. Since three months she has a feeling of a foreign body in the left eye, which is sometimes bloodshot. The eyes and conjunctival surfaces are not reddened, but in the periphery the scleral veins are fuller than normal. The left eye appears a trifle smaller than the right. There is increased corneal haze apparently alike in both eyes—of course only visible by focal illumination. Fundus normal.

R.E. V= $2\frac{3}{40}$. Cyl.—1 axis 90 & Sph.—.75= $2\frac{3}{25}$.

L.E. V= $2\frac{3}{40}$. Cyl.—1 axis 95 & Sph.—1.5= $2\frac{3}{30}$.

She was ordered to wear Cyl.—1 and Sph.—0.75, which proved most comfortable on trial. Twenty-two months later she returned, stating that the glasses had relieved the pain and headache, but for a while she still felt slight irritation in the left eye, and is probably not absolutely free from it yet. The objective condition is the same as previously. The left lid aperture a trifle smaller than the right.

Case 4.—Mrs. M., 29 years of age. Is in poor health since her last confinement; has pelvic disease. Since half a year she gets tired from eye work, which ultimately gives her a headache. The eyes are apt to become bloodshot, and the lids often droop so as to give her a sleepy appearance. The right

eye is a trifle smaller than the left. The ophthalmoscope shows the edge of the right disc slightly blurred. The corneae show both more than the normal turbidity.

R.E. V. $2\frac{3}{40}$ Cyl.+0.5 axis 180 $2\frac{3}{35}$.

L.E. V. $2\frac{3}{40}$ Cyl.+0.5 axis 180 $2\frac{3}{30}$.

She was ordered Cyl.+0.5 and the use of calomel as well as general hygienic measures, as I did not think that the local condition explained fully her complaints. However, two weeks later she admitted that she was much better, though still not able to use her eyes indefinitely without some suffering.

Case 5.—Miss S., 41 years of age. Had suffered much with headaches in the form of migraine, which two years ago were said to have been relieved by the use of a Cyl.+0, 5 axis 90. Lately she has again had more headache, probably from close application to study and want of exercise. On steady exertion she gets burning in the eyes. I found the refraction fully corrected by her glasses, though her sight did not reach quite $2\frac{3}{20}$, especially in the left eye. Her accommodation was normal. I ordered only hygienic measures, which proved sufficient to give her relative comfort.

Six months later she returned, claiming to be fairly well satisfied, except that she still has burning of the eyes, lately somewhat more annoying. There is no injection whatsoever, but unmistakable increased turbidity of the corneae, and in the left eye more than in the right. At the previous time she had not been examined in this respect. As her accommodation seemed slightly insufficient, she was advised to use Sph.+0.75 for a trial for work, but she has not reported the result.

Case 6.—Mrs. H., 57 years of age. Slightly tired on use of the eyes. Occasional migraine. Comes mainly on account of twitching of the left upper lid. The only anomaly found was a difference in the transparency of the two corneae, the left being a trifle more hazy on focal illumination, and presenting a decidedly more marked—relatively coarse—grain.

R.E. V. $2\frac{3}{40}$ Cyl.—0.5 axis 165= $2\frac{3}{35}$.

L.E. V. $2\frac{3}{50}$ Cyl.—1 axis 135= $2\frac{3}{35}$.

Although she could decipher a little more positively with the left eye after correction than with the right, she was still definite in her statement that the letters seemed more blurred to the left eye than to the right. The above glasses given to her proved, however, satisfactory.

Case 7.—Mr. T., 20 years of age. Sight is blurred at times to a variable extent. Headaches from long use, and the eyes get red and watery, the watering being more annoying on the right side. He had lately obtained glasses (R.E. Cyl.—0.75 axis 180; L.E. Cyl.—0.25 axis 180 & Sph.—0.5), but was quite doubtful as to their value. I found his optic condition,

R.E. V. $2\frac{3}{40}$ Sph.—0.5 & Cyl.—0.5 axis 90 $2\frac{3}{35}$,

L.E. V. $2\frac{3}{40}$ Sph.—0.5 & Cyl.—0.5 axis 90 $2\frac{3}{35}$,

with considerable hesitation concerning these glasses. The corneae were both decidedly turbid and almost stippled, so that there could be no doubt about its being a morbid condition, yet neither direct inspection nor ophthalmoscope showed this anomaly. There was slight congestion of the palpebral conjunctiva, but no actual catarrhal condition. The lachrymal puncta seemed normal on the left side, while on the right the lower one could not be found, and the upper one appeared unusually small. As I could not account for the watering, except on the supposition of a lachrymal stricture, I divided the right upper canaliculus down into the sac, finding indeed much obstruction in the path. In view of the corneal condition, I suggested calomel to be dusted in. Contrary to my expectation, the blurring and watering improved decidedly in the course of a fortnight. On using the probe a few consecutive times, the patency of the right passage was easily maintained. The left lachrymal channel was never examined. At the end of the third week he was contented to stop further treatment, as he was practically free from complaint, and his vision had risen to $2\frac{3}{30}$. As far as one can judge, both corneae appeared less turbid.

Four months later I found him free from discomfort, no more watering, vision satisfactory, though only $2\frac{3}{30}$, and the cornea apparently not as turbid as originally. He accepted the same cylinders as before, but was doubtful about the concave spherical glasses. He felt, however, no need for glasses.

All these patients had refractive anomalies, but these errors did not account fully for the complaints in the majority of instances, especially the one-sided ones. There was more burning and external irritation than is found in typical cases of refractive errors. While glasses were of benefit in all but the last instance, they did not give immediate and prompt relief to all symptoms. In the last instance, indeed, the complaint ceased even without optic correction.

Yet the refractive anomaly seems to me of some etiologic importance since the more ametropic eye showed the most irritation and the greater corneal turbidity in all anisometropic instances.

It was noticeable that these patients showed more than the ordinary hesitation in choosing glasses. In none could I obtain absolutely perfect vision. A condition of irritation was manifest in the one-sided instances, and in some of the unequal bilateral ones, by the slight but unmistakable ptosis. Indeed, it was this symptom which induced me to use lateral illumination, in the expectation that I might find a minute circumscribed corneal infiltrate as the possible lesion. Instead of this, however, there was the increased corneal turbidity entirely diffuse and not circumscribed. I do not consider this a keratitis, as there was neither dimness of lustre nor opacity recognizable by the ophthalmoscope. Yet there must have been some irritative lesion, as suggested by the slight ptosis, as well as the fullness of the scleral veins next to the transition fold. The conjunctival congestion noticed in some was not always present, and hence was either secondary or irrelevant. As to the nature and exact site of the irritative process, I can not express an opinion. The corneal turbidity seems to me a secondary consequence, probably due to lymphostasis. It seems to account, however, for the imperfection of vision.

The irritative condition here described, is, I believe, a not infrequent bilateral occurrence, and, as such, a factor in many instances of rebellious asthenopia. But when bilateral the diagnosis is difficult. For the very symptoms which suggest it, the slight inflammatory ptosis, the vascularity of the sclera next to the fornix, are so little pronounced that they are scarcely observed unless unilateral and thus accentuated by comparison. The corneal turbidity itself is, as I emphasized, but an exaggeration of the normal condition. As the normal turbidity varies somewhat, the diagnostic judgment is easily at fault, unless the haze is relatively coarse or a difference between the two corneae facilitates the comparison. The first bilateral case, however, that I observed not quite two years ago, showed such a marked turbidity and coarse "grain" that it could be easily and positively pronounced morbid; indeed, I hesitated whether or not to call it keratitis. Unfortunately I saw that patient only once, probably because the correction of her astigmatism proved relatively satisfactory. I have records of five other patients whom I would place in the same class. They all had more or less burning or smarting sensations not fully accounted for by their ametropia, as this was either minimal, or as its correction gave only partial relief. On using the eyes they became bloodshot. In all cases the vision was not quite equal to 20/20, and glasses, if accepted at all, were passed upon with much hesitation. In all these instances the corneae seemed to me less than normally transparent. In some my diagnosis seemed definitely established; in others I remained in doubt on account of the feebly pronounced objective appearances. I can recall many instances besides that presumably belong to this group from my former experience before I used lateral illumination in such patients systematically, but of course lack the essential objective criterion in my records.

DISCUSSION.

Dr. L. J. LAUTENBACH, Philadelphia—I think any one who uses the ophthalmometer extensively will have noticed a large

class of cases of opacity of the cornea not recognizable by the usual methods of examination. No ophthalmoscopic examination is equal to that which we get by taking the incandescent filament as our source of light, using its reflected lines to indicate the exact contour of the inside of the eyes as well as of the corneal layers. It is one of the best ways of carefully studying the corneal nutrition. The ophthalmoscope thus gives us knowledge not obtained in any other way. I simply mention this to call attention to the advantage of having the best instruments for bringing out the various fine anatomic and pathologic points.

The causation of these cases seems to me to reside in a disturbance mainly dependent upon blood conditions. These cases usually give a rheumatic or syphilitic history, though it is not always present. I expect in a very short time to bring forth a paper covering this very ground. It covers the case of a patient who was operated upon for cataract and where this peculiar opacity of the cornea has been greatly controlled by the use of glasses. In another similar case I am not using glasses, but with the knowledge of the man, am studying the changes that are taking place in his cornea.

Dr. EDWARD JACKSON, Denver—I have seen a few cases such as Dr. Gradle refers to, and I agree with him in thinking that eye strain is a very important factor in the causation. The condition has yielded to the persistent use of one of the slow mydriatics, used sometimes for three or four weeks.

Dr. HAROLD GIFFORD, Omaha—When Dr. Gradle announced the subject of his paper to me I thought it time to say something of a form of opacity which I have been demonstrating to my friends for some years. I have called them normal opacities of the cornea. I have never yet seen a cornea which with proper illumination and examination you could not dissolve the haziness into little spots and clouds distinct from one another. This is not easy to see and recently when I tried to demonstrate it to some gentlemen in New York, I failed entirely for want of a proper lens. The haze which you see with the ordinary pocket lens resolves itself when you get a magnifier of five or ten diameters into these little clouds. I think the explanation of that is that they represent the so-called corneal corpuscles and they are more prominent at times because of their filling up with leucocytes and that may account for the changes taking place under eye strain. I am sure that it is a perfectly normal condition and that any of you who take the proper means can demonstrate it to your satisfaction. If there is the slightest sort of irritation, be it an ulcer or foreign body, you will at once find these opacities much larger and tending decidedly to run into each other. They are more easily seen with a dilated pupil.

Dr. J. F. FULTON, St. Paul—I am very glad that Dr. Gradle has introduced this important subject, because it covers a class of cases that has embarrassed us very much. There is no doubt they are due to strain of some kind, and in many cases I think is a stage of active keratitis. This condition is not only due to refractive trouble, but frequently to muscular trouble, and anything that relieves the strain will improve the condition. It becomes therefore important not only to correct refractive errors, but to correct the muscular condition.

Dr. GRADLE—I mentioned the incandescent filament as a method of examination to show the normal turbidity, but it has no clinical advantage. I can confirm what Dr. Gifford said about the normal cornea. The haze can be resolved into fine dots or clouds and sometimes into a few comparatively coarse dots. It is difficult to say on examination of an eye whether the turbidity you find is more than normal or not. I can not do it except in one-sided instances or in those cases of bilateral trouble where the turbidity is decidedly increased.

I consider this condition very common, for I have on record at least six cases since I began to observe the trouble two years ago, of the same condition existing in both eyes uniformly, but the

difficulty of diagnosis here is great. The cases are asthenopes that complain of external irritation of the eyes, sandy feeling, burning, etc. But the pronounced symptoms of the one-sided cases fail us in some of these bilateral cases. The first case I saw was so pronounced that I wondered whether or not it was keratitis. The other cases were not so pronounced, but in all there was sufficient turbidity to enable me to say that there was deviation from the normal.

BACTERIA ONE OF THE CHIEF ETIOLOGIC FACTORS IN DISEASES OF THE EYE.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ELLET ORRIN SISSON, M.D.

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KEOKUK, IOWA.

While the relation of bacteria to general diseases has been proven beyond a doubt, and with the result that the practice of medicine and surgery has been practically revolutionized, and placed on a more thorough scientific basis than at any time in its history, the special field of ophthalmology has also received attention, and although we have but entered upon this line of research, we are able to report several important discoveries which are of inestimable value to the ophthalmologist, and which will undoubtedly be followed by others, serving to explain many hitherto misunderstood phenomena.

It is perfectly reasonable to suppose that bacteria should be one of the chief etiologic factors in the production of diseased conditions in the eye, when we take into consideration the exposed position of the organ. We have the moist surface of the conjunctiva presenting itself and furnishing an excellent lodging-place for all sorts of deleterious substances present in the air. It is rubbed by soiled fingers, washed with impure water from rivers, creeks and ponds, wiped with soiled towels, handkerchiefs, and whatever else comes to hand. Moreover, the slight alkalinity and small amount of proteid material contained in the normal secretions, as well as the fact that there are folds and crypts in the conjunctival membrane, favor the development of whatever germs accidentally enter. But aside from all these means of infection, an even more dangerous source of contamination is from the nose by way of the nasal duct and lachrymal sac, the continuity of the mucous membrane between these structures furnishing an excellent means of conveyance for saprophytic and parasitic (pathogenic) organisms from the nose to the eye and vice versa. Again, infection of the conjunctiva may occur from disease of neighboring bones and an inflammation of the sinuses, especially the maxillary sinus, or it may appear by the conveyance of micro-organisms to the conjunctiva through the blood- and lymph-vessels in cases of diseases of remote organs.

The various researches of Sattler, Michel, Fick, Weeks, Shongolowicz and many others, have clearly established the constant presence of numerous harmful as well as harmless bacteria upon the eye, and by this demonstration have shown a factor in prognosis which had not previously been considered.

Among the diseases in which the causative rôle is played by bacteria, we note first acute catarrhal conjunctivitis; that this condition is of microbic origin there can be no doubt. Gifford,¹ in an examination

of forty cases of acute catarrhal conjunctivitis, ascertained the cause to be the pneumococcus of Fraenkel, which, according to the researches of Gasperini as reported at the Eleventh International Congress in Rome, is shown to be one of the most frequent microbes that inhabit the conjunctival sac. Gifford proved that the pneumococcus really caused the disease, by successful experiments in inoculating with pure cultures. According to Weeks, acute catarrhal conjunctivitis is caused almost exclusively by a small bacillus which he was the first to study thoroughly, and his observations have been confirmed to a large extent by Moran and Beach. In acute blennorrhœa of the conjunctiva or purulent ophthalmia, the etiologic moment is the introduction into the conjunctival sac of some of the specific discharge from the urethra or vagina containing the gonococcus of Neisser. Kroner² examined ninety-two cases of ophthalmia neonatorum and found the gonococcus with "perfect ease" in sixty-three of them. In other cases it was difficult to find, but was successfully demonstrated. Dr. Th. Gelpke³ recently, in a very interesting article, reports the results of a bacteriologic investigation carried on in conjunction with Professor Migula in an epidemic of acute purulent ophthalmia. After very careful observations they determined the cause to be the bacillus septatus. Koch and Gaffke found in a highly contagious conjunctivitis small rods resembling those of mouse septicemia, and Kartulas succeeded in growing the same on agar as fine, gray points, becoming confluent, making a stripe having a fatty appearance, which he considered as identical with the Leber-Kuschbert xerosis bacillus, but this Gelpke doubts after examinations of Leber's preparations. Schmidt found a form morphologically resembling the albus, and Parinaud one resembling the gonococcus, which Morax identifies as the streptococcus.

Another disease which, as we all know, is of bacterial origin, but which fortunately is rare, is diphtheritic conjunctivitis. Here, in the majority of cases, we have the disease extending by the avenue previously neglected, namely, from the nose by way of the nasal duct and lachrymal sac. Fuchs⁴ says von Graefe observed many cases of diphtheritic conjunctivitis during epidemics of diphtheria in Germany, that "in lands where diphtheria prevails the disease appears, either sporadically or as an epidemic," that "at the time of an epidemic of diphtheria, other inflammations of the conjunctiva show a tendency to assume all at once a diphtheritic character." Fraenkel and Uthoff have found that diphtheria bacilli are not uncommon in the conjunctival sac. Escherich reports two cases in which diphtheria bacilli were found in the exudate. In the same category as diphtheritic conjunctivitis comes tuberculosis of the conjunctiva caused by the bacillus tuberculosis of Koch. This condition is usually secondary to general tuberculosis, but Cheney of Boston reported a case before the American Ophthalmological Society, 1896, where the primary lesion appeared on the conjunctival surface of the left upper lid, and presented a typical appearance. Tubercle bacilli were found on microscopic examination. The glands in front of the ear were affected when first seen. Frequent examination of the chest failed to elicit any trouble in the lungs. Patient disappeared

¹ Archives of Ophthalmology, 1896.

² Bericht über Sitzungen der gynäkologischen Section der 57. Versammlung deutscher Naturforscher und Aerzte zu Magdeburg, Vol. ii, 34.

³ Graefe's Archiv für Ophthalmologie, xlii, 1896, p. 97.

⁴ Fuchs: Lehrbuch der Augenheilkunde, S. 93, 1887.

from the clinic, May 26, and July 4, died of general tuberculosis. The main trouble just preceding her death seemed to be in the throat. E. Franke⁵ reports a case where, in a seven-year-old boy of healthy parents, there appeared numerous blisters on the ocular conjunctiva, and little follicles in the retrotarsal fold of the lower lid, together with swelling of the pre-auricular gland of the right side. In a piece taken for examination there were giant cells and tubercle. A small portion of the excised conjunctiva was placed for experiment in the anterior chamber of a rabbit's eye; a tubercle of the iris formed in which bacilli were found. In the case of the boy, the entire diseased spot of the conjunctiva was removed, together with the pre-auricular gland. For a year afterward the boy remained without eye disease.

Bacteriologic research in connection with xerosis or xerophthalmos has resulted in the discovery of a bacillus which is believed by many investigators to be the cause of the disease. In the experiments conducted by Kuschbert and Neisser with this bacillus a moderate inflammatory reaction was obtained, while Leber describes a catarrhal condition of the conjunctiva which might be somewhat due to staphylococci present, and as previously mentioned, it has been confounded with the bacillus kartulis. In short, the descriptions of the xerosis bacillus are, in its morphologic and biologic relations, somewhat conflicting, so that only carefully conducted observations and experiments will succeed in establishing it as the micro-organism of xerosis.

The first bacteriologic "arbeit" upon trachoma seems to have been done by Sattler,⁶ who found small cocci of biscuit shape, joined in pairs but separated from each other by an intervening space, and in size and appearance much resembling the micrococcus gonorrhoeæ. This organism, described by Sattler, though it resembles the gonococcus, is certainly a different organism. Baumgarten and also Kartulis have taken exception to its specific action, by showing that it was absent in many cases of ordinary trachoma and in the cases of the virulent ophthalmia of Egypt. While in Egypt in 1882 and 1883, Koch⁷ paid some attention to the ophthalmia prevalent there, and he reports that the cultivation experiments from the conjunctiva of these cases discovered the presence of the gonococcus and a tiny bacillus. Michel⁸ found in numerous cases of Egyptian catarrh a diplococcus much resembling the gonococcus, but smaller. While both of these observers were in accord as to the shape and size of the organisms found by them, the latter alone was successful in his inoculations. Schmidt⁹ differed again, and continually found in the secretions small, perfectly round, isolated cocci without a dividing septum, surrounded by a clear, gelatinous area, and resembling the staphylococcus pyogenes aureus. They occurred free and also in the protoplasm of the epithelial cells. In this connection let us point out that the morphology of the staphylococcus pyogenes aureus is now well known to be exactly that which Schmidt rejects. Schmidt found that the organisms which he observed readily induced trachoma in birds, which were very susceptible, but that mammals contracted the disease only after numerous repeated inoc-

ulations. His studies were thorough, comprising sixty-three cases, in forty-nine of which this coccus was found.

Kucharski¹⁰ investigated twenty-six cases of trachoma and found numerous bacteria, among which were staphylococcus pyogenes aureus, bacillus subtilis, bacillus mesentericus vulgatus; when these accidental organisms were excluded, his cultures all showed one characteristic organism. This organism was a diplococcus of the size and shape of the gonococcus, possessed of a "springing movement." Sometimes it was seen to occur singly, sometimes in groups; sometimes short chains were observed, sometimes a figure B. The description of his coccus is thorough and excellent. Unfortunately, while it did not seem specific, he concluded to add it to the literature of trachoma. Goldschmidt's¹¹ coccus corresponds very closely to that of Michel.

Very remarkable results were obtained by Washejewski,¹² who studied thirty cases of trachoma in its various stages. He found single cocci and groups of cocci enclosed in the lymphoid cells, the red blood corpuscles and the epithelial cells. He was unable to find any other organisms. The cocci thus enclosed in the cells resembled the gonococcus.

Staderini¹³ found a coccus much like the cocci already described. Its morphology was very similar to that of the gonococcus. Baumgarten investigated this organism and could not see that it differed from the staphylococcus pyogenes aureus.

Wittram¹⁴ studied thirty-nine cases of trachoma and discovered cocci similar to those of previous authors, but as far as he could determine, inoculation experiments were all negative in their results.

Shongolowicz¹⁵ introduced an interesting innovation in the etiology of trachoma by describing a specific bacillus which he found in seven out of numerous cases which he studied. Inoculations of pure cultures of this bacillus under the skin of two white mice, one guinea pig and one rabbit gave no results. Sixteen inoculations of pure cultures of the bacillus upon the conjunctiva of five rabbits, two dogs, four pigeons, one guinea pig, two white mice and two cats, were all productive, not of trachoma, but of a somewhat similar disease.

Alt,¹⁶ in a paper read at the last meeting of the Western Ophthalmological and Oto-Laryngological Association, entitled "Recent Researches in the Histopathology of Trachoma," reports as the result of his investigations, which have been very thorough, the finding of a parasite which he deems the cause of the disease. He found them in follicular conjunctivitis as well as in trachoma. From the similarity of the climatologic conditions under which malaria and trachoma seem best to thrive, Elze,¹⁷ like many another before him, drew the conclusions, that the same or similar cause must bring about both these diseases. He observed, in one case, in the secretion, as well as in the granules, certain formations, which he thinks are monads, and which he especially likens to the

¹⁰ Bakteriologisches über Trachom, Centralbl. f. Prakt. Augenheilkunde, 1887, xi, p. 225.

¹¹ Zur Aetiologie des Trachoms, Centralbl. f. Klin. Med., 1887, No. 18.

¹² Zur Aetiologie und Therapie des Trachoms, Wojenno-med. Shurnal, October, 1887.

¹³ Ricerche sulla histologia e sulla patogenese de la conjunctivite trachomatosa, Annali di Ottalmologia, 1888.

¹⁴ Bakteriologische Beiträge zur Aetiologie des Trachoms, Diss., Dorpat, 1889.

¹⁵ St. Petersburg Med. Wochenschrift, 1890, N. F., Bd. vii, p. 247, Zur Frage vom dem Mikroorganismus des Trachoms.

¹⁶ American Journal of Ophthalmology, Vol. xv, No. 4, p. 97,

¹⁷ Berlin Gebr. Borntraeger, 1897.

⁵ Festschr. zur Feier des 80 Jahr. Stiftungsfestes des aerztl. Vereins zu Hamburg, Leipzig, 1896.

⁶ Bericht über die xii. Versammlung der Ophthalmol. Gesellschaft, 1881.

⁷ Wiener Med. Wochenschrift, 1883, p. 1550.

⁸ Archiv f. Augenheilk., Bd. xvi, 1886.

⁹ Dissert. St. Petersburg, 1887, Ueber die Mikroorganismen bei den Trachom und einigen anderen mykotischen Krankheiten der Bindehaut des Auges.

trichomonas batrachorum, and proposes to call plasmodia.

Thus the bacteriology of trachoma is of special interest, and, while the majority are inclined to the opinion that at the present moment we have no reason for regarding any bacteria as specific for trachoma, still no one will deny that the bacteriologic researches in connection with the disease have been productive of much good, as everything points to its being a germ disease, and as we have seen, there seems to be a pretty well established connection between trachoma and gonorrhœa, and it is not improbable that the rôle played by the gonococcus is of more importance in the etiology of trachoma than is generally supposed.

Passing to diseases of the cornea, careful observation and study go to prove that many corneal troubles are dependent directly or indirectly upon invading bacteria. Leber has shown how serious may be the results of a growth of comparatively harmless organisms if once they secure a footing in the proper soil, and reason exists why we should believe that keratitis may result from ordinarily harmless bacteria should they gain entrance to the corneal layers. Babes obtained from the broken-down corneal tissues and from various organs of a child who died of septicemia following keratomalacia, a bacillus which he terms the bacillus septicus keratomalaciæ. Cultures of this bacillus inoculated into the cornea caused purulent keratitis.

The capsule bacillus of Loeb was also obtained from a case of keratomalacia infantum by inoculating media with a little of the softened exudate of the cornea. It resembled the bacillus capsulatus of Pfeifer, but is said to be somewhat larger and thicker than the latter.

Experiments with the bacillus of Fick,¹⁸ which has been found in the conjunctival sac, showed that when inoculated into the corneal tissue the organism produced a distinct keratitis, and sometimes caused a perforating ulcer, which required about four weeks to penetrate the corneal tissues. The work in this field has but just commenced, and bacteriologic research will undoubtedly reveal much which will be of value in connection with corneal diseases.

There is one more disease which I must consider before closing this paper, first because of its importance, and second because it is recognized by all authorities to be directly produced by bacteria. I refer to sympathetic ophthalmitis. This affection, as we know, owes its name to the theory, held until a few years ago, that it was due to reflex action of the ciliary nerves. Investigations made in recent years¹⁹ have placed it beyond doubt, that sympathetic ophthalmitis is an inflammation propagated to the sympathizing eye by direct continuity through the optic nerves and chiasm from the exciting eye, as erysipelas extends over the skin, and that the staphylococcus pyogenes albus or aureus is the active element in the process.

Time will not permit a further discussion of this interesting subject, and as I have repeatedly said

throughout this paper, the work has but just commenced, and in view of the fact that besides the bacteria occurring in connection with the diseases mentioned, and which we have no right to deny is the direct cause of them, we have to deal with such bacteria as the bacillus coli communis, bacillus influenzae, bacillus lepræ, bacillus of measles, bacillus pyocyaneus, bacillus syphilis, staphylococcus, pyogenes citreus and streptococcus pyogenes, some of which have been demonstrated as occurring in the conjunctival sac and we have no reason to believe that the others do not; I think we are perfectly justified in believing that bacteria are one of the chief etiologic factors in diseases of the eye.

CONCLUSIONS FROM CLINICAL AND BACTERIOLOGIC EXPERIMENTS WITH HOLOCAIN.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ROBERT L. RANDOLPH, M.D.

BALTIMORE, MD.

I have been using holocain for some months and have recorded here fifty cases where it was recently employed in the eye clinic of the Johns Hopkins Hospital. Seventeen of these cases were foreign bodies in the cornea, and the average time employed to produce anesthesia was a little less than two minutes. In three cases iridectomy was performed and in four cases cataract extraction. Here I made the same number of instillations as I do when employing cocain, that is three in fifteen minutes, and all that can be said is that I noticed no difference in the anesthesia from that produced by cocain, and the same may be said of eight tenotomies. The other cases were where the holocain was used after the application of silver nitrate, after the passing of probes, in operations for tarsal cysts and pterygia. With the exception of the tarsal cysts the anesthesia was produced in a little more than two minutes. Most of those who have reported on the subject of holocain have alluded to its germicidal properties. I have looked through the literature, and with the exception of some very meager experiments made by Heinz, showing that the yeast bacteria are retarded in their growth by contact with holocain, have found no record of experiments proving that a solution of holocain is a germicidal one. The following experiments were made to throw some light upon this aspect of the question:

1. To determine the effect of a 1 per cent. solution of holocain upon the micrococcus epidermidis albus. (Welch.) For this purpose thirty wooden toothpicks were sterilized by boiling for ten minutes. They were then immersed for five minutes in a suspension of the organisms in sterilized water, afterward taken out and dropped into a 1 per cent. solution of holocain. Here they were allowed to remain fifteen minutes. They were then taken out with long sterilized forceps and plunged each into a tube containing nutrient agar. After being in the thermostat twenty-four hours they were inspected, and in every tube there was a luxuriant growth. Control tubes showed that the pieces of wood were sterile before immersion in the suspension of organisms. The growth in half of the tubes was examined and the micrococcus epidermidis albus was found in every instance. Fifteen

¹⁸ Ueber Mikroorganismen in Conjunctival Sac, 1887.

¹⁹ Knies: Sitzungsber. d. Ophth. Gesellsch., 1879, p. 52; Leber: A. v. Graefe's Archiv, xxvii, pt. 1, p. 325; Bailey: Trans. Internat. Med. Congress, 1881, Vol. iii; Snellen: Trans. Internat. Med. Congress, 1881, vol. iii; MacGillivray: Amsterdam Internat. Med. Congress, 1879; Berlin, Volkmann's Samml. Klin. Vorträge, No. 185, 1880; Deutschmann: A. v. Graefe's Archiv, xxx, pt. 3, p. 77, xxxi, pt. 2, p. 277, and Ueber die Ophthalmia Migratoria, 1889; Gifford: Archives of Ophthalmology, 1886, p. 281. Randolph, in Arch. of Ophthal., Vol. xvii, p. 188, does not support the theory of extension of the process through the optic nerves and chiasma, but he does not offer an alternative explanation.

experiments made with the staphylococcus pyogenes aureus resulted in the same manner. In another series glass rods were employed instead of pieces of wood. They were sterilized in the flame. They were then dropped into a suspension of the aureus in sterilized water and allowed to remain there five minutes. When taken out, instead of putting them directly into the holocain solution as was done in the first and second series, they were put into a sterile tube and allowed to dry thoroughly and then immersed fifteen minutes in a 1 per cent. solution of holocain, after which each rod was plunged into a tube of nutrient agar. The result was the same as in the first and second series.

2. To determine whether a 1 per cent solution of holocain has an inhibitory effect upon these same organisms. Five grains of holocain were dissolved by boiling in two drams of water, and to this were added six drams of fluid agar. The resulting mixture was practically a 1 per cent. solution of holocain. Twenty tubes of "slant agar" were prepared in this way and ten "smear cultures" made of the staphylococcus pyogenes aureus and ten of the micrococcus epidermidis albus. These tubes were inspected every day for three days but there was never any evidence of a growth. This experiment was repeated a number of times by others in the laboratory as a control measure, and in every instance with the same result. Neither the staphylococcus pyogenes aureus nor the micrococcus epidermidis albus would grow in a medium containing holocain in the proportion mentioned. It may be said that a solution of holocain half the strength employed in these experiments does not inhibit these organizations. The positive results of the experiments to determine whether holocain had an inhibitory effect upon the organisms would seem to indicate that some of the organs on the glass rods and pieces of wood in the first, second and third series were killed. To determine this question the following experiments were made:

A thick suspension of the staphylococcus pyogenes albus was made in physiologic salt solution. Five loops of this suspension were transferred to a tube containing two drams of a 1 per cent. solution of holocain, and five loops were transferred to a tube containing the same quantity of salt solution, the latter as a control measure. After allowing the organisms which had been transferred to the holocain to remain there five minutes, two loops of the latter solution were carried into fluid agar and plate cultures made. This was repeated after ten, fifteen, twenty and thirty-five minutes, and finally, after twenty-four hours. In the first plate (after five minutes) there were fifteen colonies; in the second plate (after ten minutes) there were about the same number; in the third plate (after fifteen minutes) there were five colonies; after twenty minutes three colonies; after thirty-five minutes two colonies, and finally, after twenty-four hours, the plate was sterile. This series was repeated and with practically the same result. There was a gradual diminution in the number of the colonies, the longer the organisms were allowed to remain in the holocain, and after twenty-four hours it was seen that the holocain no longer contained living organisms. Plate cultures made after twenty-four hours from the salt solution showed numerous colonies.

Conclusions:—Holocain, in so far as its anesthetic properties are concerned, seemed in these fifty cases to have been sufficiently effective. In those cases

where a test was made of the rapidity of its action, as for instance, in foreign bodies in the cornea, in pterygia, and after the application of irritating substances the quickness with which anesthesia was produced was striking. Whether the anesthesia produced after two minutes is sufficiently profound to guarantee a painless iridectomy or a satisfactory cataract extraction I did not determine, but in those cases where operations of this character were performed, and where the holocain was instilled just as we do cocaine, no difference was observed in the anesthesia from that produced by cocaine. The drying of the cornea and dessication of its epithelium, the dilatation of the pupil, the absence of which phenomena has been noted by others has been confirmed by my own observations. The absence of these two properties should recommend it for office use for the removal of foreign bodies, as it is well known that after the employment of cocaine in such cases blurred vision and slight photophobia are often present for hours.

A 1 per cent. solution of holocain has not only an inhibitory effect upon the pus organisms, but these organisms are killed when exposed to a solution of this strength for a certain length of time. No attempt was made to determine the point of time at which these organisms lose their vitality on exposure to holocain, but it may be safely said that this point is somewhere within twenty-four hours. Furthermore, exposure to a 1 per cent. solution of holocain for periods of five, ten, fifteen, twenty-five and thirty-five minutes showed in every instance a gradually diminishing number of colonies in the plates, so that it is plain in spite of the luxuriant growth around the glass rods and pieces of wood many of the organisms were killed. It may be said in conclusion then, that a solution of holocain of the strength employed in ophthalmic practice possesses distinct germicidal properties, a fact which it is evident enhances the value of this product.

DISCUSSION.

Dr. H. V. WÜRDEMANN, Milwaukee.—I have been unable to make any experiments regarding the antiseptic properties of holocain solutions, but as far as my experience goes I should say its solutions are stable and antiseptic. A solution which I had and kept for the purpose of seeing whether it remained aseptic, though opened from time to time during eight months, shows that the solution remains clear and that it is antiseptic. I am pleased at the exhaustive character of Dr. Randolph's paper, for it seems to prove the claims that Tauber, Heintz and I have made.

As regards its clinical aspects I have had much experience having used it as a local anesthetic in almost all of my bulb operations during the last year. I have done several hundred operations with holocain, from corneal and conjunctival to cataract operations. I have found it similar in effect to cocaine but it has several advantages. It more thoroughly anesthetizes the deeper structures, and its effect is more lasting. It does not affect the accommodation, the pupil or the tension. It is quicker in action, and does not affect the epithelium of the cornea. That is a most important point; one can anesthetize an eye for a half hour or an hour, leaving it exposed to the air, but keeping it moist from time to time, and will not find any erosion of the epithelium. We use less of the drug than of cocaine, the percentage of the solution being only 1 per cent., and it is hence proportionately cheaper.

As a disadvantage, it is said that it is more poisonous than cocaine. I have not had any ill effects from its use on the eye, nose or fauces, but I have not used it hypodermically. The bleeding is more free than under cocaine, and it is not so good for muscle operations. It is slightly more irritating, and I

have had patients complain after the removal of a foreign body that the sensation remained for some time, which is not the case after the use of cocain. Another disadvantage to those of us who boil our instruments in soda solution is, that it is necessary to wash the instruments in sterilized water, because the soda is precipitated and the solution becomes turbid.

I should say, from my experience with it in about fifteen cataracts, seven iridectomies, four operations for glaucoma and a number of minor operations, that this drug is a most satisfactory local anesthetic, and I recommend it especially for office work.

Dr. E. C. ELLETT, Memphis—I have had a little experience with holocain during the past winter, limited to its use in removing foreign bodies from the cornea and conjunctiva, and with cataract extractions associated with iridectomy. I have done seven or eight cataract extractions in that time with holocain, all with iridectomy except one, which was iridectomized the next morning on account of prolapse. Holocain seems to me to be a more satisfactory anesthetic than cocain, and I think the first drop often does not produce as much irritation as the first drop of cocain. The fact that it does not influence the pupil or corneal epithelium is an advantage.

Another class of cases in which I have used it are those small but painful corneal abrasions, the type in which the cornea of the woman is wounded by the nail of the nursing child, and we know how painful they are. Knowing that holocain has no effect upon the corneal epithelium, and that it has a germicidal action we feel no hesitancy in putting it into the hands of patients for as liberal use as they may require.

I have noticed two things which I do not know whether to attribute to the drug or to my preparation of it. One is that after standing for some time the solutions acquire a delicate pink color, not so deep as eserin, but a faint pink. It may be that this is due to some action of the holocain on the glass bottle in which it is preserved. The other point is that in one case of cataract extraction the solution which I had used repeatedly did not produce anesthesia. Not being able to get a fresh solution at once, I had to use cocain. I later operated upon the other eye of that patient with holocain, and with satisfaction.

People frequently come to the oculist with a foreign body and ask me to "take this out without cocain if you can, because it dilates the pupil so I can not work the rest of the day." It becomes a satisfaction then to have such an anesthetic as holocain.

Dr. C. D. WESCOTT, Chicago—I have been using holocain solutions for six months, and have two observations to make that may be of interest in this connection. To test the rapidity of the anesthetic action of a 2 per cent. holocain solution I used it in an extraction. After cleansing the eye I applied one drop on the cornea, waited one minute and gave another, in one more minute applied a third and immediately made my section without any sensation to the patient. After completing the section I applied another drop, waited perhaps forty seconds and did the iridectomy without the slightest evidence of pain.

I am inclined to think, however, from another experience that holocain is not absolutely without deleterious effect upon the epithelium. In a nervous, hysterical woman, where I was obliged to do a very tedious advancement, the tendon having retracted very far, I used a 1 per cent. holocain solution. The eye was exposed for thirty minutes, and although I applied boracic acid solution repeatedly, when I came to take out the speculum I noticed a positive blur of the corneal epithelium. The diameter of this spot was at least 2 mm.; and touching it very gently with a smooth instrument, I demonstrated beyond doubt that it was separated from the substance of the cornea. I cleansed the eye, bandaged it and no harm resulted. I operated upon the other eye of the same patient two or three

weeks later, using 5 per cent. cocain solution, without any deleterious effect upon the epithelium, but the eye was not exposed more than fifteen minutes in that operation.

Dr. F. C. HOTZ, Chicago—We are indebted to Dr. Randolph for having conclusively demonstrated by experiment that a solution of holocain is and remains sterile for an indefinite time. It is certainly a most valuable local anesthetic. It is the ideal local anesthetic for removing foreign bodies, and to have such a remedy that we can at a moment's notice use, with the knowledge that it will not carry infectious germs into the eye, is of great value. It has been stated so frequently that I need not now go over my experience, to bring out all the points about holocain. One point, however, that should be mentioned is this, that it irritates more than cocain and in fact increases the congestion of the eye, and on that account I have noticed that in muscle operations there is more hemorrhage than after the use of cocain. To obviate this bleeding, I have first used cocain to produce anesthesia and then kept it up by means of holocain; for I find that it will keep up a continuous anesthesia for any length of time needed, if instillations be repeated about every five minutes.

Dr. FRANK ALLPORT, Chicago—I would like to ask Dr. Randolph if the holocain solution can be boiled without any injury to its efficiency?

Dr. RANDOLPH—Yes sir.

Dr. H. M. STARKEY, Chicago—I am sorry we have not had a little more discussion of the first paper, which is certainly a valuable contribution to the subject. I think, as we make more careful examinations of the cases that come before us with regard to their bacterial infection, we shall be able to classify them in a more scientific manner. The attention of the section is called to a ready means of obtaining pus from patients that we see outside of our office. It used to happen to me frequently to be called to see a case of purulent conjunctivitis or other infection at the patient's house, whence I had no means of taking secretion back to the laboratory, and perhaps on making another visit the conditions were found to be so changed that it was useless to take the specimen. It is now my custom to have a few cover glasses constantly in my pocket. I carry these in a very small tin ointment box and also have another box of the same size in which to carry the infected covers to the laboratory. In this way a small drop of secretion may be easily and safely carried between two covers.

Dr. R. L. RANDOLPH, Baltimore—I have been very much interested in what has been said by those who have used holocain, particularly in Dr. Ellett's remarks. We meet with cases in which cocain acts in the same way and where a general anesthetic is called for. It is of great value to know that this agent possesses properties that are not only antagonistic to the growth of organisms, but that they can not live in it, for it actually kills these organisms.

FIVE CASES OF CONGENITAL, BILATERAL, SYMMETRICAL DISPLACEMENT OF THE LENS OF THE EYE IN THREE SUCCESSIVE GENERATIONS OF ONE FAMILY.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

EDWARD FROST PARKER, M.D.

CHARLESTON, S. C.

Cases of congenital ectopia lentis may, for convenience of reference, be divided into three groups: first, those occurring in one member of the family; second, those occurring in several members of the same family; and third, those occurring in one or more members of a family for two or more generations.

The malformation is not commonly met with, as out of fifty thousand hospital and private patients of Knapp's in New York City, only ten (1 in 5000) were seen. Notwithstanding this, however, illustrations of individual cases (group I) are quite numerous in literature, and probably number about a hundred.

Examples of the malposition occurring in more than one member of the same generation of a family (group II) are also on record to the number of twenty. Instances of the ectopia in several members of the same family for several successive generations (group III) are quite rare and far more interesting, and merit reporting from this standpoint no less than from the fact that they show in a remarkable manner the marvelous and fateful power of hereditary influence in the transmission of physical defects, as well as disease.

A complete record of all such instances I am enabled to report below, through the courtesy of Dr. David De Beck of Cincinnati, a recognized authority on congenital anomalies, to whom I am much indebted.

D'Oench¹ in 1881, presented some valuable conclusions as to the nature, history, symptoms, etc., of congenital ectopia lentis, drawn from the collated statistics of most of the hitherto published cases, belonging to the three groups I have mentioned. He relates that the first cases of luxation of the lens recorded were reported by Sichel in 1846, but that these were no doubt spontaneous, Sippell² in 1859, being the first to draw the distinction between congenital and spontaneous luxation, illustrating the same by reporting the condition in his own, his mother's and his brother's eyes. The influence of heredity was quickly recognized, though the exact cause remained for some time a subject for theory.

Lang and Collins³ assert that it is "due to some defect in the development of the suspensory ligament, caused by a failure or late closure of the ocular cleft in the ciliary region, so that as the eye expands there is no suspensory ligament to hold the lens down in that region, and it consequently becomes drawn in the opposite direction."

Five cases of bilateral, symmetrical, congenital dislocation of the lens occurring in three successive generations of one family recently having come under my observation, I have endeavored to present their salient features in brief detail, and at the same time to collect the history of all similar cases.

The following are my own cases:

Mrs. H., Columbia, S. C., aged 67, consulted me Aug. 12, 1896, and claimed to have had defective sight from her earliest childhood. Her vision, however, in spite of great difficulty in getting glasses to suit her, had been useful until recently, when it had become smoky. The eyes of her parents were normal as far as she knew. She had six children, only four living. By means of either focal illumination or the ophthalmoscope the dislocation of the lens could easily be detected, in the right eye almost exactly, but only slightly upward. The right lens was completely, and the left partially opaque. With the instillation of homatropin nothing further was observed, no threads or suspensory ligament folds being found. Gray tremulous irides. Patient could read with R. E. $\frac{3}{200}$ + 8 D. Sph. - $\frac{13}{70}$. J. 14 at 5 inch + 16 D. Sph. - No 9. With L. E. $\frac{3}{200}$ no glass improves. J. 14 at 5 inches no glass improves.

Raab⁴ asserts that congenital ectopia is one of the most frequent causes of spontaneous luxation, and D'Oench corroborates this by stating that the number of cases in which both congenital and spontaneous luxation have been observed make it almost certain that the latter is a frequent result of the former. I

judge therefore that the luxation of the right eye was at first up and out, but that the same changes which caused it subsequently to become opaque caused it to change its position. In addition downward luxations are rare and unknown. She received convex glasses and was dismissed.

Mrs. A. W., of Charleston, S. C., aged 35, a daughter of Mrs. H. was seen Nov. 8, 1897. Mrs. W. is very myopic, and wears glasses. She has three children, two boys, one girl.

Vision in R. E. = $\frac{15}{40}$ not tested with glasses. J. - 1 at 6 inches. L. E. = $\frac{3}{200}$ not tested with glasses. J. - 5 at 2 inches. Brown tremulous irides, upward dislocation of both lenses.

Albert W., aged 15. Brown tremulous irides. Vision R. E. $\frac{2}{200}$ not tested with glasses. J. - 7 at 1 inch. Left eye $\frac{15}{200}$ not tested with glasses. J. - 1 at 6 inches. Dislocation of both lenses upward and outward.

Theodore W., aged 12. Brown tremulous irides. Vision R. E. $\frac{15}{30}$. J. - 1 at 6 inches. Does not wear glasses. Vision L. E. $\frac{15}{30}$. J. - 1 at 6 inches. Slight upward dislocation of both lenses.

Mary W., aged 8. Brown tremulous irides. Upward dislocation of both lenses. Vision R. E. $\frac{3}{200}$. J. - 5 at 1 inch. L. E. $\frac{3}{200}$. J. - 5 at 1 inch. No glass improves.

D'Oench thinks that in those cases where no glasses improve the vision it is due, perhaps, to a "torpor of the retina, caused by indistinctness and interference of the images."

The indisposition of the patients to submit to any prolonged examination prevents more exact observations as to the proper corrections of the errors of refraction.

In all the cases, the irides were tremulous, the anterior chamber appeared deepened in that part unsupported by the lens, the lenses were clear, except in the case of Mrs. H. Their size was normal, the suspensory ligament was not observed, the direction of displacement was as stated, upward, and upward and outward, the intelligence was of a high order, the vision varied with a degree of luxation, the tension, the cornea, as well as the shape and size of the globe and the fundus and disc even were all normal; no diplopia was complained of and there was no corectopia, iridderemia, myastagnus, coloboma, detached retina or strabismus observed, the dilatation of the pupil in the two cases in which a mydriatic was used appeared normal.

The following is a resumé of similar cases on record:

Morton.⁵—Ten examples, presumably in five successive generations. Father, two sons, grand-daughter, her three sons, two children of one of these and one child of another. Direction of dislocation in nearly all inward and upward.

Bresgen.⁶—Ten examples in three generations: Mother, two daughters, a son free, but his son affected, one of the daughters with all six children affected. Direction in all upward and inward.

Kejser.⁷—Nine examples in three generations. Father, daughter and three sons, and the daughter's three sons and a daughter. Direction downward and outward.

*Williams E.*⁸—Three examples in two generations. A father, son and daughters. Direction not stated.

Sippell.²—Three examples in two generations. Dr. Sippell himself, his mother and a brother. Direction not stated.

Dixon.⁹—Four examples in two generations. Mother and three sons. Direction, two upward and inward, one inward, one upward.

Tiffany.¹⁰—Eight examples in two generations. Father and seven of his nine children. Direction not stated.

Wordsworth.¹¹—Six examples in three generations. Mother, two sons and three grandchildren. Direction in all upward and outward.

*Parker, E. F.*¹²—Five examples in three generations. Mother, daughter and three grandchildren. Direction in all upward, or upward and outward.

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DISCUSSION.

Dr. W. H. WILDER, Chicago—I doubt if the time allowed us will be sufficient for all the work before the section and I think in this connection I will briefly relate the cases of ectopia lentis recorded in my paper. A woman 39 years of age, came to my service in the Illinois Eye and Ear Infirmary, bringing her child, Maggie, 10 years of age, who complained of bad sight. Examination showed a dislocation of the right lens outward and of the left lens outward and upward. I examined the mother and found a dislocation of the right lens upward and outward, and of the left upward and inward. I then had her bring all of her children for examination and two of the four living had dislocation of the lens. The second child, Joe, aged 5 years, had both lenses dislocated symmetrically inward. In all the cases the lenses were perfectly clear and transparent and the details of the fundus could be seen through the lens, or through the aphakic pupil. In all the vision was considerably impaired and could not be improved by glasses, probably because the edge of the lens interfered so much.

In all probability these are illustrations of dislocations occurring during three generations, because I found that this woman's mother was reported to have had very bad sight that could not be corrected by glasses.

Dr. FEANEL B. TIFFANY, Kansas City—The Doctor has already referred to my cases and, as he stated, the displacement was upward and outward, except in one case, I think, in which the dislocation was inward. As has been said, the lenses in these cases were perfectly transparent and when the pupil was dilated the vision was very much improved by glasses. I recommended in these cases that an operation should be performed, the lenses to be removed, and I think the vision might have been very much improved if the operation had been performed and glasses adjusted, but I did not get the consent of these patients.

Dr. L. W. FOX, Philadelphia—I was very much interested in this report and I have just one thing to add, that is, concerning the difficulty in operating upon these cases. Quite recently I attempted to perform one of these operations in the ordinary manner, but I found it impossible to deliver the lens in that way. The fluctuation warned me that I should have a flow of vitreous and the lens would slip back, so I immediately took a Bowman scoop and delivered the lens.

The peculiar formation of the lens was of interest. A few years ago, you remember, I showed at the society four cases of black cataract. In examining this lens I found it to bear the same characteristics. In the course of time the patient had good vision with ordinary cataract lenses.

Dr. J. E. MINNEY, Topeka—I have had but one case and it was evidently congenital, though it was not seen until the lady was 35 years of age. The dislocation in both eyes was downward and inward. The vision could not be improved by glasses when I first saw her two months ago and I advised nothing else, as she had useful vision which enabled her to go

about and do her housework. Two weeks ago I operated upon her and instead of finding a lens I found a sac filled with whitish fluid. I was determined to do something, and though I lost about one-fourth of the vitreous I kept on until I got out that tough membrane. On my way to this meeting I stopped to see that patient, but she did not meet me. Her husband wrote that she was able to go out in the yard, could see the chickens and tell the difference in their sex, so she evidently had some vision.

Dr. H. M. STARKEY, Chicago—I wish to report, so that it may go into the literature of the subject, some cases that I will publish more fully later on. I had under observation a number of cases in one family, where I believe there was five children and their mother that had double ectopia lentis. I showed three of the children and the mother at the Chicago Ophthalmological Society. Some of these eyes were highly myopic, one requiring a 3 D or 4 D concave lens to obtain a good view of the fundus beside the lens.

CASES OF HEREDITARY ECTOPIA LENTIS.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM H. WILDER, M.D.

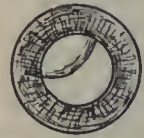
Professor of Ophthalmology, Chicago Policlinic; Instructor of Ophthalmology, Rush Medical College; Surgeon and Pathologist to Illinois Eye and Ear Infirmary; Ophthalmic Surgeon, Cook County Hospital.

CHICAGO.

The following interesting cases came under my observation in October, 1894, at the Illinois Eye and Ear Infirmary.



Right.



Left.

Fig. 1.—Mrs. H., aged 39 years.

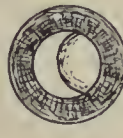


Right.

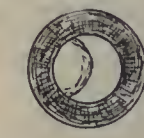


Left.

Fig. 2.—Maggie H., aged 10 years.



Right.



Left.

Fig. 3.—Joey H., aged 5 years.

Mrs. John H., brought her daughter Maggie, aged 10 years, to the clinic because of poor eyesight, saying the child could not see well at school. R.V.=5/200, L.V.=10/200, only slightly improved with a strong convex glass, +12 D. No concave glass was found that improved the sight.

Examination revealed congenital dislocation of both crystalline lenses (Fig. 2), the right being displaced directly outward to such an extent that its inner edge did not reach the center of the pupil, while the left was displaced outward and upward to nearly the same degree. There was no opacity of the lenses and the details of the fundus could be seen either through the margin of the lens or through the aphakic pupil. No sign of coloboma could be observed in any part of the uveal tract that was visible, nor of any

other malformation or deformity, either about the eye or any other part of the body. The child was well formed but mentally dull for her years.

The mother, aged 39 years, then informed me that she herself had poor sight and was unable to get glasses that would benefit her. Examination showed an ectopia lentis (Fig. 1). The right lens was displaced upward and outward, the left upward and inward to about the same degree. Both lenses were clear, as was also the pupillary space, so that the details of the fundus could be distinctly seen and no other deformities about the eye were observed. R.V. = 12/200, L.V. = 5/200. Mrs. H. is a widow, born in Ireland, and has always been in good health. Her father and mother are living in Ireland and are healthy. She recalled that her mother had some defect of eyesight; she was very near-sighted and could not see small objects distinctly. It is quite possible that she also has the same deformity. She gives no history of syphilis and has had no injury of any kind. She has four children living, three boys and one girl—our case—and four dead. The living children are Maggie 10, John 7, Joe 5 and Tom 3 years of age.

One boy older than Maggie died at 16 months, one child died at 3 weeks, one child between Joe and Tom lived 3 months and a baby younger than Tom died at 6 weeks.

I told the mother to bring all her children for examination. I found the eyes of John, aged 7, and Tom, aged 3, normal, and as near as could be determined with such young children, with normal visual acuity. Joe, aged 5, however, showed the mark of heredity (Fig. 3). Both lenses were symmetrically displaced directly inward, although not to the extent seen in Maggie's eyes. The pupils were easily dilated with mydriatic, and as in the other cases, the lenses were clear and the interior of the eye, as far as it could be seen, was normal in appearance. Vision could not be accurately tested, but seemed to be R. = 5/200, L. = 8/200, with no marked improvement with glasses.

AN ADDITIONAL CASE OF DOUBLE CONGENITAL MICROPHTHALMOS.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CASSIUS D. WESCOTT, M.D.

INSTRUCTOR IN OPHTHALMOLOGY AT RUSH MEDICAL COLLEGE, ETC. CHICAGO.

During a trip in Minnesota last September, I was asked by my friend, Dr. E. J. Lewis of Sauk Center, to see Maxwell James, aged 2 years, who was said to have been blind from birth.

Upon examination the child seemed to be in perfect health and his development was good for his age. I have been unable to secure a photograph showing the condition of the eyes, but the one which I present will give a general idea of the little fellow's appearance. The lids and orbits were normal. The palpebral fissure of the left eye was not smaller than usual, but the lids of both eyes appeared sunken. Both eyeballs were smaller than normal, the diameter of the cornea measuring no more than 6 or 7 mm. in left eye and 5 or 6 mm. in the right. The iris was present in the left eye, but the pupil was not well made out, because of a small central opacity of the cornea, and the fact that the opaque sclera seemed to shade off into the cornea, leaving a narrow

ring of clear cornea between an outer opaque ring and a central circular opacity. The right eye was decidedly smaller than the left. There was almost no clear cornea, the iris showing faintly through the almost opaque membrane. The movements of the eyes were normal, but limited. No cysts could be demonstrated in either orbit and the conjunctiva was smooth and free and gave no sign of past inflammation. There was evidently vision in the left eye, for the child could see to get about, and was immediately attracted by bright objects held before it.

The baby had always been perfectly well and presented no other physical anomaly. The parents were Americans of the middle class, and had always enjoyed good health. They had the appearance of health when I saw them, but both were spare and the mother did not seem to be especially vigorous. She had borne but two children, gestation being without incident and delivery natural in both instances, but both children had been born blind. The first, a girl, had died at 18 months, of some acute infantile disease, but up to that time had seemed well and normal, except that the eyes were almost exactly like those of the little boy, whose case I have just described.

A careful inquiry failed to elicit any cause for these two cases of micropthalmos in the family, and the parents had no theory to suggest. So far as the mother knew, or would tell, nothing had happened during the intra-uterine life of the infants which might interfere with their development. Although an itinerant professor had promised to cure the eyes of the little boy, for \$50 cash, in advance, I gave it as my opinion that little change was likely to occur, although it might be possible to slightly improve the vision of the left eye by iridectomy, if it should increase in size with the growth of the child.

Treacher Collins has reported ("Transactions of the Ophthalmological Society of the United Kingdom," Vol. xiii) two cases of congenital micropthalmos, in which he secured specimens and made elaborate examinations. He divides these cases into two classes: First, those in which the eyeball is simply abnormally small, *i. e.*, very highly hypermetropic eyes, in which, beyond the defect in size, there has been no arrest in development. Second, those cases in which the eyes, besides being small, have some other congenital abnormality, resulting from imperfect closure of the fetal ocular fissure. This last class may again be divided into those where there is only a slight defect, and where the eyeball retains nearly its normal shape, and those in which the accompanying abnormality is very gross, the eye being usually exceedingly small, while connected with it are one or more cysts. These cysts are often large, sometimes concealing the globe, which is situated at the back of the orbit, so that its presence can not be ascertained by clinical examination alone.

His first case was of the class to which my own probably belongs, and I trust you will pardon me if I quote his report:

The patient was an infant who died when four days old, from congenital heart disease. The aorta and pulmonary arteries formed one common trunk, and there was a defect in the ventricular septum. The right eyeball measured 19 mm., antero-posteriorly and laterally, and 8.5 mm. vertically. There was a small prominence in the sclerotic posteriorly, immediately below the optic nerve. The iris was well developed, but several delicate fibers stretched across the pupil, evidently remnants of the pupillary membrane. The ciliary body presented its usual appearance. The lens was in its normal position and the vitreous appeared healthy. The retina had

numerous little rucks in it. At the seat of the prominence below the optic nerve there was a gap in the sclerotic, through which a fold of retinal tissue projected.

Microscopic examination revealed no central blood-vessel in the optic nerve. The nerve fibers, after having passed through the lamina cribrosa, all sloped somewhat downward; the upper ones afterward curved backward to the upper part of the retina. Below the optic nerve there was at first no retina, no uveal pigment layer and no choroid, only a mass of nerve fibers with fibrous tissue external to them. This fibrous tissue, representing the sclerotic had, a short distance from the lower margin of the outer optic nerve, a break in its continuity. Into the gap thus formed the nerve fibers passed, expanding somewhat after they were through it and becoming mixed with bodies like those found in the nuclear layers of the retina; external to this nerve tissue was a thin layer of fibrous tissue. On the side of the gap in the sclerotic, farthest from the nerve, the retina commenced with its usual layers, being continuous with the nerve fibers emerging from the gap; around the edge of which, also, the uveal pigment layer turned. The tunics of the eye were traced forward from the break in the sclerotic. The retina was at first seen to possess its usual layers, the uveal pigment was present, also the choroid, which, however, was more cellular than normal and devoid of pigment. A short distance farther on the choroid ceased and the uveal pigment layer became an unpigmented layer of cells.

The left eyeball measured 18 mm. antero-posteriorly, 18 mm. laterally and 16.5 mm. vertically. The cornea measured 8.25 mm. laterally and 7.5 mm. vertically. There was a prominence in the sclerotic posteriorly, below the optic nerve, more pronounced than in the right eye. There was a small coloboma of the iris downward. The lens was situated nearly in the center of the globe, a considerable space being left between it and the posterior surface of the iris; it was almost globular in shape, measuring 5 mm. antero-posteriorly and 5.5 mm. laterally. The ciliary process, thin and much elongated, passed almost directly backward toward the sides of the lens. In the center of the vitreous was a band of fibrous tissue, which passed forward from the back of the globe below the optic nerve to the posterior pole of the lens; this band was broad posteriorly and gradually tapered off as it passed forward. Around this central band the vitreous appeared normal. The retina had some small rucks in it. Below the optic nerve, in the situation of the prominence seen externally, a fold of retina seemed to be included in a gap in the sclerotic.

Microscopically the structure of the cornea appeared normal. In the position of the coloboma of the iris the uveal pigment ended about on a level with the point of termination of Descemet's membrane in the fibers of the ligamentum pectinatum. The fibers of the suspensory ligament, passing from the much elongated ciliary processes, sloped backward and a little inward to the sides of the displaced lens, which was very rudimentary in structure. The ciliary body, choroid, uveal pigment, and retina in the upper part of the eye appeared healthy. In the lower part, the ciliary muscle was much elongated, and the choroid could only be traced backward as far as the equator of the globe, its posterior part being absent. The uveal pigment layer, just previous to the termination of the choroid, was thrown into several folds; from this position it was continued backward, first as a layer of unpigmented cells, and afterward as tissue which looked like degenerate retina. The band of tissue passing through the center of the vitreous was composed of bundles of nucleated fibers, with small blood-vessels coursing among them; it was adherent posteriorly to the sclerotic, and anteriorly, where it was very thin and reduced to but a few fibers, it joined the posterior capsule of the lens. The vitreous was continuous with it at the sides. There were no central blood-vessels in the optic nerve; all its fibers, after passing through the lamina cribrosa, bent directly downward, the upper ones curving round again to the retina above, which began in a fold. The lower ones seemed to end abruptly at the band of fibrous tissue which passed forward through the vitreous. Below this band of fibrous tissue some very degenerate looking retina, consisting mostly of nuclear bodies, was seen embedded in a gap in the sclerotic. The retina in the lower part of the eye had its inner granular separated into two; some fibers separated by spaces running transversely between them.

Hirschberg reports (*Berliner Klin. Wochenschrift*, 1870) the case of a girl of three months, with double microphthalmos. She was well developed, but her eyeballs, though well formed, were very small. The horizontal corneal diameter on both sides was about 5 or 6 mm. There was coloboma of the right iris, below and inward, and persistent pupillary membrane.

In the left eye there was luxation of the opaque lens downward, and a persistent hyaloid artery. The fundus showed an extensive discoloration (coloboma). The child continued to develop and the eyes grew somewhat larger, but no perception of light could be discovered. The parents were perfectly healthy.

Rindfleisch described (*Archiv. f. Ophthalmologie*, Leipsic, 1891) a case of bilateral microphthalmos, with cystic posterior ectasia, complicated with hydrocephalus. The ventricles were dilated, the cerebellum was cystic and the hemispheres of the cerebrum were separated from the cranium by a collection of sub-arachnoid fluid. The irregularities of the base of the skull had been obliterated by internal pressure. The roofs of the orbits were concave upward, and the orbits thus depressed contained microphthalmic eyeballs, with connecting cystic structures.

Williams of Boston has reported (*Boston Medical Journal*, 1850, Vol. xliii, page 421) a case of microphthalmos, complicated with congenital cataract of both eyes, in a boy 13 years of age. The entire globe was extremely small, and much sunken in the orbit. The iris, in both eyes, was hardly more than half the average size in a new-born infant, the pupil scarcely larger than a mustard seed. The entire field of the pupil in the right eye was occupied by a cataract, apparently formed by the capsule only, the lens having been absorbed. The pupil of the left eye presented an opacity covering nearly its entire area, but a small point existed toward the temporal side, which was not occupied by cataract, and the opacity was less white than in the right eye. Dr Williams successfully operated upon the cataracts, but with what result as to vision I am unable to say.

Bernheimer reports (*Archives of Ophthalmology*, 1894) a remarkable case of hydrocephalus internus, in which the eyes of the patient were normal in external appearance, but very small. The muscular and lachrymal apparatuses were normal in both. The left pupil was not circular. The axis of the left eye measured 12 mm., and lying to the lateral side of the optic nerve was a cyst 6 mm. long, filled with clear fluid. The right eye was continued posteriorly in a thick stalk, and was about the size of the left. In place of the nerve was a sheath containing but a single vessel, and to its lateral side was a cyst continuous with the posterior and inferior portion of the ball. The lens was small, egg-shaped and cataractous. The retina was completely detached and much folded. The optic nerve had a peculiar appearance, and nerve tissue could scarcely be found. A third of the nerve tissue was converted into an egg-shaped cyst, communicating by a narrow cleft with the cavity of the eyeball. The pigment epithelium and the choroid were normal and in position. Near the choroidal ring the choroid was somewhat thickened and choroidal pigment was traced back to the wall of the cyst.

FitzGerald reported (*British Medical Journal*, 1886, Vol. ii, page 1385) a case of double congenital microphthalmos to the Royal Academy of Medicine in Ireland, and exhibited the patient. There were two undeveloped globes, with cornea and iris, but little or no anterior chamber; illumination of the fundus was impossible. The father of the child thought it could see when light was brought into the room, but after having several times made trial with both lamp and ophthalmoscope, Dr. FitzGerald was unable to satisfy himself that the child saw anything. The mother in this case gave a history of a fright

during gestation, but at what period was not stated.

Brailley reports (Transactions of the Ophthalmological Society of the United Kingdom, Vol. x, page 139) a case of double microphthalmos, with defective development of the iris, in a patient with imperfect teeth and arms, seen at Guy's Hospital. Vision of the right eye equalled fingers at 10 feet, and the field was much narrowed all round. Tension was +1 and the eye was myopic about twelve diopters. Vision was not improved by lenses. The cornea was small, about 9 m.m. in diameter. The iris was absent except a narrow crescentic piece in the inner side, which occupied about two-fifths of the circle. The lens was in situ. Its diameter seemed to equal that of the cornea. The disc was cupped and had a myopic crescent to the outer side, and opaque nerve fibers to the inner side. Vision of the left eye equalled fingers moving. Tension was +2 and the eye was myopic. The cornea was the same as in the right eye. The iris was wanting except for three small isolated bits with rounded edge, situated on the inner side of the vertical line. The disc was cupped.

De Vincentiis of Pavia, reports (*Ann. di Opth.*, Vol. xiv) a case of congenital bilateral microphthalmos, with defective development of the heart. Mayer described a case of microphthalmos with cysts in the lower eyelids. Ginlini reports (*Ztschr. f. Verleich. Augenh.*, Wiesbaden, 1891) a case of double congenital microphthalmos in a dog four weeks old. Holtzke (*Archives of Ophthalmology*, Vol. xii) made careful studies of the eye of a rabbit with coloboma of the iris, ciliary body and choroid, and general microphthalmos. He closes his report as follows: "The explanation of the above-described changes is very simple. There have evidently been extensive inflammatory processes in the eye, and I see no reason why we should not adopt Deutschmann's view (*Klin. Monatsbl. f. Augenh.*, March, 1881) that the arrest of development is only a changed development of the eye in consequence of an intra-uterine inflammation. This inflammation has probably taken place in the latter half of the third week; the fetal fissure was nearly closed, or after having been closed, was again opened; the iris, on the other hand, had not begun to develop. Why this inflammation was just at this fissure, which is so important for the development of the eye, can not be decided, unless it was favored by the greater vascularity of this neighborhood."

Hess reports (*Archiv. f. Opth.*, Bd. xxxiv) and gives details of the microscopic examination of a series of microphthalmic eyes with colobomata; he found in his cases no sign of past or present inflammation and concludes that it has very much less to do with the production of congenital malformation than is generally assumed.

As I have no specimen to present, and have had no opportunity to make pathologic studies of microphthalmic eyes, I have no theory to offer as to the causation of these anomalies. The appearance of the eyes in my own case would cause one to think immediately of an inflammatory process.

31 Washington St.

DISCUSSION.

Dr. CASEY A. WOOD, Chicago—I have had personally no experience in these cases outside of some studies that I made with Mr. Lang of London a number of years ago, when an attempt was made to show that cases of true anophthalmos, one of the divisions of microphthalmus, was not possible. As was declared some years ago, careful dissection will discover some

parts of the eye and in considering the embryology of the eye it would seem strange to think that entire absence of the eye was possible. The experience we had seemed to prove that we only have cases of true microphthalmus to deal with and that there is always some trace of the ocular structures to be found in the cranium.

EXPERIMENTS IN THE USE OF ALUMINIUM FOR ARTIFICIAL VITREOUS.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY D. C. BRYANT, M.D.

OMAHA.

Some two years ago, after experimenting with several other kinds of material for an artificial vitreous, I commenced the use of aluminium for this purpose, and so far have met with nothing but very satisfactory results in its use. In the beginning of my experiments a complete hollow ball was used, and the results were about the same as are secured by the use of the glass ball, that is, good results in a majority of cases, with an occasional case in which, sooner or later, the ball was extruded. The fact that this unfortunate result would occasionally occur, led me to try the experiment of using a frame instead of a complete ball, allowing the cavity to fill up with granulation tissue. These experiments were carried on with dogs, and proved fairly satisfactory, the failures, when they did occur, being due to infection, which is very difficult to avoid when the subject is a dog. After allowing the frame to remain in the place for from six to ten weeks, the dogs were killed and the new stump examined. The frames were found to be partly or wholly filled with new-formed tissue, and a slight amount of tissue drawn in from outside. The frames, which were allowed to remain in place ten weeks or more, were practically completely filled, though in none of them had new tissue formation entirely ceased. Through the kindness of Dr. J. S. Foote, Professor of Histology and Pathology in Creighton Medical College, I am enabled to give a report of the result of a microscopic examination of the contents of one of these frames, which had remained in position eight weeks. The report is as follows:

Having completed the microscopic examination of the contents of the metallic eyeball which you presented, I submit the following report: After cutting the ball in two, transversely, sections were taken, cutting from the metallic rim to the center of mass. Beginning at the outer side of the specimen there are to be found the following areas: 1, a layer of new connective tissues, in which are a great number of incompletely developed cells and new blood-vessels. 2, bundles of striped voluntary muscle running perpendicularly to the general direction of the fibers of the mass within. The muscles are not new, and between them are found leucocytes. The muscle is attached to the main mass by a connective tissue layer which is vascular. 3, a layer of connective tissue fairly well developed, in which are many blood-vessels and spindle, branching and irregular cells. Intercellular substance complete. 4, a dense area of blood capillaries, between which are many new embryonic cells. 5, an area of delicate new connective tissue, in which the cells are the most prominent part, and the wavy character of the intercellular substance is less apparent than in the adult stage. 6, an area of blood-vessels and new embryonic cells, exhibiting elongation in one or two directions characteristic of a developing connective tissue. Intercellular substance not developed. From the above it would appear that the contents of the metallic eyeball are made up of tissues drawn in from the outside, and hence, adult in character, and tissue generated from within, and, therefore, presenting the phases of new tissue development.

This report of Dr. Foote's corresponds with the macroscopic appearances presented by these stumps after removal. There is always more or less drawing in of the surrounding tissues, while the main part of the cavity is filled with apparently new tissue. I have used the frame in sixteen and the complete ball in four cases in human beings. Three-fourths of these cases were such as to require, from one cause or another, an enucleation instead of evisceration. In the cases of enucleation there was little more reaction than follows the ordinary enucleation, the recoveries being quite rapid, without complications whatever. In the eviscerations the healing process was considerably prolonged, in one case extending over three months before all irritation had subsided. In all of the cases where the frame was used, everything has gone all right so far, there having been no after-trouble, no tenderness or irritation in the stump, and each patient wears an artificial eye with perfect comfort. In one of the cases in which the ball was used, after evisceration, the patient returned a year after the operation, reporting that the ball came out about ten months after he was discharged from hospital.

I am fully aware that the short time, the few experiments and the small number of cases reported here, do not prove that there are not serious objections to the use of the aluminium ball or frame, but the results are good enough, I believe, to warrant the continuance of their use until such objections, if they exist, become manifest. The aluminium has two qualities superior to glass, being both lighter and stronger. Other things being equal, these two qualities alone would make it preferable to glass, either in the shape of ball or frame. For the frame, I think it can fairly be claimed that if once healed in and filled with connective tissue there can be little or no danger of its sloughing or popping out, as will happen occasionally with the ball, whether it be of aluminium or glass. The frame as used by me now is made up of a ball with a complete front and fenestrated sides and back. These, of course, can be of any size to suit the individual case. The technique of the operation and after-treatment, whether the case be one of evisceration or enucleation, is the same as when the glass ball is used, so no time will be used here in their description. The one thing that I would insist upon, in the after-treatment, is the free and prolonged use of cold applications.

DISCUSSION.

Dr. W. L. Fox, Philadelphia—There is one point in Dr. Bryant's paper that I did not understand, that is whether these balls are used only in implantation or also in evisceration.

Dr. BRYANT—I have used them both ways.

Dr. FOY—The point at issue is this, that in proper evisceration I fail to understand how new formed tissue could find its way into these balls, for in the proper Mule's operation the margins of the sclerotic are brought so well together that they close up and become a solid mass. I am glad the Doctor has brought up the question of implantation, for I consider it one of the greatest advancements in ophthalmology. Every ophthalmologist finds ten or twelve years after enucleation a cicatricial contraction of the tissues of the orbit, and there I have found the implantation of great value. In a case reported two years ago I implanted a glass ball where I could not think of anything else to do, and it proved to be sufficient to hold the artificial eye and pleased the patient so well that I was led to continue the operation. So, today where by any chance I am obliged to enucleate I immediately put in a glass or silver

ball. I have found that in nearly every operation we can succeed in making a good artificial stump and it is wonderful what excellent movement follows. It is not as good as the Mule's operation, but it is of great value, for it fills out the artificial eye and the secretions are not retained in the sac but are thrown off, and for this class of patients it produces a heaven on earth.

In an article which will be published shortly in the *International Clinics*, to illustrate the position the glass ball attains I have had these X-ray photographs taken (exhibiting skiagraphs). I want to encourage the gentlemen of this Section to try two things; first, the Mule's operation, and second, the implantation. You will have some difficulty at first in the technique. I am not perfect in it myself, though I have done 125 operations. I have lost four cases; that is, the glass balls came out, and why I can not tell. Instead of using a No. 4 silk I now use the most delicate silk, the 0 or 00, and I believe it the best. Immediately after the operation I saturate a piece of cotton with 1 to 500 chlorid solution, bandage that over the eye and do not open it from forty-eight to seventy-two hours. At the end of that time there will be a slight excoriation of the skin but no pus and no reaction, with positive success.

Dr. W. MONTGOMERY, Chicago—I would like to ask Dr. Fox what his preference is, in implantation, between glass and silver balls?

Dr. Fox—I have no preference whatever and it is simply a question of expense to the individual, as the silver balls cost \$1.75 and the glass balls 5 cents. I think it is almost impossible to break the glass balls, for in one of my cases a boy was struck in the eye by a cow's horn and the ball did not break. Unless, then, a bullet be shot into it I think it would be practically impossible to break the glass ball.

Dr. W. H. WILDER, Chicago—I would like to ask Dr. Fox, who has had so much experience in this matter, whether or not in following up any of these cases of Mule's operation he has had any cases of sympathetic ophthalmia, or has known of any that have occurred?

Dr. Fox—I have not had a single case of sympathetic ophthalmia, and I may state here that I have had recently two or three very interesting cases. In one there was evidence of sympathetic ophthalmia beginning—the ciliary injection, the keratitis punctata and the dimness of sight all being present. I saw in that case that the fight was on, and it was just at that point where it required a great deal of bravery on my part to do a Mule's operation. I remembered that Carter of London had had a similar case and I settled the question by following him and performing the Mule's operation. In justice to a brother practitioner I must say that he had seen the case and had already started in with heavy doses of mercury, so it may be that the case was at that time on the turn. At any rate three days after the operation the symptoms of sympathetic inflammation had disappeared in a measure and the patient continued to improve. I continued the mercury treatment; of course, giving injections as well as $\frac{1}{10}$ of a grain calomel three times a day. In another similar case, but not so pronounced, I performed the Mule's operation and the symptoms disappeared. So these two cases convinced me that I need not be afraid to perform this operation even when sympathetic symptoms are already present.

Dr. HAROLD GIFFORD, Omaha—It does not seem to me that the distinctive features of Dr. Bryant's balls have been sufficiently appreciated. This framework gives a hold for the sclerotic, as it contracts down and is much less likely to be expelled than a complete sphere. I can claim a slight share in this improvement, because when Dr. Bryant first used aluminium he had ordinary spheres made, but complained that he could not get them made without a hole in them. It occurred to me that the hole might be a good feature and I suggested that it might be a good plan to have more than one hole made for the tissue to grow into.

Dr. BRYANT—Dr. Fox has the advantage of us in the wild

and woolly West in that he has seen many more cases. The most of my cases are seen in working men injured in the railroad shops of my own city, and in the usual year we have perhaps ten to twenty cases. That is all that I have had the chance to see in the last two years. The aluminum ball has the advantage over the silver in that it costs only 4 cents unpolished, and a few cents more for the polishing. It is even lighter than the glass ball and is stronger.

GONORRHEAL CONJUNCTIVITIS AND IRITIS.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY FRANK S. MILBURY, M.D.

OPHTHALMOLOGIST, OTOLOGIST AND LARYNGOLOGIST TO THE BEDFORD DISPENSARY AND HOSPITAL AND THE NORTH BROOKLYN EYE, EAR AND THROAT HOSPITAL, BROOKLYN, N. Y.

Gonorrhœal conjunctivitis, or gonorrhœal ophthalmia is one of the most serious inflammations met with in the eye. It is produced, usually, by the direct transmission of pus from a gonorrhœa into the conjunctival sac. It finds its way to the eye from a urethral or vaginal gonorrhœa, or from a similar inflammation in some other eyes, so that the inoculation may either be from the individual himself, as is most commonly the case, or by some one else whose towel has been soiled by the discharge and used subsequently by the patient. Such pus is known to acquire its virulence from the presence of characteristic micro-organisms to which the name of gonococci is given.

The first symptoms may begin within from two or three hours to three days after inoculation. The appearance during the first day may be such as to suggest merely an acute attack of simple conjunctivitis. More frequently the rapidity with which the symptoms set in, and especially the early appearance of more or less chemosis, excites suspicion, and leads to the detection of the source of inflammation. Considerable differences exist in the length of time before the inflammation reaches its full height and leads to a copious purulent discharge. What is usually distinguished as the first stage, in which only a watery and slightly mucoid discharge—often considerable in amount—takes place, may last a couple of days or more, or may rapidly pass on to chemosis, due to a fibrino-plastic exudation beneath the conjunctiva and to intense redness and swelling of the lid. In the most severe cases the infiltration of the conjunctiva is so great that the latter in places appears no longer red, but grayish-yellow, because, as in diphtheritic disease of the conjunctiva, the vessels are compressed by the bulky exudation, and the conjunctiva is thus rendered anemic. The conjunctiva forms a tense, grayish-red wall about the cornea. Quite often the surface of the conjunctiva is found to be covered with clotted exudate like a croupous membrane. The secretion produced by the conjunctiva is like meat-juice; that is, it is a serum which is colored by admixture with blood, and in which float some flakes of pus.

The eye is uncommonly sensitive to contact; the lymphatic gland in front of the ear is swollen, and there is some fever and pain, burning and neuralgic in character; photophobia and lachrymation are constant, and increase as the tension of the swelling of the conjunctiva and lid becomes greater. The swell-

ing of the upper lid generally reaches such a degree as to cause it to hang down over the lid, and to assume a red, glossy appearance on its surface. It is then perfectly impossible for the patient to open his eye, or even to raise the lid to any extent with the finger. The full height of the inflammation is generally sustained for from one to three days, after which the swelling begins to diminish and the lid regains some of its natural wrinkling, and the circulation in the conjunctiva becomes freer. Simultaneously with this there begins a very profuse secretion of pus, which strikes out continually from the palpebral fissure.

In the further course of the disease the swelling of the conjunctiva keeps constantly diminishing, the eye in many cases returning to the normal state within the next four or six weeks. In most cases, however, a condition of chronic inflammation of the conjunctiva remains, which is designated as the third stage of the disease—the stage of chronic blenorrhœa.

Some cases—and often, it would appear, the less severe ones—in which the palpebral conjunctiva is much more affected than the ocular, so that the absence of marked chemosis renders corneal necrosis much less imminent, gradually lapse into a chronic state. In these cases the conjunctiva often remains enormously swollen for months, the tarsal portion assuming a thick and more or less velvety appearance, while the retrotarsal folds present large fleshy elevations and furrows, which protrude into prominence when the lids are everted. Not infrequently this leads to ectropion. The lower lid is more often ectropic, doubtless on account not only of the smaller size of the tarsus, but also on account of the thickening of the skin produced by excoriation by the overflowing tears and secretion. Occasionally, however, the upper lid is everted as well, the everted portion being hardened and encrusted if not properly attended to.

The most dreaded complication of blenorrhœa is the involvement of the cornea, by which, in many cases, incurable blindness is produced. At first the cornea becomes dull and covered with a slight diffused opacity. Then circumscribed infiltrations of grayish color make their appearance, which soon become yellow and break down into ulcers. These infiltrations may be situated at the margin of the cornea and may give rise to a speedy perforation of the latter, and this may prevent the destruction of the whole cornea. In some cases, however, these infiltrations may form a ring around the cornea and become confluent, producing thereby an annular abscess. In that event the cornea is lost, for this ring soon spreads over the whole cornea and destroys it, which usually happens in the most severe forms. Sometimes corneal ulcers are not developed until late in the disease, when the blenorrhœa is well on the retrograde path.

The prognosis of the affection depends upon the condition of the cornea and the severity of the case.

Treatment.—First, the great importance of warning patients suffering from gonorrhœa, or, in the case of women, from any other discharge as well, of the danger to their own eyes and to those of others living in the same room, in using towels, sponges, etc., is common, and of the consequent necessity of absolute cleanliness can not be exaggerated. One of the most important considerations, when only one eye is affected—and this, fortunately, is the rule—must be to protect the second from inoculation. This may

always be done by tying it up in the following way: The lids are gently closed and kept so by two or three strips of courtplaster. The hollow between the nose and eye is then filled up with absorbent cotton; over this a piece of guttapercha tissue is placed and the whole bound down along the edges with strips of closely-fitting adhesive plaster.

Special care must be taken that this adheres well along the nose, and the patient when in bed should lie as much as possible on the side of the affected eye, to prevent the discharge from trickling over to the other side and possibly loosening the plaster; if it is properly applied there is, however, not much fear of this. Before tying up the sound eye it is well to thoroughly wash it out with an antiseptic solution of corrosive sublimate, 1/6000 to 1/4000. In this way the effect of inoculation, which may have taken place shortly before the patient seeks advice, may in some instances undoubtedly be neutralized.

It is certainly very trying for the patient to have the good eye occluded from vision at a time when the other, owing to the great swelling of the lid, is temporarily useless. He is thereby rendered very helpless and unable to go about alone, so that his spirits, generally depressed as he is, are not raised by his being put entirely in the dark. On this account it is well, where this is possible, to protect the sound eye in a manner which does not altogether interfere with its use. This may be done by strapping a small watch glass over the eye: Dr. Buller's method. This plan has the advantage of allowing one to observe the sound eye all along, and therefore the shield can be left on continually, whereas the ordinary occlusion bandage has frequently to be reapplied. After this is done we turn our attention to the inflamed eye. The treatment to be adopted will depend on the stage of the inflammation and the state of the cornea. When the discharge is only serous and the chemosis slight, pretty frequent washings with corrosive sublimate solution (1 in 5000), and ice compresses, frequently changed, may be used, and the patient's room well ventilated and slightly darkened. When the inflammation comes to its acme, ice may be discontinued, and nothing used but the antiseptic wash and a little vaselin smeared along the edges of the lids. Local bleeding is recommended, but it is of doubtful use; still, it may be tried. The method generally in use is to make a large cut across the outer canthus with a pair of scissors. This at the same time tends to relieve the tension of the swollen lid on the eye. At this stage it is almost impossible to evert the upper lid, so that any attempt at the local application of caustic solution is neither desirable nor always possible. The cornea must be cautiously watched, and any symptoms of loss of vitality counteracted, if possible, by free incisions in the chemosed conjunctiva. However, this treatment is not always efficacious in arresting the dreaded complication, owing not only to lack of nutrition, by pressure on the anterior ciliary vessels, but to actual stasis in them. As soon as the upper lid can be everted without much difficulty, an application of nitrate of silver (5-10 grains to 1 oz.) should be made once or twice during the twenty-four hours, with the object of restraining the discharge and reducing the risk of subsequent inoculation of the cornea. Any ulceration of the cornea appearing at this stage may be treated by applying directly to it the same caustic solution, unless it has begun to heal, when care

should be taken that the nitrate of silver does not come in contact with it. Free exercise in the open air is desirable. Atropin to relieve congestion, the bowels kept free, good diet, and opiates when sleep can not otherwise be obtained, constitute the treatment.

Gonorrhoeal iritis develops in those cases in which gonorrhoea has given rise to a general infection; it is closely allied to rheumatic iritis, but is an exceedingly rare form. The inflammation is always severe, and the cause, owing to coexisting inflammatory changes in the joints, is apt to be overlooked. Gonorrhoeal iritis always seems to occur in both eyes, though not always quite simultaneously, and it may be with different degrees of severity in the two eyes. Successive attacks of gonorrhoea are sometimes accompanied each time by iritis, and in other cases, although no fresh inoculation takes place, a return of the joint affections may be accompanied by a recurrence of the iritis as well. The local treatment is the same as for other forms of iritis. Potassium iodid in large doses seems to be the best general treatment at first, followed, as the inflammation subsides, by quinin and iron.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT, IN RECOGNITION OF THEIR LABORS IN THE SURGERY OF THE PERINEUM.

BY BYRON ROBINSON, B.S., M.D.

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CHICAGO, ILL.

Continued from page 650.

GENERAL VIEWS.

As we employ perineorrhaphy to repair uterine prolapse (sacropubic hernia) as well as deficiency of the external sphincter apparatus, the subject covers a vast field. All kinds of genital supports—peritoneal, fascial and vaginal sphincter apparatus—must be considered. To have prolapse, both peritoneal and fascial supports must yield, as well as the occurrence of muscular relaxation. No one support to the exclusion of all others can be claimed for the uterus.

The utero-rectal (sacral) ligaments which consist of peritoneal duplicatures, containing fibro-muscular tissue, are very efficient uterine supports. The peritoneum itself, on account of its intimate connection to the pelvic viscera and fascia, doubtless gives considerable support.

The round ligament, with its peritoneal duplicature, the broad ligaments holding some muscular fibers, and the vesico-uterine ligaments all assist in supporting the genitals. In the consideration of sacropubic hernia, the intra-abdominal pressure, the state of the abdominal walls, as well as the visceral supports, should be weighed. Whether the patient has enteroptosis is a very significant question. The peritoneal duplicatures, with their contents, constituting mesenteries of the genitals, elongate in enteroptosis just as they do with the stomach, kidneys, intestines and other viscera. It is not uncommon to find a uterus excessively mobile, due to relaxed supports. Dis-

placements of the genitals not only involve their special supports and the pelvic floor, but the whole peritoneum and the abdominal walls.

It need not be doubted that the mechanism of the pelvic viscera is complicated. The levator ani, closely ensheathed in its superior and inferior fascia, forms a diaphragm through which the viscera find an outlet. By introducing the finger three-fourths of an inch into the vagina, the ledge made by the fascia and muscle enclosing the vagina can be distinctly felt. The muscle normally ensheathed in its scabbard, drives the vagina and rectum directly forward and

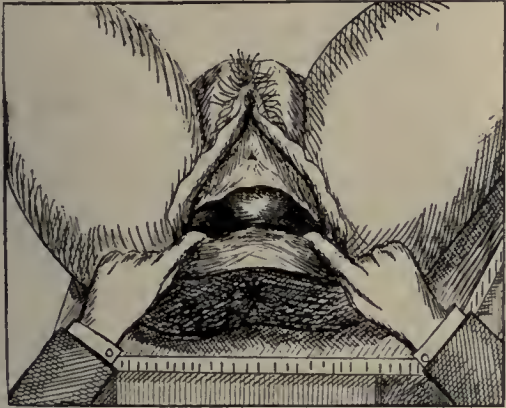


Fig. 10.—(Robinson-Scholer.) A medium degree of relaxed vaginal outlet, to be remedied by colpoperineorrhaphy.

upward toward the pubic arch. The fascia inserts itself into and embraces the lower third of the vagina and is the important support. The levator ani (fascial and muscular) supports lend to the lower third of the vagina a firm fixation, quite immovable, forcing its walls closely in contact for about an inch, producing a pronounced vaginal sphincter apparatus. In marked contrast to the lower third of the vagina is the upper portion, which is lax, mobile and yielding, being surrounded by loose connective tissue only. The urethral portion of the vagina and the neck of the bladder are firmly fixed by the vesicopubic liga-



Fig. 11.—(Robinson-Scholer.) A high degree of relaxed vaginal outlet, to be remedied by colpoperineorrhaphy.

ments which dwindle off into the white line. This can be seen during respiration with highly relaxed and displaced genitals; the urethro-vaginal portion remains still, while the remainder of the organs move to and fro with each breath or diaphragmatic movement. Superiorly the lower vagina is extremely firmly fixed by the three layers of firm, fibrous fascia—the posterior layer of the triangular ligament, the anterior layer of the triangular ligament, and the deep layer of the superficial fascia. These three powerful and dense fibrous layers originate at the

margins of the ischiopubic rami and stretch across the arch of the pubis, surrounding the vagina and being intimately blended in the vaginal walls. To be convinced of the fact that these fibrous laminae are the all-important supporting structures that not only retain the lower end of the vagina in position but prevent it from being torn away at labor, one needs only to dissect away all supports from the lower vagina except them, and then by tugging and dragging on the inlet of the vagina, note their almost unyielding qualities. Parts of these fibrous layers (triangular ligament) are frequently lacerated in labor, and must be included in the flap-splitting and deep sutures to restore the lower vaginal tube.

Laterally, the vagina is firmly fixed against the descending rami of the pubes, not only by the so-called triangular ligament, but by the levator ani fascia superior and inferior enclosing the levator ani muscle. By introducing the finger for about an inch into the vagina and palpating the posterior and lateral parts, one can feel a blunt band running from the pubic ramus on each side downward and uniting behind the vagina in a still thicker and more blunt band. This is the free edge of the levator ani and its double fascia, where they come in contact and embrace the vagina. The vaginal canal, below the free edge of the levator ani and its fascia, is directed forward by the perineal body and triangular ligament while the same body directs the rectal canal backward.

The lower third end of the vagina is quite thick, very vascular, possesses turgidity and is surrounded by some circular fibers. In short, the lower third of the vagina possesses a distinct, vigorous sphincter apparatus which plays an important rôle in the support of the sexual organs and in perineorrhaphy.

In making a division of the supports of the pelvic viscera into those of the peritoneum and those of the sphincter apparatus, we may first make a few remarks on the deficiency of the peritoneal supports. The utero-rectal (sacral) ligaments (extending from the rectum to the neck of the uterus) are the most important of the peritoneal supports. If they relax, the cervix will pass downward and forward, while the body and fundus of the uterus will pass backward. In other words, elongation of the sacrorectal ligaments is the initial stage of retroversion and descensus. Retroversion changes the intra-abdominal pressure from the posterior surface of the uterus to the anterior and superior. After retroversion the intra-abdominal pressure is exercised on the top and anterior surface of the uterus, driving the pointed neck, like a conical wedge downward at every breath. The cervix acts in retroversion as a wedge or cone, and gradually forces the sphincter apparatus to yield. The filling bladder forces the fundus backward and the full rectum pushes the cervix forward, all perfecting the retroversion, the beginning stage of prolapse, by elongating the utero-rectal ligaments.

In colpoperineorrhaphy, we must not only repair the deficient sphincter apparatus, but the cone-shaped descending cervix must be amputated and its blunt end turned downward, so that it should point and rest against the sacro-coccygeal region (bone and ligaments) instead of attempting to dilate the levator ani muscle at every breath by the change of intra-abdominal pressure. When the cervix once gets firmly into the vulva, i.e., into the vaginal sphincter apparatus, the descent is rapid and inevitable. The upper two-

thirds of the vaginal walls being loose, easily descend with the uterus. In descensus uteri, the vagina is inverted, showing in all probability that intra-abdominal pressure had displaced the uterus first in the process of descent. An intact sphincter apparatus will long retard a descending uterus. The anterior vaginal wall appears first in prolapse; however the vesicopubic ligaments may still retain the bladder in position. Posteriorly, the peritoneum descends with the cervix and upper portion of the vagina. In other words, the upper part of the rectum and vagina are separated, while the lower rectum and vagina are closely connected by a musculo-fascial septum, with the thin edge of the wedge upward.



Fig. 12.—(After Hegar and Kaltenbach.) Baker Brown's method, about 1850.

Rare forms of prolapse may occur where the cervix is elongated or where the peritoneum is loosened and stretched. Space forbids reference to many other conditions and kinds of peritoneal supports.

GENERAL VIEWS IN THE DEFICIENCY OF THE SPHINCTER APPARATUS.

The vagina should engage more of our attention, because it is on this apparatus that the operation of colpoperineorrhaphy is applied. The primary factor which produces deficiency in the supports of the sphincter apparatus is labor. Other factors play but a secondary rôle.



Fig. 13.—Dr. Goodell's method of colpoperineorrhaphy.

The pelvic fascia is not infrequently lacerated near the ischiopubic rami; where the fascial sheath is ruptured the contained muscular fibers also suffer laceration. The results are cicatrices and loss of substance, which may be felt by palpation. The anterior vaginal wall generally escapes laceration, but the posterior vaginal wall is often damaged, showing various sized and formed lesions. Relaxation is prominent and

closure incomplete. Instead of the curved lower canal with the perfect sphincter apparatus, there is a patulous, relaxed, open mouth, resembling a tobacco pouch which has lost its puckering string. Sometimes the vaginal mouth is closed by an anterior and posterior vaginal fold, for a considerable distance up the vagina. The causes of displacements of the sexual organs are so numerous—as elongation of the utero-rectal ligaments, elongation of the cervix, laceration of the levator ani fasciæ, muscles and triangular ligament, intra-abdominal pressure, enteroptosis—that all possible factors must be considered in repair. Repair must consist in correcting vicious forces, as the pointed cervix should be amputated and turned backward, the posterior vaginal curve should be restored with a perineal body to turn the rectal end back and the lacerated levator ani fascia should be reunited.

An analysis should be made of the factors producing displacements and lacerations in the genital organs. Deficiencies of peritoneal support should be considered distinctly from deficiencies of the sphincter apparatus; however, the both may be often combined. Yet, after all, our chief attention will be directed to deficiencies of the sphincter apparatus, for on it depends prolapse and lacerations, chiefly arising in it. Deficient primary peritoneal supports give rise to vaginal inversion as rectocele, vesicocele, bladder and rectal disturbances, and the vaginal mouth loses its puckering string condition. In colpoperineorrhaphy, the whole of the tissue of the pelvic floor should be utilized for support by forcing it into the median line. This will rest over the tonicity of the pelvic floor and form a firm cicatrix which will prevent sacro-pubic hernia and also reproduce the normal curves of the canals. To accomplish this, extensive denudations or flaps are requisite.

Successful colpoperineorrhaphy must make the pelvic floor as tense as possible and the newly formed cicatrix will aid materially in its success. The thickened tissue (columns) on the anterior and posterior vaginal walls are remnants of Miller's ducts, which should be and are preserved in both Dr. Emmet's and Mr. Tait's flap operations. They furnish evident support from their fibrous masses. It may be observed that nearly all successful methods of perineorrhaphy make the denudations in the vaginal sulci on each side, and avoid sacrificing the thickened tissue on the anterior and posterior vaginal walls. Reference to the labors of Bischoff, Martin, Hegar, Kaltenbach, Schatz, Emmet and others will show this to be correct. After performing colpoperineorrhaphy posterior, Martin makes what may be called an extension of the perineum forward. This is an excellent method of restoring the anterior curve of the lower end of the vagina. Any surgical procedure, to be successful, must conform to the anatomic structures. The denudation of the lateral vaginal sulci or the flap operations conform to anatomic conditions, and so far have proved successful. The reason denudation in perineorrhaphy is so successful is because healing in the vagina occurs with considerable certainty.

THE METHODS OF PERFORMING PERINEORRHAPHY.

The methods of perineorrhaphy may be classified into three divisions, viz: Those which started at the vulva (denudation); those which attack the lower vaginal portions (denudation); those which depend on the flap procedure (which embraces colpoperineorrhaphy).

Numerous methods of perineorrhaphy have been tried since the days of Ambrose Paré, Dieffenbach and Baker Brown, when they simply united the superficial tissue which was situated on each side the visible laceration. This was a superficial vulvar procedure and was of small value except to prepare the way for more useful methods.

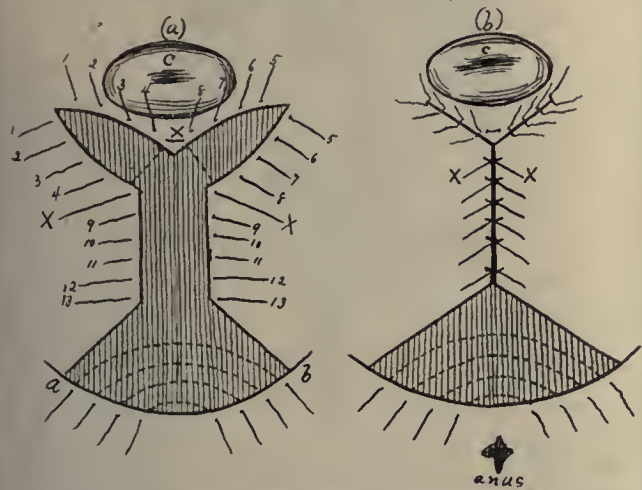


Fig. 14, a and b.—Dr. Reamy's method of colpoperineorrhaphy.

HISTORY.

If the ancients performed successful perineorrhaphy, I am unable to obtain the records. Colpoperineorrhaphy as a modern operation can scarcely boast of being more than a century old. Surgeons sought to prevent prolapse by excising of the vaginal wall so that the resulting inflammation would produce a contracting cicatrix. Others applied caustics for the same reasons. According to Schroeder, Girardin, Laugier employed the blue stone. Phillips used "smoking saltpetre;" so did Laugier, Velpeau, Kennedy, Dieffenbach, Colles and Simon. Chippendale sought to stir up inflammation and cicatricial contraction in the vagina by the very questionable method of infecting it with gonorrhoeal virus. Operators have attacked the vulva or vagina. The vulva was first attacked by such surgeons as Baker-Brown and Paré. Fricke was the pioneer who performed episiorrhaphy which consisted of denudation of both labia and union by sutures. The failures of Fricke's episiorrhaphy induced later surgeons to operate higher up in the vagina, which finally resulted in the Emmet and Tait methods. Mende suggested denudation in the region of the hymen. Malgaigne thought it should be done deeper in the introitus. Jobert cauterized the vagina when it protruded, and after the exfoliation of the eschar, united the raw surfaces with sutures. Desgranges employed chlorid of zinc to produce cicatricial contraction. Marshall Hall was among the first to employ elytrorrhaphy. He cut out oval or long segments of the vaginal mucosa and united the denuded surfaces with sutures. Dieffenbach formed flaps. Velpeau was one of the first surgeons to do successful perineorrhaphy. Langenbeck and Karl Braun were also pioneers in the operation. Early operators failed on account of lack of anatomic knowledge and prevailing sepsis. It is not many decades since surgeons learned the necessary anatomy to employ in colpoperineorrhaphy. It was learned that the perineum must not only be elongated, but a solid, thick, unyielding pelvic floor must be constructed that the sexual organs can not escape. Per-

haps Simon, the predecessor of Czerny at Heidelberg, was the real founder of colpoperineorrhaphy. when, in 1867, he was not only performed but added to it that of posterior colporrhaphy. Simon freshened the vaginal wall with a scalpel, and a fenestrated speculum was placed in the vagina while he freshened the upper part of the vaginal wall by having an assistant introduce the finger in the rectum and force the vaginal mucosa out at the vulva. Veit, Hegar and Spiegelberg aided to develop the operation. As time passed, instruments for support were gradually displaced by more perfect operations, owing to more perfect anatomic and pathologic knowledge. Most of the advances are due chiefly to the investigations of Freund, Hugier, Martin, Schroeder, Wilms (1879) and Staude (1880), Breisky, Huepfel and others mentioned in this monograph. The practical execution of colpoperineorrhaphy by the celebrated Heidelberg surgeon, Simon, is the real foundation of subsequent labors. The success attending Simon's addition of colporrhaphy demonstrated that some form of vaginal operation is required in prolapse or deficiency of the peritoneal or sphincter apparatus of the pelvic floor. Celsus, it is reported, reorganized perineal lacerations and suggested rest in bed and tying the legs together, but gave no surgical views of repair. Ambrose Paré, a fertile genius, demonstrated the use of sutures before 1880. He had a pupil named Guillenneau, who-

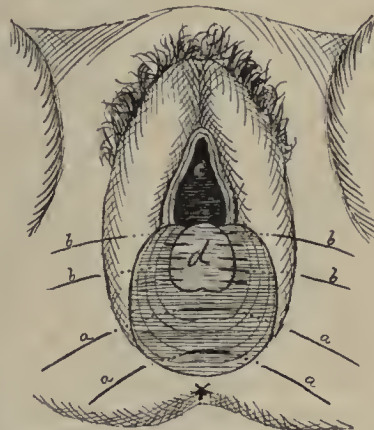


Fig. 15.—Colpoperineorrhaphy according to Bischoff. The tongue-shaped portion of the posterior wall of the vagina, d, is not dissected away. The denudation in this operation is severe and bleeding is active, and should the operation fail much damage is done. a, a, and b, b, show the method of introducing the sutures and the shape of the denuded area.

restored the parts, applied the sutures and secured curves. Sancerotte and Noel secured success about 100 years ago. In 1829, Dieffenbach, surgeon to the Charity Hospital in Berlin, devised useful methods of repair. The deductions which made Dieffenbach celebrated in perineorrhaphy were his methods of lateral incisions (to relieve tension) and confining the bowels by the aid of opium. Chelius opposed this view, insisting that the bowels should be loose. In 1852 Von Langenbeck gave to the world his views through a memoir written by Verhaeghe of Ostend. This definitely advocates the use of the flap and splitting of the rectovaginal septum. Marcy gives credit to Dr. Jenks for originating the flap. Zweifel gives Mr. Lawson Tait credit for the flap-splitting method, to which he is no doubt entitled. Hart and Barbour credit A. R. Simpson with it. Baker-Brown published in 1854 his first edition of the "Diseases of Woman," in which he advocated Dieffenbach's lateral incisions, the use of deep quilled sutures, confining the bowels with opium, and bilateral division of the sphincter.

The perineal sutures were removed the third day, the remainder later, as late as twelve days. All sutures were silk. It appears that Dieffenbach and Baker-Brown realized that the denudation should be carried up into the posterior vaginal wall, the fact which Simon actually demonstrated. It is reported that Mettauer of Virginia in 1830 used lead sutures; other metallic sutures were also employed. In New York, in the Woman's Hospital, Drs. Sims, Emmet and Thomas further developed colpoperineorrhaphy.

At present the operation should be termed colpoperineorrhaphy. New aids have also been developed in regard to the operation, as A. Martin taught for years that one should begin the operation for colpoperineorrhaphy by setting up an involution of the uterus by amputating the cervix. I have amputated the pointed conical cervix to get rid of the dangerous dilating wedge to the sphincter apparatus of the pelvic floor, to prepare for successful colpoperineorrhaphy. A new era appeared in this operation when the flap began to be formed. So far as records are accessible, the late Berlin surgeon, von Langenbeck, in 1852, first described the flap operation in perineorrhaphy. He describes the splitting of the rectovaginal septum making a vaginal flap forward and a rectal flap backward. Langenbeck's description of perineorrhaphy, as translated by Dr. Marcy, is the most important contribution to the subject before the time of Simon of Heidelberg. In fact, it is almost equivalent to Simon's, and in one sense superior—in the use of the flap. Perineorrhaphy was also cultivated by Zary, Mursina, Mensel, Osiander, and Horner. Perineorrhaphy was first performed with silk sutures, the hot iron, and chemicals. About three-quarters of a century ago metallic (wire) sutures appeared. In 1879, Werth published views on the use of catgut (animal ligatures) for buried sutures. Schroeder chiefly introduced the buried spiral catgut sutures in perineorrhaphy. Silkworm gut is one of the best materials for sutures in general use at present. About 1872, Mr. Lawson Tait began the use of a certain flap method, consisting of resplitting the old cicatrix by the use of scissors, reuniting the produced wound surfaces by means of sutures which do not penetrate skin or mucous membrane. The utility of this consists in its application to either, or both, perineorrhaphy or colpoperineorrhaphy. The flap operation was dimly begun by Dieffenbach, in 1829, by his lateral incisions to relieve tension. The flap operation was definitely introduced in perineorrhaphy by von Langenbeck, about 1850 ("Memoire," 1852, by Verhaeghe). In 1861, Colles of Dublin, in a case of vesicovaginal fistula, resplit, instead of pared, the edges, and united the resultant flap. In 1872, John Duncan resplit the edges of an artificial anus and reunited them with interrupted catgut sutures. He forced the flap of mucosa upward and drew the flap composed of muscular and serosa outward, thus increasing vastly the denuded surface for coaptation. Hart and Barbor report that Dr. A. R. Simpson applied this flap method to perineorrhaphy. Not far from 1872, Mr. Lawson Tait applied the flap operation of Langenbeck, Colles and Duncan to the subject of perineorrhaphy. He added to all previous labors the use of sharp-pointed elbow scissors, and the introducing of the sutures without penetrating the skin or mucosa of vagina or rectum. Silkworm gut sutures are employed and may remain in situ for ten days to six weeks. According to Sanger, Stein, a Dane, and Voss, a Norwegian, used

similar methods. Later, Hadra, 1887, contributed valuable views on the restoration of the pelvic floor, as well as Marcy, Jenks, Byford, and Reamy.

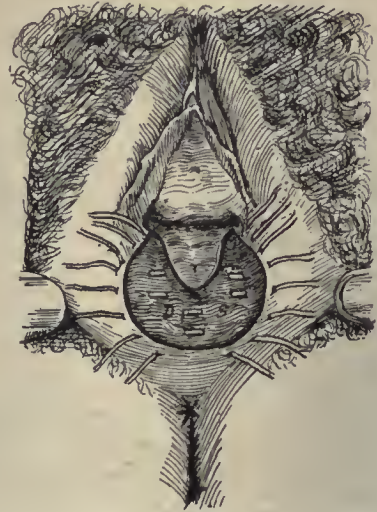


Fig. 16.—Dr. Skene's method. The area D. S. is denuded, with sutures in situ ready for tying. The method resembles that of Hegar and Staude.

The various so-called operations for (colpo) perineorrhaphy are numerous. The first operation devised involved the vulva, the second both vulva and vagina.

1. Ambrose Paré (1580) used simply sutures. His pupil Guillemeau practiced and improved the method (1649). LaMotte, Smellie, Noel Murena and Sancerotte practiced it.

2. (1830) Dieffenbach, union by sutures, and tension relieved by lateral incisions. Roux (1834) introduced it into France, as well as Mark See (1885), and Palaillon (1885).

3 X. Baker-Brown (1885), union by sutures of the denuded surfaces. Wilms and Staude cultivated it in Germany.

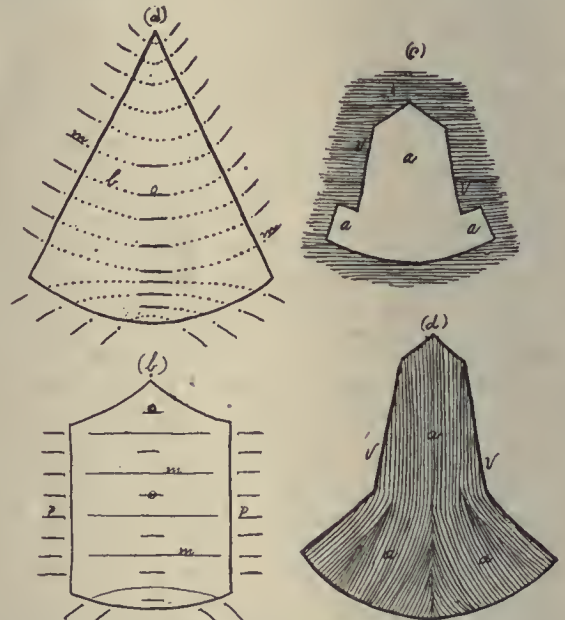


Fig. 17.—Shapes of the denuded areas in colpoperineorrhaphy; a, Hegar; b, Simon; c, Lossen; d, Fitch. In a, and b, the dotted line represent the sutures buried by tissue, the black lines the exposed sutures.

4. The next important contribution and method devised in perineorrhaphy was von Langenbeck's flap method (1850). It was described and performed with a master hand. Von Langenbeck also suggests that

the lateral incisions of Dieffenbach may be added, as it obviates dragging from movements. He advocated removal immediately after the injury, if possible. Von Langenbeck makes several distinct steps in the operation: vivisection of the free border of the recto-vaginal septum; the undoubling of the septum and the formation of the flap destined to form in the new perineum, the anterior side of the triangular space formed by two canals, vagina and rectum, with the perineum as the base; the vivisection of the two lips of the laceration; the insertion of the sutures. In this operation of perineorrhaphy von Langenbeck started the flap method. The flap operation protects the wound from secretions (vaginal or rectal).

5. In 1867 Simon of Heidelberg began the real modern steps in successful perineorrhaphy, which was a combination of perineorrhaphy and posterior colporrhaphy. Simon simply improved on Baker-Brown's method by not only freshening the perineum, but also carrying the denudation high up into the vagina. Simon denuded the vagina by the aid of a fenestrated speculum. The upper angle of the vaginal wall was denuded by introducing the finger into the rectum. Spiegelberg and Veit aided in developing the subject. Englehart wrote in 1871; Banga in 1875 wrote a thesis on "Kolpo-perineoplastik" according to Bischoff. In 1879 Hegar and Kaltenbach made excellent contributions. In 1877 Le Fort, and Neugebaum in 1881, added their labors. In 1877 Dr. Edward W. Jenks of Detroit began the publication of a series of articles on perineorrhaphy which was really a flap method of operating—a distant relative of von Langenbeck's procedure. Dr. Jenks first cut away the flap, but afterward preserved it. The method is almost precisely similar to the flap method attributed to Dr. A. B. Simpson by Hart and Barbour. In 1879 Werth began to use buried catgut to suture the wound. Dr. Bröse, in 1883, used buried animal ligatures. H. O. Marcy published a series of articles (1883) on perineorrhaphy, advocating the flap method and buried animal ligatures, which he first used in hernia in 1881. A. Martin of Berlin contributed excellent labors about 1882. About 1880, Professor Schroeder of Berlin contributed excellent results by the use of the "étage" stitch. It was a continuous running suture of catgut buried in the tissues of the denuded surfaces. As a pupil of Schroeder and Martin, I observed excellent results from this method. Bischoff in part revives the flap operation of Langenbeck. However, his operation was quite influential in its day. Drs. Byford, father and son, made valuable contributions to the subject. History notes that Simpson carried Duncan's flap-splitting to the perineum. Simpson performed a kind of four-flap perineorrhaphy for many years. Perhaps Mr. Tait imbibed some of his views.

(To be continued.)

A LIGATION OF THE EXTERNAL ILIAC ARTERY.

BY G. G. DARLING, M.D.
ANN ARBOR, MICH.

The town of S. may be considered slow and dull, but it is nevertheless patriotic. The Fourth of July was celebrated there, this year, in a truly old-fashioned way, though the only ordnance available was a combination of two anvils and a large wagon-nut. The hole in one anvil was filled with powder, and the

nut, two inches in diameter and half an inch thick, was placed over the hole, and likewise filled with powder for good measure. The second anvil was placed upon the nut to confine the charge. The volunteer artillery company did not consider that the addition of the nut to the infernal machine would increase the danger and retreated but a short distance when the fuse was lighted. Don L., a lad of seventeen, was standing on the opposite side of the street, some thirty-five feet from the anvil at the time of the explosion. Simultaneously with the report he experienced a sensation of having been struck a severe blow immediately above the symphysis pubis. There was no pain commensurate with the severity of his injury. A few moments later, blood trickling down his leg apprised him of the fact that he had been wounded. He walked home, a short distance, and Dr. Sheeder was called. Dr. Sheeder states that in examining the patient he found a wound, nearly round and about an inch in diameter, immediately above the pubes and a little to the left of the median line. The deeper tissues fell back into place so that examination with the probe failed to locate the foreign body. When the clothing was examined it was found that two thicknesses of cloth had been cut away from the trousers, leaving a hole about one inch by half an inch in dimensions; a piece the same size had also been cut from the shirt. These pieces of cloth had been driven into the wound by the projectile.

Dr. Sheeder washed the wound with a bichlorid solution, made a counter-opening to the left of the point of entrance, and put a drainage-tube in these openings. The patient suffered but little pain or discomfort. He was kept in bed, on a low diet, and the wound was irrigated daily with bichlorid solution. On the fifth day the fragment of shirt appeared in the wound and was easily removed. At a subsequent dressing fine bits of gravel came away, indicating that the iron struck the ground and rebounded before inflicting the injury. By this time there was considerable induration of the tissues in the inguinal region, so that the thigh was flexed and partially fixed. The urine was passed with difficulty, but more readily when the patient was sitting upon the edge of the bed. On the seventh day, while sitting on the edge of the bed to void urine, there was a sharp arterial hemorrhage from the wound. This ceased when the patient resumed his usual position—on his back with the thigh flexed. The recurrence of the hemorrhage several times under the same conditions alarmed the patient's friends, and counsel was called. I reached S. at 10 P.M., the seventh day after the injury; saw Dr. Sheeder and from him obtained the history as above given. I found the patient quite weak from the loss of blood. He was lying on his back, the left thigh flexed upon the body, with a pillow passed under the knee for support. The left leg was slightly cooler to the touch than the right. There was no femoral pulsation on the injured side. Before proceeding further with the examination, I requested him to sit upon the edge of the bed as he had done previously when the hemorrhage had occurred. He did so, and a sharp hemorrhage followed, which stopped promptly when the horizontal position was taken.

The necessary instruments and the field of operation were prepared, and the patient was anesthetized. After enlarging the skin wound to the left, I passed

my finger into the opening, and was able to feel a hard foreign substance which lay behind Poupart's ligament and beneath the artery. Its relation to the vein I could not accurately determine. When the tissues were pushed aside, the external iliac artery was easily felt and so far exposed to the touch that I could easily grasp it between my finger in the wound and my thumb outside, if hemorrhage should follow the removal of the foreign body. I then seized it with a pair of forceps and withdrew what proved to be nearly one-half of the nut which had been used in firing the anvil. A gush of blood followed its removal, but by thrusting my finger into the wound and grasping the vessel, as I had planned, the bleeding was completely controlled. Under my direction, my assistant, Dr. Burr, cut down to the vessel and secured it with a catgut ligature. A second ligature was passed one-half inch above the first for greater security. Now came the question of ligating the vessel on the distal side of the wound. The clot in the distal portion was already one week old, and the wound was comparatively free from infection; why disturb this natural hemostatic to apply a ligature? Acting on the supposition that a clot which had effectually blocked the artery for a week, must, in the absence of suppuration, be sufficiently organized to continue to do its work, I decided to break a well-established rule of surgery and not ligate below the injured point. The wound was washed and lightly packed with gauze. The opening through which the iliac had been ligated was left to heal by granulation.

Two days later, Dr. Sheeder informed us that another piece of cloth had come away. A week after the operation I went to S. and found the patient doing well in every respect, though the third piece of cloth had not yet appeared. Three days later it presented in the wound, but a vigorous transmitted pulsation warned the doctor that its close connection with the vessel rendered its removal at that time unwise. It subsequently sloughed out without doing any damage, and the wound healed. He does not experience the least discomfort from the change in the course of the blood.

The following features of the case are worthy of note: That fatal hemorrhage did not immediately follow the receipt of the injury; that the iron and the cloth should have effectually blocked the wound in the vessel for a week; that there should have been so little infection or fever; that the formation of a clot made it possible to successfully treat a large wounded vessel by ligature above the wound alone; that in the passage of the iron across the inguinal canal in the upper portion, there should have been no damage to the spermatic cord, and that the external iliac vein should escape serious injury.

SOCIETY PROCEEDINGS.

The Chicago Society of Internal Medicine.

First Regular Meeting, June 23, 1898.

Dr. JOHN A. ROBISON, the President, in the chair, and twenty-seven members present.

Dr. GUSTAV FÜTTERER read a paper¹ entitled

HOW SOON DO BACTERIA WHICH ENTER THE PORTAL VEIN BECOME DISSEMINATED THROUGHOUT THE SYSTEM, AND WHEN DOES THEIR ELIMINATION COMMENCE?

After showing, from the literature, that bacteria can pass through the walls of the intestinal canal, without grave lesions

being present, and enter the general circulation, the writer set for himself the task to inquire experimentally whether, after they had entered the branches of the portal vein, the liver would offer any marked resistance to their reaching the general systemic circulation.

In the several experiments the bacillus prodigiosus and the bacillus pyocyaneus were the germs used, and every precaution was taken to prevent outside and accidental contamination and to render the results conclusive. The bacteria, with physiologic salt solution, were injected into the portal vein of dogs and blood taken from a jugular vein, at varying intervals of time, was used to inoculate culture media. As a result of five experiments the author concludes that micro-organisms may pass from the portal vein into the general circulation within one minute's time.

As to the second question: When does the elimination of bacteria commence? the author states that it begins immediately. He has tied the left ureter of a dog, injected bacillus prodigiosus into one of the jugular veins, taken specimens of urine from the pelvis of the corresponding kidney and found identical germs present within two minutes' time. In another experiment upon a dog, the common bile duct was laid bare and a canula introduced and bile obtained after the bacillus prodigiosus was injected into a jugular vein, with positive results after two minutes' time. This experiment, with extraordinary precautions in the technic, was repeated with like results. From these experiments the author concludes that the elimination of micro organisms which find their way into the general circulation is inaugurated at once by the kidneys and the liver.

Dr. BILLINGS said that every practitioner has seen clinical evidence of that which has been verified by the praiseworthy and valuable experimental work done by the author.

Dr. GENTLES said that when it is considered how long the typhoid bacillus may remain localized in the gall-bladder, he could not help feeling astonished at the short time which elapsed between the injection of bacteria into the portal vein and their appearance in the jugular vein, as detailed by the author.

Dr. GEORGE F. BUTLER read a paper² entitled

CHRONIC PARENCHYMATOUS NEPHRITIS AND AORTIC REGURGITATION, WITH ENORMOUS DILATATION OF THE HEART.

The case presented was that of a man 65 years of age, who several years ago had acute articular rheumatism and gonorrhoea. He dates his present illness to three months ago, complaining of shortness of breath on exertion, cough, palpitation, nausea and vomiting, constipation and great weakness. There are present arterio-sclerosis, visible pulsation of arteries of arms, pulse rapid and collapsing, a blowing systolic murmur at apex which is transmitted to left axilla, an aortic diastolic murmur, a double murmur in the femoral arteries, enlargement of the heart especially on the left side, hepatic enlargement, edema of legs, and albuminous urine with hyaline and granular casts. From these symptoms and findings is based the diagnosis of general arterio-sclerosis, chronic parenchymatous nephritis, aortic regurgitation and hypertrophic dilatation of the left ventricle. The mitral systolic murmur is considered as being due to a mitral incompetency secondary to the ventricular dilatation. After discussing further the diagnosis of cardiac valvular disease and exhibiting sphygmographic tracings taken from this case, the author passed on to the subject of treatment. Digitalis was characterized as the typical cardiac stimulant, indicated in all cases of hyposystole, irrespective of the nature of the valvular lesion, but having its action guarded by a vaso dilator in cases such as the one detailed. He advises the use of digitalis in efficient doses, with opium in small doses as a vaso-dilator. In the case given, 15 minims of the tincture of digitalis, with 5 minims of the deodorized tincture of opium, was given, every four hours at first, but with gradually increasing intervals, with excellent effect. In addition strychnia, cholagogue cathartics and a careful diet were employed. In conclusion the author made a plea for individualized treatment based upon a broad pathologic conception of the case and a familiarity with the physiologic action of the remedies employed.

Dr. PATTON had seen the case with Dr. Butler. At that time doubt was expressed by some of the hospital internes as to the presence of aortic regurgitation, because of the effect upon the pulse tracing by the administration of digitalis. As the paper stated, that, and the great enlargement of the heart, which was much larger than is found in any other condition, was regarded as a strong point in sustaining the diagnosis, aside from the presence of a murmur. The tracing is of interest in this connection because some authors still teach that in aortic

¹ Published in full in "Medicine" for July, 1898.

² Published, in full, in the Medical Standard for August, 1898.

regurgitation digitalis is a dangerous drug, to be given, if given at all, with caution. This, in the abstract, he had always regarded as fallacious teaching, because we obtain, relatively, the same effect from digitalis in the lesion in question as in any other, only it is necessary to give much larger doses in order to get the same result. For instance, in using digitalis, one of the most active of the alkaloids of digitalis, he frequently gave a dose up to $\frac{1}{3}$ grain of Merck's product, although the books say the dose is about $\frac{1}{50}$ grain and that above $\frac{1}{50}$ grain is a dangerous dose. In this particular class of cases, with the left ventricle secondarily involved, it is necessary to give large doses. Mention was made of the case of a lady of 80 years, with atheromatous stenosis, who is taking, with great benefit, $\frac{1}{6}$ grain doses of digitalin, and the sphygmographic tracings exhibit the same beneficial change as in Dr. Butler's case.

Regarding the administration of digitalis the speaker did not suppose that anyone would attempt to obtain its effects in any valvular lesion without appreciating the dynamic force of the circulation, the relative amount of hypertrophy and dilatation and the peripheral resistance to the circulation. The reason why the heart fails in dynamic power is, that there is a perivascular sclerosis which interferes with nutrition and the heart muscle becomes degenerated and weakened. It dilates and symptoms of a failing heart arise, because the intraventricular pressure exceeds the contractile force of the heart muscle; this can be counteracted by giving something that produces more dynamic force and if digitalis does not do this, he did not know what does. The dose must be such that produces sufficient contraction to overcome the resistance. If small doses do this, well and good; but in his experience he had found that it will take relatively twice as much digitalis to produce the same amount of contraction of the ventricle in an aortic as in a mitral lesion. Failures are often due to disturbance of the normal relation between the peripheral resistance and the contractile force of the heart. The peripheral resistance becomes relatively too great and must be reduced by a vaso-dilator. Opium is very serviceable for this purpose, from 3 to 5 drops of the deodorized tincture usually being sufficient. Such doses are harmless, even in cases associated with nephritis. With the exception of nitrite of sodium, the action of the other vaso-dilators is too transient. Nitrite of sodium is very useful in these cases and the balance of the circulation can often be restored by its use.

Dr. GOODKIND said that he saw, recently, at the Michael Reese hospital, a case similar to that of Dr. Butler's. With marked symptoms of cardiac insufficiency, due to combined aortic and mitral regurgitation, there were general anasarca, double hydrothorax, renal stasis, etc. The patient was given, by mistake, 2 drams of a freshly prepared tincture of digitalis. The error was not discovered for an hour, when the stomach was emptied, bringing away some of the digitalis. The following was the first good night's rest the man had obtained in months. Since then the anasarca has disappeared, the pulse has become more rhythmical, and there has been a very marked improvement in all his symptoms, subjective and objective.

Dr. BABCOCK said that while he believes in the use of digitalis in this class of lesions, he differs with the author of the paper and previous speakers with reference to the dosage. He can readily understand that in many of these cases large doses of digitalis not only may be well borne, but may be absolutely indispensable to obtain the effects desired. This leads him to say with reference to digitalis generally, the dose should be determined by the effects, but on the whole he believes that it should be the smallest which will produce the desired effect. That many times we can accomplish excellent results with small doses if the heart is relieved of much of the burden it has to bear. It is a mistake to pour in digitalis without lightening the heart's work. While he knew that the gentlemen who preceded him realized this fully as well as he did, the general practitioner, who does not see many of these cases, might be led into error by reading a statement that cases of aortic regurgitation in general require larger doses of digitalis than others. One great danger in these cases is the condition of the arteries secondary to or associated with the cardiac lesion. The arteries are sclerotic, and if the left ventricle becomes again powerful in its contractions, and if the vigor of the myocardium has not become greatly impaired, large doses of digitalis might readily cause the heart to throw a volume of blood into the arteries with such force as to cause a rupture of some of the degenerated vessels. He believes this is not an imaginary danger. Furthermore, if the dilatation of the left ventricle is due to the cause assigned by Dr. Butler, viz., the increase in the systole required to overcome the obstacle, rather than to the reflex of blood into the ventricle during diastole, then the digitalis in large doses might bring about an increase of dilatation. Dr. Babcock said he is not convinced that the cause of

the dilatation is that assigned by Dr. Butler, but if it is, it seems to him that the reason he assigns is an argument against large doses of digitalis. In the treatment of these cases he lays particular stress upon sufficient rest in bed and the removal of obstacles to the emptying of the left ventricle by lessening peripheral resistance. He also appreciates the wonderful effect of opium in all cardiac cases, but that we must here also speak a word of caution against its general use in connection with digitalis. It is in chronic cases that digitalis has to be prescribed for a long time, for months and often for years, and if opium is combined with it, the opium habit is likely to be formed. The argument might be advanced that if it prolongs life it is of no consequence, but it seemed to him that if we could accomplish with small doses of iodid of potassium practically the same results, so far as the vascular system is concerned, we should use it because it is better for the patient and it certainly is devoid of many evil effects on digestion which are caused by opium, and the nutrition of the patient is a factor of much moment and one which we must never forget, for it is upon the nutrition of the myocardium that the heart depends.

Dr. BILLINGS alluded to the differences of opinion as to the diagnosis and treatment, especially as to the use of digitalis, which, almost of necessity, prevailed among clinicians. He believes, however, that in that form of insufficiency which is due to real, endocardial, valvular disease, there is great risk to life in the use of an agent which causes violent contractions of the heart. In cases due to atheroma and consequent shrinking of the valves there is no possibility, or probability, of washing off any foreign material. As to the use of digitalis in these old people with arterial changes, he believes we all differ in our views, as may be seen by reading the journals and text-books. But he does not think that there is much danger of the rupturing of an artery, because if the heart is so weakened by disease that there is a loss of tension, then there is a lack of arterial pressure, the blood being dammed back on the venous side, as shown by the enlarged liver and spleen and congested kidneys. Digitalis fills the arteries and carries the blood forward. He agrees with Dr. Babcock in that more is to be gained by rest and emptying the right side of the heart than from digitalis. Digitalis forces the blood stream and improves the venous circulation, but this may be done in an easier and less dangerous way. He quite coincided with Dr. Babcock as to the use of digitalis with opium, but thinks opium is contra indicated in cases where the kidneys are involved, with a diminished quantity of urine. In cases of uremia absolute physical rest increases the elimination of urea. In conclusion, he remarked that the longer he practiced medicine the less digitalis he used, particularly in some valvular lesions, and resorts to smaller doses.

Dr. ROSENTHAL considers the state of the pulse the only reliable guide in the use of digitalis. The *pulsus celer et altus* will not allow digitalis, as arterial rupture might ensue. German authors, generally, teach that there is a difference between the tincture and the infusion of digitalis, preferring the latter, and this was also his preference. He considers digitalis inapplicable.

Dr. WELLS stated that his remarks would be limited to the question of diagnosis, which was particularly worthy of consideration in this connection, because the case presented by Dr. Butler was not, from a diagnostic standpoint, a typical one of aortic regurgitation. The murmur, to be sure, is present, but this is one of the least important of the diagnostic features of aortic incompetency; in any case it is only confirmatory, not conclusive evidence. It may be present or it may not; it may be heard at one time and not at another, but that only makes it the more necessary that repeated consultations be made before the final opinion is given as to the presence or absence of a murmur. The matter of sphygmographic tracings had attracted much of his attention for many years, and he believed that in aortic regurgitation the sphygmogram was, in the immense majority of instances, highly suggestive, and even distinctive of this lesion. The typical tracing (several of which were presented) is one in which the ventricular wave rises to a great height, is very steep and has a sharp apex; a very rapid fall, often to one-half or more of the ventricular wave; then there is a sharp upturn, the elastic recoil, which also has a rather sharp apex. He had not seen, in his cases, so far as he could recollect, the dicrotic, or peripheral recoil wave absent, and it is always present in typical cases. When fever is present the peripheral recoil may be so marked as to show profound dicrotism. He could not understand how the Corrigan pulse could be absent in cases of marked aortic regurgitation, with enlargement of the left ventricle, even though the right ventricle be also enlarged. The entire question of hypertrophy is an important one, and it must be remembered that when the left ventricle is hypertrophied and

forces the blood through the arteries with great velocity and power, the muscular and fibrous tissues in the arterial walls also become hypertrophied, the whole process, cardiac and vascular, going along, hand in hand. He believes that the peripheral symptoms, the visible pulsation of arteries that normally do not so pulsate, the capillary pulse in the nails, forehead, gums, tonsils, etc., are of great import, yet he must add a word of caution to laying too much stress upon these without careful consideration of the case as a whole.

The PRESIDENT cited the case of a lady of 60 years, with aortic insufficiency, who was confined to her bed for two years on account of hemiplegia. At the end of that time the cardiac dilation was less, her heart was greatly improved, and the secondary symptoms of the aortic regurgitation had disappeared. This case shows what rest alone is capable of doing in these subjects. In cardiac valvular disease he had had great success with the old mixture of digitalis, nitrate of potash and cubeba.

Dr. BUTLER, closing the discussion, said that doctors would differ, although their objects were the same. For this reason he would not take issue with those who differed with him in the points brought out in his case. His experience justified him in the use of remedies as designated by him. Numerous cases of aortic insufficiency had been treated by him in hospital, where the internes had begun with small doses of digitalis, the patients not improving nearly so well as when the doses were increased. In one case 10 minims of the tincture of digitalis had been given three times a day for some time without benefit. The dose was increased to 15 minims and the intervals lessened and in a short time the man was able to be up and around. He quite agreed with Dr. Babcock in the undesirability of giving more digitalis than necessary; if 10 minims were efficient it is enough, but if a dram is required give it. In regard to the danger of rupture of atheromatous arteries from the use of digitalis, he had never seen a case, and did not think the matter especially worthy of attention. He had seen numerous cases of delirium tremens, many of which were old men with sclerosed arteries, who were treated by the hospital steward with tincture of digitalis in large doses, often from 4 to 6 drams, entirely regardless of the condition of the circulation. Marked results were always obtained and no one ever killed. In short, he had never seen any bad effects from the use of digitalis. As regards rest, he quite agreed with Dr. Billings that it is a very essential factor and one which was too often slighted. He had been interested in the tracings exhibited by Dr. Wells, but supposed they were uninfluenced by medicine, whereas his first tracing was without medicine and the others after use of digitalis and opium. Personally, he preferred opium as, judging from his own experience, it did not disturb the digestion so much as potassium iodid, and as to its influence upon the kidneys, he paid no attention to that, as he never gave more than 3 or 4 minims of the deodorized tincture of opium. He had had patients on this treatment for months and they had not formed the opium habit. In cardiac cases with much dropsy he uses diuretin, the theobromin of which causes the diuretic effect, while the salicylate dilates the blood-vessels. The combination spoken of by Dr. Robison he thought especially useful in cases with ascites and hepatic lesions.

Dr. JAMES B. HERRICK read a paper

ON THE EXISTENCE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS IN CHICAGO, WITH REPORT OF A CASE WITH AUTOPSY.³

Dr. FÜTTERER had seen, a few months ago, in consultation, a case of epidemic cerebro-spinal meningitis, in a boy of 12, with recovery.

Dr. HOLLISTER had seen a case, fatal on the twentieth day, which had presented all the essential features of epidemic cerebro-spinal meningitis, thoroughly like those seen in severe epidemics of former years.

Dr. BUTLER had seen, recently, two cases; one with recovery within a month, in which the diagnosis of epidemic cerebro-spinal meningitis was positive, and a number of other, hospital, cases in which the diagnosis had been in doubt.

Dr. BILLINGS expressed pleasure in having seen the slides and cultures of the diplococcus intracellularis meningitidis which the author had presented. He had been seeing cases of epidemic cerebro-spinal meningitis, in small numbers, for several years, and in speaking with colleagues, particularly Dr. Church, he believed his experience is but that of others, and that these cases occur, not universally, but in foci, every year in Chicago. In his opinion these cases should be isolated.

THE PRESIDENT stated that he had seen three cases of epidemic cerebro-spinal meningitis in Chicago during the past few months. The diagnosis seemed positive, one dying and

two recovering. They were all encountered in the same neighborhood.

Dr. HERRICK, closing the discussion, said that he was sure there were always sporadic cases in Chicago, and this is the testimony of physicians in almost every large city. After epidemics there are always stray cases which creep in here and there. Councilman, in a recent article, mentions this and cites the experiences of some of the older New England physicians who went through epidemics and for years saw cases cropping out here and there. Sporadic cases, he says, are usually present in many of our large cities. Dr. Herrick remembered that during the World's Fair there was a little nest of cases out at the Fair, and he attended one case at the Presbyterian Hospital. Some twenty or thirty cases were sent to the County Hospital, all from the same neighborhood. All the cases which the author referred to in his paper came from a wide area on the West Side—from Lawndale near Twenty-ninth Street on the south to Armitage and Milwaukee Avenues on the north. With regard to the contagiousness of the disease, he could say nothing from personal experience, but from reading Councilman's article he should judge that it was not ordinarily contagious, and he believes Dr. Billings' proposition to isolate these cases is unnecessarily severe. In the Boston epidemic of thirty-one cases only a few came from the same house; the majority being from separate houses. And yet there are those who believe in the contagion of the disease in the ordinary sense of the term. It is a disputed point as to how the organism gains entrance into the meninges. It probably does so through the nose, as is shown by the investigations of Schiff, who found, in examining nasal secretions, that there is present in the nose, in a large percentage of cases, an organism which is either identical with or, at present, indistinguishable from the micrococcus intracellularis meningitidis of Weichselbaum. The experience in epidemics seems to be that the contagious element is a very mild one.

EDWARD F. WELLS, Secretary.

Chicago Medical Society.

Regular Meeting Held in the Society Headquarters,
Sept. 14, 1898.

The president, Dr. ARTHUR DEAN BEVAN, in the chair.
The subject for discussion was the

MEDICAL EXAMINERS' BILL,

which was opened with a paper by Dr. J. W. PETTIT of Ottawa. He said there was a growing sentiment among the better class of physicians in the State that some more thorough and practical method of regulating the practice of medicine should be attempted. This sentiment had found expression for several years in addresses, papers and committee reports presented to the Illinois State Medical Society, favoring legislation more in keeping with present needs and conditions. It was not until 1896, however, that any attempt was made to formulate a bill and secure its enactment. The Legislative Committee appointed by the State society that year, recognizing the utter futility of securing the enactment of any law which might be opposed by any considerable number of licensed physicians, and further recognizing the unreasonable and unreasoning antipathy of many physicians of the so-called schools to each other, sought a union of the schools in this effort. The Legislative Committees of the regular, homeopathic and eclectic schools met and agreed to act jointly. Having nothing to guide them as to the wishes of the profession, they conferred with leading men in all the schools and found them unanimously in favor of the creation of a State board of medical examiners, and separating the license from the degree. With this for their guide, they had Judge Shope, formerly of the State Supreme Court, formulate a bill embodying these provisions, which for lack of time could not be submitted to the profession before presenting it to the last session of the legislature. Being, as it was, a new departure and containing some radical provisions which were not understood, it met with so much opposition within the ranks of the profession that they did not press its passage. This was about what was expected, but served the purpose for which the effort was intended, namely, to elicit a discussion of the subject, and in this way determine the wishes of the profession.

The work of the joint committee last year was to carefully frame a bill which would meet the requirements of the present time, and be a step in advance of any attempt hitherto made, and yet not so radical as to excite such opposition within the profession as to lead to its certain defeat.

While the profession had been found to be almost unanimous in favor of restrictive legislation as a general proposition, a

³ Published in full in this JOURNAL, July 2, 1898, Vol. xxxi, p. 20.

failure to comprehend or recognize the legal principles which must be observed in framing a measure of this kind had led to some confusion of details as to methods, and herein lies the difficulty of harmonizing the profession upon some specific measure. Unless it can be clearly shown that such a law is in the interest of the public, it will not stand the test of a judicial decision, as the Constitution expressly prohibits class legislation. Such regulations are under the police power of the State and must be for the protection of the public and not the profession. Whatever advantages may accrue to the profession by such a law must be incidental to the public good. Physicians would demean themselves and belittle the profession were they to attempt to secure the enactment of a law for their own protection. This principle of protection to the public must constantly be kept in view, and any departure from it would nullify any law the profession might succeed in having enacted. Medical license laws are only defensible on the theory that they are needed to protect the public health. Any attempt to favor physicians as a class, or one class of physicians at the expense of others, has been declared illegal, hence the difficulty in determining who should be excluded from the privileges of practice.

Unfortunately, too often regularly licensed and well educated physicians subsequently become notoriously irregular as to their methods of practice, but are still under the protection of their legally obtained licenses. Unless some more practical method is devised than the present cumbersome and inefficient one, the profession might only succeed by the creation of an examining board, in raising the educational standard without elevating the moral tone of the profession.

The renewal clause of the proposed law had this in view by restoring to the licensing body once a year that discretionary power which seems to be the only practicable way to reach this class who make the enactment of such a law necessary. This provision puts the quack on the offensive instead of, as now, on the defensive, thus placing the burden and expense of a trial on him, instead of, as now, upon the Board of Examiners. This difference will operate against the quack as seriously as it now does against the board. It will give the board more latitude in the exercise of its discretion as to what is "unprofessional conduct," and this discretion can not be controlled by judicial tribunals. This will make it possible to withhold a certificate for those offenses which are regarded as unprofessional from an ethical standpoint, but are not usually so regarded by a court or jury.

The serious objection raised against it is that physicians may inadvertently allow their licenses to lapse and thus unwittingly become violators of the law. This can easily be remedied by amending the bill, making it incumbent on the Board of Examiners to notify any delinquent that his license has expired, and giving him reasonable time in which to comply with the law. The trifling annual tax is certainly too small a matter about which to quibble.

The object of this discussion is not only to bring about a better understanding of the Committee Bill which had been sent to the physicians of the State, and make desirable changes, but to stimulate the necessary interest and enthusiasm to secure its enactment. All that seems to be necessary to secure the enactment of this or some other measure into a law is, 1, its endorsement by the medical profession; and 2, the weight of political influence on the part of the profession. When the profession is united on what it wants the battle is won. Without this union of effort for a specific measure, it will be a waste of time and effort to attempt to secure its enactment.

Dr. DANIEL R. BROWER said that the proposed bill referred to by Dr. Pettit would correct the deficiencies of the old one. The State Board of Health should restrict its work to sanitary matters. During his term of service with the Board of about one year's duration, not one-tenth of the time was given to questions of public health, but most of the time was given to the consideration and regulation of medical colleges and the question of medical practice. The proposed bill was an excellent one. The only objection urged against it was with reference to the clause requiring a yearly license. This feature was the only one by which quackery could be suppressed and good work done by the medical colleges of the State.

Dr. N. S. DAVIS, JR., said the regular profession was heartily in sympathy with the general principle of having a licensing board independent of college degree. A bill such as the one proposed should not at any time be advocated as in any sense a piece of legislation for the medical profession only. It was in no sense whatsoever class legislation, but was purely and simply legislation for the benefit of the public. While there were certain sections of the bill that could, in his opinion, be modified advantageously, yet if there was any possibility of the bill not passing because of modifying it, personally he

would much prefer to have it passed exactly as it had been presented.

Dr. HAROLD N. MOYER said the bill as it now stood met with his unqualified approval in every particular. He therefore moved that the Chicago Medical Society endorse the proposed Medical Examiners' Bill, and pledge itself individually and collectively to support it when it comes up for passage at the next meeting of the legislature; and that the President of the Society appoint a member from each legislative district to further the resolution. This resolution was seconded and unanimously carried.

The proposed bill was further discussed by Drs. D. W. Graham, Sanger Brown, A. W. Baer, H. H. McAuley, J. S. Christison, Arthur Dean Bevan, and the discussion closed by Dr. Pettit.

SELECTION.

The Epilepsy of Napoleon.—No life in its singularity better supports my theory that epilepsy is fundamental to genius, than that of Napoleon, as he was surely one of the most complete examples of genius. He not only had motoria convulsions, followed by sleep and unconsciousness; excessive violence without cause, so common to genius, but the phenomena rarely noted in psychic epilepsy—momentary mental absences. Nor was an hereditary cause lacking. It is well known that epilepsy is often inherited through parents addicted to alcohol. Napoleon himself confessed to Antommarchi that his father drank, and he died young of a cancerous affection. He was talented, intriguing, and lacking, or almost entirely so, in moral sense. It was known he was an old friend and follower of Paoli, whom he abandoned at the time of his exile, and thenceforth became a client of the French governors. Napoleon's sisters were very immoral, especially Pauline, who was hysteric; it was she who allowed herself to be sculptured nude by Canova. Lucien was selfish, avaricious and sensual. The mother, however, was a woman of solid character, resolute, intelligent and imperious.

Napoleon was short of stature, barely five feet tall, though he measured five feet, six and a quarter inches from finger-tip to finger-tip; which is considered by the alienist, a mark of degeneration. The mesocephalic head, with depressed temples, was not lacking in anomalies, especially the heavy jaw, with the pendant lemuria that is familiar to us all, the salient cheekbones, arched zygomatic bone and scanty beard, which one sees in his youthful portraits, before adulation had transformed the expression of his face. The upper and lower parts of his body lacked proportion, the legs being too short in comparison to the trunk; the head sunken between the shoulders, and the back slightly curved. He had hyperaesthesia to such an extent that he had his room heated as late as July. He perceived odors when no one else noticed them. He suffered from frequent migraines, and had an exaggerated form of what I call meteorologic sensibility, causing him to feel the approaching changes in the weather, from which he suffered, becoming ferocious when it was damp. As is frequent with epileptics, he had muscular contractions, especially when under strong emotion. In anger the muscles of his calves twitched. When he treated of new schemes he was addicted to what are called Jacksonian convulsions, twisting the right arm and raising the right shoulder, with contortions of the lips and grinding of the teeth. From his youth he had regular epileptic convulsions. At one time at school in Paris, he was to have been punished for insubordination, by wearing coarse clothes and by eating on his knees, but he was seized with such a serious attack of convulsions that the punishment had to be spared. In the journal of travel to Margonza in 1804, kept by an unknown lady of the court, and in Constant's Memoire, it is stated that on September 10, Napoleon had one of the nervous attacks to which he was becoming subject. Josephine called for assistance and after many hours of anxiety it passed over. The Emperor forbade its being spoken of. Another time Constant saw him in an attack between epilepsy and incubus, lying on his elbows in bed, shaking and screaming; he was awakened with much difficulty, and pretended to have dreamed that a bear was tearing his chest. Talleyrand saw him in a more marked attack, when, in 1805, he went with the

Emperor to Strasburg. One afternoon he saw him go into Josephine's room; soon afterward he came rushing out, grabbed Talleyrand by the arm, almost dragging him into a near room, and confusedly asked him to close the door, when he dropped upon the floor as if dead. "He trembled and foamed with convulsions, which lasted about a quarter of an hour. Soon after, he began talking, then rearranged his clothes, and recommended silence to us; half an hour later he was on his way to Carlsruhe." Like many epileptics, he had a very slow pulse, 48, and later 60 to the minute.

Great were his mental absences. Wolsley declares a military plan was adopted at Borodino which insured success, and that the victory was lost by the actual mental paralysis of Napoleon. At Dresden, as after the battle of Moscow, he lost the fruit of the battle by a sudden mental absence which prevented him from making a decision; at Moscow he did not decide to comply with the request of his generals and order out the reserve to pursue the Russians. His mind certainly was not clear when, at Vasarvi, simply because he was affronted at not receiving a reply from Alexander, he decided, almost without preparation, upon a plan of invasion against a solid war-like people, protected by the steppes, the cold, and above all by intense patriotism. He was entirely lacking in moral sense, as is common with epileptics, which Taine justly says, made him a great leader. Thus at Cherasco he said to the Savoyard general with whom he was treating for an armistice: "I wanted to demand in the treaty that was being closed, a fine picture of Gérard Dow, which belongs to the king, and is one of the masterpieces, but I could not see how to put a picture in an armistice, and I feared it would seem a strange freak, especially having the fortress of Coni attached to it." It is the language of a brigand making a redemption. In his talk with Metternich at Dresden, when the latter remarked that the late war had cost 200,000 lives, Napoleon answered: "What are 200,000 men to me?" Napoleon's complete lack of moral feeling was reflected in the phrase, although purely official, of the bulletin issued from the horrible Russian carnage: "The health of the emperor was never better." No Asiatic despot, even in ancient times, could have dictated a sentence more jarring on the mournful scene of death from which it was issued. Madam Remusat relates of Napoleon's having said in a conversation with Josephine: "I am not like other men; moral and social laws were not made for me." Upon another occasion, in reprimanding the Bishop of Grand, who did not wish to give his oath, as it conflicted with one he had already sworn, Napoleon said: "*Eh bien monsieur*, your conscience is nothing but stupidity." The evening of the 13th vendemiaire, being present at the arrangements of the insurrection of the sections, he said to Junot: "Ah! if the sections would only place me at their head, in two hours I would install them at the Tuileries, and would clear out all the miserable conventioners." Five hours later he headed the conventioners, and had opened fire upon the Parisians. These qualities did not develop late, but were manifested at an early age; even in college he was reticent and deceitful. His worthy uncle, Corso, prophesied a splendid future for Napoleon, because he was *master of falsehood*; the eulogium which Napoleon reversed upon Metternich.

His baseness reached the point that at a public banquet he spilled some oil on the gown of a great lady, of whose honor he wished to rob her, that he might have a pretext to retire with her into the next room. One should read his recently published correspondence to see how, aside from the monumental Caesarean style of his proclamations, he used a coarse, slangy language. It is known that many of the worst letters have been suppressed and will never be seen. How unfortunate that he should have shown these qualities even in treating with sovereign and foreign ministers of state; insulting them in his proclamations, his letters and his audiences; revealing their love intrigues, whether actual or supposed. The bulletins 17, 18 and 19 after the battle of Jena, openly accuse the Queen of Prussia with an intrigue with Alexander of Russia. His unlimited selfishness was shown in Egypt and in Russia when, at a time when everything depended upon him, he abandoned the army for the sake of saving himself. He would never have raised his brothers and brothers-in-law and many of his generals, except to have them as instruments in his hand, as reflectors and magnifiers of his own light. He thrust them cruelly against their people for his own interests. When he crossed into Italy the first time, he began with the phrase "my soldiers" and "my army," and finished by talking of "my people," "my senate," and even of "my bishops," and "my cardinals," as though they were his puppets. For arranging, directing and mastering the practical affairs of life, such incomparable and lively passions form a tremendous force.

This force was Napoleon's selfishness; not the inactivity of

the many, but active, aggressive selfishness, developed to the point of creating an infinite *Ego*, so that in the vast domain in which it acts it can not suffer another existence, unless it be an appendage or an instrument of its own. As a child this characteristic existed in him in embryo. He was rebellious at every reproof; without scruples, without conscience; intolerant to rivals, ready to fight any one who would not give way to him, while he accused others of attacking him. He considered the world as a magnificent banquet open to all, where to be well filled it is necessary to have long arms and help one's self first, letting others have only what is left. Man, according to him, is dominated with his same selfish passions of fear, cupidity, self-love and emulation. Napoleon never departed from these ideas, nor could he; they being a part of his character, he saw man as he choose to see him. His selfishness, reflected in ambition, took such possession of him as to kill his conscience, and ambition finally caused his downfall. It was not enough that his functionaries were active and zealous; after having killed every critical sense in the man, he must belong to him body and soul; and in the slightest observance he suspected a conspiracy or an attempt upon his majesty. He demanded every agreement of service from his functionaries—even though criminal—from the falsification of the Austrian and Russian notes in 1809 and 1812 to the projection of an infernal machine against the Bourbons, in 1814. Gratitude was unknown to him; when a human instrument no longer served him he cast it away. Peace for him was an armistice during which he prepared for a new campaign. It was for this reason that all Europe, taught by experience, united after 1809 in turning against him. Napoleon, instead of considering his own personality secondary to the State, considered the State secondary to his personality. He had no regard for the future and sacrificed it to the present. "If my successor is an imbecile, so much the worse for him." He made the press a slave to Censorship, and even prohibited works of statistics and economy, if they appeared to cast doubt upon his infallibility. It was the same with the schools. He wrote to his councillors of State: "In establishing a corps of instruction my aim is to have a means of directing public opinion in politics and morals." As Renan said, school was for him the vestibule of the academy. G. Gorion was sent to prison for having called his coronation with the iron crown an absurdity, and Lattanzio was committed to the insane asylum for saying Napoleon would make himself king of Italy. His brother Joseph said Bonaparte would have had no peace if he could have supposed that after his death everything would go on quietly and smoothly. He forced France into an abyss, conscious that he was deceiving her; by misdeeds and an abuse of confidence there grew by degrees the divorce between his own interests, such as he understood them, and the public interest. Napoleon ended by becoming the slave of his monstrous conceptions and his limitless ambitions. Even though the expedition into Russia had not ended disastrously, some other misfortune would have overtaken him. In order to carry out such an enormous campaign it would have been necessary to have a tremendous combination of forces. The fate of Napoleon's subjects was reduced to a military career or obligatory administration. In 1810 there were 160,000 men who refused to serve, and in 1811 and 1812 60,000 were arrested. Meantime he had made 4,000,000 victims; France was reduced by two foreign invasions, made a suspect of Europe, surrounded by menaces of odium and envy. This was the political work of Napoleon; the outcome of selfishness supported by genius. With his false image of glory he promoted what may be called the military and bureaucratic degeneration of France; the worst calamity that can overtake a civilized nation. In all this he showed an impulsiveness and above all a brutality common to epileptics. As Bonfardini says, he mistook brusqueness for dignity, his own caprice for moral law, anger for justice and insolence for truth. It is told that he kicked Volney when he said that France wanted the Bourbons, and gave Bertier a cuff when he saluted him inopportunistly, as "Roi de France." While the treaties of peace were being made with the Count Cobentzel, Napoleon suddenly broke a valuable vase, saying, "I will break your monarchy in pieces like that." At Boulogne, when the admiral refused to collect the fleet on account of a menacing storm, Napoleon raised his lash upon him, which he had already used several times on some of the grooms. He writes to Prince Eugene, "You will await orders from H. M. were it only to change the ceiling of your room, and if Milan were on fire you should await orders, although the whole city burn while you are waiting." He once violently thrust his brother Louis out of the door. In Dresden, in 1813, he brutally asked of Metternich, at a time when he was indispensable to him, how much England had paid him to represent her interests as he was doing. Intolerant of delays, he

would throw clothes into the fire if he did not easily succeed in putting them on. He scrawled, he did not write. He dictated with unusual rapidity, and if asked to repeat would fly into a passion, which his secretaries sometime provoked for a rest. From childhood he was violent and impulsive. He boasted to Antommarchi that as a child he feared no one, struck and scratched everybody, especially his brother Joseph, whom he would bite and kick until interfered with.

A leader of high talent, between the alternatives of the throne and the gibbet, he made a game of peoples, religions, and government, with incomparable skill and brutality. His gigantic intellect was abnormal for his size. Marbot, a reliable authority, attests that he had marvelous nervous force, and had resistance for a work seemingly incredible. He could spend ten or twelve hours on horseback, with barely four or six hours interrupted sleep, being wakened for his signatures, only to fall immediately to sleep again; and this upon the eve of battle which would keep him in the saddle all day. At Paris, after a day of intense work, he could rise in the middle of the night, dictate to many secretaries, who changed with the precision of sentinels; and in this way go from a conference with his ministers to an audience with literati or artists. "The quantity of facts," wrote Taine "which his mind stored up and retained, the number of ideas which he produced and elaborated, seemed to surpass human capacity; and always as one of experience, of a practicality which contrasted with the abstractions and theories of his Latin education."

"I think more rapidly than any other man" said Napoleon. In the art of mastering men his genius was superhuman. All his sayings are fire flashes: "Liberty," he exclaimed, "is the necessity of a small and privileged class, endowed with higher faculties than those of the mass of mankind, therefore you can lessen or infringe upon it with impunity. Equality, on the other hand, allures the rabble." He possessed a faculty which carries us back to the Middle Ages, an astounding constructive imagination. What he accomplished is surprising, but he undertook far more, and dreamed much more even than that. However vigorous his practical faculties may have been, his poetic faculty was still stronger; it was even greater than it should have been in a statesman; greatness was exaggerated into immensity, immensity growing into madness. He was great, yes, but his greatness became a monstrosity. What aspiring, gigantic conceptions revolved, accumulated, superseded each other, in that marvelous brain. "Europe" he said, "is but a mole hill. Only in the Orient, where six hundred millions of men live, can one establish great empires, excite great revolutions." In Egypt he dreamed of conquering Syria, of re-establishing the Eastern Empire; returning to Paris by Adrianople and Vienna. The Orient allured him with the mirage of omnipotence, and in the Orient, he, the new Mahomet, caught a glimpse of the possibility of creating a new religion, while in Europe he dreamed of rebuilding the Empire of Charlemagne; of making Paris the physical, intellectual and religious capital of Europe; assembling within its precincts the princes, kings, and popes who should have become his vassals, then extending his domain through Russia to the Ganges and the Indian supremacy.

From the turmoil of politics rose the artist, creating the impossible in the field of the ideal. One soon recognizes him for what he is, a posthumous brother of Dante and Michaelangelo, though they worked on paper and with marble; he worked upon the sensitive, suffering flesh of living man. Neither in the Malatestas nor the Borgias does one find such an impulsive brain, in which the internal tempest is so continuous, so menacing, so sudden in its flashes, capable of such electrical changes and discharges, and so irresistible in its shocks. In him no idea remained in a mere state of speculation, each was equivalent to an inward convulsion, which immediately extended into an act." This wonderfully reproduces the epileptic mind in its greatest hypertrophy.

Although he traveled through Europe so much he never had a clear idea of the social conditions of the people. He thought that in a hundred years Europe would be Russian or republican. He was blind to the facts of social life. His was an intense intellect, with rays of light in various directions, rather than a solar intelligence which sheds light upon all; he felt the truth in an attack of clearness, or he understood nothing. There were many old contradictions in his politics, as when he re-established the catholic religion and seized the pope. He forbids Gérardin to appear at court, because he is divorced, and later Napoleon is himself divorced. He declares the glory of his race to have risen at the battle of Marengo, and then affects regal pomp and heraldry. One of his oddest caprices was his passion for making marriages; the number he made and imposed was extraordinary. When convalescent at Valencienne he married the daughter of his attendant to a young

acquaintance. He married his brothers, his sisters, his nephews, almost all his generals, When some one refused one of his sisters, he offered her to another, and obliged the marriage to be consummated in two days. At St. Helena he continued to make marriages among his attendants, and among the children of the generals and governors of his suite. Even in his will, in a codicil, he asked the Duke of Istria to marry the daughter of Duroc. He believed that a star guided him, and at St. Helena he showed fear of a comet. He was superstitious about Friday. When he broke the glass of the picture of Josephine, which he always carried with him, he feared for her life. In making war he always selected propitious days. He had the rudimental form of doubting insanity, and was not able to go through a street, even at the head of an army, without counting the windows in pairs. There is in this great man the combination of genius with convulsive and psychic epilepsy, which is manifested by impulsiveness, mental absences, cynicism, excessive selfishness, and megalomania. And by this example, which can not be an isolated case in nature, one can believe it possible that epilepsy is the substratum of genius.

If we further analyze the phenomenon of genius under the light of the new theories upon epilepsy which are being solved today by the clinics and experimentalists, we see the justice of the conclusion that genius is a form of psychic degeneration, of the species epileptoid. The lesser number of women of genius supports this theory, as women are more rarely degenerate and more rarely have psychic epilepsy. It is proved by the frequent anomalies of asymmetry of the cranium; moral insanity, which I have demonstrated in "Criminal Man" as being a variation of epilepsy; hallucinations, intellectual and venereal precocity, somnambulism, double personality, which has two and sometimes three opposing natures; sometimes obtuse, sometimes exaggerated sensitiveness; the anomalies of the field of view, bluntness of perception, the frequency of suicide, which is very common in epilepsy; and above all, amnesia and analgesia. It is also demonstrated by a roving tendency and strange fears by which one is seized; misonism, and an affinity to criminality, the point of union of which is moral insanity. Add to it the origin and descent from criminals, inebriates, or from imbeciles, which often marks both the genius and the epileptic, and which is seen in the families of the Cæsars and of Charles V. It is shown by insensibility and a lack of moral perception which is common in geniuses. One might doubt the conclusion who does not know the extent of the field of epilepsy in modern times, since intermittent hemicrania, scialorrhæa and amnesia are now recognized as epilepsy. Many forms of monomania are but a guise of the disease, at the appearance of which all other pre-existent traces of epilepsy often disappear. It is enough to mention the number of geniuses of the first order who were taken with motoria epilepsy, vertigo or passionate anger, in which they lost themselves absolutely; besides Napoleon there were Molière, Julius Cæsar, Musset, Petrarch, Peter the Great, Mahomet, Handel, Swift, Richelieu, Charles V., Flaubert, Dostoyewski, Guerazzi and St. Paul. Those who suffered from vertigo were Dickens, Swift, Herschell, Farady and Marlborough. Vertigo is simply cortical epileptoid which is accompanied by loss of memory or paralysis, as in Dickens and Faraday, and by convulsions, as in Marlborough. As to passionate anger, we recall Peter the Great, the parricide; and Byron, who from childhood fell into such paroxysms that it was sometimes feared he would die of suffocation.

For one who understands the binominal law, according to which no phenomenon is isolated, but always the expression of a series of less-marked though analogous facts, such frequency of epileptic phenomena among the greatest men indicates that it is more extended among geniuses than one would at first think, and that the nature of genius itself must be epileptic. It is important to note how seldom in their lives they have convulsions, and that in such cases the psychic equivalent (which creates genius) is more intense and frequent. Above all, the identity of the two great phenomena is proved in the analogy between the epileptic attack and the moment of inspiration; the unconscious and violent activity which creates in the latter, acts motorially in the former. Most convincing of all is the analysis of the creative inspiration, which is sudden, intermittent; frequently associated with unconsciousness, irregularity of the pulse and often somnambulism, and not seldom accompanied by convulsive movements of the limbs or followed by amnesia. It is often occasioned by conditions which provoke or increase cerebral hyperemia, and is followed by hallucinations.

The close connection between inspiration and the epileptic attack is pointed out more directly in the words of a great statesman, Beaconsfield: "It often comes into my mind that there is but a step between intense mental concentration and

insanity; I can not easily describe what I feel in that instant, it then seems to me that my senses wander and that I am no longer sure of my existence. I recall often having been obliged to refer to a book to see my own name written to assure myself that I lived. During this state my sensations are incredibly acute and intense. Every object appears animated, and it seems to me that I am conscious of the rapid movement of the earth." A modern novelist says: "It is a fatality that dictates the idea; an unknown force, a supernatural will, a sort of necessity to write which directs the pen and in such a way that when the book is written it no longer seems yours, and you wonder how such a thing could have existed in you and of which you had no consciousness; such is the feeling I had in creating 'La Sœur Philomine.'" (Journal de Goncourt.) Zola, too, in the "Roman Naturaliste," gives us this point on the inspiration of Balzac: "He worked under the operation of certain impulses which are a mystery to us; he was the victim of a capricious power. At times for all the gold in the world he could not have written a line, at other times, in the evening, in the middle of the street or in a morning orgie, a burning coal kindled his brain, his hands, his tongue; on a sudden a word awakens hidden ideas which lie fermenting. So is the artist an humble instrument of a despotic power." "My passions," says Burns, "are wild as demons if they do not find a vent in verse." After writing he felt relieved and consoled.

Such are the confessions of Mahomet, St. Paul and Dostoyewsky. In "Besî" he writes: "Suddenly something opened before him, an extraordinary internal light illumined his mind; there are moments which do not last more than five or six seconds, in which you suddenly feel the presence of eternal harmony. This phenomenon is not terrestrial, nor celestial, but something that man in his earthly development can scarcely endure; he would be obliged to transform himself physically or die. It is an ineffable feeling. Suddenly it seems as if you were put in touch with all nature. There is neither tenderness nor joy; there is no forgiveness, because there is nothing to forgive; there is not even love! Oh! it is a feeling higher than love. The joy which fills one is terrible; if this state should last more than five seconds the spirit could not resist; it would have to vanish. During these five seconds I live an entire human existence, and for it I would give my whole life, and should not feel I were paying too dearly." "Are you not epileptic?" "No." "You will become so. I have heard it said that one begins in just that way. A man subject to this disease [evidently it is Dostoyewsky himself] has described minutely the sensation which precedes the attack, and listening to your description it seemed as if he were speaking. He also said that it would be impossible to sustain this state more than five seconds. Do you remember the vase of Mahomet? While it was being filled the prophet flew to paradise. The vase is your five seconds, and paradise is your harmony; Mahomet was epileptic." ("Besî," Vol. i.) And in the "Idiot": "I remember, among other things, a phenomenon which preceded his attacks of epilepsy, the weakness, the mental marasmus, which proved the disease. There were moments in which his brain suddenly became inflamed, and his vital forces all at once rose to a prodigious degree of intensity. The sensation of life, of conscious existence was increased tenfold in these swift moments. A wonderful light burned in his mind and heart. All agitation became calm, all doubts, all perplexities, melted into a vast harmony. But these radiant moments were but the prelude to the last second which was immediately followed by the attack. This second was truly ineffable. When, later, the prince having recovered, reflected upon it, he said himself: 'If these fugitive moments are owing to sickness and the suspension of normal conditions, then they are not of a higher life, but, on the contrary, one of a lower grade. What matters it if it be a sickness or an abnormal tension, when in looking back, recalling and analyzing it, the greatest degree of harmony and beauty are included?' In this moment did he not have visions analogous to fantastic dreams produced by intoxication with hashish, opium, or wine. He could easily judge all these things when the attack ceased. These moments are marked by the extraordinary exaggeration of the inner sense; in the last moment of consciousness which precedes the attack the sufferer can say with full consciousness of his words, 'For this moment one would give a lifetime.' And without doubt the epileptic in this instant understands the allusion of Mahomet when he said that he visited all the mosques in less time than it took to empty his vase.

That we may see how perfect the correspondence is, compare this description of the psycho-epileptic attack with the inspiration of genius, as authors describe it. Berlioz says: "A voice comes from my palpitating chest; it seems as though my heart, under the irritation of an irresistible force, expands as

to be dissolved by expansion. Then the skin of my whole body aches and burns, I flush from head to foot. I wish to scream, call the assistance of some one who would console and guide me, and prevent my being destroyed, and detain the life which is ebbing away. I have no thought of death during this crisis, and the thought of suicide is unbearable, I wish to live, live with energies a thousand fold redoubled; it is a prodigious attitude of happiness, and a mania for activity, which can not be quelled except with devouring, furious realization, according to the measure of its intensity." Goethe said that the melody of his verse, like a tiny, independent, impalpable thing, agitated within him before the words were formed, or the thought itself took shape. And Beethoven said, "I have told it, but they did not understand me, as they can not understand the power of artistic inspiration, as they do not understand that I act in accordance with internal laws, unknown to the vulgar, and that I cease to understand myself when the hour of enthusiasm is passed. Fools! In their cold exaltation, in their free hours, they select a theme, they develop, enlarge it, taking care to repeat it in another tone; they add by rule, wind instruments, or some strange combination. All that is very reasonable, very polished, well studied; but could I work so? They compare me to Michel-Angelo. Very well; how did the author of Moses work? With fire and furor; in a frenzy, he then made great strokes in the immovable marble, and forced it in spite of itself, to unlock his living thought sepulchered in the block; and I too compose thus. For me inspiration is that mysterious state in which the entire world seems to form a vast harmony, when every feeling, every thought, echoes in me, when all the forces of nature become my instruments, when a shuddering shakes my whole frame, when my hair stands on end." These expressions demonstrate that where genius shows itself in the highest form, and where there is the greatest differentiation from the normal man, in the moment of inspiration he is more or less in that state of unconsciousness which, according to many, is the true character of epilepsy.

"One of the characteristics of genius," writes Hagen, "is the irresistible impulse of the act." And thus is explained by Kant, Coleridge, Voltaire and Cardano, how works of genius can be created in sleep, as this is also a state of perfect unconsciousness, and how the double personality of genius, in the state of inspiration and in the state of normal mind, is a mystery to itself. The most salient characteristic of genius is therefore unconscious creation, which is the most singular, if not the sole phenomenon of epilepsy; and from that, to deduct that it is a specially divine variation of that *morbo sacro* (I do not repeat this synonym without reason) is a step which, even to the least learned in psychic materia, is not difficult. For those who do not know that in many cases the entire attack consists only in a violent excitation of a single sense followed by amnesia, I mention a patient of mine who is seized by a motorial attack, now only by vertigo accompanied by the sight of a bright yellow light; and another whose attack, preceded by aura, consisted in atrocious crural and brachial neuralgia, followed by amnesia. I will add that in some not only the attack, but the whole life, records the psychic phenomenology of the epileptic; but over and above all the example adopted here of Napoleon is enough.—Lombroso: *Rivista d'Italia*, March 15, 1898; translated by A. Goodwin Culver, exclusively for the JOURNAL.

PRAGTICAL NOTES.

The Diazo-Reaction in the Urine.—A. Krokiewicz concludes from a study of 1105 cases (16,167 tests) that the Ehrlich diazo-reaction is one of the most important means in our possession for the diagnosis and prognosis of phthisis and abdominal typhus, and also of primary carcinoma of the ovaries. The results are more or less negative in all other affections, including the renal. It always indicates an acute course of the morbid process or an impending relapse, and is independent of the number of bacilli in the sputa. It can be relied upon in every case of abdominal typhus, and in miliary and nearly every other manifestation of tuberculosis.—*Vienna klin. Woch.*, July 21.

Electric Shock.—This must be treated as promptly as possible, and not only with artificial respiration, but with faradization of the respiratory nerves, the phrenicus, vagus and spinal nerves.—*Munich Med. Woch.*, July 19.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, SEPTEMBER 24, 1898.

ANOMALIES OF THE DUCT OF MÜLLER AS THE CAUSE OF ECTOPIC PREGNANCY.

Rare forms of ectopic pregnancy are those that develop in accessory tubes or in diverticula of the tube. Of each of these varieties HENROTIN and HERZOG¹ have recently described an instance.

At the fimbriated end of the Fallopian tube may be found certain accessory organs, which are somewhat difficult to describe. Some of them, however, are known under the name of accessory tubes. They consist of a canal with an open free end surrounded by fringes, the other end sometimes opening into the Fallopian tube proper. These structures are congenital malformations, resulting from anomalies of the duct of Müller. It must be mentioned, however, that certain authors believe that these structures and orifices may result from inflammatory processes, followed by proliferation of the wall of the oviduct, with hernia of the mucosa. The histologic study of such accessory organs in serial sections has shown conclusively that they depend upon an early embryonal anomaly.

RICHARD² found accessory organs in five cases out of thirty; VALENTINE and WILLIAMS² two in sixty-one. In the cases observed by KOSSMANN² the accessory canal did not have any connection with the oviduct proper, and he therefore believes that these accessory organs result from infundibuliform invaginations of the serous endothelium, and that sometimes such prolongations may connect with the salpinx.

HENROTIN and HERZOG then report a case of ectopic pregnancy which developed in an accessory tube. This was a small organ which communicated directly with the lumen of the oviduct proper, without any interruption or modification in the mucous lining, which consisted of cylindrical cells in single layer, and, according to their statement, they have been unable to find any example of tubal pregnancy in an accessory tube whose canal did not communicate with the duct proper. The instance occurred in a 27-year-old American woman, whose clinical history did not present any peculiar features; the diagnosis of ruptured extrauterine pregnancy was readily made; prompt recovery followed removal of the adnexa and curettage of the uterus.

Diverticula of the walls of the Fallopian tube have long been regarded as playing some rôle in the etiology of ectopic pregnancy, but the number of illustrative cases is so far very small. One of the most complete studies of the tubal diverticula is that by WILLIAMS,³ who describes these diverticula as developing in the interior of the tube and as extending up to the serous covering; they may be lined by a single layer of cylindrical cells with cilia, presenting therefore all the characteristics of the mucous membrane of the Fallopian tube proper. These diverticula can not be confounded with accessory tubes, because they do not open upon the exterior and can not be readily recognized from the external surface of the tube. In his articles concerning tubal pregnancy ABEL² calls attention to the fact that a very tortuous tube may in microscopic sections appear as though its canal is doubled or thrown into diverticula. The only example of ectopic pregnancy in a congenital diverticulum of this kind is described by LANDOIS and RHEINSTEIN. They found an embryo situated in the superior wall of the tube, separated from the cavity of the tube by a band of connective tissue, so that the only explanation of the condition would be the lodgment of the fecundated ovum in a congenital diverticulum.

HENROTIN and HERZOG believe that diverticula of the tube of this kind are due to anomalies of the duct of Müller, which has given origin to a secondary branch. This division may result in a double opening into the uterine cavity. The first instance of this sort was described by BAUDELLOCQUE in 1825. The case described by our authors occurred in a patient of twenty-nine. The diagnosis of extra-uterine pregnancy was made clinically, and the uterus and its adnexa were removed. As the result of the careful microscopic examination of the specimen it was concluded that the ectopic pregnancy developed in a congenital diverticulum which terminated in a cul-de-sac, because there was found in this diverticulum the characteristic elements of the decidua. On account of its size it was believed that this diverticu-

¹ Anomalies du canal de Muller comme cause des grossesses ectopiques, Revue de Gynecologie, July-August, 1898.

² Quoted by Henrotin and Herzog.

³ American Journal of Medical Sciences, 1891, cxxviii, p. 357.

lum resulted from a congenital anomaly and not from a pathologic process.

We have abstracted this report because it very clearly emphasized the important rôle that congenital anatomic anomalies may play in the production of pathologic conditions of great significance to the patient.

THE RESPONSIBILITIES OF THE ARMY MEDICAL DEPARTMENT.

In the JOURNAL of August 13, under the title "An Arraignment of the Army Medical Department," we discussed some of the criticisms of the work of Army medical officers elicited by their reported inability to provide for the comfort and surgical treatment of the wounded after the attack on the Spanish lines at Santiago, Cuba. Since then the newspapers have been filled with harrowing reports of suffering in the camps and hospitals, much of which has been attributed to the carelessness, incompetency and inhumanity of the medical men serving with our troops. From time to time the Surgeon-General has given to the press extracts from the reports of officers in active service with various commands, to correct the impressions made by the extravagant headlines and sensational exaggerations of certain of these newspapers. He has also given statements of the provision made for the sick on special occasions, when the charge had been preferred that the Government had made no such provision. But notwithstanding this, so much odium has been thrown upon his department, and particularly on himself, that he has lately given to the papers a definition of the duties and responsibilities of his office. "It would require," he says, "superhuman power to meet the expectation of many of those who have criticised the Surgeon-General for his administration of the affairs of the Medical Department of the Army." He apparently has been held to a responsibility for the care of every individual sick, for he explains that regimental medical officers and medical men in charge of wards in hospitals were assigned to this duty. He has also been held responsible for the sanitary condition of camps, for he explains that brigade surgeons were appointed to look after the sanitary conditions of brigades; division and corps surgeons to superintend the medical department of their commands, the sanitation of their camps and the equipment and efficiency of their field hospitals, and a Chief Surgeon of the armies in the field to exercise general supervision over the whole. It has been urged that the Surgeon-General is responsible for the deeds or misdeeds of his subordinates. This would have held good had opportunity been afforded him to test the qualifications of the men appointed to positions in the medical department of the Volunteer Army; but these positions were filled by the State authorities and the appointees very generally had little practical experience in military methods, and

particularly in military sanitation. As a result of this want of experience, regimental, brigade, division and corps surgeons, however competent as medical men and even as sanitarians in civil life, found it extremely difficult, and in most cases impossible, to control the insanitary influences that pervaded the large camps of hastily organized troops, whose line officers were more concerned with the military equipment and drill of their men than with their preservation from these influences. The Regulations of the Army and orders from the War Department published at the suggestion of the Surgeon-General give directions with reference to camp sanitation and the care of the sick, and it is the duty of military commanders to see that these are carried into effect, yet the Surgeon-General has been held responsible for all the faulty conditions that have been developed by failure to carry out these instructions.

The duties of the Surgeon-General are specifically defined, as are those of the regimental surgeon. As stated, he makes the assignments of officers as chief surgeons of corps and divisions. He has charge of all general hospitals and of hospital corps, of the medical supply depots, of the payment of all bills against the Medical Department, and of the collection of all reports and papers relating to the disabilities of individual men in the military service. The general hospitals are those at Key West, Fla., Fort Thomas, Ky., the Leiter and Sternberg Hospitals in Chickamauga Park, the hospitals at Fort McPherson, Ga., Fort Myer and Fortress Monroe, Va., the temporary hospital at Montauk Point, Long Island, and the Josiah Simpson Hospital, a newly finished pavilion hospital of 1000 beds near Hampton, Va. The hospital ships are the *Relief* and the *Missouri*. The failure of Congress to provide a hospital corps for the large volunteer army which was so suddenly brought into existence, had to be met in part by hastily organizing a force of contract nurses. Although the Surgeon-General is responsible for the purchase and issue of medical supplies, it is impossible for him to foresee the local wants in different parts of the country. Hence the necessity for requisitions from the local officers. The difficulty of getting war material to crowded camps has added a medical phrase to the vocabulary of the newspaper reporter, "the congestion of the lines of transportation." This congestion has frequently been the cause of complaint of want of supplies.

It is very evident to one who looks on from the outside, that the difficulties encountered by the Army Medical Department were due to the impossibility of having, in so short a time, an experienced and well-disciplined medical force sufficiently strong in numbers to control the sanitary situation in an aggregation of a quarter of a million of men hurriedly thrown together in military camps. Detailed reports from Santiago show how nobly the medical men of the

Fifth Army Corps acted during and after the fight, notwithstanding the failure of the Quartermaster's Department to land and bring up the supplies; yet the press despatches charged them at the time with carelessness and incompetence. Similar detailed reports, when brought out later, will show as clearly the earnest efforts of the Medical Department, from the Surgeon-General down, to protect the troops in the camps in this country from the effects of their own ignorance and want of military training.

INSANE ARTISTS.

The recent parietic dementia of MUNKACZY, the Hungarian artist, has attracted no little attention to the question of insanity in artists. Prominent among the many contributions to the subject is ARREAT'S "Pathology of Artists." In this a large number of artists are described as having either acquired or inherited psychoses. What disappears first in insanity is, as ARREAT remarks, the power of special inhibition and general control. The mind is free to impulses born of disease. The artist loses judgment of images relative to his art which are then offered to him. Disorder begins in his ideas of painting and is shown in his choice of subjects and defects of harmony in composition. Errors in design come first; technical memory long survives, that is, the mechanical association of visual and motor images. Though the professional memory of an artist be a thing acquired and improved, yet it has roots in the association of images composed of innate tendencies formed in specially gifted brains.

Sense of color and its contrasts were deficient in early races. Even as high a race as the Greeks exhibited decided deficiencies in this particular. Primeval and medieval art exhibits the same peculiarity, and it atavistically appears in the insane. In alcoholic insanity and parietic dementia the color sense is often destroyed. LOMBROSO finds that the alcoholic lunatics use yellow excessively in their pictures. One paroxysmally alcoholic lunatic, who lost all sense of color, became very skilful in depicting white, and between his attacks was the best snow painter in France. A parietic dement artist, after the onset of his disease, collected miserable oleographs which he colored green. (*Alienist and Neurologist*, Vol. xiii.) A paranoiac, at one time under KIERNAN'S care, painted "A Struggle of the Youth and the Amazons" at its voluptuous termination in various tints of green. The effect, which was ghastly in the extreme, recalled the preference of MURGER for women with green lips. The artist was not color-blind, but attached a peculiar symbolism to this use of green. This was clearly a reversion to a fetichistic canon of art such as regulated the productions of the Egyptians and Greeks and appeared in the middle ages as a consequence of the intellectual storm and stress resultant on Christian reaction against fanatic vandalism. The tendencies to undue use of analogies lead to color and

shade otherwise inexplicable. Such uses of color lead to interpretations seemingly at variance with the subject depicted. Thus, as RUSKIN has pointed out, some of CORREGGIO'S Madonnas—and the same is sometimes true of RAPHAEL—often suggest voluptuousness. On the other hand, Phryne has been so depicted as to create sympathy for violated purity. Many of these contrasts pushed to the extreme appear to be insane, from the tendency to attach occult significance to trivial analogies. In "His Masterpiece" ZOLA vividly depicts this innate insane tendency to symbolism which causes terrible defects to appear in the otherwise beautiful paintings of Claude Lantier, the artistic brother of Nana, the genius of the degenerate Rougon-Macquart family.

Atavistic tendencies explain the appearance of artistic powers during insanity as the result of a conservative tendency struggling with disease. A hypomaniac period sometimes so removes inhibitions of early training that difficulties are ignored and a seemingly mediocre artist executes a good work. PAOLI reports the case of an insane artist whose copy of a Madonna of RAPHAEL, painted during an attack, gained a prize medal at the exhibition. It is evident from the relative infrequency of artists among the English-speaking insane, as compared with the mechanicians, that a conservative factor has much to do with the appearance of artistic "sports" among the insane. The influence of the same factor is evident in the relative frequency of the insane with artistic tendencies among the patients of the insane hospitals of the Italian districts which have furnished most artists. It is also demonstrable in the atavistic effects of disease on artists who become insane. ANDRIANI found that four out of eight acutely maniacal painters retained their skill during the attack. In two, bizarre ideas appeared, while the work of two more markedly deteriorated, so much so, that in one instance the patient bitterly deplored after his recovery the work done during his insanity.

Parietic dement artists lose all sense of proportion; they begin to stretch trees which, if drawn in their entirety would pass beyond the frame. Exaggeration pushed to the improbable and even the impossible characterizes parietic dementia art, according to REGNARD. One of his patients painted a man whose head touched the stars while his feet were on the earth. As LOMBROSO forcibly points out in the "Man of Genius" parietic dement art effects are generally due to amnesia. Parietics often omit essentials from this cause. In a case observed by FRIGERIO a parietic dement drew a picture of a general seated, but forgot the chair. SIMON had under care a parietic dement who believed himself to be a second HORACE VERNET, yet drew horses with four strokes and a tail.

The most salient characteristic of art in mania is, according to LOMBROSO, absurdity in drawing or coloring due to exaggerated association of ideas through

which the connecting links that would serve to explain the author's meaning are lost. A maniac artist painted "The Marriage at Cana of Galilee." He drew the "Apostles" excellently, but in place of Christ put a large bouquet of flowers. The existence of an archaic symbolism is here apparent. A periodic lunatic, during the paralytic intervals, painted fairly but with excessive minuteness. During the attacks this minuteness became grotesquely exaggerated.

According to RUSKIN, the grotesque in art is divisible into three kinds: Art arising from healthy but illogical play of imagination in times of rest; art arising from irregular and accidental contemplations of terrible things or evil in general; and art arising from the confusion of the imagination by the presence of truths which it can not perfectly grasp. All these types of the grotesque are found in the insane, particularly the last two. The first is rare, but it does exist. Since art, an early acquirement of the race (as witness the Dordogne caves), is less affected by insanity than later acquirements it results that insanity at times merely tinges art. Thus a periodically insane Italian mason became a painter when a patient at the Pesaro insane hospital. His attacks were always announced by a tendency to caricature the hospital staff, whom he condemned in effigy to strange punishments. The cook offended him, whereupon he painted the cook as a stout, ruddy man in the attitude of an *ecce homo* behind a grating which prevented him from touching the appetizing viands placed before it. A patient of Dr. VIRGILIO drew an excellent portrait of a maniac *in furor*. MANCINI, after his recovery from insanity, painted a "Woman Offering for Sale a Picture Painted by a Lunatic." MAGNONI had remained for fourteen years listless and idle in the Reggio insane hospital. Dr. RANI induced him to paint, whereupon he covered the walls of the ward with excellent frescoes. One of these depicted the story of Ugolino so vividly that a patient threw meat to the father and children to prevent them from starving. According to MAGNAM, GILL came of a family rife with apoplexy and degeneracy. Like degeneratively-tainted dements, GILL had seemingly perfect lucid remissions. During one of these remissions he sent to the "Salon" a picture of a melancholic with depressing delusions crouching in one corner of a seclusion-room in an insane hospital. Later he sent to the "Salon:" "Salome with the Head of John the Baptist in a Charger." The decapitated head was his own; the plate was simply twenty-franc pieces joined by their edges. The symbolism here evident was certainly not of a purely insane type.

Many artists who have ranked high have exhibited elsewhere, than in art their insane taint. While ARREAT claims that LEONARDO DA VINCI and MICHAEL ANGELO were on the "sane" side of the border line, he points out that they exhibited peculiarities. DA VINCI had inchoate persecutory delusions, to which in no small degree were due his errabund tendencies.

Independently of MICHAEL ANGELO's sexual inversion, he had more than one hallucination. He deserted his post in Florence in 1529 when it was besieged by the imperialists. He thus accounted for this performance to DELLA PORTA:

How did I quit Florence? It is a problem I can not solve. A man came to conduct me to the bastion. There we examined everything, and a voice murmured in my ear, "There is nothing here for those to do who wish to save life and honor." Whether God or the Devil impelled me I can not tell.

TURNER exhibited degenerative taint, while HAYDEN, LANDSEER and ROMNEY became insane. The greatest artist of the English-speaking countries who had a decidedly degenerate insane taint must be admitted to be BLAKE, who was the son of a hosier, and, like TURNER, was of stunted growth. In his youth he exhibited a genius for art and poetry. When a boy, in his father's shop, he drew pictures on the counter and wrote poetry on the backs of bills. He was moody, mystical and led a life of dreamy abstraction. He had hallucinations of hearing; celestial voices called him. He became an engraver, but wrote poetry copiously. Between his twelfth and fifteenth years he had written seventy pages. Visual hallucinations of poets, heroes and princes occurred, which he accepted as real. His designs were revelations which he was commanded to publish by celestial voices. He claimed that from his dead brother he learned that truly beautiful and original method used in engraving and tinting his plates. This spirit counselled him as to the treatment of his best known and most successful works, "Days of Innocence." "Write," said the spirit, "the poetry, and draw the designs on copper with a liquid (which BLAKE always kept secret), then cut the plain parts of the plate down with aquafortis. This will give the whole, both poetry and figures, in the manner of the stereoscope." Jesus Christ taught him how to mix his colors. The "Gates of Paradise," another of BLAKE's works, ambitious in scope and quite incomprehensible, consists of twenty-seven designs. It is seemingly intended to embody the fall of Lucifer and the creation of man, and swarms with figures demoniac, human, and divine. BLAKE's colossal egotism is evident in a letter written in 1800 to FLAXMAN:

I am more famed in Heaven for my works than I can well conceive. In my brain are studies and chambers filled with books and pictures of old, which I wrote and printed in ages of eternity, before my mortal life, and these works are the delight and study of archangels. Why then should I be anxious about the riches of fame or mortality?

MOSES, VIRGIL, DANTE and MILTON are seen by BLAKE as "majestic shadows, gray but luminous, and superior to the common height of men." BLAKE's mind, as ALLAN CUNNINGHAM remarks, at all times resembles the page in the magician's book of glamour which made

The cobwebs on the dungeon wall
Seem tapestry in lordly hall.

BLAKE'S defects arose from the fact that he did not always clearly distinguish between the real and the ideal visualization. His mind could convert the most ordinary occurrence into something mystic and supernatural. He often saw less majestic shapes than those of the poets of old.

"Did you ever see a fairy funeral, madam?" asked BLAKE of a lady. "Never," was the reply. "I have," said BLAKE, "but never before last night. I was alone in my garden. There was great stillness among the branches and flowers, and more than common sweetness in the air. I heard a low and pleasant sound, and knew not whence it came. At last I saw a broad leaf of a flower move, and underneath I saw a procession of creatures of the size and color of green and gray grasshoppers bearing a body laid on a rose leaf, which they buried with songs and then disappeared. It was a fairy funeral."

He talked, as IRELAND remarks, familiarly with his supernatural visitors. The specters that entered his room were used as models. He would look at them a while, then draw a little and then look up again. Sometimes he would stop at his work, saying that the spirits had walked off. Once he drew KING SAUL in armor, but could not finish the helmet because from the way SAUL was standing he could not see the whole of it. Some months after, the specter of SAUL came back, and obligingly stood in such a position that BLAKE could sketch the helmet. Once he was employed to furnish a likeness of Sir WILLIAM WALLACE. In the presence of his employer BLAKE cried out: "Sir WILLIAM WALLACE there—there I see him in all his glory." He commenced to draw, but suddenly paused. When asked why, he replied: "I can not finish him. EDWARD I has stepped in between him and me." "That is lucky," responded his employer, "for I want him also." BLAKE sketched the Plantagenet on a sheet of paper, whereupon his majesty politely gave place to Sir WILLIAM WALLACE. BLAKE'S rapid visualization of correlated association was often present. A friend of BLAKE, who collected several of his sketches which illustrate this same peculiarity, once remarked:

Observe the poetic fervor of that face. It is PINDAR as he stood a conqueror in the Olympic games. This lovely creature is CORINNA, who conquered in poetry at the same place. That lady is LAIS, the courtesan. With the impudence which is part of her trade she stepped in between BLAKE and CORINNA and he was obliged to paint her to get rid of her.

The most grotesquely curious of BLAKE'S visions was his "ghost of a flea," anent which ALLEN CUNNINGHAM cites this history:

This is the greatest curiosity of all. Only look at the splendor of the coloring and the original character of the thing. You see a naked figure, with a strong body and short neck, with burning eyes which long and moisten, and a face worthy of a murderer, holding a bloody cup in its clawed hands, out of which it

seems eager to drink. You never saw any shape so strange, nor did I ever see any coloring so curiously splendid—a kind of glistening green and dusky gold beautifully varnished. It is the ghost of a flea, a spiritualization of the thing.

BLAKE one evening was more than usually excited and told the friend he had seen a wonderful thing—the ghost of a flea. "And did you make a drawing of him," the friend inquired. "No, indeed," he replied, "I wish I had, but I shall if he appears again." He looked earnestly into a corner and said: "Here he is; reach me my things; I shall keep my eye on him. There he comes, his eager tongue whisking out of his mouth, a cup in his claw to hold blood, and covered with a scaly skin of gold and green."

The more demonstrably insane productions of certain artists display this symbolic tendency to find the occult in the real. Like another insane artist of less genius but greater suspicious delusions, BENJAMIN HAYDON, BLAKE appealed to the general public with an exhibition of designs chiefly "of a spiritual and political nature." But (ALLEN CUNNINGHAM) the spiritual work and political notions of BLAKE were unlike those of any one else. One piece represented "The Spiritual Form of Newton Guiding Leviathan," and another "The Spiritual Form of Pitt Guiding Behemoth." Those who missed instruction in his pictures found entertainment in his catalogue, which was a wild performance overflowing with oddities and dreams and evidently an enunciation of BLAKE'S notions of the laws of art. Anent color BLAKE remarks:

Coloring does not depend on where the color is put on, where the lights and darks are put but all depends on form or outline. Where that is wrong coloring can never be right, and it is always wrong in TITIAN, CORREGGIO, RUBENS and REMBRANDT. Until we get rid of them we shall never equal RAPHAEL and ALBERT DURER, MICHAEL ANGELO and JULIO ROMANO. Clearness and precision have been my chief object in painting these pictures; clear color, and firm determinate lineaments unbroken by shadows, which ought to display and not hide form, as is the practice of the later schools of Italy and Flanders. Oil has been falsely supposed to give strength to colors, but a little consideration must show the fallacy of that opinion. Oil will not drink or absorb color enough to stand the test of any little item and of the air. Let all the works of the artists since RUBENS' time witness to the villainy of those who first brought oil painting into general opinion and practice, since which we have never had a picture painted that would show itself by the side of an earlier composition. This is an awful thing to say to oil painters; they may call it madness but it is true. All the genuine, old, little paintings are in fresco not in oil.

Those "abominations concealed outlines and tricks of color," bringing on one of those visionary fits to which BLAKE was liable; he narrates with the most amusing wildness sundry revelations made to him anent them. Certain painters, according to BLAKE, are demons let loose on earth to confound the sharp,

wiry outlines and fill men's minds with fear and perturbation. He admits that he himself was for some time a miserable instrument in the hands of "chiaroscuro demons," who employed him in making "experimental pictures in oil." Anent which he writes:

These pictures were the result of temptations and perturbations, laboring to destroy imaginative power by means of that infernal machine called chiaroscuro in the hands of Venetian and Flemish demons who hate Roman and Florentine schools. They cause that everything in art shall become a machine; they cause that the execution shall be all blocked up with brown shadows. They put the artist in fear and doubt of his own original conception. The spirit of TITIAN is particularly active in raising doubts concerning the possibility of executing without a model. RUBENS is a most outrageous demon, and by infusing the remembrance of his picture and style of execution, hinders all power of individual thought. CORREGGIO is a soft, effeminate, and consequently most cruel, demon, whose whole delight is to cause endless labor to whoever suffers him to enter his mind.

TITIAN was, however, the most malignant of his persecutors. He told CHARLES LAMB that all the while he was engaged on his water painting, TITIAN was disturbing him—TITIAN, the evil genius of oil painting. BLAKE'S intense belief in his mentally reached visions was so infectious that, as ALLAN CUNNINGHAM remarks, some acute and sensible persons who heard him expatiate, shook their heads and hinted that he was an extraordinary man and there might be something in the matter. His wife, a modest, loving, intelligent but not highly educated woman, accepted the truth of all his visions. As so often happens with paranoiacs, *folie-a-deux* resulted, but, as BLAKE'S persecutors were in the ideal world, no serious consequences followed. BLAKE'S mental defect showed itself in his inability to distinguish the objective from active reproductions of the memory. He partially recognized the mental origin of some of his visions. "The other evening, taking a walk," said he quietly, one night, "I came to a meadow, and at the farther end of it I saw a fold of lambs coming nearer; the ground blushed with flowers and the wattled cote and its woolly tenants were of an exquisite pastoral beauty. But it proved to be no living flock, but beautiful sculpture." A lady present, thinking this a capital holiday show for her children, eagerly interposed, "I beg pardon, Mr. BLAKE, but may I ask where you saw this?" "Here, madam," answered BLAKE, touching his forehead.

As a rule, however, productions of BLAKE'S visualizing powers were facts to him, not mental visions, whence the incomprehensibility of much of his work. When the fact element is uppermost, puerile minuteness and repetition mar the work. The bathos of insane egotism swamps the artist.

THE HYGIENE OF MUSIC AGAIN.

Some little time ago this journal editorially called attention to what, in a medical point of view, appeared to be some insalutary possibilities of the over-encouragement of musical culture, and in so doing noticed briefly some of the theories of the origin of the musical sense and emphasized a little the fact that it is essentially a sensuous and emotional faculty, not in any intrinsic sense an intellectual one. An esteemed correspondent has found in the said editorial, matter to which he strongly objects, and accuses us of over-magnifying the value of the merely useful, and under-estimating that of the higher incitants of the imagination. As he appears to have misunderstood the whole spirit and tenor of the editorial referred to, it may be well to take up the subject again and state, it may be more plainly, the idea it was intended to convey.

There is no rational being that can honestly deny the utility of the pleasures of life, and music is certainly one of the highest of these. This, however, does not alter the fact that excessive indulgence in any of them not only may be, but must necessarily be, harmful to the individual, and that this is true as well of those that are usually reckoned as higher and more refined as of the grosser sensual appetites and tastes. The difference is mainly one of degree; music does not necessarily or always refine the disposition, and natural brutality may be aggravated by undue emotional excitation in this way as in any other. It does not tend essentially to improve morals any more than intellect; in spite of what Dr. METTLER says there are more than there should be among musical celebrities who have been deficient in the former, and the intellectual giants among them are few and hard to find.

It is not with intellect or morals, however, that the medical interest of the question of the hygiene of music has mainly to do; the point in the editorial referred to was the possibility of its excessive culture inducing morbid developments in impressible subjects, a danger which, it is believed, has been too much overlooked. The question was also raised whether this danger was not augmented with the popularity of certain modern types of music, more particularly that of WAGNER and his followers, the cult of which seems to fall in well with the various "intensity" fads lately in vogue. The emotional erethism incited by some of this modern music must, judging by the language of some of its devotees, be something altogether beyond the comprehension, not to say the appreciation, of the uninitiated. As was said before, their descriptions suggest more than anything else a perversion of a sense and a morbid, unnatural enjoyment. It may not be scientific to quote NORDAU, but there may be more truth than poetry in his characterization or the present dominant spirit in music as a symptom of degeneration. The classic masters of the earlier

Let us have a Department of Public Health!

half of this century would hardly sympathize with it; if a MENDELSSOHN could not enjoy a BERLIOZ or a LISZT, he could hardly endure a WAGNER or a RUBINSTEIN.

The pathologic possibilities of music are not confined, however, to the higher-grade music of the concert-room or opera, but may be found in the simplest melodies; anything that can thoroughly stir up the emotions possesses them. It would obviously not be a wise thing to constantly play the Ranz des Vaches to a Swiss mercenary, or "Lochaber no More" to a Highland exile. The over cultivation of music by some impressible individuals has had disastrous effects; its results have been observed in asylums for the insane, and any too general and indiscriminating tendency this way, it is not hard to believe, may have general bad results, if we can credit such an observer as LAWSON TAIT.

The dancing mania of the middle ages is a fair example of misguided and misdirected musical and religious enthusiasm.

It does not follow that because one is able to see these possibilities, he has lost his appreciation of the beautiful, or has been reduced to the level of bald GRADGRIND utilitarianism. Nor does the recognition of the fact, for such it is, that the musical faculty is essentially not an intellectual one, imply that the individual has no musical taste or capacity for enjoyment of sweet sounds. Life without its pleasures would be a hard thing to endure, but, as physicians, we should not shut our eyes to the misuse of even excellent things when it concerns our bodily salvation.

CORRESPONDENCE.

The Association and the Colleges.

TRENTON, TENN., Sept. 12, 1898.

To the Editor:—I have before me Dr. D. S. Reynolds' reply to my note on page 547 of the JOURNAL. When I presided over the ASSOCIATION in Denver, I acted *then* in my official capacity; *now* I am only a member of the AMERICAN MEDICAL ASSOCIATION, and as such have a right to criticise any of its actions. In the hurry of business, a presiding officer puts such motions as are made, if they are not plainly out of order, when no point of order is made against them, just as was done in the resolutions offered by Dr. Hare in regard to the admission of the members from the State of New York, who were not in affiliation with the recognized Society in that State. The question was discussed at some length before the point of order was made against it that it was out of order because it involved a change in our Constitution in regard to membership. The chair at once ruled the question out of order, and no appeal was taken. A legislative body frequently passes an unconstitutional act, and it is so declared by our courts of last resort. The "Court of Last Resort" in the AMERICAN MEDICAL ASSOCIATION is the ASSOCIATION itself, and the fact that a matter has been adopted, even by a vote in which there were no negative votes cast, does not make it legal. I do not plead ignorance of law. Those who know me best know that I *never* make that plea. It is the *knowledge* of law that I am pleading, and that very fact has induced me to call up this matter.

Any one at all posted on law knows that no by-law can be passed which contravenes the constitution or charter which it interprets. All by-laws, or if Dr. Dudley prefers the expression, ordinances, must conform to the charter or constitution, or they are unconstitutional, and hence not binding. An unconstitutional act can not be enforced. The constitution alone can fix the qualifications for membership, and any attempt to change this qualification is an attempt to alter or amend the constitution, and must be treated as such. To amend our constitution, only one way or method of procedure is laid down, and that is found on page 9, section 7, "Provision for Amendment," already mentioned in my first communication. The specifications to which Dr. Dudley refers in the by-laws conform to the constitution of the AMERICAN MEDICAL ASSOCIATION, but this new action of the ASSOCIATION at Denver in regard to the colleges, goes beyond the requirements of the constitution for membership and hence is void.

There can be no "technical quibble about attempting to make the resolution appear as an amendment to the constitution." It is either an effort to amend, or it is not. There is nothing "technical," nor is there any quibble. It is a straightforward presentation of the facts in the case. It is certainly in the province of the ASSOCIATION to fix any requirements for membership it may see fit, but this must be done in a legal way. The object of the constitution in requiring one year's notice of such proposed amendments is too plain. It is to give notice to all interested in the matter, so that "the unexpected" may not happen.

Dr. Dudley is unfortunate in his reference to the law in regard to amending the by-laws. The order of business is a by-law itself, and the provision, to which reference is made, only relates to that one special by-law providing for changes in the order of business so as to allow the ASSOCIATION by a three-fourths vote to take up any special item and consider it, regardless of the order of the call. This provision is as it should be, because without it unfinished and miscellaneous business (Sec. 15) might never be reached. As to the standard of qualifications for the practice of medicine, each State is regulating that, and a diploma of a college demanding five courses would have no more weight than would one issued by a college requiring two or three courses only. With that the ASSOCIATION has nothing to do. The ASSOCIATION has a right to fix, and can fix in a *legal* way a standard for admission into the membership of the AMERICAN MEDICAL ASSOCIATION, but it can not say what "can be accepted of any candidate for admission to the regular medical profession of the United States." The code of ethics governs admissions into the ranks of the regular medical profession.

I do not propose to be drawn into a discussion in regard to the number of terms that may be necessary for students to acquire a sufficient amount of medical lore to enable them understandingly to begin the practice of medicine. It can be summed up in one sentence: Some who attend medical schools *never* learn enough. □

I am not a college professor, nor am I related by "affinity or consanguinity" to any one connected with a medical college, and hence what I say or do in this matter can not be due to college bias.

T. J. HAPPEL, M.D.

The Medical College Resolution.

NASHVILLE, TENN., Sept. 12, 1898.

To the Editor:—In a communication from Dr. Happel, which recently appeared in the JOURNAL, I learn that he was misled by a statement made by the Secretary of the Business Committee, when he reported on the medical college resolution. Dr. Bulkley had no authority to state that the Southern Medical College Association, through one of its members, had given assent to the resolution. I was the member referred to and certainly did not say anything that would justify the statement made by Dr. Bulkley. I did appear before a sub-committee of the Executive Committee, as did also Dr. Dudley Reynolds, a member of the Judicial Council of the American

College Association. I stated to the committee that the Southern College Association would take final action at its next annual meeting, which would be held in Memphis in November next, on an amendment to the constitution looking to the establishment of a four years' graded course. I further stated that I had no reason to believe otherwise, than that this action would result in the establishment of the four years' graded course, thus placing the Southern colleges on the same plane with the colleges of the American College Association. I argued that those students who had matriculated in our various colleges, prior to this change in the constitution would be entitled to graduate at the end of three years, and asked that the resolution be modified so as to allow our colleges this privilege. The sub-committee would not listen to so long an extension of time. Finally the conclusion was reached that the class of 1898-99 could be graduated at the end of the third year, and not affect the membership in the AMERICAN MEDICAL ASSOCIATION of individuals connected with these colleges. I saw that this was the best that could be done, and then it was that I said: "If, in your report, you make it appear that the Southern colleges are not being driven in this matter I will not fight the resolution: but if you do not make it so appear then I will be forced, in the interest of the Southern Medical College Association to do my best toward defeating the resolution." I was present when the Executive Committee made its report, through its Secretary, and was surprised as to the manner in which the report was made; but seeing that the intention of the Secretary was to show that the Southern colleges were not being driven, to comply with my promise not to fight the resolution, I said nothing.

Up to this time it had not occurred to me, and it seems that it had not occurred to any one else, that the whole thing was out of order, or I should have raised that point, which, if sustained by the presiding officer, would have delayed final action for one year.

Dr. Reynolds' reply to Dr. Happel's communication is beyond all doubt incorrect. So vital a thing as the question of membership of an organization would not fail to be included in the constitution of such an organization. The matter of "membership" and "rules of order" are very different things; the latter always being in the by-laws, the former always in the constitution. By-laws, and resolutions not intended as law at all, when in conflict with the constitution of any organization, would certainly be null and void. An amendment to the constitution of any organization should never be rushed rapidly through to final action. Hence the very important feature of all constitutions is that they can not be changed without some due consideration, and after an interval of time longer or shorter. Such an amendment must always refer to the article and to the section to be amended.

Dr. Reynolds ought to know, and I presume he does, that Dr. Happel's statement touching the unconstitutional nature of the resolution, could have only the force of a non-official member of the body, but that the opinion expressed by Dr. Happel is correct, no one who is unprejudiced in this matter can doubt. The Judicial Council is the body to which this resolution will have to be referred at the next annual meeting. If this Council finds the resolution to conflict with the constitution of the AMERICAN MEDICAL ASSOCIATION, their decision can be but one thing, and that is that the resolution is null and void.

With the present feeling in the ASSOCIATION there could be no doubt but that an amendment to the constitution, similar to the resolution that was passed in Denver, will be introduced in proper form, at the next meeting, and that it will be finally acted on favorably, at the annual meeting in 1900: in the meantime the colleges constituting the Southern College Association will have carried out their original intention of extending the course of medical instruction to four years. The amend-

ment was introduced two years ago, and would have been acted on finally at the annual meeting in May 1897, except for a request from Tulane University (whose delegate was unable to attend because of the flood) that final action be deferred until the next meeting.

G. C. SAVAGE.

A Case in Obstetrics.

SIOUX FALLS, S. D., Sept. 10, 1898.

To the Editor:—On responding to a call in the country, July 24, to attend Mrs. S. in confinement, I found myself confronted with complications different from anything I had ever before encountered.

I reached the home of my patient, about seven miles from town, about noon. She was a large, muscular woman about 42 years of age, living with her second husband. She had given birth to ten children by her first husband, the oldest now 19 years of age. She had also had three miscarriages, one since living with her present husband.

I found her in bed, lying partially on her right side, with head and shoulders raised by pillows and her lower extremities elevated, because of a violent hemorrhage which had taken place. She was sweating profusely, was very cyanotic, with painful dyspnea; was coughing incessantly, raising enormous quantities of thick, tenacious mucous of a pinkish tint. Pulse 120 and irregular. Inspection revealed a very large abdomen, with very lax walls, so that the uterus and contents would roll from side to side, as she turned. There was complete inertia of the uterus; it seemed large enough to contain twice its contents. A digital examination brought on a profuse discharge of dark, stale, foul-smelling clots. I was unable per vaginam to make out the presentation, but by external manipulation decided it to be a breech. I had never before found a fetus so movable in-utero; it slipped about so freely that I would sometimes find the breech and sometimes the head presenting, perplexing me not a little. I could make out no fetal heart-sounds, so decided we had a dead fetus to deliver, though the mother insisted motion had continued up to that time and that she could still feel it. On close questioning, she admitted that up to just four weeks previously movements had been strong, painful and annoying, but for the past four weeks had been slow and gentle. Knowing that a dead fetus will roll about enough to simulate motion, I thought nothing of this. She stated that about 2 o'clock, A.M., she had felt a desire to urinate and got up upon the chamber, when the membranes ruptured and nearly filled the vessel with a very dark brownish liquid. A neighboring midwife was sent for, who on her arrival became alarmed at the large quantity of dark, foul-smelling clots that were coming away, recommended that a doctor be sent for. Any attempt to manipulate the uterus to excite contraction, or to introduce my hand into the vagina, would greatly aggravate the cough and dyspnea. Patient appeared much alarmed, complained of the dyspnea and said she felt as though her lungs were filled up "clear to the palate." Loud mucous râles could be heard all over the chest. Not deeming it safe to administer an anesthetic, I gave her a teaspoonful of ergot, together with $\frac{1}{4}$ grain of extract of belladonna, $\frac{1}{4}$ grain of codein, and six drops of chloroform. In an hour I gave her half a teaspoonful of ergot and repeated the belladonna and chloroform, omitting the codein. The cough and expectoration subsided, the dyspnea disappeared, hemorrhage stopped and pulse came down to 100. Within an hour after the second dose she was able to turn upon her right side and, with pillows removed, rest quietly. Previously she had been unable to lie either upon her right side or back. The uterus began to contract feebly, but regularly, though any attempt at manipulation would bring on the cough and dyspnea. I then administered a three-grain pill of ergotin and a two-grain of quinin and awaited developments. Pains grew more frequent and regular until about 11 P.M., when they became strong and natural.

Introducing two fingers into the vagina, I now succeeded in hooking into the groin of the fetus and delivering it promptly. It had the appearance of being somewhat immature and of having been dead a long time. The secundines were delivered in the usual manner in about twenty minutes.

My attention was attracted to the extreme length of the cord. Upon examination, I found a large, firm knot near the center, revealing the cause of the death of the child. It was not simply a single knot, but a complete figure 8. The cord had apparently become looped, twisted once upon itself and the loop had passed completely over the fetus and been drawn tight, shutting off the circulation. Untying the knot and measuring the cord I found it to be *forty-seven* inches long, by careful measurement. Forty inches is the longest I had ever before found. After the removal of the placenta and clots the uterus contracted normally and the patient felt relieved of all her distressing symptoms.

My theory, which may not be correct, is that after the cord became tied the placenta was detached and hemorrhage took place, distending the uterus abnormally, finally being limited and controlled by the size of the uterus, and for some reason it could not escape from the os, the clots remaining in utero until after the rupture of the membranes, when they were allowed to escape. The cough, with profuse expectoration, the dyspnea, cyanosis, perspiration and high pulse were, I believe, due to absorption of toxic material from within the uterus. I report the case, hoping it may be as interesting and instructive to some of the readers of the JOURNAL as it has been to the writer.

A. H. TUFTS, M.D.

Braces in Spinal Curvature.

CHICAGO, Sept. 12, 1898.

To the Editor:—In the JOURNAL of Sept. 10, 1898, there appears an editorial entitled "Braces in Spinal Curvature" which contains so many half truths, to put it gently, that it should not pass without comment.

The editorial writer says: "The two conditions of tubercular caries and spinal curvature differ so widely in their causation, symptomatology and treatment that each must have a clear-cut picture in our mind when examining spinal caries." This is true in so far as causation and treatment go, but it is not true in all cases in so far as symptomatology is concerned. It is true that there are cases that distinctly differ, and there are other cases where those having the greatest experience can not at once differentiate. Lateral spinal curvature may not simulate tubercular caries, indeed there would be no serious harm done to the patient by the treatment if it did, but tubercular caries in the early stage, before the characteristic posterior deformity has developed, may simulate spinal curvature so closely that a certain diagnosis can not be made by any one on the first examination. This is a serious matter, for tubercular caries will be seriously aggravated if it be treated for spinal curvature. In all cases of doubt the benefit of the doubt should be given to tubercular caries, and the case treated by some efficient form of immobilizing apparatus.

Now as to symptoms: A reflex rigidity of the spine is the only constant symptom in tubercular caries. Pain is rarely present until months after a diagnosis should have been made, and in many cases it is never complained of during the entire course of the disease. Pain on motion is rarely present except when the patient is caught off his guard. The involuntary muscular rigidity, above referred to, protects the spine from motion, which otherwise would be painful. It is a very fatal error to regard pain as a constant symptom in tubercular caries of the spine or of other bones. I have reported a case of hip disease that passed to a flexion deformity of ninety degrees and absolute loss of motion, then through a complete reduction of the deformity by a leverage brace, through the development and spontaneous evacuation of two large abscesses, and finally

to recovery with good motion at the end of six years, that never had a minute's pain or tenderness, and was all the time able to walk on the leg and also to stand on it alone, and holding up the well leg, hop about without the slightest sensitiveness. "Angular deformity in an anteroposterior plane" is a comparatively late symptom; he who can not make a certain diagnosis long before the development of "angular deformity in an antero-posterior plane," is very ill-fitted to treat a case of tubercular caries of the spine. Lateral deformity, simulating lateral curvature, is an early symptom in nearly half of the cases. Abscesses appear in less than half of the cases, and paralysis, fortunately, is very rare. These should be counted as complications and not as symptoms of tubercular spinal caries. If the diagnosis is made early, tubercular caries of the spine will be found in well-nourished as often as in ill-nourished children; it is only when it has remained unrecognized for months, perhaps until pain is complained of and angular deformity has developed, that the children nearly all become poorly nourished.

As to lateral curvature of the spine: It has not been demonstrated by any one that the predisposing causes are prolonged ill health or rapid growth. As a rule these cases have not grown rapidly, they are undersized, and have never had any special ill health, prolonged or otherwise. It is true that it is usually noticed by the dressmaker, between the ages of twelve and twenty years, but it can be found, if looked for, many years earlier, as shown by Ketch of New York. No one has shown any hypertrophy in the muscles of either side; if it were on either side it could not be on the side of the convexity, as claimed by your editorial writer, and further, it has been clearly proven by Scudder, of Boston, that there is no muscular hypertrophy, or atrophy, or muscular weakness, or difference in the strength of the muscles of the two sides in the ordinary cases of lateral spinal curvature. A tilted pelvis arises from a short leg, and one short leg is found in sixty per cent. of children who have no lateral curvature, as was long ago shown by Morton, of Philadelphia. When there is a short leg and a tilted pelvis in conjunction with lateral curvature it is found quite as often on the wrong side as on the right side. That is to say, with a right dorsal and left lumbar curvature the pelvis should be oblique, the right side high and the left low, and the left leg shorter than the right. Quite as often as otherwise the right leg is half an inch shorter than the left, as reported by me many years ago, and since confirmed by many observers. A word as to the treatment: In slight cases, especially in postural cases, "apparatus," that is, braces and corsets, is not necessary. In cases where there is any of what Roth calls "osseous deformity" "apparatus" is necessary if reduction of deformity is to be gained, and often, if the progress of the deformity is to be checked, but the "apparatus" should always be used in conjunction with exercises given by the surgeon himself.

Respectfully yours,

JOHN RIDLON.

American Public Health Association—Twenty-Sixth Annual Meeting.

CHICAGO, Sept. 12, 1898.

To the Editor:—The forthcoming meeting of this Association is an international one, inasmuch as it will convene at Ottawa, Canada, Sept. 27 next, and as such promises to be of much interest, because representatives, not only from the United States, but from Mexico and Canada will be present.

As this Association has been known in the past for its marked energy in successfully promulgating Municipal, State, National and International sanitary matters, its influence in disseminating the practical application of public hygiene, not only to the medical profession of the countries named, but to the public generally will be wide. It appears to the writer that at this particular time our profession should be largely represented at this international meeting of sanitarians. It is

well-known that all the wisdom of sanitary science is not contained in a few hundred of the members of this or any other large body, but there are other important reasons why this meeting should be a representative one in numbers, namely: among the special committees provided for in its constitution, is the Committee of Public Health Legislation, and it is expected that this committee will submit a comprehensive report, on the merits of which a full discussion should be participated in by medical men.

The convening of Congress at Washington, next winter, will be awaited with renewed interest, as many important topics of a judicial and commercial nature will be introduced, of which none are more important than public health matters. With the strong endorsement of the AMERICAN MEDICAL ASSOCIATION, the American Public Health Association, and scores of other scientific societies throughout the United States, our profession should demand of Congress that our petition looking toward a Department of Health be granted—a department that will be an ideal one from which any country throughout the universe might model.

As the medical profession and citizens of the beautiful and picturesque capital city of the Dominion of Canada have invited this Association and its friends to be their guests at this meeting, it is hoped that a large representation of our profession can attend. Several entertainments have been provided for. Those of us who have shared their hospitality on similar occasions know the social functions extended to us, and their unbounded hospitality is proverbial. For this occasion complimentary excursions, luncheons, etc., have been announced on the program, and the ladies who will grace the gathering will be provided for in a charming manner.

The usual rate of a fare and a third has been granted by the railroads: tickets issued on the certificate plan. It is proposed to leave Chicago on Sunday, September 25, at 3:15 P.M., via the Wabash and C. P. R. The magnificent sleepers of the Canadian Pacific will run through from Chicago to Ottawa without change. It is expected that the Mexican delegates will go this way, thus accompanying those who pass through and depart from Chicago. The train leaving Chicago at 3:15 P.M., is due to arrive at Detroit at 10:45 P.M. on Sunday, when we will be joined by other members of the Association, who will accompany us the remainder of our journey. Leaving Detroit at 11:35 P.M., we are due at Toronto on Monday morning the 26th, and at Ottawa at 5 P.M. the same day.

Believing that this international meeting will be an unusually profitable one, scientifically, and that a large attendance is particularly desirable, is why the writer has invoked space in our JOURNAL for this communication.

Very sincerely yours,

LISTON H. MONTGOMERY.

PUBLIC HEALTH.

Society for the "Repression" of Tuberculosis.—A well-attended meeting of prominent members of the profession took place recently, by invitation, at the house of Sir William Broadbent. The meeting had been called to consider the advisability of inaugurating a movement to disseminate knowledge concerning tuberculosis and its prevention, and also the provision of sanatoria for the open-air treatment of tuberculous lung disease. Sir William Broadbent was in the chair, and he briefly stated the objects in view. He read a letter from the President of the Royal College of Physicians of London, expressing approval of the project and suggesting lines of work. Dr. Corfield, Mr. Malcolm Morris, Mr. Shirley Murphy, Dr. Isambard Owen, Dr. J. Pollock, Dr. Ransome, Dr. H. Weber and others spoke; and resolutions were passed: 1, expressing the desirability of forming a public association for the purpose stated, and 2, appointing a provisional committee to take the

necessary steps to start such an association. We heartily sympathize with any action which may be taken to diminish the amount of tuberculous disease, and consider that if, as no doubt will be case, the methods of effecting this are pursued with wisdom and discretion, much good will be done. The facts, as stated by Dr. Ransome, that under existing sanitary legislation the death-rate from such disease has been reduced by two-thirds, and, as Mr. Shirley Murphy pointed out, that vast improvements have taken place in London habitations during the past twenty years, go far to encourage the hope that yet greater benefits will accrue when the community realize fully the preventable nature of tuberculosis and the value of pure air and food.—London *Lancet*.

Phosphorus Poisoning in France.—The prevalence of this formerly serious evil has been much reduced since the French government assumed the monopoly of match-manufacture, and framed rules that must be read aloud to the work people at the factories, at least once every month. Among these rules, according to the London *Lancet* for August 6, is one that enjoins that no food or drink shall be allowed in the workshop, but must be left in the dining-room; that before meals the working clothes must be left in the cloak-room, and the work people must wash their hands with soft soap and water, and must gargle their mouths with a gargle specially provided for that purpose. Then only are they allowed to eat. The same precautions are taken on their leaving the works. Further, it is enacted that no one shall be employed under sixteen years of age, and that they must first be examined by the medical man, who must certify that they are free from bodily infirmity and contagious disease; that they have been vaccinated or have had smallpox, and that the state of the teeth is good. As a result of these precautions among the 575 men and women employed at the Pantin and Aubervilliers works there has not been a single case of phosphorus poisoning during the year 1897. A reduction in the severer cases has been chiefly due to raising the age of admission, to medical examination, subsequent close supervision, repeated dental examination, the personal cleanliness of the workers, and immediate suspension on first symptoms of illness, with allowance of two-thirds of the salary while the employé is away from the works. The French government is doing all in its power to discover better methods of manufacture. Chemists and inventors are paid out of the public purse to study the matter, and the result is, that a match which will strike anywhere and yet which is free from phosphorus has been invented, though it has not yet become a commercial article.

Milk Supervision by Municipal Sanitary Boards.—Dr. W. H. Hatch has reported in the *Journal of Comparative Medicine*, some of the good results of local milk-work in the city of Buffalo, N. Y.

In the absence of State supervision it would seem pertinent to here refer to the system adopted by the Health Commissioner of Buffalo, with the view of mitigating, if possible, the contamination mentioned. By his direction a record of the various dairies supplying the city is kept. This includes inquiry: 1, as to the herds, their health, and whether they are subjected to veterinary examination and tuberculin-test; 2, the methods of cleaning utensils, the process and time given for cooling the milk, hour of shipment, and distance hauled; 3, quality and source of the water supply; 4, physical condition of the employes, etc.; 5, educational efforts in the way of causing the dissemination of literature bearing upon the interest of the dairyman and his care of the milk.

Following this, where conditions at the dairy are deleterious or where circumstances arise of a character deemed prejudicial to the public health, instant investigation by the health department is made, and the dairyman required to correct, without delay, such conditions as may be at fault. Failing to

do which, or even prior to notification, if urgency and facts demand it, the product of such dairy is interdicted at the city line; the milk-house in the city to which the milk is consigned being at the same time notified and prohibited from receiving the milk, under penalty of the revocation of license. Under this system, the only one available under the circumstances, it is believed that decided sanitary improvement has been made in the dairies supplying Buffalo, the ratio of infection diminished, and a corresponding influence made upon the public health. Many dealers keep milk only as a convenience to their customers. Their facilities for proper storing and handling are insufficient—in fact, nothing. This traffic in milk is objectionable from the fact that it is only a small part of the business, and subsidiary to other interests. The average store-keeper has little or no information relating to milk, which, while in the store, is not only liable to absorb deleterious odors from adjacent products, from vegetables, perchance decomposing, but more seriously to contamination by micro-organisms, from dust and dirt which are tracked in from the street by the feet of customers and blown about the store by the draughts. This condition is always present and a danger, and is invited by the habit of leaving the milk-cans uncovered. Grocers and other small dealers should be and are obliged, in Buffalo, to keep posted in a conspicuous place the names and license of those from whom they obtain their milk. To abolish this store peddling will be difficult, but existing conditions should be mitigated by personal instruction to the dealers and frequent inspection by those designated for that duty. Adulteration of milk by water or contamination by preservatives may be considered of secondary importance to the question of sanitation. Stringent ordinances relating to both are proper. Concerning the former, the use of the lactometer as a method of testing has given rise to much discussion through the possibility of evasion at the hands of crafty and unscrupulous dealers. State and city laws upon this feature are too liberal, placing the standing as low as it has been deemed possible for normal milk to assume under ordinary conditions. Adulteration of milk by water is not a common occurrence in Buffalo, and is seldom found among representative dealers. It is in the main confined to peddlers, who, having an unusual and unexpected demand, resort to the Buffalo water-supply for assistance. The peddling of milk in the streets as well as the distribution of milk through grocery stores and small dealers should properly be abandoned. The yearly license system, with power of revocation and with heavy penalties for violating ordinances relating to the business, and with further penalty of exclusion from the trade after a certain number of offences, should be adopted. The features here specified are necessitated by the fact that in all municipalities the evils they endeavor to cover and prevent have been found to exist, and through their existence contamination has occurred, and disease has been definitely assigned to them. Almost all these directions are, through the direction of Health Commissioner Wende, embodied in the ordinances of the City of Buffalo, and enforced without favor. They have been found efficient, and the security they have given to milk has been demonstrated by the low rate of infantile mortality through diseases known to be due to milk.

Anaerobic Bacterial Purification of Sewage.—In the *British Medical Journal*, Dr. Boyce directs the attention of sanitarians to some early attempts at the bacterial treatment of refuse, in part as follows: "The most recent advance in the treatment of sewage was subjecting it to aerobic fermentation. This now seems likely to be reinforced by an anaerobic method, and one which may play a most important part in the solution of a very difficult and costly problem. I should like, therefore, to direct attention to some early work upon the subject which, as far as I am aware, appears to have been overlooked. In Janu-

ary, 1893, my father received a very interesting letter from the British Consul at Barcelona, bringing to his notice a new method for the treatment of sewage, a method which the writer stated had been published in France about the year 1883 by the Abbè Moigno. The Consul stated that the system had been tried by a well-known merchant of Barcelona, at first at his factory and then at his private residence, and that at the time of writing the method had been in operation for five years with perfect success. The Consul had himself inspected the tank and had seen the almost colorless and odorless fluid which came away, and which was removed in casks and employed for manure purposes without causing the slightest repugnance. 'By a mysterious action which reveals an entirely new principle it transforms all that it receives, both solid and liquid evacuations, in a tolerably short time, and without any addition of chemic ingredients into a homogeneous and scarcely turbid liquid, which holds everything in suspension in a state of filaments almost visible, without leaving any deposit against the sides of the soil-pipe or at the bottom of the drain-pipe.' The apparatus is constantly discharging, and the fluid is admirable for domestic irrigation. The septic tank is then accurately described and figured, and the capacity calculated for the amount of work it has to do. It is in effect the perfect septic tank as now understood. The Abbè discusses the theory of action of the complete decomposition of the fecal and refuse material in the airless tank, and hints that it may be due to the action of a hydrosulphate of ammonia, but he adds that this is a conjecture, and proceeds, 'May it not be discovered that the mysterious agents of the fermentation, cause of the decomposition and liquefaction of the feces are the vibrios, or rather the anaerobes of M. Pasteur, which the oxygen kills, and which only employ their devouring activity when excluded from the air?' A laboratory septic tank was constructed with glass sides, so that the whole process of fermentation and liquefaction could be observed, the layer of about 5 c.c., which forms upon the surface is described and the manner in which it undergoes disintegration. A tap was placed on the top of the tank and over this a bladder was securely fastened, and it was found that little, if any, distention of the bladder occurred. If, however, air was admitted to the tank there was a rapid development of gas bubbles and soon the bladder was distended, and therefore for the effective working of the bacterial destructor it was essential to exclude the air. He points out that a certain proportion of water is requisite to prevent saturation of the fluid with the product of decomposition, and in consequence arrest of the process. Chemic analysis of the fluid showed that it possessed strong fertilizing properties. The Abbè conjectures that during the petrid anaerobic fermentation any pathogenic germs which might be present are destroyed, and that therefore the fluid can be turned with impunity into the sewers or used for irrigation."

BOOK NOTICES.

An American Text-book of Gynecology, Medical and Surgical, for Practitioners and Students. By HENRY T. BYFORD, M.D., J. M. BALDY, M.D., EDWIN B. CRAGIN, M.D., J. H. ETHERIDGE, M.D., WILLIAM GOODELL, M.D., HOWARD KELLY, M.D., FLORIAN KRUG, M.D., E. E. MONTGOMERY, M.D., WILLIAM R. PRYOR, M.D., GEORGE M. TUTTLE, M.D. Edited by J. M. BALDY, M.D. Second edition, revised, illustrated. Pp. 718. Philadelphia: W. B. Saunders, 1898. Price, cloth, \$6; sheep or half morocco, \$7. For sale by subscription.

Our notice of the first edition of this work will be found in Vol. xxii, p. 62, Jan. 13, 1894, in which we gave a favorable notice of the work. In this edition we are informed by the editor that more than forty of the old illustrations have been replaced by new ones, and that very much of the material has been altered and rearranged. The portions devoted to plastic work are practically new. The article on hysterectomy has

been rewritten and more fully illustrated. The book has been revised, so that it fairly covers the changes and improvements which have been made in the art during the four years which have elapsed since the publication of the first edition. The style of the work is excellent, the publisher having spared no pains to secure the finest typographic effect. Some of the illustrations are beautiful.

A Text-Book Upon Pathogenic Bacteria for Students of Medicine and Physicians. By JOSEPH MCFARLAND, Professor of Pathology in the Medico-Chirurgical College. With 134 illustrations. Pp. 497. Second edition, revised and enlarged. Philadelphia: W. B. Saunders. 1898. Price, \$2.50 net.

Our notice of the first edition of this work will be found in Vol. xxvi, page 688, April 4, 1896, and we regret to see that the errors in history which were pointed out in our notice have still been continued in the present edition, no correction having been made. In other respects, the volume sustains the favorable opinion we gave of it on its first appearance. In this edition new chapters have been added, dealing with the bacteriology of whooping-cough, mumps, yellow fever, hog cholera-swine plague, describing bacillus *adrogenes capsulatus* and proteus vulgaris, and pointing out the methods of determining the value of antiseptics and germicides, and of determining the thermal death-point. This makes a work fully abreast of the times, and one of the most useful of recent text-books on bacteriology, so far as its practical applications are concerned.

Onzieme Congres de Chirurgie, Paris, 1897; Association Française de Chirurgie, Procès-Verbaux, Mémoires et Discussions. Publiés sous la direction De M. Le Dr. LUCIEN PICQUÉ, Secrétaire-Général. 8vo. Pp. 960, with numerous engravings. Paris: Félix Alcan. Price 20 f.

This work comprises the transactions, papers and discussions of the Eleventh Congress of Surgery, held at Paris in October last by the Association Française de Chirurgie. The questions which were discussed at this session were, first, "Contusions of the Abdomen," and, second, "The Indications for Operation and Treatment of Cancer of the Rectum." In addition to the numerous communications and discussions which belonged to the program there were also many volunteer papers presented by the members of the congress on interesting surgical cases. An examination of the volume shows conclusively that, from the standpoint of efficient surgery, the French surgeon still keeps on as high a plane as other leading surgeons of the world.

The Twelfth Congress will be held at Paris by the Faculté de Médecine on Monday, Oct. 17, 1898, under the presidency of Prof. Le Dentu.

An American Text-book of the Diseases of Children; Including Special Chapters on Essentially Surgical Subjects—Orthopedics; Diseases of the Eye, Ear, Nose and Throat; Diseases of the Skin; and on the Diet, Hygiene and General Management of Children, by American Teachers. Edited by LOUIS STARR, M.D., assisted by THOMPSON S. WESCOTT, M.D. Second edition, revised. Pp. 1244. Philadelphia: W. B. Saunders, 1898. Cloth, \$7; half morocco, \$8; sale by subscription only.

There are sixty-eight contributors to this volume. The contents of the volume are, in general, as follows: First, an Introduction of 60 pages; next, Part I, disorders incident to birth and diseases of the newborn, 68 pages; Part II, diathetic diseases; Part III, infectious diseases; Part IV, general diseases not infectious; Part V, diseases of the blood; Part VI, diseases of the digestive organs; Part VII, diseases of the nervous system; Part VIII, diseases of the respiratory system; Part IX, diseases of the heart; Part X, diseases of the genito-urinary system; Part XI, orthopedics; Part XII, diseases of the skin; Part XIII, diseases of the ear; Part XIV, diseases of the eye.

The first edition of this book was noticed in this JOURNAL in Vol. xxii, p. 641, April 28, 1894. Some new articles have been

added to the present edition, some of the original papers have been amended, and a number have been rewritten. The new articles include modified milk and percentage milk mixtures and orthopedics. Those rewritten are typhoid fever, rubella, chicken-pox, tuberculosis, meningitis, hydrocephalus and scurvy, while extensive revision has been made in the chapters on infant feeding, measles, diphtheria and cretinism. The volume has therefore been increased in size by about fifty pages.

The editor records with regret the decease of two of his collaborators who wrote articles in the previous volume, and which have been continued in this—Drs. Charles Warrington Earle of Chicago, and J. Lewis Smith of New York.

In most respects, the work is quite up-to-date, but we notice that the old weights and measures continue to be used in the formulæ, to the exclusion of the decimal system. So progressive a book should not be "behind the procession" in this respect.

A Clinical Text-Book of Medical Diagnosis for Physicians and Students, Based on the Most Recent Methods of Examination. By OSWALD VIERORDT, M.D., Professor of Medicine of the University of Heidelberg. Authorized translation, with additions by Francis H. Stewart, A.M., M.D. Fourth American Edition from the Fifth German. Revised and enlarged. 194 illustrations. Pp. 603. Philadelphia: W. B. Saunders. 1898. Price, cloth, \$4 net: sheep or half morocco, \$5.

This favorite work needs no syndicate of professors to insure its sale at medical colleges. Although less than nine years elapsed between the date of the first edition and the date of the fifth, from which the present translation is made, the book has been kept carefully abreast of the progress of the times. The author himself has carefully revised his work four times. With the exception of the entire omission of the Roentgen ray, all the latest methods of diagnosis have been incorporated in this volume. This has been done purposely, as its distinguished author states that for purposes of internal medicine the application of the Roentgen ray is still in the beginning. It is quite possible that before another edition shall have been issued, its place in internal medicine will be more definitely fixed. In the meantime, this work remains, as before, one of the most valuable books of its class.

Transactions of the American Surgical Association. Volume xvi. Edited by DE FORREST WILLARD, A.M., M.D., Ph.D., Recorder of the Association. Pp. 319. Printed for the Association. Philadelphia, 1898. For sale by William J. Doran.

The contents of this volume include the list of the officers, presidents, fellows and honorary fellows of the Association, the constitution and by-laws, an account of the D. Hayes Agnew Memorial Wing of the University Hospital at Philadelphia, the address of welcome by Dr. Joseph Holt of New Orleans, the address of the President, and papers as follow: "Etiology and Classification of Cystitis," by N. Senn, M.D.; "The Question of Operative Interference in Recent Simple Fractures of the Patella," by Charles A. Powers, M.D.; "The Use of Animal Toxins in the Treatment of Inoperable Malignant Tumors," by George Ryerson Fowler, M.D.; "A Clinical and Histologic Study of Certain Adenocarcinomata of the Breast, with a Brief Consideration of the Supraclavicular Operation and the Results of Operations for Cancer of the Breast, from 1889 to 1898, at the Johns Hopkins Hospital," by William S. Halsted, M.D.; "An Inquiry into the Etiology of Cancer, with some Reference to the Latest Investigations of the Italian Pathologists," by Roswell Park, M.D.; "Remedial Measures in Obstruction of the Common Bile-duct," by J. McFadden Gaston, M.D.; "Traumatic Rupture of Pancreas, Formation of Hemorrhagic Cyst; Operation; Pancreatic Fistula; Recovery," by H. W. Cushing, M.D.; "The Cranial Cracked-pot Sound as a Symptom of Cerebellar Tumors," by N. B. Carson, M.D.; "A Case of Appendicitis in which the Appendix became Permanently Soldered to the Bladder, like a third Ureter, Producing a Urinary Fecal Fis-

tula," by W. W. Keen, M.D.; "A Case of Fecal Communication with the Bladder, with Resulting Calculus Following Appendicitis," by George Ryerson Fowler, M.D.; "Gunshot Injuries of the Spine," by T. F. Prewitt, M.D.; "Hysteria from a Surgical Standpoint," by James E. Moore, M.D.; "Hypertrophy of the Prostate Gland, and Suggestions in Regard to its Treatment," by L. C. Lane, M.D.; "Some Cases not Operable," by David W. Cheever, M.D.; "A Case of Apparently Hopeless Infiltration of Left Axilla and Scapula by Round-celled Sarcoma; Extirpation Attempted and Abandoned; Extensive and Severe Wound Infection Followed by Disappearance of the Tumor," by Maurice H. Richardson, M.D.

In this volume will be found a valuable paper on the etiology and classification of cystitis and a paper on fractures of the patella. The surgeon who owns a complete set of the transactions of the American Surgical Association will have at his disposal one of the best exponents of American surgery that can be found in our literature, and he will have occasion to observe that the topics and discussions each year usually contain information in advance of the text-books.

A Text-Book of Materia Medica, Therapeutics and Pharmacology.—By GEORGE FRANK BUTLER, Ph.G., M.D., etc. Second edition, revised. Pp. 860. Philadelphia: W. B. Saunders, 1898. Price, cloth, \$4 net; sheep or half morocco, \$5.

In our first notice of this book, in Vol. xxvii, p. 1117, Nov. 21, 1896, we expressed the opinion that it had certain features that would make it very popular—such as designating the precise orthoëpy of all the names according to the Romanesque pronunciation, the use of the decimal system throughout, and having conveniently placed the genitive form after each official name. These features are bound to be of use to students, and we are not surprised that the second edition was called for so quickly. The work has been thoroughly revised, and, as we said before, "taken as a whole the book may fairly be considered as one of the most satisfactory of any single-volume work on materia medica on the market."

Report of the Twelfth Annual Meeting of the Association of the Executive Health Officers of Ontario. Paper. Pp. 72. Toronto: Warwick Bros. & Rutter. 1897.

This report contains the proceedings of the meeting held at Toronto, Ont., Aug. 16 and 17, 1897. It is well printed on good paper, and contains much of interest to the physician.

Transactions of the Medical Society of the State of New York. 1898. Cloth. Pp. 512. Published by the Society, 1898.

This volume contains proceedings of the Annual Meeting of the Society held at Albany in January of this year, with data as to delegates, permanent and honorary members, forty-four papers presented at the Society, besides obituary notices of various deceased members of the Society, and a list of the officers of the Society from its organization up to the present time.

Transactions of the Sixty-fifth Annual Session of the Medical Society of the State of Tennessee. Cloth. Pp. 300. Nashville: Jno. Rundle & Son, 1898.

This volume comprises the minutes of the session held at Jackson, Tenn., April 12, 13 and 14, 1898, a list of the delegates to the AMERICAN MEDICAL ASSOCIATION, committees, judicial council, By-laws, "Code of Ethics," and the various papers presented before the Society, with the discussions thereon.

PAMPHLETS RECEIVED.

Aberrant Tendinous Cords of the Heart. By Henry F. Lewis, Chicago. Reprinted from Phil. Med. Jour.

American Climatological Association.

Blood Serum as an Antiseptic and Surgical Dressing with Report of Cases. By Charles Graef, Sandusky, Ohio. Reprinted from Lancet Clinic.

Cystic Degeneration of the Chorion Villi with Co-incident Cystic Tumor of Both Ovaries. By Henry Kreuzmann, San Francisco, Cal. Reprinted from Am. Jour. of Obstet.

Diseases of the Lachrymal Passages: Their Causes and Management. By Leartus Connor, Detroit, Mich. Reprinted from Jour. Am. Med. Ass'n.

Does the Present Method of Teaching by Didactic Lectures Best Qualify the Student for the Practice of his Profession. By John S. Marshall, Chicago. Reprinted from the Dental Review.

Employment of Solutions of Toluidin Blue as Collyria, and as a Stain for Corneal Abrasions and Ulcers; Importance of Early Recognition and Treatment of Acute Inflammatory Glaucoma. By C. A. Veasey, Philadelphia. Reprint.

Infant Feeding. By Luther S. Harvey, Crescent City, Fla. Annals of Gyn. and Ped.

Organization of the British Medical Association. By Surgeon-Col. G. J. H. Evatt, M.D., Hongkong, China. 1898.

Patency of the Stump After Salpingectomy. By J. Wesley Bovee, Washington, D. C. Reprinted from Am. Jour. of Obstet.

Prevention of Diseases now Preying upon the Medical Profession. By Leartus Connor, Detroit, Mich. Reprinted from Bul. of the Am. Acad. of Med.

Proper Use of Vaginal Pessaries. By J. Wesley Bovee, Washington, D. C. Reprinted from Va. Med. Sem.-Mo.

Some New Practical Pharmaceutico-Therapeutic Notes, and Some New Ideas in Surgical Instruments. By Samuel F. Brothers, New York City. Reprinted from Phil. Med. Jour.

Tubo-Ovarian Hemorrhage Resembling Ruptured Ectopic Pregnancy. By J. Wesley Bovee, Washington, D. C. Reprinted from Am. Gyn. and Obstet. Jour.

TRADE PAMPHLETS.

The Alpha Sanitarium, Lake Forest, Ill.

Announcement Chicago Eye, Ear, Nose and Throat College, Chicago, Ill.

Bromidia; Iodia. Battle & Co., St. Louis, Mo.

Guaiaquin. McKesson & Roberts, New York City.

SOCIETY NEWS.

Idaho State Medical Society.—The sixth annual meeting of the Society was held at Moscow, September 6 and 7. The following officers were elected for the ensuing year: President, C. W. Shaff, Lewiston; vice-president, E. F. Guyon, Montpelier; secretary, Edward E. Maxey, Caldwell. The next annual meeting will be held at Lewiston, Sept. 5 and 6, 1899.

Mississippi Valley Medical Association.—The annual meeting of the Association will be held in Nashville, Tenn., October 11, 12, 13 and 14. The provisional program contains seventy-five papers and the members of the Association look forward to an interesting meeting. Communications concerning papers should be sent to Dr. Henry E. Tuley, Louisville.

The Thirteenth International Congress of Medicine.—This Congress will meet in Paris, France, Aug. 2-8, 1900. The section of psychiatry is already organized, with a committee of twenty-five of the best-known alienists of Paris and the provinces, among them Bourneville, Professor Mairet, Paul Garnier, Meuriot, Falret, Vallon and Jules Voisin. Dr. Magnan is president of the section, Professors Joffroy and Ballet vice-presidents and Ant. Ritti of the Maison Nationale of Charenton secretary. The subjects selected are: In mental pathology, "The Psychoses of Puberty"; in pathologic anatomy, "Idiotism"; in therapeutics, "Bed Treatment in Acute forms of Insanity and the Modifications it may Entail in the Organization of Asylums"; in legal medicine, "Fixed and Impulsive Sexual Perversions from a Medico-Legal Point of View." There are to be three addresses on each subject, one by a French "rapporteur" and two by foreigners.

American Academy of Railway Surgeons.—From the preliminary program of the fifth annual meeting, to be held at the rooms of the Chicago Medical Society, Chicago, Oct. 5, 6 and 7, 1898, we note that the executive sessions are open to Fellows only. In the scientific sessions, open to all those interested, the following papers are announced: "Anesthesia," R. H. Cowan, Radford, Va.; "Traumatic Injuries of Peripheral Nerves," D. S. Fairchild, Clinton, Iowa; "Injuries of the Genital Organs," Milton Jay, Chicago; "The Radical Cure of Hernia," W. J. Mayo, Rochester, Minn.; "Concealed Meningeal Hemorrhage," H. Reineking, Sheboygan, Wis.; "Physical Examination for Railway Surgeons," J. F. Pritchard, Manitowoc, Wis.; "The Hygiene of Railway Injuries," G. P. Conn, Concord, N. H.; "Conservatism in Railway Surgery," H. Hatch, Quincy, Ill.; President's Address, "The Higher the Order of Railway Surgery the Greater the Protection to the Employee, the Passenger and the Company," R. Harvey Reed, Rock Springs, Wyo.; "Convenient First Dressing of Fractures with Samples," E. H. Trickler, Cutler, Ohio; "Surgical Treatment of Some Varieties of Disease of the Prostate and Seminal Vesicles," G. E. Benninghoff, Bradford, Pa. The following Fellows of the

Academy have promised papers: A. D. Bevan, Chicago; Allen Staples, Dubuque, Iowa; LeRoy Dibble, Kansas City, Mo.; C. K. Cole, Helena, Mont.; George W. Crile, Cleveland, Ohio. R. HARVEY REED, M.D., President, Rock Springs, Wyo.; D. C. BRYANT, M.D., Secretary, Omaha, Neb.

Virginia Medical Society.—The annual meeting of the Virginia Medical Society was of more than usual interest. It was held August 30 and 31 and September 1, at the famous watering-place, Virginia Beach. This is eighteen miles southeast of Norfolk, Va., on the Atlantic coast, and is one of those rare, wide, sand-floor beaches so much enjoyed on the coast. The Princess Anne Hotel was the home and place of meeting, and was an ideal spot for comfort and great pleasure. It was a new feature to see crowds of medical men and their families disporting themselves in the surf night and morning, filling the air with joyous shouts and displaying all the enthusiasm of youth over again. It was a delightful change from the dreary reading of papers to plunge into the surf and feel the force of the Atlantic waves with all their cool freshness. If medical societies could meet on ocean shores in hot weather, both the science and the pleasure would be intensified in many ways. The meeting was very largely attended; thirty-six papers and two addresses were down on the program, all of which was carried out most carefully. The president's address, by Dr. Harvie, was replete with practical advice to the young men of the profession, and the public address by Dr. Jones of Roanoke was interesting. The first session was devoted to papers and discussions on diphtheria and the influence of bacteria in disease, and was spirited in its scientific and free expressions of opinions. Dr. Bolton of Brattleboro, Vt., described the bacteria of typhoid fever and its vitality and transmissibility under different circumstances. All the papers were short and clear. The second session was devoted to surgical papers. Dr. Phelps of New York gave a clinical paper on "Hip Joint Disease," and Dr. Mallet of the University of Virginia gave some very interesting results of experiments on kreatin and kreatinin. At the night session, many gynecologic questions in several papers of ability were presented at some length. Papers covering a great variety of topics were read at the remaining sessions, some of which were followed by able and instructive discussion. The meeting closed with a very pleasant banquet at the Princess Anne. The publication of the papers at an early date indicates a very healthy spirit in the Society, which, while comparatively young in organization is fully equal to many of the larger and more pretentious societies. Most of the members are widely scattered over the mountain and valley towns of the State, more or less difficult of access and isolated from each other; and yet in papers and discussion they show a familiarity with medical science that would compare favorably with that shown by city societies. One thing noticeable is that the Virginia doctor can always express himself clearly, in public debate. He may not be well informed on all matters, but what he does know he can put clearly and smoothly in offhand talks. The papers at this meeting were very common-sense, and clear, unpretentious discussions of the most practical side of the topic. Most of the physicians were educated in their own State at the very excellent University of Virginia and the Richmond schools, and a large number have received a classic training before their degree, hence a wider culture is apparent. While the cross-roads doctor and the irregular exist, they are hardly noticeable. The Virginia medical man ranks higher socially than in other States, and this requires general culture and participation in the affairs of the neighborhood calling for judgment on matters outside of medicine. The examining board for admission to practice in the State has a very high standard of requirements, and many persons are rejected at every session. The board has manifested a very strong determination to raise the standard of the profession throughout the State. The State Society is greatly indebted to Dr. Edwards, the secretary, who for years has worked incessantly to gather all the physicians in the State into a

popular, enthusiastic society. As nearly all the physicians are general practitioners, doing all sorts of general and special practice, the annual meeting is a postgraduate school to some degree, and each paper is listened to with much interest. Noted specialists find in this Society very appreciative hearers and much pleasure in reading papers before them. The Princess Anne Hotel management made the visit of the Society very pleasant in every possible way, and the Old Dominion Steamship Company from New York made it very pleasant for the visitors from the North. The Virginia Society has found it practicable to hold their annual meetings at some watering-place in the mountains or by the seashore during the hot season; and this example could be followed with advantage by other societies. This would give greater attractiveness to the meetings and bring out larger numbers of the profession.

NECROLOGY.

WILLIAM LINDSLEY MUSSEY, M.D., Miami Medical College, Cincinnati, O., 1887, died in France, September 8. He was a son of the late Dr. William H. Mussey, and grandson of the late Dr. Harvey Lindsley of Washington, D. C. He was identified with the Women's Medical College of Cincinnati, as Demonstrator of Anatomy and Professor of Dermatology and Syphilography. He was also an Assistant-Surgeon of the Children's Hospital of Cincinnati.

CHARLES CARTER, M.D. of Blowing Rock, Watauga County, N. C., September 9. He was graduated from the College of Physicians and Surgeons in 1861, and in October of that year became an Assistant-Surgeon, U. S. Navy. Having served as such until February, 1863, he was appointed, after an interval of a few months, Surgeon of the U. S. Hospital, Turner's Lane, Philadelphia.

EUGENE S. FORMAN, M.D., University of Buffalo, N. Y., 1870, died from apoplexy, September 13, at his home in Auburn, N. Y.

JOSEPH F. KUHN, M.D., Long Island College Hospital, 1887, died at his home in Brooklyn, N. Y., September 12, aged 34 years. He was the son of Dr. Louis DeB. Kuhn.

GEORGE S. HANNA, M.D. of Hedgesville, Md., September 8, aged 70.—Abbie G. Hall, M.D. of Champaign, Ill., September 11.—Louis Hess, M.D. of Brooklyn, N. Y., September 11.—J. E. H. Nichols, M.D. of New York, September 10.—A. A. Sylvester, M.D. of Columbia, Ga., September 11, aged 64.—E. Steifel, M.D. of Gallion, O., September 3.—H. Scarborough, M.D. of Ellaville, Ga., September 8, aged 86.—Joseph O. Wilcox, M.D. of Dresden, N. C. September 8.—Stephen D. Ayers, M.D. of Marion, Ind., September 15. He was born at Morristown, N. J. in 1811.—Francis Huebner, M.D. of Elysburg, Wis., September 9.

MISCELLANY.

Personal.—Prof. Nicholas Senn has resigned his position of Lieut. Col. U. S. V., to resume his practice in Chicago.

R. Stansbury Sutton, Major U. S. Vols., has resigned, and resumed practice in Pittsburgh.

A. C. Corr, M.D., of Carlinville, Ill., has been elected president of the Illinois State Board of Health, vice A. Adelsberger resigned.

Congenital Lacerations.—Congenital lacerations in the cervix uteri have been observed by Heil in three cases of nulliparæ, showing that the usual assumption that they are invariably caused by previous child bearing is not correct.—*Obl. f. Gyn.* 1898, 19.

Civil Service Change.—The Medical Examining Board of the Chicago Civil Service Commission has been abolished by the Commission on the ground of economy. The retiring examiners deserve the thanks of the community for the able and efficient manner in which they have performed their duty, but

there is no valid reason why the City Health Department should not be utilized in this capacity.

Diagnostic Value of the Reflexes in Lesions of the Cervical Portion of the Cord.—Mendelssohn of St. Petersburg, asserts that all normal reflexes pass through the superior portion of the spinal cord and the inferior portion of the medulla oblongata. This theory explains the abolition of the reflexes with lesions of the cervical portion of the cord, as the lesion is an obstacle to their passage.—*Bull de l'Acad. de Méd.*, May 10.

The Tibia Substituted by the Fibula.—Three years ago Poirier resected the whole of the shaft of the tibia on a boy for osteomyelitis, replacing it in two steps by grafting the body of the fibula on the two tibial epiphyses. Radiographs now show that the graft has finely replaced the missing tibia. It has grown from 4 to 20 millimeters in diameter and also increased in length, answering its purpose so well that the lad recently won the first prize for gymnastics at his school. Another demonstration of the fact that the "function creates the organ."—*Semaine Méd.*, May 25.

To Improve Medical Certification in France.—Last year there were published reports from the civil tribunal of the Seine to the effect that the judgment of the court had been that all medical certificates must be written from the personal knowledge and not from hearsay information of the physician making the report. This year the court has rendered a judgment in a case which makes it a misdemeanor for a physician to certify to a lesion which would incapacitate the injured person from any labor for a considerable length of time, when in reality the injury was slight. And if, in consequence of such a false certificate, an insurance company has paid an indemnity to the third person, the physician is liable for damages if sued by the company.—*N. Y. Med. Jour.*

A Long-Lived English Family.—Dr. C. J. B. Williams of London, in proposing the health of Mr. H. Perigal, the treasurer of the Royal Meteorological Society, who was entertained at dinner on attaining his 92d birthday, gave some interesting particulars of the longevity of the Perigal family. It appears they have been remarkable for longevity. Mr. Perigal's father, who was 99¼ years of age when he died, was one of thirteen children, nine of whom attained respectively their 64th, 67th, 77th, 80th, 88th, 90th, 94th, 97th, and 100th year, the last five averaging 93 years and 100 hundred days. A brother of the treasurer, Mr. Frederick Perigal, now in his 85th year, was present at the dinner.

Removal of Fibroma of Base of Skull.—In order to open up the field of operation more completely, other methods having failed to accomplish the entire extirpation of the neoplasm, Max Jordan has operated two cases by lifting a tongue-shaped flap, which included the entire nose and cheek nearly to the ear, resecting the upper jaw-bone. In one case he opened the flap down to the center, turning each half back; in the other, he avoided the central incision and turned the whole flap back from the ear. In threatening cases and recurring growths, he advises this method in spite of the resulting scar, which shows only on the cheek, and is not very disfiguring, as can be seen from the cuts accompanying this article in the *Munch. Med. Woch.* of May 24.

Tinea Tonsurans in an Adult.—Tinea tonsurans in an adult is an event of great rarity. At a recent meeting of the Dermatological Society of London, Dr. Aldersmith presented a man, aged 23 years, who had contracted the disease from a hair brush used by a younger brother who had ringworm. There was only one patch and the majority of the hairs grew healthily and firmly, but scattered here and there were numerous black dots and very short stumps, some of which were in the form of little corkcrews. The skin of the patch was smooth. Such a case would probably have been overlooked without a careful

examination with a lens. The stumps were so fragile that one could not be extracted entire. They were saturated with a large spore form of fungus—trichophyton megalosporon endothrix. The modified manner in which the fungus grew in this case as compared with the tinea tonsurans of children is interesting, the unfavorable nature of the soil being evident.—*London Lancet.*

Lupus Treated with the Roentgen Ray and Hot Air.—E. Schiff reports two children with lupus completely cured to date by the application of the Roentgen ray, and Lang has also had similar success with the Holländer apparatus, a coiled metal tube connected with a Bunsen burner, from which a stream of hot air at a temperature of 228 degrees C. at a meter's distance was directed upon the patches. The scab and blisters formed were only superficial, and the resulting cicatrization proved much smoother and more esthetic than after any other process.—*Munch. Med. Woch.*

Sanitary Precautions Against Phosphorus Poisoning.—It appears that the use of white phosphorus in match making is not interdicted in England, as it is in France and elsewhere. An inquiry in the House of Commons on this subject led the Home Secretary to make a statement that speaks most favorably for the results which have followed sanitation in respect to the match industry. He stated that the use of white phosphorus had been found less open to objection than has been asserted; on the contrary the information in his possession is that in some important countries, such as Germany, Austria and Belgium, its use is not prohibited. In England the use of white phosphorus is regulated by special rules, which have been so far successful that last year only two cases of phosphorus poisoning occurred, neither of which was fatal. In these circumstances he did not think there is sufficient cause for further legislative action.—*Medical News.*

Tetanus Cured with Intracerebral Injections of Antitoxin: First Application to Man.—The failures of antitoxin in curing tetanus are ascribed by Roux to the fact that the nerve-cells have more affinity for the toxin than for the antitoxin, and they therefore take it up from the blood, leaving the latter to circulate ineffectually, unable to reach and neutralize the toxin then accumulated in the nerve-cells. The conclusion follows that the antitoxin must be introduced directly into the nerve-cells to cure or prevent their intoxication, and this has been accomplished experimentally, arresting the disease at once and holding it stationary until convalescence commences. A case of severe and progressive traumatic tetanus in a boy of 16 years, has thus been treated at the fifth day, pulse 120 to 130. The skull was trephined on each side with an 8 mm. fraise, the dura mater incised and the needle inserted 5 or 6 centimeters at the base of the second frontal, far enough to avoid injury to the psychomotor centers, while still near enough to suffuse them with the antitoxin. The tolerance of the intracerebral tissues was perfect, confirming the experimental work on rabbits and guinea-pigs. The disease was definitely arrested, although there was some subdelirium, insomnia, tachycardia and oliguria, probably due to the severity of the established infection. Convalescence commenced the seventh day after the operation; complete nine days later.—*Presse Méd.*, June 18.

The Danger of Contagion from Typhoid Fever in Hospitals.—At a recent meeting of the Société Médicale des Hôpitaux, of Paris, Dr. Troisier stated that he had observed a case of typhoid fever in a young girl who was suffering from pleurisy, and that she had been surrounded by typhoid fever patients. He stated, also, that the patient in question had taken nothing but a tisane, milk and Dhuy's water. Dr. Netter recalled having observed in the Trousseau Hospital twenty-seven similar cases, twelve of which had been among the attendants of the service. Dr. Gaillard had observed a case of typhoid fever, which the patient had contracted while in the hospital. Dr. Richardière

had seen a similar case of contagion in a patient suffering from myelosyngiosis. In this case the pulmonary symptoms had predominated, and this had led him to the supposition that the contagion had been introduced by the respiratory tract.—*N. Y. Medical Journal*.

Medical Responsibility.—Two cases have recently been tried abroad which have attracted much attention. Professor Seidel of Brunswick was accused by his assistants of neglect of the ordinary precautions in operating, causing the death of a patient by infection from an unhealed furuncle on his finger. The authorities informed him that an investigation would be made, which so distressed him that he committed suicide. His brothers then brought suit against the assistants to restore their brother's reputation. Bergmann cited on the stand the varying opinions in regard to gloves as an instance of the diversity of opinions that prevail in regard to asepsis; some considering gloves a progress, others a direct menace to the patient. The Seidel brothers gained their case. The other case was tried in France. A woman was arrested suspected of infanticide, and Dr. Méloche, who examined her twice, stated that there were probable evidences of a recent delivery, but a few days later the woman was delivered in prison of a living child. Released at once, she sued the physician for 1000 francs damages, which were awarded her, the court adding to the peculiar features of the case by censuring him for not having examined the woman's blood. A higher court has recently exonerated Dr. Méloche and condemned the woman to the costs.

The Maragliano Treatment of Tuberculosis.—At Rome there has been opened an institute for the gratuitous supply of this serum to the poor. Its chief promotor is Dr. Passarini, who, on a tour of the Italian centers of population, where tuberculosis is most frequent, had his own convictions as to the efficacy of the serum confirmed by leading practitioners in those centers, and accordingly found the time ripe for such a dispensary in Rome as would place the prophylactic and curative virtues of the preparation within the reach of the humblest. He, with a staff of assistants, will undertake the consulting practice of the Institute and be responsible for the diagnosis of the cases in which the serum is specially indicated, while Dr. Maragliano volunteers the gratuitous supply of the serum in whatever quantities it may be called for. The initiative thus taken is a noble one, and at the inaugural proceedings the large attendance of leading consultants, teachers and practitioners, attested the due appreciation of it on the part of the profession. Its extension to other Italian cities can hardly fail to follow, and with the experience thus to be obtained, Dr. Maragliano anticipates a still further advance on the lines he has worthily laid. Nowhere more than among his compatriots has he found severer critics, but the rise of the new dispensary may be taken as significant that opposition has passed its acute stage, and that, to use Baccelli's words, the Maragliano serum has at length vindicated "its right to citizenship" in the medical commonwealth.

Alcoholic Somnambulism.—Dr. Francotte of Liège has published a carefully prepared paper, having special reference to the medico-legal relations of the somnambulism which is met with as a result of alcoholism. Somnambulism, regarded as the condition in which during loss of consciousness co-ordinated actions are carried out, of which there is no recollection afterward, is met with not only in hysteria, epilepsy, and the hypnotic state, but also as a result of alcoholic indulgence. The author relates the following case of a man who was arrested for disorderly conduct in a public place. He could not be induced to answer questions or even to speak, and appeared to be quite demented. There was no sign of intoxication, but next morning at the medical examination, he confessed that at a place far distant from that at which he had

been arrested, he had imbibed a large quantity of alcohol. He had completely lost recollection of what had occurred during the next forty-eight hours. He confessed to other excesses in alcohol, and there was marked tremor of the hands and of the tongue. A sister had been the subject of mental disease. The author, after citing several examples, concludes that there is a species of alcoholic somnambulism in which the patient behaves to all appearance in a normal way, but without consciousness, or at least without having any recollection of what he has done. In reality, however, during such a time, certain slight peculiarities of conduct are present which may easily escape the observer. The condition manifests itself only in degenerate individuals, or at least in those who have inherited some psychic weakness, and as it is one which implies the absence of responsibility, unless it is intentionally induced, it is of great medico-legal importance.—*Neurologisches Centralblatt*.

Benefactions made by Women.—It is not often that two so large bequests by women come to the knowledge of the public at about one and the same time as are those lately made by two women of New York State. Two colleges and a hospital benefited by the wills of two women who have recently died. Mrs. Annie S. Paton of the borough of Manhattan, has bequeathed \$100,000 to the Princeton University and \$50,000 to the Manhattan Eye and Ear Hospital, and Dr. Elizabeth Bates of Port Chester, has left \$125,000 for the endowment of a chair in the medical department of the University of Michigan, for instruction of the diseases of women and children. In addition to her direct bequests, Mrs. Paton has left \$100,000 more to Princeton and \$50,000 more to the hospital contingent on the death of her children, who have a life interest in the sums named. Dr. Bates was a graduate in 1853 from the then young and struggling Philadelphia College for Women; at the time prior to her decease, Dr. Bates was one of the school's senior surviving ex-students and alumnae. These gifts bespeak our attention to the generosity of women to charitable objects, and to education; although it is no doubt true that the major part of the benefactions to colleges and hospitals have come from men, this fact is readily explained by that other fact that the property is held in the name of the legal head of the family. If the truth were known it would be found that many gifts have been suggested by the wife, and that frequently both husband and wife have united in planning for the benefit of the object of their mutual generosity.

Hospitals.

THE management of the South Barnabas Hospital of Minneapolis, Minn., has issued a circular soliciting donations to be applied to the hospital debt of \$25,000. The authorities are making strong efforts to raise this amount on account of the availability of \$50,000, left by the late Richard Martin, depending upon the liquidation of the debt.

THE Ensworth Hospital, St. Louis, Mo., has been purchased by the Methodist Episcopal Church, which will take charge of the institution October 1.

AT a recent meeting of the directors of the Mount Zion Hospital Association, San Francisco, Cal., it was decided to commence the erection of a new hospital, with accommodations for fifty patients, to cost about \$40,000. This institution is a charity hospital, supported by Jewish subscriptions.

THE formal opening of the St. Margaret Memorial Hospital, Lawrenceville, Pa., has been postponed from October 1 to November 15.

THE Employers' Hospital Association of East St. Louis, has been incorporated with capital of \$100,000.

THE Dunning (Ill.) Hospital for Consumptives will be formally opened October 8. Arrangements are being made for the entertainment of those attending the inspection of the institution.

THE report of St. Luke's Hospital, Jacksonville, Fla., shows

that 112 patients were treated in that institution during the month of August.

BIDS for the Crozier Home for Inebriates, to be erected in Chester, Pa., have been opened. The contract was awarded for \$47,480.

Detroit.

WAYNE COUNTY MEDICAL SOCIETY.—At the regular meeting of this society, held September 15, Dr. E. K. Bacon read a paper on the subject of "The Anatomy and Physiology of the Sympathetic Nervous System and its Bearing on Pelvic, Abdominal and Mental Trouble." The Doctor gave an elaborate and exhaustive description of the anatomy of the sympathetic nervous system and traced its bewildering intricacies throughout the entire body, showing how organs remote are connected by nerve branches, and making intelligible the phenomena of associated clinical symptoms in parts of the body widely separated and apparently unconnected. He enumerated a series of cases, occurring in his own practice, of reflex and sympathetic nervous irritation and explained clearly how, for example, dyspeptic symptoms are often caused from merely pelvic lesions, or how mental symptoms may be dependent upon abdominal pathologic conditions.

The society discussed the advisability of amalgamating with the Detroit Medical and Library Association. This society and the Wayne County Society are the two leading medical societies in the city, and many of the members of both societies have long desired a union of the two, but many difficulties have stood in the way, the chief one being in the choice of a name. After some discussion the question was tabled.

Dr. A. H. Steinbrecher reported nineteen cases of fever among returned soldiers he was treating at Harper Hospital. He stated that while many of the cases resemble typhoid fever, yet they are all undoubted cases of malarial fever. Widal's serum test has failed in every case, while in nearly all the plasmodium has been found in the blood.

HEALTH REPORT for the week ending September 17: Deaths 75—under 5 years 37; births 72—male 31, female 41; contagious diseases, diphtheria 7, scarlet fever 10; deaths, from diphtheria 3, scarlet fever 6. One pair of twins born. One case of smallpox.

Louisville.

KENTUCKY SCHOOL OF MEDICINE.—The injunction granted Drs. Kelley and Woody in the local courts, enjoining Dr. Wathen from claiming to be Dean of the Kentucky School of Medicine, has just been made permanent by action of the Court of Appeals, it having been argued before that court and so decided.

SURGICAL SOCIETY.—The Surgical Society held its regular monthly meeting on the 5th inst., as guest of Dr. Jas. S. Chenoweth. A number of interesting reports of cases were made, and pathologic specimens exhibited. Dr. Chenoweth read a paper upon "Drainage of Cavities," and exhibited an ingenious apparatus for continuous drainage, specially applicable in gall bladder surgery. A number of different appliances were shown for other uses of this apparatus, the most practical of which, perhaps, was that to be used in lavage of the stomach.

MACCAMMON.—Dr. Vernon MacCammon has recently been appointed acting assistant-surgeon in the United States Army, and been ordered to Fernandina, Fla. He is a yellow fever immune, and has traveled extensively in the tropics. He is a recent graduate of the Kentucky School of Medicine.

LOUISVILLE SOCIETY OF PHYSICIANS AND SURGEONS.—This society was entertained on the 8th inst. by Dr. Eugene C. Roemele. He read a paper entitled "Milk Infection."

FOWLER.—Dr. and Mrs. J. W. Fowler celebrated their silver wedding most pleasantly on the 10th inst. Dr. Fowler is president of the Kentucky State Board of Pharmacy, president of the Louisville College of Pharmacy, and member of the State

Pharmacy Examining Board. About two hundred guests were present on this most delightful occasion, and received invitations from Dr. Fowler to his golden wedding, twenty-five years hence.

San Francisco.

SAN FRANCISCO COUNTY MEDICAL SOCIETY.—Dr. McCone presented a case of syphilis of the peritoneum, at the regular meeting of this Society for the month of September. The history of the case was about as follows: A woman presented herself at the University of California clinic, some time in May, saying that the trouble for which she sought relief had existed for the past eleven months, steadily growing more aggravated. She was a prostitute, 29 years old, had two children, no miscarriages, and had been previously regular in her menstrual law. She acknowledged to the initial sore of syphilis, four years previously acquired, but said that she had had no trouble that could be, in her opinion, due to that cause. On examination, the abdomen was found to be very much enlarged, with the umbilicus protruding; the genitalia presented a very curious condition. There was a diverticulum connecting the vagina with the rectum; the anterior wall of the vagina and the bladder were drawn upward; all the parts in the neighborhood were very much injected and edematous. A sound was introduced into the uterus and easily passed to a distance of five inches. The mass in the abdomen exerted a mechanical pressure upon the lungs and heart which had very much interfered with respiration and the circulation. She was sent to the City and County Hospital, where a consultation was held between Drs. McCone, Kerr and von Hoffman; no diagnosis was made at this time, but it was decided to operate and see what the condition in the abdomen could be. Dr. von Hoffman operated, with the assistance of Dr. McCone. When the abdominal wall was cut through, there escaped 2½ gallons of a dark brown, coffee-colored, apparently non-purulent fluid. The intestines were found somewhat matted together, and the whole abdominal viscera covered with a thin, delicate membrane. A large number of nodules were observed in different parts of the abdomen. Nothing at all characteristic of any known disease could be found, and the diagnosis was not made even at this time. The patient did not recover from the operation, but rapidly sank and in a few hours died. Postmortem examination showed a very great number of nodular enlargements in the abdomen, scattered promiscuously about, but nothing at all definite. The nodules were red and were not broken down; some of them exhibited a very clear picture of granulation tissue; one was noted about the size of a man's fist, solid and not at all broken down. Specimens were taken which were subsequently cut and examined microscopically, but with no new light being thrown upon the disease. It was stated by one examiner of the specimens, that the disease might have been syphilis. A more careful examination of the body, after death, resulted in the discovery of some of the typical syphilitic scars, with round, punctured edges and thin skin, on the inner side of both thighs. A careful search of the published literature which might possibly have any bearing on the case was made, with the result that it was found to almost parallel the case reported by Lancereau in his work. The similarity between the two cases being so great, it was assumed that the diagnosis of the case under discussion was, in all probability, syphilis of the peritoneum. In reply to a question Dr. McCone stated that the patient had had no abnormal temperature while she had been under observation, either before or after operation. The pathology of the case was discussed by Dr. Douglas Montgomery and by Philip King Brown, the latter holding opinion that while the disease might have been caused by, and might have been indeed syphilis of the peritoneum, there was absolutely nothing in the report of the case that would make such a diagnosis unquestionable. He was also of the opinion that it would be absolutely impossible to

make a diagnosis from the microscopic appearance of the specimens which had been removed, as they showed nothing except that there were nodules, in the abdomen, of granulation tissue, and that these were not broken down, as one would expect to be the case in tubercular peritonitis. The presence of the sero-purulent membrane rather contraindicated syphilis as the causative factor.

Dr. F. Dudley Tait agreed with Dr. Brown in his opinion that the diagnosis of syphilitic disease of the peritoneum had not been shown in the case reported, and the condition may have been something quite different. He was also of the opinion that it would be absolutely impossible to diagnose syphilis by means of the microscope. The case may have been one of tubercular infection, or infectious inflammation from some other cause; it might also have been due to syphilis, but this was far from having been proved to be the case. Dr. McNutt exhibited the kidneys of a man of about sixty who had been killed by a passing car, while jumping from the cable car on which he had been a passenger. There had been no history of any disease of the kidneys and the man was considered to have been in perfect health up to the time of his death. On postmortem examination the kidneys were found to measure 9 x 4 x 6 inches, and to weigh three pounds each; they were one mass of multilocular cysts, hardly any trace of true kidney tissue being discernible. He read extracts from the most recent writers on the subject, the majority of whom were of the opinion that cystic disease of the kidney, of this variety, was a congenital affection which had persisted into adult years and was seldom the cause of death. The specimens were exhibited and were particularly fine. On motion of Dr. Philip Mills Jones, the sum of \$500 was voted for additions to the library.

APROPOS of the discipline of the Tennessee regiment, a recent visitor to the Presidio, where the regiment is encamped, witnessed a number of the men tossing one of their officers in a blanket. On inquiry it was discovered that the officer in question had done something to displeas the men and they were simply adjusting the punishment to fit the crime.

Two of the positions left vacant by the death of Dr. J. F. Morse, have been filled. Dr. L. Bozet has been appointed to the Board of Health, and Dr. Fehlaisen has received the appointment as chief surgeon to the German Hospital.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To duty with troops at Camp Wikoff, Montauk Point, L. I.: Major Charles Adams, brigade surgeon, from Camp George H. Thomas, Ga.; Major Royce D. Fry, brigade surgeon, from the general hospital, Ft. McPherson, Ga.; Major Eugene L. Swift, brigade surgeon, from camp at Lithia Springs, Ga.; Majors Henry I. Raymond and Adrian S. Polhemus, brigade surgeons, from the 3d Corps at Chickamauga Park, Ga.; Major Chas. M. Gandy, brigade surgeon, from Tampa, Fla., and the following Acting Asst.-Surgeons: Herbert I. Harris from Buffalo, N. Y., Edward M. Parker from Washington, D. C., Thomas H. Lowe from Baltimore, Md., Raphael A. Edmonston from Washington, D. C., Delos L. Parker from Detroit, Mich., James McV. Mackall from New Haven, Conn., Elijah J. Russell from Baltimore, Md., Charles A. Hamilton and Wm. O. Cutliffe from Washington, D. C., Orrin S. Mills from Gallipolis, Ohio, Frederick W. R. Lapsley from Chicago, Ill., John A. Tanner and Henry B. Lee from New York City, George Dock from Ann Arbor, Mich., W. T. Hamilton and Stephen M. Long from Washington, D. C., Charles H. Fischer from Detroit, Mich., and James S. Kennedy from sick leave at Chambersburg, Pa.

To duty with troops at Camp Meade, Pa.: Major Frank Brusio, brigade surgeon, from the 3d Corps at Chickamauga Park, and acting Asst.-Surgeon Donald Maclean from Detroit, Mich.

To duty with troops at Lexington, Ky.: Acting asst.-Surgeons Matthew Leeper from Milan, Mo., Henry J. Hinkel from Baltimore, Md., Philip P. Parrish from Afton, Va., William J. Boyd from Pavilion, N. Y., and James B. Stewart from Bradford, Pa.

To duty with troops in Chickamauga Park, Ga.: Acting Asst.-Surgeons Howard Carey from Sand Beach, Mich., Erwin I. Shores from Bridgewater, Mass., William T. Tanner from Buffalo, N. Y., F. Arthur Zeller from St. Paris, Ohio, Charles S. Picketney from Charleston, S. C., Alfred O. Stimpson from Thompson, Pa., and Josiah B. Trudgian from Washington, D. C.

To the Sternberg hospital in Chickamauga Park, Ga.: First Lieut. Jesse Roux, Asst.-Surgeon 1st Illinois Cavalry, and acting Asst.-Surgeon George Dock from duty at Montauk Point, L. I.

To duty with troops at Camp Poland, Knoxville, Tenn.: Acting Asst.-Surgeons Thomas W. Jackson from Philadelphia, Pa., and Thomas H. Kearney from Washington, D. C.

To duty with the 7th Army Corps at Jacksonville, Fla.: Major Peter D. MacNaughton, brigade surgeon, from duty at Montauk Point; Major A. H. Appel, Surgeon U. S. A., from Ferdinand, Fla.; Majors Geo. A. Smith, Bial T. Bradbury and Milo B. Ward, brigade surgeons, from duty with the 3d Corps at Chickamauga, Ga.; Majors Simon P. Kramer and John G. Davis, brigade surgeons, from duty at Camp Wikoff, and the following acting Asst.-Surgeons: H. A. Eberle from Canton, Ohio, George A. Thompson from Phenix, Ind., Samuel S. Rodman from Frankfort, Ky., Donald P. McCord from St. Louis, Mo., Eugene W. Davis from Saginaw, Mich., John Gilbert from Philadelphia, Pa., Murray F. Mudge from Gaines, N. Y., Daniel C. Cooney from Washington, D. C., Thomas W. Bath from Normal, Ill., Melchor G. Cockey from Belvue, Kan., Raphael Echeverria from Washington, D. C., and Charles V. Buttler, Charles G. Eicher, Francis R. Percival, Frank W. Ross and John T. H. Slayter from duty at Camp Alger, Va.

To duty with troops at Huntsville, Ala.: Acting Asst.-Surgeon P. S. Field from Baltimore, Md.

To duty at the general hospital, Ft. McPherson, Ga.: Lieut. Marshall M. Cloud, Asst.-Surgeon U. S. A., from sick leave at Atlanta, Ga.

To the charge of sick in hospitals of Philadelphia, Pa.: Major David C. Peyton, brigade surgeon, from Camp Meade, Pa.

To duty at the Josiah Simpson hospital, Ft. Monroe, Va.: Major James M. Jenne, chief surgeon of volunteers from the 3d Corps at Chickamauga Park, Ga.; First Lieut. Leigh A. Fuller, Asst.-Surgeon U. S. A., from New York City, and the following acting Asst.-Surgeons: F. A. Hudson, Lewis M. Walker and B. F. Wooding from Denver, Colo.; Ernest W. Ewell from Lancaster, N. Y., George A. Curriden from Chambersburg, Pa., Walter S. Chapman from San Carlos, Ariz., Frederick W. Fabricius from New York City, and John R. Devereux from duty at the Leiter hospital, Chickamauga Park, Ga.

To duty with the U. S. Commission on the evacuation of Cuba; Acting Asst.-Surgeon W. T. Lainé, from duty at Camp Wikoff.

To duty at Santiago, Cuba, via New York City: Acting Asst.-Surgeons J. D. Dabney from Birmingham, Ala., J. M. Eindsley from Camp Wikoff, L. I., and L. B. Bluit from Quincy, Ill.

To duty at Ponce, Porto Rico: Major W. C. Gorgas, Surgeon U. S. A., from Santiago, Cuba, and the following acting Asst.-Surgeons: John W. Thomas from Camp Wikoff, L. I., E. Harold Williams from Hamilton, Ga., William R. S. George from Houston, Texas, and Ferdinand H. Scholle and Martin M. Dolan from Baltimore, Md.

Honorably discharged: Thos. C. Kimball and Edward Boeckmann, chief surgeons of volunteers; Majors R. Stanbury Sutton and Geo. T. Vaughan, brigade surgeons, and Major Andrew P. Biddle, Surgeon 31st Michigan Infantry.

Resigned: Major Sprague Winchester, Surgeon 5th U. S. Vol. Infantry; Major Geo. G. Ward, Jr., Surgeon 12th New York Inf.; Major Henry Wallace, Surgeon 47th New York Inf.; Lieut. Jos. B. Whiting, Jr., Asst.-Surgeon 1st Wisconsin Inf., Lieut. J. B. L'Hommedieu, Asst.-Surgeon 9th New York Inf., and Lieut. F. R. Newberry, Asst.-Surgeon 5th Missouri Inf.

CHANGE OF ADDRESS.

Bell, H. A., from Butler, Pa., to Phoenix, Ariz.
Buckmaster, S. B., from Lake Geneva to Janesville, Wis.
Carroll, T. W., from Galveston to St. Paul's Sanitarium, Dallas, Texas.
Campbell, F. E., from Fairfax to Blunt, S. D.
Chapman, W. S., from San Carlos, Ariz. Ter., to Ft. Monroe, Va.
Cough, J. A., from Spring Valley to 306 S. Barstow, Eau Claire, Wis.
Dicken, H. W., from Petoskey to Cross Village, Mich.
Drayton, H. S., from 27 E. 21st Street to 12 E. 11th Street, New York, N. Y.
Drake, G. W., from Monteagle, Tenn., to Hallms, Va.
Follansbee, E. A., from 533 S. Broadway to Laughlin Building, Los Angeles, Cal.

Gray, A., from 456 Ogden Avenue to 125 Flornroy, Chicago, Ill.
Jenkins, M. J., from Indianapolis to Valley Mills, Ind.
Kaszynski, J., from 151 W. Blackhawk to 700 Milwaukee Ave., Chicago.
LeCount, E. R., from 1413 W. Madison Street to 120 Warren Avenue, Chicago, Ill.

Luster, J. C., from St. James to Rolla, Mo.
McDougall, G. T., from Osseo to 533 11th Street, Milwaukee, Wis.
McMahon, D. B., from Omaha to Newman Grove, Neb.
Moir, C., from 201 Shipp Avenue to 2403 3d Street, Louisville, Ky.
Peavey, J. L., from Denver to Colorado Springs, Colo.
Roope, J. W., from Portland to Montrose, Ark.
Shoemaker, S. A., from Eureka Springs, Ark., to Reiffsburg, Ind.
Sutton, R. Stanbury, from duty with army to 170 Ridge Street, Pittsburg, Pa.
Wedding, S. J., from Sulphur Springs to Hartford, Ky.

LETTERS RECEIVED.

Adams, C. B., Vanceburg, Ky.; Ard, F. C., Plainfield, N. J.; Atkinson, W. B., Philadelphia, Pa.
Bowen, D. R., Wellsburg, N. Y.; Bruner, William E., Cleveland, Ohio; Burnham, A. A., Chicago, Ill.
Callahan, J. R., Cincinnati, Ohio; Carveth, Florence, Port Hope, Ont.
Darling, C. G., Ann Arbor, Mich.; Derge & Co., A. R., Salt Lake City, Utah; Doerner, J., Buffalo, N. Y.
Egan, J. A., (2) Springfield, Ill.; Elgin Milkine Co., (2) Elgin, Ill.
Fischer, Louis, New York, N. Y.; Forum Publishing Co., New York.
Grigg, T. A., Butte, Mont.; Gnthrie, E. C., Aspen, Colo.
Hughes, Don C., Findlay, Ohio; Hummel Adv. Agency, A. L., New York.
Johnson, F. S., Odebolt, Iowa; Jones, S. C., Crane Nest, Ky.
Kiernan, J. G., Chicago, Ill.; Kress & Owens, New York, N. Y.
Martin, Franklin H., Chicago, Ill.; Mathews, J. M., Louisville, Ky.; Montgomery, L. H., Chicago, Ill.; Morrison, W. T., Bay Port, Mich.; Moulton, H., Fort Smith, Ark.; McElfresh, C. H., St. Louis, Mo.; Mulford Company, H. K., Philadelphia, Pa.
Nelson, L., Hillsboro, Ohio.
Patterson, Jas. A., Salem, N. J.; Prioleau, W. H., Summerville, S. C.
Rand, F. T., New York, N. Y.; Reed, C. A. L., Cincinnati, Ohio; Rice, W. G., Muncie, Ind.; Robinson, Byron, Chicago, Ill.
Sampson, F. E., Creston, Iowa; Sanitarium, The, Battle Creek, Mich.; Savage, G. C., Nashville, Tenn.; Smith, E. J., Harlan, Iowa; Smith, J. R., Philadelphia, Pa.; Stafford, M., Ansten, W. Va.
Tasche, J. C., Franklin, Wis.
Watts, C. W., Moberly, Mo.; Weeks Drug and Chemical Co., Jackson Mich.; Wells, W. A., Washington, D. C.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, OCTOBER 1, 1898.

No. 14.

ORIGINAL ARTICLES.

IMMUNITY THE FUNDAMENTAL PRINCIPLE UNDERLYING ALL TREATMENT OF TUBERCULOSIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY LAWRENCE FLICK, M.D.

PHILADELPHIA, PA.

The principles underlying the treatment of disease have in the past been matters of speculation only. What was known to do good had been found to do so empirically, and was handed down from one generation to another in the most dogmatic way. With the birth of the germ theory of disease speculation gave way to exact science, and it became possible to base plans of treatment upon rational theories. In the light of the germ theory of disease, immunity becomes the fundamental principle underlying all treatment of those diseases which are due to living organisms. The usefulness of a plan of treatment must therefore be predicated upon what it will contribute toward maintaining or bringing about immunity.

Certain axioms can be formulated out of our present clinical and laboratory knowledge of germ diseases. These are: 1. That all germ diseases are due to parasitic life of living organisms. 2. That there is in all living organisms an inherent power of protection against parasitic life. 3. That the power inherent in the human organism protective against disease, is potent in direct ratio with normal physical development and normal standard of health. 4. That a proper soil for a given disease germ must exist in a prospective host as a pre-requisite for the establishment of the disease. 5. That the soil necessary for the subsistence and development of any given disease germ in a host may become exhausted. 6. That the normal physical development and normal standard of health with the consequent relative resisting power to disease, are closely related to nutrition in the individual, and in the ancestry from which the individual has sprung. 7. That congenial soil for a disease and inherent resisting power to it, may both exist in their fullest intensity in the same individual at the same time.

Of no germ disease have we, probably, as exact and intimate a knowledge as of tuberculosis. We can therefore lay down the following additional axioms about it as a basis of treatment: 1. That tuberculosis is essentially a local disease, and as such is slow in exhausting the soil in the host in whom it colonizes. 2. That tuberculosis, as a disease in its complete symptom-complex, is a series of colonizations, each colonization, in the complete cycle of its existence, constituting a minor attack. 3. That each colonization which runs its course, leaves the system of the

host less competent to battle against a subsequent attack. 4. That every successive colonization is more extensive and more devastating than the preceding one. 5. That when a colony has been established, cure can only take place either through phagocytic powers of the blood by destruction of the bacilli before the circulation has been cut off from the deposit, or through defensive powers of the system by necrosis and ejection of the mature bacilli, or by encapsulation. 6. That during the process of necrosis and ejection of the mature bacilli re-inoculation may take place.

Upon the general and special axioms here laid down, the scientific treatment of tuberculosis must be based, and the fundamental principle that grows out of them is that immunity must constitute the basis of all treatment.

Immunity to disease is a freedom from liability to disease, because of an innate or acquired condition of the system, which is inimical to the development of the disease. In other words, it is an uncongenial soil for the germs which produce the disease. For the proper understanding of what is meant by immunity, it is first necessary to get a clear conception of what constitutes soil. Soil is a complex condition having both a positive and negative qualification. It may be a condition of the system in which disease germs find something in the blood or tissues upon which they can luxuriantly feed and prosper; or it may be a condition of the system, in which there is lacking something in the blood or tissues, which if it were present the germs could not obtain a foothold. Immunity being conditioned upon soil is therefore of a two-fold nature: 1, natural immunity, and 2, artificial immunity. Natural immunity is that condition of the system in which there is something present in the blood or tissues which inhibits the colonization of disease germs; in other words, it is the innate resisting power to disease. Artificial immunity is that condition of the system in which the specific pabulum for the disease germs has been taken out of the blood or tissues, either by a prolonged resistance to implantation of the germs, or by a successful struggle through an actual colonization of them. Immunity is not a fixed absolute condition, but varies from a slight temporary resisting power to an absolute permanent impediment to disease.

While tuberculosis subscribes to the general laws which govern germ diseases, it differs somewhat from most germ diseases in the matter of immunity. With such diseases as smallpox, scarlet fever and measles, natural immunity is weak, and a single attack of the disease is likely to establish absolute and permanent artificial immunity; with tuberculosis natural immunity is strong, but artificial immunity is exceedingly difficult to establish. Natural immunity from tuberculosis is, however, not possessed by all races and peoples, nor even by all families alike; races that have

not been exposed to the disease, such as the colored race in the interior of Africa at the present day, and the native races of America before its settlement by Europeans, do not possess it at all; country people possess it in lesser degree than city people; and some families are absolutely devoid of it. This difference may be explicable upon the theory that strong natural immunity really may be artificial immunity gradually acquired through long exposure to the disease by races, peoples or special families. As a rule natural immunity from tuberculosis goes hand in hand with normal physical development and a normal condition of health, and this is true to a much greater degree of tuberculosis than of most germ diseases. Complete artificial immunity is very seldom attained, although a very high degree of artificial immunity may be reached by certain families. Artificial immunity in the individual is sometimes acquired in bone tuberculosis and possibly also in glandular tuberculosis. The reason why complete artificial immunity is so seldom attained is, because when the disease is once established, the natural immunity or resisting power of the person affected gradually gives way and becomes exhausted before artificial immunity can be established. That there is, however, a tendency in every case of tuberculosis toward the establishment of artificial immunity can not be doubted, for we have evidence of it not only in the gradually increasing chronicity of the disease, but in the degeneracy of the tubercle bacilli as the disease advances. Could the natural immunity of the individual be maintained at a normal standard, a very large number of cases would undoubtedly recover, as artificial immunity would ultimately be acquired and the germs would no longer find congenial soil for the establishment of new colonies. There are really very few cases of tuberculosis in which recovery does not take place from the first attack, and in many cases "complete restoration to health follows a second, a third, and even a fourth attack; but unfortunately after each attack there is lower physical tone—a lower natural immunity, and recovery is slower and less complete, with the chances of ultimate permanent recovery greatly diminished.

In the treatment of tuberculosis the great and important object should be the maintenance of natural immunity and the establishment of artificial immunity. Everything possible should be done to maintain the normal standard of health, first by preventing the waste of force, and secondly by stimulating the organs which have to do with nutrition. To prevent the waste of force it is necessary to suspend all activity over and above that which is necessary for a normal circulation and the proper action of the emunctuaries. Over-work among the poor, and over-exercise among the well-to-do are serious impediments to recovery. There is a popular idea, shared by too many physicians, that tuberculosis is due to inactivity of the lungs, and that the natural remedy is a great deal of out-door exercise. The mischief caused by this erroneous idea is beyond calculation. As well might one expect a typhoid fever patient to recover under a régime of hard labor, as a person suffering from tuberculosis while pursuing an active career. Absolute rest is the proper treatment in all cases of tuberculosis so long as there is marked variation of temperature and excitability of circulation. Not only will the resisting powers of the patient be conserved by such treatment, but the nutritive powers of the system will be greatly increased. Loss of weight will cease, appe-

tite will improve, digestion will grow better and the general condition of the patient will show marked improvement after a few weeks' rest in bed. When the acute symptoms have subsided and the circulation approaches a normal condition, passive exercise may be taken with benefit. Watchfulness should, however, be maintained, so that even passive exercise may be suspended the moment evidence of disturbed circulation reappears. Not until the circulation becomes normal, and all evidence of activity of the disease has disappeared, should fatiguing exercise be permitted. There is no rule of practice of greater importance to the welfare of the patient than this; for a single fatigue may be the turning point in the case from the road to recovery to the road to fatality.

By advocating rest and partial inactivity during the convalescent stage I do not wish to be understood to favor indoor life or to oppose open-air treatment. On the contrary, I deem it of the greatest importance that even in the most acute stage pure, fresh air be supplied to the patient night and day, and that the whole mode of life be regulated with this end in view. There is nothing inconsistent, however, between the ideas of absolute rest and plenty of fresh air, for such rest can be secured even in the open air if necessary, and can always be had in well-ventilated rooms. Sleeping-rooms should be kept well ventilated night and day, and where they can not be properly heated the patient should be sufficiently protected by clothing to permit of thorough flushings at frequent intervals. The ideal treatment for tuberculous subjects is really only attainable in sanatoria, where everything can be so planned that patients may spend most of their time out of doors even in the acute stage of the disease; where the sleeping-rooms can be well ventilated, and where the physical exercise can be regulated to suit the requirements of each case. In home treatment we must do the best we can, but with the two ideas of rest and plenty of air always in mind and as the basis of every plan of treatment and every act of life.

Next in importance to preventing the waste of force, is stimulating the nutrition so as to make up for the ravages of the disease. Tuberculosis being a parasitic disease, and one which usually attacks some important part of the machinery of the body concerned in nutrition, there is bound to be a loss in nutrition and a deterioration from the normal standard of health. In proportion as this loss can be repaired will treatment of the disease be successful. In this connection the close relationship and interdependence of the respiratory and digestive tracts in the function of nutrition and their common government by the pneumogastric nerve must be ever kept in mind. As this nerve supplies both the lungs and the stomach, an embarrassment to the lungs is bound to prove an embarrassment to the stomach. In treating tuberculosis of the lungs the most constant attention should therefore be given to the stomach, and every weakness and incapacity anticipated. By reason of nervous inhibition and perverted nervous function growing out of the diseased condition of the lungs, appetite is often wanting, or a morbid craving for food, which, if taken, will prove injurious, exists. Want of appetite and morbid cravings of food must therefore not be heeded, but a liberal and judicious feeding must be pursued. An ample supply of easily digested food at frequent intervals will probably give the best results. The largest amount of nutrition

with the smallest amount of labor to the digestive tract should be the golden maxim by which every article of diet is judged. Artificial aids to digestion, both in the stomach and in the intestines, can always be employed with advantage. Great care should be exercised in giving drugs, such as alteratives and cough medicines, by the stomach, for the purpose of influencing the course of the disease. The good that may be accomplished with such drugs is more than counterbalanced by the impediment to nutrition which they bring about and the consequent deterioration in natural immunity. There are many drugs, such as strychnia, alcohol, cod-liver oil, hypophosphites, mercury, the mineral acids and the vegetable tonics, which may be used to advantage for maintaining natural immunity. They should, however, all be used with care and only when indicated for a specific purpose. Animal and vegetable ferments, such as pepsin, pancreatin and diastase are likewise most useful remedies for this purpose when judiciously used.

In the matter of artificial immunity we seem to be at the dawn of a great day. Much can already be accomplished with the methods and remedies at our command, but what we can do now is merely a foreshadowing of what is to come. In the past, climate has been our chief resource as a means for the attainment of artificial immunity. With a better knowledge of tuberculosis and more careful observations of the results of treatment, a change seems to be coming over medical opinion as to the value of climate as a therapeutic agent. Personally I have long since abandoned the idea that there is any specific power in climate over tuberculosis. That climate may contribute something to the maintenance of natural immunity I have no doubt; but as between the advantages to be derived from the best climate and those which accrue to the average patient in comfort and nutrition at home I believe the preponderance to be on the side of home. Whatever advantage there may be in climate will only be attainable to the majority of persons suffering from tuberculosis when sanatoria have been established in appropriate places to which patients can either be admitted free or upon payment of nominal board.

There has been much disappointment in the serum treatments. They one and all aim to establish artificial immunity and thus to bring about a cure. Personally I have had no experience with any of them and I am therefore not in a position to speak of them with authority. I have, however, read all the literature upon the subject within my reach and have kept close watch upon reports of cases treated with animal immunizing agents of any kind. I believe that all contain some merit, and in the hands of the proper persons are legitimate therapeutic agents. I have not used them because of lack of intimate knowledge of them, and also in part because of diffidence inspired by conflicting reports about them. That their genesis is upon correct principles, however, I am thoroughly convinced, and I look forward with great anticipation to the discovery of a specific remedy along the lines upon which they have been worked out.

Of drugs that have the power of contributing to the establishment of artificial immunity we have at least two that are worthy of confidence. These are iodine and creosote. In my opinion iodine approaches nearest being a specific for tuberculosis of all agents now known. That it is an absolute specific where it can be properly applied I am certain, but the great diffi-

culty lies in the application. I have for many years obtained the most decided results by daily inunctions with a solution of iodoform or eucrophen in oil. The virtue of these drugs lies undoubtedly in the iodine, and the mode of action appears to be the production of nascent iodine in the blood by the decomposition of the iodoform and eucrophen, and a consequent inhibition of the tubercular process. The treatment is successful in proportion to the incipiency of the disease and the integrity of the circulation throughout the deposit. Of incipient cases that I have treated nearly all have recovered, and of advanced cases many have shown remarkable improvement and some have recovered. The reason why incipient cases recover so much more readily than advanced cases is because after necrosis has begun in a tubercular deposit medication through the blood is no longer possible, and the only hope of recovery lies in the prevention of new deposits. And here the importance of artificial immunity as a factor in the treatment of tuberculosis becomes evident. In proportion as artificial immunity can be attained the chances of reinoculation grow less; and if absolute immunity can be established recovery is assured. Iodine might possibly give this absolute immunity could a method be devised of keeping the blood thoroughly under its influence until all danger of reinoculation has passed.

Creosote is undoubtedly also a most valuable immunizing agent in the treatment of tuberculosis, and stands a close second to iodine. It must, however, be used in very large doses to get the full effects of which it is capable. A dosage of fifty drops of pure beechwood creosote three or four times a day ought to be reached. This amount can easily be given if the dose is gradually increased and copious liquid vehicles, which in themselves are not prejudicial to the stomach, be used. Hot water is probably the best vehicle in which it can be given, but milk is sometimes preferable. When milk is used the drug should be given after meals, so as not to interfere with the appetite. Wine, alcoholic beverages, and oils are objectionable vehicles, because they may prove embarrassing to the nutritive process and can not well be taken in large enough quantities to properly dilute the creosote. With the special preparation of creosote I have very little experience.

LIFE HISTORY OF BACILLUS TUBERCULOSIS IN ITS RELATIONS TO THE TREATMENT BY TUBERCULIN.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., July 7-10, 1898.

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It is said by Hirsch that about one-seventh of the mortality that exists among civilized men is due to tuberculosis in its various forms; and when we consider the dreadful mortality due to this group of diseases, there is rather a remarkable fact that confronts us in studying the life history of the tubercle bacillus, namely, that it is apparently, when compared with many other species of bacilli and bacteria, very much less virulent and deadly.

Let us compare for a moment the tubercle bacillus with the Klebs-Loeffler bacillus of diphtheria. The tubercle bacillus, it is true, can be inoculated on raw

and cut surfaces, but only with great difficulty and under exceptionally favorable conditions which aid in its development. Even when it does develop under favorable conditions of soil and habitat, its powers of growth and multiplication are slow and feeble, when compared with many other pathogenic micro-organisms. Compare this tardy process with the furious onset and virulence of the Krebs-Loeffler bacillus in a case of malignant diphtheria; the ghastly rigor followed by the burning fever and the septic infection produced by the absorption into the system of the poisonous toxins elaborated by these bacilli. As the case of diphtheria goes on the glands of the throat become swollen and often purple in color, showing the still greater contamination of the tissues; and as death approaches the blood loses its coagulability and in fact resembles greatly the disorganized blood found in the veins after death from snake bite. Tuberculosis, on the other hand, is comparatively slow and insidious in its progress. There is also a marked difference to be observed in the organs attacked by tuberculosis in children, as compared with the same disease in adults. In the former, tuberculosis commences usually in the glandular system, and the caseous glands may infect the adjoining organs, lungs, etc., by direct infection, or may set up a condition of general miliary tuberculosis. In adults, on the other hand, in an enormous preponderance of cases the disease tends to localize itself in the lungs, and the digestive system and the glands are much less frequently involved. The infection caused by the bacillus tuberculosis in adults is, there can be no doubt, produced by these micro-organisms lodging in the nasal cavities, pharynx, trachea or lungs. In children the infection is more general and very often seems to enter by the intestinal tract.

The comparatively slow development of tuberculosis is of great utility to the physician and enables him to adopt measures of prevention that in many other diseases would be quite ineffectual. It is a proposition that scarcely admits of argument, that when the tendency to tuberculosis is hereditary, and more especially when it prevails among the relatives of both parties desiring to marry, such unions should, as far as it is possible to do so, be prevented; unfortunately, however, the advice of the physician is often never asked, and if asked is still oftener disregarded. While it sometimes occurs that women who are suffering from pulmonary and other forms of tuberculosis do bring forth and suckle children who are apparently healthy, yet the best authorities condemn the practice, as likely to be dangerous to both mother and child. In these cases it is advisable to at once secure the services of a healthy wet nurse. If the peculiar circumstances of the parents render this impracticable, then the infant should at once be placed upon the use of sterilized cow's milk, properly diluted and slightly sweetened. If the quantity of casein in the cow's milk causes indigestion, the excess can be removed by coagulating with pepsin or pancreatin and filtering through a piece of lace net. In regard to the various kinds of infant foods so largely used in this and other countries, in my opinion they are utter abominations, and their use is responsible for the deaths of thousands of children annually. Mother's milk is the perfect type of food for young infants, therefore all our efforts should be directed, in feeding these children who can not obtain their natural nourishment, to giving them as close an imitation as pos-

sible. The basis of all the so-called "infants' foods" is starch, which is not found in mother's milk, and requires for its proper digestion an action and such an activity of the digestive function of the small intestines as is not often to be found in young infants.

As has been before mentioned, the infection of tuberculosis in infants and young children, more often take place through the glandular system of the intestines than through the mucous surface covering the respiratory apparatus. This fact emphasizes the importance of most carefully scrutinizing the milk supply and the cattle whence the milk is procured, in order that no tubercular infection may be incurred from that source. I am inclined to look also with considerable mistrust on the common practice of feeding young infants with scraped raw beef, believing it to be possible thereby to infect young children with tuberculosis, not to mention the possibility of other parasitic diseases, as for example, trichinosis. As the infant grows and develops into the child new sources of infection for the development of tuberculosis are found to exist in the glands, so abundantly to be found on the surface of the respiratory mucous membranes.

The crypts and follicles of enlarged tonsils form a nidus and resting-place for the retention and development of tubercle bacilli; the same may be said of adenoid growths in the vault of the pharynx, and of a catarrhal condition of the mucous membranes of the throat or nasal passages, whether produced by the above-mentioned or other causes. This chronically inflamed condition of these mucous membranes (commonly called catarrh) I believe to be a powerful predisposing cause of pulmonary consumption. Another reason why enlarged tonsils and other growths in the pharynx should always be removed, is that they in great measure prevent the proper development of the chest and lungs. In all cases of chronic catarrh I believe it to be of the utmost importance to insist upon the habitual and thorough cleansing of the nasal and post-nasal cavities with antiseptic solutions. If this is not done the secretions of the part become more or less putrid, the resisting power of the blood serum of the organs on which we depend for the destruction of these and other pathogenic micro-organisms become weakened or destroyed and the body is thus rendered an easy prey to whatever poisonous germ may be able to find entrance.

As will be readily understood from the previous part of this paper, the preventive treatment of this dread disease is by far, I believe, the most important. Cases of this disease are, however, ever present with us, and the momentous question then presents itself: What are the principles of treatment that should guide the physician in the management of cases of tuberculosis? The best answer to be given to this, therefore, will probably be found by making another inquiry, viz.: How are cases of tuberculosis (more especially tuberculosis of the lungs or pulmonary consumption) spontaneously or by medical aid cured? That these cases are cured is proven by the universally admitted fact that a large proportion of cadavers of persons who have died from many different diseases of the respiratory organs have, on postmortem examination shown indubitable evidences of having at varied periods of their lives suffered from tuberculosis of the lungs. Dr. J. Hughes Bennet, in his classic work, "Clinical Lectures on Medicine," says (p. 680) that the spontaneous arrest of tubercle in its

early stages occurs in the proportion of from one-third to one-half of all the individuals who die after the age of 40. The observations of Roget and Boudet, made at the Saltpetriere Hospital in Paris, among the individuals who were generally above the age of 70, showed that from one-half to four-fifths of such persons had recovered from tuberculosis. As the larger proportion of these cases never received any medical treatment for their tubercular disease of the lungs, it must be perfectly apparent that the fluids or tissues of the body must have the power to destroy and render inert these poisonous micro-organisms. Where does this power reside? Metchnikoff thought he had discovered the answer when he elaborated the doctrine of phagocytosis, or the destruction of bacteria and other micro-organisms by the leucocytes or white corpuscles of the blood. Nutall, Buchner, Nissen, Lubarsch, and in this country, T. Mitchell Pruden and many others, have shown conclusively, however, that the power of destroying the bacteria, etc., resides not in the leucocytes, but in the blood serum. This preservative power of the blood serum also explains why it is that the human body is able to resist the destructive action of the innumerable poisonous micro-organisms which continually surround us. They exist in every breath of air we draw, in the articles of food we consume, and in much of the water we drink. Uncounted myriads of them are to be found in the digestive apparatus of persons who seem to be in all respects perfectly healthy. Professor Buchner of Germany states the time usually required for one microbe or germ to become two, by the process of division, is fifteen minutes. At this rate it is computed that a single microbe would produce in twenty-four hours a million million million times the present human population of the earth. Professor Law, in a paper published recently in the *Pharmaceutical Era*, estimates that a single bacterium dividing and redividing would produce in forty-eight hours, if undisturbed, 281,500,000,000, which in bulk would fill a half-pint measure—all produced in two days from a germ measuring the $1/150,000$ part of an inch. Pathologic bacilli are just as numerous where found, and divide as rapidly. Professor Bollinger states that a cubic centimeter (about one-fourth a fluid dram) of phthisic sputum (from a case of pulmonary consumption) contains from 810,000 to 960,000 tubercle bacilli. In an ordinarily copious expectoration the consumptive patient deposits nearly a million bacilli into his cup, and in an ordinary day he throws thirty or forty millions of these micro-organisms into the world. Then, at a low estimate, 10,000 tuberculous patients now living in New York City daily expectorate some 300,000,000 tubercle bacilli.

There exists, however, two conditions which have a most powerful effect in increasing or diminishing the power of the blood serum to destroy these poisonous micro-organisms. The first of these here to be mentioned is the high or low condition of the health of the individual at the time of receiving the infection. If the individual is in a high state of health, his blood serum is then capable of destroying an immense number of these pathogenic organisms, and he is thus rendered immune to the disease.

Let us apply, then, the lesson to be drawn from the above-mentioned facts to the principles to be observed in the treatment of tuberculosis. Patients with tuberculosis can be cured when seen in the early stages of

the disease and when they can be placed under proper conditions of hygiene. We enjoin perfect cleanliness; we direct that they shall receive an abundance of easily assimilated and nourishing food; we send them away from the vitiated and impure air of the city to breathe the pure and reviving air of the country; we give them cod-liver oil, tonics, the preparations of iron, iodine and its compounds, beechwood-tar creosote, with now and then a little codein or morphin to allay the cough and procure sleep. This is not a long list of remedies, and in it there is nothing new. One fact to be noticed is that all the remedies which the experience of ages has taught us to be useful in tuberculosis are reconstructive medicines which tend to build up the body and improve the health. The second condition which greatly influences the fatality of tuberculosis as well as that of every other infectious disease due to the presence of poisonous micro-organisms, is that the deadly effects produced depend upon the number of bacilli introduced into the body at the time of receiving the infection. Experiments upon animals with many varieties of poisonous bacilli show a very close analogy to the phenomena produced by other poisons; such, for instance, as opium, etc. If the dose of the poisonous bacilli is large, the animal dies; if it is small, his blood serum may destroy this limited number and he may recover. How then can we diminish this number of these bacilli in the immediate vicinity of our patient and thus prevent him taking into his system a deadly dose of these poisonous germs? The answer presents itself at once: Send your patient immediately to the seashore or country; still better, if his means permit of it, send him to the great table-lands of our country west of the Mississippi, to New Mexico or to some parts of California. He will come back to you perhaps in a year or two so changed and improved in physical appearance that you will scarcely recognize him. Above all things never send your consumptive patient to a sanitarium or a health resort, for if you do you have sealed his fate.

A great deal can be done to prevent the further infection of your patient, by the scrupulous disinfection of the sputum and its prompt destruction. Paper boxes for receiving sputum can now be procured for a trifle; these with their contents should be burned daily, thus removing at least one source of contagion. Tubercle bacilli in abundance have been found in the dust of rooms occupied by tuberculous patients, so the room should be as thoroughly cleansed and disinfected after occupancy by consumptives, as after having been used by patients suffering from any of the so-called contagious diseases.

It is needless to dwell upon the stupendous failure of the lymph from which so much was hoped when it was introduced to us by the illustrious Robert Koch. It is perhaps presumptuous in me to have an opinion on a matter that belongs so especially to those who have made bacteriology a special study, yet I can not help expressing a conviction that we can not expect as much benefit as we hoped we would receive from these investigations. It seems to me that such laborers are working in a wrong direction. Since the world began tuberculosis has always been cured in one way, namely, by improving the hygiene or general health; and how the injection into the system of a concentrated extract of the poisonous materials elaborated by the bacilli can do this I am unable to discover. I had the opportunity of studying the effects

of the hypodermic injection of the lymph sent by Robert Koch to this country. My limited experience of its use leads me to believe it a most energetic and poisonous fluid, and one that is much more likely to injure than to benefit patients who are suffering from tuberculosis. Other observers have had also very unfavorable experience with the new Tuberculin R. of Professor Koch, as will be seen from the following taken from the *Medical News*, March 19, 1898, p. 378:

The last two meetings of the hospital staff of the Charité (which constitutes a sort of medical society with bi-weekly meetings) have been occupied with a discussion of Koch's new tuberculin—tuberculin R. In April it will be year since the authoritative publication of the new method and announcement of the remedy. Some definite conclusions, it would seem, might be reasonably expected. The drift of opinion was all against the tuberculin R., and most of the clinicians did not hesitate to compare it to the old tuberculin in its effects, and some of them in its possible dangers. Dr. Huber, an assistant in Professor Leyden's clinic, has attempted to immunize animals in the way in which Koch immunized the animals which served as the basis for his conclusions in his last communication, but utterly failed. The experiments seem to have been carefully carried out, the dosage of tuberculin was exact and sufficient and the observations numerous enough to do away with the idea that perhaps coincidences played a rôle in the results obtained. Yet he failed to get the desired immunity. The full details of the experiments are to appear in the next number of the *Zeitschrift für klinische Medizin*, of which Professor von Leyden is the principal editor. After supposed immunization all the animals died when inoculated with tuberculous material, and interestingly enough, most of them before the control animals inoculated with the same material at the same time.

In Professor Leyden's clinic there has been absolutely no success with the new tuberculin. Patients acquire an immunity to reaction from the tuberculin itself, but no curative effects on tuberculin deposits have been noted. At times some improvement occurred, but there never was complete disappearance of any physical signs of the disease which had been previously noted. In patients with fever even Koch himself does not recommend it, and there is no doubt that it can and often does do harm in such cases.

Non tuberculous patients may react to even small doses of tuberculin R., so that the employment of any such reaction as a sign of the presence of a tuberculous process in a given case is said here to be utterly delusive. The conclusion of the experience in the medical clinic is that it is not a specific. Therapeutically it is no better than other forms of treatment which are not near so costly and not near so worrying to the doctor; for in no case can this treatment be employed except under a doctor's immediate supervision. These conclusions are shared by the workers in Professors Gerhardt's and Senator's clinics.

Even Professor Fränkel, the throat and nose specialist, who, on the strength of some lupus and laryngeal cases in which at first improvement seemed very rapid, was for some months an advocate of the new treatment, now admits that it is practically no better than many other forms of treatment for these affections, that it often fails to produce a change in the course of the disease, and never produces radical cure. Only Professor Briger, Professor Koch's assistant in the Institute for Infectious Diseases, makes any claims as to the value of the tuberculin treatment. The history of the second tuberculin forms an interesting commentary on the enthusiastic reception of the first. Here it has had practically the effect of destroying faith in all so called specific remedies for tuberculosis. Constitutional treatment, especially such as can be given in favorably situated, specially arranged consumption hospitals, is now the only method receiving any attention.

Another and a very serious objection to the use of tuberculin R. for diagnostic purposes arises from the fact that many people have encapsulated tubercular bacteria in the apices of their lungs, which are for the time being harmless. If we inject the tuberculin R. and obtain the reaction characteristic of tuberculosis we may awaken to activity these dormant germs and thus aid in poisoning the system of our patient instead of promoting a cure of his disease.

While wishing most heartily, therefore, that the

results of the injections of tuberculin R. should have aided in destroying the most dreadful disease that afflicts humanity, yet we feel compelled to say that we have little hope of the cure of tuberculosis by this means.

ANTISTREPTOCOCCIC SERUM.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WARREN B. HILL, M.D.

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Serum therapy has afforded a large field for speculation and exploration, and the achievements in it have marked an era in medicine. The brilliant success of antidiphtheritic serum have assured us of the practicability of this mode of treatment in bacterial diseases, and we are justified in the hope that like results will be obtained in many or all diseases of this character. It now remains for us to determine the bacteria which produce a given disease and provide a suitable medium for their cultivation, and the proper organisms for the production of antitoxins, and we may hope for a specific agent in the disease in question.

The task here briefly laid out is by no means an easy one. All diseases are not of bacterial origin. Again, the most virulent microbes do not always stand artificial cultivation without deterioration, and the tolerance or natural immunity in species or individual animals makes it no easy task to produce antitoxins of a given standard. We are all cognizant of the work that is being done with the various antitoxins and are often surprised and disappointed because the results have not been so certain as in diphtheria. Nevertheless, much has been accomplished, and the finer problems are being worked out one by one. Advancement along this line is sure and certain, and the time is not far distant when other antitoxins will stand shoulder to shoulder with that of diphtheria and command the respect and attention of the medical profession for the results achieved. To Marmorek is due the credit for the original work in antistreptococcic serum, but Dr. Charles C. McClintock of Detroit has carried on the work in this country so admirably that we have an American product which is as good as is possible under the existing conditions of our knowledge of this subject. He, like other experimenters, has found it difficult to maintain pure cultures without deterioration. This has been overcome in a large degree by inoculating rabbits and other susceptible animals with large quantities of pure culture, and in such rapid succession that a virulent culture is produced. Having thus obtained a powerful toxin, a suitable animal must then be procured for inoculation. This is somewhat of a difficult task, as in all of the domesticated animals there is the personal equation to be accounted for. We all know that in man certain individuals are far more susceptible to streptococcic infection than are others. This is also true of the horse. The thoroughbred is not available, because of cellular degeneration due to inbreeding. The animal dies, not because of his particular susceptibility, but because of the inability of the cells to produce a suitable antitoxin. Again, the scrub is not available because of his tolerance, and a sufficient reaction does not take place to pro-

duce a standard antitoxin. Dr. McClintock was obliged, therefore, to select by experiments individual animals which had the power of producing a suitable serum. Recently he has carried on his experiments upon asses, and he believes them to be much more uniform in their susceptibility to streptococcic infection and capable of producing a more uniform antitoxin than the horse.

The animal selected is now inoculated with filtered cultures. Having thus obtained a slight immunity, he is next inoculated with pure cultures, the vitality of which have been impaired by heating. The virulence of the cultures is now gradually increased at each injection until he is able to withstand, with little or no reaction, large quantities of pure cultures of the most virulent type. This procedure occupies a period of time of from one to two years. The blood is drawn off and the serum is gathered and prepared in the same manner as for diphtheria antitoxin. Another difficulty now confronts us in the standardizing the antitoxin. This is usually accomplished by first determining the fatal dose of the toxin upon a given animal. Other animals of the same species are now injected with a great many times the fatal dose, and at the same time with a given quantity of the antitoxin. By continuing these experiments it can be determined to what extent a given quantity of the antitoxin will immunize the selected animals. Up to the present time this has not been accomplished because of the difference in susceptibility of different animals of a species to streptococcic infection. However, in a general way this has been accomplished, inasmuch as animals which have been inoculated with this toxin have died, while others of the same class and inoculated with large quantities of this toxin have been saved, or their lives prolonged, or their symptoms ameliorated by the use of antistreptococcic serum.

The practical work of this serum has not been confined to the laboratory. It has been largely used upon human beings, and while the results have not been uniformly good, there have been enough successes, and brilliant ones, to commend it to the profession for their careful consideration and approval. Marmorek used it with great success in curing forty-five out of forty-six cases of erysipelas (*Therapeutic Gazette*, 1898, p. 114). Dr. Chantemasse has collected statistics respecting the treatment of erysipelas, both by the old symptomatic treatment and the new antistreptococcic; the mortality in the former was 3.79 and in the latter 2.59. Gauchez (*Therapeutic Gazette*, 1898, p. 1159) records the case of an infant six weeks old with erysipelas which started at the umbilicus and became general. After the usual line of treatment had been resorted to for fifteen days, the child gradually becoming worse, antistreptococcic serum was used, and after the first injection the temperature dropped two degrees. The child continued to improve and was cured.

A case of puerperal fever treated with antistreptococcic serum with happy results is reported in the *Lancet*, 1898, p. 779. Fraser notes a case of puerperal septicemia which was much modified after the injection of this serum (*Lancet*, 1898, p. 496). MacNalty (*British Medical Journal*, 1898, p. 85) records a successful cure of puerperal peritonitis with the serum. In the *British Medical Journal*, May 15, 1897, Watson Cheyne gives results of treatment of operation involving subsequent sepsis, where antistreptococcic serum was used with good results. He advises the

injection after operation as a prophylactic against septic processes. A. Knyvett Gordon (*Lancet*, 1897, Vol. 1, p. 34) reports a case of rapid improvement due to its use in scarlet fever. In this case the child was to all appearances dying from septicemia; he was semi-comatose, with failing heart. After one injection he rallied, and after the second rapid improvement took place. Dr. A. W. Russell, at a meeting of the Glasgow Obstetrical Society held Feb. 24, 1897 (*Lancet*, 1897, Vol. 1, p. 815), reported a case of puerperal toxemia with symptoms of mania in which he had used antistreptococcic serum and recovery had followed. Dr. Guttman of Detroit had in his practice recently a case of general erysipelas which showed favorable results within a day after the injection of antistreptococcic serum. The fever and local inflammation at once began to decline and the patient was cured. The Doctor stated that he had exhausted every means known to him, but without any effect until he was advised to use the serum treatment. A case of acute otitis media cured with antistreptococcic serum is recorded in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* Feb. 6, 1897, p. 272.

Reporting a case of septic absorption following the operation of oöphorectomy cured by the use of the serum, Dr. Scott McGregor (*British Medical Journal*, 1897, Vol. 2, p. 805) says: "I am inclined to believe that the recovery which resulted in this case, and with the small quantity of serum used, was due in a great measure to the prompt use of the serum at an early stage of the disease." Mr. Stephen Paget read a paper on cases of blood poisoning treated with antistreptococcic serum, and gave the general results of treatment up to the present time. He said that the four diseases in which the serum had received a fair trial were scarlet fever, puerperal fever, erysipelas and poisoned wounds. He presented statistics showing the great advance in reducing the usual frequency and fatality of the complications of scarlet fever, preventing suppuration, causing the throat inflammation to subside and in checking delirium.

My personal attention was attracted to serum therapy as a cure for streptococcic infection some three years ago, when treating a case of inoperable sarcoma with Coley's toxins, when I completely immunized my patient against streptococcic infection. This demonstrated to me the feasibility of procuring an antistreptococcic serum, but having no laboratory of my own in which to produce the serum, I was obliged to wait until it was put on the market. At an early date I procured some made by Parke, Davis & Co. and commenced experimenting with it.

While thus engaged I was called to see a lady 71 years of age, of rather feeble constitution, who was suffering from a violent attack of facial erysipelas, the infection having taken place in a small fernicle in the nose. The disease spread with frightful rapidity, extending to both sides of the face, closing the eyes, and involving the ears. The attack was so violent that one could see the invasion of new tissue. The temperature reached 104, pulse 140, the patient having all the symptoms of severe septic intoxication. I sterilized my field of injection between the shoulder blades and injected 10 c.c. of Parke, Davis & Co.'s antistreptococcic serum, which was all I had with me, and telegraphed them for more. This was at 2 P.M. In a few hours the patient became quiet, the pulse became slower and the temperature dropped 2 degrees. At 4 A.M. the following day the patient called the

nurse and told her she felt perfectly well. The tenderness had entirely left the face, the toxic symptoms had subsided and the pulse and temperature were nearly normal. At 8 P.M. the patient had a chill, which was followed by another exacerbation of the disease. The heart was overpowered and showed signs of extreme intoxication. The disease extended into the meatus of the ear, the temperature reached 103.5, which was followed by a mild delirium. At 1 P.M., the serum which I had ordered the day previously having arrived, I again injected 10 c.c. with most happy results. Within two hours the heart was again beating naturally and the symptoms gradually subsided. In twelve hours the temperature was normal, the pulse only slightly accelerated and the tenderness all gone. I then injected 5 c.c. as a prophylactic against further exacerbation and in twenty-four hours I again repeated the dose. The patient made an uneventful recovery, desquamation taking place within twenty-four hours from the last injection.

Within a few weeks I was called to attend a woman suffering from puerperal fever. From the clinical picture presented, as well as from facts surrounding her confinement, there was no question in my mind as to the diagnosis of streptococcic infection. Her temperature was 104.5, her pulse 150. She was a young woman of robust constitution, and afforded an excellent opportunity for the demonstration of the efficacy of antistreptococcic serum in this type of puerperal infection. Ten c.c. of Parke, Davis & Co.'s serum was injected, which was repeated in twelve hours. In twenty-four hours from the second injection the patient was absolutely well, no indications of the previous infection being in any way manifest. I have used the serum in a number of cases with results varying in direct ratio to the positiveness of my diagnosis. In all cases where I knew that the infection came from the streptococcus erysipelatus, the results were uniformly good.

Dr. Madden handed me the following report of a case which he exhibited before the Milwaukee Medical Society:

L. A. M., 40 years of age, subject to repeated attacks of facial erysipelas during the past four or five years, has had eight attacks of considerable severity. The disease generally began on some point of the face and extended over the whole head, on two or three occasions involving the neck and one shoulder. The length of these attacks varied from fourteen days to two and a half months. About February 1 a characteristic attack began on the right ala of the nose, extending upward and backward over the right cheek. The patient applied for treatment on the second day of the disease. At that time the parts bore all the characteristic signs of erysipelas. On the morning of the third day 10 c.c. of Parke, Davis & Co.'s antistreptococcic serum was injected in the subcutaneous tissue between the shoulders. Two hours afterward the patient declared that he felt relieved. In twenty-four hours the activity of the disease seemed to have completely ceased, and in forty-eight hours desquamation had begun. The progress of the case from this point was uninterrupted until complete recovery.

In conclusion, I would say that, owing to the fact that this serum has not yet reached a state of perfection and can not as yet be accurately standardized, we are apt to meet with some failures and be subjected to some disappointments in its use. A great many diseases of mixed origin are supposed to be benefited by this serum, but the results of its use must be determined by the extent to which the streptococcus erysipelatus infection acts as an etiologic factor in the disease. Any disease which is caused by streptococcic infection is certainly benefited, if not

cured, by antistreptococcic serum. Serum which is reasonably fresh and hermetically sealed, having been properly prepared and properly inspected, is never an element of danger and may be used with impunity, in reasonable quantities, where the diagnosis is not clear, but where streptococcic infection is suspected.

SOME OBSERVATIONS ON THE AURI ET SODII CHLORIDUM U. S. P.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY DANIEL R. BROWER, A.M., M.D., LL.D.

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CHICAGO.

Auri et sodii chloridum is a mixture of equal parts of dry gold chlorid and sodium chlorid. It is very soluble in water and very easily decomposed by sunlight and organic matter. This drug is tonic, alterative, bactericidal, and antiseptic. It acts on the digestive tract, in small doses improving the appetite, stimulating the functions of the liver and stomach, promoting assimilation and general nutrition. The larger doses continued produce epigastric pain, nausea, and anorexia. Still larger doses produce violent gastro-enteritis without ulceration and salivation. Six and a half centigrams (gr. 1) have produced these symptoms in an adult, and this same dose has produced death in a dog in four minutes.

In anemia, in small doses, it increases percentage of hemoglobin and the number of red blood corpuscles; on the nervous system, in small doses, it is a cerebral stimulant, making the mind more active, and often inducing in the mentally depressed a sense of cheerfulness; upon the spinal cord it acts as a stimulant. In man it acts as an aphrodisiac, and in woman it augments the menstrual flow. In large doses it produces paralysis of the central nervous system, first in optic lobes and cerebellum, then in spinal cord, and then in cerebral lobes. In medicinal doses it increases urinary secretion and the percentage of urea. In large doses it will produce renal hyperemia and albumin in urea.

The bactericidal and antiseptic powers have recently been investigated by Prof. L. Hektoen, at my suggestion, and he writes as follows:

May 26, 1898.

Dear Doctor:—Sternberg, in his Manual of Bacteriology, made the following statement of the bactericidal and antiseptic properties of chlorid of gold and sodium:

	Destroys.	Restrains growth.
Anthrax bac.	1:8000	1:40,000.
Diphth. bac.	1:1000	1:40,000.
Bac. glanders	1:400	1:15,000.
Bac. typhoid	1:500	1:20,000.
Spir. Asiatic chol.	1:1000	1:25,000.

I have had the necessary experiments repeated by Mr. Danielson, who finds that with our cultures the above figures hold good with the bacillus of diphtheria and typhoid fever as to bactericidal powers, but that the dilutions mentioned do not destroy the other germs mentioned. He found that growth was delayed by the dilutions of Sternberg in the second column.

Yours sincerely,

L. HEKTOEN.

Shoemaker (Materia Medica and Therapeutics, 3d, Ed., p. 226), quoting Calmette, says that it is antidotal to the poison of the cobra de capello. Gibbs and Shurley (*Therapeutic Gazette*, April 15, 1891) demonstrated its bactericidal power against bacillus tuberculosis: First by inoculating guinea pigs and a

week afterward treating them with auri et sodii chloridum, limiting the lesion to the seat of the inoculation; second by putting healthy animals under treatment for one or two weeks before inoculation, and thereby preventing in these even the formation of an abscess at the seat of inoculation.

The elimination of gold and sodium chlorid takes place principally by kidneys and, to a small extent, by liver and bowels. There is an astonishing amount of skepticism in the profession as to this drug. Some of this, at least, arises from the fact that it is very unstable, being readily decomposed by light and organic matter. Sufficient care is not exercised in its combination with other drugs, or too large a quantity is ordered, so that decomposition has taken place before its ingestion, or its administration is not properly timed, so that destruction takes place in the stomach. The best vehicle with which to combine it in capsule is tragacantha or guaiac resina; neither of these decomposes it. The time for administration should be one hour after eating, or, better still, one hour before eating. The ideal method for administration is by hypodermatic injection, the solution used being made with equal parts aqua destillata and glycerina.

Syphilis.—The remedy is useful in syphilis, especially in those cases in which the iodid and mercurials do not agree, or in which there is a great amount of debility. Dr. E. F. Ingals (*Diseases Chest and Throat*, page 448) recommends it in syphilitic laryngitis. M. Martineau (*Bull. et Min. de la sac, de la Therap.*, April 30, 1883) recommends it in cases of inveterate syphilis. One of his cases, a woman in an advanced state of cachexia, broke her fibula, probably because of specific change in the bone. Though rebellious to other treatment, she recovered quickly and the fracture united readily under gold treatment. W. Hale White (*Mat. Med. and Therap.*, Wilcox, 2d Ed., p. 187) says it is a valuable remedy in the tertiary manifestations of syphilis, especially of the bones, and presents fewer disadvantages than does the corrosive mercuric chlorid. Shoemaker (*Mat. Med. and Ther.*, 3d, Ed., p. 226) and Potter (*Mat. Med., Pharmacy and Therap.*, 3d Ed., p. 123) both emphatically endorse it for the treatment of syphilis in its later manifestations.

The drug is useful in the treatment of connective tissue hyperplasia, as in cirrhosis of the liver, interstitial nephritis, arteriosclerosis, and the spinal sclerosis. Millard (*Bright's Disease*, p. 220) writes: "The chlorid of gold has proved of great value in interstitial nephritis. Under its use I have often known the albumin to diminish and disappear;" and again, "At all events its usefulness in chronic nephritis has sometimes been unmistakable, and it is likely to prove still more useful if the patient suffers, as is usual, from nervous symptoms, hypochondriasis, irritability, vertigo, etc." Bartholow (*Practice of Medicine*, p. 400) writes, anent topic interstitial nephritis: "Better results even, the author believes, are procured from the careful and persistent administration of the chlorid of gold, or of gold and sodium." Baumgarten (*Reference Handbook Medical Sciences*, Vol. iv, p. 282) writes (referring to Dana, *Boston Medical and Surgical Journal*, Oct. 24, 1883) under "Contracted Kidney": "Marked improvement and mitigation of distressing nervous symptoms have been observed from the use of chlorid of gold and sodium (0.005=1/12 gr.) in pill after each meal. Culbertson

(*Am. Jour. Oph.*, July, 1894) relates a case of albuminuric retinitis relieved by chlorid of gold and sodium. W. H. Walling (*Medical and Surgical Reporter*, Philadelphia, 1897, Vol. lxxvi), writing of sclerosis generally: "I will state my belief, founded on an experience of twenty years, that gold is far more efficient than any other drug I know of."

My first experience in the use of this remedy in interstitial nephritis was about fifteen years ago. The case came under my treatment because uremic symptoms had developed after severe exposure. When these acute symptoms disappeared he was given chlorid of gold and sodium, and he continued it in varying doses for five years, the albumin gradually diminishing and finally disappearing. Several examinations of the urine were made five years ago and no casts or albumin were found. I am sure that I have also repeatedly seen advantage from its use in the early stage of posterior and combined spinal sclerosis.

Diabetes mellitus.—J. A. Robison (*Chicago Medical Recorder*, May, 1891) reports two cases of diabetes mellitus cured by its use. A recent communication from Dr. Robison informs me that these cases continue well and that an equally favorable result has been reached in other cases.

Functional diseases of the nervous system.—Niemeyer (*Text Book Prac. Medicine*, p. 386) writes: "I have accidentally hit upon a nervine of great efficacy in hysteria and have made use of it with signal effect in many cases." The formula he recommends is:

R. Auri et sodii chloridi 0.30 gm. (gr. v)
Gummi tragacanth 4.00 gm. (dr. i)
Sacch. alb. q. s. ft. in pil. No. 40.

Sig. Begin with two pills a day, increased to eight pills daily.

Mills (*The Nervous System and its Diseases*, p. 238) writes: "Sodium and gold chlorid, although it has attained an unmerited reputation in some directions, is a valuable tonic, and I not infrequently use it in the treatment of hysteria and other affections."

My personal experience is in accord with these great clinicians, and I especially desire to emphasize its value in that complexus of symptoms called neurasthenia.

Tuberculosis.—Gibbs and Shurley (*Therapeutic Gazette*, April 15, 1891) report twenty-seven cases of pulmonary tuberculosis treated with the drug, used hypodermatically, in doses 0.003 gm.—.001 gm. (1/20 gr.—1/6 gr.) during three to eight months, with gradual disappearance of temperature and cough, increase in weight, and disappearance of bacilli. Pepper (*Univ. Med. Mag.*, December, 1895) reports a case of phthisis apparently cured by the use of this drug.

GOLD CURES IN INEBRIETY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Any remedy introduced, surrounded by mystery and sustained by falsehood and deception, is unworthy of notice. Yet a number of physicians have expressed confidence in the value of gold as a remedy, both in inebriety and allied brain affections. This theory has been recognized by reputable druggists, who have prepared several preparations of gold for administration chiefly by the needle. The empiric prepara-

tions called "gold cures" whenever analyzed are found to contain no gold whatever. The assertion that no chemist can ever make an analysis of such preparations is absurd. As a medicine gold has been rarely used by the regular profession. In the first century of the Christian era Pliny mentions it only to doubt its value unless taken with large quantities of drink, which destroys its potency for evil. The Arabian physicians for hundreds of years mentioned gold as an elixir of life, believing it of value in renewing youth and prolonging life. This doubtful theory continued and appeared in old works of chemistry down to the last century. No one made a test of it, but simply repeated it in terms of vague doubt. The alchemist charlatans have always been defenders of gold as a remedy. It is a curious repetition of modern experience that at least three much vaunted remedies contained no gold at all. In 1540 Gallus, a physician of Paris, claimed to have a gold cure for syphilis and gave the formula an impossible combination. Glaser, a London doctor in 1663, claimed to have a diaphoretic powder of gold for intermittent fever. This was equally fraudulent and no gold was found in the preparation, although it was used for many years with great popularity. From 1725 to 1780, Lamotte's gold drop was famous throughout Europe and was called a tincture of gold, but contained no gold. Neuman wrote nearly two hundred years ago: "Gold has been held to be possessed of extraordinary medicinal virtues, and many preparations dignified with the name of this precious metal have been imposed on the public, but the virtues ascribed to gold have apparently no other foundation, than credulity and superstition and most of the golden remedies have no gold in them." Even when gold has been employed in their preparation none of it is retained in the product.

Gold is non-assimilable, and its modern use is confined to quacks who trade on the name. The modern craze for gold as a remedy is simply a repetition of charlatans' schemes of the past centuries, who sought to meet and supply the demand for elixirs of life, renewing youth and postponing old age. Croll, a German physician in the sixteenth century, mentions over a hundred different preparations of gold; each if made by the formula would be absolutely free from gold. This was illustrated in the modern gold cures, which from their names were found to be chemic impossibilities. Their value in inebriety depends on credulity. A yellow mixture of some vegetable extracts injected in the arm, followed by general relaxation and diaphoresis so profoundly impressed the inebriate chemist that he has ignored all teaching and experience for the belief that the hidden virtues of this drug have been discovered and will revolutionize pharmacy in the future. I have tried three of the known preparations of gold made by reputable authorities, on cases of inebriety, with no results whatever. When strychnin, cinchona and other remedies were given, associated with gold, the effects were marked. The same results followed when gold was not used. Infusion of cinchona in large doses at frequent intervals resulted in rapid subsidence of the drink craze and a distaste for both the flavor and effect of spirits. Injections of gold were not noticeable for any effects on the taste or desire for spirits. By impressing the mind of the patient with profound conviction of the value of the drug, and detailing the expected results which would follow, and by using colored water the exact effects would appear. In some

cases this impression is so powerful as to materially change the disease. Supposing gold to be used, it must be combined or given with some other drug of pronounced effect on the body, or preceded by expectancy and credulity, to be followed with any results. This would be the same in any other disease of the body; to specialize any effects from the drug alone would be impossible. Inebriety is more than alcoholism; it includes disorders of which the desire for spirits is only a symptom. The real trouble is some central disease of the brain so complex and obscure that no drug or therapeutic agent can reach it specifically. For a quarter of a century a great variety of remedies have been used in inebriety, with the same results as in all other empiric efforts to reach an unknown disorder by remedies whose action was largely unknown. Some drugs like strychnia have some influence in checking the drink symptom, but beyond that nothing is known.

Gold, whose effects are unknown and even to its defenders are surrounded by mystery, can not possibly be of any service in checking an unknown disorder. Its use must be empiric and irrational always, except as a mental remedy to influence the mind. Experience indicates that it is extremely doubtful if any remedy exists for this obscure neurosis of the brain. Combinations of therapeutic measures are valuable and their action marked in many cases, but no single drug can have any curative influence. The checking of the drink symptom is the same as using opium for pain, leaving the cause uninfluenced. On general principles, gold or any single drug can have no specific influence in cases of inebriety and all specifics—either single remedies or combination of remedies—are fraudulent and empiric. Inebriety is not reached by drugs alone or special, concealed plans of treatment. It is a neurosis to be treated as other affections of the brain and nervous system. Even under the most skillful care, with the best appliances known to science, it is often incurable and only temporarily influenced by therapeutic measures. The degenerations which precede and follow the use of alcohol are organic changes of cell and nerve tissue, and restoration is problematic, depending on causes and conditions largely unknown, therefore, the discovery of a remedy to check decay is impossible with our present knowledge of medicine. It will require a century of study and experiment before we can speak positively and authoritatively on the pathology and therapeutics of inebriety. Yet a number of men are confident that drugs are found—or will be soon—to cure and restore the inebriate to health again. This expectation is met in the gold cures, where color and price are accepted as evidence. This, with the hysterical assertions of cure and statements of health, reiterated with great positiveness, becomes a mental contagion difficult to resist by unstable defective alcoholics. The acceptance of this testimony by persons not inebriates is ignorant credulity difficult to explain. Why gold should have any influence in these complex drug neuroses, and not in the more common affections is a mystery; why the use of gold should be confined to irregular and doubtful practitioners is also a mystery. Why should gold be wanting in the preparations said to contain it? Even when present, its combination with powerful drugs makes it difficult to know the value of any one of them, unless the physiologic effects of that drug appear.

A physician who reported ten cases of inebriety

cured from the use of gold used barks and strychnia freely at the same time, and yet seemed to think the action of gold was prominent. Another physician used colored water injection as gold and impressed the mind of the patient with the certain effects which would follow. The drink craze subsided and the patient recovered. In many cases under my care, who have been cured in the gold-cure asylums at different times, there is concealed periodicity. The drink symptom is limited, and disappears naturally both with and without drugs. Such cases always make rapid recovery from the use of any drugs, and assert their final cure most positively. They pose as examples and illustrations of the effect of remedies, and the medical man becomes bewildered with the faith of a new discovery of some new effects of drugs. If it is gold or any unusual medicine, he is more convinced. These cases continue cured for irregular intervals, then relapse again and after a drink paroxysm of uncertain duration recover. The first subsidence of the drink storm makes them willing to be treated medically. Or when forcibly taken away and put under treatment they suddenly acquiesce, and after the first few days recover, no matter what is given. This is popularly called the sobering-off process, and in all the quack asylums is limited to four weeks. It is not scientific treatment, but a mere preliminary to the full restoration, which only comes from months and years of medical care. The use of gold in this period would not be a final test, and its virtues could not be known from its supposed effects at this time. There is no gold cure for inebriety. There are no facts to show that gold has any value in this disease. All the assertions and statements concerning gold as a remedy are delusions, and will not bear the test of critical examination.

THE TREATMENT OF INSOMNIA.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

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Insomnia is, of course, only a symptom but, like many other symptoms, it occasionally stands alone as representing some functional disturbance of which we have no other means of information. When we speak of the treatment of insomnia as such, we ought not to include the treatment of the pains or discomforts from various known sources which may keep the patient awake, or of many forms of insanity, of delirium tremens or other kinds of poisoning.

This narrows our limits very much, but at the same time makes the problem more precise. The practitioner or writer, however, does not get rid of its difficulties by these exclusions, for many of the cases which present no other important symptoms, so that the patient has nothing to tell as to his bodily condition except that he can not sleep, are more difficult to manage successfully than one where we can put a finger on some definite disturbance that is a sufficient cause. For the treatment of insomnia does not consist in making a patient sleep for one, two or a dozen nights by the use of drugs, but in getting his brain into such a condition, with or without drugs, that he

goes through the normal, regular alternations of sleep and wakefulness, of cerebral activity and repose, without special assistance but simply as a part of the physiologic functioning of the brain.

The first thing then to be done when one applies for the relief of insomnia, is to determine whether it is insomnia at all in this narrower sense; that is, whether it is not possible to find a cause in some irritation outside of the brain, some disorder of the digestive or circulatory system, some accidental disturbance, which prevents its coming to its normal rest, or whether its abnormal activity is not the accompaniment or precursor of some more defined and perhaps serious form of mental disturbance. The expression sometimes used by patients, that they will go crazy if they can not sleep, is not always to be looked upon as a mere exaggeration, for although fortunately in the great majority of cases it is so, yet the possible warning should not be overlooked. If you find no such specific cause and ask the patient what prevents him from sleeping when the proper time comes, he is likely to answer, "I do not know. I simply can not go to sleep," or else, "I get to thinking and can not stop."

There is no theory of sleep which is thoroughly satisfactory, and it is by far the most probable that the changes in the cerebral circulation which have been observed are the results rather than the causes of diminished activity. Still, those theories which connect the varying conditions of sleeping and waking with the state of the blood-supply to the brain, or even to certain parts of it, and its control by the regulation of the quantity going to other parts or to other organs, make the most useful working hypothesis in many cases of insomnia. But it would be as absurd to expect it to cover all the ground and to stand the test of therapeutics in every direction as it would be to look for exactly the same conditions in every case of paralysis, or neuralgia, or tremor. That the surface of the cerebral hemispheres is usually in a condition of relative anemia in normal sleep and also, as a natural consequence, that other parts of the body and in particular the skin, as recently shown by Howell, are apt to contain more than the usual amount of blood, are tolerably well established facts. But congestion of the brain, although certainly not a condition of normal sleep, produces symptoms not very different from it, and on the other hand, cerebral anemia, whether as a part of general anemia or only local, gives rise to symptoms just as far from normal sleep as those dependent upon an opposite condition of the blood supply. It is probably just as true in insomnia as in many other visceral states, that the demands of the nervous centers regulate the supply of blood, rather than that their activity is dependent solely upon vasomotor conditions which are themselves independent of the needs of the tissues.

So far as the action of drugs may throw some light upon the relation of vascular tension to sleep, there is certainly an approach to the rule that many of those drugs which tend to relax it, like alcohol and chloral, are also under favorable circumstances, hypnotics, while those which raise the general tension, like the theine group and cocain, are decidedly promotive of wakefulness. But there are so many exceptions, and the hypnotic and vasomotor effects are sometimes so distinctly separate, that it is not very easy to suppose that the relation of causation is an invariable or very close one.

[NOTE.—A paper, of which this is to some extent a revision, was read to the Section on Therapeutics of the British Medical Association at Montreal and published in the British Medical Journal for Oct. 2, 1897, as having been read by Dr. R. Ferguson of Western University. The error was corrected in the index of the volume but, notwithstanding several notifications, not in the text of any succeeding number.]

Digitalis, which raises the general tension more persistently than almost any other drug, does not specially tend to wakefulness. The nitrites, which diminish it extremely and with a rapidity varying according to the basic combination, are not hypnotics, and in particular the amyl salt, which produces vasomotor paralysis with such extreme rapidity that we might reasonably expect it to be not merely a hypnotic but an anesthetic, has no such effect in its early stages when the paralyzant action is at its height.

Aconite, which in poisonous doses is such an extreme paralyzant of the circulation, is not a hypnotic. Even in the instances where moderate vascular relaxation and drowsiness are among the consequences of the action of the same drug, the relation in point of time may not be a close one. Chloral, which even in small doses is not only among the most certain but the most prompt hypnotics, produces an initial rise which does not pass into depression until a later stage or with larger doses. Alcohol, on the contrary, produces a speedy vasomotor paralysis of the superficial vessels, as may be seen in the flushed face and general moisture of the skin, at a time when the brain, especially in its motor functions, is in most rapid, if not most accurate, activity.

Of course, it is possible, by assuming in some cases an alternation of cerebral and general vascular tension and in others a coincidence, to reconcile some of these apparent contradictions with the general theory of sleep as due to cerebral anemia, but this assumption, which even if possible or probable is certainly unproven and capricious in its application, can not be regarded as at all satisfactory. Waking and sleeping undoubtedly indicate the normal rhythm of cerebral nutrition, the alternation of waste and repair in the nervous substance itself.

The rhythmic curve is a function of several variables and probably not identical in form in all individuals. One of the most important of these is undoubtedly the condition of the cerebral circulation as controlling the supply of nutritive material and also the balance of pressure between the blood and nervous protoplasm. Beside this, however, there are two laws of nervous activity, partly dependent on each other and partly opposed, which are probably not controlled by the condition of the circulation, at least, that is, when it varies only within the usual limits: 1, the tendency of nervous force to discharge itself along the same paths with constantly increasing ease, i. e., the formation of habitual associations of ideas and movements; 2, the tendency to rhythmic action, i. e., excess of expenditure over income during a certain time to be made up by accumulation during rest.

If we have the first of these, as applied to the attention or to some limited center of cerebral activity, gaining the ascendancy over the second, so that the action does not cease at the end of the proper time when the reserve of energy is running low or become transferred in a lower grade to some other region (sleep with dreaming), we have insomnia, which is only slightly affected by the condition of the blood supply.

In treatment of chronic insomnia, in the first place a normal and sufficient general nutrition is to be looked out for as the basis for normal cerebral nutrition, but this does not necessarily imply the stuffing process. A useful criterion is the body weight in reference to

the height and usual or normal condition of the individual, and diet is to be regulated on this basis. Secondly, the distribution of the blood is to be equalized, with the balance however tending to anemia of the brain rather than the reverse, though by no means to the extreme. The derivation of blood may be accomplished by hot baths to the feet, or the lower half or even the whole body, emphasized if necessary by a little mustard. The well-known expedient of a small amount of easily digestible food just on going to bed or on waking up in the course of the night, probably acts to a considerable extent, at least, in the same way. The hot toddy, which also keeps coming up in the papers as a new discovery, adds to a slight direct narcotic effect the early vasomotor dilating action of alcohol.

Another illustration of the same influence is to be found in the intense drowsiness that comes over one who has been for a long time in the cold and who sits down in front of a cheerful fire, when the blood previously driven to the interior of the body flows outward again as the arterioles dilate.

Cold feet are often an accompaniment or partial cause of insomnia, and it is well to promote the circulation in them by a hot bath for five minutes, followed by a short cold douche and friction, rather than to simply attempt to warm them by hot bottles and the like. The cold pack is a more extensive application. Two methods described by Dr. McAllister at Montreal, as useful in the case of students unable to sleep while cramming for examinations, undoubtedly owe their power to the production of a general vasomotor reaction following the brief superficial application of cold. The first of these was the very simple plan of parading the room absolutely naked, and the second, wringing out the night-shirt in cold water and resuming it with the addition of a sweater.

There seems to be a certain medium degree of activity in the cerebral circulation necessary for normal sleep, and it might be expected that it would be so. On the one hand the production and discharge of nervous force, resulting in cerebral activity and wakefulness, can hardly be prevented while the neurons are being bathed by a rushing current of highly arterialized blood. On the other, sleep is not simply and solely a condition of exhaustion. It is the preparation for waking activity and the occasion in which the storage of potential energy for future use must for the most part take place. This of course can not be accomplished unless the cells have presented to them a supply of nutriment for building up again their wasted structure. The promotion of the general nutrition is of great value in the treatment of insomnia, especially of the chronic form. Sometimes it is sufficient without the introduction of any more specific measures in restoring the normal function. But while it is necessary that suitable nerve food should be prepared in due quantity and delivered, speaking both literally and figuratively, under due pressure, yet a third condition is quite as essential, namely, that the nerve centers themselves shall have the power properly to dispose of it, that is, absorb and store it. People lie awake when the extremities, the skin, the viscera, so far as any one can judge, are properly supplied with blood, and when everything seems conducive to its orderly distribution; everything, that is, except the condition of the brain itself. Either an excitement which can not be abated or an excitability which makes slight disturbances into great ones

drives away repose, and an active congestion is the result of the too long continued demand upon the brain, or, much more probably and usually, upon some quite limited portion of it which is the center of disturbance and prevents the repose of the whole.

A brain in perfect health arrives gradually at a condition of fatigue which more or less peremptorily compels sleep, and the more so the longer the period of deprivation. But sometimes the brain or some part of it does not follow the laws of fatigue and is capable of working, or rather insists upon working, in the same direction it was following when work should have ceased. The rate of production is undoubtedly low and in most cases, so far as any useful thinking is concerned, none at all, but the condition is not one of rest. It is much as we might imagine would be the case in a mill somewhat worn and with a water supply insufficient for continuous working, if the gate got out of order so that the pond could not fill up. Then a little stream of water, not enough to grind any corn, might keep the wheels moving and prevent proper repairs or the accumulation of enough power to do any good. The proper thing to do in such a case is obviously to fix the gate in complete order, but if this for any reason can not be done, it may be proper to stuff it full with something or other to save the water and stop the mill for repairs. When the current of wearing thoughts will not stop, we may occasionally stuff the gate with hypnotics.

Cases where sleeplessness results from adequate causes—pain, discomfort or extreme sensory irritation, bright lights, loud noises—are hardly to be reckoned true insomnia at all, but the line which separates the adequate from the trivial varies greatly according to the makeup of the individual, and in the same person at different times. The psychic element is very distinctly shown in the great diversity of effect produced by disturbances according to the mental attitude of the would-be sleeper. A noise which he considers perfectly legitimate or for which he feels no responsibility is much less likely to keep him awake than those which come closer to his sense of the fitness of things or his personal feelings, though in themselves no worse in respect to loudness or quality; like that of the absurd dog who bays the moon, or the neighborly cough for which he has himself prescribed ineffectually, or the single mosquito he has made up his mind to kill. This is not the same state of things as is investigated by the psychologists, who take the loudness of the noise (dropping of a ball) necessary to awaken the sleeper as a measure of the soundness of the sleep.

Cases have been observed where, several of the senses being wanting, a temporary stoppage of the channels of the remaining one has resulted in sleep within a few moments, but it is a very common observation that noises which are continuous and to which one has become accustomed, and for which he no longer waits, cease to have any effect upon a sleeper except on their sudden cessation, which then acts as the irritant. It is necessary to bring the *attention* to rest.

That a certain thin streak of waking consciousness may be made to run through the sleeping condition, perhaps always to some extent does so, is shown by the ease with which many persons can wake up at a predetermined hour.

It is probable that the sensible fatigue of mental labor depends not so much on actual cerebration, the

association of ideas, as in forcing the work to continue in certain definite directions without regard to outside distractions. After a time this becomes more and more difficult, and stronger and stronger irritants are necessary to retain the attention. Thus we have under normal conditions the soothing effect of monotonous repetitions as of music, the prosy speaker, the more or less intentional hypnotist. In normally going to sleep the attention, either because too much fatigued to act longer or failing to receive adequate stimuli from without, ceases to exercise its control in co-ordinating the intelligence received from the special senses and from the various departments of the brain. Cerebration dissociates itself from the recent memory and from the data of sight, hearing and feeling, as they are rapidly becoming blunted. Definite thinking becomes dreaming. Probably every one has noticed in himself the process of going to sleep carefully enough to know that the rapidity of the coming on of full sleep varies greatly, and while one may, as the phrase goes, drop to sleep as soon as the head touches the pillow, there is usually an interval in which real impressions are mixed with the images of dreams, and even in quite sound sleep the current of the dreams is more or less influenced by bodily sensations. Attention should be withdrawn, if possible, from habitual disturbing and anxious thought, not just at bedtime, but *before* it, and the interval should be employed in some entirely different occupation.

True insomnia, as distinguished from an interference with sleep by special somatic causes, seems to consist largely in the attention refusing more or less absolutely to surrender its directing and controlling power over the action of the brain. Perhaps the associational centers of Flechsig may, by too long-continued and intense activity without rest, or a current of ideas confined within narrow and monotonous limits, get into a condition analogous to that of the motor centers in writer's cramp or chorea.

The products of a partially exhausted cerebral activity, which should be allowed to float vague and purposeless, calling for an expenditure of energy much less than the nervous tissue is capable of reacquiring during the same time, are still more or less held together and intensified, so that the potential energy of the nerve centers is drained away as rapidly as it accumulates, the output exceeds the income, the patient gets but little rest, and arises unrefreshed. It may be remarked, however, that the effect of two or three nights of this form of insomnia is less absolutely and thoroughly exhausting than the same period of enforced wakefulness under great pressure, as for instance, that of a sentry, a nurse, or an engine-driver working overtime, although the latter may occasionally pass into the former, as an acute disease into a chronic.

A purely experimental want of sleep produced by constantly waking the persons experimented upon, although to be sure assisted as far as possible by themselves, seems to have produced singularly little disturbance in nervous or cerebral function, and to have been recovered from with an amount of extra sleep much less than that lost, varying from 16 to 35 per cent.¹ In these cases, however, the mental strain in the form of anxiety or responsibility was almost *nil*, and it is not difficult to understand how the effect upon the reserve supply of nerve force may have been correspondingly less.

¹G. W. Patrick and J. Allen Gilbert. *Psychological Review*, Sept., 1896.

A plan sometimes resorted to in desperation by victims of insomnia, that of producing great bodily fatigue, as for instance by a walk far beyond the usual habit or ability, is an extremely bad one and usually fails entirely of its object. As with the circulation, a certain medium degree of fatigue is required for the best kind of sleep, and if increasing the burden is to be of value, it must be shifted so as to moderately fatigue new portions of the brain, and not deepen the old ruts from which it is already too difficult to dislodge the current of the thoughts. Mere labor which fatigues the muscles without engaging the attention in something outside the fixed and disturbing current of associations does not fulfil this indication.

At Montreal, Dr. Learned of Northampton suggested successive series of slight movements of separate groups of muscles, raising the head from the pillow a certain number of times, then one arm, one foot, and so on, is much nearer to the object sought, since it requires a certain amount of mental effort and attention to carry out the plan properly, and when the proper point is reached the patient is already in bed to avail himself of it. Reading one's self to sleep with a suitable book is a common and commendable device. The book, however, is not a matter of indifference. It should not be at all in the direction of one's anxious daily occupations, nor sufficiently exciting to set up a train of thought intense enough to be itself a cause of wakefulness and, on the other hand, it must have enough interest to take the mind away from the previous one. Probably nothing could be more valuable and efficient, were it generally available, than music, which would, however, require a delicacy of adaptation to the individual case that would greatly interfere with its practical applicability.

The prescription most frequently made for chronic insomnia, and in most cases undoubtedly the best, is that of complete rest or a vacation, recommendations more easily given than taken. Absolute vacancy of mind is talked about but never artificially attained, and relief from mental activity means relief from the habitual train of thought, most probably of a depressing or anxious character. It is specially difficult to obtain the proper conditions at home or among familiar surroundings.

A vacation in the country, real country if it can be had, is by far the best method of getting the necessary diversion, but here also there is a choice. The disturbances which drive away sleep come from within, and the occupation of the vacation must be such as will displace morbid activities by healthy ones, not intense but sufficient to predominate. If the patient has nothing else to think about he will be sure to think about his troubles. Black care may sit behind the horseman or beside the lounge on the hotel piazza. Of course the morbid train of thought may be difficult or even impossible to displace at once, but life in the woods, with adventure enough to command the attention of the invalid in an entirely different direction, is as likely to do so as anything. The psychic as well as the physical atmosphere must be changed. A well-founded doubt as to whether the patient is going to find any place to sleep at all is a useful counterirritant to the harrowing dread that he may not sleep after he gets there.

In cases not insane, the haunting idea which stands in the way of satisfactory sleep is likely to be the fear that it will not come, or the feeling of doubt, anxiety and despair when it is long awaited in vain. Insom-

nia and the dread of it react to heighten each other's intensity. Under ordinary circumstances it is better that all thought in regard to sleep, even a slight expectation of it, should be banished from the mind, unless of course it be so firmly believed in that the element of doubt no longer exists. "Sleep, like the other gods, comes when we least expect him." When this idea has been banished a great step has been taken. Suggestion, as it is mildly called, not dependent upon hypnotism and varying from the gentlest of hints to the most positive asseverations, is by no means certain of ridding the patient of this dread, and it must very often be backed up with a dose of something. Patients, even when they are strongly suspicious, or even when it is acknowledged that the medicine ordered will not be a powerful one, are reluctant to have it omitted altogether and be left to their own resources.

A placebo or half placebo, as some of the mild hypnotics, and even some of the others when given in very small doses, may be called, ought always to have a reputation behind it, whether deserved or not, if there is any chance of the name becoming known, lest a highly intelligent patient, as such patients are apt to be, or an officious nurse, should look it up in a medical dictionary, which for practical purposes, whatever doubts may be justifiable from a scientific point of view, should give out no uncertain sound. Hence part at least of the value of lactucarium, lupulin and the hop-pillow. The knowledge that a powder is lying on the chimney-piece, or the assurance that a provisional order will be left on the night-nurse's book, has a tranquilizing effect highly desirable.

A graduated series of powders, with sugar of milk to maintain the bulk, and enough quinin to maintain the taste, beginning with a full dose of sulphonal and ending with none of it, is a convenient way of ridding the patient of the drug habit without the disturbing apprehension consequent upon the brusque statement that he must get along as best he can without any drug.

Hypnotics may be roughly divided into two classes: Those which diminish the nervous irritability which keeps the patient awake, and those which distinctly, though perhaps not profoundly, narcotize the nervous centers.

The most typical of the first class are the bromids, among which I have never abandoned my preference for the potassium salt as the most powerful, believing that the fear of any depressing effect of the basic element upon the heart is purely imaginary, at least in such doses as ought to be or are likely to be used in the treatment of insomnia. The bromids are better given in two or three doses during the latter part of the day, and in many chronic cases through the day, than in a single large one, although in my own person the latter plan has worked well also. In cases where a good deal of nervous excitability and restlessness during the day, "nervousness" par excellence, is added to the insomnia, a bromization lasting a few days or a week or two is occasionally admissible. The bromid of potassium, under circumstances demanding mental activity, even in considerable doses, is not a distinct hypnotic, although, when given in the way I have suggested, it will allow a patient to sleep if it does not make him do so. I think the same is true of its action when given with narcotics that are liable by themselves to produce an excitant effect. Opium or cannabis indica may be converted by it from an excitant to a sedative. I have taken a single dose of more than one hundred grains of bromid for the purpose

of having its effect on my retinal circulation examined by one of my ophthalmic colleagues, and then made my hospital visit without the consciousness of anything unusual in my mental condition, or any remarkable degree of somnolence perceptible, so far as I was aware, to my internes. Yet such a dose in the evening would have given me a quiet night if undisturbed, and I have no doubt, if I could have yielded to it, would have done the same thing in the daytime. Opium, with its alkaloid, morphin, the first of narcotics, notwithstanding its undoubted power, its traditional *vis dormitiva* and the fact that sleep usually follows a sufficient dose after a varying interval, is not a desirable hypnotic in the strict sense of the word. In small doses it is untrustworthy, in many persons having the reverse of the desired effect, while in large ones its disadvantages far outweigh its benefits. Where, however, the want of sleep is dependent upon pain, the case is entirely different. It would be peculiarly dangerous in a case of neurasthenia, and I can hardly think of circumstances which would justify its use in a case of pure insomnia. Cannabis indica is hardly a hypnotic at all alone, or at least takes a long time to produce real sleep, but often does well in combination with bromid. I have used it occasionally alone with good effect when the dreams were depressing or annoying with the result, or coincidence, of their changing their character for the better.

Chloral, I think, has gone largely out of use. Introduced as an anesthetic, then freely used in quite large doses as a hypnotic, it has been to a great extent abandoned for safer if less powerful drugs, and I judge from the catalogues of drugs given me by patients that my opinion of its danger and uncertainty is shared by other physicians, though under the misnomer of "bromidia," which seems to obscure even in the professional mind the exact character of the preparation, it often appears upon the list of the narcotic "fiend." Of the immense number of other hypnotics of recent introduction, mostly of coal-tar or alcoholic origin, each of which has in turn been brought forward as agreeable, certain and free from danger or disagreeable after-effects, I will only mention three.

I do not believe that the hypnotic is yet discovered or ever will be, which is at once trustworthy as producing the desired result and incapable of producing any unpleasant after-effects. Sulphonal comes as near to that standard as any drug with which I am acquainted, and used with care is little likely to do harm except that which attaches to any habit of the kind or dependence upon artificial aids to sleep. Nearly all, perhaps all, the cases, which, considering its widespread use, are not numerous, where dangerous conditions as evidenced either by hematoporphyrinuria or by long-continued subnarcotic effects have arisen, are the results either of doses singly too large or administered too close together, not allowing the blood to be free from it in the interval. The same remark might undoubtedly be made of other hypnotics. Its correctness may be shown by reference to the discussion at the Montreal meeting.

The tardiness and permanency of the action of sulphonal, undoubtedly a consequence of its difficult solubility and slow absorption, can not be looked upon as a disadvantage when properly allowed for. A second good night without a renewal of the dose, is by no means an exceptional occurrence even when the dose has not been excessive. It seldom fails in the dose of one gram if given well dissolved and early enough

in the evening. In dose of thirty centigrams or less it is somewhat of a semiplacebo. The full dose should not be repeated on the same night, and it should not be given continuously, that is upon successive nights, for any length of time. If its use is to be prolonged beyond an emergency period of four or five days the interval should be more than forty-eight hours.

Trional is more soluble and rapid in its action, but seems to enjoy most of the advantages of sulphonal except the important one of having its effect last over two nights.

The peculiarities of each may be best utilized by reserving the sulphonal for a patient who has not slept for several nights and who, it is pretty clear, is not going to get a good night unassisted, so that the medicine may be given early, namely, at 6 or 7 P.M., in order that its effect may be developed at the regular time for going to sleep. Trional, on the other hand, may be kept for a case where sleep is likely to be well begun, but where it is likely to be broken off very early in the night and not renewed without a hypnotic. It is the preferable of the two for a provisional prescription, since the dose may be given at any time in the night necessary and the effect will not be too far distant. Paraldehyde is a rapidly acting and safe narcotic, probably coming much closer in its mode of action to alcohol than the coal-tar preparations. I have seen a case closely resembling a mild delirium tremens from the continued use of the drug in the hands of a patient not under professional care. The extremely disagreeable taste and smell may or may not be an advantage according to circumstances.

THE CONTINUOUS USE OF DIGITALIN IN THE VASOMOTOR AND CARDIAC LESIONS OF SENILITY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Senility embraces that period of life during which one or more of the functions, as well as nutritional metamorphoses, when compared with the manifestations of the vital unit possessed by the individual, are recognized to be prematurely waning, and thus many are the instances of men and women, who, being endowed with vital energy sufficient to enroll them among the normal activities of advanced being, remain more or less disabled or invalidated because of this premature failure on the part of some special organ or system to adequately discharge function. This retrograde process has an insidious origin, manifesting itself much earlier in life than we are prone to imagine, and is primarily operative, as a rule, in the vasomotor system. This *great* system has *not*, as yet, received the attentive study it should, and its direct relationship to functional activity, whether it be of brain or special sense or organ, is such that it is not an exaggeration to state that life itself depends thereon.

Active nutrition, then, in the fullest sense of the term, is that condition which determines the normal relationship of function to vital unit and is intimately associated with the perfect fulfillment of vasomotor function, because the distribution of pabulum to each cell, organ and system is directly dependent upon the

physiologic integrity of this *nervo-sanguineous* system. The first physiologic symptoms of senility will almost always be found with some portion of the vasomotor system, and that which is most objective consists in preternatural fullness of the superficial veins. This condition is indicative of far more advanced, although not visible, alteration of the minuter radicals, both of the arterioles and venules, and when present for some length of time, is associated with the symptoms of diminished and impaired function; therefore, we have slight defects in intellect; the details of everyday life are forgotten, and the victim finds it necessary to utilize the "memorandum tablet," instead of relying upon memory. Sleep is less refreshing and is interrupted by slight insomnia. Some failure in vision and obtunding of hearing co-exist, while respiration is habitually augmented in rate, and the ordinary activities of life, formerly free from any sense of discomfort, are associated with more or less dyspnea. The digestive functions are all less active than before, and the disturbances especially noticeable are those accompanying passive hyperemia and the consequent diminished absorption. The disturbances of hepatic functions manifest themselves in paroxysmal headache and pruritus; the itching of the nose is especially noticeable, and is often contemporaneously present with similar annoyances, located in areas of the back and lower extremities. Emaciation, while not marked, is pronounced, and the usual rotundity characteristic of the vigor of life, gives place to the well-known diminution in weight and wrinkling of the skin.

The function of the sphincters, and especially the vesical, is markedly impaired and the passive hyperemia of the kidney gives expression to its existence by albuminuria and the shedding of casts. The group of symptoms just enumerated, if the condition is well advanced, frequently assumes the clinical picture of organic disease, and thus has the writer seen what he erroneously believed to be senile softening of the brain, presenting typical symptoms, as demonstrated by a failure to recognize the members of family, inability to realize living at home, and *re-living* boyhood life, totally disappear under the treatment to be described; a fact demonstrating that the failure of *functional activity* may be due, under these conditions, *not* to the death of the cell, but the absence of nutriment necessary to the maintenance of its vital phenomena. Of the cardiac conditions we have either fatty degeneration of the myocardium itself, cloudy swelling, or some type of retrograde change, either uncomplicated, which is exceedingly rare, or associated with gross lesions in the radicals and larger arteries. Indeed, the changes in the cardiac muscle are, in ninety-nine instances of the hundred, *secondary* to a *primary* lesion of the peripheral arterial system; this fact is worthy of especial emphasis and is to be considered in formulating a prognosis, other things being equal, of any given instance. Elsewhere will some facts associated with the physiology of the circulation be elaborated, and it will suffice in this connection to simply state that, in senility, the propelling power of the arterial system being diminished, by reason of its vasomotor factors, but capable of restoration to the percentage longevity of the vital unit involved, will result in the establishment of lost equilibrium. The symptoms associated with what has hitherto been considered "senile heart" are, habitually augmented rate, diminution of resistance and edema

of the extremities; of course, with these we have the bronchial disturbances, the falsely called "asthma," and, in advanced cases, various forms of dropsy. The treatment of these cases with digitalis, alcohol, strychnia, strophanthus and nitroglycerin finds its limit of usefulness far down the scale of possible achievement, and the premature death of all such, so afflicted, has been the outcome of *secundum artem* methods.

It is taught, that in the condition just described, arterial tension is increased and, therefore, digitalis should not be employed, because of producing ruptures of the brittle and overfull arteries, and otherwise endangering the life of the sufferer. Careful study demonstrates that when the venous side of the circulation is tortuous and distended with blood, the arterial possesses *less* than its normal quantity, and while the aortic valves close with pronounced force, instead of being the result of *arterial tension*, this is actually dependent upon the *weight* of the column of blood, which not being propelled by what may be considered vermicular contraction, fills the non-elastic vessel as though it were an iron pipe; therefore, we have operative *weight* and not active force, and consequently *diminished* and not augmented arterial tension. What obtains in the aorta is an expression of the whole arterial vasomotor system and, consequently, we have this disturbed circulatory equilibrium, characterized by distended veins and relatively empty arteries. The cerebral phenomena so common in this condition manifest themselves in their worst type, by symptoms suggestive of apoplectic processes, and not uncommonly does the patient complain of localized numbness which, after a shorter or longer duration, culminates in confusion of thought, partial loss of consciousness, somnolency, confusion, loss of speech and transient paralysis of groups of muscles. This condition must not be confounded with true apoplexy, by which is meant rupture of a large arterial trunk, such as the middle meningeal or striate artery, because they are dependent upon either transient *ischemia*, that is, the terminal vessels fail to transmit blood to the part on account of the lack of propelling power, or to actual ruptures of venous radicals, directly due to the overdistention characteristic of the venous side.

A typical clinical illustration of an advanced case of senile cardio-vasomotor disease is that of an individual propped in a chair and completely disabled. For years nearly all of the symptoms briefly described have been gradually becoming more numerous and severe, until now he is distended with anasarca, the lower extremities ruptured and oozing serum freely, while the skin is red and glossy and the seat of ulceration. Respiration is imperfectly accomplished with constant effort, and is shallow and rapid, and the want of breath so marked that only a few words and disconnected sentences can be uttered at a time. The bronchial area is edematous and the lungs the seat of moist râles. Cough is persistent and exhausting, and sleep only indulged in for a few minutes at a time. The kidneys are almost passive, and only from two to four ounces of urine are secreted in the twenty-four hours. Exhaustion and distress are depicted on the countenance, but to the patient are not so keenly appreciable because of a partial obtunding of the brain. The cases from which this picture is drawn were the failures resulting from the *secundum artem* treatment, above mentioned, and although it is realized that the statement will be doubted, it is

asserted that several who, years ago, were advanced to the stage depicted, are today free from all of these phenomena and able to be about as old, but comfortable seniles. The continuous use of "digitalin" in doses sufficiently large to restore lost circulatory equilibrium, is the treatment which brought about these truly wonderful results.

A few words about "digitalin": Unfortunately, this term is applied to a product in the shops which represents a complex mass or glucoside composed of one or more of the following active principles contained in crude digitalis:

1, digitalein, a glucoside occurring as a white amorphous bitter powder, soluble in water and alcohol; 2, digitalin, a yellowish powder, soluble in alcohol, chloroform and 2000 parts of water; 3, digitalin German, really digitalein and an alleged inert crystallin derivative, known as digitin (this latter in a very small percentage); 4, digitonine; 5, digitalin kiliani, resolvable by treatment with acids into digitalose and digitaligenin; 6, digitalin crystallin, soluble in alcohol and ether; 7, digitalin purified, which contains, also, digitalein, digitonin and digitalin kiliani; 8, digitonin; and 9, digitoxin.

When a prescription is ordered for "digitalin," the question may well be asked, what is supplied? Each of these derivatives possesses especial therapeutic power, which it is not the province of this contribution to consider; therefore, with simply indicating why there is such diversity of opinion entertained concerning the value of so-called digitalin, attention is directed to the fact that that derivative, the use of which this paper is the outcome, is a so-called digitalin, known as *Digitalin German Merck*. None other will effect the results set forth. Its dose is from one-tenth to one-half grain, from three to six times daily, as the severity of case requires.

If instances of advanced disease are encountered, and dissolution threatens when first seen, one-half a grain is safely exhibited hypodermically, and repeated in one hour; after that, two grains additional are administered by mouth, in quarter grain doses every two hours, should the emergency require. This bold plan has, in the writer's experience, several times averted impending death, and enabled restoration practicable. When the circulation has been restored by two or three days' treatment, the advantage is maintained by just sufficient of the remedy to secure permanent results. Skillfully used, this is maintained, as the title implies, continuously. A gentleman who, last October, was in the condition described and dying, has taken daily ever since, two grains a day. He now walks to my office, a distance of more than one mile, and returns to his home without any inconvenience whatever. After observing the effects of this treatment for years, it can be confidently asserted that *no* hypertrophy of the heart follows; also, that sclerosis of the arteries, not an expression of calcareous infiltration or atheroma, but what may be viewed as an ankylosis, so to speak, frequently disappears.

This is due to the fact that the contraction and expansion essential to the calibrating function of the arteries being restored as a result of the action of "digitalin," normal functional activity and, consequently, nutrition of the coats is instituted; just as a stiffened articulation, by normal movements loses its rigidity, does an artery, similarly affected. The treatment must be practically continuous, because the

senile changes having already become permanent are a constantly acting factor in the onward march. It must therefore be constantly held in abeyance and it can be, just as long a time as the life with which the vital unit of the individual was originally endowed.

RECOGNITION OF TEMPERAMENT: A FACTOR TO THE SELECTION OF REMEDIES AND THEIR DOSAGE IN DISEASE.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Temperament may be defined as that quality, made manifest by the physical and mental characteristics of man. There are four distinct types of temperament: The nervous, the sanguine, the bilious, and the lymphatic. To these I will apply the term primary, because they are the base of all the combinations or compounds met with in the majority of people. A pure type of any one temperament is not often found, and when it is the characteristics are very marked. For the purpose of my paper it is necessary that I describe each temperament separately, and then take up the various compounds as they present themselves. Before taking up this description, I would state that I shall differ from all the authors that I have been able to consult, in that I shall consider, not only the skin, the eyes, the hair, and the contour of the face as they do; but also the brain, the respiratory apparatus, the heart, liver, and digestive organs, as elements entering into the type or temperament under consideration.

Hippocrates and his followers claimed that the difference between men lay chiefly in the color of the eyes, hair and complexion, and that these could be sorted into four groups, in which all men might be placed. In the original idea or arrangement of temperament the mental qualities and traits of character were not considered, thereby losing sight of a very necessary factor in the recognition of an individual. A number of men have given this subject some consideration, and all have, in my humble opinion, fallen into the same error—overlooking the proportionate, relative sizes of the various organs of the body as elements of temperament; failing in this, they have been unable to present any system or plan that appealed in any measure to the medical profession as a possible aid in the treatment of disease. That these temperaments are easily recognized, when of a single type, is very true; but when in combinations of two or more, they become complex and difficult to master. As to a description of the temperaments, I know of no better than that formulated by Dr. Alex. Steward of Edinburgh, in his able work, entitled "Our Temperaments," and adding thereto certain ideas of my own which, I believe, materially influence the recognition of the characteristics of each.

THE NERVOUS TEMPERAMENT,

as the name would imply, is composed of a preponderance of nerve structure and mechanical velocity of action.

Physical characteristics.—Light brown hair; grey eyes; pale, clear complexion; face tapering from a high forehead and broad supra-orbital region to a narrow chin; the nose narrow; trunk slight and thin, never

corpulent, often tall. The chest is small, the respiratory apparatus is proportionately so, as are also the digestive and other organs of the body. In other words, the nervous is in excess, proportionately, to all other elements.

Mental characteristics.—This temperament is impulsive, animated, quick at conclusions, excitable, readily provoked and as readily reconciled, imaginative, sensitive, fastidious, irresolute, persistent after final decisions, having great capacity for work, and will not give in even when in danger of physical exhaustion. Intellectual and muscular exercises are enjoyed; happiness, from whatever source, pleases the senses; and the mind is enriched by travel, literature, or art. The speech is characteristic, being rapid—often exceedingly so—frequently interrogatory and undecided. The nerve energy in this type is great, and is spent without regard to results.

THE SANGUINE TEMPERAMENT.

This is probably the most happy type of humanity, and this temperament probably enters into as many compounds as all others combined. The blending of this temperament with either of the others, or with any two of them, only adds vim and vivacity to the compound.

Physical characteristics.—Red or reddish hair; blue eyes; and a more or less pronounced florid complexion. The face is usually square; nose, broad and ake outspread; neck, usually short, but some are more moderate in length; build, thick-set; chest, large and expansive, indicative of large respiratory organs and a large heart. The respiratory effort is full and deep, affording immense oxygenating capacity, therefore a full red glow to the exposed cutaneous surfaces. The abdominal organs are proportionately smaller when compared with those of the chest; though larger than those of the nervous temperament.

The mental characteristics.—Are impulsive, buoyant and cheerful. They draw favorable conclusions without thought; are excitable, readily provoked, readily reconciled, emotional and passionate. They are not enduring in work; but muscular exercises are preferred to intellectual ones. They are equally happy in the pursuit of small things, as they are in the greater ones. They are more happy in the pursuit than in the possession. In speech they are usually firm and outspoken, but are not often minutely informed. Every respiratory effort seems to intoxicate them, so they look only at the bright side of life, when left to themselves. They are prone to undervalue danger of all kinds; only to rue it when too late.

THE BILIOUS TEMPERAMENT.

This may be termed the intense temperament, which knows no obstacle too great, nor effort too laborious to attain an end.

Physical characteristics.—Black hair; black or very dark brown eyes; and dark or a pale olive color complexion. The face is square; nose outspread; mouth, square cut, indicative of firmness and strength of character; build, usually thick-set. The chest and abdomen are well balanced and possibly slightly larger liver, the glycogonic function being unusually active.

Mental characteristics.—This type is not impulsive, but serious conclusions are arrived at only after due deliberation; passionate, jealous, revengeful, unscrupulous when not properly trained. In business cool and wary; eager, earnest and persistent.

Business or pursuit of worldly gain preferred to muscular or intellectual labor; but they are able to excel in all. They are happy in the pursuit of wealth or power, and also in their family relations, if not disturbed. They are decided; always ready; and well-informed.

THE LYMPHATIC TEMPERAMENT.

This type of humanity is characterized by its absence of hurry, and its great appreciation of animal comfort.

Physical characteristics.—The hair may be fair or light brown, flaxen, sandy-white and thin; eyes, brown or light hazel, grey, sometimes giving the impression of a green color. The corneal area is smaller, with a corresponding greater sclerotic exposure. Complexion, colorless, dense or opaque. The face, square, rather inclined to heavy jaws; nose, outspread; neck, short; build thick-set tending to corpulency. The abdominal cavity is larger, and the digestive organs proportionately so; they are usually large eaters, tending to gluttony. These people live to eat, and do not eat to live.

The respiratory effort is usually shallow, the chest flat, and its expansive power somewhat limited.

MENTAL CHARACTERISTICS.

These people are not impulsive, but slow, and the face shows a heavy expression. They come to conclusions by degrees. They are not excitable nor readily provoked; they forgive but never forget. They possess a certain amount of persistence, but lack ardor. They are somewhat enduring in work but plodding in business. They enjoy personal comfort and indulgence. The speech is slow and deliberate, and when trained they are well informed. Their greatest effort is in the direction of food and rest.

Having carefully considered the four primary temperaments, we find that in the first type, the brain is predominant; in the second, the heart and lungs are in excess; in the third we find the chest and abdomen well balanced, with marked hepatic activity, giving strength and intensity to its individuality; in the fourth, abdominal organs, with the natural result attending—a disposition to hibernation. The various compound temperaments are but modifications of the primary ones, by the union of two or more temperaments, and are indeed often difficult of recognition. But this may be materially overcome by a careful examination or inspection of the body, and noting the relative size, and development of the patient; taking this into consideration with the contour of the face, the head, the color of the eyes and hair, with the complexion, the subject would then be easily classed, as to the compound to which it belonged. It is true, physical training and environment affect temperament and tend to modify it, but not enough so to destroy its identity.

The compounds most frequently met with in this country are the nervo-sanguine, the sanguino-bilious, and sanguino-bilious with a strong nervous infusion. Occasionally we find combinations of the nervo-lymphatic, and also all the temperaments combined; giving us a people, the one, a constant care for the physician, while the other is a well-balanced individual. The first three compounds give our American people their characteristic push, speed and energy, placing them in the fore-front for physical and intellectual endurance and capacity. It is not in the province of my paper to discuss these compounds in detail, but rather to

apply the elements that we have furnished to a practical use in medicine.

To the surgeon this knowledge is necessary, that he may recognize the degree of shock sustained by reason of injury, compared with the recuperative or reactionary power of the patient, enabling him thereby to prognosticate probable results more perfectly. In his operative work he may be able to judge with some degree of certainty as to possible chance of success. In anesthesia, it will indicate the element best calculated to support the patient during the trying ordeal, and which of the anesthetics offer the best results. With the general practitioner it is often a question as to what complications may arise, and wherein lies the direction of danger. In his dealing with the very young he may anticipate a cerebral complication, by recognizing the peculiarity of the temperament. In another he may expect pulmonary or hepatic involvement and so on until every element of temperament is exhausted. To the obstetrician, this knowledge is of incalculable benefit, for by a thorough knowledge of his patient, he will be enabled by suggestion, to control the expulsive effort and direct the parturient forces, so that the patient will be capable of utilizing all her energies, both nervous and muscular, to her own ultimate safety and good. To the neurologist it suggests the best method of overcoming the various neuroses and reflexes; and by a proper direction of remedial agents, reconstructive and eliminative, to restore tone and vigor to the overwhelmed nervous organism. To the dermatologist it affords like relief, estimating as he does the possible nerve involvement or digestive disturbance likely to exist in the premises. To the oculist it is of material importance, as by a prompt recognition of temperament he may the better determine the source of ocular disturbances.

These suggestions will serve to give the student an idea that he may enlarge on, so that still greater benefits may accrue. It seems reasonable to me that a nervous temperament would be more susceptible to affections involving the brain, in the form of congestion, anemias, etc., that would be disastrous. In these people you would naturally expect various forms of neuralgias, due to the cerebral disturbances existing. In the sanguine temperament the large respiratory apparatus, to properly functionate, must have at any one time a larger blood-supply, than other organs, hence the greater danger from congestions or trauma from any cause. This is the temperament (and compounds having this temperament in the ascendancy) that gives us the greater number of pulmonary tuberculous patients and these are people who suffer the most frequently from fatal pneumonia and bronchial affections, the bilious temperament being more frequently assailed by intermittent and remittent fevers. They are not a fruitful source to the physician, for they are usually hardy and resist infection with great vigor. The lymphatic temperament, by reason of its construction, is frequently the victim of hypochondriasis, and hepatic and intestinal torpor; portal congestion seems almost a normal condition. Fermentative dyspepsia, hepatic concretions, and catarrhal jaundice are the conditions most frequently met in this people. Cardiac weakness and functional derangements are a common failure and also rheumatism and gout, due to faulty elimination. This temperament is most prone to sudden heart failure during acute attacks, by reason of innervation.

The various compounds are modified in their tend-

encies, and they are the ones that give us the greater trouble and perplexity. This rule may be applied to all; whichever temperament predominates in that direction will afflictions tend. I believe this to be argument enough for the close observer. Many will recall instances such as I have described. This does not in any manner conflict with the germ theory of disease, but it does explain why some enjoy immunity from infection, while others do not.

As to remedies.—The nervous type stands cerebral excitants poorly, because of a possible irritant congestive condition resulting, while cerebral sedatives and arterial depressants act kindly even in decided doses. But when suffering from shock, such elements as strychnia, glonoin and strophanthus are strongly indicated to hasten circulatory distribution and buoy the respiratory and cardiac action. The sanguine temperament is inclined to favor arterial stimulants when depression exists, and depressants in active disease conditions, with such elements as will favor the maintenance of the fluidity of the blood, also elements that control respiratory and cardiac effort. The cardiac stimulants, that, have a marked effect on the peripheral circulation, are well borne, but after inflammatory processes, due regard must be given to deobstruants and alteratives. The bilious temperament is best treated by an exhibition of antispasmodics, motor depressants and arterial sedatives. Motor excitants are decidedly contraindicated in acute conditions; the indications are for general sedatives, particularly muscular and glandular sedatives. The glycogenic function is most active in this temperament. The lymphatic subject must be favored by catharsis, to relieve common tendency to portal congestion, and autotoxemia, but especial attention is necessary to combat the tendency to cardiac failure, and cerebral stimulants are almost always indicated, particularly of the strychnia class, favoring as they do the support of the cardiac and respiratory apparatus.

The dosage of these remedies depends on the condition of the patient; if in the active or acute stage, pronounced doses of the remedies that are opposed to the condition existing; if passive, then small doses to give impetus by graduated stimulation of the organs involved. This holds good in all the compounds as well. The fact necessary to be borne in mind is, that what type of temperament is in the ascendancy, or predominates, in that line or direction will the danger lie, and the remedy and dose must be applied to these conditions. If we would add to the celebrated Von Haller law, for the proving of remedies (or substances used as medicines) a knowledge of temperament; we would be able to get more positive and perfect knowledge of their physiologic and toxicologic actions.

In conclusion, I wish to acknowledge my indebtedness to the excellent work of Alexander Steward of Edinburgh, from which I have taken some of the descriptions verbatim, because of their terseness and clearness in the primary types, for which I wish to give due credit. Some of his suggestions have but strengthened my own conclusions that a proper recognition of the peculiarities of people, both mental and physical, which we call temperament, is at least, very serviceable, if not a factor, in the proper and successful practice of medicine. Failing in this, we shall but obstruct the way to the placing of our beloved profession in a line to become a positive science.

Let us have a Department of Public Health!

IRITIS SPONGIOSA.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Prior to 1870 almost nothing is found giving more than two forms or divisions of iritis, it being classed either as syphilitic or rheumatic, there being only three forms of exudations given in the so-called parenchymatous, namely, serous, plastic and suppurative, the clinical history, cause, treatment and termination being distinct in the type.

Serous.—Develops slowly; no pain; normal pupil or slightly dilated; little or no injection of vessels and long duration; usually shows punctate deposit on posterior surface of cornea; aqueous humor cloudy; ends without adhesions or serious effects. Treatment expectant, hygienic and constitutional, according to causes found.

Plastic.—Pain pronounced; onset rapid; pain referred to frontal and other branches of fifth pair, worse at night; circumcorneal injection, photophobia and lachrymation; pupil contracted; iris discolored and engorged, may be nodules upon its surface; exudation of lymph and iritic adhesions follow. Treatment: antiphlogistics, mydriatics and sometimes mercury.

Suppurative.—Iris very much swollen, yellowish tinge, and formation of new vessels in its substance; hypopyon forms; pain and inflammation symptoms much the same as in plastic. Prognosis usually good.

Though quite distinct types, these three forms may merge into one another, giving rise to seroplastic-plastico-suppurative, though rarely, if ever, a sero-suppurative form. Each form may pass over to the ciliary body and choroid, making other combinations and forms of disease.

After 1870, a few cases of a form of iritis were reported, that from the character of the exudate were called iritis spongiosa, but no full description being found in any text-book up to 1880, Dr. Swan M. Burnett of Washington, D. C., after having a very severe case under his care, took pains to collect the cases then reported—less than forty in all—to give, if necessary, for future guidance of others, a name to so peculiar a form. Schmidt is the first to have mentioned it, but under the head of simple iritis, of which Wecker makes mere mention in 1879.

The clinical picture is pain, which, at its height, is as acute as in the plastic form. Up to the time the exudate appears, it is not so intense, but after the exudate begins, till absorption takes place it is very severe. The sudden relief from pain when absorption begins is a marked peculiarity of this form of iritis. Exudation begins with marked symptoms of irritation, in many cases very suddenly. At one visit anterior chamber is clear, at the next, is filled with a gray mass of exudate. In others it is extruded more slowly, usually begins in or below pupillary space and in most cases fills anterior chamber. Very likely absorption had begun in cases said to be only partly filled. Absorption takes place with varying rapidity, generally five to eighteen days elapsing before all traces have disappeared. The course of absorption is very peculiar, and characteristic. It begins always at the periphery, and the mass gradually diminishes from all sides equally, the pupil being last to clear.

As to the character of the exudation, it has been found on examination in its earlier condition, fibrous.

Knapp, who first examined it, says: "It consists of a dense network of very delicate fibrils inclosing white and red blood corpuscles and of a finely granular substance." His opinion is that when the substance is uniformly semitransparent (hyaline, gelatinous, like a dislocated lens) it probably consists exclusively of coagulated fibrin; if gray, or whitish gray, white corpuscles, which collected in clusters appear like whitish dots; yellow or yellowish green tinge indicates red blood corpuscles. Alt says: "The exudation has two well-defined parts, the one perfectly homogeneous, like the gelatinous exudation; the other, lens-like in shape, consists of a net-work of exceedingly fine threads of fibrin, the meshes of which were filled with exudation. The two layers are the two stages of exudation so-called, at first spongy, then gelatinous." The unchanged appearance or nearly so of the iris precludes the possibility of extravasation of blood into its tissues, the iris having its normal luster, and as soon as the attack passes it is seldom discolored or changed in appearance, which would not be the case if the blood had been extruded.

Diagnosis: As soon as the exudate appears there is no difficulty in deciding that we have to do with spongy iritis. The difficulty is not to confound it with diffuse keratitis or a lens dislocated into the anterior chamber. The excessive chemosis is not present in diffuse keratitis, and oblique light shows epithelium intact. When absorption begins, the sharply defined edge of the mass appears so exactly like a luxated lens that only a magnifying glass and oblique light quickly shows the error. A fibrous mass in some of its parts, lack of regular outline, and peculiar mode of absorption, proves iritis spongiosa. The typical form leaves iris free and normal, but it may be joined to plastic form and adhesions result. No cases united to serous or suppurative forms is known. As to etiology, it may arise from any of the causes of iritis—traumatic, rheumatic or syphilitic. The great majority of cases reported were males.

Prognosis in typical form good. Treatment as in plastic: antiphlogistics, mydriatics, anodynes and hot applications. Absorption is naturally so rapid that mercury is not of benefit unless indicated by some dyscrasia. The last case seen will give a perfect picture and history of cases in general.

I. J., colored, female; seen first Jan. 9, 1898. Exudation in anterior chamber of left eye, down and outward from pupil, reaching slightly beyond pupil, which was small and adherent. First noted trouble in the eye ten days before; pain and usual symptoms of iritis. No history of syphilis. January 11, under atropin; pupil dilated somewhat, but irregularly; exudate about the same. January 12, the edge of exudate, which before had been undefined, is today sharply defined at the upper margin, the anterior chamber above it being clear and showing the pupil enlarged, but still some adhesions. January 13, only a small quantity of exudate downward and outward. January 14, no trace of exudate; pupil larger; no pain. January 16, eye clear and vision about the same as before the attack. This is as nearly as may be a typical case, though the exudate may be much longer in being absorbed. This type, when once seen, will not be forgotten, though from any text-book it has been my fortune to examine, one may not get even an idea of its real appearance.

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A NEW PERIMETER.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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In testing the field of vision it is desirable to have the same illumination of the test object in all parts of the field, and to be able to diminish the intensity of this illumination by a known and measured amount when we wish to test the field for white or colors in cases of beginning atrophy or other conditions where there is a marked difference in the extent or shape of the field of vision when tested with a full and with a diminished amount of light. This seems to be best accomplished by making the tests in a dark room and using two incandescent electric lights of one candle power each for the test object and the fixation point. A Förster's perimeter with a broad semicircular arc of hard rubber is arranged so that one lamp is placed in the center of the arc and about an inch from it, to be used as the point of fixation. Slides are made so that pieces of ground glass, London smoke glass or diaphragms with openings of various sizes and shapes can be inserted in front of this lamp. The other lamp is arranged in a similar way and can be moved back and forth from one end of the arc to the other, its motion being controlled by a small electric motor mounted on the perimeter and geared so that the test lamp is moved on the arc with the desired speed. The motion of this lamp can be reversed at any time by reversing the polarity of the armature of the motor by means of a switch held in the examiner's hand; in this way a motion back and forth can be obtained for the test object without going near the perimeter or without taking the examiner's gaze off the patient, thus making sure that the patient does not alter the direction of his eyes during the examination.

SOME SEVERE CASES OF TOBACCO AND QUININ AMBLYOPIA.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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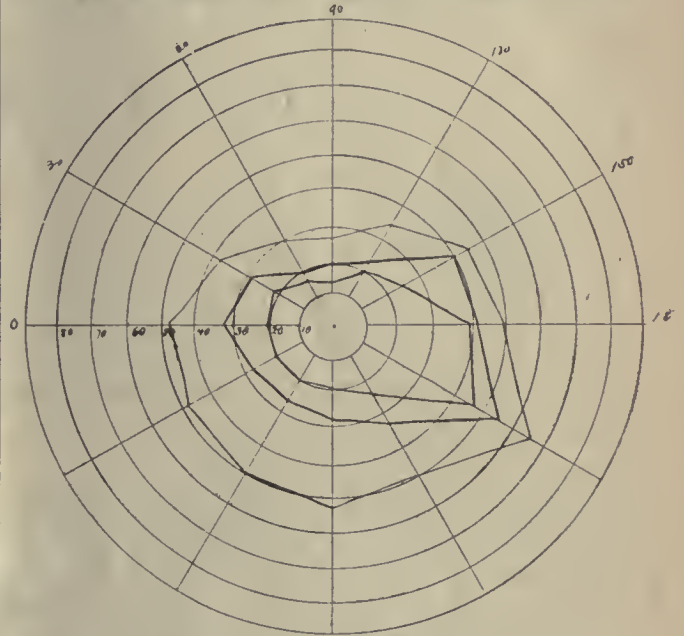
In presenting to your notice any observations on the subject of the toxic amblyopias, the recent exhaustive works of Wood and DeSchweinitz render references to the history and literature of the subject entirely superfluous. It is from a study of the work of these gentlemen that I am enabled to appreciate the unusual features in the few cases which I wish to report, and I present them solely for the reason that they do exhibit some points a little out of the ordinary.

The first case was a young man of 26, whom I saw at the request of his physician, Dr. Thomas Henderson, Feb. 28, 1894. Since August, 1893, he had not been able to see to read, though his vision began to fail some months prior to that time. Since 12 or 13 years old he has been addicted to the use, or rather the abuse, of cigarettes, consuming from ten to forty a day, and at the time he came to me he was smoking from thirty to forty a day. It was his habit to awaken frequently during the night, on account of extreme nervousness, and to smoke cigarettes whenever he awoke. For six years he had been a steady drinker, beginning with beer, but for the three years preceding my examination he had been more addicted to whisky, which he said he was stopping. He was the picture of an alcoholic,

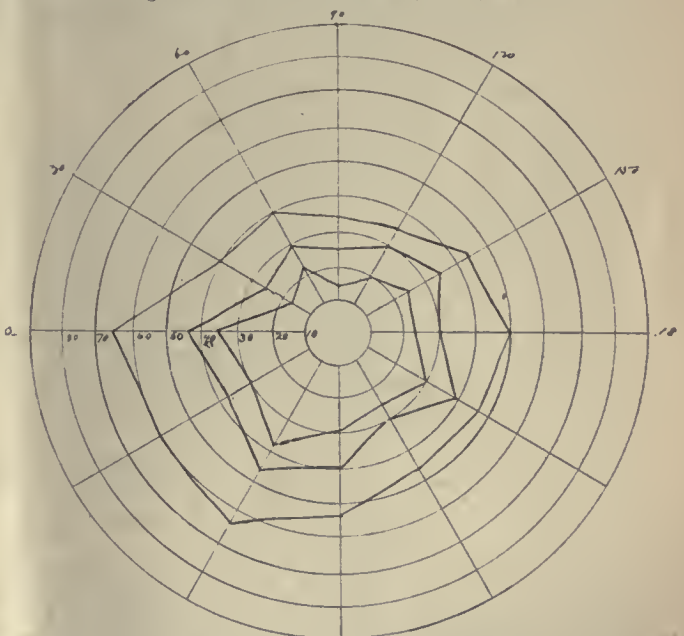
extremely nervous and tremulous, his person and attire saturated with the fumes of tobacco and alcohol, and he often would suddenly and causelessly burst into tears.

The pupils were equal and normal, and vision was $\frac{1}{200}$ in each eye. Very unsatisfactory perimetry showed no contraction of the fields and no scotoma. Of this I could not be sure, as his general condition made this part of the examination very difficult, he answering rapidly and carelessly in his desire to have the ordeal terminated. The ophthalmoscope showed whiteness and cupping of the lower temporal quadrant of each nerve, with veiling of the nasal edges, and the vessels were of normal size. He would not consent to undergo treatment, and died of acute tuberculosis the following summer. An autopsy was not obtained.

The second case was that of a medical man, aged 28, whom I saw on Oct. 6, 1896. His vision has been failing since April of that year, and was reduced to $\frac{20}{200}$ in the right eye and $\frac{3}{200}$



Right. Field of vision of Dr. W., Feb. 3, 1898.



Left. Field of vision of Dr. W., Feb. 3, 1898.

in the left. He read J x with difficulty, and had been compelled to relinquish a position as quiz-master in a medical school on account of his impaired sight, and his usefulness as a practitioner was greatly curtailed. Since 12 years old he had been a smoker, at first cigarettes, but at the age of 21 he began to smoke cigars, and smoked as many as twelve or fifteen a

day. At the time of his visit to me he was smoking about half this number. For several years he has been in the habit of drinking six or eight glasses of beer a day. His physical condition, except for his vision, was very good. I found the same ophthalmoscopic picture as in the first case; whiteness of the lower temporal quadrant of each nerve head, the rest of the disc being a dirty red, and the vessels of normal size. The pupils were normal and the perimeter showed a central relative scotoma in each eye. He was advised of the nature of his trouble, told to stop both tobacco and alcohol, and was given $\frac{1}{48}$ of a grain of corrosive sublimate and five grains of iodid of potash three times a day, and later $\frac{1}{20}$ grain of strychnia in addition. He stopped smoking and has not touched tobacco since. He fought it out through a few restless days and nights and the battle was won. Stopping his beer did not inconvenience him any. His progress was steady, but slow. October 11, O.D. 20/100 p. O.S. 5/200; Nov. 2, O.D. 20/100 O.S. 8/200; November 12, O.D. 20/100 O.S. 20/200, Jan. 3, 1897, O.D. 20/70 O.S. 20/100; February 17, O.D. 20/50 O.S. 20/70, and he could read J I with O.D. and J IV with O.S. About March 1, 1897, he stopped treatment of his own accord, but continued to improve. May 20, 1897, O.D. 15/20 p. O.S. 15/20 p., could read J I fluently with each eye. He now does not smoke, but drinks a little beer. His vision in February, 1898, was 15/20 p., the ophthalmoscope about as at first and his fields as shown.

These two cases are what we must call alcohol-tobacco amblyopia, since in neither was the abuse confined to one of these substances, and we can do but little more than speculate as to the true cause of the symptoms in each case. The description of the condition which Uthoff gives as being found in the majority of his 1000 cases fits these two exactly; pathologic whiteness of the temporal half of the optic papilla (papillo-macular bundle) and occasionally haziness of the nerve head or hyperemia of its surface; so that we may put them down as typic cases, so far as the ophthalmoscopic appearances went.

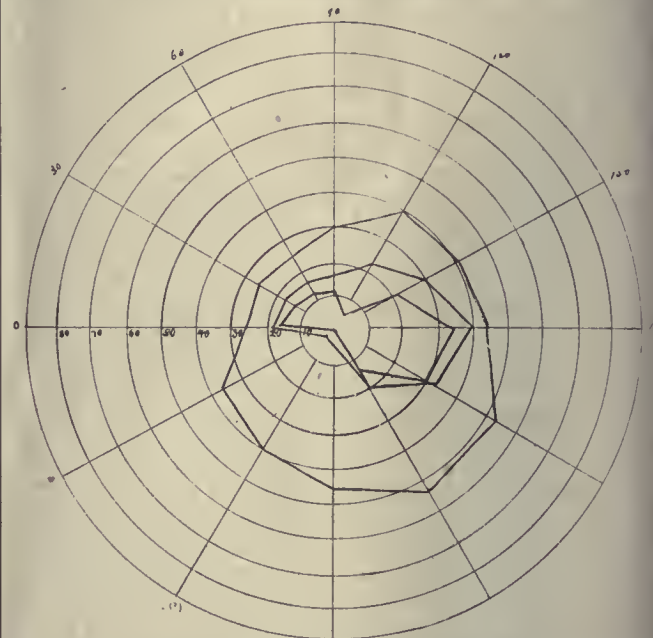
The first unusual feature is the youth of both of these patients, 26 and 28. De Schweinitz says they are exceedingly uncommon before the 35th year and Wood puts it down as rare under 40. In over 300 cases quoted by these gentlemen in which the age was given, only ten were under 30 years old. Though only 26 years old, my first patient had been a cigarette fiend for thirteen years, which is about the length of time necessary to produce the condition of tobacco amblyopia. The second had also used tobacco for fifteen years, but cigars for only six.

Another point is the extreme, and in the second case, unequal, reduction of vision. In thirty-five cases Uthoff found 6/200 the lowest point to which vision was reduced, and 1/40 (or 6/240) is put down as the extreme limit. I beg to recall the fact that the vision was 6/200 in each of the first, and 2/200 in the worst eye of the second patient. Unilateral amblyopia even has been observed, but it is usual to find the impairment equal, as one would naturally expect from the fact that the cause acts systemically. It is somewhat unusual to find this condition resulting from the use of cigarettes, but my first patient did not use tobacco in any other form.

A third case is one which I am by no means sure it is correct to place in this category, and therefore I put it apart from the others, and what comments are to be made on it will apply to it alone.

C. W., a mulatto boy, age about 21, was sent to me on April 20, 1898, for poor vision. Since he was seven or eight years old he had had enlarged cervical glands on both sides, which had often suppurated. His neck showed the characteristic cicatrices on both sides and many enlarged glands could be seen and felt. Since about the same age (that is seven or eight) he had been a cigarette smoker, but never to excess. His indulgence, according to his statement, had not amounted to more than a five-cent sack of "Duke's Mixture" a week, which is certainly very moderate. A year or so ago he had contracted a venereal sore, which made its appearance within

two or three days after exposure, and disappeared at the end of a similar length of time. For five weeks his vision had been rapidly failing till he had little more than light perception peripherally when he came to me. Indeed, his field could not be taken with candles, which was probably on account of a large central scotoma. The pupils were normal, and the nerves showed whiteness of the lower temporal quadrants. In the macular region of each eye the fovea showed as distinctly as we often see it in mulattoes and negroes, and in each macular region there were pin point glistening spots, such as I have



Right. Field of vision of C. W., May 14, 1898.

often seen at the macula and elsewhere in the eyes of negroes who have perfect sight. The only pathologic condition visible to the ophthalmoscope, then, was the condition of the discs which I have mentioned. The vessels were normal. *Faute de mieux*, he was put on ascending doses of iodid of potash, which he bore with the characteristic complacency of the Southern negro. He has gradually increased it to 150 grains a day, and I show here the field of the right eye, taken May 14, when the vision in it was $\frac{15}{20}$ p. The left eye has, with the candles, a decided relative central scotoma, but the vision has improved very little. He can count fingers at one foot eccentrically with it.

As I before remarked there is very slender evidence on which to class this as a case of tobacco amblyopia. The youth of the patient, his moderate use of tobacco, and the fact that one eye improved and the other did not, are, I think, against this diagnosis. The ophthalmoscopic appearance and the lack of positive reasons for classing it elsewhere are my reasons for presenting it in this connection.

In addition to these cases I have to present the history of a fourth.

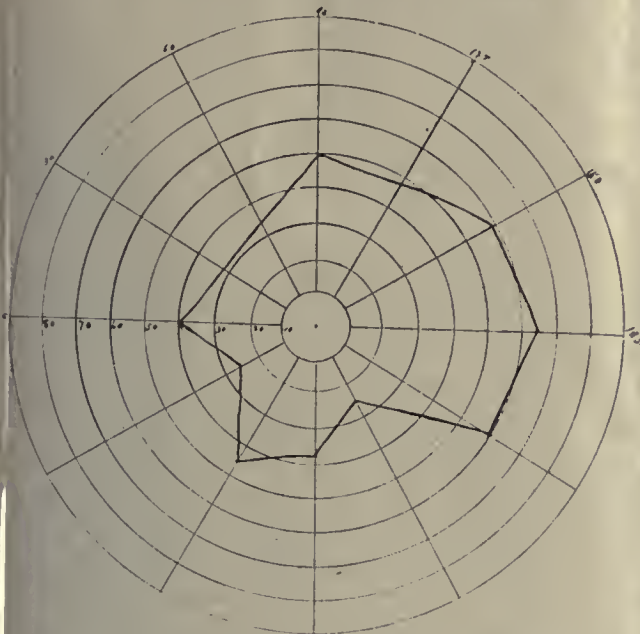
F. F., aged 30, was brought to me by my friend, Dr. Pincus, of Memphis, with the following history: Since seven years of age he had smoked cigarettes in increasing numbers and from 1890 to 1893 he smoked from forty to fifty a day. In 1893 his employment prevented him smoking so constantly and he reduced his allowance to from six to eight a day, which number, I may say, he still consumes. He smoked a cigar and a pipe occasionally and very seldom drank anything.

In the fall of 1894 he suffered from intermittent malarial fever of the tertian type for a month. On Monday, Nov. 19, at the suggestion of a medical student that he take quinin, he procured some of the sulphate and some empty five-grain capsules, and mixing a pinch of capsicum with the quinin, he filled twenty-four of the capsules, and beginning at 7 A. M., he took two capsules every hour till 7 P. M., this making the amount about 120 grains. At 7 P. M. he was completely deaf, but the deafness passed off by 10 o'clock, and he felt no further inconvenience in any way till Thursday, the 22, when his eyes burned and smarted a little, but there was no impairment of

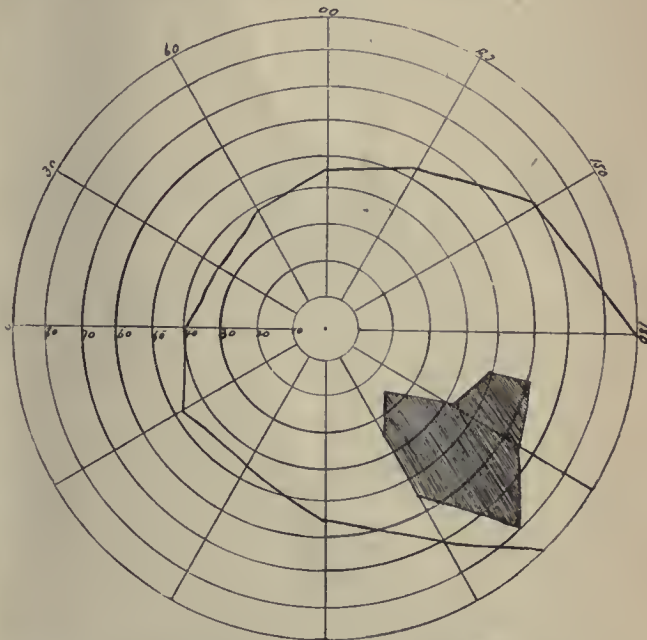
sight. I may say here that his certain organisms were effectually routed. Friday morning he awoke with the sight of both eyes very much impaired, about as much, he thinks, as it is now. He was taken to a physician about noon of that day and when he left this gentleman's office at 1 o'clock he had lost the perception of light, nor did he regain it until the end of three months. He was given iodid as high as eighty-five grains, three times daily, and also went to the Hot Springs of Arkan-

sas. At the end of three months, as I have said, he regained the perception of light, and from that time to the present has experienced a very slow improvement in vision. When I examined him first in May, 1897, his vision was O. D. $\frac{5}{200}$ O. S. $\frac{1}{200}$ eccentrically. His fields I here show you, and would call attention to the changes in that of the right eye with the final appearance of a relative ring scotoma. Colors appear to him as different shades of light and dark. Tested as for color

pupils of this patient are dilated, but respond to strong light and to accommodation. The ophthalmoscopic picture is that of optic atrophy (white) with papery nerve head and attenuated vessels. In this patient we see nerves already probably affected to a slight degree by the long-continued abuse of tobacco, and further devitalized by a con-



Right. Field of vision of F. F., Dec. 6, 1897.



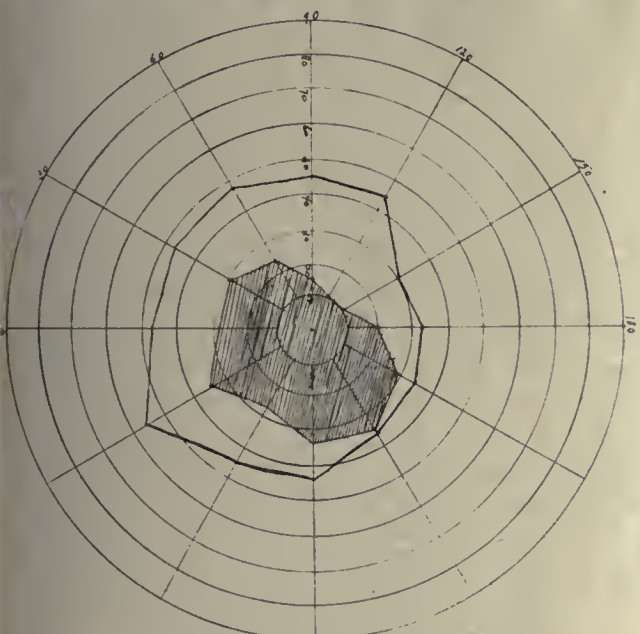
Right. Field of vision of F. F., Feb. 24, 1898.

tinued certain malarial infection, become the victims of a large, but not enormous, dose of quinin. Since this poison is more or less accidental, age and sex do not bear on the condition. The unusual features of this case are the following:

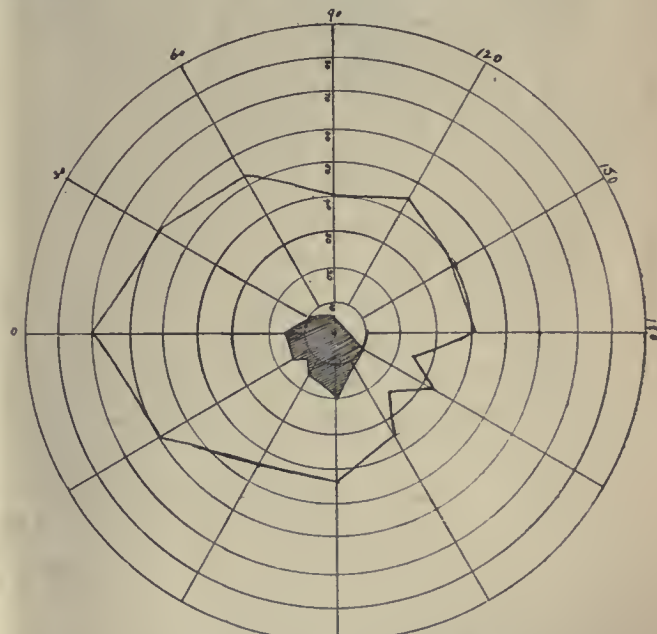
1: The length of time which elapsed between the ingestion of the poison and the appearance of the eye

symptoms. As far as I can determine the usual condition of affairs is a rapid effect on the vision.

2. The severity and chronicity of the visual impairment.



Left. Field of vision of F. F., Dec. 6, 1897.



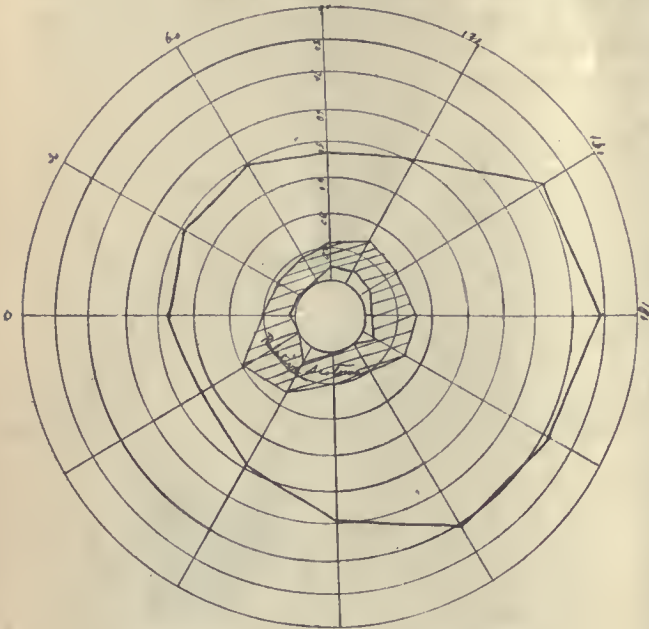
Left. Field of vision of F. F., Feb. 24, 1898.

blindness with colored wools, he matches the test skeins very well, not by color, he says, but by their relative darkness. I once tried nitrite of amyl inhalations, according to the suggestion of Dr. Kollock, of Charleston, but though vision was temporarily doubled, no permanent improvement resulted. The

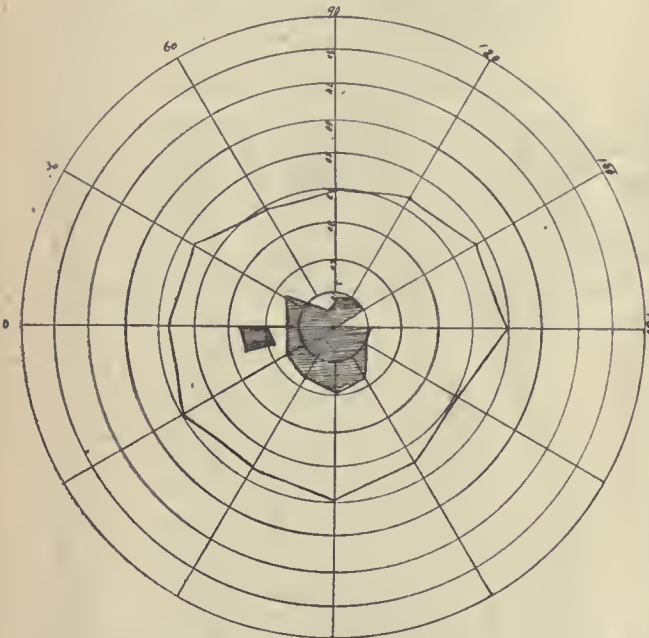
symptoms. As far as I can determine the usual condition of affairs is a rapid effect on the vision.

2. The severity and chronicity of the visual impairment.

3. The unequal effect on the two eyes.
4. The peculiar and dissimilar visual fields, presenting a relative ring scotoma in one eye and an absolute



Right. Field of vision of F. F., May 30, 1898.



Left. Field of vision of F. F., May 30, 1898.

central scotoma in the other. The effect on the color sense is not remarkable, considering the impairment of vision and the ophthalmoscopic appearances.

SOME RESULTS IN CASES OF TOBACCO AMBLYOPIA.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY LOUIS J. LAUTENBACH, M.D.
PHILADELPHIA, PA.

The results here presented to you are the conclusions drawn from the various cases of tobacco amblyopia treated by me during the past seventeen years. The cases selected are intended not only to call atten-

tion to the favorable results following treatment, but to serve especially as illustrations of the faith that is in me. The subject has been so exhaustively handled that it is needless to theorize more; practical experience is after all our final teacher.

I employ the term tobacco amblyopia to express a bilateral, retrobulbar neuritis of the optic nerve with central color scotoma, followed later by an atrophy of the nerve occurring in one addicted to the use of tobacco, and so far as known not using any other toxic agent to excess. The condition may be due to a primary hyperemia of the nerve in this location—the interstitial inflammation, with later the formation of connective tissue elements followed by atrophy of the axial fibers of the optic nerves following it. The primary lesion may be a direct action of the poison on a central inhibiting center followed by the phenomena above outlined—a suggestive fact in connection with this supposition being that it is always bilateral. Whichever of the various theories as to its primary origin may ultimately be proven to be the true one, the lesions met with are well understood. That which especially concerns us are its early recognition and curability, and the measures that conduce thereto. I believe that tobacco blindness is not an uncommon affection, being far more prevalent than usually supposed. It varies from a condition of but slight obscuration of vision to a complete loss of sight. It is in the early stages especially that the affection should be recognized, as then the complete restoration of sight is comparatively easily accomplished, whereas in the later stages when atrophy has set in, the disease can usually be arrested but the vision can not be fully restored. The reason why we find in hospital reports so very few records of tobacco amblyopia is, I think, that these slight cases go unrecognized, the condition being perhaps unconsciously overcome by the doctor insisting upon more rigid habits and alterative treatment. The cases are usually recognized by the disturbance of vision observed on passing from the dark to the light, or even vice versa; by an obscuration of vision more or less constant; by perhaps even a slight sluggishness of accommodation; by at first a hyperemic condition of the outer half of the nerve, especially below, and, I fancy, a slightly sluggish pupil on varying the illumination; and by olfactory evidences of the excessive use of tobacco as well as from the history.

As for the form in which tobacco must be used to bring about such results, I would say that it would have to be smoked, that is, the oily alkaloid volatilized, and the other constituents of the tobacco gasified. In my work I have never seen a case produced by the use of snuff, nor have I seen a case in which I was sure it was caused by the handling of the tobacco either in its fresh or dried state, nor have I seen a case in which there was any evidence that the chewing of tobacco has caused it. I know this latter statement is at variance with that of most observers, and yet so sure am I of this fact that I allow my smokers, who are also chewers, to continue the latter if they will but stop the former. Case 2 is one to whom I allowed this privilege and yet he improved from R. E. 6/19, L. E. 6/19 in three months' treatment while using chewing tobacco constantly to R. E. 6/6, L. E. 6/6.

As for the age at which this disease appears, I think it well to recognize that *it is especially liable to occur in adolescence and early manhood*, on account

of the greater susceptibility of the nerve structures. I have found it present in a comparatively large number of patients under 21 years of age. The youngest was aged 13 years. Case 1 was a well-marked and typical case of rapidly progressing tobacco blindness. The oldest case I have treated was 76 years of age.

In regard to the condition of the pupil, I have frequently observed slight irregularities and inequalities present, and as before said, I fancy that the response to light stimulation is slightly less prompt than normal. I will briefly outline a few cases and their results, making comments as necessary and will indicate later the treatment followed. All the cases showed typical central scotoma with the usual objective symptoms.

Case 1.—Frank A. R., a school boy aged 13 years, was examined Jan. 19, 1888, and presented the typical symptoms and history—a cigarette smoker, had never used alcohol; had history of increasing loss of sight during the past year. Remote vision, R. E. $7\frac{3}{8}$; L. E. $7\frac{3}{8}$; proximate, R. E. 1 J @ 7—40 cm.; L. E. 1 J @ 7—40 cm. The remote vision was slightly improved by glasses. Stopping the tobacco entirely and pushing the treatment the vision was raised in four months to R. E. $7\frac{3}{8}$; L. E. $7\frac{3}{8}$, improvable with H.As. glasses to B. E. $\frac{1}{2}$.

Case 2.—Mr. Thomas R. H., aged 50 years, came Dec. 28, 1896, with a history of steadily decreasing vision, commencing one and one-half years previously. He never had used alcohol in his life. On his arrival I observed he had a very peculiar gait. He walked with his head twisted to the side and downward, at once indicating central total scotoma, which was confirmed by taking the fields. His remote vision was R. E. $\frac{1}{10}$, L. E. $\frac{1}{10}$; not improved by glasses. Near vision was R. E. 20 J. @ 19—100 cm.; L. E. 20 J. @ 15—100 cm. He had early noticed mists and obscurations of vision and an increasing impairment of sight. Later on he began to observe that his central vision was gone; he has been compelled to rely on eccentric vision for about a year. His tobacco smoking was stopped at once and he was allowed to chew although he had not done this before. He had averaged over eight cigars a day, but ceased at once. The treatment was pushed to the fullest extent and he was very faithful in following all my directions. After three months' treatment I ordered for him B. E. + 2.75 for near = 1 J. @ 17—45 cm. His distant vision without glasses was R. E. $\frac{1}{2}$, L. E. $\frac{1}{2}$. This was a typical case of tobacco blindness and one easily proven, and yet by ceasing smoking and thorough treatment his remote vision was made practically perfect, his central vision being restored to him, and instead of walking with the head twisted on the body he saw perfectly well with the head erect and directed forward as natural.

Case 3.—George W. S., a tobacco dealer, aged 57, came to me Feb. 5, 1898; a case dating back some ten years since its origin, one in which atrophy had occurred to a great extent. Remote vision, R. E. $\frac{3}{10}$, L. E. $\frac{3}{10}$, not perceptibly improvable by glasses. Proximate vision, R. E. some 50 J., L. E. 50 J., not improvable by glasses. No alcohol has ever been used by the patient, but he has been a constant smoker since he was a boy. After three months' treatment and the ceasing of the use of tobacco, continuing the chewing, however, his remote vision improved to R. E. $\frac{1}{4}$, L. E. $\frac{1}{4}$; with glasses, R. E. $\frac{1}{2}$, L. E. $\frac{1}{2}$, and his near vision with glasses to B. E. = 1 J. @ 21—38 cm.

Case 4.—Mr. John R., aged 76 years, came to me March 27, 1897, with a typical history of tobacco blindness, dating back some twelve years—the observed symptoms confirmed the history. He had always been a heavy smoker but a moderate drinker. The condition present was one of extending atrophy. His distant vision was R. E. $\frac{1}{10}$, L. E. $\frac{1}{10}$, not improved by glasses. Near vision, R. E. some 30 J., L. E. some 40 J. I could not entirely stop his smoking, but put him on the scantiest allowance possible, and instituted the usual treatment, with the result that with glasses his distant vision improved to B. E. $\frac{1}{2}$, and near vision to B. E. = 3 J. @ 20—35 cm. The case is interesting on account of the age of the patient, the length of the period of involvement and the fact that despite these factors there was a marked improvement in vision.

Case 5.—Mr. G. W. S., New York City, jewelry salesman, aged 33 years, came March 8, 1894, with the typical history, fields, symptoms and appearances of a commencing tobacco amblyopia. He commenced the use of tobacco as a boy and

continued at it pretty continually, using at the time eight or ten cigars a day. Later on he commenced to use alcohol, but not excessively. His symptoms of blurred vision and obscurations, especially when there was a change of illumination, particularly when leaving the outer air and entering a room, had continued for about a year, lately seeming to get worse. Occasionally he momentarily saw double, but attributed this to his stomach. Remote vision, R. E., $\frac{1}{2}$? + 1 × 90° = $\frac{1}{2}$; L. E., $\frac{1}{2}$? + 0.50 × 90° = $\frac{1}{2}$. Proximate vision, R. E., 1 J @ 13—57 cm.; L. E., 1 J @ 15—64 cm. The proper glasses and treatment were ordered for him and he was strongly urged to stop smoking, being warned he would go blind unless he ceased it.

I saw very little of him after this, but have learned from his friends that he continued the tobacco habit until quite blind, when he consulted an Eastern specialist, who insisted on the stopping of the tobacco, but he refused to obey. His vision is now so bad that he has not been able to do his work for over two years, and lately is compelled to have some one guide him when he goes outdoors. This case excited so much compassion in New York City that a benefit was given him the past winter, at one of the prominent theaters there, the announcement indicating the total blindness of the beneficiary. We will observe that when he presented himself his vision for near and distance was almost normal, and yet four years afterward he was totally blind.

Case 6.—Mr. John A. Z., attorney, age 23 years, came for the first time March 23, 1893, with a typical history of tobacco amblyopia, and the examination gave absolute evidence of the same fact. The blurred vision on going into the light was very marked. It had been coming on for about a year. Remote vision was, R. E., $\frac{3}{10}$, with glasses $\frac{1}{2}$; L. E., $\frac{3}{10}$, with glasses $\frac{1}{2}$. Proximate vision, R. E., — 1 J @ 12—48 cm.; L. E., — 1 J @ 12—46 cm. After cessation of the smoking habit (he was a very mild user of alcoholics) and steady treatment for four months, he was discharged with a remote vision of R. E., $\frac{1}{2}$; L. E., $\frac{1}{2}$, with glasses, and proximate vision R. E., 1 J @ 12—50 cm.; L. E., 1 J @ 12—50 cm. His eyes were practically perfect.

He again appeared April 23, 1896, having recommenced smoking shortly after his discharge by me, although I had carefully informed him as to its danger. His remote vision now was R. E., $\frac{1}{2}$?; L. E., $\frac{1}{2}$?; improved with glasses to R. E., $\frac{1}{2}$ +; L. E., $\frac{1}{2}$; and proximate vision, R. E. — 1 J @ 12—44 cm.; L. E. — 1 J @ 12—44 cm. After three months' treatment such as had been followed before by such good results he was again discharged as well, with normal vision, and up to this time he has not reappeared.

It will be noticed that the first three cases above noted developed in those who had not used alcohol in any form. Of the others none had used alcohol to excess. Several of them continued to chew after the treatment was commenced and yet the vision improved. In all in whom a favorable result followed was smoking withdrawn.

The treatment to which I now subject my patients comprises the routine measures of absolute stoppage of smoking, the use in increasing doses of iodid of potassium, the use of increasing doses of strychnin. In addition, I always order the frequent applications of hot washes to the eyes, preferably by means of eye cups. I always use irritants, such as alum stick, etc., to the lids myself two or more times a week. I always advise hot plunge baths if possible every night, and order that hot water, hot milk or hot lemonade be used frequently and liberally. I have observed quite a marked increase in the amount of improvement developed in my cases since these latter measures were systematically added to the treatment. I believe they serve to improve the local circulation about the eye as well as the general circulation, thus stimulating the metabolic processes and strengthening the activity of the secretory organs to such an extent as to the sooner relieve the system of the toxic agent as well as of the results of the perverted nutrition. It may be termed a going back to the old water treatment.

1723 Walnut Street.

AMBLYOPIA FROM AUTO-INTOXICATION.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. B. YOUNG, A.M., M.D.
BURLINGTON, IOWA.

Within the past year I have had under observation six cases of amblyopia differing in degree, and more or less transitory in character, for which I have been at a loss to give a definitive diagnosis. The possibility of an hysterical origin has not been overlooked. Indeed with two of the six this idea is still entertained. But with the others, the presence of a particular symptom, coupled with intestinal derangement, and this more or less uniform in all, seems to allow the characterization which appears in the title of this paper. I will endeavor to describe briefly these four cases:

Case 1.—Mrs. C. S., age 40, mother of four children, hitherto vivacious and apparently healthy, aborted last May in the sixth week of her pregnancy. She was making good progress toward recovery under the care of her family physician, when on the evening of the third day, without any undue flooding, pain, or other bodily disturbance, she complained of a failure to see objects distinctly—as if the lights had been turned down. The next morning she could see nothing—had not even light perception. I saw the case immediately and found the conditions as follows: Patient in bed and a professional nurse in attendance; alarm and depondency manifest; the face was pale, almost putty color; the eyes had the aimless stare and wandering, peculiar to those blind from atrophy; the pupils were widely dilated and unresponsive; no complaint of pain about the eyes or head; and no hypogastric tenderness. The tongue had a dirty yellow coat, and the breath a peculiar foulness of odor. I wish that I could accurately describe this odor; for this is the particular symptom which these indeterminate four cases all had. You have all noticed the odor of the breath in cases of extensive corneal suppuration. These amblyopic cases had an odor equally putrid, but more stale and musty.

Ophthalmoscopic examination was negative—the discs were perhaps a little pale, nothing more. Both nurse and physician were interrogated, but the reply was in each case positive “no mydriatic medicine had been used in any way.” The bowels were said to be inactive, and the appetite nil. The pulse, temperature and urine were negative. The odor of the breath, associated with loss of appetite and inaction of the bowels, suggested a failure of digestion; and in the absence of any structural changes in the eyes, I hazarded the opinion that if the alimentary canal was promptly cleaned out by a cholagogue cathartic, vision would probably return. Calomel was given at once, and continued until the bowels moved freely (the nurse describing the odor of the discharges as foul beyond anything in her experience), with the result that on the third day the pupils reacted; within a week there was Q. P. L.; and a month later, after correction of astigmatism, vision was 20_{30} in both eyes.

Despite a careful dietary, however, and more or less in the way of medicine all this while, a normal appetite, regular action of the bowels, and buoyancy of spirits were not regained until two months later.

In January last there was a return of all her troubles in a modified form, constipation, poor appetite, foul breath, low spirits, and vision reduced to 20_{40} and reading headlines in the papers. Ophthalmoscopic examination was again negative. The field for form was perfect; for color, uncertain. The red and green squares on the perimeter targets were not recognized at all, but when shown in larger areas were correctly selected in a number of different shades. The same line of treatment was employed as in the first attack, (pleasure journey included) and the result while more slowly attained, is the same.

Case 2.—P. R. S., age 59, formerly a master mechanic for a railway company, consulted me for the first time in January, 1893. He thought his vision might be helped by glasses. The record shows that I got for him 20_{30} in the left eye with -1.5 sph. and -0.5 cyl., axis 90; but only 20_{40} in the right with -2 sph. on account of opacities in the posterior lens cortex. In December, 1895, he came for a change of glasses. He now had $20_{50}+$ in the left eye with -2.5 sph. and -0.75 cyl., axis 90. In the right eye the lens seemed a little more opaque. (It is to be noted here that from this time on Wallace's test card was used, the letters having only $4''$ angle).

In January, 1897, he came again, very much discouraged over the continued failure in vision. The left eye had now only 20_{50} —with -4 sph., and cyl. as before. The disc was moderately excavated and the tension was apparently too high; but no fault could be found with the pupil, ant/ chamber, or field of vision. However as there was some complaint of pain at times, and the condition was that wherein one hesitates to decide between simple atrophy and chronic glaucoma, I felt that a tentative exhibition of a miotic was not out of place. I therefore prescribed pilocarpin; and after some days my patient reported the situation improved both as to comfort and vision.

In November, 1897, he again presented himself, very despondent. “Vision” he said, “had again failed, had been so bad at times that he could hardly get about.” He had abandoned business and was trying to take care of himself; had had some difficulty with his digestion, but had not consulted his family physician. Sometimes he thought he saw better with the eye that had the cataract. His face was pale and his manner was languid, but to my great surprise vision was more acute in the left eye than at his last visit. With -7 sph. (an increase 3 D $-$) and -0.75 cyl., axis 90 he had almost 20_{40} . Tension was normal and the field was normal. I made no change in his glasses, but insisted that he should see his family physician at once. He came a month later, having in the meantime gone to see a physician in Chicago. There he had gotten a diagnosis of enlarged prostate and chronic cystitis. Urinalysis had shown the presence of pus and a little albumin, but no caets. He had been advised to learn and practice self-catheterization, and for this purpose had ordered a catheter. He thought his vision was again worse, but I could see no change. In January of this year his daughter wrote me that “vision had again failed; was just as good without glasses as with; and poor both ways. The Chicago doctor had written that it was probably due to albuminuric retinitis; and the prospect was grave.” I thereupon went to see my patient at his home. I found him confined to his bed, very feeble and despondent, about ready to give up the fight. His appetite had failed; the bowels were inactive, and he had the characteristic odor of the breath. Vision was reduced to Q. P. L., and not improved by his glasses. I dilated the pupil with homatropin and examined the fundus thoroughly; but no suggestion could I find of hemorrhage, or retinal inflammation. The disc was possibly more excavated, but even that was doubtful. Tension was normal. In consultation with his physician, I afterward learned that in attempting self-catheterization, a silver catheter had been used; violence had been done; and an orchitis set up. And this was the original cause of his going to bed. As in case 1, I advised the free use of calomel, and expressed my belief that the amblyopia was toxic, although probably not uremic in character. How thoroughly my idea of treatment was carried out I do not know, for we were forty miles apart. But I understand that it obtained in part at least, with good results. A month later my patient died. The daughter, in writing to me of this event, said the nurse described it briefly as “death from uremia.” But she also wrote these particulars: “Six days prior to his death he had some friends in to play cards with him. He had been up and around but was weak. Three days before he died he began to suffer pain (I subsequently heard that this was in the lower part of the abdomen), and this was more or less continuous to the end. The day before he died he was up and dressed; but in the evening had a terrible chill; an hour later became delirious; and went from that condition into coma which terminated fatally in a few hours.” No autopsy.

Case 3.—J. W., age 35, a machinist in the railway shops, came to me Oct. 6, 1897, to have a small foreign body removed from the cornea. It was superficially lodged and easily extracted. October 18 he returned to say that his injury of the 6th instant had been more serious than he thought, as he was unable to see the lines on his work. The injured eye was perfectly healed, and had $V=20_{40}$ —; while the uninjured eye had only 20_{50} —. The discs were a little pale; no other abnormality. Hyperopia (under scopolamin) was 0.5D. Glasses did not help. His general health, he said, was good, except for a little indigestion and a little constipation. He used tobacco freely, and drank weak domestic wine at home. He also had a little difficulty in telling colors—confused reds and greens. This proved not be a typical scotoma for color; but I nevertheless looked upon the case as a tobacco-alcohol amblyopia, and contented myself with advising total abstinence. After a month of this, he returned to say that he was no better in vision, and now he had no appetite. He was pale and anxious-looking.

All at once, in coming close to him, I caught the odor of his breath. It was identical with that in Case 1. So I gave calomel to free catharsis, and followed this with calomel and salol

in small doses, thrice daily, for a number of days. Under this treatment the breath became sweet, appetite returned, and the bowels became regular. On December 12, my record shows that he accepted a correction of $+0.5$ sph. which he had before refused, and had $20_{30}+$ in both eyes.

Case 4.—T. G., age 12 years, schoolboy, son of a farmer, came home from school one day, about the middle of last December, complaining of headache and inability to see his lessons. He had been dull and listless for a week or two, but prior to this had made no complaint. I did not see him until he had been ill five weeks. He had now been confined to bed since January 9, suffering from obstinate constipation, persistent vomiting, and pain in the head and eyes. His bodily weight had fallen from 90 to 65 pounds, and he had an unnatural appetite—at one time craving, at another indifferent. His vision had also failed.

The boy was spirituelle in appearance; greeted me pleasantly, and answered questions willingly, in a subdued drawl. General weakness was manifest; but there was no evidence of any paralysis, and the reflexes were normal. The tongue had a yellow and brown coat, and the breath was not sweet. Vision was 19_{30} —in the right eye, and 19_{30} in the left—better with $+0.75$ cys. (90 degrees) than without. He professed inability to read any ordinary type, but read a few words in large type, held very close.

The fundus, which I could see best (erect) with $+4$.D correction (and I have hyperopia 2.5D) had no markings that might not have been normal. The inferior temporal vessels gave a suggestion of fullness and curving, and the pigment in one or two places was not evenly distributed. But I could find no swelling at these points or about the papillæ. As in the other cases, I advised a thorough exhibition of calomel, and careful supervision of the diet. This advice developed the fact that in order to keep the bowels from complete inaction the cascara-strychnin-belladonna pill had been resorted to, and he was taking from three to five every night at bedtime. The calomel, however, was given, as I afterward learned, and produced the most foul-odored discharges that the family had ever known. Following this there was a little amelioration of the conditions. But the treatment was not pushed, and the benefit was temporary.

I did not see this patient again until three months had elapsed. Stimulated to more persistent effort by their family physician, wonders had been worked in the boy's general condition. He is not yet able to walk, but he sits up all day, and is gaining in strength and weight. His vision is also improving slowly. He can tell the time by the wall clock and read a little Jaeger No. 6. There is still nothing in the fundus, that I can see, to account for this defective vision.

Extended comment seems to me unnecessary. No one realizes more fully than I the incompleteness of the pictures herewith presented; and that there is nothing in these visual peculiarities which might not have been simulated *nolens volens*. Had I seen but one, or, at most, two cases of this character I should not have so trespassed on your time and attention. But the number of cases and the constant association of the visual disturbances with manifest disorders of digestion which were so nearly alike in all, has impressed me.

I also deem it but justice to myself to say, that I had exclusive control in but one of the six cases; and this is said with no intent to disparage my colleagues in the other five. It only explains, in part, the absence of systematic investigation for the moving cause. Of the two cases not described, it remains to be said that one was a boy aged 10 years, the other, a man aged 27 years. Both recovered.

To recapitulate according to age: There was one at 10, one at 12, one at 27, one at 40, and one at 63. Five males and one female.

DISCUSSION ON TOBACCO AMBLYOPIA.

Dr. F. C. HOTZ, Chicago—I was invited to open this discussion, but I take it that I need not cover the whole subject that has been presented, and that it is my duty simply to start the ball of discussion rolling. My experience with toxic amblyopia has not been very large. I have, for instance, never seen a case of quinin amblyopia, or one from any other cause than

tobacco and alcohol. My cases were mostly of the mixed form, both alcohol and tobacco being used to excess by the patients. From the observations that I made, I think the gradual loss of sight, the slight ophthalmoscopic change at the disc and the sluggishness of the pupils were the prominent clinical symptoms. The patients do not, as a rule, come to us at an early stage, but I have among my cases one that is an exception, and I have not heard or seen anything like it. In that case, the patient had good vision in the morning and two hours later his vision was completely obscured in both eyes. He was a saloon-keeper and was one of his best customers, both as to wet stock and the weeds. He was secretary of a lodge, and one morning (this occurred in 1875) he wrote up the minutes of a previous meeting to report at the meeting to be held that afternoon. He went to the meeting two hours later, and when the chairman called upon him to read the minutes, to his amazement he was unable to see his own handwriting.

He came to Chicago two or three days afterward, and an examination showed slight blurring of the edges of the disc, the vision reduced to less than 20_{100} , and the perimeter showed a positive central scotoma in each eye, in the right covering ten degrees, and in the left five degrees. He was advised, of course, to stop drinking and smoking at once, and to use the iodid of potassium in increasing doses, pushing it rapidly. In a few months there was no trace of scotoma, and central vision had improved to 20_{20} . In this case I am not quite certain whether the gentleman has absolutely followed out my orders as to the liquor, but I suspected all the time that he did not.

We are often told by patients of the sudden loss of sight, and find on closer questioning that vision had been failing gradually, and they reckon the loss only from the moment when they failed to read, but in this case there is evidence of the patient having been able to read and write two hours before the total failure.

Dr. CASEY A. WOOD, Chicago—I have been especially interested in Dr. Young's paper, because I believe that I have obtained ample evidence of the auto-intoxication theory of amblyopia. Horner—and I do not think there has ever been any more acute observer of these cases—as long ago as 1873 expressed the opinion that inasmuch as he had noticed chronic gastritis in alcohol amblyopia, so did he believe that the changes in the stomach had to do with toxic amblyopia quite as much as the tobacco or alcohol in the system. Sachs, a short time ago, went even further and stated, I believe, that it is not the nicotine or alcohol but some compounds of these things in the stomach which produced the retrobulbar neuritis of toxic amblyopia.

There are other points of interest we should not forget. Amblyopia often comes on in diabetes, as a result of malnutrition. Another point to bear in mind: Tobacco does not set up changes in other nerves. Another matter to consider in connection with this paper is that form of atrophy of the optic nerve that Uthoff placed among the unknown causes. I have for several years held the belief that these cases were in some instances at least due to auto-intoxication. In talking the matter over recently with Dr. Klebs and Dr. Turck of Chicago, we all thought it was not impossible that this might be the case. In a series of experiments on dogs, recently, it was noticed that in some instances, after hypodermic injection of certain ptomaines, amblyopia followed. We have continued these experiments, and I propose to follow them up, and I suggest to you all the proposition that a certain class of cases of progressive optic nerve atrophy are the result of absorption from the intestinal tract.

Dr. D. S. REYNOLDS, Louisville—This is a field that is very fertile, I think, and it is fortunate that a large number of observers are cultivating it. I have every reason to believe that there are many cases of amblyopia due to auto-intoxication. That view has been forced upon me by experience. I am

equally convinced that the cases of tobacco amblyopia are difficult to separate by any pathologic changes, by perimetry and the color test, from similar conditions found in persons given to the use of other toxic drugs. I do not believe that the use of alcohol alone, as a beverage, is so likely to produce amblyopia as the condition that it brings on by way of disturbed functions. The inhibitory effect of alcohol upon the eliminating organs affords, at least, reasonable grounds to suspect that a part of the results of amblyopia formerly attributed to alcohol are really due to auto-intoxication, because similar conditions are found in people with disturbed nutrition who do not use alcohol. There are many cases in which amblyopia at first may be very slight, and when you see the same again, say after a lapse of two or three years, you note that the area of affected optic nerve substance has gradually extended, and if symmetrically in all directions from the central point, there has been very little increase in the amblyopia, but if more extended toward the temporal side of the disc, then the amblyopia has been correspondingly increased.

I think I know that tobacco does produce a form of hyperplasia resulting in changes in the nerve structure, and I dissent from the view that it operates upon the optic nerve alone, because it is well-known that those who use tobacco in any form have disturbances of muscular co-ordination, and are liable, most of them at least, to insomnia. The fact, too, that tobacco heart is a recognized form of weak heart, is another evidence that other parts of the body than the optic nerve are disturbed.

Now, I believe that the tea-drinker is in just as much danger as the habitual consumer of tobacco, and that these are not in much greater danger than the excessive coffee drinker. I believe that coffee does not hurt any one who takes active exercise, and who takes the coffee in the morning only, but those who use it three times a day and often extra cups between meals, are apt to have trouble. I know a lady in Louisville who got in the habit of drinking coffee to such an extent that any intelligence of a disturbing character called for the use of more coffee, and she had such disturbances of muscular co-ordination that she became unable to stand alone. Her vision is so bad that she can no longer read, and can only see sufficiently to distinguish chairs and large objects about the room.

Dr. LEARTUS CONNOR, Detroit—At our meeting in Newport, I presented a paper on "Tobacco Amblyopia, Pure and Simple," and reported all the cases I could ascribe to a definite cause. Since then a few have come to my notice, and one of them was singular in this respect, that the man, 40 years old, began to smoke as soon as he could walk. His father was an inveterate tobacco user, and the boy was taught to light the pipe and smoke it before the father received it. No doubt it was a very pretty thing to the father, and the boy kept up the use of tobacco nearly constantly until about a month before I saw him, when he noticed a failure of vision. He was a very nervous man, but otherwise in perfect health, and he never used any alcohol, tea or coffee. Characteristic evidences of disturbance of the optic nerve were apparent; the vision in one eye $\frac{2}{200}$, and in the other $\frac{2}{200}$. When I told him what he had to do, he said: "I would rather die than do that, but for the sake of my wife I will try it." He did try, and in three months his vision was $\frac{20}{30}$ in either eye and he could read J1. Some six months after this he met with financial difficulties, and in a fit of despondency killed himself. Whether the loss of tone to the nervous system rendered him unable to resist this action in the time of trouble I do not know.

I have never seen a case of quinin amblyopia, but a case came to me recently, a little child about 12 years old, who had the history of using three or four cups of strong coffee three times a day. For a month or two before her visit to me she had quite severe headaches, and her right eye finally became

utterly useless for sight. Everything looked red before her and the right eye saw things imperfectly. If I held my hand before her, she saw it, but declared its position reversed from what it actually was. The ophthalmoscopic evidences were negative. The stopping of the coffee alone resulted in the diminution of these symptoms and the return of normal vision.

As I remarked to Dr. Reynolds, a few minutes ago, coffee has given me more trouble in the disturbances of vision than all the other drugs used by humanity put together.

Dr. W. H. WILDER, Chicago—I think there is a suggestion of considerable truth in the idea of auto-infection causing impairment of vision, but I can not believe that many of the so-called toxic amblyopias are cases of auto-intoxication. The cases reported present certain unique features, and it would seem to be difficult in many cases to dissociate the symptoms from hysterical manifestations. As far as intoxication with quinin, or any other drug than tobacco, is concerned, I have never seen but one well-marked case. I remember seeing one case of quinin amblyopia in a woman residing in the South who had taken very large doses of this drug for malaria. The general impression is, I think, that the ill effects resulting from the use of tobacco are due to nicotine, but I do not think this can be proven at all, but rather that the trouble is due to some other product of tobacco, possibly to the ingestion of pyridin. It has been shown that when tobacco is smoked in cigars, colodion is present in large percentage, whereas when it is used in a pipe pyridin is the main product which gains entrance into the system, and naturally we would expect more of it to be ingested the shorter the pipe. I believe it is a well-known fact that more of these cases of tobacco amblyopia are seen in England than elsewhere in the world, and it is probably due to the fact that the Englishman usually smokes a short pipe. That lends some support to the idea that it is pyridin that produces the ill effect.

Aside from all this, there is also the factor of susceptibility of the individual. We can not say in any given case that a man is likely to have an attack of tobacco amblyopia, and certain races, the Cubans and Spanish, for instance, are almost free from it. The use of certain qualities of tobacco also seems to produce more trouble than others. Aside from the susceptibility of the patient, I do not believe an individual is liable to an attack unless the resisting power of the whole organism is lowered, and then an excess of either tobacco or alcohol is liable to bring on disturbances of digestion and a lowering of the general vitality, together with an inflammation of the nerve.

Dr. D. C. BRYANT, Omaha—I have had a case under observation for ten years that is very susceptible to quinin. It happens to be my brother-in-law and I have had a good opportunity to observe him. Dr. Wilder spoke of the difference in the influence of the drug according to whether the patient was or was not in good health, but this patient seems to be an exception to that rule. He first noticed his trouble ten years ago, when he was suffering with malaria or mountain fever in Western Kansas and had taken large doses of quinin. His vision became very poor, and as he expressed it, "he was seeing through a pin hole," the vision being reduced to a central point. In the course of a month he had a relapse of the disease and quinin was used again with the same effect. He left the ranch, came home and recovered entirely. In order to see what effect it would have upon his eyes, some time after recovery I gave him a dose of quinin. He was then in good health, but a dose of 15 grains would markedly reduce his vision.

Dr. REYNOLDS—Did it produce peripheral contraction or obliteration of the central vision?

Dr. BRYANT—Peripheral contraction. It seems to be a clear case of quinin poisoning.

Dr. C. R. HOLMES, Cincinnati—I have under my observation a case that was rather unusual. On a Sunday a message came

to me to call at a certain house. Not going to my office on Sunday, my assistant received the message and made the visit. He has been with me nine years, is a very capable man and has made some excellent drawings. I mention that to show that he knows optic nerve changes when he sees them. He found the man drunk and blind. He had been to Washington, where he had been successful in securing a patent. He had been reading on the train on the way home and he stated that having caught cold he sent for some whisky and quinin. He got a pint bottle from a fourth-class druggist in the neighborhood and had directions to take a certain quantity every hour or two. After taking about half of it his vision failed and he became deaf. The doctor made an ophthalmoscopic examination the following morning and found intense hyperemia of the disc. He had the contents of the bottle analyzed and found nothing but quinin and whisky. I urged upon the assistant to tell him to come to the private hospital for treatment. He refused and did not send for me again for two weeks, when he said he could begin to see the outlines of the window and his hearing had returned. Three weeks later he came for treatment but at that time there was complete atrophy and he was totally blind.

Dr. ELLETT—In regard to the cases reported by Dr. Lautenbach in which the condition disappeared without cessation of chewing tobacco my former partner, Dr. Minor, has gone him one better and reported eight cases that underwent perfect recovery without stopping either smoking or chewing. Those cases have been rather extensively quoted, but I do not think anybody has profited by them to permit such things in their treatment. The only thing I want to comment on is the age of his cases, which is in striking contradistinction to the literature of the subject. I have only found ten under 30 years of age and none under 20.

Dr. LAUTENBACH—As regards the age of the patients I think there has been one case reported at 19.¹ I called attention to another fact which is that I believe there is a large class of cases which if recognized at first are perfectly curable. I think we can then use a method of treatment that will bring us through our difficulties. Often, especially in hospital practice, our diagnoses are not made accurately enough and often the medicine prescribed and the hygienic directions given are such that the case becomes well—the case not being reported as a tobacco or toxic case, but perhaps simply as a refraction case needing tobacco or alterative treatment to overcome a depraved general condition.

In regard to the matter Dr. Wood spoke of, that it has not been demonstrated that there is any effect upon any other nerve than the optic, we allow in our public schools certain truths to be taught for which we are in part responsible, and you will find in the school books attention called to the arrest of growth, etc., produced by tobacco and alcohol. If it is true that they do not affect other nerves than the optic we should see that things are properly taught. For myself I believe that there is plenty of ground for the belief that other nerves are affected. It is well recognized that by the withdrawal of tobacco in certain cases of deafness we get rapid improvement, and hence tobacco deafness is a recognized disease. Certain heart cases too are said primarily to be due to inhibitory changes in the coronary arteries and I do not see any reason for doubting it. Watch the chronic user of tobacco, his walk and shuffling gait, and the conviction grows that other nerves than the optic are affected.

In regard to the matter of tea, I think the prediction can be made today that ten years hence quite a number of our men will report cases positively due to tea drinking. The Americans have been until recently using the Chinese tea, but now a Ceylon tea, which is far more powerful in its effects upon the nervous system, is displacing it and it is expected that the use

of Chinese tea on account of its inferior flavor will soon be a thing of the past. I am sure I have seen cases attributable to Ceylon tea. It is my belief that the whole class of cases we have been considering are due to changes primarily in the nerve, or in the cerebral center, I do not know which, but they all act in the same way and bring about the same result.

Dr. YOUNG—In connection with my paper I have only to repeat what I said at the start: that the cases were indeterminate in my mind. I try to make a differentiation between hysteric amblyopia and those which are not. I should be inclined to classify hysteric amblyopia, as those which by the effort of the patient could be overcome. You know that in the true hysteric cases if you can get the patient's mind off the subject you can promptly restore vision. I used the expression "*nolens volens*" because I do not believe there was anything in my cases that was present *volens* and not *nolens*. One patient, 60 years of age, when I saw him last was unable to recognize me and to count fingers. Treatment enabled him to see sufficiently well to play cards, and I do not believe his death was due to uremic poison, because no casts were found at any examination. I am further fortified by the experience of a colleague recently. A man with enlarged prostate died with symptoms of septicemia, and postmortem discovered a large perineal abscess that had given no evidence by swelling or pain prior to death. My impression is that my case died from septic trouble due to the injury from self-catheterization.

In connection with the calomel treatment I want to say that in only one case did I have control of the exhibition of the calomel and I was unable to enforce upon my friends the necessity for and advantage of small doses of calomel. In the cases that recovered I attributed the result more than anything else to small doses of calomel kept up for quite a period.

I want to endorse what Dr. Reynolds said as to the uncertainty of color sensations in amblyopia and also to say that at the Atlanta meeting two years ago I reported a case of relapsed amblyopia from excessive tea drinking. The case of inverted image that Dr. Connor spoke of I should think belongs to the true hysteric amblyopias.

ON THE USE OF EPITHELIAL GRAFTS FOR REPLACING THE OCULAR CONJUNCTIVA.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY F. C. HOTZ, M.D.

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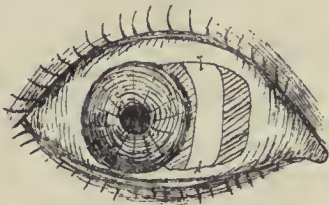
The unsatisfactory results obtained by the transplantation of rabbit's conjunctiva upon the eyeball, the laborious work of freeing from all shreds of sub-mucous tissue the mucous flaps cut out with scissors or scalpels; and on the other hand, the ease with which Thiersch's skin grafts can be obtained and the certainty with which they grow in their new bed, have induced me many years ago to make use of Thiersch's grafts in operations for pterygium, symblepharon and other conditions where it was desirable to replace lost conjunctiva. The results obtained by these operations were very satisfactory; the grafts answered the purpose for which they were implanted; in many instances they became after some time as smooth and glossy as the surrounding conjunctiva; and though in other cases they continued producing a white coating of epidermis cells, I have never found this condition to cause any irritation. Still I have always regarded the substitution of epidermis flaps for epithelial tissue as a make-shift to be abandoned as soon as we should

¹ de Schwinitz—Toxic Amblyopias.

find a convenient method of obtaining epithelial grafts, for the ideal aim of our plastic work should be to replace mucous membrane by flaps of the same histologic character.

I believe we have now that improved method we wished for, thanks to the ingenuity of the present chairman of this Section. In the *Ophthalmic Record* of December, 1897,¹ Dr. Gifford has shown that the cutting of epithelial grafts is very easy and successful if done with a razor instead of scissors or scalpels. The flaps so cut, he says, correspond histologically for mucous membranes to the Thiersch's skin-flaps; they are cut so thin that only the epithelium and a very little of the subjacent tissue is removed. In other words, Dr. Clifford has solved the problem by applying the principle of the Thiersch's razor method of cutting skin grafts to the mucous membranes, an idea so simple that we can only wonder at that we have not hit upon it long ago.

As to the proper execution of this new method I will quote Dr. Gifford's own words: "Probably the main reason why these thin lip-flaps have not been used more generally, is that it is hard to get at the lining of the lips so as to use a razor easily; and to facilitate the process I have had a large clamp made, of which the solid blade is smaller and set at an angle with the shank so as to pass clear through the fenestra of the other blade. Closing the blade upon the lip forces the latter into a tense prominence from which the membrane can easily be shaved. The surface must of course be kept wet and the razor must



be sharp. In cutting flaps to replace palpebral conjunctiva, it is better to cut them nearly twice as thick as where they are to be applied on the ball. They should be slid directly from the razor to the denuded surface and there trimmed if necessary. After pressing them down rather firmly with moist toothpick swabs, they should be allowed to dry on, so to speak, for two to three minutes before the lids are allowed to close. A binocular bandage should be left on for the first twenty-four hours, and after that a monocular for four or five days. After a few days, a thin pellicle of epithelium is thrown off and what is left is so very thin and transparent that one is at first inclined to think that the whole flap has necrosed, but after some days it becomes evident that the flap is alive, although it is so much like the conjunctiva that its boundaries are hard to trace."

Since reading Dr. Gifford's article, I have employed his epithelial grafts in all cases where formerly I should have used Thiersch's grafts; and it gives me great pleasure to state that the results were so satisfactory that I have no reason to regret having substituted Dr. Gifford's method for my own. I found indeed the flaps could be cut very easily and accurately, and their application offered no difficulty if I only took care to keep track of the side which was to go down on the wound.

For illustration I will report only one case, and I

¹ "On the Use of Epithelial Lip-flaps and Half Skin-flaps in Eye Surgery."

select the very first case in which I tried the new method, because it was a very severe test of its merits on account of the unusually large size of the flap.

February 7 I removed from the eye of a young man an epithelioma of the ocular conjunctiva. The very vascular growth surrounding almost the whole nasal margin of the cornea spread out 12 millimeters over the sclera and invaded the corneal epithelium about 1½ millimeters; the ocular conjunctiva adjoining the lower border of the tumor appeared thickened and opaque. In removing this growth I first detached it carefully from the cornea; then I made an incision in the healthy conjunctiva all around it and finished with dissecting up the episcleral tissue from the conjunctival incision to the corneal margin. The thickened portion of the ocular conjunctiva adjoining the lower end of the tumor was also excised. This operation caused a large exposure of the sclera, which it was impossible to cover by a transplantation of the adjacent conjunctiva.

I therefore decided upon implanting a Gifford's lip-graft. As I had not Gifford's lip-clamp, I used our ordinary eyelid forceps with its fenestrated branch upon the mucous surface of the lower lip. When the forceps was well screwed down the mucous membrane within the ring of the forceps was quickly anesthetized by holocain, and was so tense and prominent that the shaving could be done with the greatest facility and without the least pain. I shaved off an epithelial flap about 1½ centimeters long and ½ centimeter wide. This flap, floating in sterile salt solution, was transported on the razor to the eyeball and spread out over the denuded surface. It was long enough to reach from the upper to the lower conjunctival border of the defect, but too narrow to cover its entire width. I had purposely cut it so narrow because in my first grafting operations when the grafts were cut so large as to cover the whole width of the denuded surface, I usually found them slightly displaced toward the cornea during the first twenty-four hours; and I had come to the conclusion that this displacement occurred because the conjunctival border was in contact with the graft and pushing against it during every lateral rotation of the eyeball, displaced it more or less before it had become adherent. When the graft is cut narrower so that a space is left between it and the conjunctival border, this displacement does not occur, because that free space prevents the conjunctiva from unduly crowding against the graft during the first twenty-four hours; and when later on the conjunctiva is drawn up closely to the graft, this has gained sufficient hold on the sclera that it can no longer be shifted from its place. But to make doubly sure that this graft, which was unusually long, would retain its position, I fastened its upper and lower end to the conjunctiva near the cornea by very fine silk sutures. After the eye had then once more been thoroughly irrigated with boric acid solution, both eyes were bandaged.

On the second day the graft was firmly adherent; the sutures could be removed and the bandage left off. At the end of the first week the gap between the graft and conjunctiva was closed, the conjunctiva having been drawn up to the longitudinal border of the graft. In March, when the patient was shown at the meeting of the Chicago Ophthalmological Society, the graft was smooth and red like the adjoining ocular conjunctiva; and when later on the injection of the conjunctiva, disappeared the graft also became pale

and clear. It showed no perceptible contraction, and only the closest inspection could find the dividing line of the graft and the ocular conjunctiva.

DISCUSSION.

Dr. W. L. DAYTON, Lincoln, Neb.—While in Chicago I had a conversation with Dr. Hotz in which he mentioned one of his cases to me, and I determined to try this method at the first opportunity. Last week a patient presented himself with a very large pterygium that extended clear over the center of the cornea, and fully 2 mm. in width at its apex. I resolved to make a mucous graft there from the lip. I performed the operation as Dr. Gifford has suggested, taking a flap 7 or 8 mm. long and 5 mm. wide. In dissecting up the growth I dissected 4 or 5 mm. back from the edge of the cornea and down to the sclera, but as he moved the eye suddenly the conjunctiva tore farther back. I then had my assistant take hold above while I dissected it back to the caruncle and removed it, leaving the conjunctiva intact after having cut down to the sclera 5 mm. from the limits. This left a 5x8 mm. space to fill up with the graft. Everting the lip and outlining the size of the flap desired, I removed the graft with a razor, dropping a few drops of salt solution on the razor, and transferred the graft directly to the eye. I held it in position by placing four sutures, one at either corner. It was allowed to remain until the third morning, when the lower portion of the graft was of a beautiful rosy hue, and the upper portion a little white and slightly loosened. I removed the stitches on Saturday last, and the graft had grown beautifully in its entire extent.

In regard to the use of a local anesthetic, I would say that I have never tried the holocain, but I would not advise the use of any local anesthetic before shaving the graft, for I presume it does not hurt very much.

Dr. G. C. SAVAGE, Nashville—My friend Hotz and I do not always agree, but I believe the best method for dealing with pterygium is that outlined in his paper. Following Hotz, I commenced the transplantation of skin, instead of mucous membrane, and months and months after found it still skin; so I am glad to hear, from his own lips, that it is better to use mucous membrane. My own method of operating is to make a puncture and counter-puncture in the body of the pterygium, not far from the cornea, through these passing one blade of straight scissors, pressing the blades slightly toward the inner canthus before bringing them together, and pull off the corneal portion by traction forceps. A very small portion of the mucous membrane of the lip transplanted will cover almost completely the exposed scleral wound. One suture above will hold it in place, as a rule. My experience from this method of procedure is very happy. I think it should be resorted to in all cases, because so many of the cases operated upon by other methods recur.

Dr. J. L. THOMPSON, Indianapolis—How long have any of you gentlemen seen your cases after these operations have been done?

Dr. HOTZ—This case reported was operated upon in February, and I saw him two weeks before I came here. This was not a pterygium case, however, but I think the same operation applies. I have seen cases treated with the Thiersch graft two years afterward, and the growth had not returned.

Dr. GIFFORD—There is very little to be said except that the suggestion of Dr. Hotz, that where you have a large flap it is better to use a stitch, is a good one. It is a good plan to dissect up the conjunctiva so as to tuck the flap under, and stitch above and below.

With regard to the length of time after they have been operated on, I have one case that I have watched for three years. The eye does not look natural in every way, but the pterygium has not returned, and as it was a malignant case that had recurred five or six times, I was glad to get any kind of a result.

REGULAR CORNEAL ASTIGMATISM IS NOT ALWAYS CONGENITAL, NEITHER IS IT UNCHANGEABLE.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM C. BANE M.D.

Late Ophthalmologist to the Chair of Neurology and Chief Clinical Assistant in Ophthalmology and Otology in the Medical Department of the University of Colorado; Ophthalmologist and Otologist to the House of the Good Shepherd; Oculist and Aurist to the C., R. I. & P. Ry. DENVER, COLO.

That regular astigmatism of the cornea is not always congenital, is clearly stated in some of our standard text-books on ophthalmology. Noyes (2d rev. ed., p. 111) states that "some rare cases of regular corneal astigmatism are acquired, but as a rule the affection is congenital." Schmidt-Rimpler (3d ed. p. 84) believes: "as a rule the affection is congenital." Berry (2d ed., p. 543) says of astigmatism: "The cause is mostly a difference in the curvature of different meridians of the cornea, a difference which may be congenital or acquired."

Hartridge (Refraction of the Eye, p. 122) expresses the view: "astigmatism is usually congenital, but may be acquired, and frequently there is some hereditary tendency." Henderson (Annals of Ophthalmology and Otology, Vol. v, p. 523) has reported one case of acquired regular corneal astigmatism. The literature bearing on acquired regular corneal astigmatism is certainly very limited. To be convinced that regular corneal astigmatism is not always congenital necessitates refractive work on the same persons for many years, during which re-examinations of eyes are made, and the measurements compared. The same rule applies as to the permanency or unchangeableness of regular corneal astigmatism, whether in amount or meridian. I have selected two cases to illustrate the subject:

Case 1.—Illustrating the Development of Regular Corneal Astigmatism. E. B., a girl, aged 10 years. Referred by Dr. Eskridge, Feb. 18, 1892. History of pain in her eyes and frontal headache almost every day, while using her eyes for close work in school. General health good.

V.R.=%. V.L.=%. Pupils are equal and respond normally to light and accommodation. Fields are normal. Manifest 2° Esophoria.

Accepts +0.50 s. for each eye, with vision of %. Radiating lines on the dial equal. Homatropin used as a cycloplegic, under which V. with +1 s. R., and L.=%. At confirmatory test, two days later, +0.50 s. was ordered for constant wear. Patient returned Oct. 21, 1893, twenty months after first examination, and complained that her eyes were not comfortable. Another examination was made under homatropin and atropin, with the result that under the cycloplegic she accepted +1 s. for each eye giving vision of %. No manifestations of astigmatism. On Sept. 16, 1896, four and one-half years after the first examination, patient returned, complaining of her eyes aching upon use for close work, and occasionally frontal headache. She has developed rapidly, changing from girlhood to young womanhood.

V.R. %—; V.L. %₂+. Pupils, accommodation and fields are normal. Fundi are healthy in appearance. Hotz' Astigmatometer indicated: 0.50 D. astigmatism; axis, 180° in each eye.

O.D. —0.50 c. 180° %. Lines on dial normal.

O.S. —0.75 c. 180° %. Accommodation paralyzed with

Wyeth's ophthalmic discs of homatropin and cocain.

O.D. +0.75 s. c. —0.50 c. 180°= %.

O.S. +0.75 s. c. —0.50 c. 180°= %.

After twenty-four hours a confirmatory test was made and patient accepted —0.50 c. 180° for each eye, giving her vision of % and equalizing the lines on dial. Forty-eight hours later the test was repeated, with exactly the same results, and the above cylinders were ordered.

This patient came under my care again a year after she be-

gan wearing the cylinders, suffering with an attack of pharyngitis, at which time she reported that her eyes were comfortable, and that she had worn the spectacles constantly.

Case 2.—Illustrating a Change in the Astigmatism, eight years elapsing between the examinations. W. J., aged 24 years. Referred by Dr. John Mahon of Allegheny City, Feb. 11, 1889. History of indistinctness of vision, especially on reading, and occasional attacks of frontal headache after reading for about an hour. The eyelids are inflamed and the margins thickened, some crusts adhering about the roots of the lashes.

V. R. = $\frac{1}{8}$; L. = $\frac{1}{8}$. Pupils equal and react normally to light and accommodation. Fields for white normal.

O. D. - 0.50 c. 165° = $\frac{1}{8}$.

O. S. - 0.60 c. 150° = $\frac{1}{8}$.

An eight-grain solution of homatropin used as a cycloplegic.

O. D. +0.50 s. \subset -0.50 c. 160° = $\frac{1}{8}$.

O. S. +0.50 s. \subset -0.75 c. 100° = $\frac{1}{8}$.

At confirmatory test he accepted:

R. -0.60 c. 160° = $\frac{1}{8}$. Dial normal.

L. -0.75 c. 100° = $\frac{1}{8}$. Dial normal.

Prescribed two-grain ointment of the yellow oxid of mercury for the blepharitis.

On May 17, 1897, while in Pittsburg, W. J. came to me for re-examination. He stated that his eyes had not troubled him since 1889, when he began wearing the spectacles, until within the past year. The blepharitis is well and has been for several years. Recently he has experienced some aching of his eyes and pain in his right temple. Vision less distinct than formerly.

V. R. = $\frac{1}{10}$; L. = $\frac{1}{20}$.

O. D. -1 c. 160° = $\frac{1}{8}$.

O. S. -2 c. 180° = $\frac{1}{8}$.

Wyeth's discs of homatropin and cocain used as a cycloplegic.

O. D. +0.50 s. \subset -1 c. 160° = $\frac{1}{8}$.

O. S. +0.50 s. \subset -2 c. 180° = $\frac{1}{8}$.

May 19, 1897, prescribed:

O. D. -0.75 c. 160°.

O. S. -1.75 c. 180°.

The change that had occurred was a slight increase in the astigmatism in the right eye and one diopter increase in the left eye, with a change of ten degrees in the meridian of the left eye.

The first case is one in which the astigmatism developed during the stage of rapid growth of the body. It seems reasonable to me that we might expect some change in the shape or length of the eye, as occurs in other organs of the body during the period of rapid growth. It is the age when myopia does develop and increase.

It will be noted that both the cases I have reported are cases of myopic astigmatism. The one reported by Dr. Henderson changed from emmetropia to myopic astigmatism.

One point naturally comes in here for consideration, i. e., can we say to our patients under 40 years of age that no change will be required in their glasses until presbyopia becomes manifest? With me, and I presume it has been the experience of others, not a little of my refractive work has been the measurement of eyes that have already been measured by other physicians. In not a few cases I have found that the glasses ordered for the patients were not suitable. They may have been of the proper focus at the time ordered and the eyes have changed in the meantime. Hence it becomes us to be on our guard to avoid criticising a brother practitioner's work, when our findings do not correspond.

It is a question as to what proportion of the cases I have seen, that were not wearing proper glasses, was due to improper correction and what proportion due to changes in the eyes. I know some physicians will hold that the errors in the class of cases I have reported were not corrected in full at first. I admit such mistakes are made, and I presume I have made some of them. We have cases of amblyopia, in which it is quite impossible to be positive of the accuracy

of our correction, even with all the modern methods and appliances.

If, with this brief presentation of the subject, we may have a free discussion of it by the members who have had an extensive experience in refractive work, and their views placed on record, my object in bringing this subject for your consideration will have been attained.

Steele Block, 16th and Stout Sts.

DISCUSSION.

Dr. F. C. Horz, Chicago—The closing remark of the Doctor alludes to cases we have all seen that have gone through the hands of our colleagues, have been refracted by them, and in which we find that our examination would not confirm or sustain the prescription for glasses which the patient received at the former examination. If the eyes have changed in a considerable number of these cases, it should certainly put us on our guard and keep our mouths shut as to what we think of the glasses the patient has. When I read the title of the paper in the preliminary program it interested me particularly, because just at that time an old patient of mine had returned, showing a decided change in the astigmatism. I therefore went over the records of this year and last in my case-book to get an idea how many cases I might fish out that had returned. The trouble is that a great many patients who consult us, if the glasses become unsatisfactory in time, go to some one else for the second examination, and we never know whether their astigmatism has changed or not. I was surprised, though, in such short space of time, a few months more than a year, to come across a half dozen cases that I had examined years before, and in which a re-examination now showed a marked and interesting change in the astigmatic condition. The examination of the past had been made under mydriasis and the re-examination was made under the same conditions. If in the first instance atropin had been used, I used the same in the re-examination, and if at first it was homatropin, I used the same drug again, so the conditions of the examinations were absolutely the same, and if the results differed, it must have been due to change in the eye during the intervals. In one of my cases examined in 1887 each eye then needed - .75 D. cyl., and in 1897 each eye needed - 1.50 D. cyl. A second case shows a change from emmetropia to a high degree of myopic astigmatism. In 1887 the patient, then 20 years of age, after recovery from an attack of iritis and while the eyes were still under the full effect of a mydriatic, showed emmetropia. In 1889 the left eye showed a myopia of 6 D. with astigmatism of - 3.50 D. cyl. ax. 15. In the spring of this year the condition has changed to a myopia of 7.50 D. in one eye, with - 5. D. cyl. ax. 15.

A third case shows in 1890, right eye required + 3. D. cyl. In 1893 it required a - 1. D. s. with + 4. D. cyl., and in 1897 - 2. D. s. with + 5. D. cyl., showing that while one meridian retained its hypermetropia, the other became myopic. Then I came across three cases in which hypermetropic astigmatism had increased. This is most remarkable, because we know from statistics that if the eye is changed during school life, the tendency is to develop myopic conditions.

Dr. G. C. SAVAGE, Nashville—On my arrival I told Dr. Bane that he had made but one omission, and that was in leaving out the ophthalmometric measurements. That these changes take place no one can deny, but where it takes place is a matter undecided. In the first place allow me to say there is one of my patients who has never been able to get away from me, that is myself. In Philadelphia where they do refraction work to perfection, I was given a - .50 D. cyl. and a little later I found I was not fully corrected until I used a - 1.50 D. cyl. axis vertical. A little later I found still more, and nine years ago the first ophthalmometer I ever saw, in the office of Dr. Swan N. Bur-

nett, showed $-2.25D$ cyl. in each eye. I am wearing that glass to the present time. What does this mean? I believe the radiating fibers of the ciliary body help to correct the astigmatism, and that they are not under the control of the third nerve. I do not believe they are reached by the mydriatics, and hence it is impossible to control them except by teasing out the astigmatism. A slight contraction of the meridional fibers will tilt the lens one way and those of another portion will tilt it another direction, and astigmatism is increased at right angles to this tilting. I think my case and others which I have observed, show that we have seldom, if ever, any increase of the corneal astigmatism, but that the increase is due to tilting of the lens, and we must tease this out until we get the maximum of astigmatism, when a given lens will serve its purpose forever.

Dr. H. V. WÜRDEMAN, Milwaukee—I wish to mention one factor in the correction of astigmatism that has not been spoken of, that is lid pressure. We all know that intense blepharospasm or a chalazion will produce astigmatism, which after the spasm or pressure has been relieved, passes away. Now there are some patients with astigmatism against the rule, who are in the habit of correcting it in part by lid pressure. We totally correct the astigmatism as it appears and we find the patients relieved, but if we examine them later we find a recurrence of astigmatism, the elasticity of the cornea having asserted itself, and instead of, say 2 diopters of corneal astigmatism, we find 3 or $3\frac{1}{2}$ to correct.

Dr. T. A. GRIGG, Butte, Mont.—I have listened to these papers with much interest and can not wholly agree with most of the speakers on the subject. My opinion is that the astigmatism that has not been fully corrected. It was there, and the mydriatic, homatropin or atropin has not been used in sufficient quantity, or not long enough to overcome the defect. Again, in young people the elasticity of the lens is great, and you will often see those people that have a considerable amount of astigmatism, as much as 2 or 3 diopters, who before you used any mydriatic in the eye could possibly read % quite distinctly and who after you have used the mydriatic could not read more than about half that amount, and at the same time you would not have fully overcome the ciliary muscle. One of the gentlemen spoke of using tablets of cocain and homatropin. It has been my experience in using cocain that it produces an astigmatism itself, that it acts upon the corneal epithelium and gives, as it were, a false astigmatism. I know that in old people past 45, where I was timid about using atropin and used cocain, so as not to produce a glaucomatous condition, I have produced an irregular astigmatism, which I could not bring out later on when I tried again to refract the eyes. I think if the physicians present today will watch their cases where they use cocain to dilate the pupil and overcome the action of the ciliary muscle, and will later on refract these eyes again they will note entirely different results. I remember an aphorism I read in a little book, I think written by Dr. Fox of Philadelphia, which is that astigmatism is an invisible and subtle child of the devil, whose hiding place is the ciliary muscle of the eye, and he is said to hate atropia as his father hates holy water.

Dr. MINNEY—I have noted this difficulty ever since I began to practice ophthalmology, and I supposed it was due to two causes, first, because I had not the ability to fit these patients, and, second, because some changes did take place. I do not know why these changes can not take place, and I think we must believe that they do.

Dr. J. L. THOMPSON, Indianapolis—The gentleman is correct about that, and I am not surprised at anything that can take place in the eye. It is true that if I took one out I should be surprised to see it grow in again, but nothing short of that would astonish me. I have seen cases that I examined years ago and gave them plus cylinders, and when examined again ten or fifteen years later, I found that they had changed from

positive to negative astigmatism. You will see some gentlemen writing today that they can calculate, in cases of myopia where they propose to remove the lens, what glasses the patient will have to wear afterward. They know nothing about it. One can not make such mathematical calculations for the human eye.

Dr. EDWARD JACKSON, Denver—The subject brought before us is one well worthy of study, and when we have accumulated enough definite facts bearing upon it, we shall know a great deal more about the changes that lead to astigmatism, and the ways of influencing it aside from correction by glasses. In 1890 I reported to the American Ophthalmological Society, a series of 18 cases of increase in hypermetropic astigmatism. I was interested in the subject first by my own case, which was similar to that of Dr. Savage. There was no question, I think, as to the refraction at the first measurement. My eyes were measured repeatedly in experimenting with different mydriatics, requiring $.50D$ cyl. for one eye and $.75D$ cyl. for the other. After two or three years of hard eye work with a microscope, etc., I found something wrong with my glasses, and an examination then showed that the astigmatism had increased to $1.25D$ in each eye. Two or three years later they showed $1.75D$ in one eye and $2D$ in the other. That was over eight years ago, and it has remained entirely constant since that time, though I have been examined within the last year.

My earlier histories of such cases are not good, because I did not then use the ophthalmometer in all cases. But I can say now that these changes in astigmatism do not depend in all cases upon change in the cornea, nor are they in all cases independent of this. Perhaps the ophthalmometer will be of some value in practice for this purpose. I hold it to be of very little practical value unless it will be in this way, to follow up and detect the changes in the cornea. Astigmatism against the rule is more apt to arise after the age of fifty than before, which looks as if these cases were dependent upon some change in the shape of the lens, or its position, I think likely the latter.

Dr. H. B. YOUNG, Burlington—With one exception I believe I am a doubting Thomas in regard to this change and I would like to remind Drs. Savage and Jackson that in their arguments I think they proved the opposite of what they intended. They stated that when they got to a certain point their astigmatism remained steady. If the conditions were changing, why did they stop eight or nine years ago.

It has been my fortune to examine quite a number of cases of what is popularly known as second sight; the refusal of glasses by people of 60 or 70 years of age, who have been using glasses previously. In examining nearly all of those cases I have found beginning opacity in the periphery of the lens and all showed a development of astigmatism against the rule. We find an astigmatism of this kind after operating upon cataract and the question arises in my mind whether that is purely an aphakic astigmatism that we see after cataract operation.

Dr. C. E. NORTON, Lewiston, Me.—Some years ago I had a case that bears on this point and I am sorry that I can not at present give the exact facts concerning it. It was a young man who came to me with a difficult error of refraction and on examination I gave glasses that were satisfactory for some time. He came to my office later with a chalazion of the lid, not giving him any pain, but he was prepared to find his sight in that eye defective and thought he could not see distinctly with the old glasses I had given him. In my first examination I had used the ophthalmometer and had a record of the findings. In the second examination, in which I also used the ophthalmometer, I found that there had been a change in the corneal astigmatism, but having about that time read of a similar case I thought it possible that this might be due to pressure of the tumor and suggested that we operate on the lid before making any change in the glasses. This was done, and in the course of a few weeks his vision had improved and the

ophthalmometer showed the same record it did in the first examination. I do not remember where I read the account of the tumor in the lid that changed the corneal astigmatism.

I think this question opens a field for investigation and I do believe that in the ophthalmometer we have an instrument of great accuracy in estimating the corneal astigmatism and I think this study of Dr. Jackson's will be extremely interesting. I differ with him as to the practical value of the ophthalmometer in office work for I use it constantly and feel that it is one of the most important instruments that I have. It is well known that many of the New York oculists have much faith in it, while the Philadelphia men, as a rule, have none.

Dr. HENRY GRADLE, Chicago—I would like to quote the most extreme change in the degree of astigmatism I have witnessed. A girl of seventeen years, examined in 1892, showed a myopic astigmatism of 1.50 D cyl. ax. 180. The tests were so decisive and the vision so perfect ($2\frac{1}{2}\%$ corrected) that no mydriatic was used and the patient was fully satisfied with the glasses. She returned in 1894, stating that the old complaint had returned, but she had been free from discomfort for four years. I found now 4.50 D cyl. with the rule and with the best correction scarcely more than $2\frac{1}{4}\%$ vision. Under a mydriatic the astigmatism remained the same, but 1 D of hypermetropia in the opposite meridian was brought out, making the refraction now=Sph. +1 with Cyl. -4.5, axis horizontal.

I have seen two instances where astigmatism had been produced by the pressure of a chalazion and where the subjective findings changed completely within two weeks after removal of the tumor.

Dr. BANE—The facts that I wanted have been brought out. Certainly the remarks that have been made prove that astigmatism does change, both in amount and its meridian. As to the latent astigmatism theory, I think it is hardly tenable. The gentlemen who have spoken have nearly all used mydriatics to an extent which would have brought it out if it were present.

THE CONSERVATIVE TREATMENT OF EPIPHORA AND AFFECTIONS OF THE LACHRYMAL APPARATUS.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY S. D. RISLEY, M.D.
PHILADELPHIA.

It is the purpose of this paper to urge the importance and value of conservatism in the treatment of lachrymal obstruction. The ophthalmic surgeon meets with no more numerous, annoying or persistent class of affections than those involving the lachrymal apparatus, especially that part constituting the drainage system. Pathologic processes affecting any portion of this delicate apparatus lead to a partial or complete closure of its lumen and thus obstruct the flow of tears from the eye into the nose. The symptoms of lachrymal retention and the secondary consequences are too well known to require any extensive recital. It should however be borne in mind that the ocular affections which often precede or cause the disease of the lachrymal passages, become chronic and persist against all measures of treatment by virtue of the evil results of the retained tears, thus constituting a vicious circle, to be broken only by the judicious treatment of the lachrymal obstruction. The retention of tears may be partial or complete, bearing more or less definite relation to the degree of obstruction in the drainage system. Partial closure of some portion of the duct may exist and cause no notable ob-

struction to the outflow of the tears except under circumstances which increase the requirements by producing excessive secretion, e.g. when the emotions are excited or on exposure to strong winds or irritants, or by the still further contraction of the tissues caused by exposure to cold. These minor cases of partial retention are doubtless frequently overlooked, and the eye treated by washes and astringents directed to the cure of mild forms of chronic conjunctivitis caused by the retained tears. The obstruction may be at any part of the drainage system; e.g. at the puncta, one or both, in the canaliculi, lachrymal sac, or nasal duct, or, by a closure of the duct at its nasal orifice from swelling of the tissues overlying the inferior turbinated bones.

A very frequent cause of partial retention is a more or less complete obliteration of the inferior punctum, or a narrowing of the lumen of the canaliculus, the sac and nasal duct being normally patulous. In these cases it is usually necessary only to dilate the punctum, or punctum and canaliculus by a delicate needle probe, a single dilation often effecting a cure. It should be done without sufficient violence to set up inflammatory reaction, which might increase instead of relieving the contraction. If the trouble is in the punctum alone it is occasionally necessary to cut its sphincter muscle, and thus to convert it into a slit. Where the obstruction is confined to the punctum or canaliculus it is obviously unnecessary to subject the patient to the annoyance and pain of probing the nasal duct. The absence of obstruction in the sac or nasal duct can be determined by the ready flow of a stream of warm boric acid, or salt solution, injected through the dilated punctum or canaliculus, by inserting the fine point of a suitable syringe. If the solution flows freely into the nose it is obvious that the sac and nasal duct are patulous, but should it flow backward into the conjunctival sac through the upper canaliculus it is equally plain that these passages are occluded and some estimate as to the locality of the obstruction may be made by the quantity of fluid injected before the return current is observed. A fine bulbous probe may then be inserted, without slitting the canaliculus, in order to explore the passage. If it passes through the duct readily, meeting with obstruction only at the nasal orifice, the nasal passages should then be carefully studied and any existing disease properly treated. A few cases of lachrymal retention need no other treatment than to free the nasal end of the duct from existing synechia between the inferior turbinate and the floor of the nose, or from hypertrophy of the mucous membrane surrounding its orifice. My attention was first called to the importance of nasal disease in causing lachrymal obstruction in 1879. I had treated a gentleman for many weeks quite unsuccessfully by probing the duct, after slitting the canaliculus. He called my attention to some discomfort he was suffering in the nostril of the same side. A superficial ulcer was discovered on the floor of the nose which spread itself into the region of exit of the nasal duct. After careful cleansing this was painted with a solution of nitrate of silver. He returned on the second day with the ulcer quite healed, and his lachrymal retention cured. In some cases therefore it is important to explore the nostril before adopting radical measures addressed directly to the lachrymal apparatus. In my experience these cases of nasal disease furnish a relatively small percentage of the cases of the retention of the tears but are still sufficiently common to

suggest a routine study of the nose in all cases. The obstruction exists however, in the vast majority of cases, in some portion of the nasal duct and usually at or near its upper end. Considerable variety is presented both as to the degree of obstruction presented to the flow of the tears, and the nature and extent of the constriction in the duct. These variations manifest themselves in the symptoms and history of the affection, and to the prudent surgeon suggest widely differing methods of treatment. In a comparatively limited group of patients I have found a thin paper-like stricture situated at the bottom of the lachrymal sac, and spreading itself like a membrane over the orifice of the bony nasal duct, effectually preventing the exit of the tears. In these cases a fine Bowman's probe can be forced through the membrane, and the rent thus made may be dilated afterward by successively larger probes, but the stretching or dilation affords only temporary relief since the membrane very soon contracts again and the obstruction is once more complete, the membrane becoming thicker, more dense and unyielding with each repetition of the procedure. This group of patients furnish the only examples where cutting operations are justifiable or efficient for permanent relief. A probe-pointed knife, much after the pattern of the Webber's canaliculus knife, but with a longer shank, which should be ductile, is suitable for cutting the membrane. Dr. H. C. Thomas of Philadelphia, exhibited such a knife to the Section at its Detroit meeting in 1892. Its probe point can be pressed through the constricting membrane and the knife made to follow, enlarging the opening by incision. By slightly turning the instrument on its long axis, a second incision can be made on withdrawing it. The process can be repeated in different diameters of the duct as often as desired. After the blood clots are washed away, a Bowman's probe sufficiently large to fit the lumen of the duct snugly should be inserted and allowed to remain for half an hour. When withdrawn the duct should be washed again with a boric acid solution. On the second day the probe may again be introduced and allowed to remain for half an hour. This will in some instances suffice to effect a cure, but the duct should be subjected to occasional inspection by syringing or gentle probing, in order to anticipate any tendency to recurrence. This class of cases have however, in my experience been comparatively rare.

The cases where the obstruction is found in some portion of the bony duct have been far more numerous than any other variety, the next in frequency being located at the inferior punctum or in the canaliculus. Statistics on this point however, as far as I know, are wanting. The obstruction in the nasal duct is as a rule due to a more or less extended narrowing of the lumen of the duct by a thickening of the soft tissues which line its bony walls. The readiness with which, in some individuals, the duct may be entirely closed or its caliber so diminished as to obstruct the flow of tears, will be made manifest by any study of numerous dried or frozen preparations of the bony duct. Such a study reveals great variety in the size and contour of its walls. The irregularities in the surface of the osseous walls of the nasal duct in many individuals obviously render them especially liable to its ready obstruction from even a slight thickening of the lining membrane. While the duct may be large and even abnormally capacious in some parts of its course, forming lake-like expansions, in

other portions bony projections or irregularities of surface contract its diameters to a narrow channel or a mere slit; or produce a tortuosity of its course which explains the difficulty which is often experienced in passing a probe into the nose, even in cases where fluids pass quite readily. The probability of these anatomic peculiarities being present in any case of lachrymal retention should always be borne in mind, and in the adoption of methods of treatment should suggest conservatism in surgical interference. Any violent effort to force a probe through the canal in these cases may very readily cause a traumatism far more serious in its results than the disease we are attempting to cure. If, for example, the canal is tortuous, or if ledges of bone project from its walls the end of the probe is liable to infringe upon the bony surface, and attempts to force it onward are likely to cause a tear in the lining membrane which will allow the probe to pass between the soft tissues and the bone. If these tissues are already the subject of chronic inflammation and thickening, the acute exacerbation caused by the traumatism, and the accumulation of coagulated blood between the bone and mucous membrane lead to increased thickening and a still more complete retention of the tears above the obstruction. I believe that more or less serious injury is often done in this way by converting comparatively simple cases of retention into practically incurable obstruction of the duct. After this accident the most careful manipulation is required in order to prevent its recurrence at every subsequent attempt to probe the duct. When it occurs the grating of the probe against the bone and the subsequent bleeding are sufficient evidence of the accident and no further attempt to pass the probe should be made until the wound has had sufficient time to heal. The duct should, however, be carefully and repeatedly cleansed by warm aseptic and slightly astringent solutions. In long-standing cases the lining membranes of the duct often seem not only thickened, but spongy and friable, so that it is extremely liable to be torn or perforated, especially if too small probes are employed. The size of the probe to be selected is of much importance. The great variation in the size of the osseous duct in different subjects suggests caution at this point. If too large a probe is forced through the passage, not only may the inflamed and friable membranes covering its wall be torn away and driven before the end of the probe, but the fragile projections of bone which encroach upon its lumen may be fractured. This certainly can be necessary in very few instances, if ever, and the results following such violence may be of more serious moment than the original disease. That this accident is probable as the result of using too large probes I demonstrated before the Medical Society of the State of Pennsylvania in 1878. In a group of skulls sent to me by the late Prof. Harrison Allen, there were two in which the nasal ducts were too small to admit the smallest of a series of large aluminum probes, and not one of them would admit the largest probe of the series without a fracture. It may be argued that such a fracture need not be a serious contingent or even that such an enlargement of the bony duct might not be necessary to effect a cure. I can conceive of cases of total obstruction where this might be preferable to obliteration of the lachrymal sac, or to consignment of the patient to life-long stillicidium with the ever-present liability to recurring attacks of acute blennorrhoea, or of phlegmon of the sac; but under all ordinary circum-

stances such violence should certainly be avoided.

The violent methods too frequently pursued in the surgical treatment of lachrymal obstruction, as in cutting operations and in the forcible passing of very large or conical probes, seems to the writer to be based upon a misconception of the physiologic function of the parts. While the function of the apparatus is to drain the eye of tears, the duct is not in health an open drain pipe through which the tears flow by gravity, but is a delicate pump, the pumping force being the act of winking. This delicate function is disturbed or destroyed by any operation, which opens widely the inferior and common canaliculus up to the entrance into the sac, and converts the nasal duct into a permanently broad, open tube. It gives ready access for air from the nasal passages to the eye so that in the act of blowing the nose the contents of the duct are forced back into the conjunctival sac. The design should be to cause the disappearance by absorption of the thickened or hypertrophied soft tissues which produce the obstruction to the normal exit of the tears. In comparatively acute cases, that is to say, when the obstruction is of recent origin the existing pathologic conditions may frequently be cured by the same methods adopted in the treatment of analogous conditions of the conjunctiva, viz., by the use of aseptic washes and mild astringents. After dilating the punctum the fine nozzle of a syringe may be introduced and a few drops of a 4 per cent. solution of cocain introduced into the sac, and if possible, forced through the nasal duct. If the latter is not possible at first it may become so in a few moments by virtue of the shrinking of the swollen and congested tissues through the action of cocain. The sac and duct may then be thoroughly washed with a warm saturated solution of boracic acid, or other wash, e. g. an alkalin antiseptic solution, Dobell's solution, etc. After this has been accomplished a few drops of a solution of sulphate of zinc gr. ii to f3i or a silver nitrate solution gr. i to f3i may be introduced. The patient should then receive a wash to be employed at home, and be instructed to instill it freely into the conjunctival sac, after emptying the lachrymal sac by pressure, and then by rapidly winking, pump it into the sac and again empty it by pressure. This can be repeated again and again, three or four times daily between the office visits. I have many times, in cases of brief duration, succeeded in effecting a cure by this simple means and have thus avoided any mutilation of the apparatus and caused no pain to my patient. A few drops of a solution of cocain prevents pain even from any necessary dilatation of the punctum. In chronic cases, however, attended with more or less blennorrhoea of the lachrymal sac, with much thickening and sponginess of its walls, and showing well-marked and rigid stricture of the nasal duct, the treatment required is quite different and much more exacting and tedious.

In my experience, however, cutting operations are followed by only temporary relief and a subsequent contraction which makes the stricture worse than before, unless a style is introduced and worn until the tube is converted into a patulous drain pipe, through the complete atrophy and change of the tissue by pressure. This I think should be avoided, and fortunately in the majority of cases is not necessary. In a few instances I have found this the only recourse, but such cases are certainly rare.

The object in view in cases of closure through

hypertrophy of the lining tissues of the duct is to cause the absorption of the thickened tissue and at the same time to remove the inflammatory conditions which are still present. As long as the duct is closed entirely or partially we have to contend with one of these vicious surgical circles. It is futile to endeavor to cure the inflammation of the conjunctiva, lachrymal sac and duct as long as the tears are retained. It becomes necessary therefore to open the duct so that the tears can flow away. This can be temporarily effected, usually by passing a suitable probe through the duct into the nose. The method devised by Mr. Bowman is the best thus far devised.

A probe sufficiently large to pass snugly through the constricted area should be cautiously passed, after the instillation of a few drops of cocain solution, and allowed to remain twenty to thirty minutes. The patient soon experiences an increasing sense of pressure and throbbing. The attempt to withdraw the probe will usually require more force than was needed for its insertion. The duct should then be flooded with a suitable wash, followed by an astringent. The theory for such treatment is the gradual absorption of the hypertrophy by pressure of the thickened tissue between the probe and the walls of the duct. The absorption is in some instances aided by washing the duct with a weak solution of iodine. This solution can be readily made as needed by dropping Lugol's solution of iodine into distilled water, until it assumes a light wine color. In many patients the treatment may be repeated with benefit on alternate days, while others require longer intervals of rest. That these conservative measures of treatment are successful in the majority of patients I have had abundant opportunity to demonstrate. When success is not reached it will be found that some marked anatomic defect is present in the duct itself; or that the turgidity of the soft tissues is maintained by pressure through anatomic defects or pathologic conditions in the nose; or, that some constitutional vice is present. In such cases treatment must be addressed to these collateral conditions before a cure can be expected.

In a large group of cases the congested state of the lachrymal drainage system seems to depend upon eye strain due to refraction errors, or abnormalities of ocular balance, the turgescence of the membrane lining the duct being common with that of the caruncles, the conjunctiva and the intraocular membranes. I have many times seen the lachrymal retention disappear with the cure of the intraocular conditions by treatment and the use of correcting glasses without any treatment addressed directly to the lachrymal apparatus.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT,
IN RECOGNITION OF THEIR LABORS IN THE SURGERY
OF THE PERINEUM.

BY BYRON ROBINSON, B.S., M.D.
CHICAGO, ILL.

Continued from page 650.

In 1887 Dr. Hadra of Texas contributed some valuable articles on the subject of perineorrhaphy. He suggested vivisection of the posterior vaginal wall for colporrhaphy, as is done in anterior colporrhaphy. Since 1880, the laborers in the field are legion. Gradually the operation of perineorrhaphy was modified

from Paré, Baker-Brown, Dieffenbach, Langenbeck and Simon to Tait and Emmet. The modification consisted in denuding not only the perineal tears, but also denuding higher up in the posterior vaginal wall. Hildebrandt especially carried the denudation well up into the posterior vaginal wall.

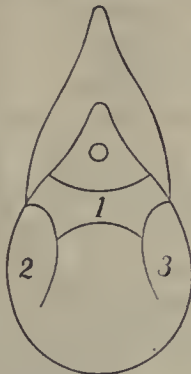


Fig. 18A.—Emmet's operation (elytrorrhaphy posterior) for prolapse; 1 and 2 show the lines of union of denuded surfaces in the vaginal sulci on each side of the vaginal column, 3, which still remains.

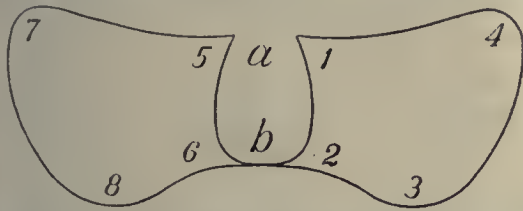


Fig. 18B.—Staude's operation (elytrorrhaphy posterior) for prolapse; 1, 2, 3, 4, and 5, 6, 7, 8, represent the denuded vaginal sulci; a, b, shows the intact column, which is utilized in coaptation and fixation of the denuded surfaces. The principle of saving and utilizing the column is the same as in Martin's and Emmet's operation.

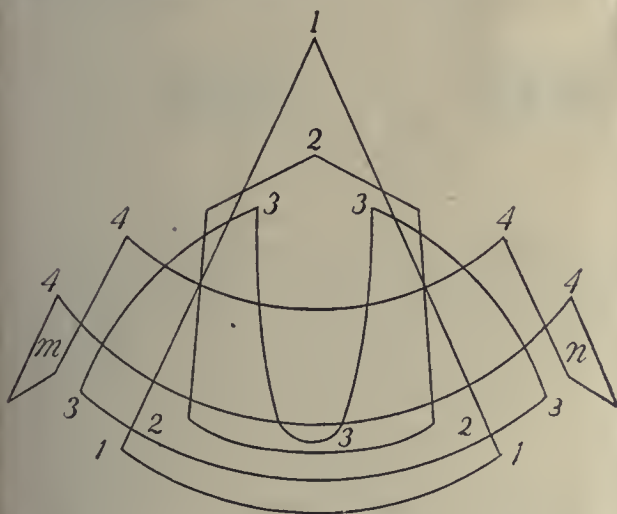


Fig. 18C.—Various shapes of the denudation in posterior elytrorrhaphy, represented by superimposed diagrams: 1, 1, 1, Hegar's; 2, 2, 2, Simon's; 3, 3, 3, Bischoff's; 4, 4, 4 m, n, Winckel's. Observe that Bischoff saves the column.

As regards suture material, Sims, Thomas, Emmet and others worked out the application of metallic wire to plastic labors on the perineum during the past thirty years. The modern tendency is to use silk worm gut as a non-absorbable suture. This may be left weeks in a wound, and acts as a splint in coapting the surfaces. It is easy to remove. To Dr. T. A. Emmet is due the credit of introducing a method of perineorrhaphy which, until recently, was the one generally practiced in America. In 1883 Dr. Emmet published

a new method, or rather a modification of his old operation. Dr. Emmet denudes the sulci on each side of the vagina and extends the perineum forward. His operation is intended to repair perineal fascia and muscles. Dr. Emmet holds that loss of support following laceration is not due to injury of the perineal body. The loss of support after childbirth, he claims, is due to rupture of perineal muscles and fascia. Dr. Emmet's operation is difficult to make clear by description, but it consists in lateral denudation wholly within the vagina to such an extent that when the sutures introduced are drawn tight, the excess or slack in the posterior vaginal wall disappears. The ostium vaginae is not interfered with by any special denudation. The claim of his operation is that discomfort disappears immediately after, and also that the posterior vaginal wall is brought in proper position and relation to the anterior wall, as it is in the normal condition. The view contained in the surgical procedure is that the perineal body is insignificant in support, and that laceration of it alone impairs but little the integrity of the genital supports. But the tearing or excessive stretching of the perineal muscles and fascia at their attachments to the genitals quickly disturbs the delicate balance of the pelvic organs. There is one point against Dr. Emmet's operation, and that is the relatively blind method of introducing the higher sutures. In other words, the deep layers of the lacerated pelvic fascia may not be included in the sutures with any degree of certainty. Dr. Gillwly added the idea that Dr. Emmet's operation would be improved by denuding the posterior vaginal wall a considerable distance and then continuing the denudation well up into the posterior vaginal sulci. This method, however, sacrifices a larger amount of posterior vaginal wall.

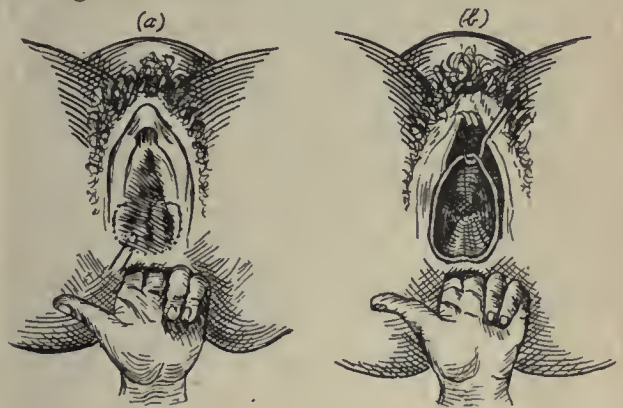


Fig. 19 a and b.—Dr. Jenks' method (flap) of perineorrhaphy. The flap-splitting is executed with two fingers in the rectum, and a scalpel. In a the flap is marked out by a dotted line; in b the flap is completed, ready for suturing.

About 1872 Mr. Lawson Tait of Birmingham, England, began to introduce a method of perineorrhaphy known as the flap method. It differed from all others in that he used elbow scissors and introduced the very deep sutures without penetrating the skin or mucous membrane. It involved no loss of tissue. The direction for doing the Tait operation is to resplit the old cicatrix. It is modified according to the condition of the case, as one may produce anterior and posterior cuts. Tait's flap perineorrhaphy is now quite generally practiced. I have not attempted to give all known historic methods of perineorrhaphy, but simply the chief ones, out of which has been built the modern operation.

GENERAL INDICATIONS FOR PERINEORRHAPHY.

1. To restore rectal and vaginal functions.
2. To restore pelvic fasciæ and muscles. Normal fascia is required for normal circulation.
3. To restore the normal relation and support of the posterior wall (colporrhaphy posterior). The posterior vaginal wall sustains the anterior vaginal wall and bladder.
4. To provide as much support for the pelvic organs as the restoration of the perineal body will afford.
5. To remove the neurasthenic conditions; to relieve the innumerable nervous associations; in short, to relieve mental and physical disturbances.
6. To repair and check sacropubic hernia.
7. To narrow relaxed pelvic outlet.



Fig. 20.—Method of denudation of vaginal strips, with curved scissors, from one side of the vagina to the other, as suggested by Dr. Skene.

The pelvic floor is closed from behind forward by the pyriformis with its thin, delicate fascia, the firm sacrorectal ligaments, the coccygeus with its moderately strong fascia, the levator ani muscle with its levator ani fascia superior and inferior, a strong double fibrous protective muscular sheath, and also the triangular ligament, a powerful layer of fibrous tissue. The coccygeus with its fascia, the levator ani with its double fascia and the triangular ligament practically constitute the pelvic floor and seem to separate the pelvic cavity from the perineum. These are essential structures in colpoperineorrhaphy. The levator ani fascia (both layers) pass from the side of the pelvis to the viscera, firmly attaching themselves to every pelvic organ, forming the strong, fibrous expansions known as ligaments, which serve to hold the pelvic viscera in definite fixed relations. In perineorrhaphy, success depends on the restoration of these vital supports; a significant anatomic fact in pelvic pathology is that the blood-vessels lie superior to the pelvic fascia and the nerves inferior to it. The blood-vessels which arrive in the perineal region pierce the pelvic fascia and pass chiefly out of the great sacrosclatic notch.

The levator ani fascia, superior and inferior, is an important structure to limit infection. It separates the ischio-rectal fossa from the pelvic cavity proper where so much loose tissue exists. The levator ani fascia is pierced by vessels and nerves, and these vessels and nerves are surrounded by lymphatic sheaths which are a source or path by which the infection may travel from the pelvis to the ischio-rectal fossa, and vice versa. In perineorrhaphy the levator ani fascia, superior and inferior, is incised. The opera-

tion which is performed for the restoration of the perineum exists under different names. It may be termed perineorrhaphy, perineo-vaginal restoration, perineal extension, perineauxesis, or the flap method. However, I think the best name is colpoperineorrhaphy. Colpoperineorrhaphy is an operation to restore the integrity of the supports of the sexual organs. These supports include those of the peritoneum and vaginal sphincter apparatus.

The perineal body is situated between the lower end of the vagina and the rectum. Difference of opinion still prevails as to the utility of the perineal body in the economy of the female genitals, but, from many dissections and considerable work on the subject, I claim the following functions for the perineal body:

1. It sustains the lower ends of the anterior rectal wall and posterior vaginal wall.
2. It supports and directs the discharging end of the vagina forward, aided by the triangular ligaments and levator ani.
3. It supports and directs the discharging end of the rectum backward; the rectum is directed backward by the levator ani muscle.

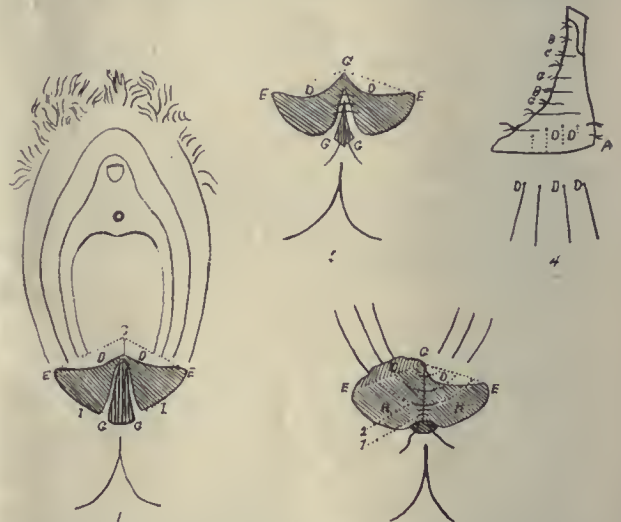


Fig. 21.—(After Pozzi.) LeFort's (1889) method, which is similar to Demarquay's (1864-1875) and Richert's. An incision is made in the vagina at the point C, in the median line down to the rectum; then an incision is made along the line C, D, E; another line, C, G, is carried along the rectal wall, but not into the rectal mucosa; another line joins it by means of E, I, G; this makes a distinct triangle, H (seen in No. 3); the cicatricial tissue is removed from the triangle, H, and also the portion of the vaginal wall, marked D, is seized and dissected from the rectal; the space denuded is D and H (No. 3); the sutures are introduced as shown in Nos. 2 and 3. The disposition of the sutures are noted in No. 4. The operation is a partial flap method, but too complicated for ordinary practice.

4. It not only keeps the discharging ends of the rectum and vagina widely apart, but it gives both a support in a curved direction at their termination, thus affording mechanical advantages for maintaining closure of both apertures and preventing the easy escape of the contents of either canal. The wide divergence of the two canals avoids mingling of the secretions and consequent irritation from decomposition. The backward hook of the rectum and the forward hook of the vagina is an important factor in support, and prevents gaping. The perineum is the skin between anus and vagina. The perineal body consists of skin, fat, muscles, fascia, elastic tissue, and connective tissue. The perineal body as a support in itself for the genital organs has been much overestimated.

5. It serves as the point of union of four muscles: the levator ani, the sphincter ani, the bulbo-caverno-

mus, and the transversus perinei. It serves also as a point of union of the various fasciæ.

6. It acts as a partial support of the pelvic floor.

7. It strengthens a tried point in labor.

8. Laceration of the perineum to any considerable extent destroys the nice balance between anatomic structure and physiologic function in the female genitals.

The object of perineorrhaphy is: To restore partial ruptures; to restore rectal functions after complete ruptures; to prevent prolapse of the pubic segment of the pelvic floor.

The methods of performing perineorrhaphy are: denudation with fixed coaptation, and the flap method. The etiologic factors of lacerations are labor, coitus and trauma. Partial laceration of the perineum may be accompanied by vulvar patency; increased vaginal secretions; irritability of parts; pathologic condition of nerve structure; neuralgic or neurotic conditions induced by long-continued local lesions; descent (distentions) of anterior rectal wall; posterior vaginal wall, and the uterus. Complete laceration of the perineum may be accompanied by vulvar and anal patency; increased vaginal and rectal secretions; incontinence of bowel contents and occasionally of bladder contents; irritability and disease of the surrounding parts from the abnormal secretions; neuralgic and neurosal conditions from changes in nerve structures; melancholia (neurasthenia); relaxation of the displaceable segment of the pelvic floor and consequent prolapse or hernia of the pubic segment. The result may be severe congestions from a disturbance of the fascia which holds the blood-vessels in relation. If the blood-vessels become distorted in their bed, disturbed circulation results.

In discussing the operation for coloperineorrhaphy by Dr. Thomas Addis Emmet and Mr. Lawson Tait I shall consider these both founded on anatomic principles, both practical and successful operations, and both arriving at the same end by different methods. However, since I can accomplish by a flap method exactly what Dr. Emmet accomplishes by denudation I have preferred to follow the flap procedure. I have employed the flap method for over six years, comprising over one hundred operations performed for almost all kinds of perineal laceration and uterine prolapse. In one case the uterus was completely prolapsed for fourteen years. Another case with laceration extending up the rectum the length of the index finger of thirty-four years' standing was operated successfully after three previous denuding operations. A third case was lacerated up the rectum for four inches, of twenty-eight years' standing, and had passed through three unsuccessful operations. One of twenty-seven years' standing, with three-inch rectal laceration, and one very different case of seven years' standing, with several unsuccessful operations by well-known gynecologists were operated on with perfect success. In these cases of long standing, atrophy was so far advanced from limited blood-supply and non-use that it required extensive flaps in order to secure tissue for a perineal body. To show that the perineal body is not significant in uterine support several of those patients continued for over twenty-seven years with laceration several inches up the rectum, with scarcely a symptom of uterine prolapse.

It will be observed from even a superficial experience that the patient should be properly prepared for coloperineorrhaphy. If the patient have a

long, pointed cervix, which acts like a conic wedge being driven downward at every breath or increase of intra-abdominal pressure, it will constantly dilate the vaginal sphincter apparatus and should be amputated. The amputation may produce involution of the uterus. A long, pointed, conical cervix generally has behind it a retroverted uterus which precedes prolapse.

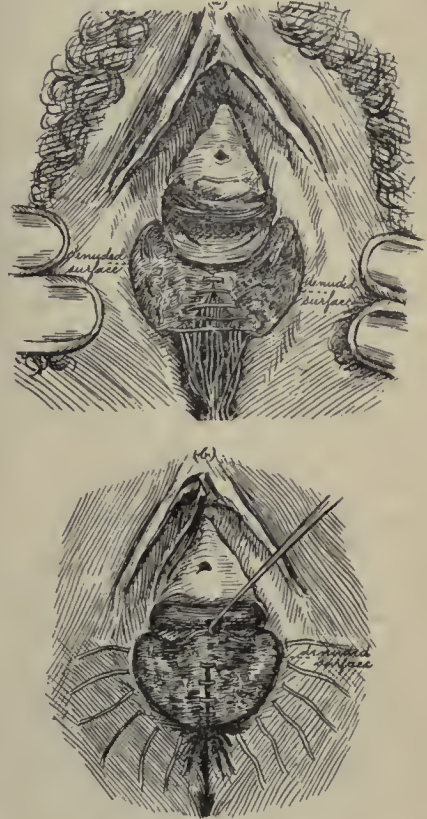


Fig. 22 a and b.—Dr. Skene's method of denudation and suturing the rectum.

Again, if there is a cystocele the patient should be prepared by an anterior colporrhaphy. It may be amputation of the cervix and anterior colporrhaphy can be done at the same sitting and anesthesia as the flap-splitting colpoperineorrhaphy. We frequently perform colporrhaphy and colpoperineorrhaphy at the same time. To require cervical amputation is rather rare, but if there be a retroverted uterus with pointed cervix it should be amputated and turned backward against the sacrum. In short we must imitate nature as much as possible to secure success. All hernia is the same; it is due to the destruction of normal valves and the straightening out of oblique canals. Hence in sacropubic hernia the normal obliquity of the vaginal canal must be restored. Colpoperineorrhaphy restores the posterior vaginal wall and anterior colporrhaphy restores the anterior vaginal wall. This is not often needed if the colpoperineorrhaphy be thoroughly performed. Prolapse is prevented by perineorrhaphy, elytrorrhaphy, epsiorrhaphy (or some abdominal operation). Prolapse may be considered as a downward displacement of the pubic segment of the pelvic floor; the sacral segment of the pelvic floor shares in it by a yielding of some of its parts. There are so many varied opinions as to the etiology of prolapse that one can safely say the subject is not fully settled. In my opinion much credit is due to Drs. Hart and Barbour for their excellent investigations

on the structural anatomy of the pelvic floor. After considerable careful dissection I feel quite sure that many previous views must be changed, but it is hopeful when the closest and most continued students of the pelvic floor come nearly to the same conclusion. The subject of prolapse, I think, should be studied out anatomically and clinically. The field of investigation is still large. As time goes on the uterus itself will get less attention and the pelvic floor more. The subject of relaxation and submucous laceration will be more studied. Relaxation of the whole pelvic floor, due to repeated labors, infectious processes and anatomic lesions will be found to be a large factor in prolapse. Insufficiency of perineal support should not be lost sight of, and the sphincter apparatus of the pelvic floor will be more studied. From dissection one would at once conclude that the levator ani fascia and the triangular ligament were the main supports in the pelvic floor, and the relations of other supports must be considered. Dissection is the only intelligible way to understand the subject. For example, dissection of quite a number of bodies has thoroughly explained, in my mind, the conflicting views of anatomists and gynecologists as to the position of the uterus. As a gynecologist I have examined several thousand women, and I am sure that the uterus leans forward in the normal condition. Repeated examination on the back and while standing will prove that slight anteversion is the normal position of the uterus. Now, the anatomist has often insisted that normally the position of the uterus is in the hollow of the sacrum. I have repeatedly found in the dead subject that the uterus is in the hollow of the sacrum, precisely as the anatomist has described. Both gynecologist and anatomist are correct. In the living woman the normal position of the uterus is that of anteversion. In the dead woman in dorsal decubitus the uterus generally lies in the hollow of the sacrum. In just such a manner arise the differences of opinion relative to prolapse, which can only be cleared up by careful personal anatomic and clinical investigation. A comparison of different causes will soon let in the light.

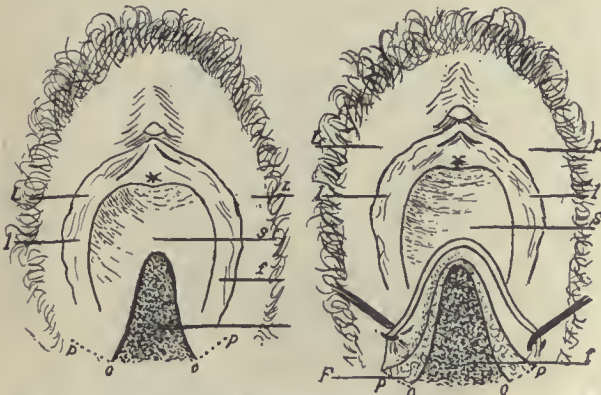


Fig. 23 a and b.—Fritsch-Walzberg method. The figure is according to Pozzi. The laceration extends into the rectum. S, rectovaginal septum; F, rectovaginal septum lacerated; P, perineum. In b the rectovaginal is split.

Though the peritoneal supports of the uterus be deficient they can be put at rest and finally cured by carefully planned operations on the vaginal sphincter apparatus. All primary uterus supports are attached to the neck of the uterus and before the uterus shows such signs of hernia the supports attached to the neck must be definitely elongated. Doubtless the uterine

supports are frequently elongated by infective processes and hence a rest by repairing and fortifying the sphincter vaginal apparatus will result in restoration. Especially is this true in certain forms of retroversion. If the uterus remains in its normal position (i. e., perfectly movable) no retroversion and consequent prolapse will arise. In chronic infection processes the pelvic organs at times swell, soften, become edematous, ending in a form of hypertrophy from static congestion. I have frequently observed this slow repeated process in the clinics.



Fig. 24.—(After Hegar and Kaltenschach.) Bischoff's method of colpoperineorrhaphy. He denudes high up on each side of the posterior median vaginal column, B. B. A. A. This method partially foreshadowed Emmet's operation. Note the butterfly wings, 1, 2, 3, d, d. Bischoff saved the posterior vaginal.

ETIOLOGY OF PROLAPSE.

1. Insufficiency of sphincter apparatus: *a*, levator ani muscle; *b*, triangular ligament (anterior posterior layers and fascia of Colles); *c*, levator ani fascia, superior and inferior; *d*, perineum (composed of levator ani, bulbo-cavernosus, transversus perinei and sphincter ani ischio-perineal ligaments); *e*, vaginal walls; *f*, urethro-vaginal septum; *g*, recto-vaginal septum; *h*, muscular and elastic tissue on lower third of vagina.
2. Insufficiency of peritoneal supports: *a*, utero-sacral ligaments; *b*, round ligaments; *c*, broad ligaments; *d*, vesico-uterine ligaments; *e*, perineum; *f*, elongated cervix.
3. Intra-abdominal pressure in increased or applied in abnormal directions.
4. Relaxation of anterior segment of pelvic floor: *a*, repeated labor; *b*, submucous, concealed facial lacerations; *c*, subinvolution of pelvic floor and organs.
5. Weight of uterus, which affords surface for intra-abdominal pressure.

OPERATIONS FOR PROLAPSE.

1. Tait's flap operation (and extension) of perineum.
2. Perineo-episiorrhaphy.
3. Elytro-perineorrhaphy.
4. Elytrorrhaphy.
5. Amputation of cervix.
6. Shortening of round ligaments (Alexander-Adams).
7. Shortening of broad ligaments.
8. Fixation of the uterus to the abdominal wall (hysteropexy).
9. Schucking's operation.
10. Herrick's operation.
11. Mackenroath's operation.

The operations for prolapse have been as varied as the views of its cases. Operators have attacked the

uterus, vagina, vulva and uterine ligaments to accomplish their purpose. The pioneer idea in prolapse was to close up the vulva so that the uterus could not escape. Thus we have the early episiorrhaphy of Fricke and Kuchler. But surgeons soon saw that simply closing up the vulva was like attempting to board up Mount Vesuvius. The forces at work were not at the vulva but deep in the interior. Then came the operations on the perineum with all their variety, from Guillemeau's successful case through Dieffenbach, Langenbeck, Simon and Sims, to the modern flap operation. Finally to episiorrhaphy and perineorrhaphy were added operations on the wall of the



Fig. 25.—(A. Martin.) Colpoperineorrhaphy posterior according to Hegar; a, is the newly-built perineum.

vagina (colporrhaphy and elytrorrhaphy). Elytrorrhaphy has been quite a successful addition to gynecology, but it is a denudation operation and hence destroys valuable tissue. I have observed that the European operators attempt to save anterior and posterior columns of the vagina. Men see in the column a valuable piece of supporting tissue, and some of them, like Martin, try to save it. Dr. Emmet has

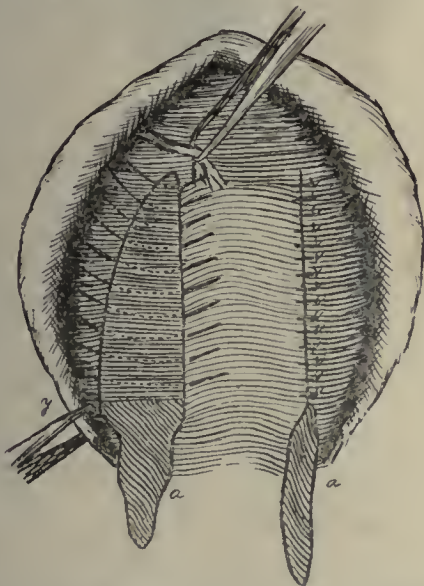


Fig. 26.—Colpoperineorrhaphy after A. Martin. He styles it elytrorrhaphia duplex lateralis. The first step is to resect denude the two vaginal flaps; the left side is freshened and sutured; the right side freshened with the sutured, but not tied. a, a, the denuded vaginal flaps.

worked along the same line, and his operation is one of the most useful of its kind, and if mastered and done thoroughly is successful. In it he has combined the best principles of the denudation method. It saves the columns and denudes the areas of least resistance. His idea of supporting the pelvic floor is

certainly correct. If the flap-splitting method could be made use of in this operation it would be a marked step in advance. The vulvar and vaginal operation of denudation should be superseded by the flap-extension method, which might be called perineo-episiorrhaphy. It is done with no loss of tissue and can be carried right up to the urethra. The amount of flap and consequent barrier of tissue built up at the vulva will depend on the depth of the scissors' clip and the amount of exposed tissue, and also much on the manner of suturing the surfaces to be coapted. The flap-extension method will form one of the best supports for prolapse. The objections against the Alexander-Adams operation are: 1. Unsatisfactory reports and the bias in selecting cases for the operation. 2. In quite a number of bodies the round ligaments can not be found. In many cases which I investigated no muscular ligaments could be discovered until one got inside the internal abdominal ring. 3. No operator can tell in which cases the difficulty will occur. 4. The danger of opening the peritoneum. 5. The round ligaments are insufficient for a main uterine

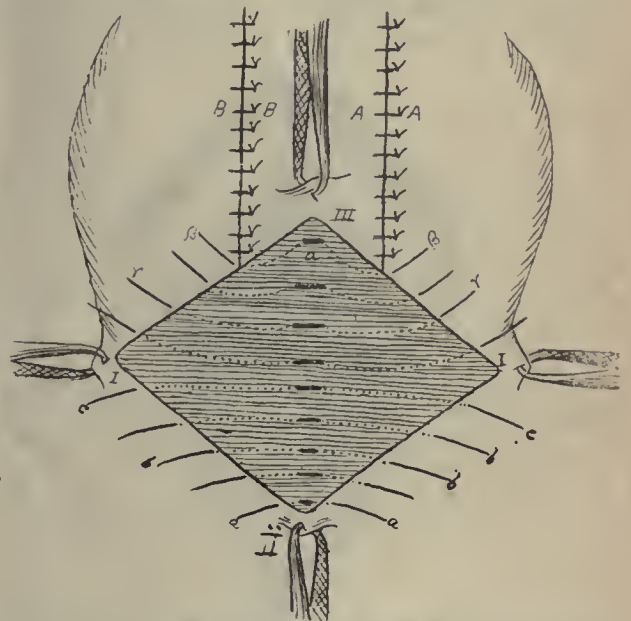


Fig. 27.—Second step in A. Martin's colpoperineorrhaphy. He calls it perineauxesis; a and b show the lines of the vaginal denudations sutured (elytrorrhaphy). The diamond-shaped space, 1, 2, 3, is the perineorrhaphy following the colporrhaphy posterior. The letters indicate the sutures.

support. 6. Hernia may follow the operation. 7. In case of uterine adhesions the ligaments will not raise and support the uterus. Results will not be permanent. The round ligaments will gradually yield to uterine weight, especially if there be an enlarged uterus, as is often the case in prolapse.

Some of the above objections may be modified. The Alexander-Adams operation is an excellent one in selected cases; in retroversion without adhesions it will frequently be of great utility. But it is here mentioned as an accessory operation to colpoperineorrhaphy. Shortening the broad ligaments is of questionable value. Hysteropexy, or the fixation of a movable organ, is against all physiologic principles.

Schucking's operation for prolapse is not yet established, and it seems the bladder would be in great danger of being wounded during the operation. Herick's operation of attaching the cervix to the posterior vaginal wall has made little definite progress. we have not yet learned how to utilize the sacro-

uterine ligaments in prolapse. Such operations are but accessions to colpoperineorrhaphy. The advantages of the flap operation are:

1. The ease and simplicity of its performance.
2. It wastes no tissue; if it fails the patient is no worse off than before the operation, whereas the failure of a denudation operation leaves serious defects.
3. It is the only operation that restores in a natural method the perineal body. The linear cicatrix is split and sutured in the opposite direction. Dr. Emmet's operation unites the perineal wound artificially by uniting tissues not previously involved.
4. It withstands subsequent labors; several of our operations have withstood perfectly subsequent labors. Mr. Tait informed me of the same fact in many of his operations.
5. The sutures are not passed through skin or mucous membrane, and therefore are not so liable to suppurate or produce pain.
6. The certainty of healing.
7. The flap operation secures in the easiest and most convenient manner the widest possible surface for coaptation and healing of the fasciæ and adjacent tissues in the median line for support.



Fig. 28.—Martin's operation with a continuous catgut suture (etagenant). It is a continuous buried suture.

8. The pain after the operation, in my experience, is less than after the denudation operation.
9. Tait's flap operation can be practiced successfully where the repeated denudation operation can not be performed because of loss of tissue and excess of tension.
10. The short time required to do Tait's flap operation minimizes shock.
11. The resulting cicatrix is in its natural location and linear, and will thus cause less peripheral nervous disturbances.
12. The stitches leave no cicatrices and therefore will cause no irritation. One can observe the most practical and best observers trying to save the column and trying to perform denudations in the vaginal sulci. The superiority of Tait's flap operation is that it saves all tissue and builds a natural perineum in a natural location, and thus subserves natural forces

according to nature's original law, and anatomic structures are not much violated by cicatrices and cicatricial contraction.

A fact not generally appreciated is the neurosis, the neurasthenic condition produced by perineal lacerations. The visible wound is not always commensurate with the suffering. There may be a visible wound, an infection atrium, or simply an over-stretching of muscle and fascia, which stretches and traumatizes the peripheral nerves, producing nervous irritation. The fascial planes which hold the blood-vessels in distinct relation, are so damaged that congestion and decongestion of the pelvis frequently arise. Healthy veins should be spiral and uniform in caliber. The laceration of the pelvic fascia allows the veins to straighten out and become irregularly dilated. This straightening out and dilatation produces not only blood and lymph congestion, but peripheral nerve pressure. The frequent pelvic congestions and decongestion from deficient blood-vessel's support, produce conditions which favor the development of pathogenic microbes in the genital mucosa. The gynecologist sees many patients with neurotic phenomena which can only be attributed to perineal lacerations and defects.



Fig. 29.—Martin's operation with buried catgut. The upper part (elytrorrhaphy) posterior colporrhaphy; the lower part (perineauxesis) perineorrhaphy; *b*, the upper end of thread; *c*, lower end of the catgut.

When the sutures are tied the newly formed perineum will look enormously longer, but it will soon shrink to the natural condition. After some experience one can do the flap operation so that on healing the linear cicatrix will resemble the old raphe so closely that one can scarcely tell after six months that an operation has been performed.

For cystocele the flap operation can also be performed. The flap method is alike applicable to partial and complete perineal laceration. The operation is best demonstrated on complete lacerations.

(To be continued.)

Formalin for Insect Bites.—As the subject of insect stings is mentioned in a recent annotation, may we point out that "formalin" (recommended some time ago for mosquito bites in one of the medical journals by a Zanzibar correspondent) is an excellent remedy for the irritation produced by the stings of all insects? The "bite" is touched with the moistened top of the "formalin" bottle, and as soon as it begins to smart the excess is wiped off; relief is almost instantaneous.

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Eleventh Annual Meeting held in Pittsburg, Pa., Sept. 20, 21 and 22, 1898.

FIRST DAY—MORNING SESSION.

The association met in the assembly hall of the Monongahela House and was called to order by the president, Dr. CHARLES A. L. REED of Cincinnati, Ohio, at 10 A. M.

Dr. JOHN MILTON DUFF of Pittsburg welcomed the association on behalf of the local medical profession. Lieutenant-Governor WALTER LYON followed with a brief but very eloquent address of welcome on behalf of the citizens of Pittsburg and of the State. President REED, in behalf of the association, responded to these remarks of welcome in a very concise but graceful speech.

Following the preliminary exercises came the first paper of the scientific session, by Dr. FREDERICK BLUME of Allegheny, Pa., entitled

SOME OF THE COMPLICATIONS FOLLOWING VAGINAL HYSTEROSALPINGO OOPHORECTOMY IN PELVIC SUPPURATION; WITH REMARKS ON THE OBJECTIONS TO THIS OPERATION.

He said a perusal of the literature of the past few years proved that vaginal hysterectomy had made its way here and abroad. Its condemnation upon therapeutic grounds had decidedly diminished. Its advantages were too plain to permit of being longer ignored. Men who, in the beginning, strongly objected or opposed this mutilating operation, as some were fond of styling it, had changed their opinions. Guided by the experience of others, they had adopted this method and confirmed the assertions of its advocates that it was a conservative operation in the broadest sense of the word—a procedure which, though sacrificing the uterus, conserved the life of the patient even under circumstances where the suprapubic route would mean certain death. The propriety of removing the uterus in suppurative disease of the appendages had been questioned ever since Péan introduced vaginal hysterectomy. Briefly stated, the chief objections were: 1, the uterus was not a useless organ after the ablation of the appendages, and should not be sacrificed unless seriously diseased; 2, vaginal hysterectomy was an incomplete procedure, followed by serious complication and was not curative. The disposition to preserve the uterus during the child-bearing age in women with healthy tubes and ovaries, or in unilateral suppurative pelvic disease, could well be understood, but why this organ should not be removed as the initial step of a life-saving operation, when the ablation of both appendages became a necessity, was beyond comprehension. The assertion that the uterus without the appendages was still an important organ, that its functions had not ceased with the artificial induction of the menopause, must be rejected as untenable in the light of present knowledge. The arguments that after the extirpation of the uterus the nervous phenomena were more pronounced than when the appendages were left alone, had strongly influenced many surgeons against vaginal hysterectomy. Careful investigation, however, had shown that these arguments could not be verified. Mainzer, in a report of 200 vaginal hysterectomies for chronic inflammation of the adnexæ, performed in Landau's clinic, had arrived at the conclusion that there is less disturbance of the nervous system after the radical operation than after salpingo-oophorectomy alone. He further states that the age of the patient bore no relation to the presence or absence of these nervous symptoms. Dr. Blume does not confirm the view that the removal of the uterus increases the nervous disturbances incidental to the menopause, and he is inclined to believe that this view is based upon the complaints of neurotic women. As to the sexual passion, his patients, with but one exception, state that they have as much sexual appetite now as at any time before operation. Two of them, young widows, who married a year after the operation, informed him repeatedly that they were more passionate and enjoyed sexual intercourse more than ever. The mortality of vaginal hysterectomy was considerably less than that of the abdominal operation. There was, however, a diversity of opinion as to the ultimate results of the vaginal procedure. The essayist does not resort to the vaginal method in those cases in which there is a possibility of saving one tube and ovary, i. e., in cases of unilateral suppuration even when due to gonorrhœa. He is not yet convinced that both appendages must be sacrificed, far less the uterus, when gonorrhœal infection is limited to one tube and ovary. His personal experience with vaginal hysterectomy for pelvic suppuration is limited to forty-two

cases operated during the years 1895 to September, 1898. This series, though small in number, was quite interesting on account of the extent and the gravity of the pathologic changes. Of the forty-two patients, eighteen belonged to that desperate class which, if treated by the abdominal route, were either left unfinished or, according to the statements of prominent operators, had a death rate of 25 to 30 per cent. in the hands of the most skillful surgeons. The pelvic organs were agglutinated into one mass and could not be distinguished by vaginal or rectal examination. In some instances these masses reached half way to the umbilicus, while in others the peritoneal cavity was less involved and they extended downward into the vagina, pushing the uterus against the symphysis pubis and compressing the rectum to such an extent that an ordinary rectal tube could not be passed without difficulty. The lesions of the remaining twenty-four patients were not quite so extensive, yet in every instance both appendages were so far involved that a conservative operation was out of question. Complications occurred in three cases.

Dr. JOSEPH PRICE of Philadelphia said that the sexual appetite of women, alluded to by the essayist, following a variety of operative procedures, was in many instances improved rather than impaired. It was rare for a woman to complain of impaired sexual appetite after a supravaginal hysterectomy. Age, however, should be considered in discussing the nervous phenomena incident to a normal or precipitate menopause. He advocates the abdominal route, saying that the vaginal method was an incomplete one. The latter method favored bowel obstruction. Of ten vaginal hysterectomies performed by Coe in his early work, there were two deaths from intestinal obstruction.

Dr. EDWIN RICKETTS of Cincinnati, cited an instructive case in which it became necessary to resort to the combined method. He spoke in favor of the vaginal route in some cases, but not in all instances, for pus in the pelvis.

Dr. RUFUS B. HALL of Cincinnati was willing to admit that there were cases that could be dealt with by vaginal section and drainage, but the field for this operation was limited. In cases in which there were dense adhesions to viscera, good, complete work could not be effected by the vagina. Experience had taught him that if a patient was under 35 years of age and the uterus was removed by an abdominal operation and the cervix was left, she suffered less from reflex disturbances than she did when the uterus was left.

Dr. CHARLES GREENE CUMSTON of Boston said that suppurative conditions within the pelvis demanded different treatment, according to their situation, the number of foci, their size and nature, and in making the diagnosis and considering the choice of operation, all of these things should be considered, whether the case be suitable for the vaginal or abdominal route. In most cases of pus in the pelvis, speaking in a broad sense, posterior colpotomy was a trifling operation, yet a conservative one. It could be performed in chronic, purulent cases of the female pelvic organs and in acute suppurations where it would be dangerous to do either abdominal or vaginal hysterectomy.

Dr. JAMES F. W. ROSS of Toronto said that at the Montreal meeting of the British Medical Association vaginal hysterectomy for cancer was discussed, and his experience agrees with that of Price, that this operation for carcinoma, no matter how early it was done, was not satisfactory. High amputation of the cervix after the method of Byrne had been satisfactory in his hands.

Dr. L. H. DUNNING of Indianapolis remarked that the character of the suppurative products encountered by the surgeon called for different lines of procedure. In the cases described by the essayist, in which the pus accumulations were exceedingly large, extending as high as the umbilicus, fixed, and extending down into the vagina, it had been his practice for the last ten years—and he saw no reason to change it—to do vaginal section. In such instances where vaginal hysterectomy was done it was exceedingly difficult, if not impossible, to remove the pus sac. He had operated on fifty cases of the kind described, by vaginal incision. Of this number four returned for subsequent operation. All but one had made primary recoveries.

Dr. B. SHERWOOD DUNN of Boston believes the perfection of technique of hysterectomy by the vaginal route exceeds in difficulty that by the abdomen to a great degree. The complications following the vaginal route exceeded those of the abdominal method. The danger to the ureters, the bowel, and post-operative hemorrhage were very much greater by the vaginal than they were by the abdominal route. He restricted vaginal hysterectomy to a few selected cases where he was fearful of death of his patients by the suprapubic route. The vaginal operation was difficult, and in many instances it had to be fol-

lowed by a second operative procedure through the abdominal wall.

Dr. W. E. B. DAVIS of Birmingham holds that vaginal incision and drainage has a large field. There was a great deal of difference between operating upon old gonorrhoeal cases and upon fresh ones. Unquestionably all the cases following the puerperal state, where the surgeon can place his finger upon the side or behind the uterus, could be dealt with better by the vaginal route. The surgeon made a mistake when he opened the abdomen to deal with this class of cases, when vaginal incision and drainage was such a simple procedure. While a few cases would return for secondary operations, the surgeon should be willing to give young women several operations, if necessary, to save important organs.

Dr. C. A. L. REED of Cincinnati formerly resorted to the vaginal route and, after trying it carefully and conscientiously in many cases, he had practically abandoned it and had returned to the abdominal incision. He had found, however, a class of cases in which hysterectomy was a very important concomitant in the course of treatment, but even in these he does not remove the uterus per vaginam.

The paper was further discussed by Drs. A. B. Miller of Syracuse, and J. Henry Carstens of Detroit.

FIRST DAY—AFTERNOON SESSION.

Dr. D. TOD GILLIAM of Columbus, Ohio, contributed a paper entitled

OPERATIVE TECHNIQUE FOR INTRALIGAMENTOUS OVARIAN CYSTOMA.

Prior to the enucleation method of Miner, the surgical treatment of these cases was crude and incomplete. Miner's method marked a new epoch and will ever remain the foundation principle of their surgical treatment. It was, however, attended with so much difficulty and danger as to greatly abridge its usefulness. The chief danger was from hemorrhage, which was oftentimes fearful and not infrequently fatal. Other, and by no means unimportant, dangers came from injuries to important pelvic structures while conducting a hurried and blind dissection. There was a crying need for something better. The essential factors of the ideal operation are: 1, tapping, to reduce the volume of the cyst and to open the way for hemostasis; 2, ligating the supply vessels to control hemorrhage; 3, enucleation along the line of cleavage to insure easy, rapid and safe dissection. This technique was foreshadowed in a case on which the essayist operated, on Oct. 30, 1894. Here he gained his first knowledge of the line of cleavage for intraligamentous cyst and reported it to the Columbus Academy of Medicine. In 1896 Kelly announced the line of cleavage for intraligamentous uterine fibroid. Hall (in 1897) was the first to combine all the essential factors of the ideal operation. Hall's method, however, included hysterectomy. The method of the essayist, without hysterectomy, is as follows; First tap the cyst and drain off its contents; then ligate the ovarian artery near the pelvic wall and place a clamp between the cyst wall and the uterus. Select a point as low down on the anterior wall as practicable, and with a pair of forceps lift up the capsule and make a small opening. Insinuate a finger and sweep it around, separating the cyst from its matrix at the base. Now turn the finger upward and work in the direction of least resistance, slitting the capsule as you go. This will indicate the line of cleavage and will generally run upward and outward diagonally across the face of the tumor. Now introduce the hand and strip off the capsule from below upward, following the line of cleavage. Enlarge the opening by making an incision parallel to the capsular margin; seize the cyst and roll it out of its bed, stripping it from the posterior capsular wall. Trim and suture as in other cases.

GENERAL CONSIDERATIONS ON SEPTIC INFECTION OF OVARIAN CYSTS.

Dr. CHARLES GREENE CUMSTON of Boston read this paper. He said that inoculation experiments had shown that if the liquid contents of an ovarian cyst were uncontaminated by bacteria they would remain aseptic and would undergo no change. But if, on the contrary, microbes attacked a cyst and entered it, its contents would serve as excellent culture media, and symptoms of infection would soon appear. But the human organism would take on the offensive and would react against the bacteria which had infected the cyst; leucocytes came from the walls of the vessels and attacked the invading microbes, and thus we had the transformation into pus of the liquid contents. There were two kinds of septic infection of ovarian cysts, namely, pathogenic infection and saprophytic infection. Pathogenic and saprophytic organisms often entered ovarian cysts through puncture, incision and drainage. As puncture was discarded in a great number of instances by

the majority of the profession, the patient contained the agent of the septic process under consideration. The germs did not come from without, but from the interior of the organism, and it may be called a true auto-infection, which takes place in one of three ways: 1, by means of the blood, in which case the infection was either direct, produced by phlebitis, which extended to the cyst, or it might be indirect, in which case the infective elements were carried in the general circulation into the tumor by means of its pedicle; 2, infection might take place by the lymphatics, in which case the lymphatic channels acted as the contaminating canals and allowed a direct introduction of the germs into the interior of the cyst up its hilum; 3, we had infection through adhesions, which were plentifully supplied in new-formed vessels which were intimately connected with those in the walls of the cysts, and thus allowed an easy transportation of the bacteria.

After giving at considerable length the symptoms of ovarian cysts and dwelling upon the diagnosis and differential diagnosis, the author dealt with their operative treatment. Operation for the removal of ovarian cysts which were the seat of septic infection may be divided into four stages: 1, incision of the abdomen; 2, the breaking up of the adhesions and ligation of blood-vessels which they may contain, and then the pus may be removed by trocar and not with the knife, because if the cyst is incised pus will immediately flow out, and the wound will very likely become infected by the septic material; 3, extraction of the cyst through the wound—and in doing this the surgeon should be careful to avoid infecting the abdominal incision at the time he is drawing the pocket through, but this complication may be easily avoided if aseptic gauze sponges are tightly packed around and inside the line of incision. Next comes the ligation of the pedicle and its section, after which it is dropped into the abdomen; 4, the fourth step of the operation consists in the cleansing of the peritoneum, which should be done with great care, especially when the operative field has run any chance of infection. If this has occurred, free irrigation of the peritoneum is proper, but it should be done with care, and the liquid employed should be a warm, normal salt solution. Care should be taken to limit the irrigation to the subumbilical portion of the peritoneal cavity, and a back flow of the liquid toward the diaphragm should be prevented by having the operating table perfectly flat and the thorax slightly raised.

Dr. HENRY HOWITT of Guelph, Ont., read a paper entitled

A SECOND CONTRIBUTION TO THE SURGICAL TREATMENT OF INTUSSUSCEPTION IN INFANTS, WITH CASES.

In the paper the term "infant" was restricted to those under 1 year of age. After briefly describing the different varieties of intussusception that occur at any period of life and also referring to particulars in regard to statistics, modes of growth, length of bowel involved and the severity of attack in the varieties, he states that in the infant we have only the acute forms with which to deal in practice, nay, possibly only the ileocolic, which all authorities agree to be the most acute and rapid variety of invagination. It is, he states, the ileocecal form plus the valve distended and its lumen occluded by the swollen and edematous invaginated portion of ileum which, owing to the tight constriction at neck by valve, in a manner resembles a well-hammered boiler rivet that no evenly distributed pressure from within can force out. The author believes that many instances of the trouble occur in infants, leading invariably to death, without the true nature of the malady being recognized by the attendant; and that when the facts having reference to this variety of intussusception become generally known, fewer deaths will be recorded from certain bowel affections, and more lives be saved by surgical means. He has seen seven cases, six of them almost within the past five years, or since his attention was drawn to the subject. Six were in male children; all came from a district, the population of which is under 12,000. He has operated successfully on four, all of whom were under six months of age. A fellow practitioner lost one owing to an accident, during operation. In one case the friends refused operation and death resulted, and one died shortly after the onset, before anything could be done. The symptoms of ileocolic intussusception were fully dwelt upon. In regard to its diagnosis, the speaker emphasized the importance of the history of the onset, and stated that without it the attendant may be likened to a ship in a storm without helm or compass. In fact, the nature of the onset might suffice to make a diagnosis. The detection of a tumor in the course of the colon left no room for doubt. The condition in this form of intussusception was such as to preclude the hope of recovery by any method short of operative. No time should be lost in trying either bowel inflation or injection of fluids. They could do no good. His method of operating is as follows:

He maintains the temperature of the child by suitable applications to extremities and body during operation. Rigid aseptic preparations and precautions should be carried out. A median, three-inch incision, avoiding the high-placed bladder, is made; the small intestines are everted as rapidly as possible, and protected with gauze, which is irrigated with water of suitable temperature. The evisceration allows the obstructed portion of intestine to be brought into view. When, as is generally the case, the invagination has reached the transverse colon, the surgeon can not bring it out of the wound till the part of the large bowel implicated is disinvaginated. This is accomplished by making pressure on the apex of the intussusceptum while the intussusciens is pulled in the opposite direction. It is done by grasping the colon close to the apex with hand and following it up the bowel step by step till the colon and cecum are free. The mass is now lifted out of the incision. Then comes the most difficult point, the reduction of the invaginated portion of ileum. The part is grasped in the hand and firmly pressed for a few minutes; the pressure is made with the thumbs on the apex, while the fingers surround and support the outer orifices of ileocecal valve. The method resembles that used in paraphimosis, only the large bowel covers the part from view. Before returning the intestines to the abdominal cavity the contents which have accumulated in the ileum above are forced through the affected part into the colon; this proves that the difficulty has been effectually overcome and ensures an early movement of the bowel. Drainage is not necessary. The omentum is spread over the intestines to prevent adhesion of the bowel to the line of incision. The dressing is covered with oiled silk, the edges of which are sealed with collodion to prevent urine reaching cut.

Dr. REED said his experience was restricted to a single case of intussusception in infants. The child was operated *in extremis* and died within the first five hours following operation. With early interference the outcome might have been different.

Dr. PRICE said the cases reported were a beautiful demonstration of what can be accomplished by good judgment, great diagnostic skill and early surgical interference.

Dr. W. E. B. DAVIS thought it was unusual for one man to have as many cases of invagination in infants. He had only met with one case, and this occurred ten days ago, the child, a male, being 8 months old.

Dr. HALL recalled half a dozen cases of intestinal obstruction in infants' in sixteen years' general practice, that had died. He believes the invagination is overlooked in the majority of instances.

Dr. JOHN M. DUFF believes intussusception in infants occurs more frequently than is generally supposed. He had held post-mortems on several cases where the diagnosis was doubtful, but intestinal obstruction was found. He had seen two cases within the past year; in one, operation was refused and the child died. At the autopsy intussusception was found. The other case was operated on after peritonitis had set in, followed by death.

Dr. CUMSTON had seen four cases of invagination in children.

FIRST DAY—EVENING SESSION.

Dr. JOSEPH PRICE of Philadelphia read a paper with the caption:

NURSING IN ABDOMINAL SURGERY.

He thought the time had passed when any question was raised by intelligent and experienced members of the profession as to the value of the trained nurse. Nurse training-schools had become important institutions, not only to young women who, with a creditable ambition, entered them to fit themselves for the profession of nurse, but to the physician, for the physician, whether in general or special practice, knew the value of the trained nurse, understood the close and vital relation she held to his patient; how much her care and quick intelligence of the needs did to relieve his anxiety and promote the welfare of his patients. The training of these schools should be specially and simply directed to fit pupils for the duties of nurses. These duties in all their details, and all the steps in the training essential to discharge them faithfully and intelligently, should be definitely, orderly and clearly outlined by teachers of thorough experience. Those desiring to become nurses should commence their work early, while young, studious and ambitious; while their habits are not so fixed as to make a change difficult, if not impossible. Too much had always been expected of nurses in private nursing. Nursing through twenty-four consecutive hours was too much to require of human endurance and resulted in neglect of the patient. Systematically trained special nurses were usually bright, cheerful, interested and spirited; were alive to the importance of their work; cared for and infused into their

patient some of their own animation. The untrained nurse, on the other hand, was meddling and dangerous. Young, healthy, unmarried women were to be preferred, not widows or grass widows, great aunts or grandmothers.

SECOND DAY—MORNING SESSION.

Dr. W. J. ASDALE of Pittsburg read a paper in which he reported an interesting case of extrauterine pregnancy, with mature fetus, and exhibited specimen. The skeletal remains were borne seventeen years over the completion of gestation term, and the condition was eventually complicated by an ovarian cyst. No operation was performed. Patient died. At the autopsy a monocyst of the right ovary of large size was emptied and withdrawn. One of the long bones of a fetal skeleton was found in the pelvis, free; from high in the left hypochondrium underlying the left lower ribs and just beneath the diaphragm the remains were found, skeletal, of a fetal body, disarticulated and closely packed together. The bones were invested by the intestines, a portion of which was cut away in the removal. The fetal soft parts had, at the time of the autopsy, almost entirely disappeared. Records of successful operations undertaken for the removal of long-retained fetal remains were so rare as yet to be exceptional, and how much more doubtful surely would be the result of operative interference in such a complicated case as this.

REMARKS ON PRIMITIVE AMENORRHEA, WITH REPORT OF A CASE AND PRESENTATION OF ACCOMPANYING PATHOLOGIC SPECIMEN.

Dr. WALTER B. CHASE of Brooklyn read a paper on this subject, in which he said that the essential fact in the sexual life of woman was the predominating control of ovarian influence, and the central fact in the pathology of woman's sexual life was due in large degree to changes or perversion of function or structure of the ovary. While ovarian function was not the single influence which swayed woman's existence, the absence of it would dethrone her womanhood. The commonly accepted theory concerning the functional activity of woman's sexual life was that menstruation marked the commencement of ovulation, and that in its ordinary manifestations they were, in point of time, coincident. The experience of all observers doubtless furnished exceptions to the common law, but these exceptions served rather to confirm than abrogate it. Among these variations or absences of physiologic processes, amenorrhea in some of its forms was of common frequency. An intelligent and comprehensive distinction in amenorrhea embraced a difference between those cases which were congenital or acquired. In the former—*emansio mensium* or primitive amenorrhea—the causes were congenital, while in the latter—*suppressio mensium* or acquired amenorrhea—the causes were functional, or largely so. In the first class, menstruation has never been present; in the second class, the function once present is arrested. Primitive amenorrhea may result from congenital deficiency or imperfect development, as follows: absence or imperfect development of ovaries and uterus; degeneration of the ovaries, cystic or otherwise; the formation and development of benign or malignant tumors of the ovaries sufficient to preclude or abolish their function.

Report of Case.—Mrs. B., aged 24 years, a woman of refinement and fine physical development, had been married about two years, was sterile and had never menstruated. She gave an intelligent history of having had all of the symptoms which usually accompanied menstruation, since the age of puberty, except the appearance of the menstrual flow, commencing at about 18 years. The symptoms of discomfort developed with perfect regularity every twenty-eight days, with a history of increasing pain and nervous excitability, until during the eighteen months previous to his having seen her the pain had become unbearable and nervous perturbation such that she and her friends feared insanity. The one subjective symptom which gave rise to her fears of mental disturbance was severe headache and pressure felt at the vertex, which was present for several days at each menstrual molen. During a year or more she had become conscious of a gradual enlargement of the abdomen, and could herself easily define an abdominal tumor. She entered the service of Dr. Chase at the Bushwick Hospital, and a careful study was made of her case by the consulting gynecologist and himself. The patient was desirous of an operation, which was performed. The first tumor removed was a dermoid and had no pedicle, but was closely adherent to the uterus and the right broad ligament. The second tumor was a suppurating multilocular cyst of the left ovary. The report of the pathologist was: 1, that the dermoid had usurped the place and destroyed the function of the right ovary; 2, in one of the cyst walls of the multilocular ovarian cyst was found a shrunken ovary the size of a large lima bean, and within this ovarian stroma was found a corpus luteum spurium. To the

presence of this ovarian stroma was due the womanly development, with ovulation, and the futile effort of menstruation and its consequent suffering; 3, it demonstrates the possibility of ovulation without menstruation; 4, it leaves us in doubt whether the absence of the Fallopian tubes was primary or secondary to the grave disease of the ovaries, with the possibility that they were congenitally absent; 5, it presents the rare and exceptional condition of a perfectly developed woman who had an ovary and uterus, who ovulated, was sterile, and never menstruated, and yet was ruined in health by Nature's effort to establish an impossible normal function.

The remainder of the session was devoted to the presentation and discussion of pathologic specimens. Specimens were exhibited by Drs. John B. Deaver, X. O. Werder, Rufus B. Hall, and Wm. H. Humiston.

SECOND DAY—AFTERNOON SESSION.

The President's address was delivered by Dr. CHARLES A. L. REED of Cincinnati, on

THE EVOLUTION OF SPECIALISM.

He said that modern specialism in medicine dated from the period when the French schools, in the early decade of this century, took up seriously the question of pathologic anatomy. This was the physical basis upon which the work of division began. The obstetric art was as old as the function of reproduction, although the latter ages had witnessed its present refinements. It had been said that obstetric married surgery, and that the fruit of the union was bright-eyed gynecology. The accouchement probably occurred at the time Recamier invented the speculum in 1801. While surgery had its first rational development in the United States in 1809, under the masterly hand of McDowell, everything from that day to this was essentially contemporaneous history, in which occurred conspicuously many of the proudest American names. Specialism became a verity, in response to natural laws, which even today determined its destiny. There was not a day but that the general medical profession became enriched in resource and potentiality by the accretions derived from specialism. Each specialty, however assiduously cultivated, remained an integral part of the great general profession, the masters of which must ever stand as our ideals. All specialists today were primarily the products of general medical culture.

THIRD DAY—MORNING SESSION.

Dr. D. TOD GILLIAM of Columbus, Ohio, read a paper on the "Treatment of Granular Erosions of the Cervix," and reported three cases, which he had treated successfully by ligation of the cervical vessels.

Dr. B. SHERWOOD-DUNN of Boston, followed with a contribution on

THE RELATION OF NERVOUS AFFECTIONS TO DISEASES OF THE FEMALE PELVIC ORGANS.

He limited his remarks to the great neuroses of neurasthenia and hysteria and insanity. He was totally opposed to any operative procedure, except where pathologic conditions were demonstrable. He had no confidence in operations upon healthy organs for the cure of any neurotic condition, and believed that such were now generally condemned by the profession. He, however, looks upon the position taken by some neurologists, that there was no relation of cause and effect between the various neuroses and psychoses and disease of the female pelvic organs, and being as extreme and condemnatory as the advocacy of the removal of normal organs in the female pelvis for the cure of nervous diseases, by some ill-advised persons calling themselves gynecologists. In operating upon diseased conditions in the pelvis, the gynecologist did not expect to remove the symptoms of the neuroses, but only those symptoms properly belonging to the pelvic disease itself. But strange and disappointing as it might seem to be to some of the critics, when those pathologic pelvic conditions were removed or corrected, the nervous system, relieved from the source of unceasing irritation, gradually returned to its normal poise, and the patient was cured of her neuroses as well as her pelvic disease.

Dr. WM. H. HUMISTON of Cleveland, Ohio, read a paper on the

GRAVER FORMS OF NERVOUS DISTURBANCES DUE TO ORGANIC CHANGES IN THE GENITAL ORGANS.

In the last five years of his work the essayist had never operated upon a case in which the correlation between the diseased pelvic organs and the nervous symptoms was not clearly defined before an opinion from a neurologist relieved him of doubt of a nerve or brain lesion, with one exception. He reported six cases in which great relief, in some cases cures, followed operative interference. The first case was one of insanity; the second, melancholia; the third, neurasthenia; the fourth, inean-

ity; the fifth, hystero-epilepsy, and the sixth, hysteria. The cases were reported with the hope that some effort would be made to secure for women confined in county and State institutions for the insane such surgical measures which would, in a large proportion of cases, be a curative means for their mental ailment, and which must, in a vastly greater proportion at least, improve their condition both mentally and physically.

Dr. RUFUS B. HALL of Cincinnati read a paper on

ALBUMINURIA COMPLICATING GYNECOLOGIC OPERATIONS.

The Doctor referred, first, to the conditions predisposing to this complication. He urged careful examination of the urine preceding operation, so as to determine, if possible, the presence of nephritis or other causes leading to suppression. The most common cause is a preexisting nephritis, but unfortunately, in granular nephritis, a most careful examination of the urine may fail to show the presence of the disease. One of these patients, after the operation, may have suppression followed by coma and death. The Doctor said we might also have suppression following the operation in a patient with a fatty heart or with atheromatous arteriee. He considers it of the greatest importance to have the patient thoroughly prepared for operation. If he finds the least indication of pre-existing nephritis, he advises chloroform for the anesthetic, regardless of the age of the patient. In his early operative work he used ether almost exclusively. He cites 110 sections in which ether was given. In thirty-three cases there was a trace of albumin in the urine in the first twenty-four hours. In ten cases there was partial or complete suppression, and two died in coma. During the time he used the ether, he operated on seven patients known to have nephritis. They were given chloroform and are included in 500 sections where that drug was the anesthetic. Eighty-five of this number showed a trace of albumin in the urine in the first twenty-four hours after operation. Ten cases had suppression, and four died of uremic coma. All patients who were known to have kidney disease were given chloroform. There were 35, and the deaths in the chloroform list were from this number. To avoid the dangers from the use of chloroform, the Doctor urged that its administration be entrusted only to one expert in its use. The Doctor closed his paper with a resumé of the preliminary treatment he accords every patient about to be subjected to a section; of the manner in which he conducts his operations, and of the measures he employs if albuminuria occurs following the operation.

THIRD DAY—AFTERNOON SESSION.

Dr. X. O. WERDER of Pittsburg gave the clinical observations of over one hundred abdominal sections for ovarian tumors.

Dr. FREDERICK BLUME of Allegheny, Pa., reported a case of double uterus and vagina, with pregnancy in one horn, in which he excised the vaginal septum.

The election of officers for the ensuing year resulted as follows: President, Edward J. Hill, Newark, N. J.; First vice-president, Edwin Ricketts, Cincinnati, Ohio; Second vice-president, A. B. Miller, Syracuse, N. Y.; Secretary, Wm. Warren Potter, Buffalo, N. Y., re-elected; Treasurer, X. O. Werder, Pittsburgh, Pa., re-elected. Executive Council, A. Vander Veer, L. S. McMurtry, W. E. B. Davis, John M. Duff, L. H. Dunning and Walter B. Chase. Indianapolis, Ind., was selected as the place for holding the next meeting, the time of which was left to the Executive Council.

Gloucester County (N. J.) Medical Society.

This society celebrated its eightieth anniversary at Wenonah, Sept. 15, 1898.

The President, Dr. Geo. C. Laws of Paulsboro introduced the mayor of the Borough of Wenonah, who welcomed the assembly in a fitting speech, and at the request of the President, Dr. Mordecai Price of Philadelphia responded.

Dr. JAMES TYSON of Philadelphia then read an essay on

THE GENERAL PRACTITIONER.

He said: "A general practitioner is one who shrinks from no service which belongs to his art. He is at once physician, obstetrician, gynecologist, ophthalmologist—anything which has received a title in the differentiation of professional duties. A hundred years ago, one man could do all that was expected of him. Even then certain men were distinguished for operative skill, yet the entire field was considered within the province of one man. Casting about for the field actually occupied by him we find he is one who practices, first of all, medicine in its broadest sense, including not only the diseases of children, but also skin diseases. He practices midwifery. In surgery, for the

most part, he is often called upon in minor surgery and the simpler affections of the eye and ear. The more complicated technique, which modern medicine has imposed upon the proper treatment of diseases of the nose and throat, demands vastly more time and trouble than the older treatment of these affections, yet the general practitioner can not escape it. Orthopedics is practically excluded, while genito-urinary affections necessarily fall within his province. The term must include more in the country than in the city. In the city he is limited in his work by the will of the patient. In the country, in the truest sense, the physician is a general practitioner. His qualifications should be correspondingly thorough. He should have preliminary culture in the broadest sense, much more than the specialist. He should be college-bred; able to read Latin, French and German. Greek also would further fit him for his work. He should be well drilled in physics, in chemistry, equally well in botany, mineralogy, comparative anatomy and zoölogy—a biologist in the full sense of the term; well-read in standard literature; equipped with all that would make him ready and versatile, not only to enhance his own pleasure and enjoyment, but that he may appear the equal, if not superior, of those with whom he mingles—the intellectual equal of the most intellectual of his community, to whom all may go for information. His professional education should be the best his money can obtain. A cheap medical education is like a cheap garment. It soon needs repairs, and is an ever-growing disappointment to its possessor. Hospital residence for a year at least is important. He should be familiar with the microscope, ophthalmoscope, etc. Thus equipped, his consulting-room should be well-appointed, his laboratory replete with instruments of research, etc., as well as necessary reagents for chemical work. As indispensable as, more useful than a horse and buggy—in the days of the bicycle at least—is a neat, bright, quick-witted, intelligent wife. She is a treasure, a cheerful helpmate and a loving companion; keeps his books and talks over his cases with him. She can learn to test urine, use the microscope, and help more than a qualified assistant because she is actuated by love and a common interest. Nothing is such a drawback as a slouchy, novel-reading wife. I have known more than one man's life blighted by such a companion. To marry on nothing is ill-advised, but one need not wait for ample means. When he begins to see his way clear to reasonable success, he should marry a sensible, well-educated woman, a little younger than himself. How now shall he attain success? By well directed, earnest effort. Establish an office or consulting hour and maintain it. The office hour is too much ignored by the country practitioner. It is soon fouled out and then his patients will be sure to expect him at that time. Your general practitioner must be an early riser. When his hour is ended, he must promptly start on his visits, not making his visits too long, thus losing time and also the respect of his patients. Still he need not indicate by his actions that he is in a hurry; this is harmful also. With work well arranged, time will remain to spend in study of doubtful cases, reading, etc. He must subscribe for one first class weekly journal, also a scientific one. He must keep in touch with all that goes on in the world. Abstracts and first-class editorials he must have. He should be a member of his local society. He must win the regard of his fellows; ventilate his views only after he has acquired the faculty of speaking in a proper manner, and report interesting cases. The State and National societies should claim his membership and attention. He thus rubs off the cobwebs, renews or makes acquaintances, and while young may better offer his aid while an older practitioner goes to such meetings when at a distance. Jealousies between doctors are unjustified, yet they are frequent, especially in the country. More than half are without foundation, the result of misunderstanding, misrepresentation, hearsay, etc. Acquaintance prevents this, as it makes a man know how well his brother is disposed toward him. He should not be in a hurry to call in a consultant; but should first call his neighbor and thus exhaust the local resources before he sends for a specialist from the city. He may accomplish much for the patient and promote good feeling. Next he has duties to the community. He should guard it well, lest any violations of hygienic laws cause disease, and should suggest measures for the relief of any such. When this is done in a quiet unostentatious manner he will be listened to with respect and his advice will more likely be followed. Cultivate social life; this aids in many ways. As to compensations, money often is not the thing. Well-doing brings its own reward. Many would give money who are not able, but give respect, etc. Alluding to pictures of the general practitioner by the novelist, the speaker concluded: "What a privilege to be a member of a profession in which such men abound! What an honor to be one of those from whom such a type is drawn! Well may we

glow with pride at the recognition it has received, and while taking new courage from the contemplation of such a life let us not fail also to allow our hearts to be softened by this example and bear with patience the many disappointments and petty annoyances that beset our daily path."

The President then read an essay, having for its title

THE EFFECTS OF NITROGLYCERIN UPON THOSE WHO MANUFACTURE IT.

In 1880 a large manufactory of nitroglycerin and its compounds was established upon the banks of the Delaware River near Gibbstown, three miles from Paulsboro, where he resided. Many of the women and their families have become his patients, and he has had ample opportunity to observe the effects of this material on the systems of those brought in contact with it. He detailed the mode of manufacture and gave some account of its properties. It was discovered in 1846 by Sobrero, later investigated by Railton and DeVrij. It is a heavy, pale-yellow fluid, inodorous, slightly soluble in water, soluble in alcohol. It is formed by the action of concentrated nitric acid on glycerin, in the presence of strong sulphuric acid at a low temperature. It is also called glonoin, trinitrin and propenyle nitrate. It is the principal ingredient of all high explosives, such as dynamite, under its various names of Judson powder, explosive gelatin—the material used in submarine mines—and enters largely into the composition of smokeless powder. Chemically it is an ether, being produced by the action of an acid (nitric) on an alcohol (glycerin). It is used medicinally in minute doses; in large doses it is an acrid poison. In the process of making, a large, tub-like vessel is used, fitted with dashers, which are rotated horizontally by a compressed-air engine. The vessel is lined with lead and has an extra lining of a continuous coil of lead pipe, through which a stream of ice-water is passed. In the center is a large thermometer on which the workman keeps his eye while the charge is being run. As the temperature rises he allows the flow of glycerin to increase; as it lowers, he increases the flow of mixed acid. Practice makes him expert and enables him to run a charge in about an hour. This man's position is a trying one, as he stands with both hands on the levers and his eyes fixed on the thermometer; not for an instant dare he relax his attention. The charge consists of 5500 lbs. of mixed acid in the proportion of 170 lbs. of sulphuric acid to 100 lbs. of nitric; and 14 per cent. of 770 lbs. of glycerin. These are run into the tub through separate spigots. After being thoroughly agitated together the charge is drawn off into a settling vat where the mixture separates by gravity into nitroglycerin and sulphuric acid. The former is drawn off and thoroughly washed with water; and the superfluous acid neutralized by an alkaline solution. The sulphuric acid is run through pipes to another building where all the residual nitroglycerin is extracted by a freezing process. The remaining acid is reconcentrated and again used. The nitroglycerin is stored in tanks, from which it is weighed and distributed in lead-lined copper buckets to the various sub departments. In the manufacture of explosives it is mixed with sawdust, nitrate of soda, nitrate of ammonia and nitrate of soda, wood pulp, etc. Explosive nitroglycerin is made by mixing 8 lbs. of gun-cotton, 10 lbs. of oxid of zinc and 82 lbs. of nitroglycerin boiled together at a temperature of 140 degrees. This is fully as explosive as nitroglycerin, and safer and more convenient. Judson powder is made by heating a mixture of bituminous coal, sulphur and nitrate of soda and adding a proportion of nitroglycerin. It is mostly hand labor; none relax the most intense vigilance. As a consequence accidents are rare; when they occur there is no means of ascertaining the cause, and there is little use for surgical assistance save in the case of those hurt by falling material. The doctor has the gruesome task of identifying and collecting the remains. In the apartments there is no noise; all is absolute silence. The machinery seems to work silently, and even the men who drive the mules that haul the trucks do without the usual mule stimulus.

The first condition to which my attention was called was known as the "powder headache." All suffered from it who had anything to do with nitroglycerin in any way. The head is generally sore; this has to be experienced to be appreciated. The workmen's wives, who do the laundry work, suffer severely every wash day. Not only the underclothing worn by the men, but any clothing, even the bedclothes, will cause this feeling. In time they become inured, but all complain of the ironing. Inhaling the steam from the hot clothes makes them very sick. Rubbing a little dynamite on the back of the hand, using a towel that a workman has wiped his hands or face on, lying on a lounge in one of their houses, remaining too long in a sleeping-room, auscultating their chests, all cause the headache in one not accustomed to it. Nitroglycerin when taken

into the system by absorption or inhalation, acts on the vasomotor centers, causing dilatation of the left side of the heart and of the entire arterial system. There is often a distinct reddening of the skin of the face and extremities, sometimes of a pinkish hue, changing to lividity, and blueness of the nails, lips, ears and nose, with conjunctival redness. With this we have palpitation, thumping of the heart, pulse slightly quickened, soft and compressible, and an intense throbbing pain in the head, worse in the occipital region, and extending down the back of the neck. At every pulsation the blood can be felt surging through the brain, and in aggravated cases the movement of the blood can be felt in other parts of the body. The affected person walks lightly on his toes; touching the heels to the ground sends an additional darting pain to the head. Nausea and vomiting are often present, sometimes diarrhea; weakness, prostration and languor continuing over the next day. Some are more susceptible, but all are affected to a degree. My worst attack was caused by taking a nap on a lounge with my head on a pillow kindly loaned from upstairs by the nurse, on an occasion when I had to remain all night. Occasionally the headache is absent, but nausea, vomiting or diarrhea are present. One case had an eruption over the body like that from poison ivy. After three or four attacks he was compelled to abandon the work. In about a week's time the new men become accustomed to the poison and do not have the headache, or perhaps do not notice it, but nitroglycerin is rapidly eliminated and the relief is not permanent. Two or more days' absence from work will cause a return when work is resumed. Some have the headache every Monday morning. Thirty men are engaged in filling cartridges and are called "powder punchers." The shells are paper cylinders dipped in paraffin; each holds from two ounces to a pound or more of dynamite. They are filled by hand, with a funnel and rammer, the dynamite being taken up with a small wooden paddle. The hands and arms are covered with the material; each man handles an average of 1000 pounds of dynamite, containing 50 per cent. of nitroglycerin a day, making 2000 half-pound cartridges. After the headache and other acute symptoms disappear, another condition gradually develops. This is dependent on a dilatation of the heart, particularly on the left side, and of the entire arterial system. The pulse is soft, weak, obliterated by moderate pressure. The first sound of the heart is accentuated, the apex beat exaggerated; murmurs resembling anemic are heard, but most frequently from aortic regurgitation, and occasionally from mitral insufficiency. There is an engorgement of the left ventricle, the heart acts irregularly and palpitates easily. The appetite is poor, especially for breakfast. He rapidly loses weight; there are no dropsical symptoms, but a certain degree of mental dullness. The punchers are especially dull and drowsy during work. I call this condition "glonoinism."

The employes are all strong men who lead quiet, temperate lives, have the principal meal at the close of the day, use tobacco in moderation or not at all, rarely drink anything stronger than tea or coffee, alcohol in any form producing serious effects. A simple glass of beer will cause headache, palpitation and reddening of the skin. Cases have been known where men have become addicted to Gibbstown punch, composed of whiskey *ad libitum* and as much nitroglycerin as can be absorbed externally; the two mix in the system. This compound is guaranteed to produce a more violent and serious form of intoxication than any other combination known to man. Handling this large amount of nitroglycerin daily, the men's systems become impregnated; their wives, occupying the same sleeping apartment and doing the laundry work, become affected in a milder degree. In these cases all symptoms are much milder, but similar to those mentioned before; the uterine functions are deranged, undue hemorrhage at the menstrual period is seen, they have premature births and fewer children. Children born under these conditions are not as strong and vigorous as others of the community; cyanosis at birth is common, and they do not have the stamina to resist disease. Diphtheria, not as a rule fatal with us, has had several victims in these families. Other children's troubles are also especially severe and the fatality greater. It is not safe for one of these men to carry his infant in his arms for any length of time; he is sure to have a sick baby. Infants can not sleep in bed with their parents without dangerous results. Early after the establishment of the factory the doctor was called to a child who had been taken in the father's arms to quiet it; both had fallen asleep; after two hours he awoke and found the child seriously ill, head back, moving from side to side, eyes partially closed—indeed in a collapse; death soon ensued. Subsequent experience convinced him that the child was killed by contact with the father's body and clothing and by inhaling the breath. All depressant remedies must be

avoided. The coal-tar derivatives can not be used at all. He found no record of phthisis among the men, but three of their wives have died of it; cases of pneumonia have died suddenly. Bromids have no effect on the headache, and irritate the stomach. Iodoform may be used when indicated, in capsules. The treatment of glonoinism is palliative, and the work must be abandoned for a cure. Strychnia gives the best results. Dr. Laws took the ground that it was probable that the use of smokeless powder so much by the Spaniards in the late war had caused their defeat so rapidly, owing to the glonoinism resulting to the men. Had this been used by our men, it is possible that the majority of our men would have been very sick in a very short time, but possibly they could have become seasoned to it. In the navy, with the movement of the vessels, the air might have blown off the results, but this point needs further investigation. It is well known that sportsmen who use smokeless powder often suffer from headache, and this is an objection to the use of dynamite in mines, etc. The combustion is never complete, and a large proportion of nitroglycerin is thus diffused in the atmosphere, or in certain cases the powder is found slowly burning near the gun. He concluded by giving at some length the results of careful observation by instruments of precision.

The Historical Address was delivered by Dr. L. M. HALSEY, of Williamstown, and concluded the program. A social hour was then spent, with a banquet, followed by toasts. After an address of welcome, the AMERICAN MEDICAL ASSOCIATION was toasted and Dr. Wm. B. Atkinson asked to respond. The Doctor took the opportunity of showing the work done by the ASSOCIATION, its vast increase in power and membership, its relation to State and local medical societies, and urged upon all the importance to the profession of every respectable physician becoming a member; the benefit to each by the literature of the ASSOCIATION, the advantage of the membership to each, and finally the power it would give the ASSOCIATION in the counsels of the nation, if in place of 8000 members it had 50,000 or more, as it should have. Then it could demand national legislation with the surety of obtaining it when backed by such a membership, extending to every town, city, etc., of the entire Union, and no longer would be seen the spectacle of the crying need of a National Board of Health with no attention paid to the demand on the part of Congress.

SELECTIONS.

Laugh and Get Well.—*Scalpel* quotes the following story from "Bonaventure des Periere": "An ape is the hero of this discourse, whose master fell sick of a fever, so grievously in fact that the doctors had to be called in. At first they clysterised him, and then they drew his blood, according to the mode of treatment at that time universally in vogue. Next, for four consecutive days they drenched the poor man with drugs of various sorts; and finally he was ordered a mixture which the apothecary brought him with his own hands. It was then early in the morning and the patient was asleep; so placing the bottle on a table and covering it carefully with a cloth, this black swan among practitioners, rather than interfere with nature's sweet restorer, incontinently departed. After a little while the sick man awoke of his own accord and saw that his potion had arrived; but there was no one at hand to administer it to him, the inmates of his house having all gone out in order not to disturb his repose. The door of the sick chamber happened to be ajar and presently in comes the ape to pay his respects to his master; but the first thing the inquisitive creature did was to mount on the table where the covered-up medicine was standing. Lifting a corner of the cloth he began to sniff at the open mouth of the flask; and, to judge by his expression, the odor was not much to his liking. For all that he repeated the action several times, and at last ventured on a taste—for his curiosity made it absolutely impossible for him to refrain. The compound had a bitter-sweet flavor and master ape withdrew his muzzle very smartly, twisting his lips about in disgust and pulling the most comic grimaces it is possible to imagine. Before long, however, the sweetness overcame him, and returning to the charge he took a second sip, then a third, and so on, until at last he finished the stuff.

The poor, long-suffering patient's precious mixture was drained to the last drop! Now it happened that the individual in question, who was looking on all the time, was delighted beyond measure at the antics of the ape. So much so, indeed, that he clean forgot all about his illness and burst out into such a hearty roar of laughter that he straightway recovered. Owing to his access of joy, so sudden and so unexpected, his spirits revived, his blood grew thin and his humors returned into their proper channels, thus extinguishing the fever. While he was revelling in his restored health the apothecary reappeared on the scene and inquired how he found himself and whether the last medicine had operated, but the ex-patient was so full of merriment that he was unable to speak intelligibly. He could do nothing but laugh; whereat the other waxed exceedingly wroth, believing that he was the butt of the unseasonable mirth. Then, with a great effort, the laugher contrived to exclaim: 'Ask the ape what operation it has had.' As may be supposed, this answer did not tend to smooth matters, and the incensed druggist was about to give vent to some furious rejoinder when lo! the ape himself afforded a practical solution to the imbroglio, while at the same time supplying proof as regards the potency of the mixture. Comprehending at once that the animal must have acted as the sick man's *locum tenens*, and being happily gifted with a sense of humor, the worthy apothecary forthwith went off into a roar on his own account: and the situation, lately so strained, resolved itself into a friendly duel between the ex-patient and his medical adviser as to which should laugh longest and loudest.

Veratrum Viride in Puerperal Eclampsia.—Dr. John Gordon in the *Lancet* (January 15) reports that one hypodermic dose of five minims of the fluid extract of *veratrum viride* resulted in cessation of convulsions in the parturient woman, reduction of arterial tension and pulse-rate, the laxation of the rigid os uteri. After this labor progressed normally, consciousness gradually returned and after two days the patient was in good condition, no other treatment being used. The case was interesting as having been treated solely by the action of *veratrum viride*, and therefore one is presumably free to deduce that the improvement which followed was due to the action of the drug. The outstanding features in the action are the lowering of arterial tension, the slowing of the pulse-rate and the absence of convulsive seizures after the dose of the drug was given. Within fifteen minutes of administering the dose there was a perceptible change in the character of the pulse. It had been firm, hard and bounding, but now became softer, was full and easily compressible. The number of the beats was also reduced from 92 or 100 to 84, and there was slight inequality in the value of the beats. Five minutes later the pulse-rate was reduced to 72; in another five minutes the pulse had become 54, and fifteen minutes later still it had reached its minimum of 52. Afterward for two hours the pulse-rate was taken at intervals of fifteen minutes and kept varying from 54 to 60 per minute. When taken five hours later it was still 56 and five hours later again it was 60. The etiology of puerperal eclampsia is obscure. The frequent albuminuria with which it occurs gave rise to the opinion that it was the result of uremia, although cases occur where there is no albumin present, and other patients with an abundance of albumin escape, it is thought that renal insufficiency is the most frequent if not invariable cause. Traube and Rosenstein refer its causation to acute cerebral anemia resulting from changes in the blood incidental to pregnancy, the watery condition of the blood being associated with increased arterial tension. Dr. Angus Macdonald of Edinburgh found from postmortem examinations extensive anemia of the cerebro-spinal centers with congestion of the meninges without edema. He attributed the convulsive attacks to irritation of the vasomotor centers from an anemic condition of the blood produced by the retention in

it of excrementitious matters that ought to have been thrown out by the kidneys. Applying the recognized physiologic actions of *veratrum viride* we know that one of its alkaloids, jervin, is able to reduce the force of the heart beat by its direct influence on the cardiac muscle, and that it is capable also of producing a general vasomotor paralysis; that it likewise reduces the pulse-rate by a direct action on muscle, while the other alkaloid, veratroidin, by stimulating the inhibitory nerves also reduces the pulse-rate; and both alkaloids, namely, the jervin and the veratroidin, are, in addition, depressants to the motor centers in the spinal cord. We have, therefore, in *veratrum viride*, an agent the physiologic properties of which meet the supposed pathologic conditions in puerperal eclampsia, namely, increased arterial tension and cerebrospinal excitement.

Pasteurized Cream and "Viscogen."—A recent bulletin of the U. S. Agricultural Department treats of the sterilization of cream. It shows that some of the advantages of this product are that it is more convenient to handle, there is less loss from spoiling, and it is free from disease germs. The cream will keep for several days without souring. An objection to pasteurized cream is its lack of consistency. The cream does not appear to be so rich as normal cream, because it is thinner and less viscous, and does not whip so readily. So strong has this objection become on the part of consumers that it has materially retarded the introduction of this method of supplying cream. The Wisconsin Station has been studying the problem for some time, and has recently suggested a remedy. It is found that the consistency of pasteurized cream may be completely restored by the addition of lime in solution. On account of the slight solubility of lime the use of simple lime water is impracticable, as it dilutes the cream to an undesirable degree, although even lime-water materially increases the consistency of pasteurized cream. It is proposed to use lime dissolved in a solution of granulated sugar (saccharate of lime). Such a lime solution contains more than one hundred times as much lime as lime-water. Consequently it may be added to cream in sufficient quantity to produce the desired result without perceptibly changing the cream otherwise. This solution of lime in sugar is called "Viscogen," on account of its viscous-producing properties, and the treated products are called "Visco-cream," "Visco-milk," etc. "Viscogen" is not a commercial article, but may be easily prepared. The method described by the Station for its preparation is as follows:

Two and one-half parts by weight of a good quality of cane sugar (granulated) are dissolved in five parts of water and one part of quicklime, gradually slaked in three parts of water. This milk of lime should be poured through a wire strainer to remove coarse, unslaked particles and then added to the sugar solution. The mixture should be agitated at frequent intervals, and after two or three hours allowed to settle until the clear supernatant fluid can be syphoned off. Where large quantities are made, we have found it convenient to mix the ingredients in a revolving barrel churn. The clear liquid (Viscogen) should be kept in well-stoppered bottles which are filled full, for the reason that it absorbs carbonic acid from the air, thus reducing its strength, and also because where air has access to the solution, it darkens in color after a time. This latter chemic change, however, does not seem to impair its usefulness. The quantity of lime recommended in the above formula is considerably more than will be dissolved by the sugar solution. This excess is added because of the impurities contained in our Wisconsin lime, which is of dolomitic origin, and hence contains nearly as much magnesia as lime. As these impurities are practically insoluble in the sugar solution, they have no effect in the prepared viscogen.

PRACTICAL NOTES.

On the Use of Thyroid.—According to the *Medical News*, September 17, the Berlin professor, Dr. Thierfelder, has advanced the following opinion as to the modus operandi of thyroid therapeutics. In the first place, the effects upon metabolism may be stated as follows: 1. Upon the nitrogenous

metabolism and elimination, its influence is stated, by some, to remain normal; by others, including Chittenden, the elimination is stated to be slightly but uniformly increased, the diet remaining the same. Those observers who have found the daily elimination of nitrogen the same, or decreased, have possibly failed to take into account the injurious effect of large doses of thyroid upon the appetite and digestion, with consequent decrease in the amount of food (and nitrogen) ingested. The increase in the amount of nitrogen eliminated remains, however, always slight. 2. The effect upon general metabolism is shown by the decrease in weight which follows the prolonged administration of thyroid, especially if in excessive doses. As there is not a corresponding increase in the amount of nitrogen eliminated, this loss must come chiefly from the non-nitrogenous elements of the body, that is, fats or the carbohydrates. This is apparently proven in the following ways: a. There is a marked increase in the amount of the CO_2 eliminated by the body, showing increased oxidation of the carbonaceous materials of the body. b. The loss of weight is most pronounced in those suffering from obesity, leading to its use as an "anti-fat" remedy. c. In mild cases of diabetes mellitus the sugar may be made to diminish or disappear entirely under the use of thyroid. These effects may be explained by one or both of the following hypotheses: 1. It may exert a specific stimulating effect upon the areolar tissues of which adipose tissue forms only a modification, due to the deposition of fats. 2. It may increase oxidation by increasing the oxidizing power of the blood. Its demonstrable effects upon the blood are limited, usually showing a slight increase in the number of mononuclear leucocytes, other changes in the blood, found at times, being explicable by changes in the organism, the alteration in blood constitution being secondary, as for example, the increase in hemoglobin and red corpuscles after administration of thyroid in bleeding fibroids.

Compound Fracture of the Patella.—Mr. Battle, in the *London Lancet*, September 10, reports the case of a cabman, aged 53 years, who on April 22 was injured in the knees by the kick of his horse. On the right knee there was a transverse lacerated wound extending almost the whole width of the limb. Through this opening the interior of the knee-joint could be seen, and it was at once evident that the right patella had been broken transversely into two large pieces, though several smaller fragments could be felt. The two large pieces formed about five-sixths of the patella. The wounds were temporarily dressed with an antiseptic application, and a back splint was applied to the right leg. On the evening of the day of admission, about five hours after the accident happened, the patient was anesthetized, and Mr. Battle proceeded to wire the bone. An incision three inches long was made directly upward from the middle of the horizontal wound on the right knee, the flaps were reflected on each side of this incision, and the knee-joint was completely exposed. The joint cavity, the bony fragments and the surrounding parts were then thoroughly washed in a solution of perchlorid of mercury. Two or three small fragments required removal. The two larger pieces of bone were joined together with silver wire and the ends of the wire, after having been twisted, were hammered on to one of the fragments. The aponeurosis over the patella was united by silk sutures and the edges of the skin wound, having been carefully pared, were drawn together with interrupted sutures. A drainage tube was inserted through a separate incision in the outer side of the joint. A dressing of double cyanid gauze and absorbent wool was applied and the limb was enclosed in a plaster-of-Paris splint. The wound on the left knee was sutured and dressed in a similar manner. On April 22 the right knee was dressed and the drainage-tube removed. On the 24th the temperature rose to 100, but fell to normal on the bowels being opened by an enema. On May 3 the skin stitches

were removed and the plaster-of-Paris splint exchanged for a wooden back splint. On the 12th the patient was allowed to sit up and on the 19th the splint was removed, a small dressing only being applied. On the 24th he was discharged from the hospital; he had firm union of the patella and was able to walk. Further improvement has resulted.

Suppurative Splenitis from Tight Lacing.—Dr. B. M. Cromwell describes a case of suppurative splenitis caused by tight lacing and violent exercise, which was successfully treated by operation. The patient was a strong, healthy girl, 17 years of age, who in order to escape an impending shower ran for the greater part of a mile on a hot day. After running for some time she felt a pain in her left side, and reached home in a state of more or less collapse. The pain ceased before she reached home and did not return until the next day, after which it was continuous. Dr. Cromwell, on examining her two or three days afterward, found a deep sulcus about the margin of the ribs, and in answer to her inquiries the girl explained that while she was running her corset was loose enough but the band of her petticoat was too short and she had to pull it very tight to button it. Above and below the sulcus there was a marked tumefaction. Percussion revealed dullness over the whole left side, extending to near the brim of the pelvis and anteriorly to near the median line of the abdomen. The edge of the tumefied spleen could be plainly felt around the greater part of this dull space. The diagnosis was an enlarged and inflamed spleen, and as no improvement followed from iodine ointment and blistering, an incision was carried through the abdominal parietes into the substance of the spleen. At first there was a copious flow of bright arterial blood, then a small ribbon of pus was mixed with it, and as the pus increased in quantity the blood diminished until the escaping fluid consisted entirely of pus, which continued to be discharged for many days under the influence of poultices, and for several days after it ceased there was a discharge of serum. The total amount of blood, pus and serum was estimated at about 30 oz. The girl made a good recovery and is now in excellent health.—*Maryland Med. Journal*, Aug. 13.

Cocain in Ophthalmic Practice.—Dr. Theobald, in the *Johns Hopkins Hospital Bulletin*, writes a word of warning about the too free use of cocain in the treatment of diseases of the eye. It has come to be quite common for the general practitioner to use cocain in eye inflammations, the inducement being that it diminishes the pain temporarily and so causes a measure of relief. The conditions in which it is used are various. He says: "I have met with many instances in which it was prescribed in simple catarrhal conjunctivitis. There seems to be no indication for its employment under such circumstances, and it is capable of doing much more harm than good. Because of its pronounced disturbing effect upon the nutrition of the cornea, cocain is not a remedy to be used carelessly in eye diseases. It acts, as you know, through the sympathetic nerves or chiefly in that way, and, besides anesthetizing the eye, it dries the cornea to a remarkable degree. The cornea not only becomes dry, but the epithelium becomes loosened, so that it is easily rubbed off, sometimes by the friction of the lids, or from the slightest touch of the instruments used. Any agent that has so marked an effect as this upon the nourishment of the cornea certainly seems not to be a safe one to use, unless there is a clear indication for its employment. The field of usefulness for cocain, apart from its anesthetic action, is extremely limited. I scarcely think, indeed, there is any occasion to prescribe it as a remedy in eye diseases, though it may be used sometimes to increase the action of other drugs; for instance, atropia, or homatropia, will dilate the pupil more quickly and powerfully if combined with cocain. Even here I prefer to keep the solutions separate, and to instill the cocain first and then the atropia. It is also useful as preliminary to the application of astringents or caustics, like the sulphate of copper or nitrate of silver, as it greatly lessens the discomfort, but this is only another phase of its anesthetic action.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, OCTOBER 1, 1898.

THE BACILLUS PYOCYANEUS IN HUMAN PATHOLOGY.

In 1889 CHARRIN ("*La maladie pyocyaneuse*,"¹) published a thorough research concerning the bacillus pyocyaneus. Before that time practically nothing was known concerning this organism in connection with diseases of man or in animals, although its occurrence in green or blue pus had already been observed by GESSARD. Experimenting upon rabbits, CHARRIN soon found that the bacillus gives rise to a disease of definite clinical entity, and to this he gave the name *maladie pyocyaneuse*. Others have studied pyocyaneus infection in the dog, as well as other animals, but the rabbit is the most susceptible.

Infections with the bacillus pyocyaneus in man bear a marked resemblance to the experimental forms, at the same time it may, like other pathogenic organisms, occur in a purely saprophytic condition in various parts of the human body. Thus it has been found in the saliva, sputum and sweat, also in the stomach, and KOCH early observed it in tuberculous cavities and regarded it at that time as incapable of any pathogenic action.

KOSSEL and others have pointed out its relation to certain cases of purulent inflammation of the middle ear in children. ERNST¹ of Boston observed it in the pericardial exudate during life, and G. BLUMER² found it in practically pure culture in a case of acute angina that clinically resembled diphtheria. It has also been isolated in cases of urinary infection.

Barker³ and others have shown that it may produce interesting cutaneous lesions. Meningitis, bronchopneumonia, diarrhea and dysentery have all been demonstrated to have been caused in a few instances by this organism. And, finally, it has been shown by a number of observers that it may give rise to a general infection.

In the *Philadelphia Medical Journal* of Sept. 17, 1898, Dr. LARTIGAU of Albany adds a report of three cases in which serious inflammatory conditions and general infection resulted from invasion of the bacillus pyocyaneus. In the first case there was a general infection, which may have been primary in the cul-de-sac of Douglas, thence extending to the general peritoneal cavity and into the system; but it would seem even more probable that the original infection came from the genital apparatus. This case, and one of BARKER'S, demonstrate the occurrence of acute peritonitis due to the bacillus pyocyaneus. In the second case the bacillus was isolated from hemorrhagic infarcts in the lungs and the right kidney, and from the exudate of a double serofibrinous pleurisy. In the third case a general infection took place from an amputation stump of the leg, on account of long-continued necrosis of the tibia.

Undoubtedly many cases of infection by the bacillus pyocyaneus escape recognition because the organism fails to produce its green pigment for days, or perhaps not until it has been passed through animals. In a bacteriologic study of 200 cases of suppurating wounds, JADOWSKI⁴ observed the organism only twice; in a systematic study of 800 consecutive autopsies made at the Johns Hopkins Hospital, BARKER encountered eleven cases of local pyocyanic infection; and the three cases observed by LARTIGAU were observed in the bacteriologic examination of 100 consecutive autopsies.

The *maladie pyocyaneuse* in man resembles the other more familiar septicemias; the general symptoms are those of all infectious diseases. The temperature usually remains high; irregular oscillations are not unusual. The spleen is enlarged, and the urine ordinarily contains a small amount of albumin. Specific pulmonary lesions may develop as bronchopneumonia and pleurisy. Intestinal disturbances, are marked by diarrhea, the dejecta in some instances containing more or less green pus; or, the pigment may become more marked after the stools have been exposed to the air. Among other rather interesting symptoms are the cutaneous lesions in the form of bluish eruptions or petechiæ, or more rarely, papular rashes. These lesions are generally found on the trunk, limbs, and scrotum, and they may appear at different periods in the course of the disease. From the fluid in the bullæ the bacillus pyocyaneus has been occasionally isolated.

¹ American Journal of Medical Sciences, 1894, Vol. cvi, p. 396.

² Johns Hopkins Bulletin, 1895.

³ This Journal, July 31, 1897.

⁴ Quoted by Lartigau.

There is also a chronic form of the disease, which has been studied quite a little experimentally, and this is characterized by hemorrhages into the skin, paraplegia and monoplegia, neuritis, myelitis, contractures, and muscular atrophy, as well as vasomotor and sensory disturbances. This remarkable nervous form of pyocyanic infection has lately been observed in man. JADAKOWITSCH is quoted by LARTIGAU as having described an interesting case of this nervous type. The patient had a chronic eczema of the legs of ten years' standing, frequently complicated by periods of ulceration, the secretion being blue. At these times he would manifest peculiar nervous symptoms; thus, at the end of a period of suppuration, paresis and anesthesia of the whole right arm developed. After another siege of blue suppuration, weakness and wasting, with dyspnea and rapid pulse developed, recovery taking place four months later. After the third return of the blue suppuration there occurred diarrhea, sensory disturbances involving particularly the ano-gluteal and scrotal regions, and in this stage the bacillus pyocyanus was isolated from the urine.

Among the anatomic lesions of pyocyanic septicemia may be mentioned focal necroses, hemorrhages, and parenchymatous degenerations. One especially noteworthy feature is the development of intestinal ulcers in systemic infection. These ulcers more frequently form in the small bowel. In some examples there is merely a superficial necrosis of the mucous membrane, sometimes diffuse, sometimes limited. As far as known, these ulcers, which rarely pass beyond the mucosa, have not caused perforation. There may also be an acute hemorrhage enteritis, with or without ulceration. The stomach is commonly the seat of such inflammation. There may be multiple minute hemorrhages into the serous membranes.

The diagnosis of local infections can be made only by means of bacteriologic examination. The diagnosis is frequently aided by the presence of green pus on the dressings. In cases of general septicemia it would be extremely hard to separate it from other forms of infection; the intestinal symptoms, if present, or the existence of blue or green pus in some local lesions, would be very suggestive. The WIDAL test might be of service in distinguishing typhoid fever from such cases. The demonstration of the bacillus pyocyanus in the urine or in the stools might further the diagnosis. Experimentally the serum diagnosis in pyocyanus infection has been demonstrated, and this might prove to be of considerable clinical utility.

POSTOPERATIVE PSYCHOSES.

A subject that formed one of the chief themes for discussion at the late annual Congress of French Aliens and Neurologists and which was also prominently brought before the corresponding body in this country

at its latest session may be fairly considered as one of the questions of the day of modern psychiatry. As presented, it is not altogether a simple one; it may be admitted that surgical interventions are sometimes followed by insanity and that there exists in such cases a relation of cause and effect, but it will still remain to be settled whether this is anything more than one of the accidents that may occasionally happen without any special significance, as well as—allowing this to be not established—whether there is any special type of mental disorder thus produced, and what particular class of operations are most likely to have such consequences. It is more particularly within late years that certain gynecologic operations have been largely credited with a special influence in producing mental disturbances, and this subject has been actively discussed, not only in the bodies mentioned, but also in the Paris Society of Surgery and elsewhere. It is not an unnatural presumption, when we consider the marked effects of early ablation of the testicles on the organization and the profound systemic disturbances that accompany the menopause, that the premature removal of, or interference with, the ovaries might be sometimes followed by serious mental disorder, and it is probable that this preconception has had its influence, not only in inciting observation in this direction, but perhaps also in affecting the estimation of the results of operations in so far as the special mental symptoms are concerned. A temporary or permanent mental disturbance following a gynecologic operation would be, it may be, more readily attributed to the interference with the ovary than to other causes—predisposition, general shock, the anesthetics used, etc.—that may have had the predominant part in its production. The theory of internal secretion which is just now prominently before the medical profession also affords suggestions in this connection that favor the notion that serious mental disturbances may follow ovarian operations. A priori, there would seem to be some reasonable grounds for the belief that there might be a special liability to postoperative psychoses from certain gynecologic operative procedures.

As regards surgical operations elsewhere than in the genital organs, the presumption is less evident, but postoperative mental disturbances may follow any kind of surgical interference and, according to one authority at least, they are apparently rather more frequent after operations on the eyes, than those of most other regions. From what we know of the mental effects of surgical operations in themselves, which have been made the subject of an interesting study by WHITE, a few years back, it would not seem improbable that an occasional attack of insanity should be one of their untoward results. Just how far, however, this is to be attributed to the operation itself and not to other accessory conditions is still, for most cases at least, an open question.

The report of M. RAYNEAU to the Association of

French Alienists and Neurologists and the discussion, in which such well-known alienists and surgeons as REGIS, PICQUÉ, JOFFROY, GARNIER and others participated, are of especial interest as affording an index of what may be assumed to be the present state of opinion in that quarter on this special subject. As a whole, they leave the question still in an unsettled condition, and one that affords the chance of a rather wide choice of opinion without cutting loose from respectable authority. According to M. RAYNEAU there is no special type of postoperative insanity, and except in case of thyroidectomy or operations on the cranium, the chief part in the genesis of postoperative psychoses must be attributed to hereditary or acquired predisposition, where only a slight cause is necessary to upset the unstable brain. As to any special liability from gynecologic procedures, he rejects it altogether. M. REGIS, on the other hand, whose psychiatric experience is certainly wide enough to give weight to his opinion, held that there is a special type, that of mental confusion, that commonly appears in the insanity following operations, which itself may be due to various causes—shock, the anesthetics, septicemia and in the most typical cases, to auto-intoxication either already existing, or induced in persons of weak resistance by the shock of the operation itself. Others in the discussion laid weight on the predisposition, and one with extensive army experience called attention to the rarity of this complication in military surgery, which he credited to the selection of recruits eliminating the predisposed. The majority of French surgeons, it would appear, consider the operation itself and its locality as an unimportant factor in the production of these postoperative mental disturbances.

The subject is a complex one, and it is evident that no one series of observations, however extensive, can have much value for the decision of the questions involved. To get the complete facts as to the effects of operations on the mind the whole subsequent history of the patients must be followed up, and remote as well as immediate results be ascertained. Especially is this true as regards the results of operations on organs like the ovaries and testicles and those on the brain itself. Even the effects of extensive major amputations might well be studied for their remoter mental effects; the ablation of extensive portions of the body has its effects on the structure of the brain, and this may sometimes involve the mind. Apparently little attention has been given to this possible later type of surgically caused mental derangement, but it is properly to be included in the postoperative psychoses.

The mental disorders immediately following surgical operations may well be due in many instances to the effects of shock, anesthetics, or any other of the multiple possible factors, and the question of predisposition is always to the fore. In fact, the predisposed form so large a proportion of the population

that it is almost remarkable that so serious a general provocation as is afforded by a surgical operation, with its adjuncts of toxic anesthetics, shock, etc., is so rarely attended by immediate or secondary mental disorder.

LEGITIMATE PRESCRIBING.

Many editors have pointed out in the columns of medical journals the importance of accuracy in therapeutics, or in other words, the necessity of using those pharmaceutical or chemic substances which are placed in our hands in such a condition of purity or excellence that no doubt concerning their reliability can possibly arise. It may not be out of place for us, at this time, to call attention to an even more pressing need on the practicing physician, and that is, the necessity of avoiding the use of compounds devised by persons ignorant of chemistry on the one hand, and of medicine on the other, who have sufficient pharmaceutical knowledge to be able to prepare for the market preparations pleasing in appearance, and who have sufficient capital and unlimited impudence to claim that most of the ills which afflict our patients can be relieved by the employment of their peculiar specialty. There is not a physician in this broad land who does not receive several times a week circulars, advertising, not only legitimate pharmaceutical preparations, but various compounds of cheap and ordinary vegetable and mineral drugs to which have been given trademarks and registered names, and which, in consequence, cost the patient far more than a simple prescription containing the same ingredients. Thus, it is well known to most of the profession that a very widely advertised drug, designed chiefly to relieve pain and reduce fever, contains as its most active ingredient, acetanilid, and we have before us, at this moment, a circular recommending a number of preparations, which supposedly contain quinin, to which are added other substances designed on the one hand to produce movements of the bowels, to act as a tonic, and to be a substitute for that most valuable and cheap alkaloid, quinin, itself. Further than this, every one of these circulars contains a number of letters from supposedly reputable practitioners, stating that they have used these products and obtained extraordinary results therefrom. In some instances these results have not really been due to the use of the compounds named, but the patient has happened to improve at the time that they were administered, and, according to the argument of *post hoc propter hoc*, the new compound has received the credit, and the physician has congratulated himself upon the discovery of a new remedial agent, when in reality he should be condoling with himself that he has lacked ingenuity and common sense to such an extent as to have been unable to devise for himself a similar combination, and further, has been misled into awarding the credit for the recovery to a substance which does not deserve it.

The very large number of compounds which are placed upon the market, which chemie analysis soon proves to be but mediocre preparations, is an illustration of the sad lack of medical education possessed by some practitioners. It is humiliating to think how many of the profession are willing to take the "say so" of the commercial traveler, who often is neither a graduate of pharmacy nor medicine, as to the therapeutic efficiency of some drug which he may be hawking about the country. Is it surprising that the laity will patronize Indian herb doctors and traveling salesmen in highly decorated wagons, when physicians will use products compounded and marketed with no greater possibilities of reliability than those which we have named. It is a characteristic of the Anglo-Saxon race that they are independent in thought and action, but it would seem as if some members of the medical professional were willing to be led hither and thither by the specious arguments of persons who have no more claim to our confidence than that which they can win by a smooth tongue and flattery. No physician should prescribe a remedy unless he has a clear idea of what he wishes to accomplish, and, therefore, it is necessary that he shall first make an accurate diagnosis, and second, that he should have a clear idea of the physiologic action of the remedy which he employs. How is this possible when he is simply given the information that such and such a preparation is useful in such and such diseases, and has placed in his hands a combination unknown to chemistry, to the honest pharmacist and to the pharmacologist? Why should the physician prescribe such products any more than he would prescribe an herb handed to him by an old woman at the roadside, with the statement that she had found it useful in the treatment of certain ailments? She, at least, would have put it to the clinical test, which is something the average promoter of these combinations has never done. Let us remember the old adage, "be sure you're right, then go ahead," and let us have enough respect for ourselves and our profession to give only those remedies which come to us through reputable and ethical channels.

THE SUFFERING OF TROOPS ON TRANSPORTS.

The daily press of this country has told us of the foul condition of the ships used in transporting troops from Santiago to Montauk Point, and of the bad water, bad food and bad treatment which our unfortunate soldiers received during the voyage which brought them from the field of victory, and of subsequent prostration by disease, to a convalescent camp in the United States. No doubt there was much suffering on many of the troop ships. The men were broken down by their exposures and by attacks of yellow fever, malarial diseases and dysentery. Their transportation was decided upon to avoid the greater danger of a continued stay in the miasmatic locality

which had sapped their strength. Great danger attached to the process of removal. Great care had to be exercised by medical officers at the point of embarkation to prevent the dissemination of yellow fever in these crowded vessels, and that no great disaster occurred on any of these ships reflects credit on the medical officers concerned. It was to be expected that there would be much individual suffering on these ships, but certain official reports which we have seen indicate that there were few grounds for the extravagant headlines and ghastly exaggeration with which the newspapers greeted the arrival of every fresh transport. Captain WALTER D. McCaw, Assistant-Surgeon U. S. Army, states that the Sixth and Thirteenth regiments U. S. Infantry embarked August 7, on the *Vigilancia*. The troops were reduced to the last degree in health by malarial poisoning and repeated outbreaks of fever. In fact, all were either sick and still suffering from fever or manifested the results of the previous attacks by extreme feebleness and profound cachexia. The sanitary conditions on board were fairly good; the ventilation of the sleeping quarters of the men was satisfactory. The vessel was not overcrowded, and plenty of deck room was available. As the voyage was made in favorable weather the health of the command improved marvelously. The travel ration could not be eaten by the majority of the men, but hot soup was served, which proved of great value. Sixty-seven men were on sick report on embarkation. No death occurred during the voyage, and on arrival off Montauk Point, August 14, the sick list was reduced to fifty-two, and these were mostly convalescent. The gain in general health was most gratifying.

Every statement made by the medical officer is sustained by General ADELBERT AMES, who was in command. The vessel furnished ample and comfortable accommodations for officers and men, the command numbering 698 men. The ship's officers and crew were attentive to all the wants of the command, providing every means possible to assist the troops in the preparation of their meals and making them comfortable in their quarters. The water for drinking and bathing was good and plentiful. The weather was exceptionally good during the entire voyage, and the health and spirits of the men improved each day.

This relates to only one of many voyages made, but it suggests that if we had more of these official reports before us we would have to correct many of the impressions made upon our minds by the perusal of the press dispatches.

THE INTERNATIONAL TEMPERANCE CONGRESS.

Many persons have the impression that temperance work is confined to this country and England, while on the Continent, the art of moderate and temperate drinking has become so perfected that temperance work or societies are not needed. It will be news to

such people that active temperance efforts on the Continent, in the wine and beer districts, are more intense and better organized than in this country.

Eighteen years ago the leading temperance men on the Continent met at Brussels and organized an International Temperance Congress. The members were largely medical men, teachers and government officials, with a few philanthropists and clergymen. The leading questions discussed at this congress were the best means of obtaining distilled liquors which contained pure alcohols, the physical action of pure artificial alcohol; also the best methods of preventing the use of poisons in mixed drinks. A committee of scientists and physicians presented an elaborate report on this subject at the next congress, two years later. The third congress was held at Antwerp in 1885, and the questions of the effects of wine and distilled spirits were discussed. In 1887, a very large congress of members from all the continental countries met at Zurich, and the nutritive value of wines and spirits was discussed. The next congress was held at Christiania in 1890, and saloons and education of the people were discussed. The next meeting, at the Hague, discussed and condemned moderate drinking. Two years later, at Basle, a still larger meeting took up advanced ground on prohibition and total abstinence as sanitary and scientific questions. At Brussels, in 1897, this congress brought out a large number of the leading medical men and teachers of Europe. The dangers from the use of alcohol, and the perils from and remedies for inebriety were the leading subjects. The condemnation of alcohol, except as an anesthetic, by leading medical men and teachers, was very prominent. France was shown, from statistics, to be the most drunken country in Europe; more spirits were consumed per head, and the assertion was made, "that France was rapidly becoming a nation of inebriates."

This congress and its reports have roused a great interest, in all the scientific and sanitary centers, and the problems connected with it are subjects attracting a great deal of attention.

A preliminary program for the next congress, at Paris in 1889, has been issued. Dr. LAGRAND, the president, is an eminent specialist, Superintendent of the Government Insane Asylum, and author of "Mental Medicine." The last congress comprised five hundred delegates and was in session three days. The coming congress will be much larger and will be divided into four sections. The first will discuss educational methods, temperance teachings in schools, and various moral means of prevention. The second section will take up the social and economic question of the drink evil; its medicinal and hygienic aspect; the action of alcohol on the body and its influence in sickness and mortality. The third section will study asylums for inebriates and their medical cure and treatment, by drugs and hygienic means and other measures. The fourth section will be devoted to pre-

ventive means, and efforts to increase habits of total abstinence, the formation of temperance restaurants and the work of societies to help on the growth of total abstinence. It is quite clear that this program will bring out many new facts and advance the subject materially. A number of leading men in this country have been invited to take part in this congress, and the scientific interest which these great gatherings create is already beginning to be felt in this country. The political and religious agitations of this subject here have largely obscured its scientific side, and medical men have not taken up the subject in the spirit of careful research. We are clearly behind in our medical study of the drink evil. The questions concerning the action of alcohol, and inebriety and its cure and prevention, are vital in almost every neighborhood of the land, and it would seem to be a most practical subject for medical men to discuss and study. Some of the most eminent men in Europe are giving attention to this subject, and a very wide, unoccupied field is opening in this country for similar work. The idea of these great congresses is to have some general symposium of all the facts, which will educate public sentiment in the right direction, and enable legislation to act along rational lines without error. Another idea is, that medical men, teachers and scientists are the most competent authorities to study and decide upon these topics, and that sentiment and theory have a small place in the practical solution of these problems. Here in this country we have two societies, the Association for the Study and Cure of Inebriety, and the Medical Temperance Association, one taking up the malady of inebriety, and the other, the problem of alcohol and its effects. Both of these societies are confined to medical men, and their studies are practically unknown to the masses. If we could have some organization to present the facts to the public in an authoritative way, above prejudice, a great advance in the temperance work of the country would follow.

THE YELLOW FEVER.

Yellow fever has again made its appearance in Louisiana and Mississippi. The familiar scenes of panic and local quarantine are once more to the front. The gush that was ladled out in certain quarters about "stamping out" the fever by the long-range method now prevalent in the Washington Bureau, is now seen to have been premature. Hundreds of refugees fleeing from the infected localities, and the interference with travel, constitute irrefutable evidence of the monumental failure of the Marine Hospital Bureau as at present managed to stop the spread of the disease.

The passage by Congress of the bill creating a Bureau of Public Health, is growing more and more necessary.

CORRESPONDENCE.

Concerning Criticism of the Medical Department.

PARKERSBURG, W. VA., Sept. 20, 1898.

To the Editor:—Just now it seems to be the thing for every one to criticise everything pertaining to the conduct of the war; from the head of the War Department down all the ranks to the lowest officer in the field, all are under fire. Meantime it is refreshing to read plain and courageous articles—statements of facts, similar to that of Drs. Sutton, Senn and others who have served in the field and camp. A new generation has come up ignorant of the unavoidable conditions that pertain to war, who have forgotten the hardships, cruelties and sufferings of 1861-1865, and who have expected an army to be created, drilled and made efficient from raw material in rank and file, without mistakes; that large camps be established, veritable cities in size, and where the unsanitary conditions arising from the congregation of many men would be avoided by strict sanitary precautions being carried out by men taken from civil life, who were ignorant of the science of military sanitation; indeed, men who were ignorant of the rights accorded by military regulation to secure proper food, medicines and camp hygiene. In Dr. Dabney's letter in the JOURNAL of the 17th, we have the criticism of a sanitarian who is painfully ignorant of the situation he presumes to criticise. Let a city, if possible, spring up in the same time as one of these camps, fully supplied with sanitarians, and see whether it would be provided with a pure and adequate water supply! whether it would have an efficient administration for the disposal of garbage, of excreta, of sanitary cleanliness? Would these officers secure the co-operation of the inhabitants to avoid the use of impure water, unhealthy food, maintenance of personal hygiene? Certainly not! Sometimes in mining towns we see similar conditions, and we see similar results. It is not fair to compare the conditions in these camps with that in cities long established, with the organizations with years of experience behind them. As to the moving of hospital trains and its attending dangers, we had somewhat similar conditions in 1861-1865, yet there was no widespread dissemination of typhoid fever, camp diarrhea or dysentery throughout the country. As to typhoid fever, it prevails all over the country at this season. In a majority of cases there is little disinfection of excreta secured. From country, and towns on the banks of streams of all sizes, this excreta reaches the rivers from which towns and cities derive their water-supply, and health authorities of all the States have not secured any abatement of the evil, by any means. They have not yet, as far as I know, secured such detention of such patients while their excreta is subjected to such examination as he proposes for our army confrères to carry out. Sanitary officers can direct that such and such procedures be carried out, just as the Surgeon General had done, and then fail to secure the performance. Let us have a little common sense with our fault finding. A summer campaign in Cuba meant sickness and death; summer camps for northern troops in the southern States meant the same. Our troops in these days have had easy times, save at Santiago, as compared with those in the days of 1861-1865, both blue and gray.

In conclusion, Dr. Dabney makes an invidious comparison between the medical men of the army and those of the Marine-Hospital Service, and proves it by the case of the marines at Guantanamo, their freedom from disease as compared with the troops at Santiago, due, he thinks, to the superior skill of the Marine-Hospital Service or surgeons. It is the first time we ever have heard that the U. S. Marines are a part of the Marine-Hospital Service and not attended by their own naval surgeons. We think the conditions are not at all the same. The medical men in the regiments were taken, in the case of

volunteers, from civil life, appointed after examinations by boards chiefly appointed by the governors of the various States, and included many men who had served with the National Guard. If ignorant, it is the fault of the system. The volunteer surgeons appointed by the National Government included many who would adorn any position, either in military or civil service. Of course there have been mistakes, had appointments, and carelessness, but nothing like to the extent the critics allege. May we profit by the experience and not be rushed into a war again before we are at least half way prepared for it. Least of all let us of the medical profession throw stones at those of our brethren who are at the head of medical service in the army. Respectfully,

W. H. SHARP, M.D.

Criticism of a Medical Directory.

MOUNT CLEMENS, MICH., Sept. 22, 1898.

To the Editor:—There has been a question coming up from time to time as to the reliability of the information published by R. L. Polk & Co., in their "Medical and Surgical Register of the United States." This question has been discussed *pro* and *con*, some claiming that it was reliable and others that it was not. It has come to the notice of physicians generally that the names of men were inserted as practicing physicians, whose evidences of having graduated were rather shady; but not until the present year have I known of any instance where they have sought to compel physicians to buy their publication by giving them a bad standing before the public if they did not. That seems to have been done in my case in the present edition without any other motive (further than that as treasurer of the Mount Clemens Sanitarium Co., they solicited an advertisement for two publications which they are getting out, namely: "The Medical and Surgical Record," and the "State Gazeteer," which I did not think, from a business standpoint, would be a paying investment). In the two former editions, 1893 and 1896, the name and standing of the college at which I graduated were correctly given; but in the present edition, the statement concerning me is as follows: "Alfred N. Shotwell, R. ¶," followed by a mark which indicates, "claims to have graduated, but the records do not show that a diploma was granted to any one bearing this name." The fact of my graduation has never been questioned before, and I refer you as to the untruth of their statement, to the faculty of the Detroit College of Medicine, where I was graduated Feb. 29, 1884; any member of it, or to any of the following societies: The Michigan Medical, the Northwestern, the AMERICAN MEDICAL, and the Pan-American. It would seem that it is about time for physicians to make a stand in this matter, as farther down in the registration of this town (if you will follow it), appear the names of two masseurs among the names of physicians. I know nothing whatever about the standing of these men, and it is foreign to the question, further than that they do not claim to be graduates of medicine, nor do they practice medicine in any shape or form. Is this a register and directory of physicians, or is it a directory published simply for the dollars and cents that these people can get out of it? I shall be glad to take this up with you and furnish you any other data that I can, and will furnish certificates from the officers and faculty of the college at which I graduated, which will substantiate the statement that this publication is unworthy of the medical profession, and should be eat down upon by all reputable physicians as unreliable and unworthy of their confidence.

If you will give this matter publicity through your journal in any way that you think proper, after a thorough investigation, I shall be very glad to have you do so.

Very sincerely yours,

A. N. SHOTWELL, M. D.

A Grave Menace to the Public Health; A Correction.

NEW YORK, Sept. 24, 1898.

To the Editor:—In your issue of September 17, p. 666, the statement is made in a letter signed by "T. S. Dabney, M.D.": "Eight hundred marines were camped for many weeks at Guantanamo and their health remained excellent, and why? Because the surgeons of the Marine-Hospital Service not only understand preventive medicine, but they *practice* it."

I beg to correct the inference that the United States Marine Corps is under the medical supervision of the Marine-Hospital Service. The latter organization was established for the care of sick and disabled sailors of the merchant service, a "mercantile marine," as it is sometimes termed, thus, doubtless occasioning the misunderstanding.

The United States Marine Corps is part of the United States Navy, and is cared for exclusively by the officers of the medical department of the United States Navy. The writer would have been strictly within bounds if he had applied to them the statement that "every man in that service is qualified for the work he is assigned." Not only in our home ports, but on foreign stations their success in preventing inroads of communicable disease is noteworthy and commendable. Furthermore, the officers, seamen and *marines* of the United States Navy are, first of all, cleanly in personal habits; second, obedient to orders and observant of sanitary requirements; and third, not given to whining (for *lactopeptin*, etc.) and complaining because of the hardships incident to the service, three essential conditions in time of war. Very respectfully,

ALBERT L. GIBON,
Medical Director, U. S. Navy (retired).

Gonangiectomy.

DUNNING, ILL., Sept. 22, 1898.

To the Editor:—In one of my recent articles published in the JOURNAL I used the word gonangiectomy, meaning by it an excision of a portion of the vas deferens. As it seems to be a new word, and since I have had a number of inquiries as to its root words or derivatives, I take this means of answering, and give first, the Greek, then the English equivalent, with diacritic markings for pronunciation; then the word as compounded, with its definition, "Lidell & Scott's Unabridged Greek-English Dictionary." The translation may not be absolutely literal:

γονή, gona: semen.
ἀγγεῖον, aggeion: a vessel.
ἐκτομή, ectoma: excision, or cutting away.

As compounded, gonangiectomy: excision of a vessel carrying semen.

Very respectfully,

GEO. W. JOHNSON, M.D.

Secretary, Department of Health.

FAIRFIELD, IND., Sept. 24, 1898.

To the Editor:—Some of the papers of our land have had much to say of sanitary conditions, and made attacks upon the medical department, the truthfulness of which will be brought out or refuted by investigation.

Present reports from surgeons themselves prove the fact that they have done noble work, also that many embarrassing conditions arose not due to any lack of service upon their part, but because of limited authority, being handicapped by officers of other departments, and without medical knowledge.

All general orders must come from the Secretary of War and in such trying times it seems quite enough for him to give attention to other duties. In truth, this department should be directed by the Secretary of the Board of Health, who should be a member of the cabinet and a physician. Let it be his duty to look after sanitary conditions, camps and boats, give general orders to surgeons, and see that this Department

is equipped for efficient work, and care for the noble men, "our soldiers."

Not only is there a demand for this additional cabinet member during war, but he would fill a long-felt want in times of peace, and prove a valuable addition to the president's family.

Yours respectfully, THOMAS L. COOKSAY, M.D.

Instruments for Fen Cho Fu Hospital.

STOUX CITY, IOWA, Sept. 19, 1898.

To the Editor:—Thanks are due to the JOURNAL as well as Dr. Webster of Chicago and Dr. Green of Dubuque, Iowa, for so soon as their gift of surgical instruments arrives at Fen Cho Fu Hospital, Dr. Atwood will no longer have to amputate limbs with a saw made of a piece of band iron. The appeal through the JOURNAL and the response by the doctors sends the instruments.

Very respectfully,

MARY A. ATWOOD.

PUBLIC HEALTH.

Yellow Fever in the South.—In special dispatches in the *Chicago Daily Tribune*, September 26, four undoubted cases of yellow fever to date, with two deaths and one recovery, were reported from Jackson, Miss.: seven cases and one death from New Orleans, and ten cases from Oxford, Miss. There are no cases in Alabama and the quarantine is entirely in the hands of the State authorities. Refugees fleeing from Jackson are not permitted to stop within the State of Alabama.

Health in Michigan.—Reports to the State Board of Health for August give diarrhea, rheumatism, neuralgia, bronchitis, and cholera morbus as the five most prevalent diseases for the month. Compared with the preceding month, dysentery, cholera morbus, cholera infantum, typhoid fever, diarrhea and inflammation of kidney increased in area of prevalence.

Health in Chicago.—The report of the Department of Health for August gives the total number of deaths during the month as 1977, a rate of 1.22 per 1000 as compared with 1.21 per 1000 for the corresponding month in 1897, and 1.40 for August 1896. The principal causes of these deaths were: Diarrheal diseases, 261; other acute intestinal diseases, 231; diseases of the nervous system, 234; consumption, 184; heart diseases, 84; pneumonia, 78; cancer, 63; typhoid fever, 45; diphtheria and membranous croup, 41; bronchitis, 37. Those under one year of age numbered 595; those between 1 and 5 years, 251.

A Warning Against Antifebrin.—An inquest was recently held in London on the body of a young man who died from taking powders containing an indeterminate quantity of antifebrin. The powders were taken for the relief of headache. Antifebrin, like most anilin derivatives, is a drug which should be employed with especial caution. It is official under the name of acetanilid, and its potency is sufficiently indicated by the fact that the maximum dose assigned to it is only three grains. There have been many cases of poisoning from the injudicious administration of this remedy, the symptoms produced by it being of the anilin type. The patient usually complains of giddiness, noises in the ears, throbbing in the temples, and a dull, heavy pain in the head. The face becomes livid, the lips are blue, and the pupils are contracted. This is followed by symptoms of collapse, the face and extremities are cyanosed, the skin is covered with cold, clammy perspiration, the pulse is feeble, and respiration becomes shallow and frequent. There is no specific antidote, and after the administration of a brisk emetic the sufferer should be kept in a strictly recumbent position, and plied vigorously with stimulants. The effects are usually of considerable duration, and in one case the patient was not out of danger for fourteen hours. We are informed that there is a considerable demand for powders of this description, the pur-

chasers being chiefly young women of a seamstress class. Many people acquire an unfortunate habit of dosing themselves with remedies of unknown composition, and this death under such sad circumstances may be taken as an indication that the custom is not one which can be indulged in with safety.—*Brit. Med. Jour.*

Requisites for a Tuberculosis Retreat.—The requisites for a sanitarium are as follows: 1, a well-arranged building with a southern aspect; 2, a dry, pure, well drained subsoil; 3, a pure atmosphere with abundance of sunlight; 4, a garden well protected from the wind; 5, sheltered verandas, galleries or arbors facing the sun; 6, constant supervision by specially trained medical men; and 7, an adequate nursing staff. High altitude is an advantage, but is not essential. As pointed out by Dr. Rufenacht Walters, all these conditions may be found on British soil; and there is no necessity for consumptive patients who can not conveniently leave home to go abroad in search of health. Three years' experience at Cromer has convinced Dr. Burton Fanning of the practicability and utility of the open-air treatment in England. He shows how the disadvantages arising from the capriciousness of our climate may to a great extent be obviated by a more elaborate provision of shelters and coverings than is required under brighter skies. There is some reason to believe that the climatic influences of foreign stations, though in themselves more favorable, may have disadvantages which make them ultimately less beneficial in the case of British patients than treatment in home sanatoria. Many leading German authorities hold that a cure effected in a more genial climate is less assured than one which has been obtained in the native country of the sufferer.—Malcolm Morris, in the *Practitioner*.

Practical Sanitation.—The Health Commissioner of Chicago has sent the following circular letter to some 3500 or 4500 individual producers of milk for the Chicago market, throughout an area extending more than 120 miles from the city—the farthest point being Loganport, Ind., 123 miles distant:

DEPARTMENT OF HEALTH: CITY OF CHICAGO.

ARTHUR R. REYNOLDS, M.D., COMMISSIONER OF HEALTH.
SEPTEMBER, 1898.

To the Producers, Handlers and Shippers of Milk for Chicago:

The return to their homes of so many of our soldiers sick with or convalescent from typhoid fever has a special interest for milk producers, as well as for health authorities, at the present time. Hundreds, and probably thousands, of these sufferers are scattered throughout the area in which milk is produced and shipped to the Chicago market—on farms and in villages, small towns and other places, which drain directly into the streams that furnish the water-supplies of dairies and milch cows.

It is highly probable that many of these streams will be or already are polluted by the typhoid fever poison, and it is positively known that the disease may be conveyed in milk received and carried in vessels washed in such polluted water. One observer, the eminent sanitarian, Ernest Hart, has investigated 97 outbreaks of typhoid conveyed by milk, which caused upward of 5700 cases and 656 deaths.

The quality of the milk supply is of vital importance to Chicago. It has greatly improved during the last few years, and the deaths of infants and young children, for whom milk is the staple article of diet, have diminished in direct proportion to this improvement. A recent report of the Department shows a saving of 1530 children's lives last year compared with the average number prior to 1894, when the supervision of the milk supply was fully undertaken by the Department of Health.

In this supervision it has been the aim of the Commissioner to secure the co-operation of milk producers by showing that their interests are best promoted by improving the quality of their supplies. Such improvement and its effects have been repeatedly shown to the Chicago public by diagrams, tables and other matter furnished to the newspapers and published in them and in the Department reports. One result of this publicity is seen in the great increase in the milk shipments to the city. In 1896 the average daily receipts of milk by railroad amounted to 13,275 cans. Last year, 16,450 cans were

received daily, or 48,034,000 gallons during the year. This is an increase of 9,271,000 gallons more in 1897 than in the previous year, or nearly 24 per cent. There has, of course, been no such increase in the population of the city, and the conclusion is, therefore, irresistible that mothers having been taught that the milk supply is of better quality, are feeding their children more generally and more liberally with this best of all food for the young.

This consideration, alone, would warrant the Commissioner in directing the attention of milk producers to the threatened danger of typhoid, and in asking their co-operation and assistance in preventing or restricting the evil as much as possible.

No producer can afford to have his milk infected with the typhoid poison. The methods of the Department are such as to make it certain that any outbreak of this disease in Chicago, caused by infected milk, will be located in the dairy from which the milk was shipped, and it would then, not only be the bounden duty of the Commissioner to prohibit the receipt and sale of such milk in this city, but the publicity which would surely be given to such prohibition would ruin the business reputation of the unfortunate producer.

All concerned in the production, handling and shipment of milk for the Chicago supply are, therefore, earnestly requested for their own interests, as well as for the interests of health and life in Chicago:

First, to keep posted as to typhoid fever in the vicinity of their places of business—especially with relation to the sources of their water-supplies.

Second, to notify the Chicago Health Department immediately on learning of any case of the fever in their respective neighborhoods.

On receipt of such information an inspector will be sent direct to the locality to ascertain the exact condition of affairs and the extent of the danger of milk infection, and to advise and assist in proper precautions.

No charge will be made for such inspection and assistance, but all the resources of the Department, its laboratory and its skilled experts, are freely offered to those to whom this circular letter is addressed.

ARTHUR R. REYNOLDS, M.D.,
Commissioner of Health.

This is practical sanitation on a broad scale and the example is one which might very properly and profitably be followed by State boards of health and other sanitary authorities in warning against the probable spread of typhoid fever from the cause indicated and in instructing in known measures of precaution.

Sanitary Results Afforded by the Filtration Plant of Lawrence, Mass.—According to the *Public Health Journal*, the effect of the changes made in the water-supply of Lawrence, in 1893, was very promptly felt in an improved state of the health of the town. The work was completed on September 20, of the year named, at a cost of \$65,000; and from that date up to the present time it has been in continuous use, and not once has the unfiltered water entered the reservoir or the service pipes of the city water-supply. It was the intention of the designer that the filter should be operated as an intermittent filter, that is, that the surface should be uncovered or free from water every day for a period of two or three hours, it being his opinion that better results would be obtained by this method of operation than could be obtained by operating it as a continuous filter; that is, one whose surface is never uncovered, except at times of scraping. The intermittent method of operating is followed during the summer, but in the winter the surface of the filter is seldom uncovered except at times of scraping. During the year 1894, the first entire year of operation, the bacterial efficiency of the filter was 98.46 per cent.; during 1895, it was 98.22 per cent.; and during 1896, it was 99.32 per cent. The efficiency of the filter in removing bacteria has always been greater in summer than in winter, the reason of this being that, contrary to the advice of the designer, the filter remains uncovered, and thus unprotected from the severe cold of the winter of the climate. In the January following the starting of the filter, the number of typhoid fever cases was nine, or one-eighth as many as during the previous January. This fact is more striking when we note that in Lowell during this month there were ninety nine cases, or three times as many as during the previous January. In January, 1895, there were ten cases

in Lawrence; in January, 1896, six cases; and in January, 1897, two cases. A more satisfactory demonstration of the effect of the filter upon the health of the people of Lawrence can be made, however, by stating that in 1887 the deaths from typhoid fever were 11.75 per 10,000 of the population; in 1888, 12; in 1889, 13.75; in 1890, 13.33; in 1891, 11.20; and in 1892, 11.11 per 10,000. During 1894 the filter was built, and hence during a portion of the year filtered water was being used. In 1894, however, filtered water was in use during the entire year, and the death rate from typhoid fever was 5 per 10,000; during 1895 it was 3.07; during 1896, 1.86; and during 1897, 1.62 per 10,000. That is to say, the average death-rate for the six years previous to the construction of the filter was 12.36 per 10,000, while during the three years and ten months following its construction, it has been 2.95 per 10,000 of population, a reduction of 76 per cent. It can be said also, that a number of the deaths reported each year are operatives in the large mills who, in spite of the warning notices, drink the unfiltered and polluted canal water which is piped into these mills. In fact, it can be said that Lawrence now has one of the lowest death-rates from typhoid fever of any city in the State, and has its greatest number of cases during August, September, and October. The cases occurring in these months can not in any way be connected with the filtered water supply. Besides giving a water free from disease germs, the filter is giving a cleaner water, one more attractive and palatable, and containing but 50 per cent. of the organic matter of the river water.

The Use and Abuse of Food Preservatives.—Considerable contention has waged round the legality or desirability of employing preservatives in perishable articles of food and the subject naturally comes to the front during hot weather such as that which we have been experiencing for the past three weeks. There is little doubt that some means of preserving food are absolutely necessary when the prevailing conditions are such as to turn food in a few hours. Otherwise milk, cream, meat, etc., become unfit for consumption, unpalatable and evil-tasting. To keep the articles somewhat near freezing point is obviously impracticable on any large scale, while sterilization is similarly beyond application. This reduces our resources to the simplest of all expedients, the addition of an antiseptic in such quantity as to preserve, at any rate for a time, the articles from objectionable change and yet in minimum quantity so as not to constitute a possible harmful amount. We think the use in limited quantities of such mild antiseptics as borax to be justified at a time like the present when otherwise a considerable amount of valuable food substances would be wasted and lost. But, as we have urged before, the fact of an article being thus preserved against change should be always notified to the consumer, and we would have limits imposed by the State as to the amount of the preservative to be used; moreover, the nature of the preservative should also be declared. In other words, we would establish a system, recognized by the State, by which under certain circumstances the employment of preservatives with restrictions as to their nature and amount could be legalized. There has recently been made an important contribution on the subject by Professor Chittenden of Yale University. As the result of a series of very interesting experiments this physiologist reports that the results would appear to warrant the statement that in particular boric acid and borax when present in moderate quantities can have little or no deleterious effect upon the more important chemico-processes of digestion. On the contrary it would appear that the presence of these agents may, in some cases at least, even accelerate the normal digestive processes of the alimentary tract. In regard to the effects of borax and boric acid on nutrition the same observer concludes that when borax is given in sufficient quantity to produce any effect its action is similar to that of common salt, i. e., it tends to increase proteid decomposition. Both borax and boric acid, he states, are without influence upon the putrefactive processes of the intestine, apparently because of their rapid absorption from the intestinal tract and quick elimination through the urine.—*Lancet*, August 27.

BOOK NOTICES.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In Twenty Volumes. Volume xv, "Infectious Diseases." New York: William Wood and Company, 1898.

This volume continues the articles on infectious diseases. The contributors are Prof. Dittmar Finkler, M.D., of Bonn, who has contributed nearly one-half of the volume, 249 pages on influenza; Eduardo Licéaga, on typhus fever, 72 pages; Dr. S. Kissato Katsagawa, on Asiatic plague; Dr. Frank S. Billings, on glanders and anthrax; Ismar Boas, on foot and mouth disease; M. L. Ponfick, on actinomycosis; N. J. Keirle, on rabies; J. McFadden Gaston and J. McFadden Gaston, Jr., on pyemia and septicemia. These authorities have produced a series of essays truly representative of medicine at the close of the nineteenth century on the subjects treated, and it would be difficult to find authors who could write on the respective topics assigned them with better knowledge of the subject in hand. The history of influenza by Finkler is alone worth the price of the volume. He has made free use of that storehouse of epidemiology, Thomson's Annals, which very fairly covers the period from 1510 to 1837, especially in Great Britain, but we have here by Finkler an account of the preceding epidemics, the disease commencing, on the authority of Hirsh, in 1173. He has also brought his history down to the year 1894. The studies of Pfeiffer and Beck, Huber, Voget, Van Selow, Danco, Babes, Nastinkov and Max Richter are given in full.

Medical Diseases of Infancy and Childhood. By DAWSON WILLIAMS, M.D., Physician to the East London Hospital for Children. In one 12mo. volume of 629 pages, with 18 illustrations. Cloth, \$2.50, net. Lea Brothers & Co., publishers, Philadelphia and New York.

The author has treated the subject from the broad standpoint of general medicine, but describes fully the special modifications and complications incident to infancy and childhood. The volume contains 47 chapters, viz: Introductory, clinical examination, diseases incidental to birth, food, acute specific infectious diseases (4 chapters), malarial fever, tuberculosis (4 chapters), syphilis, rheumatic fever, chronic rheumatic affections, infective arthritis, chorea, rickets, scurvy, anemia, leukemia, hemophilia, diseases of the thyroid and thymus glands, diseases of the heart, diseases of the mouth, diseases of the upper respiratory passages, acute bronchitis, bronchial pneumonia and pneumonia, pleurisy, chronic affections of the bronchial tubes, peritonitis, diseases of the liver, acute disorders of the gastro-intestinal system, intestinal obstruction, intestinal parasites, hydatid diseases of the genito-urinary system, diseases of the nervous system (8 chapters), diseases of the skin (2 chapters).

This is a carefully considered work, and will be extremely useful to students and others in keeping abreast of the literature of the time on this subject.

I. **Raggi di Röntgen e loro pratiche Applicazioni**, Di ITALO TONTI. Milano: Manuzi Hoepli. 1898.

II. **La Cure Razionale del Tisicli e i Sanatorii**. Del DOTTOR AUSONIO ZUBIANI. Milano: Manuzi Hoepli. 1898.

These two little volumes from the Milan publishing house of Ulric Hoepli are in evidence of the demand of the Italian medical profession to be kept in touch with the latest results of scientific investigation. The first is a convenient, handy manual of actinoscopy that appears to be, though brief, tolerably full and up-to-date. It is profusely illustrated with skiagraphs that are reproduced in half-tone and which are very clear and intelligible.

The second volume is a discussion of the treatment of tuberculosis with special reference to the care in sanitariums and by the open air treatment, rather discarding the serum therapy methods that have been and are still somewhat in vogue. The

author makes a strong plea for the establishment of such sanitarium for the benefit of the poor.

Both works appear to be useful contributions to these special subjects.

Diseases of Women; A Manual of Gynecology. Designed especially for the use of Students and General Practitioners. By FRANCIS H. DAVENPORT, M.D., Assistant Professor of Gynecology in the Medical Department of Harvard University, Boston. New (3d) revised and enlarged edition. In one handsome 12mo. volume of 387 pages, with 155 illustrations. Cloth, \$1.75 net. Lea Brothers & Co., Philadelphia and New York.

This manual is not intended for specialists, yet specialists will find it interesting. All the important topics of gynecology are here discussed, and discussed intelligently. It comprises 20 chapters, viz., Introductory, anatomy, methods of examination, diseases of the vulva, diseases of the vagina, dislocations and lacerations of the vagina, displacements of the uterus, ante-flexion of the uterus, inversion, inflammatory conditions, laceration, fibroid myomata of the uterus, malignant diseases of the uterus, disorders of menstruation, disorders of the ovaries, tumors of the ovaries, diseases of the fallopian tubes, pelvic peritonitis, pelvic cellulitis, pelvic hematocele, diseases of the urinary organs.

As a recitation book for students, this work is extremely useful, and the practitioner will not go far wrong if he adds it to his library and is guided by it.

A Text-Book of Practical Therapeutics; With especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. With special chapters by Drs. G. E. DE SCHWEINITZ, EDWARD MARTIN and BARTON C. HIRST. New (seventh) edition. In one octavo volume of 770 pages; illustrated. Cloth, \$3.75; leather, \$4.50, net. Lea Brothers & Co., Philadelphia and New York.

This well-known text-book now appears annually, each year fresher and with the latest fruits of the medical literature of the period, succinctly classified and inserted in the revision. Few men have succeeded better than Dr. Hare in, first, ascertaining what is wanted by his colleagues, and, second, in supplying it with intelligence. The system of indexing and cross-references adopted makes the work very convenient. The work is masterly and authoritative.

The Essentials of Histology. By EDWARD A. SCHAFER, F. R. S., Professor of Physiology in University College, London. New (5th) edition. Revised and enlarged. Octavo, 450 pages, with illustrations. Cloth, \$2.00 net. Lea Brothers & Co., publishers, Philadelphia and New York.

This book, as the former one, is divided into 46 lessons, and is intended as a recitation and practice book in the laboratory. The present edition contains 50 pages more than the former one, and is enriched by 67 additional engravings. Full instructions for the microscopic examination of tissues is given. The work is destined to maintain its popularity.

Elements of Histology. By E. KLEIN, M.D., F.R.S., Lecturer on General Anatomy and Physiology in the Medical School of St. Bartholomew's Hospital, London, and J. S. EDKINS, M.A., M.B., Joint Lecturer on and Demonstrator of Physiology in the Medical School of St. Bartholomew's Hospital, London. In one 12mo. volume of 506 pages, with 296 illustrations. Cloth, \$2.00, net. Lea Brothers & Co., Philadelphia and New York.

This is a masterly guide to the science of histology, without which neither anatomy nor physiology can be properly comprehended. It is, as the preceding work, a treatise on microscopic technique, but, as its name indicates, is strictly confined to the subject of histology. The present issue is a thorough revision in every respect, and contains much additional matter. Although the work is very concise, compressed in 488 pages, it contains all the essentials upon the subject of normal histology. We commend the work to our readers, feeling sure they will not be disappointed in it.

A Clinical Manual of Skin Diseases, with Especial Reference to Diagnosis and Treatment. For the use of students and general practitioners. By W. A. HARDWAY, A.M., M.D. Second edition, revised and enlarged, with 42 engravings and two plates, pp. 557. Philadelphia and New York: Lea Bros. & Co. 1898.

This book is divided into two parts, of which Part I contains introductory observations on symptomatology, causes of skin diseases, diagnosis, local distribution of skin diseases, treatment and classification; Part II, diseases of the skin proper, inflammations, hemorrhages, hypertrophies, atrophies, new growths, neurosis, diseases of the appendages of the skin, sweat glands, sebaceous glands, hair follicles, nails; parasitic diseases and animal parasitic infections. The work is well illustrated, and carefully written. As in the past, it will continue to be a favorite. We sincerely hope, however, that in the next edition the decimal system of dosage will be used in the prescriptions.

Examination of Sources of Public Water-Supplies. Cloth, 258 pp. Maps. Cleveland: J. B. Savage Press, 1898.

This volume is a "Preliminary Report of an Investigation of Rivers and Deep Ground Waters of Ohio as Sources of Public Water supplies," made by the Ohio State Board of Health during 1897-98. It contains; "Report on Stream Pollution," by Allen Hazel; "Report on Chemico Examination of Waters of the Scioto, Olentangy and Mahoning Rivers," by N. W. Lord; "Report on Bacteriologic Examination of Waters of the Scioto," etc., by A. M. Bleile; "Report on Stream Gaugings and Sources of Pollution," by C. N. Brown; and a "Report on Rock Waters and Flowing Wells of Ohio," by Edward Orton.

A Treatise on the Science and Practice of Midwifery. By W. S. PLAYFAIR, M.D., LL.D., F.R.C.P., Emeritus Professor of Obstetric Medicine in King's College, London. Examiner in Midwifery to the Universities of Cambridge and London. Seventh American from the Ninth English Edition. In one very handsome octavo volume of 700 pages, with 207 engravings and 7 full page plates. Cloth, \$3.75 net; leather, \$4.75 net. Philadelphia and New York: Lea Brothers & Co., publishers.

This edition of Playfair gives evidences of complete revision, and it will doubtless remain, as heretofore, a favorite text-book with students and practitioners. The chapter on conception and generation has been re-written. A number of bacteriologic illustrations from Cruikshank have been added.

A Guide to the Clinical Examination and Treatment of Sick Children. By JOHN THOMPSON, M.D., Extra Physician to the Royal Hospital for Sick Children, London, Lecturer on Diseases of Children, Edinburgh School of Medicine. In one crown octavo volume of 350 pages with 52 illustrations. Cloth, \$1.75 net. Lea Brothers & Co., publishers, Philadelphia and New York.

The author has laid particular stress in this work upon clinical examination and methods of diagnosis, although the other essential features have not been omitted. The book is well written, and contains a fair résumé of the existing knowledge of the subject.

Transactions of the Indiana State Medical Society. Cloth, 537 pp. Indianapolis: 1898.

This volume comprises the transactions of the forty-ninth annual session of this Society, held in Lafayette, Ind., May 5 and 6, 1898. In addition to the usual data found in "Transactions," the following papers presented before the Society are printed: "President's Address," "Myths and Medicine," "Cerebral Centers for Pain," "Sudden Blindness," "Trachoma," "Optic Neuritis, Its Relation to Cerebral Disturbances, Toxicity, etc.," "Some Points in the Etiology of Typhoid Fever," "Summary of a Report of 100 Cases of Typhoid," "Biology—Its Relations with Medicine as a Factor in Cosmology," "Symptoms, Diagnosis and Treatment of Appendicitis," "Gonorrhoeal Septicemia," "The Diagnosis of

the Different Diseases of the Liver," "Patent Medicines vs. Scientific Medicine," "Spinal Irritation," "Tuberculosis—Prevention and Treatment," "Constipation—Its Causes, Effects and Treatment," "Pneumonia," "Auto-intoxication," "Of What Value is Alcohol as a Medicine?" "Inflammation from a Surgical Point of View," "Chloroform and Ether Narcosis," "Sarcoma of the Kidney in Childhood," "Nasopharyngitis—Its Causes and Treatment," "The Causation and Treatment of Hay Asthma," "The Mastoid Bone," "Criminal Abortion," "Monstrosity Triplets," "Teratology—Report of a Case," "Some Common Monstrosities," "Toil On, Keep Climbing," "Pus in the Female Pelvis," "The Radical Cure of Hernia," "Report of First Year's Work of Indiana State Board of Medical Examination and Registration," "Climato-therapy in Phthisis," "Oral Lesions of Syphilis in Relation to the Public Health," "What Shall We Do About Tuberculosis?" "Personal Observations in Diphtheria," "Excisions of Tonsils."

Transactions of the State Medical Society of Wisconsin. Vol. xxxii. Cloth, 583 pp. Madison: Tracy, Gibbs & Co., 1898.

The reports, papers, etc., in this volume were presented at the fifty-second annual session of the Society, 1898, the papers being grouped under the several headings: *Materia Medica and Therapeutics; Surgery; Practice of Medicine; Neurology; Gynecology; Obstetrics; Pediatrics; Ophthalmology and Otolaryngology; State Medicine and Hygiene; Medico-legal.* There are also obituaries of Drs. William Meacher, Francis H. Bodenius, Lucius M. Squire and George D. Wilber. The "Constitution and By-laws" occupy the latter part of the volume, with lists of members, present, honorary and deceased. The style of arrangement, the printing and the excellent paper used make this, the thirty-second volume of the "Transactions," a credit to the Society.

Transactions of the Ohio State Medical Society. Cloth. Illustrated. Pp. 556. Edited by P. MAXWELL FOSHAY, M.D., Cleveland, Ohio. Cleveland: J. B. Savages. 1898.

This volume has to do with the fifty-third annual meeting held at Columbus, Ohio, May 4 and 5, 1898, and in general appearance is uniform with former volumes. The full membership lists of the societies auxiliary to the State society, omitted last year, are included in the volume. The papers presented at the meeting are arranged under the following heads: Addresses, surgery, medicine, neurology, gynecology and obstetrics, ophthalmology, otology, laryngology and rhinology, rectal and genito-urinary surgery, forensic medicine and physiologic chemistry. The volume also includes the Constitution and By-laws, obituaries, etc.

Philippe Pinel of France: Science, Philosophy, Courage, Humanity, all in one person. Profound honor and gratitude from an American citizen. J. M. B. Easter, April 10, 1898. Rev. FRANCIS TIFFANY has prepared a memoir of Pinel, which is prefaced by an introduction by Dr. J. M. BARNARD of Milton, Mass.

The life story of the great Pinel, who struck the chains from the unfortunate at Salpêtrière, is well shown. The frontispiece of this pamphlet is a photograph from the painting by Robert Fleury of Pinel's visit to the Salpêtrière.

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Paper, 114 pp. Baltimore: The Deutsch Company, 1898.

This volume has to do with the one hundredth annual session, held at Baltimore, April, 1898; also the semi-annual session held at Ocean City, September, 1897. The contents comprise: Officers, committees and delegates, minutes, president's address, "The Country Doctor"; annual address, "Epidemic Cerebro-spinal Meningitis"; reports; rules for the government of the library; lists of presidents, vice-presidents, active and honorary members.

Transactions of the Medical Association of Georgia. Cloth. Illustrated. Pp. 274. Published by the Association. Atlanta. 1898.

This volume has to do with the proceedings of the forty-ninth annual session, held at Cumberland Island, April 20, 1898. In addition to the usual matter found in "Transactions," it contains a number of charts, explanatory of the papers included in the "Transactions." The papers printed are up to the usual standard of excellence of papers of this Society.

SOCIETY NEWS.

Cincinnati Academy of Medicine.—At the opening meeting, September 19, Dr. Johnston exhibited a baby but a few weeks old afflicted with spina bifida and double clubfoot. The child had had an imperforate anus, which had been operated upon when the infant was about twelve hours old. No muscular tissue was found during the operation. The dissections were made entirely through cellular tissue, and the edges of the lower bowel, found opposite the sacral promontory, brought down and stitched to the skin. The result has been good, but undoubtedly the child will suffer from the loss of muscular tissue around the new rectum. The spina bifida occupies the lower dorsal region and does not contain the cord. The regular paper of the evening was read by Dr. J. A. Thompson, on "Nasal Headaches with Illustrative Cases." The causes reported with cases included hypertrophic rhinitis, atrophic rhinitis, either of the above complicated with nasal spur providing the spur presses upon the turbinated bone, deviated septum exerting the same pressure, syphilis including gumma, deep ulcer, and necrosis of the nasal bones, tuberculosis, tumors including polypi, fibroma and sarcomata, foreign bodies, rhinoliths, parasites, perforation of the septum, and granulomatous and purulent inflammations of the accessory cavities of the nose, including the ethmoidal and sphenoidal cells, the frontal sinus and the antrum of Highmore. The essayist also stated that very commonly two or more of these affections existed at the same time and that the symptom complained of, headache, would not in all probability be relieved unless the nose were rendered free and unobstructed. He likewise called attention to the frequency of complicating affections of the trachea, bronchi, larynx, pharynx and nasopharynx. He did not wish it to be understood that he thought all headaches, or even a very large proportion of them, were due to pathologic conditions in the nose. He did think, however, that headaches accompanied by the symptoms of nasal obstruction, where direct examination showed such obstruction to exist, were in nearly all cases, relieved by removing the pathologic conditions existing in the nose. Discussed by Drs. S. E. Allen, Vale, Tangeman, and the essayist.

Wayne County Medical Society.—At the regular meeting of this society, Detroit, Mich., September 22, Dr. W. E. Scriber read a paper on "Ten Typical Cases of Typhoid Fever Treated Successfully Without Medicines." The Doctor said he did not feel that he was offering anything new, as he believed the trend of the profession is toward little or no medicine in the treatment of this disease. He stated that he had tried the various remedies for typhoid fever in a series of 500 cases with little or no beneficial effect, and in many cases the opposite of what he desired. Turpentin and quinin he had entirely discarded as not only worthless but harmful. He now confines himself to the use of but four remedies in complicated cases. These are cold, heat, water and diet. For the moral effect, and to satisfy the friends of the patient a little colored water or powdered chalk is used. Diarrhea, he said, may be controlled, and in most cases arrested, by keeping the patient on a small or restricted diet, or entire fasting for a few hours. Then milk whey may be given if any food is required. During fasting

cracked ice is beneficial, as it allays vomiting and replenishes the secretions of the body. Hemorrhage is met in the same way. He said that patients fed on milk had not done well in his hands, as they are more liable to hemorrhage, diarrhea, vomiting and other unpleasant symptoms. Constipation, he has found, could be relieved by giving plenty of cold water, if necessary, enemas of pure water. The temperature he controls by means of ice compresses applied to the abdomen and back of the neck, the amount of ice used being directly in proportion to the height of fever. The Doctor illustrated the success of his treatment by enumerating and giving the histories of ten cases of typhoid fever treated by the method laid down. In all cases recovery and convalescence were prompt and rapid.

Southern Surgical and Gynecological Association.—The approaching meeting of this Association will be held in Memphis, Tenn., November 8, 9 and 10. Papers have been promised by many of the leading surgeons and gynecologists of the country, especially of the South. Members of the medical profession are earnestly invited to attend. William E. B. Davis, M.D., Secretary.

NECROLOGY.

CHARLES D. SHIRMER, M.D., College of Physicians and Surgeons, New York, 1889, died September 15. He was a New York City practitioner.

JOHN D. KNIEF, M.D., Bellevue Hospital Medical College, New York, 1887, died at Liberty, N. Y., September 8. His home was in New York City.

JOSEPH KUFNER, M.D., Bellevue Hospital Medical College, New York, 1882, aged 60 years, died in New York City September 14. He was born in Germany and studied at Vienna and Munich before his arrival in America, thirty-five years ago.

PHILIP ARTHUR MALLESON, M.D., College of Physicians and Surgeons, New York, died at his home in New York City September 19. He was born Dec. 25, 1859, at Glens Falls, N. Y., and at the time of his death was president of the Harlem Medical Association. Besides being a member of many organizations he was well known for his well-directed charities.

GEORGE TROWBRIDGE, M.D., died at his home in New York City, September 10. He was a son of Amos H. Trowbridge, president of the Second National Bank, who died in 1881 possessed of considerable wealth. Dr. Trowbridge was graduated from Yale in 1878, and three years later received his diploma from the College of Physicians and Surgeons, New York, but retired from practice fully ten years ago.

ABRAHAM M. OWEN, M.D., Bellevue Medical Hospital College, New York, 1870, of Evansville Ind., died September 19. He was born in Madisonville, Ky., and early became a member of the AMERICAN MEDICAL ASSOCIATION. As one of the organizers of the Pan-American Medical Congress and an active promoter of the Mississippi Valley Medical Society he will be recalled by many friends. He was a man of great energy, uncommon industry and a most genial companion.

T. S. BELL, M.D., Wapell, Iowa, September 16, aged 70 years.—R. H. Bush, M.D., Huntsville, Texas, September 13.—F. Caspar, M.D., Warren, Ohio, September 19, aged 82 years.—Harry Chase, M.D., Ferron, Utah, September 15, aged 28 years.—Noah T. Clarke, M.D., Canandaigua, N. Y., September 16, aged 81 years.—Henry O. Claus, M.D., New York City, September 19, aged 72 years.—A. M. Cooper, M.D., Point Pleasant, Pa., September 15, aged 68 years.—Louis T. Gruel, M.D., Philadelphia, September 19, aged 28 years.—G. W. Holcomb, M.D., Clinton, Mo.—J. S. McCain, M.D., Lexington, Miss., September 8, aged 70 years.—Albert F. Schafer, M.D., South Bend, Ind., September 17, aged 35 years.—C. I. Walker, M.D., Powers, Mich., September 11, aged 35 years.—F. D. Wheelwright, M.D., Washington, D. C., September 12, aged 81 years.

MISCELLANY.

New Publication.—A new quarterly, *The Psychiater*, \$2 a year, has been launched at Hospital, Ill., to contain reports of the scientific work at the Illinois Eastern Hospital for the Insane.

Melancholia in Lepers of Iceland.—Dr. Ashmead has received the following from Dr. Jonaseen, dated at Reykjavik, Sept. 3, 1898: I thank you kindly for the reprint about "The Leprosy Question." As to the melancholia in a leper, I shall remark that about all lepers (when the malady is advanced) are under depression of mind, and I am sure that several cases of melancholia in lepers exist in Iceland.

Phlebitis of the Leg in Pneumonia.—Da Costa (*Phila. Med. Jour.*, September 10) reports two cases of this rare complication. The treatment is the same as for this condition in typhoid fever; rest in bed and elevation of the limb; fomentations to reduce the pain and swelling; laxatives to prevent engorgement of the venous system; and close attention to the heart. The patient should be carefully guarded from getting up too soon, and allowed to walk only short distances at first.

Historic Research in Maryland.—The "Medical Annals of Baltimore," which were edited by the late Dr. John R. Quinan in 1884, are to be revised by Dr. Eugene F. Cordell, who has been appointed by the medical and surgical faculty to bring the work up to date and issue it as a centennial volume of the faculty in 1900. This is a matter in which all the medical sons of Baltimore, in all parts of the country, can take interest, and many can give their help.

More High Balloon Flights.—European scientific papers publish interesting accounts of the fifth series of international balloon ascents made in June last. Balloons, some manned and some unmanned, ascended simultaneously from various parts of Europe, extending from Paris to St. Petersburg, and as far south as Rome. An unmanned balloon which started from Paris and dropped in Westphalia, reached a height of about ten miles and recorded a minimum temperature of 83 degrees below zero. A balloon carrying Dr. Berson, from Berlin, attained an elevation of about 18,000 feet, more than 2000 feet higher than the summit of Mont Blanc. The lowest temperature that he experienced was between 10 and 11 degrees below zero.

Heroism of an Army Surgeon in India.—The following case of an army surgeon's heroism has attracted attention: In a recent action on the Indian frontier an officer was wounded in the shoulder by a bullet, and was bleeding to death, the main artery being cut. Surgeon-Lieutenant Hugo came to his aid. The fire was too hot to admit lights to be used to examine the wound, and there was no cover; nevertheless Lieutenant Hugo struck a match and examined the wound. The match went out; the fire which had been drawn kicked up the dust all around. Having no ligature, he remained three hours holding the vessel, under fire the whole time, then picked up the officer, still holding the artery with his thumb and finger, and carried him to a place of safety.

Roborant Properties of Spinach.—Prominent specialists claim that spinach is the most precious of vegetables, on account of its medicinal and strengthening properties. The emollient and laxative virtues of spinach, owing probably to the salts of potassium it contains, have been long known. It is excellent for the liver and as a consequence freshens the complexion. Some vegetables contain a relatively large dose of iron. According to Boussingault, the proportion is 0.00074 of iron in 100 parts of French beans, 0.0083 in 100 parts of lentils, and spinach very much more. The chemist, Bunge, has proved that spinach and yolk of egg are proportionately richer in digestible iron than all the most renowned ferruginous remedies. Its great value and growing importance is shown in the fact that

spinach is already an active ingredient in several new and very salable tonics.—*Public Health Journal*.

Thyroid in Bleeding Fibroids.—In the *Medical News* for September 17, Moseley reports the results in five cases and draws the following conclusions: 1. That while some patients can take comparatively large doses of thyroid with impunity, others are injuriously affected by small amounts. One should therefore begin with minimum doses, i. e., three grains daily, increasing the amount slowly, watching its effect on the kidneys and heart. 2. Thyroid has a marked influence in bleeding fibroids, in checking excessive loss of blood, and in some cases is followed by a diminution in the size of the growth. 3. In appropriate doses, improvement to the general health results, probably due to the cessation of excessive loss of blood.

Intravenous Saline Injections.—Boise (*Med. News*, September 10) advocates the intravenous route in postoperative saline injections, as, 1, with proper technic, there is no more danger than by any other route; 2, it supplies fluid to the system most quickly and most certainly; 3, it brings heat directly to the cardiac and arterial ganglia; 4, by this method the stimulating effect of the saline solution on the heart muscle is more immediate and more pronounced. He believes the solution should be as hot as can safely be borne, i. e., 115 to 118 degrees, and whether the post-operative condition of the organs be one of depression or excitation, the heat thus supplied will be beneficial. In acute anemia, raising the temperature of the fluid circulating throughout the system will aid in re-establishing physiologic conditions.

What Did the Rector Mean?—For the sake of the rector, who is young and artless, let his name be unknown. But the story is true and it occurred last week, and each woman is busy with its narration. There is an organization in the church; what its uses are only the members know, but it is called "The Little Mothers of the Church." Now, this rector was giving out a notice about it the other Sunday, and how a woman could join it, etc. And then he made this announcement, which created a flutter and a gasp: "Any lady wishing to become a Little Mother can do so by calling on the rector any Friday in his study attached to the church." And a murmuring wave, like a sudden wind in the forest, went over that congregation.—*San Francisco News Letter; Pacific Med. Journal*, September.

Trauma as a Cause of Appendicitis.—In a paper on this subject (*Medical Record*, September 10), Small concludes: 1. That general prevalence of catarrhal conditions of the bowels, perhaps as an accompaniment or result of the grippe, is responsible for a large part of the general increase in prevalence of appendicitis. 2. That accidental injuries, strains, and work demanding strong contraction of the abdominal muscles may be held accountable for the greater prevalence of the disease in males. 3. That such injuries and strains act by forcing material, loaded with the bacteria which produce appendicitis, from the cecum into the vermiform appendix. 4. That in consequence of the irritation of such material, or from some other cause, these germs here find a favorable soil for their multiplication and development. 5. That in common with other germ diseases a time of incubation must elapse (for the multiplication of these germs) before symptoms sufficiently marked to prove characteristic of appendicitis can appear. 6. That the disease is of growing medico-legal importance, as many cases are of traumatic origin, and may therefore give rise to proper suits for damage or valid claims against accident insurance companies.

Service of Writs Upon the Insane.—In the chancery practice in England, process must be served on an infant before a guardian *ad litem* can be appointed; and this is said to be the general practice in suits against an idiot or lunatic who has been found to be of unsound mind by inquisition. Substituted

service upon the keeper of an asylum where a lunatic is confined has there been allowed, in equity, when service would be injurious to him. In some of the States, service upon a committee or upon a guardian has been held sufficient. But as the statutes of Massachusetts concerning the service of writs and subpoenas contain no special provisions for service upon infants, or persons under guardianship or of unsound mind, the practice in that State seems to have been to require the same service upon them as upon other defendants. And the supreme judicial court of that State says, in the case of *Taylor vs. Lovering*, that it thinks this is the proper practice, because, although service on an infant or a person of unsound mind sometimes would seem to be useless, it often would be difficult to determine whether in fact it would be so or not.

Injured Employe Assumes Risk.—By retaining a portion of the monthly wages of each employe for medical services, the court of civil appeals of Texas holds, in the recent case of the *Southern Pacific Company vs. Mauldin*, the company obligated itself to furnish such services as were practicable and reasonable to each of its employes when sick or injured. But this duty, the court says, as it understands the evidence here, was to be discharged, when practicable, by treatment of the patients in the hospital at a certain point, the patients being taken there gratuitously by the company. And this being the case, the court considers it immaterial whether a patient could be properly and successfully treated at another place. When the company furnished there such treatment as the emergency demanded and was necessary to prepare the patient for transportation to the hospital, by the servants of the company calling to the patient a physician of good reputation residing in the vicinity of the accident, and the patient declined the offer of the company to take him to the hospital, declaring that he was satisfied with the treatment of the local physician, and preferred to remain with him, the court holds that the duty of the company as to the patient was ended, and that he could not recover damages for the mistake of the surgeon to whose care he was temporarily committed, in treating him for sprain and laceration of the muscles, instead of for a dislocated hip.

Cannot Disclose Incidental Discoveries.—In the personal injury case of *Nelson vs. the Village of Oneida*, the plaintiff claimed to have suffered an umbilical hernia, a prolapsus of the uterus, and several bruises, by a fall due to a defective sidewalk. But the defendant attempted to show by her physician that she had an umbilical hernia before the accident. Its counsel insisted that if the physician discovered the umbilical hernia while attending his patient at childbirth, but did not treat her for it, and the knowledge was not necessary for his guidance in assisting in the delivery of a child, he could disclose it, while the court took the position that the very nature of his employment compelled the disclosure to him by the patient, and, therefore, it was privileged under the statute. The latter provides: "A person, duly authorized to practice physic or surgery, shall not be allowed to disclose any information which he acquired in attending a patient, in a professional capacity, and which was necessary to enable him to act in that capacity." Appeal was taken to the court of appeals of New York, and this tribunal now affirms the judgment of the court below, holding that the evidence offered was clearly within the protection of the statute, because the witness acquired the information which the defendant desired to elicit from him while attending the patient in a professional capacity, and the discovery of an umbilical hernia was a necessary incident of the investigations made to enable him to act in that capacity.

Insurance in Its Earliest Stages.—We can discover no earlier recorded instance of insurance against accidents than that mentioned by Livy. During the Second Punic War the contractors for delivering corn into Spain stipulated that the Gov-

ernment should indemnify them against loss by tempest. Cicero, too, after his victory in Cilicia, seems to have obtained security against the loss of his booty during its transit to Rome. These instances, however, have not been regarded as genuine cases of insurance by those authorities who assert that only after the revival of commerce in the tenth century did it come into vogue. If this be correct, the first mention of insurance is the establishment in 1310, at Bruges, at the request of the inhabitants, of a chamber of assurance. "The contract of reciprocal insurance was known likewise in Portugal in the fourteenth century, and in the fifteenth, Sept. 10, 1436, King Edward of Portugal writes from Lisbon that the merchant vessels of the English, which had been chartered for the Tangiers expedition, had not been insured owing to the fault of their proprietors; while those of the Portuguese, even of the Royal Navy, were." It is probable, however, that insurance came into use in Italy early in the twelfth century, and was, by the Lombards, transplanted into those countries with which they had commercial dealings. To them, therefore, the invention of insurance, as it is now understood, is generally conceded.—*Pearson's Weekly*.

Statistics of Cutaneous Diseases.—In his presidential address before the recent meeting of the American Dermatological Association (*Jour. of Cut. and Gen.-Urin. Dis.*, September), Hyde made a comparison as to cutaneous disorders in this country and abroad, taking as a basis, 500 cases occurring in men, women and children, in the out-patient service of public clinics in each of the cities of Paris, New York, Boston and Chicago. The figures show a decidedly greater variation in the character of the tabulated disorders in America. In the 500 cases in New York, 58 different dermatoses were noted; in the 500 in Boston, 54; in Chicago, 48; in Paris, 46. Again, the list of rare disorders tabulated in Paris were less than in each group of 500 cases in the American cities. Of the 500 Paris cases, 114 represented the victims of syphilis, as compared with 46 in the Boston group, 33 in the New York and 170 in Chicago. Chicago patients gave more than four times as many male as females. In New York the sexes were equally divided, and in Paris more than half the patients were women. Paris reported nearly double the number of American cases of alopecia areata; Chicago the larger number of cases of lupus erythematosus and of lichen planus, with a case of pityriasis rubra pilaris. New York excelled in lupus vulgaris, sebaceous-gland affections, seborrheic eczema, and psoriasis, while more than half of the forty-five cases of pruritus were from Chicago. Dr. Hyde believes that "the results of this comparison, even though made on a limited scale, are sufficient to indicate clearly that the clinical field for the study of dermatology in our country is in a high degree satisfactory, and that with increased laboratory facilities the day is not distant when American students will no longer deem it requisite to pursue a course of foreign study in order to perfect themselves in this branch of medicine."

Growth of Ether Anesthetization in England.—Dr. Frederick W. Hewitt, anesthetist to the London Hospital, reports that chloroform was administered in only 677 cases out of the 6,657 cases anesthetized at that institution during 1897. He further says that several years ago this anesthetic was in routine use; but experience has tended to somewhat shake our confidence in it for general employment. When such a report is made, coming as it does from a large and important hospital, it seems very significant. A better example of medical conservatism can not, perhaps, be found than in the use of the two great anesthetics. For a long time it has been very evident that ether is the generally safer anesthetic; but convenience, the fact that chloroform is pleasanter to administer and less disagreeable in its after-effects, and, above all, habit, seemed for years to blind the eyes of our English brethren to that most

important consideration, the greater danger to human life. What though the danger be but slightly greater, is any man justified in risking his patient's life? The gradual change in favor of ether is coming, not alone in England, but on the continent of Europe. In several of the large German and French clinics ether is the usual anesthetic, and in spite of the shockingly large chloroform fatalities annually reported in the *British Medical Journal* and in the London *Lancet*, we believe that there is greater need of this change on the continent; for what American who has visited the clinics of Europe has not been amazed and disgusted at the careless administration of chloroform in some of the most celebrated clinics? It should in justice be stated that there has been in certain parts of our country almost as much prejudice against chloroform as has been shown in favor of it on the other side of the Atlantic. At present it is generally recognized, however, even in Boston, that although ether is the anesthetic to be chosen in the vast majority of cases, chloroform is very definitely indicated under certain conditions and this, we believe, is the proper solution of the matter.—*Philadelphia Medical Journal*.

Scope of Personal Injury Liability.—When a person is injured through the negligence of another, he must use due diligence to obtain proper medical treatment, though the supreme judicial court of Massachusetts says that his duty in this respect is fully discharged by using ordinary care in procuring a reputable physician, and the same care in following his instructions. That the treatment which he obtains is improper will not release the defendant from liability for negligently causing his injury. Nor will the fact that certain medical witnesses testify that blood poisoning is not an ordinary incident, if wounds are dressed in a specified manner, authorize an instruction that the defendant will not be liable for blood poisoning, unless it is the ordinary effect of such a wound, especially so long as there is no evidence that blood poisoning is not a natural result of such an injury as that which the plaintiff received, and no evidence that the wounds which were inflicted on him were not skillfully and properly treated, and so nothing to call for an instruction to be separately given with reference to disabilities resulting from improper treatment. On the other hand, the court holds correct (*McGarrahan vs. the New York, New Haven & Hartford Railroad Company*) an instruction that if the plaintiff, in the selection of the physician or surgeon, and in compliance with his directions, was in the exercise of reasonable care, the defendant was still responsible in damages for the results of the injury, although those results were more serious than if he had had better treatment. Evidence that one, who practices as a physician and surgeon, attends a patient and gives him professional assistance, the court further holds, justifies a finding that the services were rendered for a pecuniary recompense, to be paid by the patient. And evidence that a sick person is kept and cared for at a private house, other than his home, the court likewise maintains, justifies a finding that he is there upon expense.

Dangers of the Nasal Douche.—Lichtwitz deprecates the routine prescription of the nasal douche in all cases of hypersecretion of the nasal mucous membrane. Irrigation is called for only when the nasal fossa require clearing of pus and crusts, for instance in idiopathic ozena. This affection is mainly limited to the nasal fossa properly so called, and irrigation is in such a case the most fitting form of procedure. An ordinary syringe or enema syringe with suitable nozzle should be used. In all other nasal affections irrigation is inadequate or useless; it is even dangerous. Repeated flooding of the mucous membrane may give rise to olfactory lesions. Antiseptics are highly injurious and pure water is badly borne; the physiologic solutions of sodium chlorid, sodium bicarbonate or sodium sulph. are the only harmless liquids. In numerous cases irrigation

has caused the sense of smell to be temporarily or permanently diminished or lost. Distressing frontal or occipital headache may result, owing to the liquid passing into the sinuses. The injection of irritating liquids may even set up inflammation of these cavities. The most skillful and careful irrigation is insufficient in many cases to prevent the resulting headache. A very grave complication is the penetration of the liquid into the middle ear, suppurating otitis media occasionally supervening. In acute coryza, especially in children, douching should never be practiced. In one such case known to the author mastoiditis followed irrigation of the nasal cavities. The predisposition to otitis is increased after retronasal operations, in particular after ablation of adenoid vegetations. For eight years the author has given up all irrigation after pharyngo-tonsillotomy, and during that period has met with no case of post-operative complication.—*British Medical Journal*.

Conductors Can Employ Surgeons in Emergencies.—It is a mooted question whether or not a railroad company is responsible in any case for the contracts of an employe, not made in the line of his employment, and he having no express authority to make them, and, if so, under what state of circumstances this liability attaches to it. However, the supreme court of Arkansas suggests that the weight of authority seems to sustain the doctrine that, in case of an emergency, the employment (of a physician, for instance) by the highest railroad official present is the act of the company, and it will be liable for the value of the services rendered to one, in the employ of the company, injured by the running of its trains. It says that it may be that it is the legal as well as the moral duty of the company, when an accident happens to a person in its employ, to do all it can to prevent an injury to its servants from having its worst consequences, just as it is its duty to do all it can to prevent the injury in the first instance when informed that the danger is impending. But whatever may be the reason, it is a case in which some one should act, and without delay; and the equities are in the idea that the employer is under a greater obligation to do so than any one else, not otherwise bound. Yet the liabilities should not be extended beyond the exigencies of the occasion, and the extraordinary rule should be most strictly construed, and applied with the greatest caution, and all conditions upon which it is based should appear in every case when it is applied. Upon these considerations, the court affirms a judgment in favor of the physician, in the appealed case of the Arkansas Southern Railway Company vs. Loughridge, it being of the opinion that the emergency under which the conductor acted in requesting the physician to go and see the injured man (meaning to attend him), a brakeman, was such as to make the act binding upon the company, the charge being reasonable.

Right to Compensation for Attending Paupers.—The supreme court of Iowa holds, in the recent case of Lacy vs. Kossuth County, that by appointment under the provision of law that each local board of health shall appoint a competent physician who shall be the health officer within its jurisdiction, the appointee becomes simply an officer to assist in the administration of the law and the enforcement of the regulations of the board, and, as such, he is not required to treat the sick in his professional capacity, and he can not be compelled to render assistance to infected persons, simply because he was appointed physician to the board. But whatever the board deems best for the safety of the inhabitants, in the matter of assistance and supplies, they may order under the provisions of the Acts of XXII General Assembly; and compensation for such service is to be had under the provisions of that enactment. Therefore, as the plaintiff in this case was called to the service by the board of health to treat an infected person, the court holds that he was entitled to his compensation, although the county may have had a contract with a physician by

which such physician undertook to treat all the paupers of the county. The fact that the patient in question was a pauper, it adds, was material to the inquiry as to who should pay the bill, and not as to who should perform the service. It also holds that there was properly attached to the plaintiff's statement of account a certificate of the board of health that he was employed by it, that he performed the services stated, and that the bill was correct, etc., which certificate became a part of the claim and, as such, was admissible in evidence, though a portion of it referring to the responsibility of the father and to the contract price of the work was rejected. On the other hand, the court holds that in an action brought to recover for medical services rendered a poor person, under employment by the township trustees, if the board of supervisors had in fact employed a competent and convenient physician to care for the poor, the trustees were not authorized to employ another simply because they believed the county physician was inattentive, negligent, or incompetent, and that the county would not be liable.

Old License but Prima Facie Evidence of Right to New One.—The provisions of Section 5 of the Indiana law regulating the practice of medicine, approved March 8, 1897, the supreme court of that State says, materially modify the provisions of Section 2, which, taken alone, would make the possession of a license under the old law the only evidence needed to entitle a person to one under this new law. It insists that Section 5 authorizes the State Board of Medical Registration and Examination to do something more than merely inspect the old license before they issue the certificate for a new one, and that, under its sweeping provisions, the old license is merely prima facie evidence of a right to the new one. The Board, in effect, the court holds, in the case of State ex rel. Burroughs vs. Webster, June, 1898, is given authority to inquire whether the license was rightfully obtained; and even then, if the applicant is an unfit person to practice medicine, by reason of criminal conduct or immoral character or habits, the Board may refuse a certificate. Moreover, after the giving of a certificate, provided no license has been issued upon it, the court further suggests, the Board may after notice and hearing, revoke the same, though they can revoke a license, once granted, under the new law only upon the finding and judgment of the circuit court. Whether the law is a wise one, is declared to be not for the courts, but for the legislature to say; and the legislature having judged that the safety of public health required the guards that are placed around the practice of medicine by this law, the supreme court says that it is unable to see that the act is not a valid exercise of the police power of the State; and it maintains that the statute itself is notice that the legislature has set aside the old licenses and given a reasonable time in which to apply for new licenses in their place, and, the applicant for a new license having presented himself before the Board, he must be held to have notice of whatever disposition the Board may make of his application. Another point decided, is, that that while in some respects quasi-judicial, the action of the Board is not judicial any more than is the action of a county surveyor in fixing a boundary line or of a county superintendent in giving or refusing a teacher's certificate, or the action of numberless other officers and boards in making investigations and decisions in matters committed to them. Neither is the circumstance that an appeal is allowed from a decision of the Board deemed an indication that its action is judicial.

Death From Insect Stings.—According to the *Lancet* of August 27, a fatality from this cause has been reported in the case of a laborer who placed in his mouth a gooseberry which proved to contain a wasp. The wasp stung him at the "root of the tongue; he went into his cottage, and medical aid was summoned, but death ensued in five minutes." In this instance

death most probably supervened on suffocation, due to intense swelling in the throat and was not due to poison itself. Vomiting, fainting, delirium and stupor strongly suggest a highly virulent substance of the nature of a toxin. The precise nature of the poison of wasps and bees is not known. They possess a poison bag and sting, and the fluid secreted is as clear as water, exhibits an acid reaction and, in fact, contains formic acid. But this acid can hardly account for the severity of the symptoms sometimes following a sting. Fatal results have indeed occurred, which could only be attributed directly to the toxic action of the sting. One of the old-fashioned remedies, and we believe a good one, is to apply immediately to the part stung the juice of a raw onion. The rationale of this remedy is not clear, the sulphur oil in the onion possibly serving as a palliative. The sting, at any rate, if it remains in the wound, should be extracted and the puncture dressed with a little weak ammonia, and afterward a little bromid of ammonia may be added, which frequently serves as a sedative. Judging from the great number of wasps which have somewhat suddenly appeared in the rural parts of England, during the recent hot weather, this seasonal pest promises to be of no small dimensions. The intense irritation caused in some persons by mosquito "bites" may be properly relieved by the application of ipecacuanha, either the "vinum" or the powdered root, made into a paste with either water or vinegar. Spirits of camphor will allay the itching of mosquito bites, and aqua-ammonia is supposed to be a direct antidote to the poison of the common insect pests.

Societies.

The following recent meetings are noted:

- California*.—Pasadena Medical Association, September 10.
Illinois.—Society of Internal Medicine, Chicago, September 10.
Iowa.—Fremont County Medical Society, Randolph, September 14; Medical Society of the Missouri Valley, Council Bluffs, September 14.
Maryland.—George's Creek Medical Association, Frostburg, September 15.
Massachusetts.—Worcester District Medical Society, Worcester, September 14.
Missouri.—St. Louis Medical Society of Missouri, September 24.
New York.—Academy of Medicine, Syracuse, September 20; Alleghany County Medical Society, September 14; Orange County Medical Society, Newburgh, September 13.
Ohio.—Lucas County Medical Society, Toledo, September 16.
Pennsylvania.—Cecil County Medical Society, Elkton, September 15; Lancaster City and County Medical Society, September 7; Lebanon County Medical Society, Lebanon, September 13; Lycoming County Medical Society, Williamsport, September 9.
Tennessee.—White County Medical Society, Sparta, September 9.
Texas.—Briggs Medical Society, Waxahachie, September 13.
Vermont.—Connecticut River Valley Medical Association, Bellows Falls, September 20.

Cincinnati.

Dr. S. P. KRAMER, newly appointed brigade surgeon with the rank of major, is on duty at Montauk Point.

Dr. CHARLES H. CASTLE, surgeon First Ohio Cavalry, is still fighting typhoid fever at Fernandina, Fla.

Drs. H. P. DIEKMEIER and E. B. Palmer, former internes of the Cincinnati Hospital, have returned from a prolonged course of study in Europe.

Detroit.

DETROIT MEDICAL AND LIBRARY ASSOCIATION.—At the regular meeting September 19, Dr. G. E. McKean read a paper on "Tubercular Meningitis." After reviewing the literature on the subject and giving the pathology, diagnosis and treatment, the Doctor recited the complete histories of three cases occurring in his own practice. One of these cases, a child of 8 years, recovered and has since been in good health. One other case was that of a young lady 25 years old, but the tubercular

deposits in the brain, causing the fatal sickness, were secondary.

HEALTH REPORT FOR WEEK ENDING SEPTEMBER 24.—Deaths 99; under 5 years 43. Births, male 30; female 32. Contagious diseases; Diphtheria, last report 5 cases, 6 new cases reported, 5 recoveries, 1 death, 5 remaining; scarlet fever, 2 new cases, 4 recoveries, no death, 4 now sick; 1 case of smallpox reported, 2 now sick.

Washington.

HEALTH OF THE DISTRICT.—The report of the Health Officer for the week ended September 17, shows the total number of deaths to have been 125, of which 64 were white and 61 colored. Among the principal causes of death were: Nervous diseases, 25; genito-urinary, 10; consumption, 15; circulatory, 11; there were 3 deaths from diphtheria, one from whooping-cough and 3 from typhoid fever: there were 68 cases of diphtheria and 45 cases of scarlet fever under treatment at the close of the week. In the annual report of the Health Officer recently submitted to the Commissioners, it is recommended that the salary be increased from \$3,000 to \$4,000 per annum for the Health Officer, and that a Deputy Health Officer, with a salary commensurate with his duties, be appointed to act as Health Officer when necessity requires. Attention is also called to the fact that the clerical force of the department is inadequate, and an increase is recommended. It also recommends the appointing of a competent janitor in charge of the smallpox hospital and steam-disinfecting plant. An increase is recommended for the pound and disinfecting departments, to enable the latter to disinfect premises infected from disease. It also recommends an appropriation for abating nuisances and vaccinating the indigent portion of the community. The report closes with the important recommendation that the Health Department be provided with an up-to-date bacteriologic laboratory, and that ashes and sweepings be removed from private premises at public expense.

MILITARY HOSPITAL AT FT. MONROE.—Lieut.-Col. Woodhull surgeon in charge, has reported to Gen. Sternberg, that a large military hospital building at Ft. Monroe, Va., will be ready for occupation within a few days. The hospital will contain 1000 beds, and is specially intended for sick soldiers returning from Porto Rico. Surgeon-General Sternberg is arranging for other winter hospitals to be located at points to be designated by a Medical Commission.

THE PRESIDENT INSPECTS FT. MYER HOSPITAL.—President McKinley recently made an inspection tour of the military hospital at Ft. Meyer, Va. He devoted several hours to the work, inspecting the wards containing about 400 sick, and then directed his attention to the culinary and commissary departments, personally inspecting the kitchen and food furnished the sick. He expressed himself as being perfectly satisfied with the management of the hospital.

RETURNED TO DUTY.—Drs. J. F. Moran, James D. Morgan, I. Berman and G. C. Morris, have returned to the city after an extended vacation.

DISEASE SPREAD BY FLIES.—The scientific commission consisting of Majors Lee, Vaughn and Shakespeare, of the Medical Department of the Army, which has just concluded an inspection of several of the southern camps, has made a report to the War Department to the effect that flies were responsible to a large degree, for the prevalence of typhoid fever among the soldiers. The commission visited the camps at Jacksonville, Huntsville, Fernandina and Chickamauga, finding many cases of typhoid fever in each. After investigation the commission concluded that the fever had been brought in by the soldiers from their State Camps. The members are unanimous in the opinion that the flies, found by the millions in all the camps, were responsible for the prevalence of typhoid fever, and they present many facts to support this conclusion. In their report it is stated that the flies fed off the fecal matter

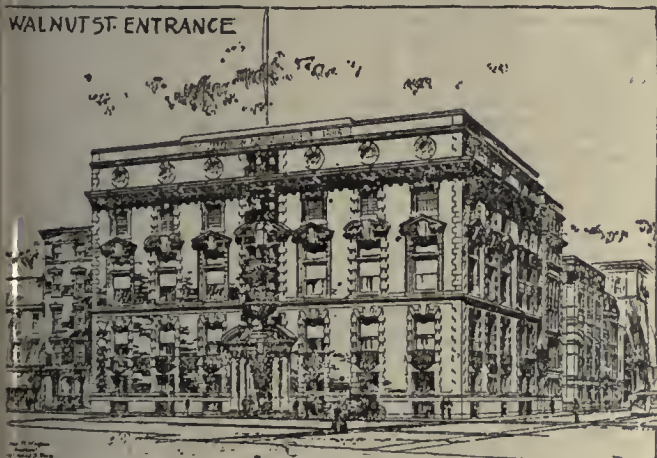
from the hospitals, and then at meal time shared the hard-tack and bacon of the soldiers. While feeding off the fecal matter of the hospital, the fly picked up on his hairy little feet infinitesimal particles containing the germs of typhoid fever and deposited them on the soldier's hard-tack and bacon.

DEATHS FROM LEAKY GAS FIXTURES.—Quite frequently the coroner is called upon to investigate deaths resulting from gas-asphyxiation, and in many instances supposed cases of suicide are found to have met their death from gas escaping from defective brackets. It would seem that the proper authorities in Washington should hold somebody responsible for these preventable deaths, just as is done in the case of railroad accidents, explosions and other neglects. In the absence of such steps, it might be wise to require owners of property or tenants to keep gas fixtures, keys and pipes in perfect repair, thus limiting or lessening the deaths above cited.

Philadelphia.

SCHOOL HOUSE INFECTED.—A few years ago several cases of diphtheria developed in the I. P. Morris School and nearly fifty persons contracted the disease. This disease has broken out in this building in previous years and a committee was appointed to investigate. It was first thought the disease was conveyed by drinking water, but this was subsequently proven not to be the case. The building has been arranged in its present condition by simply bringing two dwelling houses into one, and accommodates 300 children. Last year forty cases developed, nine of whom died, and an equal number have died during this latter epidemic. The teachers, at the first symptoms of the disease, dismiss the affected children in order that they may return home. Many parents very justly refuse to allow their children to attend this school, preferring to contend against the compulsory education law rather than risk exposing them to the contagion. The school will doubtless be closed. Fourteen cases have also been reported in two other districts of the city.

JEFFERSON MEDICAL COLLEGE.—Students of this institution next year will doubtless be at home in one of the handsomest medical colleges in the country. The site is immediately south



BUILDING OF JEFFERSON MEDICAL COLLEGE.

of the old college building, fronting Tenth and Walnut Streets, being 118 feet long by 110 feet deep, and the new building will be six stories high, of Italian Renaissance style and fire-proof.

ARMY INVESTIGATING COMMITTEE.—Dr. W. W. Keen, professor of surgery at the Jefferson Medical College, returned from Europe last week. During Dr. Keen's absence he was appointed by President McKinley a member of the Army Investigating Committee, but he has, after consideration, declined to accept.

BETTER EDUCATION FOR PHYSICIANS.—Since the passage of the law in Pennsylvania demanding a strict examination of applicants for those who desire to practice medicine in this State much good has been done toward elevating the profes-

sion and suppression of quackery, but there is a determination to raise the standard still higher. According to the act of May 18, 1893, governing the subject, one of the specifications was that a common-school education should be possessed by the applicants, including orthography, reading, writing, arithmetic, English grammar, geography, history of the United States, physiology and hygiene. The subjects of physiology and hygiene are to be assigned to the medical examining boards while the other branches will be transferred to and conducted by a committee consisting of persons connected with the public school system. It is stated that two preliminary examinations will be annually held in Philadelphia, one during the month of October, after the medical schools have opened, and the other preceding the final examination in June. Preliminary examinations will also be held in the Western part of the State on the same dates. The committee to take charge in Philadelphia will consist of the State superintendent of public instruction, the assistant superintendents of the schools of Philadelphia and several professors in this department. Answers to all questions are to be marked and kept on file in Harrisburg. It is stated that the Medical Council will accept as satisfactory evidence of a common school education permanent certificates issued by the school department of Pennsylvania, diplomas from colleges, normal schools and other institutions approved by the Council.

HUIDEKOPER RESIGNS.—Dr. Rush Shippen Huidekoper, formerly of Philadelphia and until recently medical director at Chickamauga Camp, has been detached from his commission in Porto Rico. Dr. Huidekoper was graduated from the Department of Medicine, University of Pennsylvania, in 1877, and practiced medicine in this city, having an office at 111 South Twentieth Street. He has been foremost in establishing the Veterinary Department in the University, and lectured in that institution until 1888, when he resigned and went to New York, where he became lecturer in the New York Veterinary School. He was for eleven years connected with the National Guard of Pennsylvania as surgeon on the brigade and division staff commanded by General Snowden, and was with the troops during the Homestead riot. At present he is in Porto Rico.

DR. JOHN ASHHURST, JR., professor of surgery at the University of Pennsylvania, while on his vacation at Overbrook, near Philadelphia, was attacked with a mild stroke of apoplexy. It was hoped at the time that he would sufficiently recover to resume his duties at the coming session, but it is now found that this will not be possible. The thousands of students who have gone out from the University will regret to hear of this unfortunate occurrence, for the feeling toward the Professor by all is one of profound respect. Besides his position in the University, he is surgeon to the University Hospital, Pennsylvania Hospital and Episcopal Hospital, and is now president of the College of Physicians of Philadelphia. At the approaching meeting of the Trustees of the University, it is supposed that Dr. Ashhurst will be relieved from duty for a sufficient period to recuperate and resume his chair at the University next year.

MORTALITY STATISTICS.—For the week ending September 24 there have been reported to the Board of Health a total of 376 deaths. This shows an increase of 14 over last week and 24 over the corresponding week of last year. Of the total number of deaths, 120 occurred in children under 5 years of age. The principal causes of death were: Nephritis, 19; cancer, 13; cholera infantum, 10; tuberculosis, 40; diabetes, 2; heart disease, 33; malarial fever, 1; inanition, 8; appendicitis, 4; marasmus, 31; old age, 11; suicide, 4; sunstroke, 1; uremia, 4.

INFECTIOUS DISEASES.—This week: Diphtheria, 83 cases, 15 deaths; scarlet fever, 8 cases; typhoid fever, 255 cases, 15 deaths. Last week: Diphtheria, 99 cases, 17 deaths; scarlet fever, 15 cases, 1 death; typhoid fever, 366 cases, 15 deaths.

Most of these cases of typhoid fever occurred among the soldiers who had been brought to the city.

JEWISH HOSPITAL.—The thirty-third annual report of the Jewish Hospital has just been issued, and shows that during the year ending April 30 there were treated in the wards 736 patients and in the dispensary 11,754. The Hospital Association of which this Hospital is a part also includes the Mathilda Adler Loeb Dispensary, the Home for Aged and Infirm Israelites and the Lucien Moss Home for Incurables. The report states that by the death of Lucien Moss a legacy has been left amounting to \$200,000 for the erection and maintenance of a home for incurables, to be known as the "Lucien Moss Home for Incurables of the Jewish Faith."

FOR FEDERAL QUARANTINE.—Owing to the cases of yellow fever recently reported in New Orleans and elsewhere, one of the leading papers here makes a strong plea for the establishment of Federal quarantine, stating that the injurious effects, not only to life but also to commerce, is a sufficient reason why the National Government should have absolute control over all quarantine matters. The article then recites the experience of quarantine by local boards of health, shotgun quarantine, etc., and suggests the old idea that the whole matter be transferred to the Marine Hospital Service, which could then manage epidemics of this disease without interference by State or county officials.

CONDITION OF THE SOLDIERS IN PHILADELPHIA HOSPITALS.—At the present time there are about one thousand soldiers being treated in the different hospitals of this city. Three deaths have occurred at the Pennsylvania Hospital within the past few days, and of the 110 soldiers still present in that institution several are yet in a critical condition. This Hospital has cared for upward of two hundred soldier patients and these deaths are the first yet reported.

DRS. BOARDMAN REED and ALBERT ROUSSEL have both returned from Europe.

DR. LAURENCE TURNBULL, who has been for several months at his summer home in Florida, has returned much improved in health.

DR. S. WEIR MITCHELL, who is now in Bar Harbor, and **DR. EDWARD P. DAVIS**, now at Marion, Mass., are both expected home about October 1.

DRS. JOSEPH PRICE, W. S. STEWART and JOHN B. DEEVER, have been in attendance at the meeting of the American Association of Obstetricians and Gynecologists recently held in Pittsburg.

MORE SOLDIERS.—On the 18th the government transport *Missouri* transferred from Montauk Point 300 sick soldiers to the hospitals of this city. On a subsequent day 126 soldier patients were received by them. The Red Cross Society has been quite active recently and, up to date, has sent out four trains for the purpose of bringing the soldiers here for treatment.

BEQUEST.—Mr. Lowber Welch, a wealthy citizen of this place and president of the Union Traction Company, recently sent the following letter to the officials of the Episcopal Hospital: "Gentlemen: My son, Charles N. Welch, seriously injured seven weeks ago, and being pronounced out of danger by his physicians, it is my wish to commemorate this blessing and to that end inclose my check to your order for \$500 to establish a free bed in your hospital for the benefit of ill or injured men while in the service of the Union Traction Company."

CHANGE OF ADDRESS.

Brown, R. W., from Glenwood, Wis. to Nipamo, Cal.
Clay, W. P., from Elgin to Mendon, Ohio.
Dietermann, O. O., from 623 W. Town to 742 S. High, Columbus, O.
Hoff, A. F., from Des Moines, Ia. to Casper, Wyo.
Holmger, J., from 314 Sedgwick to Schiller bldg, Chicago, Ill.
Hotvedt, I. J., from 942 21st Ave. So. to 1819 2½ Street So., Minneapolis, Minn.
Jones, J. D., from Newburg to 1631 Howard St., Cleveland, O.
Pritchett, C. W., from Keeling to 1031 Main St., Danville, Va.
Plummer, R. W., from Tyrone, Pa. to Journal bldg, Chicago, Ill.
Rodman, W. L., from Louisville, Ky. to Medico-Chirurgical College, Philadelphia, Pa.
Ross, T. D., from Stockton to Santa Rosa, Cal.
Sites, J. McKee, from Upper Tract to 359 W. Burke St., Martinsburg, O.
Sale, E. P., from Masonic Temple to Southern Express hldg, Memphis, Tenn.
Truax, Greene & Co., Chas., on or before November 1 will remove to their new building, 42, 44 and 46 Wabash Ave., Chicago, Ill.
Town, M., from 131 N. Clark to 268 E. North Ave., Chicago, Ill.
Wilson, G. H., from 50 to 176 Euclid Ave., Cleveland, O.

Winn, C. S., from 432 W. 71st to Byron, O.
Williams, C. C., from Brighton, Mass. to 1396 Winfield St., Los Angeles, Cal.
Wolfe, L. E., from Beavertown to Kinzers, Pa.
Wittle, M. E., from Mt. Pleasant, Ia. to Clarinda, Ia.

LETTERS RECEIVED.

Ayers, S. C., Cincinnati, O.; Allen & Hamburgs, Ltd., New York, N. Y.; Alma Sanitarium Co., Alma, Mich.
Baker & Co., Walter, Boston, Mass.; Bailey, S., Mt. Ayr, Ia.; Black, J. F., Springfield, Mass.; Brabham, W. S., Poplar Bluff, Mo.; Brown, F. F., New York, N. Y.; Bentz, H. G., Buffalo, N. Y.
Clements, Jos., Kansas City, Mo.; Curtis, F. C., Albany, N. Y.; Cheney, J. V., Chicago, Ill.; Cook, G. F., (2) Oxford, O.
Dunham, W. R., Keene, N. H.; Dios Chemical Co., St. Louis, Mo.
Evans, A. H., Saxton, Pa.; Economy Sign Works, Chicago, Ill.
Fuller's Advertising Agency, C. H., Chicago, Ill.; Fairchild Bros. & Foster, New York, N. Y.; Fairbank Company, The N. K., Chicago, Ill.; Farbenfabriken of Elberfeld Co., New York, N. Y.
Goode, C. A., Traverse City, Mich.; Gordon, N. R., Springfield, Ill.
Hobart, J. P., Cincinnati, O.; Hoy, J. Emory, Philadelphia, Pa.; Hartsborn, W. E., Minneapolis, Minn.; Hekoten, L., Chicago, Ill.; Hare, H. A., Philadelphia, Pa.; Haynes, E. E., Memphis, Tenn.; Hummel Adv. Agency, A. L., New York, N. Y.; Huber, G. C., Sec., Ann Arbor, Mich.; Harmon, Julia, Warren, O.; Hill, Chas. Erwin, Chicago, Ill.
Jerome Kidder Mfg. Co., New York, N. Y.
Kellogg, J. H., Battle Creek, Mich.; Kempson, J. F., New York, N. Y.; Kemp, L., Bucyrus, O.
Long, Le Roy, Caddo, I. T.; Lippart, Freida E., New York, N. Y.; Loeb, H. W., St. Louis, Mo.
Mariani & Co., New York, N. Y.; Malt-Diastase Co., New York, N. Y.; Murray, N., Baltimore, Md.; Memphis Lancel, Memphis, Tenn.; Miller, E. C., Rockwell, Ia.; May, C. H., New York, N. Y.; Merrick, M. B., Passaic, N. J.; Mayer, Emil, New York, N. Y.; Malmshury, J. O., Peru, Ind.; Moore, W. A., Hindsville, Ark.; Maxey, E. E., Caldwell, Idaho; Murphy, J. B., Chicago, Ill.
Nelson, L., Hillsboro, O.; Newell & Heldman, Chicago, Ill.; Newell, E. D., King, Ill.; New York Post Graduate Medical School & Hospital, New York, N. Y.; National Vaccine Establishment, Washington, D. C.; Norwich Pharmaceutical Co., Norwich, N. Y.
Oakland Chemical Co., New York, N. Y.; Olmstead, D. S., Millersburg, O.
Perkins, P. M., Kansas City, Mo.; Pasteur Vaccine Co., New York, N. Y.; Reed, W. W., Fowler, Colo.; Rosenberry, A. J., Oak Park, Ill.; Rogers, John, New York, N. Y.; Riley, W. H., Boulder, Col.
Seabury & Johnson, New York, N. Y.; St. Charles Condensing Co., St. Charles, Ill.; Stearns, F. & Co., Detroit, Mich.; Schering & Glatz, New York, N. Y.; Sutton, R. Stansbury, Pittsburg, Pa.; Scheppegrell, W., New Orleans, La.; Stuver, E., Rawlins, Wyo.; Saunders, W. B., (2) Philadelphia, Pa.; Scott & Bowne, (2) New York, N. Y.; Smith, Lewis P., Bedloes Island, N. Y. Harbor; Sheldon, C. S., Madison, Wis.; Shelby, Mary C., Lexington, Ky.; Smith, M. M., Austin, Texas.
Thorpe, A. C., San Gabriel, Cal.
Watts, C. W., Moberly, Mo.; Wheeler, Jno., Penitentiary, Ore.; Wells, E. F., Chicago, Ill.; Winn, J. F., Richmond, Va.; Whitford, Wm., Pittsburg, Pa.; Wallace, John, Milton, N. H.; Woldert, E. A., Philadelphia, Pa.; Wampole, H. K. & Co., Philadelphia, Pa.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To duty at Camp Wikoff, Montauk Point, L. I.: Major John M. G. Woodbury, chief surgeon of volunteers.

From Camp Wikoff, Montauk Point, L. I., to Santiago, Cuba: Acting Asst.-Surgeon E. Nufez, To Ponce, Porto Rico, the following acting asst.-surgeons: J. F. Hadley, H. B. Mohr, Charles D. Camp, H. P. Jones, E. M. Barney, Robert Boyd, S. W. Perry, Stephen M. Gonzales, Charles A. Hamilton, Charles J. Kenworthy, S. H. Wadhams, E. F. McClelland, Charles E. McDonald, Wm. M. Carson, William C. LeCompte, John J. Gilhuley, Elmer S. Tenney, E. C. Shattuck and W. W. O. Cutcliffe. To duty with troops at Jacksonville, Fla.: Major Royce D. Fry, brigade surgeon, and Acting Asst.-Surgeon Ed. C. Poey. To duty with troops at Amiston, Ala.: Major Samuel W. Kelly, brigade surgeon. To New Orleans, La.: Acting Asst.-Surgeon Geo. B. Lawrason. To Mobile, Ala.: Acting Asst.-Surgeon George H. Fonde. To Jefferson Bks., Mo.: Acting Asst.-Surgeon Llewellyn E. Williamson. To Ft. McHenry, Md.: Major L. W. Cramp-ton, Surgeon U. S. A.

To duty with troops in Porto Rico, the following acting asst.-surgeons: Louis L. Gilman from New York City, W. G. Young from Camp George H. Thomas, Ga., E. L. Griffin from Ft. Barrancas, Fla., and Robert F. Jones from Washington, D. C.; also Lieut. Weston P. Chamberlain, Asst.-Surgeon U. S. A., to take charge of medical supplies on the *Panama* at Newport News, Va., and to return from Porto Rico with convalescents.

To duty with troops at Knoxville, Tenn.: Acting Asst.-Surgeon Geo. Dock from Camp George H. Thomas, Ga.

To duty with troops at Camp Hamilton, Lexington, Ky.: Acting Asst.-Surgeons Baen Street from Camp Hobson, Lithia Springs, Ga., and Francis E. Holliday from Washington, D. C.

To Plattsburg Bks., N. Y.: Acting Asst.-Surgeon James Reagles from Newport News, Va.

To New York City: Acting Asst.-Surgeon Charles Brewer from Ft. Monroe, Va.

To Atlanta, Ga., to establish a medical purveying depot: Major Ed. T. Comegys from Camp George H. Thomas, Ga.

Honorably discharged: Lieut.-Col. Nicholas Senn, chief surgeon; Majors Charles B. Nancrede, Geo. A. Smith and Nicholas H. Henry, chief surgeons, and Major Charles Adams, brigade surgeon.

Resigned: Major Julian La Pierre, 3d Connecticut Infantry.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, OCTOBER 8, 1898.

No. 15.

ORIGINAL ARTICLES.

THE USES OF REMEDIES IN DISEASES OF THE HEART AND BLOOD-VESSELS.

Presented to the Section of Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY T. LAUDER BRUNTON, M.D., D.Sc., EDIN.; LL.D.,
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It is obvious that the scope of my paper is so large that if I were to deal with it fully I would require to write a text-book, so that I can not do more in the time at my disposal than simply enter upon a few of the most important points. I have, therefore, thought it advisable, instead of entering into the details which are usually to be found in ordinary handbooks on the practice of medicine or in special books on cardiac disease, to take up a few points which I regard as the most important and try, if possible, to bring out clearly the general principles of treatment in diseases of the heart and vessels.

It is curious to think that the heart which is beating in the bosom of every one began to beat a considerable while before the body had assumed a human shape, and will, with very few exceptions, continue to beat a short time after the individual has forever become unconscious of this world and all its concerns. During the whole life of the individual his health, energy and activity, his success in life, his physical force, his mental power and even his moral qualities, all depend to a great extent on the way his heart performs its duty. Hardly less important than the action of the heart is the function of the vessels, because, even while the heart is beating regularly and steadily, obstruction to some of the cerebral vessels may transform a man who was far above his fellows in physical strength or intellectual power into a helpless paralytic or demented invalid. A study of the means by which the functional activity of the heart and vessels can be maintained or increased is, therefore, of the utmost practical importance. This has been recognized in every age of medicine, and perhaps there is no movement more characteristic of the physician than that of feeling the pulse of the patient. By this simple act the trained finger can discover a great deal regarding the state of both the heart and the vessels, and gain much information regarding the indications for treatment. Greater perfection in other means of physical diagnosis, and especially in auscultation, have tended to draw attention away from the pulse and direct it rather to the sounds which can be heard in the heart and vessels, so that more thought is now bestowed by many physicians upon actual valvular changes than upon the strength of the cardiac muscle. A little consideration will show that this is wrong. Many men live with serious organic disease for many

years and are hardly conscious of it. When I was a medical student, one of my honored teachers had had pericarditis and suffered from great shortness of breath due to adherent pericardium. After a lapse of thirty-five years, during which he has continued to do much good work, he seems now to be much stronger and healthier than he was then. A similar occurrence takes place when the valves are diseased. In his excellent work on diseases of the heart, Sansom says that many who are the subjects of even considerable valvular affections can live a large portion of their lives unconscious that they have any such disease. Balfour states that he has seen many cases of aortic incompetency who have suffered from it from thirty-five to forty years, and an old friend of his had suffered from mitral regurgitation for nearly seventy years, yet lived a useful life nearly all that time, and even at the last, his heart was not the first organ to fail. A medical man whom I used to see had been rejected for life assurance on account of mitral disease, before the Crimean War, and had been told that he had not two years to live. He thought that as his time was short, he might as well see something of the world during it, so he entered the army, served through the Crimean War, saw a great deal of active service afterward, and died only about two or three years ago. These instances clearly show that considerable valvular disease may have little effect in shortening life or producing serious symptoms. But the case is very different when we come to consider the muscular walls of the heart, for any weakness in them not only enfeebles the circulation at once, but will secondarily produce valvular incompetence. The mitral and tricuspid valves are only large enough to close orifices of a certain diameter, and when these orifices become larger, as they do from enfeeblement of the cardiac muscle, the valves are not able to close the auricular and ventricular openings, and regurgitation takes place.

Weakness of the heart is not an absolute, but only a relative term, and however strong the heart itself may be, the limit of its power may be reached. The ancient Greek who carried the news of the battle of Marathon to Athens must have had a very powerful and healthy heart in order to do so, but even he overstrained it and fell dead at the conclusion of his task. The young American who performed a similar feat a few years ago showed himself either stronger or more fortunate than the hero of old, yet he must have felt the unpleasant symptoms of cardiac strain. These symptoms are known to almost every one, because in ordinary people who are out of training a short run to catch a railway train or steamer, more especially if a portmanteau or bag be carried, will bring on tightness and oppression across the chest, rapid, difficult and gasping breathing, giddiness and muscular weakness, so that the person may be unable to stand. In feeble or elderly men these symptoms may be associated with a sense of impending death, and death

indeed may actually occur. In such cases we find that moderate exertion in persons who are healthy but otherwise out of training, produces symptoms similar to those which occur in men of exceptional health and training, like that of the athletes of Athens, after severe strain. But when the heart is feeble and fatty from imperfect nutrition, such as occurs from the chronic abuse of alcohol, or from atheromatous change in the coronary arteries, and especially when the heart thus degenerated has extra work thrown upon it by valvular disease, we find that slight movements, such as that of crossing the room, of getting up, or even of sitting up in bed, may bring on symptoms of cardiac distress similar to those which occur after a run to the train in middle-aged gentlemen, or after a run of many miles in athletes. What I have just said is, I think, sufficient to prove the statement with which I started, namely, that cardiac weakness is a relative term, and expresses the power of the heart, not absolutely, but only in relation to the work that it is called upon to perform. Probably there is not one in a hundred thousand; perhaps indeed not one in several millions of men, however young, strong or athletic, who could at a moment's notice start on a race such as that from Marathon to Athens and run it successfully. In order to do so previous training is necessary, and the science of such training is to accustom the heart to excessive exertion by gradually increasing the work which it has to do, while at the same time the other organs of the body are kept in a healthy condition, so that the heart may receive a proper supply of healthy blood and its nutrition be thereby increased. The best example of training is the classic one of Milo, the wrestler of Croton, who is said to have succeeded in carrying a full-grown bull upon his shoulders by beginning to carry it when it was a newborn calf and continuing to carry it every day afterward. In this way, it is said, the athlete's strength gradually increased in proportion to the weight of the calf. If training, then, be the method of bringing an ordinary healthy heart up to the mark required for excessive physical exertion, the same method ought to be successful in bringing the heart enfeebled by disease up to the healthy standard.

This, I believe, is the truth, and of all agents for remedying cardiac weakness there is none so good as that of training. The training must be adapted to the condition of the heart, and the amount of exercise given to a feeble, fatty heart must be very little indeed, and when even slight movements give rise to cardiac distress, we must insist upon absolute rest. It is sometimes difficult to get this injunction carried out, for active people insist upon getting up and moving about the room, even when such movements cause distress. But here the physician must insist that absolute rest in bed shall be maintained and that the whole strength of the patient shall be devoted to the recuperation of his heart. One good rule is that the heart shall not be allowed to make a single extra beat that can be avoided. If the patient rises in bed his heart will probably beat from five to ten times in a minute more than if he lay quiet, and if it does this for five minutes it has done from twenty-five to sixty beats too much. Sometimes patients will grumble, but they may occasionally be comforted by simply reminding them that their condition is not nearly so bad as if they had broken their thigh-bone, for then they would have been put up with a splint, unable to move for many weeks, and very likely have been suffering pain,

while their cardiac disease is producing them no pain whatever. Indeed, I have sometimes threatened patients to put them up in a long splint, as if they had a broken leg, when I find them rebelling against the enforced rest which is necessary for their recovery. I do not think I can speak too strongly regarding the necessity for absolute rest in bed in cases of cardiac distress. I often remind patients that they must treat a strained heart as they would a sprained ankle, and remember that just as the least extra movement will bring on a pain in the ankle, so it will increase the distress in the heart, while each increase still further prolongs the time necessary for recovery.

But here another difficulty meets us. By keeping the patient so quiet we no doubt lessen the work the heart has to do, but we diminish at the same time the circulation through the stomach, liver, intestines, kidneys and muscles, and we thus tend to a certain extent to interfere with the elaboration of healthy blood which is required for the efficient nourishment of the heart. Here massage comes in, and when this is skillfully applied, it not only increases the circulation through the various organs of the body, but while doing so it gives the heart rather less than more to do. For when the patient is left to himself the heart has to drive the blood onward through the whole circulation, but when the masseur is at work he moves the venous blood along the veins, the lymph along the lymph spaces and lymphatics; so that his hand is really a kind of accessory venous and lymphatic heart. At the same time it actually lessens the work to be done in the muscular arteries, for Dr. Tunnicliffe and I found that massage of the muscles causes the blood to flow through them much more quickly than when they are at rest. We see, then, that in the worst cases of cardiac distress the chief remedies are absolute rest and massage. But there is a long interval between this condition and that of ordinary health, which must be filled up by gradually increasing movements. These movements have of late years received a great deal of attention, more especially from Ling in Sweden, Schott of Nauheim, and others. The essence of these movements is that they must be slow, gentle, and gradually increased against resistance, that they shall not cause the patient any distress, but only call upon the heart for such work day by day as it is well able to do. But before the patient has reached this stage where he is able to take ordinary exercise, another system of treatment, namely baths, may be employed to assist the action of the exercises. In the treatment which is so successfully employed at Nauheim the baths contain chlorids of sodium and calcium, the proportions being 10 per 1000 of chlorid of sodium at the commencement, gradually raised to 30, and of chlorid of calcium 2 per 1000, gradually raised to 3 or even 5 per 1000. At Nauheim the waters contain carbonic acid, but this may be artificially supplied by means of bicarbonate of sodium and hydrochloric acid, or tablets specially prepared for this purpose.

The effect of these baths is to stimulate the skin and increase the flow of blood through it, while at the same time a reflex influence is exerted upon the heart through the vagus, by which the pulse is slowed. It is evident, by dilating the cutaneous vessels, the effect of the bath upon the skin is somewhat similar to that of the masseur upon the muscles; that is, in both cases the bed through which the blood has to flow becomes wider, and the resistance to the action of the heart is consequently diminished. Where the tension

is great it may be still further diminished by the use of nitrites or substances having a similar reaction. But the most important effect of the baths is probably a reflex one upon the heart, and perhaps I may make this effect more clear by a comparison with athletic feats. To walk a thousand miles in six weeks can hardly be regarded as any feat at all, but to walk a thousand miles in a thousand hours is a very different thing indeed, and may be regarded even now as beyond the capacity of most men. There is no more actual work involved in walking twenty-four miles in one day than in walking twenty-four miles in twenty-four successive hours, one mile every hour. The difference between the two is the shortness of time allowed for rest and recovery between each period of exertion in the latter. When this time is further shortened, as it is in walking a thousand half-miles in a thousand half-hours, the difficulty becomes incomparably greater. It would probably be almost impossible for any one to perform this feat by walking a mile at the beginning of each half-hour, but in order to increase the interval for rest, one mile is done at the end of one half-hour and the next mile at the beginning of the next. Supposing that a man walks four miles an hour, or what is equivalent to it, one mile in a quarter of an hour, he would only have a quarter of an hour's rest between each successive mile if he walked it at the beginning of each half-hour. But by walking two miles together he is able to obtain half an hour's rest, and it is the prolongation of the rest which enables the man to go through with the feat. Now, the action of the heart is like that of the athlete who has very short periods of rest between his periods of action, and just as the athlete's work is rendered more difficult by shortening his periods of rest, so is that of the heart by increasing the rapidity of its pulsations. For just as the athlete will take about the same time to cover his mile whether he be walking twenty-four miles a day, one mile in each hour, or half a mile in each half-hour, so the heart takes about the same time to perform its systole whether it be acting quickly or slowly. Increased rapidity of the pulsations, therefore, means a shorter time for rest and consequent loss of time for recuperation. The inhibitory fibers of the vagus, which slow the heart, are the nerves which tend to increase its nutrition, and when they are cut through and the heart is allowed to beat more quickly, it is very apt before long to undergo degeneration. It is, therefore, evident that any means by which we can stimulate the vagus and slow the heart is likely to aid us in restoring its power. This is the effect which baths seem to have, and they probably act reflexly on the vagus through the nerves of the skin.

But we have, in addition, various drugs which stimulate the vagus roots in the medulla oblongata or the terminal endings in the heart itself. The number of these drugs is very great, and very many of the arrow poisons and ordeal poisons employed by savages act on the heart in this way.

Among them may be mentioned the active principles of digitalis, strophanthus, erythrophleum, convallaria, adonis vernalis, antiar, tanghinia, hellebore black and green, oleander squill, manganja, carraval, vao and cactus, but among these the most important are certainly digitalis and strophanthus. These drugs not only slow the heart, but they increase the energy with which it contracts. The energy may be still further increased by a combination of strychnin or

nux vomica with the drugs already mentioned, for while they appear to act chiefly on the muscular fiber, strychnin exerts its stimulating action on the motor ganglia of the heart. By the combined use, then, of rest, massage, graduated exercises, baths and cardiac tonics, the heart may be brought from a condition of extreme weakness to one of moderate strength.

And then comes in the use of another system of training which is usually associated with the name of Oertel. The essence of this consists in gradually increasing the work that the heart has to do by making the patient walk farther and farther along paths of gradually increasing steepness, so that at the end of the treatment he will be able to walk a considerable distance and up a pretty steep incline. This treatment, however, requires careful supervision, lest at any time the patient overtax his strength, and the supervision should be exercised from day to day, because the health and strength of a man may vary very considerably in two successive days, not from any change in the heart itself, but from changes in other organs, and more especially in the digestive or eliminative organs. Attention to these is most essential in diseases both of the heart and vessels, but to enter fully upon this subject would take me too far, and I must conclude this paper, which I fear is already too long, by simply mentioning the great use of cholagogues, purgatives and alteratives, such as iodid of potassium, in diseases of the heart and vessels, more especially in atheroma, which, by affecting the coronary arteries, leads to disease of the heart itself. The utility of iodid of potassium is very great, but sometimes it must be administered in large doses, and frequently I believe the full advantage is not obtained because the doses are not sufficiently large.

To resume shortly what I have said in this paper, the main risk in cardiac disease is from feebleness of the muscular wall of the heart, and the chief remedy is to lessen the work to be done till it is not excessive even for the most feeble heart; to slow the heart's action so as to give it time for rest, and to train the heart by graduated exercises until it is able to meet all the ordinary, or perhaps even all the extraordinary, demands upon it.

THE USE OF MORPHIA IN BRIGHT'S DISEASE.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY SIDNEY RINGER, M.D., F.R.S.

LONDON, ENGLAND.

Few opinions are more firmly held or more dogmatically taught than that opium must not be given to patients with albuminuria or Bright's disease. The more extreme upholders of this doctrine teach that the presence of albumin in the urine, even when the kidneys are not diseased, as in cases of fever, prohibits the use of opium. Many years of careful investigation of this subject convince me that this opinion is wrong. I avail myself of this opportunity to again draw attention to this subject. Several writers in America and England have recorded their experiences that opium either by the mouth or hypodermically may be administered, not only without danger but with great advantage, to some patients with uremia. Dr. Loomis ("Diseases of Respiratory Organs, Heart and Kidneys," 1875) states that he has employed morphia

hypodermically in puerperal eclampsia with marked success. He says that morphia may be given hypodermically to some, if not all, patients with acute uremia without endangering life. He states that the almost uniform effect of morphia so administered is 1, to arrest muscular spasm by counteracting the effect of the uremic poison on the nerve centers; 2, to establish profuse perspiration; 3, to facilitate the action of cathartics and diuretics. He has given half a grain of morphia hypodermically to patients completely comatose, with uremia, with benefit. Austin Flint ("Clinical Lecture," *New York Medical Journal*, reported in *Medical Times*, April, 1880) states that uremic convulsions in connection with hard contracted kidneys are well treated with hypodermic injection of morphia. There is no question in his mind, he says, that the administration of morphia in pretty full doses is of considerable service in quite a number of cases of uremic poisoning with nausea, tremor, impaired vision, etc. Roberts Bartholow ("Treatment of Diseases by the Hypodermic Method") asserts that in the treatment of uremic convulsions considerable doses of morphia are demanded; to an adult half a grain may be administered at once, and repeated so that as much as two grains may be injected within a few hours in severe cases. Stephen Mackenzie (*Lancet*, Aug. 3, 1889) reports some cases of uremia treated with hypodermic injections of morphia. One patient with paroxysmal dyspnea, with weak heart was relieved by one-sixth of a grain of morphia. Another case with breathlessness, irregular action of the heart and headache was greatly relieved by the same treatment, the patient obtaining refreshing sleep the first time for a long period. He has benefited patients with renal asthma by hypodermic injections, also removed headache. He refers to two cases reported in the *British Medical Journal*, March 16, 1888, suffering from uremic convulsions, both of whom recovered after the hypodermic use of one grain of morphia. Robert Park (*Practitioner*, Vol. xxiv, 1880) recommends this treatment in uremic insomnia and orthopnea. Powell (*British Medical Journal*, 1885) injected one-twelfth grain of morphia into a child 6 years old suffering from uremic convulsions, due to acute nephritis, following scarlet fever. The convulsions subsided, there was no recurrence and the child recovered.

Osler writes concerning uremia, "for the restlessness and delirium morphia is indispensable. Since its recommendation by Stephen Mackenzie in uremic states, some years ago, I have used this remedy extensively and can speak of its great value in these cases. I have never seen ill effects or any tendency to coma follow." My observations entirely confirm these statements, and yet the use of morphia in Bright's disease is denounced with little less than horror by most practitioners, though they all confess that they have never tried it, that, indeed, they dare not do so. Morphia hypodermically employed is of conspicuous benefit in the shortness of breath of uremia. This may be due to different causes. With some patients the compensatory hypertrophy gives way and they suffer from cardiac dyspnea, in all respects similar to that from valvular defects with insufficient compensations, notably, sleep in aortic regurgitation. The paroxysmal shortness of breath prevents sleep; on falling asleep they are soon awakened by distress of breathing. The patient is compelled to start up in bed, often throws his legs out of the side of the bed pant-

ing for air, or the sleep may be distressed and harassed by Cheyne-Stokes breathing. This distressing condition, whether due to deficient compensation, in Bright's disease or to valvular defects, is almost invariably relieved by hypodermic injection of morphia; and several hours' refreshing sleep are secured, to the great relief and comfort of the patient, who on the following day is refreshed, takes and digests and assimilates his food better. Morphia can scarcely be too highly commended in such a condition, and although it does not cure, it delays the end and greatly lessens the distress of the declining days of life.

Uremic asthma, again, yields promptly to hypodermic injection of morphia. On the other hand, persistent distress of breathing may be due to dropsy, the lung being hampered by an abundant serous effusion into the cavity of the chest. I need hardly say that such a condition is not improved by the use of morphia.

The headache and sleeplessness occurring in uremic patients can generally be removed by the hypodermic injection of morphia. I have not given this treatment in uremic convulsions or coma, but I have largely used it in many cases of uremia with other troubles, and am sure that morphia may be given to such patients with every prospect of benefit and no risk of harm.

THE PLACE OF HYDROCHLORIC ACID IN THE TREATMENT OF DISEASES OF THE STOMACH.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY BOARDMAN REED, M.D.

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The time has come for a definite and precise statement of what hydrochloric acid can do in the treatment of stomach diseases—when and how it is useful, as well as when and how it can be harmful. Riegel, in his recent work¹ very pertinently remarks: "While formerly HCl was prescribed in nearly all dyspeptic conditions, its employment has of late been essentially limited, since it has been recognized that it is by no means true, as was once assumed, that in almost every form of dyspepsia a lack of HCl exists." There is much other testimony to the effect that even among the aggravated stomach conditions for which the advice of a specialist is sought, an excess of this acid is very often found in the gastric juice. Could all cases of gastric derangement, including the earlier stages of catarrhal affections, be brought to the test of a chemical analysis of the stomach contents, it is probable that those with either a normal or excessive secretion would be largely in the majority. And none of these require the administration of HCl as a medicine. Indeed, it is capable of doing pronounced harm in all such cases. We should expect, a priori, that to introduce this active drug artificially into stomachs which already secrete it in too large quantity, would intensify the depressing and painful symptoms of hyperchlorhydria. Experience has abundantly shown that this result usually follows in such cases when the drug is administered in considerable doses.

The well-known antiseptic power of HCl might tempt one to give it in the numerous cases in which, despite the presence of a normal percentage of this

acid in the gastric juice, the patients suffer from eructations of gas as a result of fermentation in the stomach, and (as still more frequently happens in cases with a normal or over-abundant secretion of gastric juice) are plagued with a large amount of intestinal flatulency. Indeed, this remedy is administered every day by excellent physicians in these conditions, not after having actually learned through a gastric analysis that a full proportion of HCl is secreted, but upon a venture, assuming that there may be a deficiency, and if not, that in any case the drug is antiseptic and must do some good. Just here is where the mistake is made. To administer HCl in cases in which it is not deficient, is not only to do no possible good but generally to do harm, and for these reasons: This drug, as has been pointed out by the writer in previous papers,² acts even in small doses as a decided stimulant to the gastric glands, and when long continued rarely fails to increase largely their activity, except in gastric atrophy or cancer. This property, which renders it so useful as a remedy when the gastric juice is insufficiently secreted, becomes a cause of injury in the opposite condition. Therefore, HCl taken into a stomach already supplied with it, and the stomach contents after meals being thus as acid as nature intended them to be, must not only produce at the time an excessive degree of acidity with all the harmful results, especially to digestion in the small intestine which this implies, but if administered often enough may easily set up a more or less permanent hyperchlorhydria.

But it may be urged that we might well risk some over-acidifying of the gastric juice and the resulting impairment of intestinal digestion, if by this means we can lessen fermentation in the stomach. Unfortunately, however, in the cases in which there is no deficiency of HCl, very little, if any, antiseptic action can be demonstrated as a result of its administration. In the acid gastritis described by various authors in Germany and France, and especially in recent treatises by Hemmeter³ and VanValzah and Nisbet⁴ in this country, a condition which my own experience has shown to be very common and the one most often present, when a normal or excessive proportion of HCl is found associated with much fermentation, the gas-forming bacteria seem to acquire a tolerance for the HCl and to thrive in spite of it. At all events, the fact that even a very great excess of HCl in the human stomach does not prevent fermentation, has been made familiar to the writer by a large number of observations. Riegel has lately called attention to it without attempting to account for it. In his work already referred to, he says: "That the presence of free HCl in the stomach contents is no hindrance to the development of an abundant gaseous fermentation, is a long since established clinical fact, which through the researches of Kuhn and Strauss has been given a further support. It has been proved that the HCl of the gastric juice under the existing conditions has absolutely not the disinfecting properties against the yeast fungi which has been established, for it is in a pure solution of the drug, or in artificially prepared gastric juice, but on the contrary, the view always maintained by us has been confirmed, that when stagnation exists the preferred soil for the gaseous fermentation is afforded by just those cases which show a normal or over-large amount of HCl." Some experiments recently reported to the Hospital Medical Society by Toinot and Brouardel and published in the *British*

Medical Journal, show that the bacillus coli can be made to acquire a tolerance for arsenious acid even in strong solutions. They succeeded in training this bacillus to grow well in bouillon containing three grams to the liter of arsenious acid. Then why may it not be that bacteria in the stomach gradually become accustomed to the presence of HCl until finally even a large excess of it does not affect them? At all events the gas-forming micro-organisms are found to flourish in the stomach even when there is present a very large excess of HCl; and in these cases when they have become chronic, it is the rule to have grievous complaints of flatulency, both gastric and intestinal, with an endless train of nervous symptoms, including especially mental depression and insomnia, along with usually constipation.

What has already been said as to the contra-indications for HCl tells in a large measure where and how it can be helpful in the treatment of gastric affections. There are a few prominent gastro-enterologists who seem to place little reliance upon this drug in any case, but the writer has found it of exceeding value, not only as a palliative in cases of atonic dyspepsia, but also as a reconstructive tonic in cases of chronic gastric catarrh, which have not yet progressed to entire atrophy of the glands. In fact, the results which have followed its administration in my practice (usually in combination with pepsin) fully warrant me in assigning to it in the therapeutics of all stomach diseases characterized by hypopepsia (except cancer and atrophy) a place second only to diet and the mechanical treatments, including especially abdominal massage. My note-books contain the histories of a large number of cases in which the administration of HCl for from one to four months, more or less continuously, has been followed by a most notable and apparently permanent increase in the secretion of the gastric glands. In the majority of my cases massage and the use of pulleys or other suitable exercise for the strengthening of the trunk muscles, were also employed as a regular part of the treatment, and the results in these can not be cited as proving the efficacy of any one of the curative measures relied upon. The cure of the patient having been naturally the first consideration, the treatment has not been limited to any one agency, no matter how valuable. A large amount of evidence has thus accumulated which, it must be admitted, is inconclusive in so far as concerns the relative value of the various remedies used.

But, fortunately for the purposes of this paper, some of my hypopeptic patients found it impracticable to take massage, and at the same time unable for various reasons to carry out with any regularity the directions as to methodical exercise, and the marked gain in digestive power acquired by these must be credited mainly to the medicine taken.

Wegele⁵ and Hemmeter⁶ among recent authors bear witness to the powers of HCl as a stomachic or stimulant to the peptic glands. Hemmeter also quotes Riegel, Reichman and Mintz as having reported cases of achylia gastrica in which the restoration of the secretion of HCl was effected by a more or less prolonged dosage with the same acid. Hemmeter gives 20 drops of the diluted HCl in appropriate cases in two ounces of water every half hour, beginning fifteen minutes before meals and continuing it till half an hour after the meal. He has frequently seen excellent results from this method, and believes that the motor function of the stomach is favorably influenced

as well as the glands, a view which my own experience confirms. My practice has been to give much smaller doses. I direct the patient usually to begin with a dose of four or five drops of the dilute HCl given after each meal in this way: The amount prescribed, which is gradually increased, if necessary, up to ten, or exceptionally even to twenty drops, is added to half a goblet of water, which the patient is directed to take in small sips at frequent intervals during an hour or hour and a half. In cases of complete or nearly complete anacidity the sipping of the diluted acid is begun immediately after the meal, but in other cases not till the meal has been over for half an hour. In this way the amylaceous portions of the food are given time for the action of the saliva. I was led to adopt this gradual method of administering the acid through having observed a number of cases with absence of free HCl in which the patients complained of a marked burning in their stomachs after taking quite small doses of the remedy. This apparent intolerance of the drug was overcome entirely by having it taken gradually in small sips, and the results eventually were quite as gratifying as in other cases in which no such disagreement had occurred. Except in those cases where in spite of deficient or absent HCl secretion there had been demonstrated a normal proportion of pepsin or of pepsinogen, I have usually combined with HCl a moderate amount of a good preparation of pepsin in the form of a glycerole. When owing to the exigencies of a busy practice the quantitative tests have included the total acidity and amount of free HCl only, pepsin has generally been added to the mixture, and the very large proportion of such cases in which the digestive power has decidedly increased inasmuch that the patients, after a time, were able to do without stomach remedies, has led me to suspect that these doses of pepsin may, like HCl itself, exert a real curative influence, acting to some extent as a stimulant to the cells which secrete pepsinogen. In the cases, reports of which are given below, no very severe restrictions of the diet were imposed, though hot or fresh bread, fried articles, sugar, nuts, vinegar, the sourer fruits, especially uncooked, and shellfish, except oysters in their season, were excluded, and the patients were enjoined to eat slowly, using their saliva to moisten all starch foods, and to drink either nothing or very sparingly at meals.

Case 1.—Lady aged 36, resident in New York, while on a visit to Philadelphia, came under my care on account of chronic indigestion with much fermentation, constipation, anemia, irregular menses, impaired sleep and cardiac palpitation. She gave a history of having suffered in a similar manner for several years, and of having had more or less trouble with her stomach for twelve years. Had formerly had much pain after meals, and for this had been directed to take freely and continuously tablets made up mostly of sodium bicarbonate about 5 grains in each. She began by taking one every hour, or 16 a day, but finally reduced them to 8 daily. These were continued with little or no medical oversight for three years, until they markedly disagreed by causing nausea. External examination when this patient came under my care in December, 1896, showed the right kidney to be loose and very movable and the stomach dilated, extending from the normal limit above to several inches below the level of the umbilicus, with tardy expulsion of the contents. The liver area was somewhat smaller than normal, but the other organs presented nothing abnormal. Analysis of the stomach contents after a test breakfast, showed a total acidity of only 24, and an entire absence of free HCl. Rennet test, no result in twelve hours. Indican in excess in urine. My first prescription contained in each fluid dram 10 m. of dilute HCl with 15 m. of glycerole of pepsin, 1¼ m. of Tr. Nuc. Vom. and ½ m. of carbohc acid. A teaspoonful was added to half a glass of water and beginning half an hour after meals the patient sipped the entire solution during the hour

following. Shortly after beginning treatment she was attacked with a severe diarrhea, which necessitated a different line of medication for a week or more. Then a new digestive mixture was given with the dose of HCl reduced one-half, and the other ingredients except pepsin omitted.

February 25, 1897, the patient came on from New York and reported improvement in nearly all ways. She had continued her last mixture. The stomach analysis now showed T. A. 40, and free HCl .0146. Less fermentation and better sleep. No excess of indican in urine. The pepsin was now left out of the HCl mixture and a few drops of carbohc acid were again added to it. Massage of the abdomen was tried but proved too exciting to the menstrual function, the first treatment having brought on the flow out of time and in excess. Since the above date the patient has seen me at long intervals only. October 7, 1897, she came on to Philadelphia and reported that she had continued the HCl mixture until six weeks previously, and considered herself then practically well. She had gained 12 pounds in weight, presented a good color and clean tongue, and had lost most of her symptoms except the constipation. She afterward fell ill with grippe in New York and came under the care of Dr. Lockwood in that city, on account of this disease and its complications. She was confined to her bed or her room there a large part of the winter, but at the end of it all her physician wrote me under date of March 28, 1898, that a gastric analysis showed total acidity 50; free HCl 22 (equal to .080) and combined HCl 22. She reported herself to me again April 4, 1898, and looked well considering her recent long illness. There was improved gastric motility, but her stomach was still greatly enlarged, she having declined intragastric electricity and abdominal massage, the two surest remedies for that condition.

Case 2.—Lady, aged 40, wife of a physician in a neighboring city, consulted me March 22, 1897, on account of paroxysmal attacks of indigestion, from which she had suffered for twenty-six years. They were characterized by violent eructations of gas, and seemed to be caused by some unusual emotion or excitement. Formerly they occurred once in several months, and were not followed by any specially unpleasant consequences except nausea and some feeling of oppression. But within the last two years there have been three serious attacks of the kind, which were followed by colicky pains and jaundice, with pruritis lasting a week. These attacks also followed some marked nervous shock or emotional excitement. One occurred just after her father's death. Between times she is said to have had usually fair digestion, with no pain or discomfort after meals and very little eructation. Her bowels have been fairly regular as a rule, but she is very constipated always at the time of the attacks. The latter, of late, have sometimes recurred every day for several weeks, accompanied by severe colicky pain and vomiting. Ingesta taken two or three days before have occasionally been vomited. Color pale and looks dejected. Physical examination: Lungs and heart normal. Liver enlarged. Stomach, slight displacement downward along with atonic dilatation. The upper boundary was one to one and a half inches too low, and the lower boundary between two and three inches below the level of the umbilicus. The kidneys not palpable. No tumor. Gastric analysis after test breakfast: T. A. 12; free HCl entirely wanting. Small amount of mucus. Diagnosis: Chronic catarrh of the stomach and duodenum. Prescribed: R Tr. Nuc. Vom. fl.ʒii; Ac. hydrochlor. Dil. q. ad. fl.ʒi. Sig. 10 to 15 drops in half glass of water after meals. Diet to be as nonfermentable as possible. Two months later patient reported improvement. No further attacks. August 6 of the same year her husband reported that she had been obliged to continue the mixture regularly. Every attempt to omit it was followed by a return of indigestion. October 14. Patient recovered a few days ago from one of her severé attacks, which lasted two weeks with eructation, pain and constipation. Gastric analysis: T. A. 18; free HCl none; mucus very small amount. Prescribed: R Ac. hydrochlor. dil. fl.ʒvi; glycerol pepsin qs. ad. fl.ʒii. Sig.—Ten drops in half a glass of water half an hour after meals by sips. Every other week to take the following: R Argent. nitrat gr. x; Ext. taraxaci ʒi. M. et ft. pil. No. lx. Sig.—One after each meal. April 21, 1898. Has taken both medicines as above ordered—the HCl mixture continuously and the silver half the time. She now has a good color and is very much stronger. No further attacks. Gastric analysis: T. A. 40; free HCl .041; mucus a small amount. The lower border of the stomach was found to be near the level of the umbilicus.

Case 3.—Lady, a teacher, aged 25, referred by Dr. Samuel Bolton of Philadelphia, October 6, 1897. Her chief complaint was headaches and vomiting every few days, with much nausea and occasional vomiting, especially evenings, between the attacks. There was also stubborn constipation and feeling of

load in her stomach after meals. Organs generally found healthy except stomach, which was moderately dilated, extending down to half an inch below the umbilicus, with delayed emptying. The gastric analysis showed only a very small amount of free HCl (.014) though the T. A. was 66, representing largely fermentation products. There was much mucus in the stomach. I advised lavage and the combination of HCl and pepsin as the main treatment. On account of marked starch indigestion, she also took Taka-Diastase for a time, and Roncegno Water was taken for some weeks to bring up the quality of the blood.

On April 9, 1898, I found the stomach much retracted in size, the lower border being one and a half inches above the umbilicus, and the gastric analysis showed T. A. 56; free HCl .075; mucus a very small amount. She had had no severe headaches with vomiting for three months, and had regained a normal color, though her gastric catarrh is not yet entirely well.

Case 4.—Gentleman, aged 66, consulted me July 21, 1897, in Atlantic City on account of chronic indigestion, from which he claimed to have suffered nearly all his life. Painful accumulations of gas and obstinate constipation were prominent features. The external physical examination revealed nothing abnormal. Gastric analysis: T. A. 16; free HCl wanting. Starch digestion good. Mucus very small amount. He was placed upon HCl and pepsin in the usual way. He has since seen me several times on account of his wife, but reported that he himself was doing so well on the digestive mixture as not to require any further medical assistance.

December 16, he was seen and was then feeling well. On April 22, 1898, his wife called to consult me for herself and reported that her husband had been continuing his HCl and pepsin, though less regularly, having virtually recovered his health. He had taken no other medicine except a little nuxvomica during the first few weeks and a laxative at night. He had not had massage except such kneading over the abdomen as he had been able to give himself.

In this case no opportunity has been offered of testing the stomach contents again, but it is highly probable, from the decided improvement in the patient's digestion as well as in his general health, that the gastric glands are now doing much better work.

Reports of a number of other cases might be added in which under a treatment consisting either entirely or mainly of the administration of HCl and pepsin, conditions of apesia or hypopepsia improved more or less markedly, the gastric secretion having returned to the normal. Without claiming that such fragments of clinical experience can be accepted as demonstrating beyond question that HCl stimulates the gastric glands, it must be admitted that a strong presumption is thus established as to the existence of such an action.

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RECENT THERAPEUTIC APPLICATION OF THE VALERIANATES OF CREOSOTE AND GUAIACOL.

Presented to the Section on *Materia Medica, Therapeutics and Pharmacy*, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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NEW YORK CITY.

It can be safely assumed that the marvelous evidences of progress which the world has witnessed during the last quarter of a century in the science of medicine, especially in the department of clinical medicine and surgery, in very great measure may be justly attributed to the discovery of the relationship which exists either directly or indirectly between certain diseases and a comparatively small group of micro-organisms which are now known to be pathogenic. Out of this application of bacteriology or microscopic botany to the practice of medicine has been developed our present aseptic and antiseptic methods of wound treatment and also our therapeutics of many

infectious diseases. The knowledge that we now have of the causes of infection in wounds we owe to the genius of Lister, who has taught us also how we may securely guard against suppuration and other germ-induced pathologic conditions. Similarly Pasteur, Koch, Klebs and others have not only enlarged our sphere of information as to the nature of many diseases to which mankind is liable, but have also clearly indicated the only means of preventing their future progress by isolation and disinfection.

Sepsis therefore occupies an important position in the mind of the clinician, and in consequence, imperative demand has arisen for a class of remedies known as antiseptic agents on account of their ability to counteract the pernicious activity of pathogenic micro-organisms. The chemists have been diligent in their investigations and have placed in the hands of the therapist powerful weapons to be used in the warfare between the human body and the invading hosts of disease-breeding cocci and bacteria.

We must not fail to recognize and fully acknowledge the important rôle played by the white blood corpuscles in protecting the human organism from infection; without such natural antiseptics the human race would have disappeared many centuries ago. The aim of therapeutics in this class of diseases is to aid in the battle between the leucocytes and the germs by increasing the functional activity of the former and weakening the virulency of the latter. It is also important to acknowledge the indispensable aid to be derived from hygienic measures in this direction, and especially the great value of sunlight, pure air, and wholesome, easily assimilated food, all of which, from this standpoint, may be regarded as accessory antiseptic agents.

Many of the chemic antiseptics are poisonous to all forms of life, and when these agents are used in medicine it is necessary that we be careful that in our efforts to destroy the bacteria, we do not inflict permanent injury to the patient. One of the most remarkable of our antiseptic remedies and at the same time perhaps, the least poisonous to the human system, is beechwood creosote, which has had an established place in medicine for more than half a century; but as you are aware, creosote has been largely adulterated in the shops and impure carbolic acid substituted, and thus the best results were not at first secured. As a result of Sommerbrodt's efforts on behalf of creosote from beechwood, however, it received greater consideration in the treatment of phthisis, and this interest resulted in our obtaining it finally in a pure state. Creosote being a compound of various elements, chiefly guaiacol and creosol, it was thought by some that more favorable results might be obtained from the principal ingredient, guaiacol, and this was isolated and used with results known to all. In these remedies we found prompt antiseptic and germicidal properties with less poisonous effects upon human beings than from the common phenol or carbolic acid, which in the early day of Listerism was the most prominent among our antiseptic agents. Guaiacol has also become widely known through its remarkable power of reducing temperature when applied to the surface of the body, which discovery is due to Sciolla.

This brings us to the consideration of the newer of the many derivations or compounds of creosote, the valerianates of creosote and guaiacol, for brevity denominated eosot and geosot. They are nearly neutral

esters, having an odor resembling somewhat that of the English walnut, and boiling under normal atmospheric pressure at about 260 degrees C; are soluble in alcohol, ether and benzine. They are administered internally in coated gelatin capsules, each containing 3½ min. and in liquid form either diluted with absolute alcohol and flavored with oil of peppermint, cinnamon or cloves or directly in milk. The dose is from 3½ to 9 min. three times a day.

A convenient formula is as follows:

R Eosot or geosot, 20 ccm. (fl. dr. v).
Alcohol 95 per cent., 80 ccm. (fl. oz. ii dr. v).
Ol. menth. pip., 0.6 ccm. (gtt. x).

M. Each tablespoonful contains about 12 min. of eosot or geosot. Mix dr. i to dr. iii with plenty of milk and give this dose in three equal parts daily.

It is generally conceded that in the treatment of phthisis, for a decade at least, creosote or its derivatives have given the best results of any of the multitude of remedies lauded, but creosote has been so destructive to the digestive and alimentary functions that but seldom a patient would be found who could continue its use sufficiently long or in large enough doses to produce a lasting or permanent effect. The poor patient would lose his appetite and desire for food and consequently his physical strength and power to battle with the disease. Besides this, there was ever present the depressing and self-conscious factor of his own limitations toward ultimate recovery increased by the never-ceasing gastric distress.

The valerianates seem to meet all the requirements as remedies destructive to this disease without untoward effects. They increase the appetite and weight, relieve cough, hectic and night sweats. The valerianic acid component, by its sedative action on the nerve centers, particularly the sympathetic, enables the patient to enjoy quiet and refreshing sleep as well as a sense of ease and comfort not secured by other remedies. Being eliminated largely by the mucous membrane their bacteriologic effects are quickly apparent when used internally in bronchitis, acute gastritis, chronic gastroenteritis, typhoid fever, and intestinal irritation; when used externally in lupus and all purulent inflammations, as well as subcutaneously in glandular enlargements of tubercular origin, in hip joint and other bone complications, and as a spray in all nose and throat affections.

Physiologic action—Providing the amount of acidity of the secretions be sufficient to replace that of the acid in the combinations, the valerianates of creosote and guaiacol would be decomposed in the stomach. The hydrochloric acid of the gastric secretion varies greatly in different people as well as in the same patient from day to day and as the estimate is made before or after meals. There is also a great variation of acidity in consequence of the character of the diet as well as at different periods of the day. All these conditions must be considered in determining to what extent a combination will be separated into its several constituents in the stomach; hydrochloric, being the stronger of the acids, would under certain conditions replace the valerianic acid or have the effect of decomposing the combination of the valerinate, thus releasing the creosote or guaiacol in the stomach, but such a degree of acidity would very rarely occur, and without an abnormally large amount of hydrochloric acid one would not find the decomposition take place there, but that the remedy would pass on into the intestines and upon encountering the acid antagonist, alkalinity, would then and there be resolved into the two con-

stituents, guaiacol or creosote and valerianic acid. This would be the usual method, but it might occur that the alkalinity of the intestinal secretions would not be of sufficient degree to decompose a compound, especially if the remedy were of a character to resist its action. This would occur to a greater or less extent with a combination whose constituents were chemically firmly fixed. The more stable the combination the more surely would a greater or less amount escape in the feces unchanged. It is not at all probable that this decomposition is brought about by the ferments or the products of fermentation, as has been claimed necessary for the decomposition of the carbonates of creosote and guaiacol, but that the remedies would act largely in the alimentary tract as they do in the test tube, due allowance being made for slight variations not likely to be material. If the liberation of the several components depended upon the products of fermentation alone, or even to a quite considerable extent, we would not be able to secure the germicidal effects of the creosote or guaiacol in organs or tissue remote from the intestinal tract as in phthisis, for the creosote or guaiacol having once rendered the intestinal tract aseptic it would remain so for a considerable time, and if the remedy were continued it must necessarily pass on through unchanged, not encountering the products of fermentation necessary to decompose it.

This theory can not be reasonably assumed, for clinically we know that the creosote or guaiacol can be pushed to such an extent as to completely saturate the organism. It has been claimed that the extreme volatility of the valerianates admits of their absorption directly into the circulation as the valerianates, and without the necessity of a chemic action; that they are separated into their component parts after entering the circulation by the alkaline constituents of the blood, as is evidenced by the odor of creosote or guaiacol so quickly appearing upon the handkerchiefs of those using them for coryza. This property is of great advantage, as it is apparent that the patient would thus be quickly under their influence without the necessity of chemic changes in the intestinal tract to prepare them for absorption by a decomposition necessary in the more stable compounds such as salol, resorcin, the carbonates, etc. To this property may be attributed the small doses necessary when compared with other remedies, as the whole of the valerianates is utilized.

As regards the rationale of the action of guaiacol,¹ it has been found that "the beneficial effect of guaiacol in tuberculosis is chiefly due, not to any direct action upon the digestive organs or the blood, but to its combination in the blood with the albuminous bodies (toxalbumins) derived from the growth of the bacilli; that the absorbed guaiacol combines with these products and renders them harmless, and that they are further changed by oxidation, the guaiacol being liberated as a salt of ethyl-sulphuric acid, and the other decomposition products being eliminated in the urine. The products of the bacilli bring about the fever sweating, disordered digestion, etc., and with their destruction the ill effects pass away." This appears a very probable explanation and it is evident that an organic compound such as the ester of valerianic acid, which is quickly and easily decomposed, yielding nascent guaiacol in a condition ready for immediate absorption into the blood-vessels, is the most efficient

¹ Berliner Klinische Wochenschrift, Jan. 18, 1892.

and economical method of administering this invaluable remedy. It would also seem that this is the best form in which to give guaiacol in the treatment of typhoid fever and other intestinal disorders.

The clinical results obtained with the valerianates of creosote and guaiacol may be summarized as follows:

Dr. Rieck, Bassum, Germany, has an article in the August number of the *Medizinal Zeitung* of Berlin, August, 1897, on the valerianate of guaiacol in the treatment of tuberculosis which shows the following results: Of seventy-six cases treated in the various stages and forms of tuberculosis, he reports thirty-one cures, and thirty-two of the remainder so much improved as to have almost reached complete recovery; nineteen of the thirty-two giving up all treatment because they felt perfectly well. There were eight fatal cases in the whole number treated; rapid and extensive destruction of the lung three; cerebral tuberculosis two, and general tuberculosis three. The Doctor says that during his whole experience he has never been able to obtain results which even approximated those treated with the valerianate of guaiacol (geosot), not only in tuberculosis but in bronchitis, especially of children, in broncho-pneumonia, catarrh of the bronchi, larynx, pharynx and nasal passages; in acute gastric catarrh and in bone tuberculosis by injection directly into the bone tissue, and finally in lupus. In the cases of catarrh of the apex treated, twenty-four in all, there was quick and permanent relief, night sweats disappeared, sensitiveness to atmospheric changes lessened, weight and appetite increased and the cough was reduced to an occasional evacuation of mucus which soon became less tenacious and was easily ejected. It acts pre-eminently upon the mucous membranes and is therefore useful in diseases of the stomach, intestines and the respiratory passages. It is especially a remedy for tuberculosis, producing no irritation whatever, but in a few days bringing a feeling of comfort and ease.

Dr. W. Zinn of the "Second Medical Clinic University of Berlin," known as Professor Gerhardt's Clinic, published in *Therapeutische Monatshefte*, Berlin, 1898, a communication entitled "Further Results with the Valerianate of Creosote (eosot)," in which he states that: "Dr. Grawitz reported in the *Therapeutische Monatshefte*, Berlin, July, 1896, thirty-five cases of tuberculosis treated with the valerianate of creosote (eosot) as well as a number of stomach and intestinal disturbances, stating that the remedy was taken in all cases without ill effects to the digestive functions. I have now to report that since the publication of Dr. Grawitz's article we have treated eighty more cases of tuberculosis with the valerianate of creosote. As a rule, the remedy was given in capsules, each containing $3\frac{1}{2}$ min., one or more capsules three times a day. In several cases the medicament was continued for several months. It was used in all forms of tuberculosis and it was especially noted that there was in no case disturbance of the gastro-intestinal canal. It is accepted that of all the many remedies which have been recommended for tuberculosis the beech-wood creosote alone retains a prominent place notwithstanding its use has so often been productive of disagreeable effects. The valerianate of creosote is therefore worthy of especial mention because of its freedom from these disturbing influences. Particularly in the early stages of tuberculosis the eosot will be found of great service. Finally,

according to the experience had with the eosot in the Gerhardt Clinic, we can say that it fulfils all the requirements of a reliable preparation which can be taken and well borne for long periods."

Dr. Frank Woodbury of Philadelphia, in a paper read before this Association at its meeting in Philadelphia last year, reports having used the valerianate of guaiacol in full strength and diluted with liquid albolene as an anesthetic in nasal operations, as a substitute for cocain, and found it to possess decided anesthetic effects, slower in appearing than from cocain and not followed by secondary hyperemia. The antiseptic power is also of great value in throat and nose operation. In painful affections of the skin attended by hyperemia the guaiacol valerianate relieved pain and checked further pus formation. Small compresses wet with the guaiacol valerianate applied over the painful spot afforded almost immediate relief in neuralgias. Dr. Woodbury "also found the valerianate highly useful in erysipelatous conditions, in rhus poisoning, in acute and chronic rhinitis, in all inflammatory conditions associated with or producing fermentation, when administered internally."

In Langsdale's *Lancet* for March 1898, I find a report of three cases of phthisis by Dr. C. F. Wainright, Professor of Clinical Medicine, University Medical College, Kansas City, Mo. I quote Dr. Wainright: "In each case treated, tubercle bacilli were detected in the sputum." I venture to make a brief abstract of these clinical reports:

Case 1.—Man, 32 years of age. With tubercular antecedents. The disease of lung was of two years' duration and attended with usual symptoms, fever, chills, loss of flesh, night sweats, cough, etc. Upper portion of right lung consolidated and left upper lobe partially. Five drops of geosot (valerianate of guaiacol) was given every four hours and continued with very little cessation for five months. The patient at last report had resumed his daily occupation, was coughing very little, temperature had been normal for a month or six weeks, he had gained ten pounds in flesh, the consolidation had gradually lessened and he was apparently on the way to complete recovery. No other medicines had been used in this case.

Case 2.—A man in first stage of acute tuberculosis. Had been sick only five or six weeks. The lower lobe of left lung was consolidated and there were also signs of pleurisy. The usual symptoms were manifested, loss of flesh, night sweats, anemia, indigestion, diarrhea, cough, and sometimes bloody expectoration. Eosot was given commencing with two drop doses, gradually increased to eight drops four times daily in milk. This was continued three months and the patient gradually improved but had not yet fully recovered.

Dr. Wainright "believes that this man's life was saved by the remedy, as from all appearances he would have died in a few weeks had not the eosot been given."

Case 3.—A young lady 16 years of age, mother dead of tuberculosis, had two or three years previously suffered with tuberculosis of the shaft of the tibia requiring surgical treatment. She developed a tuberculous process of the left apex which in four or five weeks had consolidated the entire upper lobe. Guaiacol, creosote, oil of cloves and other remedies were tried and had to be abandoned on account of great irritability of the stomach. She was then given the eosot (valerianate of creosote) in capsules, and after four weeks, when the fever had subsided, she removed to New Mexico, and by the influence of climate together with the eosot which she has taken constantly she is now doing well.

Dr. Wainright concludes: "I have reported these cases, they being typical of many cases I have been treating. Am using these preparations extensively in other cases and have had uniformly good results."

The valerianates are being used at the Loomis Sanatorium for Consumptives, Liberty, N. Y. Dr. Stubbart, the physician in charge, in an article published in the *New York Medical Journal*, April 2, 1898,

says that "geosot, valerianate of guaiacol, proved an agreeable form of administering guaiacol. It was found less irritating to the stomach than creosote." I have very little time to refer to other valuable uses of eosot and geosot, such as their value in overcoming irritability of the stomach as in cases reported by Dr. W. E. Anthony of Providence, R. I., where in the nausea of early pregnancy and the sick stomach of Bright's disease of the kidneys they gave prompt relief. Having indicated some of the applications of the valerianates of creosote and guaiacol in clinical medicine and surgery, with one further reference I will close. Surgically Dr. Rieck refers to two cases of lupus of the face cured by applications of geosot and also to two cases of tuberculosis or white swelling of the knee and hip joint cured by injections of geosot into the capsule of the joint. Dr. Rieck also positively states that the valerianate of guaiacol cures bone tuberculosis, though not through the usual channels of absorption but by direct local application and declares that there is no question but that the use of the valerianate of guaiacol will permit of a marked extension of conservative measures in the treatment of tuberculosis of the bones and joints.

THE GENERAL PRINCIPLES OF ALKALOIDAL MEDICATION.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY W. C. ABBOTT, M.D.

CHICAGO.

My purpose in coming before you is to present some of the general principles governing that form of medicinal treatment which I have denominated "Alkaloidal Medication," and I trust that I may be enabled to present them with sufficient force and clearness to make my meaning distinctly understood. I am prompted to this effort by the belief that by bringing the subject before this Section of the great Association, we may correct some mistakes which my experience shows to exist very generally among the members of our profession.

There is an erroneous idea abroad that those who favor alkaloidal or dosimetric medication aim to establish a distinct system of practice. This is a great mistake, and a careful perusal of the literature of the subject will show that the word "system" is used by its opponents while the word "method" is used by its friends. In other words, what we claim for alkaloidal medication is that it is simply an up-to-date method for the treatment of disease, whereby departures from physiologic equilibrium can be controlled more quickly, safely and pleasantly than by any other known method. This claim we base upon the fact that alkaloidal therapy is founded upon the use of remedial agents in a state of chemic purity, completely prepared outside the body for ready absorption, leaving practically no chemistry at all to be performed by the ailing and weakened cells.

The agents we utilize are the active principles of plants—alkaloids, resinoids, glucosides and concentrations—and certain mineral preparations, all in a state of chemic purity. In fact, we use the same remedies we always did, but with the "dirt left out." For convenience in dispensing, these agents are usually given in the form of granules or minute tablets, accurately divided and measured to minimum dosage, to be given

at frequent intervals until effect. By this means one is always absolutely safe, utilizing the smallest possible quantity of the best obtainable means to produce the desired therapeutic result. How to obtain this result most speedily, safely and pleasantly should be the study of every practitioner of our art. The use of these "arms of precision," in cumulative minimum doses, gives us such perfect control of the physiologic disturbance at the beginning of an acute disease that we promptly restore the normal equilibrium, jugulate the attack, and cure the patient before serious organic lesions have been produced. This effect may be secured in all cases depending upon a controllable congestion, such as bronchitis, pneumonia, peritonitis and kindred conditions. Eruptive fevers will pass through their cycle under any form of treatment, but when treated alkalometrically they do so in a mild and greatly modified form; while that class of affections of which typhoid fever may be taken as a type, may either be aborted in the early stages or, if seen too late for that, may be conducted through the regular course to a quick and safe termination, like the eruptive fevers. The early control of the congestive element means much as to the subsequent course of any febrile attack, whether it be that of a specific fever or of a local inflammation.

In the practice of alkaloidal therapy certain customs or basal principles have been developed, which, though not confined to this therapeutic method alone, have become, in a manner, habitual to its followers. Whether or not these principles are well-founded you may easily determine. I will first mention the giving of small doses, frequently repeated, until the desired effect is produced; that is, every fifteen to thirty minutes, according to the severity of the attack, until some improvement is manifest. Such doses should then be given, at greater intervals, as will keep up this effect. By adhering closely to this method it is simply impossible to overdose the patient. In this way the alkaloids and other active principles and the most powerful mineral drugs may be used with perfect safety. Here we have the first illustration of the value of the alkaloids in promoting accuracy of medication. These agents are clean-cut and well-defined in their effects and totally devoid of the uncertainty which hangs over the galenicals. For instance, when we give pilocarpin we direct the dose to be given every fifteen minutes until sweating occurs. We know this will be the effect; and no one who has enough intelligence to be left in charge of a patient can possibly mistake so simple a direction. But if we were to give the fluid extract of *jarborandi* we could not know whether it would induce perspiration or dry it up, because the way it will act depends on which of its alkaloids—pilocarpin or *jaborin*—happens to be in excess. Consequently we have to go into a long explanation to the nurse, which she is not likely to comprehend, because we do not really know just what effect the medicine is going to exert.

I will not occupy your time in detailing more of such illustrations, but will merely ask you to call to mind the great number of drugs that contain more than one active principle, some of which are antagonistic to the others, as in digitalis, ergot, hyoscyamus, opium, etc. Observations made in India upon the treatment of dysentery with *ipecacuanha* deprived of its emetin render it probable that many plants now thought to possess but one useful active principle may contain others of no less value. When applied

to the treatment of acute diseases, the alkaloidal method directs that active medication be instituted the moment congestion is detected, before sufficient organic lesion occurs to make a specific diagnosis possible, or in other words, it directs that we apply to acute diseases, acute or active treatment, reserving the slow or expectant sort for chronic conditions. There is no such thing in rational therapy as a fixed dose. Under the old methods the dose is modified by sex, age, weight, strength, habit, time, season, general condition and idiosyncrasy—each considered apart from the effect of the disease—therefore, in no instance can the dose be more than roughly approximated to the probable need. The principles governing alkaloidal therapy do away with all this. The initial dose is made too small to do harm under any circumstances; it is given in a shape that allows it to be dissolved and absorbed almost as quickly as if given hypodermically; and it is repeated at short intervals until the desired effect has been obtained.

Here is where individual differences arising from the personal equation are equalized; one will require but two or three doses while another will require ten or twelve to produce the same effect. And it is not impossible that the constant impression of small doses frequently repeated has the same power of controlling acute disease-processes (a power apparently so completely out of proportion to the amount of the agent used) that a film of oil has in preventing the development of waves in an ocean storm. This delicate, scientific handling of a therapeutic agent, especially in the beginning of disease-processes, has its uses; but by no means does it preclude the employment of good, strong, Anglo-Saxon, Dewey blows when they are indicated. There is need of and room for both in the practice of medicine. The researches of Bouchard and the clinical observations of thousands of physicians have demonstrated the importance of a clean alimentary canal, and also the large part played by intestinal sepsis and autotoxemia in the semeiology of most diseases. Accordingly the employment of a saline laxative—preferably a chemically pure magnesium sulphate in effervescent combination—to empty the bowels, and of intestinal antiseptics to prevent microbic action, are inculcated as essential features of the alkaloidal treatment of any disease. By these means the body sewers are flushed; accumulations of toxin-breeding débris are removed or prevented; and the kidneys are relieved from that overwork which, resulting in an irritation, constitutes such a serious menace to the organ, being liable to result in actual and perhaps fatal nephritis.

One of the singular anomalies in medical belief is the persistence of the idea that the alkaloids are dangerous as compared with the galenic preparations from the same plants. But little investigation is necessary to demonstrate the fallacy of this idea. Infusions, tinctures, decoctions and extracts depend for their therapeutic efficacy upon the active principles which they contain, and, in view of the fact that no two crops of the same plant ever contain the same percentage of active principles, they must be present in these preparations in unknown and varying proportions. Not only does the amount of active principle in any plant vary with the seasons, but it also varies with the localities in which it grows and the conditions under which it is cured and kept. Therefore, as usually prepared, each new lot of extract or tincture must be tested chemically or at the bedside before the

physician can tell how much he should give. Even the dose of today may not be that of next week; for the drug may deteriorate or, in case of insecurely corked alcoholic or ethereal preparations, may gain in strength through the evaporation of the menstrum. No one can reasonably claim that uncertainty of strength adds to the safety of a dose, nor that the presence of inert matter renders it less dangerous. Besides, as in the case of digitalis, some of the ingredients of a tincture or extract may hinder the absorption of the desired remedial agent, and the most valuable period for medication may thus be lost.

While the old methods deal with uncertainty, the alkaloidal deals with certainty; while the old asks the sick cells to do both chemistry and absorption—when the former can be at best but poorly performed—the new calls for absorption only. Thus a more accurate and scientific therapy is made possible. It is strange that the laity are quicker to recognize the merits of alkaloidal medication than are the majority of physicians. It does not take the patient or his friends long to appreciate the wonderful potency and efficacy of the granules of the active principles, and yet many of the medical profession still fail to comprehend. Occasionally one becomes imbued with the spirit of alkaloidal medication, and, astonished at the excellent results obtained, becomes inspired with a new enthusiasm and awakes to the fact that with these tools he can do better work than he has ever been able to do before. No less an authority than Prof. Shaller says in his "Guide to Alkaloidal Medication": "The writer has had years of experience in prescription writing, and also in dosimetry—alkaloidal medication—and he has no hesitancy in saying that his results with the alkaloidal granules have far surpassed what he was able to accomplish while using the cruder preparations of the same drugs."

Accuracy in prescription requires a corresponding accuracy in diagnosis. The name of the disease is not enough. There must be a distinct conception of the pathologic condition of the organs and the cells and tissues composing them. We must have a clear idea of the nature of the disease and of the treatment required, and administer those remedies which are indicated by the morbid symptoms. The time has come when we should discard the old shotgun prescriptions with which, through the association of a number of substances, the practitioner hoped to at least hit the mark with one of them. The active principles are "arms of precision" and bear the same relation to the old-fashioned galenic preparations that the rifle bears to the shotgun.

The standard works on practice have little or nothing to say of vasomotor spasm and paresis, yet these are among the conditions most frequently demanding the active interference of the therapist. Much might be said in elaboration of this subject, the importance of which we are but just beginning to realize; but it must suffice to say that such clear-cut control is just as impossible under the old methods as it is possible and easy under the alkaloidal. Alkaloidal therapy teaches that the treatment must proceed as rapidly as the disease. The more acute the disease the more frequent the repetition of the doses. This statement is almost axiomatic; but it has been reserved for the alkalometrist to recognize it and call the attention of the profession to its importance.

Although I have already referred to the jugulation of acute disease, the prime importance of the princi-

ple involved warrants a further word. I can not too strongly emphasize the importance of instituting a strong, active treatment, directed to the dissipation of the prominent symptoms, at the earliest possible moment of attack, and before the danger has definitely located itself. Otherwise we may be too late, and cerebral, thoracic, or abdominal symptoms may appear, the disease having the form of a fully developed meningitis, carditis, pneumonia, or gastro-enteritis, any one of which must be allowed to go through all its stages unless the patient should succumb before the end. The use of the little granules has led casual observers to ask if alkalometry does not savor of homeopathy. Were it not that the question has been asked by those who ought to know better, I would not occupy your time with this matter; but a few words are enough. The original idea of Hahnemann was that a remedy should be selected whose gross effects coincided with the symptoms shown by the case, and that if properly selected, a single dose would suffice for a cure. The use of the infinitesimals was a later development. It was necessitated, in order to hold his followers, by the impossibility of rendering the theory universally applicable when tangible doses were administered. This was one of the earlier applications of the art of hypnotism, and the influence of his "suggestion" obtains to this day. In alkalometry the remedy is chosen that most nearly antagonizes the disease-condition present, and is given in small but effective doses until the drug-effect has been raised to the point where it exactly counteracts the disease-effect; a reaction to the normal is the result. An apparent application of similia may be seen in the alkalometric practice of giving such stimulants as strychnin arseniate and sanguinarin in acute diseases of the parts over which these drugs have a selective influence; but the reason for this is, that there is an antipathic effect to be secured. Disease means a lowering of vitality, either functional or organic. If the vitality of the pharyngeal tissues be normal, pharyngitis will not occur. It does occur, consequently the resisting power of the pharyngeal tissues is below normal. Our grandmothers recognized this and treated pharyngitis very successfully with capsicum tea; we, more pleasantly, treat it with strychnin, sanguinarin, etc., or with strong local astringents. This is clearly "antipathic" and not "homeopathic."

The principle of administering a remedy until the desired effect has been secured, simple as it appears, was never satisfactorily applied, or even understood, until the present method was advocated by Burggræve. This principle is of especial importance in the treatment of children, to whom the giving of anodynes, narcotics or antispasmodics is often a necessary but dangerous measure. No drug, however powerful, need be excluded from child-practice when employed alkalometrically; everything depends upon the accuracy of meeting the indication, and upon the gradation of the dose; all danger is removed by cumulative minimal dosage.

To the superior control which the physician exerts over his drug, to the promptness and certainty of his medication, and to the avoidance of all the ills resulting from the intermediation of the pharmacist, conditions easily possible to alkaloidal therapy, I can but casually refer. The superior facilities for treating emergencies which the physician who carries his granule case possesses over him who has only a lead

pencil and a bit of paper; the difference in favor of carrying an ounce of active principle instead of eight pounds of galenic powder (to him who has to carry them), and many other practical points, must be left to you who know them as well as I. When the pathologic conditions that are present in every attack of disease are clearly comprehended, and when the effect of each medicament upon these conditions has been definitely determined, then, and not till then, will therapeutics be established upon a firm basis, and the practice of medicine become a true science. But this happy condition can never be reached until the members of our profession turn to the use of remedies distinct and uniform in their effect. And as alkalometry makes for keener study of disease-states, greater accuracy in diagnosis and prescription, even to certainty as to the dispensing of medicines, it is bound to win in the contest with the old, careless, slovenly, half-hearted, pessimistic methods.

HOW FAR DOES A SCIENTIFIC THERAPY DEPEND UPON THE MATERIA MEDICA IN THE CURE OF DISEASE?

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ELMER LEE, A.M., M.D., Ph.D.

NEW YORK.

A large part of medical student life is spent in trying to memorize the contents of the materia medica and its auxiliaries. The drug catalogues sent gratis, and drug circulars and the spurious medical literature for advertising purposes comprise the auxiliaries. Names of drugs are arranged into classes for convenience, and later the names begin to keep company with other names which stand for disease. The hapless student works away for some years till he is prepared to answer examination questions pertaining to diseases and the drugs which it is affirmed cure them, he is then ready to be graduated in medicine, and soon takes up the practice of this acquired information upon other hapless ones, perchance to be found in some eleemosynary institution to which he is assigned for having shown himself specially fitted or judged by his ability to pass a medical examination in current theory and practice.

The ambition of the student is worthy of a better fate than the disappointment which is certain to settle upon him in the battle against disease. He hopes to succeed where others fail, for he does not yet suspect where the real weakness of his therapeutic system lies, believing that failure to cure depends only upon an imperfect individual knowledge of pharmaceuticals and their exact application. Such is the feeling at the inception of the medical career, but later on in the practice of medicine it is realized that the anticipation of a perfect understanding and the possibility of curing where others fail, was a dream.

Schools of medicine rise and fall based upon drug therapy, and the widest dissension exists among adherents of diverse medical systems. Claims are set up which alone exist in the brain of the medical reformer. It is impossible to check thought, as well as undesirable, but it is contrary to progress to accept error. It matters not who is the teacher. The materia medica is a vast collection of strange drugs and chemicals, mineral and vegetable, so put together that they form many thousands of pharmacals, for which there

is little use in the arts and sciences, and if the truth were to be told, even a less need for them in the treatment of disease. The force of habit perpetuates many customs that are fruitless for good; in the same way the favorite prescription continues to dominate therapeutics without a pretense in many cases of either science or reason. Man is truly a creature of circumstance; physicians operate in precisely the same way as a rule. The homeopathic doctor sticks to the notions of his teachers and the precepts of that system. The eclectic physician yields to the influence of similar environmental conditions, imbibing a respect and love for the tenets of specific medication as arranged for him by the clever but erratic wits of some medical classifier who is taken seriously for an authority. The great mass of physicians, through an incident of association, make choice of a medical school for study, knowing nothing of its essentials of doctrine perhaps, choosing it rather for the simple reason that its inducements happen to reach them persuasively. Seeing then that the selection of a creed in medicine is due to some chance circumstance, for the student can not possibly choose intelligently—for the best of all reasons, that of not having experience—friendly co-operation and not condemnation would be a proper attitude toward those who follow sectarianism in medicine. One physician of New York prescribes according to the *materia medica* on the ground that he knows not what else to do in the treatment of his cases, at the same time admitting freely that his experience teaches the uselessness of the drugs he prescribes. A patient was sent from a famous health resort home to die, with a note of explanation of the treatment of the case during the stay in the sanatorium. There were copies of nine prescriptions included in the notes on the case to further explain to me how the dying condition of the patient had been reached. The doctor there had rained coals of literal fire upon her head. The colleague at the sanatorium possesses all the virtues of fine fellowship, but is a physician emphatically detrimental to his patients. He is one who stands for a class of practitioners waiting with a pharmaceutical club to crush a symptom of warning and possibly kill the patient at the same blow. This is the solemn truth. It is everyday experience.

In another case a dangerous and extensive colitis had almost accomplished the destruction of a precious life; my counsel was requested at this stage of the case. The nurse and family desired me to inspect the medicines, thinking it would aid me. The list of prescriptions and proprietary cures which had been used in her case awakened my resentment against the medical teaching that made it possible that doctors could be content to depend upon the *materia medica* for physiologic reconstruction in the face of such adverse results. The patient was made worse by her treatment, even though the mistakes were made by honest, earnest and faithful physicians. The patient required a great deal of assistance to re-establish her health, but she did not need medicines, either mild or strong.

The study of drug therapy may become fascinating, and medical experimentation with human life as exciting as a romance, but these things are not the main object of the true physician. Sound health needs for its continuance a regular exercise of the different parts of the body and adequate nutrition for growth and repair. When these elemental conditions are not properly and regularly supplied, it leads to disease.

Then the way to cure is to right that which is wrong, using natural agencies rather than artificial. The greatest success in curing the sick is to give scientific attention to such matters as belong strictly to the actual necessities of life forces. The *materia medica* is not required to support vital functions in health, and the question is: How far is it useful when the body is sick? From time immemorial in the treatment of the sick curative influences have been associated with substances which are not well understood by those who take them. Such long existing habits of man in his course of evolution can not be lightly set aside. In some future day it is certain that drugs and chemicals will form no part of a scientific therapy. This is sure to be the case, for truth is finally certain to prevail. From the physical standpoint the *materia medica* confers no important favor upon either the healthy or sick body, but as yet the mind of the patient will not listen to the divorce between bodily cure and drug effect, though in fact, the drug actually retards health resumption.

The principal influence or relation of *materia medica* to the cure of bodily disease lies in the fact that drugs supply material upon which to rest the mind while other agencies are at work in eliminating disease from the system, and to the drug is frequently given the credit. Every physician knows this explanation is in accordance with the facts of the case. Experience teaches that to satisfy the mind of the patient, harmless medicines are fully able to be a substitute for the disagreeable and dangerous ones, besides they confer the real or supposed help to nature and never an injury. Sugar of milk tablets of various colors and different flavors constitute a *materia medica* in practice that needs for temporary use only, morphin, codein, cocain, aconite and a laxative to make it complete.

If this were not literally true how could the satisfactory cures of the little pill doctors be explained? Their patients are from the most intelligent classes of society, and prefer the harmless doses. The effect upon the confidence is the chief element of such slight drug treatment, while the cure is due to the inherent reconstructive forces of nature, aided by the employment of hygienic counsel.

The multiplication of new chemicals, which are everywhere pressed upon the physician first, then the public afterward, is pretty conclusive that the therapy of this day is not satisfactory, or else physicians are easily imposed upon by the promises of the impossible from the latest drug claimant. It also shows that the doctor is dissatisfied with his standards or loves continual experimentation. If a simple, natural *materia medica* prevailed in the profession, it would enable the physician to base the cure of disease and his hope for prosperity on selling his wits to the patient rather than the drugs of the apothecary. People everywhere ought, and generally will, pay a greater price for sound counsel than for a prescription for medicines. The strong incentive to excel in medicine is commendable, and should be based upon the desire to be a wise health-counselor, rather than a routine prescriber of chemicals, thus commanding respect and good fees. This is proper and just.

The drug stores are ready to supply a customer with a drug for his every symptom, and for this service they are entitled to commercial profits, but if the physician does no more than the druggist, the public estimate between the two will not be much in favor

of the doctor. The earnings of the profession average low, and so long as practicing physicians indiscriminately prescribe every sort of chemical that is placed before them, they place themselves in competition with druggists and vendors of patent cures, while the original and independent thinker will always enjoy a greater individuality, and deserves to gather the equivalent in fees in exchange for the higher kind of medical aid in the work of a life-saving profession.

10 West 49th Street.

THE REGENERATION OF PHARMACY A VITAL-NECESSITY OF SCIENTIFIC MEDICINE.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY OSCAR OLDBERG, PH.D. (NORTHWESTERN UNIV.)
CHICAGO.

Medication is indispensable to the healing art. The physician without drugs is powerless. Indeed, the more urgent is, in most cases, the need of the medicine. The purpose of this paper is a plea for the more faithful and effective performance of duty in the preparation and dispensing of medicines. If medicine is not of importance in the treatment of disease, then let materia medica and pharmacy be abandoned. But if drugs or medicines are really so indispensable that the physician can do little or nothing without them, then it must be one of the highest duties of the physician to give heed to the character of the medicine he employs. This truth is apparently to a great extent ignored. But it is as important to the welfare of humanity as the science of medicine itself. To deny the necessity of faithfulness in the preparation and dispensing of medicine for the sick would be to put the stamp of quackery upon the practice of the physician. I am not an alarmist; but it seems to me that any thinking man must, upon due reflection, be led to the conclusion that the condition of therapy and pharmacy is most deplorable and that there is a present and pressing necessity for a radical change. Sensational references to adulteration, substitution and other frauds in the manufacture and sale of medicines are as ineffective as they are unwarranted. That ignorance and dishonesty are met with in all pursuits is not to be denied. It is not my purpose to reiterate such indictments or too add to the proofs of their truth. But I assert that the vast progress made in pharmacognosy, chemistry and pharmacy has utterly failed to receive that recognition which compels obedience to its lessons. There has not at any other time been a greater disparity between the store of scientific knowledge applicable to the preparation and dispensing of medicines and the actual application of such knowledge for the benefit of humanity. Pharmaceutical knowledge is now sufficiently developed to prove more clearly and conclusively than ever before the necessity for the services of the trained expert in pharmaceutical work.

We now realize fully the fact that without any reference to intentional fraud and criminal ignorance or negligence, medicinal substances are, from other preventable and unpreventable causes, liable to changes and variations such as render it necessary that they be selected, tested, preserved, examined from time to time, and prepared for use only by properly trained scientific-technical experts who are alone competent

to determine their character and condition. Whoever dispenses medicines for the sick should know of his own knowledge precisely what he is dispensing and what he is doing. He should possess that special education which is necessary to a proper realization of his full duty and its faithful performance. Yet medicines are now dispensed by thousands and thousands of persons who possess not the slightest knowledge and training in pharmacy. And the most serious feature of this dangerous abuse is the sad fact that a rapidly growing proportion of those who, without adequate knowledge of the risks involved, undertake to provide the medicines required for the sick, are physicians. This practice is indefensible except in cases where the physician is so situated that the services of a competent pharmacist are not within reach. In such cases the physician can only procure his medicines from reliable pharmacists, preserve these medicines properly and renew his supplies so frequently that the chances of deterioration, dangerous alteration, or destruction are minimized or obviated.

If modern pharmaceutical chemistry has taught us anything, it is that medicines do not retain their properties unchanged for an indefinite period, and that the changes liable to occur in medicinal preparations are not limited to a mere gradual decrease of potency. They sometimes become nearly or quite inert, and in other cases become so changed as to acquire entirely different medicinal properties. We have heard of such bold-faced frauds as the manufacture and sale of "tasteless strychnin tablets," put forth to deceive those who do not know that strychnin can not be tasteless. We know of proprietary preparations with published formulas which omit to mention very potent actual constituents, but which do name ingredients not contained in the preparations. Against these and other similar frauds the physician has an effective remedy; he can get along without them. But the practice of dispensing medicines which have not been properly examined, the identity, purity, quality and strength of which are unknown, and the age and condition of which are uncertain, must be regarded as a more dangerous evil because of the many plausible excuses which suggest themselves, and because of the fact that the only effective remedy is not so easily found or applied. There are incompetent and dishonest manufacturers of pharmaceutical preparations as well as competent and honest ones. There are incompetent and dishonest dispensers as well as competent and honest ones. Whatever may be the proportion of ignorant and incompetent persons employed in preparing and dispensing medicines, the physicians have it in their power to do more than any other men to compel a thorough and lasting reform in the ranks of pharmacy. The practice of medicine and the practice of pharmacy can not be combined without detriment to both and injury to civilization. The higher the standard of medical education the higher must be the standard of pharmaceutical education also. The more a well-educated physician knows of pharmaceutical chemistry the more clearly will he see the need of the services of scientifically trained pharmacists who devote their whole attention to the laboratory work demanded by modern medicine, including the preparing and dispensing of medicines for the sick. And a well-educated pharmacist should not only be competent to perform these services, but will be sure not to encroach upon the duties of the physician.

The average drugstore is an altogether unfit place

for the proper performance of such important, delicate and responsible duties as those of true pharmacy. But instead of dispensing his own medicines the physician should insist upon a radical reform in the average drugstore, including the banishment of the soda fountain, cigar stand and all other excrescences. Many druggists are uneducated. But the remedy is a reasonable measure of compulsory education which the physicians and the public should insist upon. We have numerous schools of pharmacy, and many of them are excellent schools; but not one of the pharmacy laws of the forty States that have such laws requires a single day's attendance at any such school as a prerequisite to the license to practice pharmacy, because the public and the medical profession are so indifferent as not to demand it. Reputable and honest merchants, called druggists, wholesale and retail, may buy and sell drugs and chemicals about which they know little or nothing, frequently accepting and furnishing in good faith one thing for another. But the only protection against such serious blunders is the faithful application of skill and knowledge by the properly trained pharmacist. Druggists, wholesale and retail, may buy and sell drugs which are so old as to be unfit for use, and those who periodically and critically examine their supplies and throw away all medicines not in perfect condition can be only those whose training fits them to do this intelligently. The remedy must be the just recognition of the plain fact that the pharmacist is a scientific-technical expert who performs special services for which he is entitled to professional fees, and not a mere merchant dependent upon commercial competition.

Without rational scientific pharmacy there can be no scientific medicine, for how can the physician learn anything definite about the action of any medicine which is not uniform? Medicinal preparations must not only be carefully and properly prepared from materials of verified identity and quality, and then standardized; but they must be protected against change, examined from time to time, and thrown away whenever they shall be found no longer perfect.

The new pharmacy should not be a "store," but an *officine*. It should be provided with all the necessary apparatus, reagents, and other facilities for scientific-technical pharmaceutical work, which should include not only the preparation, examination, compounding and dispensing of medicines, but also urine analysis, and other microscopic and chemic examinations required by physicians, the preparation of bacteriologic culture media, etc. There should be no patent medicines and other nostrums in the *officine* of the new pharmacist, no tobacco, no soda fountain, no merchandise—nothing but legitimate medicines, surgical dressings and whatever else is requisite to enable him to perform his proper functions as the laboratory expert and assistant to the physician and the common chemist of the community. This is no idle fancy picture of an unattainable ideal. It is the reasonable and proper demand of our present civilization. Such pharmacies can be maintained in every large city, and in numerous smaller cities. Not only that, but in places where it may be impracticable to maintain such an *officine*, divorced from the miscellaneous merchandizing of the average drugstore of today, there can still be a vast improvement made upon the prevailing system.

Will not the members of the AMERICAN MEDICAL ASSOCIATION declare in favor of compulsory pharma-

ceutic education for the practice of pharmacy and for the divorcement of legitimate pharmacy from the commercial drug business, in the interest of the public welfare?

PRESENT STATUS OF SERUM THERAPY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY GEO. W. COX, M.D.

CHICAGO.

The history of serum therapy is like the history of a day—a busy day—into which is crowded the memory of a thousand conflicting incidents, all so brief and fleeting in character as to be almost forgotten on the morrow. Many of us remember the "good old days" of thumb lancet and fever starvation, when serum therapy was not even a dream; most of us remember when the clouds first began to separate under the influence of scientific research, and all of us remember when the first sunbeam of actual discovery burst upon the world like a meteor's gleam. It must not be inferred from this that no hint of the underlying principles of serum therapy was ever scented until the present generation, for a suggestion of them was made nearly two hundred years ago, when the Turks are credited with practicing a crude form of inoculation against smallpox. The methods were so imperfect, however, and their success so limited, that the practice was allowed to die out, and many decades passed before Jenner revived the idea and applied it in the form of vaccination. Although another half century rolled by before the next great advance was made, it would be very unjust to the immediate followers of Jenner to say that they were content to confine the principles of vaccination to the prevention and treatment of a single disease. Many theories were advanced by them—the chief one being the once popular but now almost forgotten isopathic practice of the Germans—and much experimentation indulged in; but their gropings were wholly in the dark until a practical application of serum therapy was made possible by the first important discovery of Louis Pasteur.

This great scientist, while still young enough to be addressed as "*mon cher enfant*" by Biot, the discoverer of the phenomena of polarization, taking molecular asymmetry as a cue, had demonstrated the power of the tartrates under certain conditions to deflect polarized light. This led him to the immediate study and speedy discovery of the true cause of fermentation—the real beginning of Pasteur's many and varied achievements. Then followed in rapid succession the numerous and useful ideas now so familiar to every student of medicine, including the explanation of the cause and nature of infection, of contagion, and of the principles of prophylaxis and cure by vaccination. He also determined the evolution of disease germs, both in and out of the living organism; and finally rounded out his brief but fruitful scientific career by giving to the world the new treatment for hydrophobia. Thus by Pasteur was laid the foundation upon which the superstructure of serum therapy is now being erected. I mention this point in simple justice to the inventive genius of a great man.

All great, important discoveries, through their greatness, soon become so popular in the public mind that their originators are quickly forgotten. We speak

of the tubercle bacillus, the telephone and the diphtheria antitoxin as commonplace affairs that had been known from the most ancient times, and rarely stop to think of the men who spent years of earnest toil in their discovery and development. Richet has truly said that the first-course medical student of today is perfectly familiar with many phenomena which the wisest sages of fifty years ago could not understand. Lavoisier, Jenner, Galen, Celsus and Hippocrates all knew that fermentations existed and were quite familiar with their consequences; but they had no more conception of their causation than we of the present day have of the origin and proximate character of electric force. It was not until the year 1857 that the bacterial origin of fermentation was made known and means devised by which it could be produced, controlled or prevented at will. The world of commerce began to be enriched at once, for the wine disease, the beer disease and the silkworm disease each in turn received the attention of the young French physicist, with the result of placing them all under easy control. This would seem to be glory enough for one man, and it seems strange that anyone would bid for more; but the highest reward was yet to come in the application of the same theory in regard to the causation of disease in man. Pasteur was not a physician, and this makes it all the more remarkable that he should have been singled out by the fortunes of destiny to lead the hosts of medical bondsmen into the light of etiologic, pathologic and therapeutic sunshine. Thus, while the whole world acknowledges Pasteur as the "father of bacteriology," as it is known and practiced today, through this relationship he must forever be designated as the *grandfather* of serum therapy. The question naturally arises whether the present progeny is of sufficient merit to be considered a worthy offspring of so famous an ancestry.

There is a brief, uncertain period in the life of every youth, as well as in every young scientific problem, when the weathercock of prophecy seems to hesitate between the points of great usefulness and utter worthlessness. It is the purpose of this paper to show that serum therapy has passed this period of uncertainty and assumed a place among the staples of rational therapeutics. It will be noticed that under the general term of serum therapy I include medication by toxins, antitoxins, blood serum and vaccins—all of which are the outgrowth of the germ theory of disease and the direct result of applied bacteriology. My definition is, therefore, intended to be practical rather than scientific, and I trust the importance of this phase of the subject will be permitted to outweigh technical inaccuracy. In presenting the claims of this new system it is necessary to first point out its great value as a diagnostic agent. The incipient stage of some diseases, tuberculosis for example, is so mild and insidious that its early detection is impossible by the usual methods; but by means of a bacterial-product it may be disclosed, both in man and in the lower animals, even before its location in the organism can be definitely determined. The advantages of this are self-evident. In the human subject it permits appropriate treatment to be instituted before chronicity and complications render the case hopeless; while in the case of cattle it favors isolation or such other disposition of the stock as will insure the owner against pecuniary loss. If, therefore, serum therapy had nothing else to recommend

it, its value in the early diagnosis of two such diseases as tuberculosis and typhoid fever would insure it a permanent place in the list of esteemed remedies. But its worth is not measured by its diagnostic power alone. Its well-known action as a prophylactic in some diseases is of the greatest moment, while its curative power in others can be accurately described by the one word "specific."

In the consideration of serum therapy in its practical application to the treatment of diseases, it seems both natural and fitting that the one to be mentioned first and with which all comparisons should be made, is that relentless and loathsome enemy of childhood:

Diphtheria.—To the vast majority of the thinking physicians of today, the mere mention of diphtheria is suggestive of the remedy par excellence in every civilized land—antitoxin. To be sure, there is yet to be heard an occasional denial of the most absolutely demonstrated facts in the common affairs of life. It is not necessary to burden you with a long list of figures and statistics relative to the grand, onward march of success in the antitoxin treatment of diphtheria. The evidence is so overwhelming in its favor, and the few failures and accidents so easily accounted for that but one conclusion is possible to the man whose senses are not wilfully closed to investigation and truth.

Tetanus.—Early in 1894, Carle and Rattone demonstrated that tetanus was an infectious disease, capable of being transmitted from man to the lower animals by inoculation; but it was reserved for Nicolaier to discover the bacillus of tetanus, a few months after the publication of Carle and Rattone's experiments. The bacillus itself, as well as the disease it creates, was extremely difficult to study, and while Brieger made the first important advance in the discovery of tetanin in 1896, it was three years later that Kitasato first obtained the germ in pure cultures and gave to the world the first description of its biologic characters. Since that time scientists in all parts of the world have constantly vied with each other in the attempt to find a remedy that would destroy the germ or its ptomains, and thus afford an efficient means of combating the distressing and fatal disease—tetanus. Naturally they turned to serum therapy for a realization of their hopes, and with what success their efforts have been crowned may be told in a few words. Blood serums are peculiar in their action, and but few of them are perfectly understood. Some of them, as the antidiphtheritic serum, exert their influence solely upon the ptomains, making them true antitoxins, while others, like the antistreptococcic serum, perform their work by destroying the germs themselves and thus putting a stop to the production of toxins. Others again, such as the antitetanic serum, do not seem to have much, if any, effect upon either germ or toxin, and yet from indisputable clinical evidence they possess an immense therapeutic value. Just in what way their good results are brought about has never been determined. Professor Roux of the Institut Pasteur has suggested that their action is of a protective character and is directed upon the tissue cells, fortifying them against tetanin, or the still more deadly toxalbumin described by Brieger and Fränkel. This explanation clearly accounts for the wonderful immunizing properties known to exist in the antitetanic serum, and is the strongest possible appeal for the use of this agent as a preventive. Not a single case of tetanus has ever developed after an adequate

prophylactic dose of a reliable antitetanic serum was given. This fact, demonstrated in hundreds of experimental cases at the Institut Pasteur three years ago, has led to the adoption of a routine practice of immunization by surgeons in places where tetanus is known to be endemic. Quite recently a physician told me that he had just used a prophylactic dose of antitetanic serum after a rusty nail puncture, and the results were so satisfactory and his patient so free from apprehension during his illness that he should continue the practice, even if only for its moral effect.

The curative properties of antitetanic serum are negatively positive, but not positively negative. It cures—or more strictly speaking, it leads to recovery—by preventing any further invasion, but it does not cure the tetanus already existing. The only reasonable conclusion, therefore, is that the antitetanic serum should be used frequently at the first suspicion of an attack of tetanus, even before invasion if possible, or at least while the existing poison is not sufficient to cause death. While the serum treatment of tetanus is not all that could be wished for, nor all that we expect to see it in the future, as men and methods and means arise for its improvement, yet as we have it today it is by far the most successful treatment at our command. In Scotland, where statistics have been most carefully kept, the mortality has been reduced from the former frightful figure to about 35 per cent. In the United States, during the last two years, according to Dr. Frederic S. Dennis of New York, who has carefully investigated the subject, the mortality figure is even a shade lower still. Five cases of trismus nascentium were reported last year as successfully treated with the serum—cases which previous to the days of antitoxin were almost uniformly fatal.

The experiments of Wasserman and Takski, based upon Prof. Ehrlich's theory of the formation of antitoxins, should be remembered for the sake of future investigations in the general system of serum therapy. At present, however, they are interesting only from the laboratory standpoint and are absolutely without practical therapeutic value. More recently still, considerable local enthusiasm was excited in Rome, where Prof. Bacelli's treatment of tetanus with phenic acid was applied in thirty cases with but one death. This showing certainly entitles the method to further study; for while such a result in a single series of cases might be purely coincidental, the truly scientific mind should always stand ready to push investigation to its utmost limits when there appears the semblance of a cue. The very latest, and what appears to be the most reasonable, theory yet advanced concerning the action of the toxin and antitoxin of tetanus, is that of Roux and Borrel, in which they express the belief that the toxin attacks the nerve centers with such rapacity that the antitoxin, when administered hypodermically, does not reach the seat of destruction in time, or in sufficient quantity, to overcome the evil. They reasoned, therefore, that if the antitoxin could be applied directly to the cerebral substance, it might reach the vital point by rapid diffusion and be much more effective. In demonstration of this theory they tetanized seventy-nine guinea-pigs for their first experiments. Forty-five of these received intracerebral injections of small doses of antitoxin, and thirty-five of them recovered. Seventeen were treated with much larger doses by the hypodermic method, and of these only two survived. The

remaining seventeen were not treated with antitoxin, and they all died. So far this method has only been applied in one case in the human subject. In this case the operation was entirely successful and the patient made a speedy recovery.

Tuberculosis.—Quite a number of toxins, antitoxins and blood serums have been introduced for the treatment of this disease, and with results that should be regarded as most gratifying, inasmuch as they have not all been absolute failures. The original tuberculin of Koch, and the improved product known as "T. R.," are admittedly most dismal failures as far as curative properties are concerned; but in spite of this they have wrought an excellent service in directing and stimulating investigation, as well as being of great value as diagnostic agents. Of the newer remedies of this class, as well as of the antitoxins and blood serums directed against the tubercle bacillus and its ptomains, the members of this Section will be fully informed in specially prepared papers relating to this subject. It remains, therefore, for me to discuss some of the complications of tuberculosis, and leave the consideration of the tubercle bacillus to the distinguished gentlemen who are making a life study of it and its terrible consequences. It has been so often repeated by various competent observers that simple, uncomplicated tuberculosis is easily curable, that it may seem strange to the casual reader that we hear of so few cures being made. The reason is that uncomplicated cases are rarely met with in actual practice, the physician's services as a rule not being demanded until the disease has progressed far beyond the initial stage. Even then it is frequently found that the tubercular infection is the least consequential of the existing lesions. It is a well-known fact that unless tuberculosis is accompanied by some other pathologic condition, it usually remains localized for a long time, and the destruction of tissue from it alone is exceedingly slow. It is when other micro-organisms make their appearance that rapid tissue changes take place and the patient sinks quickly to the point of dissolution. To stop this process of rapid necrosis in the vital organs should be our chief aim, and in order to do so, it were better for us to forget for the time being that the tubercle bacillus has anything to do with the case, and give our entire attention to the organism that is doing the actual damage. In short, rid the case of its complicating influences first; convert it into a condition that is admittedly curable, and then direct our energies to the original disease. Can we always do this? Most assuredly we can not—but we can always try; and inasmuch as it is impossible for us to foretell the result of our efforts, it is clearly our duty to give our patients the benefit of the attempt. We will succeed in a certain number of cases; we will probably fail in many more, at least until effort and experience shall combine to suggest improvements in theory, methods and practice. In the light of past experience and present indications, however, it is reasonable to predict that if tuberculosis in its various forms and complications is ever to be placed in the category of curable maladies by means of medication, it will be accomplished by some method within the realm of serum therapy.

Snake bite.—The antitoxin used for the venom of poisonous reptiles is as surely specific in its action as any remedy known to medical science. The only drawback to its employment is the difficulty of procuring the serum at the required moment. The ab-

sorption and action of the poison are so rapid that death is likely to result before the remedy can be obtained; but where it is possible to apply the serum within eighty or ninety minutes after the reception of the sting, no fears need be had as to the outcome of the case. The limitations of the application of the serum as a curative have led a number of investigators to seek for a reliable prophylactic or immunizing procedure, by means of vaccination or otherwise. Chief among such experimentors are Fraser and Phisalix, who have made exhaustive researches, and claimed decided success with such substances as bile, glycocholate of sodium, cholesterin and the tyrosin of certain vegetables. Calmette, however, whose name will always be associated with the antitoxin of snake venom, has shown conclusively that these substances only furnish a weak and transitory immunity by means of cell stimulation, the same as may be induced by a large number of others, and in no wise act as true antitoxins. So for the present, at least, the only known safeguard for persons living in regions infested by poisonous snakes is to make sure that a supply of the antivenomous serum is kept within easy reach.

Erysipelas.—The writer's experience in the treatment of this disease with blood serum, has been comparatively limited, but it has been so uniformly successful in a number of trying cases that he can not help thinking that if failure should be reported it must be due to the employment of faulty serum or some equally avoidable cause. Marmorek's serum is the one indicated in all stages of the disease, and a number of cases reported by me at the annual meeting of the Illinois State Medical Society on the 17th of last month most conclusively show the immunizing power of the serum, as well as its specific action as a prophylactic and curative agent. The number of cases reported as successfully treated by the serum method already extends into the thousands, as every one interested in the collection of statistics can testify.

Yellow fever.—With the single exception of tuberculosis, there is probably no disease in which the bacteriologists of the Western hemisphere are more intensely interested, at the present time, than yellow fever. We are just at that critical period of anxious expectancy when any moment may witness the end of all dispute as to the question of causation, and the true germ of the disease be established beyond all cavil. And while we are thus waiting for the settlement of this one point, which we confidently hope will enable us to formulate a remedy that will place this dread disease in the column of preventable and curable maladies, it is fitting that we should allow our minds to dwell for a moment upon the names of those most intimately connected with this work. Among those in foreign lands, that of Sanarelli stands out with conspicuous luster, while in our own country we have a full half dozen of equally earnest and equally intelligent workers. Without detracting in the least from the fame of any of these, if asked to mention the man above all others, native or foreign, who is entitled to the palm for pioneer work in this field, for long, untiring and intelligent effort, as well as for modesty in presenting his just claims, we would unhesitatingly breathe the name of the present distinguished president of the AMERICAN MEDICAL ASSOCIATION, George M. Sternberg. Placing the serum treatment of yellow fever upon the same

rational and scientific basis as that of diphtheria and other infectious diseases, then, we can not expect the remedy to precede a knowledge of the etiologic germ. Whether this shall eventually prove to be the bacillus icteroides or the bacillus "x" (Sternberg), if these are not identical, or some micro-organism yet to be discovered, remains to be seen. In the meantime the Sanarelli serum should be given a thorough trial, as pronounced success or pronounced failure would materially assist in settling the question of etiology.

Typhoid fever.—So far no serum has been prepared that can be implicitly relied upon as a cure for this disease, although several attempts have been made. The most promising one, at this time, is that of Prof. Chantemesse of the University of Paris, who claims to have had marked success in a number of recent trials—noting rapid defervescence and decided improvement in the general symptoms. He thinks, with a little more time for investigation and opportunity for the improvement in the preparation of the serum, it will take rank with those of well-established therapeutic value. In the matter of diagnosis, however, it is quite different, the Widal test being now regarded as a perfectly reliable and practical method for the busiest practitioner. It is possible to determine by means of this test, not only the very early invasion of typhoid fever, but also whether an individual has had the disease, even after the lapse of many years, in some cases. The test is of especial value on account of its accuracy and the simplicity of its technique.

In the brief space allowed for the discussion of this subject, it would be impossible to give the details of all that has been accomplished in the application of serum therapy to the various diseases and conditions in which it has been tried, however interesting it might be to do so. Up to this time, something more than a score of diseases have been subjected to treatment by this new method, and, as would naturally be expected, with varying success. In addition to those already mentioned, these include among others, pneumonia, influenza, rheumatism, cholera, cancer and sarcoma, pertussis, leprosy, gonorrhoea, chancroid and syphilis, bubonic plague, anthrax, chorea and puerperal septicemia. A few of these deserve more than a passing notice, both on account of the prevalence and gravity of the diseases and the promising outlook for the early discovery of efficient remedies. Yersin and Haffkine have already succeeded in greatly mitigating the ravages of the bubonic plague, while numerous investigators have given us encouraging reports in regard to the probable successful management of leprosy in the near future. Sarcoma has undoubtedly yielded in a number of instances to the influence of the Coley mixture, while Asiatic cholera, the depopulating scourge of many nations and of all ages, seems destined to lose its terror through the beneficent agency of serum therapy.

Pneumonia.—Since the discovery of the bacillus of Friedlander in 1883, a host of bacteriologists, including Sternberg, Flügge, Talamon, Fränkel, Netter, Belfanti, Gamelía and many others, have studied this germ and the micrococcus pneumoniae croupose with great diligence, in the hope of arriving at definite conclusions in regard to pneumonia and its proper treatment. It is generally found that mixed infection exists in this disease, and for this reason it will be necessary to pursue investigation and wait with such patience as we can command for the perfect success

that we hope to meet. Serums have already been used, and in some cases with gratifying success. Klemperer reported six cases with excellent results, and his experience has since been duplicated by Mosny, Bonne, Emmerich and Pansini. During an epidemic of pneumonia in the city of Naples, in the month of January of the present year, Pane treated nine cases of a very grave type with antipneumococcic serum. The effect of the remedy is reported as decidedly good in every case, and but one of the patients died.

Puerperal septicemia.—When caused by the streptococcus microbe, as it is in a very large proportion of cases in this disease, is no longer the frightfully fatal affection of bygone years, for it yields in a most gratifying manner to the antistreptococcic serum of Marmorek.

Streptococcal infection.—If this condition meant but a single disease, however severe, instead of a number of distinct maladies and a multiplicity of complications, its presence would not be regarded with more concern than that of tetanus or snake bite. But in all probability a score of such affections as these would fade into insignificance in comparison with streptococcal infection, if the full measure of its destructive virulence were known. We find it in all kinds and conditions of disease, sometimes as the sole pathogenic factor, but more often as an insidious and insinuating "co-respondent" adding dangers to those inherent in the original malady, or even supplying them where none existed before. Already the study of the streptococcus microbe has been productive of much valuable information, and a number of diseases can be traced directly to its presence; but inasmuch as its pathogenetic power is known to vary from absolute innocuousness to the most destructive virulence, there must yet remain much to be determined. The wide variation in its pathogenesis, its unapproachable extent of distribution, and the unusually attractive field it presents to the microscopist, all combine to make its study both fascinating and instructive. Much confusion has been caused by the more or less arbitrary subdivision of the streptococcus into a large number of "kinds" or "species," bestowing such names upon each supposed new discovery as the fancy of the investigator would dictate. Koch, Marmorek, Widal and other high authorities, however, do not recognize any of the classifications thus far made, but regard all the so-called forms of the germ as the offspring of a single parent microbe, and attribute its varying pathogenic effects to such conditions as location, temperature, the kind and health of tissues involved, presence or absence of other micro-organisms, etc. Just why or how the same germ should cause convulsions in one animal and paralysis in another has never been explained, and possibly never will be, but as long as the same remedy, by equally mysterious methods, works a cure in both, we need not trouble ourselves about the pathogeny. Erysipelas, phlegmon and most cases of puerperal septicemia are caused by the streptococcus germ, and their certain and rapid cure by the proper use of Marmorek's serum is a fact so often demonstrated that it seems almost unnecessary to repeat the assertion.

However important it may be to know we have so efficient a remedy for these diseases, it is still of greater interest to know that the same remedy is equally successful in controlling certain complications that are more or less constant in many infectious dis-

eases, including scarlet fever, diphtheria and tuberculosis. Scarlet fever is probably always complicated by streptococcal infection; and in the experience of many close observers in Europe and America, when Marmorek's serum is administered early in the attack the disease is greatly modified, runs a mild course and the patient recovers without any disagreeable sequelæ. Streptococcal invasion is likewise the most constant complication attending cases of diphtheria; and no doubt many of the fatalities reported are due to this cause, and not to the toxemia produced by the Klebs-Loeffler bacillus, which may have been already overcome by the use of diphtheria antitoxin. Mixed infection should be suspected and looked for in every case of diphtheria, and when found a mixed treatment resorted to as early as possible. In this way the present extremely low mortality rate in this disease may be still further reduced, for without doubt nearly all of the fatal cases would show mixed infection if the proper tests were applied, and many more recoveries would occur if the proper (mixed) treatment was used.

It would be gratifying to me to hold a clinic at this time and present a number of tuberculous subjects, which have come under my observation during the last two years. They would all be cases of pulmonary tuberculosis with mixed infection, the predominating complication being of the streptococcal type. In at least two of these cases the complicating factor was so overwhelming in extent and severity that I am tempted to refer to them as cases of *streptococcal infection complicated by tuberculosis*. They had all the classic symptoms of well-advanced pulmonary consumption, and repeated examination of the sputum revealed the presence of the bacillus of tuberculosis, but always in small numbers. They had stubbornly resisted anti-tubercular treatment for many months; the direction of their progress was continually downward; faith had entirely deserted them, and hope was rapidly going. They were even denied the questionable consolation afforded by the promise of a lingering invalidism, for their physicians had named the limit beyond which they could not survive, and the date was almost reached. Microscopic examination of the sputum had heretofore been directed solely to the tubercular aspect—now it was made with reference to the complications. Streptococci in vast numbers were found. A complete change in the treatment was instituted, which was speedily followed by a most gratifying change in condition. All measures having reference to the tubercular infection were suspended and concentrated effort given to the streptococcal invasion. Marmorek's serum was given in 10 c.c. doses every alternate day until the streptococci all disappeared. By this time there was such an improvement in the general condition that hope was immediately revived and the patients put back upon the former treatment. One of them has remained constantly under my care, while the other, on account of distance from home, was returned to her former physician. In both cases the improvement continued; and now, after a lapse of nearly twenty months since the Marmorek's serum was stopped, my patient reports himself in better health than he has been for many years. Although there still remains a suggestion of tubercular toxemia, it is too slight to cause detention from business, and there has been no return of the streptococcal invasion.

Aside from the many flattering reports that come from all quarters of the globe in regard to the merits of serum therapy as a system, a careful study of its

principles, and personal application of its methods, have convinced me that its vaunted worth has not been overstated. It is based upon reason, common sense, and truly scientific grounds, and its future development can not fail to shed untold blessings upon suffering humanity.

2945 Groveland Avenue.

SOME SOURCES OF FAILURE IN TREATING LACHRYMAL OBSTRUCTIONS.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY LEARTUS CONNOR, A.M., M.D.
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Accepted methods of treating lachrymal obstructions succeed in some cases but fail in others, for reasons not always apparent. Bearing on the sources of failure are the following suggestions, grouped under four heads: Constitutional disorder, eye strain, nasal disease and faulty technique.

First. It is evident that if lachrymal obstruction be caused by a chronic constitutional disease, the best planned and most skillfully executed operation will come to naught, for surgery never cured syphilis, gout nor rheumatism, and yet observation shows that this obvious truth is not infrequently overlooked. Syphilitic infection may displace the puncta, obstruct the canaliculi, induce a dacryocystitis, locate a mucous patch about the mouth of the duct, cause a periostitis, endostitis or subperiosteal gumma, adjacent to, or necrosis of the bony wall of, the duct; or hyperplastic processes of the bones themselves. These lesions may be found in any stage, from insignificant to gravest, singly or combined; but it is evident that operative treatment of obstruction due to any of them, would be useless unless accompanied by constitutional. More frequent though less amenable to general treatment are lesions of the tear passages, induced by gout or rheumatism or rheumatic gout and involving the mucous, fibrous or bony tissues. Their management by purely operative procedures is quite as futile as surgical operations on deposits of these dyscrasia in other portions of the body, if disassociated from suitable diet, exercise, baths and general medication. Tuberculous and scrofulous diseases do not always spare the lachrymal passages, and one who would do the best for every case of epiphora and record the fewest failures will not overlook the possibility of their presence under the most unexpected conditions. These are the most common chronic constitutional diseases, likely to produce lachrymal obstruction, though others may not safely be neglected. It has occurred to the writer to observe so many failures from exclusive operative measures which subsequently recovered under appropriate general treatment that he is compelled to emphasize the latter.

Second. It is generally accepted that eye strain causes or may cause conjunctivitis and blepharitis; that blepharitis and conjunctivitis may induce inflammation of the lining membrane of the canaliculi and sac and lachrymal obstruction, so the conclusion is inevitable that eye strain may cause lachrymal obstruction. In its earlier stages, epiphora from eye strain is readily cured by the treatment of the diseases of the conjunctive and lids, but like the latter, it returns with subsequent eye strain, while the correction of

the eye strain is followed by permanent relief of both disabilities. Less happy is the exclusively operative treatment of lachrymal obstruction from eye strain, as the mutilation of the passages added to the eye strain renders the case even worse.

It is objected that eye strain is not always attended by epiphora. Quite correct; neither do all cases have blepharitis or conjunctivitis; nor would all of a thousand persons have pneumonia if suddenly plunged into an ice-cold stream, but some would. Unquestionably, there are conditions in certain individuals, which direct the disturbance of eye strain to the lachrymal passages, that are absent in others. Among these may be noted anatomic deformities of the bony walls of the duct. It is a clinical fact that lachrymal obstructions are more frequent in persons with a very broad or a very narrow-based nose. It is an anatomic fact that such faces have the bony wall of the duct flattened either anteriorly or laterally, so that the actual caliber of the passages is diminished and the more readily obstructed by morbid agents acting upon their lining membrane. It is not improbable that other congenital abnormalities determine the eye strain toward the lachrymal passages and cause obstruction. Further, it is not impossible that such deformities in some cases render failure inevitable from any or all treatment. We can lengthen a shortened leg by a mechanical contrivance, correct ocular defects in the shape of the eyeball, by lenses; but we may not hope to make round a bony lachrymal duct, greatly flattened in any direction.

Is it inquired how eye strain causes epiphora? Answer may be made:

1. By direct extension of disease from the conjunctiva and edges of the lids, to the canaliculi and duct and sac. Retention of microbes in the lachrymal lake enables them to manufacture a larger volume of debris, as well as augment their own armies, conditions favorable for causing disease of the tear passages.
2. By disturbing the position of the puncta, through muscular action of the lids in efforts to overcome the refractive defect.
3. By interfering with the natural action of the lid muscles in propelling the tears through the canaliculi and sac to the duct. The clinical proof, that eye strain causes epiphora, and its relief stops it in certain cases, is abundant, but the scope of this paper does not permit of its presentation. If seen early in their course no other treatment than the relief of eye strain is needed; but later, when strictures have formed, or dacryocystitis, or other serious complications, surgical interference must be added to the removal of the eye strain. The practical point is, correction of eye strain will remove lachrymal obstruction in some cases and benefit all.

Third. Some failures to relieve epiphora are due to the overlooking of a morbid condition of the nares adjacent to and involving the opening of the duct into the nose. Clearly it is quite as essential to examine the terminal as the beginning of a continuous tube if we would remove all obstructions. The variety, frequency and gravity of nasal disease render it surprising that the duct is not occluded with greater frequency than is shown by clinical observation. We can not discuss the nature of the morbid condition of the nares or the means for their removal, but their importance is unlikely to be overestimated. Ophthalmic surgeons who do not treat nasal diseases need to be constantly on their guard to detect their presence, and refer the cases to one able to intelli-

gently care for them, lest they unduly increase their failures in treating lachrymal obstructions. The clinical evidence is abundant, showing that failures to relieve epiphora by lachrymal operations have been made successes by rational treatment of nasal diseases.

Fourth. Some failures in treating lachrymal obstruction are due to faulty technique. While there are some points of this technique on which ophthalmologists differ, its general principles and most details are universally accepted. Time admits only a note respecting a few points of faulty technique.

1. If a canaliculus be so divided that the gap in its walls opens to the air, instead of pressing against the eyeball within the lachrymal lake, it is quite clear that epiphora will remain unchecked, and further, the chances are that it will always continue thus. All operations upon canaliculi, puncta or sac should be such as to leave the opening of the upper end of the lachrymal tube within the lachrymal lake. A syphon will not work unless its upper end lies beneath the surface of the fluid it is expected to drain. The violation of this mechanical law renders a lachrymal operation nugatory.

2. Another fault in the technique is the extensive division of the lachrymal passages, when a slight one would have accomplished the desired end. Thus if the puncta be slightly everted, and so remains after removal of all disease of the conjunctiva and lids, it is quite unnecessary to slit the canaliculus extensively. Long since, Dr. Prout showed us that in such cases the epiphora could be effectually stopped by operating upon the vertical portion of the canaliculus alone. Sometimes a simple division of the inner wall sufficed; at other times a V-shaped piece was removed from the inner wall, the top of the V being at the puncta; at other times at the base of the vertical incision, a horizontal bit of conjunctiva was removed, the contraction of the scar on healing of the wound pulling inward the open mouth of the canaliculus, so as to place it in contact with the eyeball and within the lachrymal lake. If the horizontal portion of the canaliculus calls for division, operation should be limited to the least that will accomplish the end sought, otherwise failure will be courted when success was in sight.

3. Another fault is the election of the lower canaliculus so frequently. Unquestionably, there are cases in which choice of the lower canaliculus is imperative as when stricture lies in its course, or at its junction with the common canal, but otherwise division of the upper canaliculus affords better chances for relieving an epiphora. As the lower canaliculus is larger and better located for drainage, its being left intact is important. Operations upon the upper canaliculus render it easier to enter the duct by either probe or knife, because the angle to which these instruments must be elevated is smaller; hence the sac is less injured by the knife; the lining membrane less twisted or torn by probes; the points of syringe or canula more readily brought in line with the direction of the duct, and so its surfaces more easily cleansed and treated.

4. Undue violence is responsible for some failures in treating lachrymal, as in urethral obstruction. Too great or misdirected force in using probes complicates subsequent treatment, if it does not defeat its object by tearing the lining membrane, injuring the periosteum or making false passages. While these accidents may not always be avoided by the most tactful operator, because of the nature of the obstruction and fragility of adjacent tissues, they will be reduced

to a minimum by exact diagnosis, and a self-control that bides its time to most safely attain its object.

5. Timidity in using force adequate to dilate strictures is a source of not a few failures. This may spring from uncertainty as to the size or direction of the passage or the resisting power of the stricture. If it be definitely settled that the point of the probe be in the axis of the passage, and that there be an opening in the stricture, very considerable force may safely be employed. Aside from the purely personal equation of the operator, failure is avoided by accurate diagnosis and by the use of such force as is needed for each special case.

6. Rigid ideas respecting the shapes and sizes of probes diminish the chances of success in overcoming lachrymal obstructions. Clearly, one who sees no advantage under any circumstance, in the use of probes larger than Bowman No. 6, will not relieve a case that calls for Theobald No. 16; or he who thinks that only the largest probes will avail aught will fail in the best results in a case which needed Williams No. 5; or he will err who uses any probe, when the local application of hot water and the pumping through the lachrymal canals by Gould's method, of aseptic or antiseptic fluids, suffice to remove the obstruction.

Doubtless cases have best been treated by each different kind of probe and each size, so that he is wisest who selects his probe because of its fitness for a particular lachrymal canal, rather than attempts to make the canal adapt itself to his probe; the shoe ought to be made for the foot, rather than the foot made to adapt itself to the shoe.

Necessarily, small probes only are admissible through the undivided canaliculus; larger ones when the sac must be opened, and it be desired to make the duct large enough for the flow of tears by simple gravity from lachrymal lake to nose; for this latter purpose Theobald's probes have served my needs admirably. Williams' probes with olive-shaped points and small flexible shanks have an especial value in cases of moderate strictures, calling for little pressure to induce absorption, and for locating and defining the same.

They have an admirable facility in gliding about obstructions with the least injury to adjacent structures. Bowman's probes occupy an intermediate position, and are especially useful in promoting absorption in moderate-sized ducts. Failures will be less frequent, as each operator uses common sense in the adaptation of his probes to the especial features and different stages of each case.

SUMMARY.

It is urged that fewer failures will attend the treatment of lachrymal obstructions, if the operator in each case:

1. Recognizes and treats the chronic constitutional disorder which caused the obstruction.
2. Removes all eye strain.
3. Makes sure that the nares adjacent to the opening of the lachrymal duct are rendered healthy.
4. Perfects himself in a faultless technique.

103 Cass Street.

THE yellow fever ravages in the South this week once more emphasizes the demand, Let us have a Department of Public Health!

TREATMENT OF CHRONIC SUPPURATIVE DACRYOCYSTITIS.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY A. E. PRINCE, M.D.
SPRINGFIELD, ILL.

In response to an invitation from the Secretary of the Ophthalmologic Section of the AMERICAN MEDICAL ASSOCIATION, I send the following brief paper, the purpose of which is to present the method I employ for obliterating the lachrymal sac.

During the earlier years of my practice I tried medication, irrigation and large probes, but the percentage of relapses was so great that I finally discontinued endeavoring to preserve the patency and restore drainage in all cases of chronic suppurative dacryocystitis. For the benefit of those who conclude, in any given case, to obliterate the lachrymal sac, rather than to attempt any of the various plans offered for the preservation of drainage, I here offer a very simple, and at the same time a very satisfactory method of dealing with this question, which has not disappointed me in its results for several years. My procedure is as follows: Introduce a probe through the canaliculi into the lachrymal sac. Direct the point toward the skin so that the point of pressure may be discovered at the surface (Stevens' tenotomy hook serves well for this purpose). Incise the skin over the probe, and enlarge the opening upward and downward the entire length of the sac. Lay open any sinuses which may exist. Apply a saturated solution of monochloroacetic acid by means of a cotton applicator over the exposed surface of the sac and sinuses. Pack the wound with iodoform, and keep it packed until healing is complete. The iodoform remains in situ, and prevents the cutaneous wound from healing before the bottom is closed.

I have tried excision of the lachrymal sac and application of other forms of caustics, and the results in comparison have led me to prefer the monochloroacetic acid to any other agent. I have packed with gauze, and the result has not been so satisfactory.

For years I have used pulverized iodoform to pack the cavity of the globe after evisceration, and the behavior of pulverized iodoform in this cavity led me to believe that it would serve an equally good purpose in packing the lachrymal sac.

THE USE OF LARGE PROBES IN STENOSIS OF THE LACHRYMAL DUCT.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY MELVILLE BLACK, M.D.

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In the presentation of this subject no reference is made to such mild cases of lachrymal stenosis as can be relieved by probing the canaliculi with small probes, followed by syringing, nor to cases dependent upon closure of the lower opening of the duct by pressure from the inferior turbinated body. The class to which I desire to call attention is that of true stenosis of the lachrymal duct, in which mild measures and nasal treatment are of no avail.

In order to pass a large probe down the lachrymal duct it is first necessary to slit a canaliculus. It is

very important that the canaliculus of lesser function should be selected. The punctum and canaliculus of the lower lid unquestionably have greater function in draining the palpebral aperture of fluid than have the corresponding parts in the upper lid. Once the canaliculus is slit and its punctum destroyed, its suction power is lost, and it ever after acts in an indifferent manner. If the lower canaliculus is slit, probes passed and the duct otherwise treated until it is thoroughly patent, this eye will never again be free from epiphora when exposed to inclement weather. On the other hand, if the upper canaliculus is chosen as the means of gaining access to the lachrymal duct, it will be found that after the passage is rendered patent the lower canaliculus will be able to keep the eye free from tears. I deem this point of great importance, and believe that the many failures in the cure of lachrymal duct stenosis are due to the destruction of the suction power of the lower canaliculus.

If probing the lachrymal duct for the relief of stenosis is to be of any advantage we must observe the same rules as in treating stricture of the urethra. The duct must be dilated *ad maximum*. It is my custom to pass, at the first sitting, the largest probe that can be introduced. The canaliculus in the upper lid is slit with a Graefe cataract knife, with the aid of a Bowman's grooved director. The director is passed through the canaliculus, then turned to the vertical and passed to the bottom of the lachrymal sac. The Graefe knife is used with the director in the vertical position. The director is now removed and a graduated probe introduced, to determine the size of the duct. If a marked stricture is encountered, an Agnew's knife is passed down the duct and the stricture cut. If no stricture is found, the Agnew knife is not used. The size of probe that the canal will admit can be fairly well judged by the passage of the graduated probe. I find that it is rarely that a No. 10 Theobald probe can not be passed. If the probe first passed is loose in the canal one after another of larger size should be tried until one is found that is passed with difficulty and completely fills the canal. Strong pressure should be exerted on the mucous membrane throughout the entire length of the canal. It is my custom to examine the nose to see that the probe is well down in the inferior meatus. If it is not, this or a smaller probe is forced down until it can be seen or felt beneath the inferior turbinated body. The probe is allowed to remain *in situ* about ten minutes. It is then withdrawn and the lachrymal passage syringed with a saturated solution of boric acid until bleeding ceases. The patient is then sent home and instructed to apply lead and opium wash on pledgets of lint which have been cooled on a block of ice. This should be done almost continuously for 24 hours. At the expiration of this time I inject, with a lachrymal syringe, into the duct a few drops of 10 per cent. solution cocain. A probe a size smaller than the largest one passed the day before is then passed. The negative pole of a galvanic battery is then connected with the probe, the positive pole being placed in the patient's hand. Then from two to three milliampères of current is turned on for ten minutes. When the probe is removed it will be found to be very loose, owing to the electrolytic action of the cathodal current. The lachrymal passage is syringed free of blood as on the day previous. There is usually a little bleeding after the removal of the probe, for the first four or five days. The patient

is instructed to use the lead and opium wash for four hours in the same manner as on the day previous. On the third day the same probe is passed, unless it is found to be loose; in which event a size larger should be used. The 10 per cent. cocain solution should have been previously used to relieve the pain. The probe is allowed to remain in the passage ten minutes. After its removal the syringing is practiced as before. A few drops of 25 per cent. solution ichthyol in water are now syringed into the passage. The probe is passed daily for about ten days, accompanied by the syringing of saturate solution of borio acid, and ichthyol solution. The largest probe that the duct will take should be used. At the end of the first week the battery should be again used in the manner described. After the first ten days the above procedures should be carried out three times a week for two weeks, then twice a week for two weeks. After this it should be done according to indications until all epiphora ceases. The use of electricity should be practiced every week or ten days for the first six weeks, and after that according to indications. It is impossible to lay down hard and fast rules in these cases. I generally say to my patients that a cure may be expected in two months. I am frequently able to dismiss them sooner. My experience has been that a No. 10 probe can be passed at the first sitting, and that in a few days a No. 13 or 14 can be passed. I have passed the No. 16 probe in a few cases.

When blenorrhoea or phlegmon is present I expect complete disappearance of these symptoms during the first week. When superficial necrosis of the lachrymal bones exists, treatment is sometimes more protracted, and has to be persisted in until the necrosed bone is absorbed. In cases of fistula with sequestrum of bone it is necessary to cut down and remove the sequestrum.

The three points that I desire especially to emphasize are; the opening of the upper canaliculus, the use of the largest probes possible of passage, and the electrolytic action of the negative pole of the battery.

THE VALUE OF LARGE PROBES IN THE TREATMENT OF LACHRYMAL STRICTURE.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. O. REIK, M.D.

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BALTIMORE, MD.

Knowing that the treatment of lachrymal stricture would be one of the subjects of discussion at this meeting, and knowing also that there exists among ophthalmic surgeons a very wide difference of opinion concerning the use of large probes for this condition, I thought it might be of interest to review and report upon the cases treated under the observation of Dr. Samuel Theobald, whom all of you know as the author and chief exponent of the really large probes. At the outset it would seem advisable to consider what is meant by "large probes," for notwithstanding the fact that Dr. Theobald has so frequently explained this point, and insisted on the difference between his probes and those of Bowman, we still see in literature frequent references to Bowman's No. 6 as a large probe. Then again, the probes obtained from the

instrument-maker under the name of Theobald are not always copies of the original model. I have seen surgeons using what they supposed was a Theobald probe, but which in reality bore but slight resemblance to the proper thing. Some of them, perhaps all of them, are of proper size, but frequently they are improperly curved, or present extremities that are either very blunt or very sharp, and thus the possibility of delicate manipulation is precluded.

When properly constructed, the probes should have a conical-shaped point; the smallest should have a diameter of .25 mm., the largest, No. 16, a diameter of 4 mm., and the difference in diameter between successive numbers should be .25 mm. The smaller sizes—Nos. 1 to 8—should be made of coin silver, while the larger ones—9 to 16—may be made of pure silver, or preferably, aluminium. I will pass around for inspection a set made according to the above directions, which were published by Dr. Theobald.

The cases which, through the kindness of Dr. Theobald, I have had the privilege of studying, comprise in all 130—63 of which were seen in Dr. Theobald's private practice and 67 in his service at the Johns Hopkins Hospital and at the Baltimore Eye, Ear and Throat Charity Hospital, in each of which last-named places some were treated directly by him and others by his assistants. The 130 cases are not selected ones beyond the point that they all received treatment with probes ranging between Nos. 12 and 16. Of course a great many more than 130 patients appeared in whom the diagnosis of lachrymal stricture was made, but as they refused treatment or did not continue beyond the smaller-sized probes, they were not considered to be of much importance in this paper. In the cases here included the condition of affairs at the beginning of treatment consisted of persistent epiphora in all; blenorrhoea of the sac in all but a few; lachrymal fistula in some, and chronic blepharitis or conjunctivitis in many. The pathologic lesion in probably all of the cases was one or more strictures in the nasal duct.

We find that of all of the patients seen in whom the diagnosis of stricture of the nasal duct is made, about 50 per cent. either decline operative treatment or fail to return after the first probing. These patients consist largely of nervous men, who, after hearing the statement we usually make before instituting treatment, decide that they will not undertake it. It is our custom to explain to all these patients that the treatment, despite the use of local anesthetics, will be more or less painful and necessarily protracted. This probably has the effect of scaring off some of them. About 15 per cent. of all who undertake the treatment fail to carry it on to the end. They will receive the probes up to perhaps Nos. 10 or 12 and then, as the epiphora has ceased, they are disposed to stop treatment before we are willing to pronounce them cured. Of the cases reported here, which include a number of children, 75 per cent. received probing up to and including No. 16. About 50 per cent. of all the children under 12 years of age received No. 16, and 50 per cent. of the remainder received No. 15, leaving only 25 per cent. of the children under 12 who were allowed to stop short of that point.

What have been the results in these 130 cases in which the large probe treatment was thoroughly carried out? All but 3 were regarded as cured when treatment was stopped. I may say here that the length of time under treatment varied considerably,

some patients being discharged at the end of a month or six weeks, while others were kept under observation more than a year. Of the 3 referred to above, one was a particularly obstinate case in which several distinct strictures could be felt in the duct; another was much improved, though not cured, the stillicidium being only slight and occasional, and the third was a case in which the stricture resulted from traumatism. In this last case the treatment was very painful, the scar tissue being difficult to overcome, and the patient did not continue his attendance as long as we desired. He was vastly improved, a fistula which was present having healed and the blenorrhoea of the sac which accompanied it being decidedly lessened.

It is practically impossible to learn the whereabouts of all these patients today, as most of them were dispensary cases and have moved one or more times. An effort was made to communicate with them in order to learn their present condition, and we succeeded in quite a fair degree. Perhaps a dozen cases were heard from and their condition noted within six months from the cessation of treatment, but we will only consider the 39 cases which have been seen, or from whom reports have been received, at periods varying from one to eight years after the cessation of all treatment. Thirty-seven of them remained cured when last heard of, as follows: Ten last heard from after the lapse of one year; 11 after two years; 2 after three years; 6 after four years; 1 after five years; 2 after six years; 4 after seven years; and 1 after eight years. If the two which have relapsed be added to the three in which a cure was not at any time claimed, we have five out of a total of 130 in which the treatment may be said to have failed, although this would be an extreme statement, for in both of the relapsed cases the patients enjoyed a period of comfort, with absence of epiphora, of more than two years. It would seem, then, that if the treatment is thoroughly carried out, we may expect to effect a cure in about 95 per cent. of the cases, and a relapse may occur in about 5 per cent. of these.

I desire to express my thanks to Drs. Hunter McGuire, Jr., and James Bordley, for much valuable assistance in following up these cases and preparing the statistics.

DISCUSSION ON PAPERS OF DRs. CONNOR, PRINCE, BLACK
AND REIK.

Dr. D. S. REYNOLDS—No more interesting subject could be found, for the reason that we know so little about it. I listened with attention to Dr. Connor's paper because it seemed to me to be very timely. I have never seen lachrymal disease in the perfectly sound and healthy individual. I have serious objections to entering inflamed mucous-lined channels with probes and I utterly abhor the idea of the Theobald probe, 4 mm. in diameter. I submit it to any gentleman who has ever examined the bony passages of the lachrymal apparatus, that a probe of that diameter can scarcely be passed in the Caucasian subject. I am aware that many negroes have lachrymal passages of large diameter, but I am sure that a probe of more than 2 or 3 mm. in diameter can not pass without doing damage to the passages of a white man. There is no cause of epiphora that can not be discovered by careful examination. If it be due to some destruction of infiltrated tissue arising probably from some trouble in the nose, as most of these cases do, it can be easily found if sought for. I have heard a great deal about the innumerable cures of systematic probing, but I have never seen any of them that will wear well. I have seen many cases of epiphora that by carefully

advised constitutional agents and the confining of local treatment to the diseased membrane of the nasal cavity result well. I take the Anel's syringe and a 2 per cent. solution of sodium chloride and try to pass that through the canal instead of the probe, and if the fluid can be passed through the canal where no suppurative changes are present I hold that to be a contra-indication for any other surgical measures.

These cases of Professor Holmes belong to a special class. They are not only chronic cases, but people with constitutional taints or who have been treated by harsh means that destroyed the duct and canal. Primarily epiphora calls for no probing, and the presence of the condition merely suggests abnormal conditions that exist in the nasal apparatus.

Dr. CASEY A. WOOD, Chicago—I would like to point out to you that even where it is proper to use probes, and even where a cure may be looked for after a considerable time, failure is exceedingly common. It is not always possible to discover whether probing has succeeded in many cases because these patients become tired after a while of having their ducts probed and cease to appear at the office of the surgeon. It interested me some time ago to discover the reason for the non-appearance of these patients. The excuses were found to be trivial, the patient is obliged to leave town or disease has occurred at home, and there are many additional reasons that are given for discontinuing the treatment. That this form of it may be successful, one must, as Dr. Reik has pointed out, often continue it for months or in some cases even for years. One of the principal reasons for their deserting the oculist's office is the relief the patient gets at the outset. The epiphora disappears, the symptoms improve and the patient feels that he is cured and does not think it necessary to come back. In the city of Chicago men and women seem to have very little time on their hands and can not continue to visit the office for weeks to undergo a painful treatment, even though it may be good. Now I want to point out a way in which, in the majority of instances, these results can be improved. It is my practice not to treat these cases in my office for more than two or three weeks, and one can usually induce them to come that often, but during those two weeks I do all the accessory work that I consider necessary, treatment of the nose, etc., with the introduction of as large probes as possible, and I then teach the patient to use the probes himself and allow him to continue the treatment indefinitely at home. Such a plan will be found to succeed in the majority of cases.

Dr. FRANK ALLPORT, Chicago—This is a broad subject and one that can hardly be fully discussed in the length of time we have to talk. I am sorry we did not have an opportunity to hear more of Dr. Holmes' paper, because we only got a glimpse of its value. As Dr. Reynolds said, I presume he only operates in this radical manner in those cases in which all other means have first been tried. I think there can be no question that we all feel alike on this subject, that we all have cases that do not get well and we can only wonder why. Some use small and some large probes. I think one reason why we do not get better results in these cases is because a great many of them are treated along stereotyped lines. We think the first thing to do is to rip up the apparatus without any regard to its normal physiologic condition and pass probes that are as large as can possibly be put in. My practice formerly was to limit the probes only to the capacity of the duct, but a long line of failures led me to change.

I believe that 80 or 90 per cent. of the cases of epiphora originate in the nose and should be treated primarily from that standpoint. Most surgeons practically ignore this point. I also feel as Dr. Reynolds does, that I have simply learned to abhor and detest the large probes. I no longer use as large a probe as I can, but as small a one as is adequate, and since I commenced that practice I have had better results. Some surgeons seem to think all that is necessary is to have a large

hole down which tears may flow, but you may have a canal large enough to pass a No. 16, and if the physiologic suction apparatus is destroyed the tears will stand in the sac and not go down. You must have the physiologic condition of that apparatus retained. I never cut the duct if I can possibly get along without it. I try to preserve the physiologic function from the punctum to the termination of the nasal duct and a large probe, 5, 6 or possibly an 8, can be introduced after stretching without increasing the punctum. I have here a little instrument like a hollow probe and containing a concealed knife, which can be passed through the stretched punctum and then made to expose the knife and cut the stricture in the duct. (Exhibiting the instrument.)

Dr. J. E. MINNEY, Topeka—I have no doubt as to the success of Dr. Reik's work nor of these gentlemen here advocating the Theobald probes and those of you who remember Dr. Derby's work will remember what sized probes he used, the largest as big as my little finger. These men succeed and it is astonishing that in my practice I have failed to use anything larger than a Bowman No. 8 and I find I have treated 250 cases. That may seem large but it is a fact. A point that impresses me is this, that every oculist must be more or less of a rhinologist unless he wishes to divide his fees with some one else. He must know something of everything and everything of some one thing.

I have no use for the lotion of opium and lead. I use hot water and boracic acid. A 5 per cent. solution of cocain I have found sufficient. Electricity I have not used. Is it not possible that we create a great many infidels by our use of so many things when a much simpler practice would be as good?

Dr. GEORGE M. GOULD, Philadelphia—In reference to these troubles I simply wish to emphasize one or two points which I overlooked in my early practice and which some of you may have neglected. I have no hospital or dispensary practice, hence do not see so many of these cases. In the last two years I believe I have had occasion to use probes only once. I have found that there are a large number of cases in which epiphora is simply due to an excess of tears and not because the duct would not carry off the normal secretion. I think eye-strain is the primary cause of these. As the result of long-continued eye-strain you have chronic conjunctival trouble with an excess of tears and if you cure the cause the epiphora will disappear. Several years ago I published a little article, and I have used the method there suggested probably a hundred or more times, and have never failed in any case in which there was not an organic stricture. The method consists in submerging the eye in an astringent medium, the contents of the duct being first forced into the sac by pressure and then by filling the sac with the lotion and pressing downward it escapes into the duct. You can teach patients to do this at home and let them report to you once a week.

Dr. J. L. THOMPSON, Indianapolis—There have been some very excellent papers presented to us and we have not time to consider them all. Dr. Connor's paper was very excellent and Dr. Gould has in his remarks led me to think of the condition we so often find from excessive smoking, etc. In that class of men who are given to smoking, drinking, gambling and other things that we do not think right, there are many cases of epiphora that are cured by relief of the strain.

I have been trying to learn something about lachrymal troubles for 26 years and I notice the gentlemen who introduce new methods have excellent results, while I do not have one-fiftieth part of the success they report with the same methods. I do not know why, for I do not think I am so awfully stupid.

At the last international Ophthalmologic meeting at Edinburgh Argyll Robertson said that Dr. Cooper and not Dr. Theobald was the originator of the large probes. I would like to ask Dr. Reik if he can tell us anything about that point.

I have used large probes, some large enough for a rhinoceros

and have thought my cases cured, but in a year or so some of them write "I believe you promised me a cure." I know how to answer that letter, because I never promised anybody a cure in my life. I believe the majority of these cases will come back in a few years just as bad as ever. Sometimes I use the style, allowing the patient to put it in at night and take it out in the morning. Mine has been a private practice entirely. I asked one of the gentlemen at Moorefield's "do you cure these cases?" and he said that many of them go to other hospitals after a time. I usually tell my patients now that I am not going to perfectly cure them.

Dr. T. A. GRIGG, Butte—We could not have a more timely series of papers, though we have all had much trouble over the treatment of lachrymal diseases. Laying aside those cases due to eye-strain, slight catarrhal troubles and the like, and taking up these cases of pure organic obstruction, the first thing I do is to dilate the punctum and try to pass the boracic acid solution through the duct by means of an Anel's syringe. I examine the nose thoroughly and sometimes divide the strictures and pass as large a probe as convenient, from 6 to 8 Bowman. Usually in these cases that can not stay I use a canula about as large as 6 or 8 Bowman probe and leave it in place from three to nine months, with very satisfactory results. There is a pathologic law that an intermittent pressure will produce hypertrophy and that continued pressure will produce atrophy, and my theory is that if you can use a lachrymal canula you get a pressure on all sides and cause an atrophic condition that will relieve the obstruction. With this method of treatment I have had very satisfactory results. Where there is a purulent condition I often omit the canula for a few days and syringe the duct with a weak solution of nitrate of silver. I have some cases treated five years ago which are all right at the present time.

Dr. J. O. McREYNOLDS, Dallas, Texas—I should like to express my gratitude to the gentlemen who have contributed papers or discussion on this subject, for no cases have given me more trouble than these. The ultimate object to be accomplished is by no means to secure a sufficiently large nasal duct, as Dr. Allport has said, and that point ought to be published further than it has been. In harmony with what Dr. Gould has said, I would say that I have been able to cure some of these cases by diligent attention to the condition of the conjunctiva and by giving the correct glasses. I have not simply given an antiseptic solution to be used occasionally, but very frequently during the day. This keeps the duct cleansed out, and we have then the best condition possible for relieving the pathologic state. I have even sometimes given patients a syringe which they could use themselves.

Dr. R. F. LE MOND, Denver—This is a subject we need to have discussed and experimented on very much, because when we get hold of these bad lachrymal cases we are like the man who got his hands full of a wildcat; he wanted somebody to loose his hands. I think I have gained several good points by hearing this discussion today. I want to say that a method which I have been using for the last eighteen months, and which has acted very well in many cases, though not so well in others, is the use of a hollow probe of pure lead, which I introduce into the duct curved so as to fit the canal, and let the patient wear it for a month, washing it out two or three times a week.

Dr. E. C. ELLETT, Memphis—I did not hear the papers, and do not know how much was said about the advantages that lead styles possess over any perforated canulae. I have never yet seen a canula that would drain a lachrymal passage. Lead styles are so convenient, so easily fitted to the case, and secure much better drainage than you can get through the lumen of a canula.

Dr. L. W. FOX, Philadelphia—I wish to add my experience in the treatment of lachrymal obstruction, which every one has

found the bane of ophthalmic surgery. I belong to the school that uses the large probes and believes in them. I just heard the remarks about drainage with the canula. After many years of experience I have partially evolved a canula which I wish to present. It is a silver tube, modeled on those that have preceded us, and I have found it as satisfactory as anything I use. For many years I have used the large Theobald probes. The lead style has always been a favorite of mine immediately after operation, using that for three or four days and then following it up with these silver canulæ. In the large manufacturing districts about Philadelphia we see many of these cases, sometimes having ten or twelve a week at our clinic, which consists of 4000 general cases a year. Where there is ordinary epiphora and the mouth of the canal is closed, I use the probe to dilate to the fullest extent possible, and in those cases I have success, whereas if the stricture is farther down, or there is a latent abscess, the operation of passing the Weber or Stilling knife and dilating to the fullest extent, is followed with the lead style and then with these canulæ. While I was house surgeon at Moorefield's we had an enormous number of cases, and the Cooper method was followed exclusively. In Paris they used the narrow probes.

Dr. WOOD—How long do you leave the canula in?

Dr. FOX—For six months. I take them out occasionally and wash the duct with a solution of boracic acid. I find I am often obliged to keep in these canulæ and to probe from year to year.

Dr. W. H. WILDER, Chicago—I think it is an encouraging sign of the times when we hear so many men advocating the conservative treatment of these cases, and I dare say many of us would be willing to predict that the time will come in a few years when the indiscriminate probing of lachrymal cases will be relegated to the past. I dislike to see a surgeon reach for the Bowman knife as soon as an epiphora case comes in. We should endeavor to preserve the integrity of the canaliculus; once it is slit up we can never replace the delicate mechanism.

I believe most certainly that many of these cases could be relieved completely if the conservative treatment were adopted from the beginning. At first there is no organic stricture whatever. It is merely a catarrhal condition and the duct is obliterated by reason of the swelling of the mucous membrane, and temporizing measures for a short time even, without the slitting of the punctum, will in very many cases suffice.

I think Dr. Holmes' specimens will illustrate very well that in some of them you could introduce the Theobald probe, but in many lachrymal ducts such probes would do great damage.

Dr. KEOLEY—In regard to teaching the patients to pass probes themselves, it seems to me the difficulty with all of us has been that we do not know when to discharge our patients. About the first thing I do is to teach the patient to pass the probe himself, and as soon as I do that I discharge the patient and the rest is with him. I have perhaps fifty cases now that I have been watching for eight years and every one of those patients is satisfied. I never go above a No. 8 probe, for I think that is large enough to drain off the secretions.

Dr. LEMOND—I want to ask if any of the gentlemen present have tried the obliteration of the sac by means of the galvanic cautery?

Dr. CONNOR—I have been extremely interested and instructed by these papers and the discussion that has been presented upon them. In the whole range of ophthalmology I know of no class of diseases that have given me so much trouble. At the same time I think the way to get out of the trouble is to study its source, and I am convinced that if the members of this Section look at the question from that standpoint they will find their results increasingly better. If they apply the same common sense to this class of troubles they do to the extraction of cataracts, their results will become as good as in that case. The earlier the cases are seen the better the results, and

by inducing the patient, through the general practitioner, to undergo treatment before organic changes have occurred, we shall diminish our sources of failure. As I remarked respecting probes, I think they should be used on the same general law that we use instruments anywhere. I have once in a while found a case where everything else failed me and the Theobald probe has brought success. My conviction is that one of the forces by which the tears are discharged through the canal is the air going in and out over the end of the tube. That is according to the idea of mechanics; consequently I never use a large probe if I can help it, and only when I am compelled to make a large opening in the sac. I think the use of hot water is helpful in some cases. I think, as Dr. Thompson stated, it is well to have the patient understand at first that one passing of the probe will not cure them. They must not expect to get well in one or two weeks, and if they are not willing to undertake what is necessary for a cure it is better not to have anything to do with them.

Dr. BLACK—It seems to me that the conservatives have it, and I want to align myself with them. While my paper may seem to have placed me among the radicals, at the same time you must remember that I made the statement that it was not the cases capable of being treated by mild methods that I was dealing with. My paper had to deal with difficult cases, and in my experience these have been the cases where there was purulency of the sac. Where there is simple stenosis, especially at the upper end of the lachrymal apparatus, I believe that mild methods will accomplish a cure in a large percentage of cases, and that we should discourage the consideration in all cases of the general physical conditions I would not for a moment advocate. It goes without saying that any man doing special work should not fail to recognize that he is still a practitioner of medicine. It does seem to me, however, that it is within reason that if it is necessary to pass a probe we must take into consideration the capacity of the passage. To dilly dally around in the duct with a little bit of a lachrymal probe serves to tickle it and accomplishes nothing. We must put a probe down for the purpose of producing pressure; I can conceive of no other reason for introducing, and if we want pressure let us use a probe large enough to fill the passage. In my experience during a service in the Manhattan Eye and Ear Hospital in New York, where I had the opportunity of observing other men using different methods, I was strongly impressed with the fact that the men who never used probes larger than No. 8 were the men who had these cases continually on their hands. The men who were inclined to use rather energetic means in these severe cases accomplished something and their cases showed marked improvement and were soon discharged. My experience has been that when I have one of these marked cases of obstruction mild measures accomplish very little.

Dr. REIK—I did not attempt in my paper to consider the value of large probes in the treatment of lachrymal stricture, further than a brief statement of our results in those cases where the large probe treatment had been thoroughly carried out. The 130 cases there considered contained none of those mild cases of epiphora due to obstruction of the puncta, reflex irritation or slight catarrhal troubles, but all belonged to that class in which there is an organic obstruction in the duct and, as I stated, in most of the cases we were able to locate by the sense of touch one or more distant contractions. Our cases were followed up for periods varying from one to eight years, and I know of no other method of treatment for this class of cases which will show 95 per cent. of cures. Dr. Reynolds attacked the large probes in his characteristically forcible style, but I think it would not be difficult to demonstrate to him the ease with which a 4 mm. probe can be introduced into the duct of the Caucasian subject, and I think, furthermore, if he will measure the lachrymal ducts of any large number of subjects he will find the average diameter considerably larger than he

is at present inclined to believe. Dr. Wood's plan of teaching the patient to use the probe himself is a good one, and we have made use of it in many cases, especially where the patient lives at a distance and can not make frequent visits to us. Dr. Allport's experience is entirely at variance with ours. It is true that after the use of probes to Nos. 8 or 10 epiphora ceases in many of these cases and the patient is inclined to call it a cure, but a study of our records shows that if these cases be followed, not simply for a few of the summer months, but for a year, so as to include the winter months, numerous relapses will be noticed. In regard to Dr. Thompson's question concerning the authorship of these probes, I would say that I am familiar with Argyl Robertson's statement, but he gave no dates in connection with Dr. Cooper's claim of priority and the question can not be settled yet.

REPORT OF TWO CASES OF ACUTE GLAUCOMA.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY H. BERT. ELLIS, M.D.
LOS ANGELES, CAL.

On Jan. 11, 1895, there called upon me Mr. G. M., aged 51, a minister by profession, who gave the following history:

On January 8, while eating supper with his family, a little piece of dry toast choked him and caused a coughing-spell, during which something seemed to snap in his right eye. Shortly afterward his eye became very painful and watered freely. The lids began to swell and the eye to become inflamed, and his regular physician was called in, who gave him an atropin and cocain solution. As the swelling and redness continued to increase, he was referred to me by his physician. I found both the orbital and palpebral vessels very much injected, especially of the lower portion of the eye, the pupil very large, the tension slightly reduced, so that I thought that the dilation of the iris was the result of the atropin and cocain, but the use of a half per cent. solution of eserine failed to contract the same. The lens was dislocated downward and backward. Under a light pressure-bandage and rest for twenty-four hours, the lens regained its position, but the pupil was still irregular and large, the lower part of the lens cloudy. In so far as vision was concerned, that eye was almost blind, the patient only being able to distinguish light; the tension was slightly less than that of the other eye. On the 18th, he could distinguish the form of objects; on the 25th he could notice individuals, but could not tell their features. On this date, the patient was free from pain, the swelling of the lids had almost entirely gone, and the injection was greatly diminished. I tested the vision of the left eye and found it to be $\frac{3}{40}$, which was brought up to $\frac{6}{7}$ by a $+5.5$ spherical, combined with a $+.5$ cylinder at 180 degrees, and he could read number .50 D, with an addition of $+3$ spherical. On February 1, the lens was quite cloudy. The tension had increased and the cup was glaucominous; vision entirely gone. I saw the patient frequently during the spring, kept him upon eserine and mild astringent drops, and there was no material change in his condition. I corrected the error of refraction of his left eye and cautioned him in regard to the use of the same. On October 29 my notes say: Lens clear, slight haziness of cornea; tension normal. Disc cupped, with the vessels passing over the edge and disappearing. I warned the patient to be very

careful about using his eyes, that he might have a similar attack with his remaining useful eye, and requested that on the first intimation of pain he report. I saw him occasionally during 1896; the tension slightly increased in right eye as time went on. He was doing his pastoral work faithfully, but abstained from reading more than he absolutely had to. On April 5, 1897, he came to my office, being led by his wife, and gave the following report: For about a week he had been suffering from a severe cold in the head and, accompanying that, a slightly inflamed eye, which he thought, as the cold improved, would pass off. There had been considerable pain, and five days before reporting, he became almost blind, but was too miserable to report, and still clung to the idea that it was only inflammation and would soon pass off. I found the tension of the eye ball $+3$, pupil very much enlarged, and the media so turbid that an ophthalmoscopic examination was unsatisfactory. I performed iridectomy at once, which gave him slight vision, that is, with a -1 spherical glass, combined with a $+5$ cylinder at 125 degrees, he could read $\frac{6}{100}$, sufficient vision for him to get around among his parishioners and about the city.

Miss J. S., aged 24, came to me on the morning of Sept. 18, 1897, with her family physician, and gave the following history: On the evening previous, she had an acute pain in her right eye, followed by sudden blindness. The conjunctiva was inflamed, with marked photophobia, increased tension and dilated pupil. I could elicit nothing as to previous history outside of her usual mode of life. Diagnosis, acute glaucoma. Treatment, immediate iridectomy. Satisfactory progress, and on November 4, with a $+2.75$ spherical, combined with 4.5 cylinder at 130 degrees, it was $\frac{6}{24}$; with a -1 cylinder at 120 degrees and a 2.5 cylinder, she could see $\frac{6}{20}+$. On Dec. 8, 1897, I prescribed for her a $-.75$ spherical combined with a $+3.25$ cylinder at 30 degrees, which gave her vision of $\frac{6}{15}$.

This case is a typical case of acute primary glaucoma. The first case is peculiar, in the first attack, in having a partial dislocation of the lens as the primary cause of the glaucoma, whereas the attack with the second eye seems to have originated *de novo*, or at least was provoked by an acute cold.

I present these two cases in contrast, simply to illustrate the conditions that we have to meet constantly in private practice. There is nothing extraordinary in either diagnosis or treatment. One is typical, and one departs very materially from the usual conditions.

243-246 Bradbury Block.

A CASE OF HEREDITARY GLAUCOMA.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

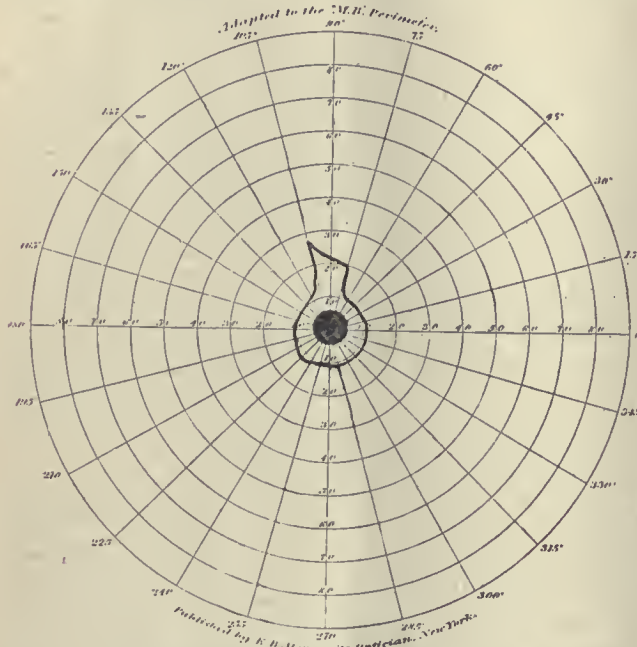
BY HERBERT HARLAN, A.M., M.D.
BALTIMORE.

Before this Section, at the New Orleans meeting in 1885, I reported a case of glaucoma, the patient being one of the fifth successive generation in which the disease had appeared. That case, C. E. B., aged 17, consulted me in March of that year. The following is the family history taken from the previous report:

"Her mother, who accompanied her, is 49 years

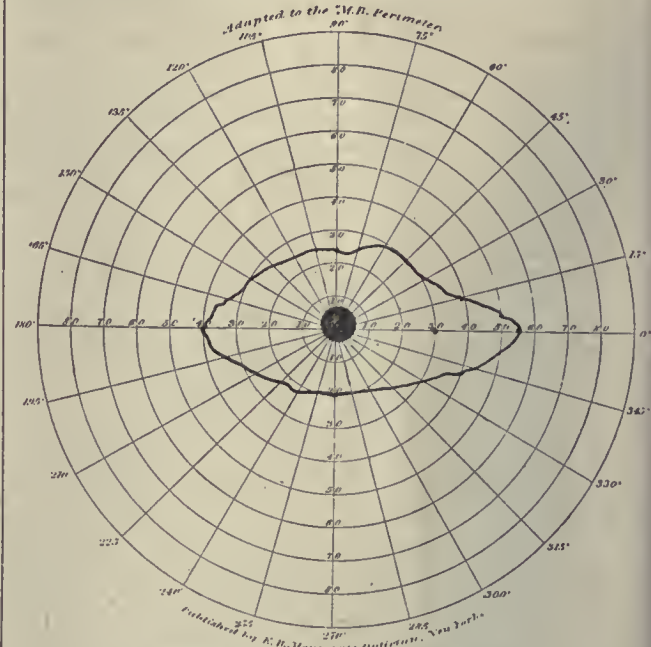
old, and absolutely blind. Both anterior chambers are obliterated and the pupils closed. She states that at 19 her eyesight began gradually to waste away. She saw halos around the lamp. A year later she had inflammation in the eyes which the doctors called

same. A maternal uncle at 35 years had pain in his eyes and head, and in three years his sight was entirely gone. A maternal aunt, who saw perfectly till she was 18 years old, and never complained of pain, was suddenly found by the family to be blind.



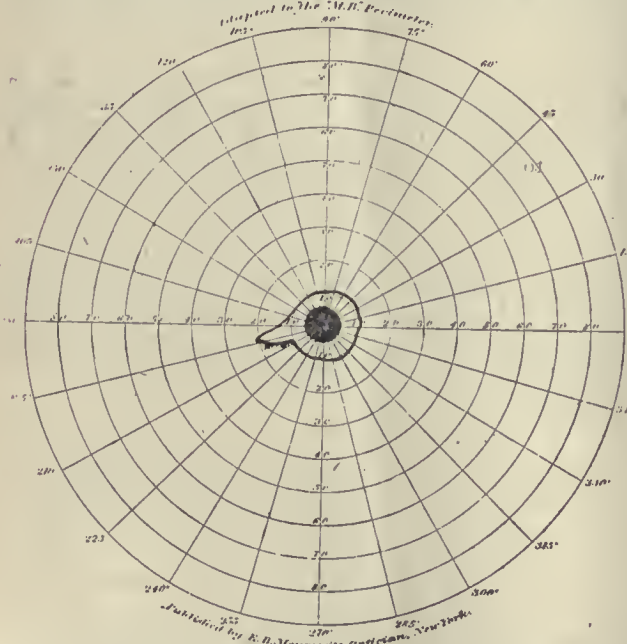
Case of Daisy Hubbard, Dec. 1, 1897. Right.

cold and treated with drops and blisters. After a while the eyes got better. Then another attack of inflammation came on, and she has been blind ever since. Never at any time was there much pain. The mother's father lost his eyes in the same way,



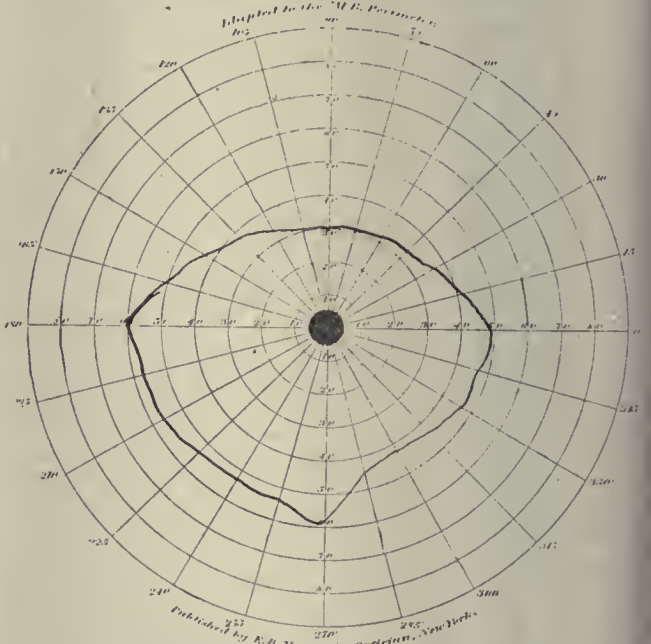
Case of Daisy Hubbard, Jan. 10, 1898. Right.

(This was the mother of the patient whose case I am about to relate today.) Two uncles and an aunt, all over 55 years of age, see well. One cousin, now at a blind asylum, began to lose her sight at 16. Sight in the left eye was gone before it was found out. The



Case of Daisy Hubbard, Dec. 1, 1897. Left.

beginning at the age of 18. This is the history of the maternal great-grandmother and great-great-grandfather. I was unable to trace the family history farther back, but from that given there can be little doubt that glaucoma has been transmitted in direct line for five generations, the age of onset being about the



Case of Daisy Hubbard, Jan. 10, 1898. Left.

other slowly followed. Never complained of pain. Another cousin was operated on four years ago by an oculist of Baltimore. One eye was removed altogether, and on the other an iridectomy was done, and with this she now sees."

So much for the family history. It is now 13 years

since double iridectomies were done on C. E. B. and she still retains her eyesight. She has married and is the mother of four children, all boys, so that there is a good prospect of the disease being reported in still another generation at a later date.

On Dec. 1, 1897, Daisy H., a first cousin of C. E. B., their mothers being sisters, as above stated, appeared at my clinic at the Presbyterian Eye, Ear and Throat Charity Hospital. Her sight was said to have been failing for two years. Central vision was 20/30 each. The fields were extremely contracted. Pupils slightly dilated. T. + 1. Discs deeply cupped. Eserin was instilled, and next day an iridectomy was done on the right eye. A week later the same operation on the left. January 10 there was a very great improvement in the fields, as shown in the accompanying diagrams, although at that time the central vision was not so good. She left the hospital January 28.

A letter received May 25, says she has improved greatly; that she has no trouble with the eyes; that they are very strong; that she can see well. This interesting family is of French Huguenot stock, and are known in their county as the blind le Comptes. There is a tradition that a black-eyed woman, on account of some real or fancied wrong, cursed the family, and since that time all the dark-eyed children have gone blind—those having blue eyes escaping. It happens that the eyes of Daisy H. are blue. As far as I have been able to learn all the other glaucomatous eyes in this family are dark. It would seem that the cases yield readily to treatment by iridectomy.

DISCUSSION ON PAPERS OF DRs. ELLIS AND HARLAN.

Dr. J. L. THOMPSON, Indianapolis—Acute glaucoma may be a primary or secondary affection and requires to be treated accordingly. When there are no complications an iridectomy is preferable to all other modes of treatment, but I have seen cases where there is great chemosis of the conjunctiva with irido-choroiditis or cyclitis, in which leeches and hot fomentation had to precede the operation which, after a few days, has been done with the happiest results. I recall a case of acute glaucoma which accompanied retinitis albuminurica. This also was relieved by the above methods and eventually passed off, but the patient died about four weeks later of Bright's disease.

True hereditary glaucoma I have met with but once. This occurred in a girl 11 years old, whose father had undergone extensive operations for caries and necrosis of the parietal bones of specific origin. The child had the characteristic Hutchinson's teeth. She had suffered from chronic glaucoma for over six months before I saw her. The optic discs were very much cupped and the veins pulsating. Eserin was used for a few weeks, but she became worse, tension +2 with vision below $\frac{2}{100}$. I made an iridectomy upon each eye which was followed on the fourth day by a hemorrhage into the left anterior chamber, and on the sixth by the same in the right anterior chamber. These hemorrhages recurred several times inside of three weeks, which very much alarmed me. But she finally recovered with V. $\frac{20}{100}$ in one eye and $\frac{7}{10}$ in the other. She has had no trouble since.

Glaucoma and detachment of the retina.—Three months ago an attorney at law, aged 30 years, consulted me on account of his right eye, which became blind suddenly in childhood, but which gave him no trouble until a few months ago, when it caused a dull aching about the brow and temple. I found an extensive detachment of the retina about the lower outer and inner parts of the disc, with a portion upward which was not detached. This portion showed several pigmentary patches

along the sides of the branches of the retinal vessels. Tension +3, vision, right eye 0, left eye $\frac{20}{20}$. I gave him a weak eserine solution and advised him to call on me again, which he has not yet done.

We are still on a sea of doubt as to the cause of this hardening of the globe. We have been inclined of late to lay too much stress upon the iritic angle and the spaces of Fontana. Many of us have met with cases in which the anterior chamber has become unusually deep after cataract operations, and still the hardness of the eyeball has gone on increasing until sight has been destroyed. I have met with one case of congenital absence of the iris and yet the eye was lost from glaucoma. Iridectomy is still the most reliable remedy in a majority of cases, and still we have to deal with some chronic cases in which contraindications to operative interference obtain. In many of these I have saved the sight for years by eserine in very weak solution and by massage of the eyeball. Just how an iridectomy benefits a patient we know no more than we did when its illustrious originator wrote concerning it. His last words on the subject apply to this day just as well as then. Said he: "No progress of importance has been made in respect to the theory of the operation, notwithstanding many attempts. Old hypotheses are usually dragged forth, little as they avail for the explanation of existing facts. The unhappiest of all, the one referring the effect simply to the wound of the ocular capsule, is periodically brought forth, decked in some new formula and recommended for adoption. Fortunately for our patients, practice advances independently on the foundation of empiric principles. No doubt some day a satisfactory theory will be found, but in the meantime we must not be led away by transient hypotheses."

Dr. GEO. M. GOULD, Philadelphia—I wish to give my experience with one of several cases of glaucoma that may be instructive to some, for it certainly was to me. An old Quaker lady came to me three years ago, after having had one eye operated upon for glaucoma, and the operation having been a failure in that the iris was almost completely torn from its attachment. The pain had been lessened, but the tension, +2, remains until this day. At the time she visited me the other eye had become quite hard and she was much frightened. Her experience had been so sad with the operation that she refused to consider another, nor would she listen to anything like enucleation of the bad eye. At that time I had also been trying massage, as Dr. Thompson speaks of, and instructed her how to carry it out—for I believe the success of the treatment depends largely upon the delicacy of touch of the patient. Despite the bad outlook in this case she now has perfect vision in that eye. Massage has to be kept up at intervals according to the degree of tension of the globe, which shows a constant tendency to harden.

Dr. J. O. McREYNOLDS, Dallas—About five years ago a patient came under my observation who had been operated upon for glaucoma two months previously. The operation was an iridectomy and the eye was lost with subsequent development of very intense inflammation of the eye and it became necessary to enucleate. She got along very well, but had repeated attacks of glaucoma in the other eye. Just as has been the result in Dr. Gould's case, she now has perfect vision and the treatment I employed has been massage and the repeated instillation of small doses of hydrochlorate of pilocarpin, combined with appropriate internal medication. She has become so skillful in the detection of the early symptoms that she can make a diagnosis of its approach and she will carry on the massage and instillation of the pilocarpin until the tension comes down to normal. One other feature I wish to mention is with regard to some of the exciting causes of glaucoma. A patient was brought to me some time ago completely blind in both eyes as the result of glaucoma. He had lost one with glaucoma and after several months he went to an oculist for

the purpose of having a pterygium removed from the good eye. The operation was done and within two hours an acute, fulminating glaucoma developed in that eye, resulting in complete loss of vision. I wish to bring out the point of danger in making any kind of an operation upon an eye that is predisposed to glaucoma. It may have occurred in this case from the cocain, the operation, or the mental impression produced upon the patient, which I am quite sure has much influence in these cases.

Dr. HOLMES—I would like to ask Dr. Gould how often he advises the massage?

Dr. GOULD—Just as often as the tension goes above normal. The manner of massage is, in my estimation, of importance, that is, the rubbing must be very slow and clear around the outer edge of the eye. You can make great pressure if you will only go slowly and make no quick movements.

Dr. J. E. MINNEY, Topeka—I was recently called to a case of glaucoma where I desired to do an iridectomy, but they refused. I inquired into the history of the case and ordered quinin. The homeopathic physician who was in attendance said that he had put the patient on quinin and that he was giving five grains every four hours. This treatment was continued and the patient was cured. It was a case of malarial glaucoma. I never thought so much about glaucoma until two years ago, when the pastor of a little church in Kansas was stricken with total blindness. He called for the family physician because of the pain, and the physician injected morphin, which gave temporary relief. He came to me in April, two months later, with the right lens dislocated into the anterior chamber, high tension and much pain. The eye was enucleated, and he did well. He returned to his charge, but six months later I had to remove the other eye. It is the saddest case that ever came under my observation. I think if those who are teaching medical students can only teach them two things, that is, to recognize iritis and glaucoma, they will be amply repaid.

Dr. C. D. WESCOTT, Chicago—I would like to ask Dr. Gould, or others who have used massage, if they succeed in preserving the fields as well as the vision in these cases? I have had a patient under treatment for two years whose vision has remained $\frac{2}{30}$, and whose tension is kept down, but the field has gone on contracting.

Dr. GOULD—The field in the several cases I have had, and especially the one I referred to, remains normal, but I have only tested her with the finger for the past year.

Dr. THOMPSON—Some of my patients, in spite of the massage, have gone blind, but so have some of my iridectomy cases. A great many cases have been benefited and the field has not contracted, but in spite of any treatment you will have some of the patients go blind.

THE FIELD OF BINOCULAR FIXATION OR THE HOME OF THE GUIDING SEN- SATION OF THE RETINA.

Presented to the Section on Ophthalmology, at the Forty-ninth
Annual Meeting of the American Medical Association,
held at Denver, Colo., June 7-10, 1898.

BY G. C. SAVAGE, M.D.

PROFESSOR OF OPHTHALMOLOGY IN MEDICAL DEPARTMENT VANDERBILT
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NASHVILLE, TENN.

A private letter from Dr. Francis Valk of New York has led me into a further study of the guiding sensation of the retina. In my book "New Truths in Ophthalmology," I have emphasized its importance as master of the extrinsic and intrinsic eye muscles, but it seems to me now that I did not place enough emphasis on it. The part of Dr. Valk's letter which has led me to undertake this communication is as fol-

lows: "I have been reading your book lately and have been very much pleased with the work; but as I have read it a question has come into my mind that I want to ask you about. I note that in your chapter on Accommodation and Convergence, you lay great stress and importance on the guiding sensation of the eyes, and there I agree with you; but if this function is so important, and I believe it is, then may I ask: Of what value is any test for the power or balance of the ocular muscles that deprives the eyes of this most important function? In my own mind I am convinced that we must treat our cases of muscular difficulties according to nature's demands on the eyes, and we must not deprive the eyes of their most important function to understand their balance."

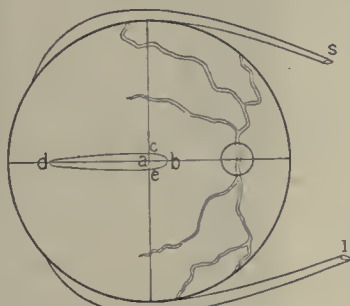
For many years I have taught my classes in the Medical Department of Vanderbilt University that, if we had but one eye, there would be no need for the extrinsic ocular muscles; that all of these muscles exist that there may be binocular single vision. In simplifying the study of these extrinsic ocular muscles I teach that the recti, in the final results of their action, are concerned only with the visual axes; that the superior and inferior recti, if acting in harmony, will keep these visual axes in the same plane, and that the lateral recti muscles will so control these axes as to make them intersect at the point of the object to be fixed.

I believe further that, if these recti muscles could thus control the visual axes without effecting any other change, there would be no need for the oblique muscles in eyes not affected by oblique astigmatism. Because of the fact that the inferior recti can not depress the eyes without, at the same time, effecting divergence above of the vertical meridians of the eyes, and the superior recti can not elevate the plane of the visual axes without, at the same time, converging above the vertical meridians, the necessity for the oblique muscles in all eyes for counteracting this torsion is at once made clear; hence I have always taught that the oblique muscles exist for the purpose of keeping the naturally vertical meridians parallel, which I have termed the simple function of the obliques. But in oblique astigmatism, with the meridians of best curvature converging or diverging above, the obliques are forced to perform their complicated function, which is to slightly converge or diverge the naturally vertical meridians. Therefore the common function of all the extrinsic ocular muscles is the production of binocular single vision. I believe these muscles are subject to one common master, which I have termed the guiding sensation of the retina. I believe that the home of this guiding sensation in the retina can be outlined, and that within this area the guiding sensation, in a normal condition of the ocular muscles, has the complete mastery of them all. I believe its throne to be the fovea centralis of the yellow spot of Soemering, and that its scepter sways over an area of the retina somewhat of the shape outlined in the accompanying cut.

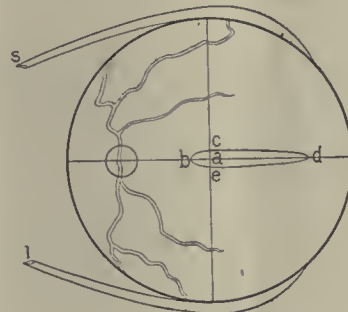
An image displaced 4 degrees to the nasal side of the macula by means of an 8-degree prism marks the inner boundary of this area; and, that vision may not be doubled, the guiding sensation commands the external rectus to abduct the eye so that the macula may be brought under the displaced image. An image displaced to the temporal side of the macula 15 to 20 degrees, by means of a prism of 30 or 40 degrees, practically marks, on the horizontal retinal meridian, the

temporal limit of this area. To prevent double vision the guiding sensation can command, through the brain that the eye be abducted so as to bring the macula under the displaced image. Likewise a displacement of an image on the line of the vertical retinal meridian $1\frac{1}{2}$ degrees above or below the macula by means of a 3-degree prism, base up and down respectively, would mark the upper and lower boundaries, on this meridian, of the retinal space constituting the domain of the guiding sensation. To overcome the diplopia the guiding sensation only has to call into activity the muscles that will depress and elevate the eye. Beginning at the nasal limit, *b*, a line drawn through the upper limit, *c*, thence through the outer limit, *d*, thence through the lower limit, *e*, thence back to the inner limit, *b*, encloses this retinal space. An image displaced anywhere within this space in one eye, without any displacement in the other, can be fused with the non-displaced image in the fellow eye at the command of the guiding sensation, the proper muscle

be taken wholly from under the control of the guiding sensation that the eye muscles might place the eye in the position of equal tension of all of the eye muscles, which means the position of rest. There should be no displacement of image in the other eye.¹ At once it would appear that the test by means of Maddox' rod could not be the best, for, in some part, the streak of light must invade the domain of the guiding sensation, necessitating some sort of effort on the part of the guiding sensation to effect the fusion of some part of the false image with the true. For lateral heterophoria it would seem that a prism sufficiently strong to throw the displaced image entirely beyond, either above or below, the outlined area would be a *sine qua non*. This would take, unquestionably, the lateral muscles from under the control of the guiding sensation when the eye under test would swing itself into a position of equal tension of the externus and internus, thus causing the displaced image to stand to the right or to the left of the vertical plane



RIGHT.



LEFT.

always [responding to the call. Images displaced without this area can not be fused and no attempt is made at fusion, the guiding sensation having learned that its commands under such a condition will not be obeyed, or that it has no existence without this area. It remains, nevertheless, a fact, that some eyes with abnormal condition have a smaller retinal area for the effective work of the guiding sensation, while in others, in which the extrinsic muscles are of more than what is considered normal strength, this area is larger. Therefore it may be stated that, in individual cases of heterophoria, this area will have its own shape, differing from that represented in the cut. The drawing is intended to represent eyes whose abduction is 8 degrees, whose sursum and deorsum duction is 3 and whose adduction is from 30 to 40 degrees. Between the lines, it may be stated here, that the diplopia which would be effected by a torsion of the eyes by the superior and inferior recti muscles, and the diplopia caused by oblique astigmatism, are each counteracted by the oblique muscles in obedience to a command from the guiding sensation.

If this teaching as to the guiding sensation be true, what should constitute the methods of examination to determine the condition of the extrinsic eye muscles? It should be granted in the beginning that, if there is orthophoria of all of these muscles, the visual axes and the vertical meridians will bear the correct relationship to each other, although the vision of one eye may be excluded by means of an opaque disc interposed. No test for heterophoria can be fully relied upon, unless the displaced image in one eye is thrown entirely without the retinal area occupied by the guiding sensation; for the eye under test should

of the true object. The distance should be measured by prisms and that measurement would show the quantity of the lateral error, whether esophoria or exophoria. Likewise, in testing for vertical heterophoria the image in one eye should be displaced to the nasal side of the macula, entirely beyond the retinal area under the control of the guiding sensation, when the eye, no longer under the control of the guiding sensation, would be elevated or depressed so as to give equal tension to the two vertically acting muscles. The measurement of the elevation or depression should be taken in the usual way by means of prisms, and thus could be reached a correct understanding as to the quantity of the hyperopia or cataphoria of that eye.

Objection to the double prism test would appear to be that one of the displaced images might fall within the retinal area of the guiding sensation and hence might lead to some error; but if the prisms are sufficiently strong both images can be thrown so far outside of this area as to make the test perfectly reliable.

After having made the test for ascertaining the balance or imbalance of the eye muscles, the intrinsic power of the recti muscles should always be taken. By this it is meant that prism after prism should be used up to the point where fusion is no longer possible. If a case has been found to be orthophoric and the abduction is 8 degrees, and the sursum and deorsum duction each 3 degrees, no condition could be more desirable. This test would show that, within the area under control of the guiding sensation, images can be easily fused by means of obedience on the part of the

¹ The author has just now (September 24) perfected a phorometer on this principle.

extrinsic muscles to the command of the guiding sensation. Again, suppose that a case has been found to be exophoric and the abduction is only 8 degrees, or less, there is at once a clear indication for doing nothing at all to the external rectus muscle of either eye, but the attention, in such a case, should be turned to the interni, and the condition should be corrected either by exercise of these muscles or by shortening one or both of them.

While the phorometer will always show the kind of heterophoria with which we have to deal, the duction test should always be relied upon as a correct guide in our efforts to bring relief.

DYNAMICS OF THE EXTRINSIC OCULAR MUSCLES.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY FLAVEL B. TIFFANY, M.D. KANSAS CITY, MO.

Some years ago, when I became especially interested in the subject of the dynamics of the extrinsic ocular muscles, I read and reread the chapters on this subject. As the subject to me at that time was abstruse and puzzling I tested repeatedly the strength of the ocular muscles in my own case, and as I could only get a fractional amount of prism dynamics compared with that given in the books I concluded that mine was an exceptional case, that the strength of my extrinsic ocular muscles was greatly below the normal; but when I began to test some of my patients and found that their abduction as a rule only amounted to 6 or 8 degrees, while the adduction rarely exceeded 20 or 30 degrees, which was much less than was stated in the text-books, I began to think that there was some mistake. Either I had not thoroughly comprehended the subject and had used different methods or else the statements in the books were misleading. But it was not until Dr. J. M. Banister, major and surgeon U. S. A., read his paper that I was fully persuaded to make a more careful search in the subject.

Last winter I examined 100 medical students (seniors) who were fully impressed with the importance of giving exact answers that the real conditions might be obtained. The examinations were carefully made with square prisms, Stephens' phorometer, Maddox rod and double prism test. My associate, Dr. George E. Bellows, assisted me in making the tests and compiled the tables following.

POWER OF ABDUCTION. Table with 2 rows: No. of cases and No. of degrees, with columns for various degrees from 1 to 18.

Unusual cases as regards relative powers.

Table comparing Abduction greater than adduction (A) with Abduction equal or nearly equal to adduction (B). Includes columns for Case No., Add., Abd., and Condition.

Average power of adduction, 19°; average power of abduction, 6.26°; average power of sursumduction, 2.45°; average power of deorsumduction, 2.16°.

POWER OF ADDUCTION.

Table showing the number of cases for different ranges of adduction power: 10 degrees and under (17 cases), 10 to 20 degrees (51 cases), 20 to 30 degrees (22 cases), 30 to 40 degrees (6 cases), 50 degrees and over (4 cases).

Main data table with columns: Age, Color of eye, Vision (R, L), Myopia, Hyperopia, Astigmatism, Esophoria, Exophoria, Cataphoria, Hyperphoria, Orthophoria, Adduction, Abduction, Sursum., Deorsum.

10 degrees and under, 17 cases.
 No. of cases: 1 6 5 1 4
 No. of degrees: 5 6 8 9 10
 Orthophoria 5 cases, 29.4 per cent.
 Exophoria 10 cases, 58.8 per cent.
 Esophoria 2 cases, 11.7 per cent.

10 to 20 degrees, 51 cases.
 No. of cases: 2 8 2 9 8 8 1 6 7
 No. of degrees: 11 12 13 14 15 16 17 18 20
 Orthophoria 25 cases, 49 per cent.
 Exophoria 9 cases, 17.6 per cent.
 Esophoria 15 cases, 29.4 per cent.
 Hyperphoria 2 cases, 3.9 per cent.

20 to 30 degrees, 22 cases.
 No. of cases: 2 3 3 4 4 1 1 4
 No. of degrees: 21 22 23 24 26 27 28 29
 Orthophoria 10 cases, 45.45 per cent.
 Exophoria 5 cases, 22.7 per cent.
 Esophoria 6 cases, 27.27 per cent.
 Hyperphoria 1 case, 4.5 per cent.

30 to 40 degrees, 6 cases.
 No. of cases: 1 1 1 3
 No. of degrees: 32 33 38 40
 Orthophoria 3 cases, 50 per cent.
 Exophoria 2 cases, 33.3 per cent.
 Esophoria 1 case, 16.6 per cent.

50 degrees and over, 4 cases.
 No. of cases: 2 1 1
 No. of degrees: 50 52 64
 Esophoria 4 cases, 100 per cent.
 Emmetropia . . . 59 cases
 Hyperopia . . . 16 cases
 Myopia 9 cases
 Astigmatism . . 16 cases
 Orthophoria . . 43 cases
 Esophoria . . . 28 cases
 Exophoria . . . 26 cases
 Hyperphoria . . 3 cases

Total 100 Total 100

	Ortho-phoria.	Esophoria.	Exophoria.	Hyper-phoria.	Total.
Emmetropia...	25	17	16	1	59
Hypertropia...	7	5	3	1	16
Myopia	5	1	3	0	9
Astigmatism . .	6	5	4	1	16
Total	43	28	26	3	100

In making the tests I sought the power of abduction, adduction, sursumduction and deorsumduction. I ascertained the exact condition of phoria, whether orthophoria, esophoria, exophoria, hyperphoria or cataphoria, especially for distant objects, or when the muscles were free from any static influence. In testing at the reading distance orthophoria prevailed. I took name, age, nationality, color of eyes and condition of refraction, and from the data obtained were formed the following tables.

Several others might be made, but these will suffice to show that we have been in error as to the real normal strength of the extrinsic ocular muscles; that this power has been placed much too high; that the text-books have been misleading and that the error in following editions should be corrected.

REFERENCES TO TABLE.

- ¹ Could not get exact degree of astigmatism.
- ² Blind in one eye.
- ³ Could not bring vision to 20 20.
- ⁴ Could not discover trouble with right eye.
- ⁵ Could not find degree of esophoria.

DISCUSSION ON PAPERS OF DRs. SAVAGE AND TIFFANY.

Dr. G. C. SAVAGE, Nashville—In reference to Dr. Tiffany's statement that abduction has been placed too high (at 8 degrees), I want to state that I believe he is in error. That we can have more or less abduction we all know, but where is the normal power? Is it at 1 degree or is it at 19 degrees? He did not tell us what was the condition of imbalance, whether esophoria or exophoria. There must have been a considerable amount of exophoria in some of his cases. How he can have

a case with no converging power at all in a case not strabismic, and yet not be able to overcome an abducting prism of any extent, I do not know. To my mind, the most complicated study in ophthalmology is a study of the ocular muscles; but I have reached this conclusion, that the study of adduction, *per se*, does not amount to a row of pins. We can ignore it always, because it is such a variable thing. But this is not true concerning abduction, sursumduction and deorsumduction. I believe 8 degrees is the normal abduction power; and we are pretty well agreed that 3 degrees is practically normal for sursumduction and deorsumduction.

Dr. J. O. McREYNOLDS, Dallas—I feel that the difference in results obtained by various observers will depend much upon the kind of instruments they employ. Dr. Tiffany, I understand, has used square prisms, and I believe that method will not give as accurate results as may be obtained with one of the various phorometers. The phorometer I employ is an extension of the idea advanced by Dr. Risley. I have had one made in which I have an arrangement with the ordinary appliances of the Stevens phorometer, spirit level, etc., and two cells containing the Risley prisms, so that I can get any degree of prismatic effect in any direction, and by increments that are infinitesimal. It enables me to get the abduction, adduction, etc., as well as the balance. I feel sure that before any operation can be made we ought to be in possession of all these facts as well as the constitutional condition of the patient.

Dr. B. ALEX. RANDALL, Philadelphia—I would like to enter a word of protest as to the matter of making muscle tests, not only to the points brought forward by Dr. McReynolds as to the constitutional condition and the instrumental difficulties, but to insist that we shall begin by understanding the fundamental condition, which is the refraction of the eye. All tests of the muscles depend, primarily, upon the refraction, and with all due respect to Dr. Tiffany or any other man, when I hear of hosts of cases that are emmetropic, I am skeptical as to all the rest. I must say, as a result of my investigations, that true emmetropia is almost an unknown quantity, and the varying degrees of hypermetropia and other errors which are ignored in most of these cases, furnish the results and vitiate the conclusions drawn. I have yet to see one of the cases (of which Dr. Noyes has reported so many) of insufficiency of the sternal muscle. I have invariably resolved them into cases of hypermetropic convergence. It is impossible, sometimes, to do that at first under a mydriatic, no matter which one is chosen, or how vigorously it is employed, but if it be repeated long enough we will get true refraction, and until that is done, and too often it is not even attempted, or at best, normal vision or lack of palpably magnified ametropia is assumed to show emmetropia, we can not get the muscle balance.

Dr. GEO. M. GOULD, Philadelphia—I want to add one word of hearty commendation to what Dr. Randall has said. I have made all these tests for eight years, and as a result of that experience, and of gymnastic exercises, I protest against this remark of our friend Dr. Savage, that the fact of adduction may be left out of consideration. To me, the question resolves itself into this: What is the proportion between abduction and adduction? and, furthermore, the existence of symptoms. I first correct all ametropia, and that correction is modified by the proportion between abduction and adduction, and after that if the symptoms do not disappear it is time enough to work upon the muscles. As to the method, what shall it be? I never, as yet, have had a case of exophoria in which I was not able to develop enough adduction power by gymnastics not only to relieve all symptoms, but to get such power of the eye that there is no difficulty in work. The proportion should be 1 to 3 or 4. I try to run the adduction in a case of say 10 degrees of exophoria to start with, and 10 degrees of adduction, up to 60, 70 or 80 degrees, and, if the symptoms do not disappear, to

100 or more degrees, until the eyes positively turn in, and there is sufficient power to do away with all discomfort. Esophoria I do nothing with, and I have never seen any one that could do anything with it. I have seen cases operated upon without the least result. I have one patient, a minister, with 20 degrees esophoria, yet he is working every day without difficulty, when his ametropia is corrected.

Dr. J. L. THOMPSON, Indianapolis—I think it is the rarest thing to find an orthophoric individual, and I think the normal condition of the muscles for distance is 1 or 2 degrees of esophoria. I believe that is the natural condition of man, just as it is natural for the flexor tendons of the hands to be under some tension.

Dr. SAMPSON—This question is of great scientific interest. But to the most of us that practice medicine the question is, what can we do for the patient? The more I read about it and try to apply it, the more apparent it is that the question of ductions and phorias has not yet been placed on a distinctly scientific and practical basis.

The methods of determining muscle balance are certainly at fault, and any one of them implicitly depended on will not infrequently lead one into error. Speaking of converging power, insufficient adduction is certainly responsible for much of the trouble with which we have to deal. I have noticed it particularly among school teachers of the female sex; they frequently have exophoria, the converging power not exceeding 10 degrees, while their work requires extensive use of the converging muscles. We frequently find them run down in general health and the whole muscular system short on endurance. They seem incapable of sustained muscular effort, and the converging eye muscles participate in the disability. In many of these cases examination of the urine will show markedly diminished excretion of total solids, and it is surprising to see the effect of copious water drinking and giving attention to the constipation which usually coexists; for as the general health improves, the power of adduction increases and ocular discomfort subsides, often without the use of any of the special means invented for cultivating ocular muscles.

The inclusion of patients of this class in the accumulation of statistics would manifestly lead to erroneous conclusions; and from what I have been able to observe it appears to me that any individual presenting muscle anomalies would be pretty thoroughly untangled before his phoria or faulty duction would be counted as an intrinsically local disturbance.

Dr. TIFFANY—The object of this paper was not to discuss the condition of heterophoria, but to establish a normal condition of the muscles, and that I think we have done by an examination of the 100 cases given. As I have said they correspond with the results reported by Dr. Bannister.

RECENT EXPERIENCE WITH ADVANCEMENT OF THE RECTI MUSCLES.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. H. BEARD, M.D.
CHICAGO, ILL.

To review the several ingenious theories as to the causes of strabismus; to endeavor to dispose of the intricate and subtle anatomic and physiologic problems pertaining to the imperfectly known branch of ophthalmology; to discuss all the pros and cons concerning the relative merits of tenotomy and advancement, as well as of the methods other than surgical for the treatment of the affection, would be highly

NOTE.—Owing to the limited time, this paper was read by title and, at the request of the President of the Section, the allotted time was occupied by its author in describing his advancement operation. The accompanying discussion, therefore, has reference to said description.

agreeable; such, however, is not my present intention. I have, from time to time, in the past stated my convictions in these matters, and shall on occasion, continue so to do, always striving meanwhile for something better yet, to offer in lieu thereof, not disdaining to iterate and reiterate in accordance with such poor light as we possess, for I believe the theme demands it. The subject of this paper was suggested to me by the worthy chairman of this Section, and in order to make my report systematic, I have tabulated from my private records about all of the strabismus cases that have come for consultation to my office during the past six years.

I have chosen to make the report from private practice because the statistics there are fuller and more available, though I hope ere long to give a compendium of results in this line, referable to the hospital and the dispensary, where the great bulk of my work in this department has been done. I shall attempt a partial summary: I found that out of the total number of cases that came for consultation in that time 214, or about 4 per cent. were cases of strabismus. These do not include paralytic nor latent squint. Of the 215 cases 142 were of the convergent variety, 70 were divergent and two were mixed, i.e., there was convergent strabismus in near vision, and divergence for distance. Six of the cases of divergence were secondary or operative ones.

Of the 142 convergence cases, in 74 the left was the squinting eye, 17 alternated, and in 51 the right eye turned. In 18 the squint was intermittent or periodic when first seen.

Of the 70 cases of divergence, in 29 the left eye deviated, in 15 the eyes alternated, and in 26 the right was the squinting eye. Ten of these were intermittent. I may remark in passing that in the beginning most of them are intermittent.

Of the 142 cases of convergent strabismus the refraction of both eyes was hyperopic in 114, both myopic in 6, antimetropic in 2, and emmetropic (or practically so) in 20.

Of the 70 cases of divergent strabismus the refraction of both eyes was hyperopic in 38, myopic in 16, mixed in 2, antimetropic in 3 and emmetropic in 11. Deducing the six secondary cases, gives us exactly twice as many cases of divergent strabismus associated with hyperopia as with myopia, a significant point in studying the causes of strabismus.

Of the 114 cases of convergent strabismus with hyperopia of both eyes the error amounted to three or more dioptics in 63. Of the 6 cases of convergence with myopia the latter was three or more dioptics in 4.

Of the 38 cases of divergent strabismus, associated with hyperopia of both eyes, the degree of the hyperopia was three or more dioptics in 9 cases. Of the 15 cases of divergent strabismus with myopia in both eyes it was three or more dioptics in 8.

Of the 214 strabismic patients 78 were under 15 years of age, 101 between 15 and 30 years, and 35 were over 30. There were 129 females and 85 males. The angle of the squint, or, rather, the angle of the optic axis of the squinting eye to the right optic axis of the working eye ranged from 12 to 65 degrees.

Of the 214 cases 158 received treatment in some form. In many instances this began and ended with the fitting of a pair of glasses. Fifty-six were not treated at all, having come merely for examination and consultation. Out of the 158 patients treated 70 had one or both muscles advanced, the second muscle

having been brought forward in about 12 per cent. of the cases. The operation was for convergent strabismus in 50 of the cases, and for the divergent form in 20; or in other words, of 81 advancements on these 70 patients 57 were of the externus and 24 of the internus. The inferior rectus was advanced once after correction of the lateral deformity. Of all the advancements only three were for alternating strabismus, two convergent and one divergent alternating.

Of the 70 patients to have their strabismus corrected by advancement, just one-half the number had a high degree of amblyopia in the squinting eye, with fair to good vision in the fixing eye. Thirteen had 20/20 in both eyes. Thirteen had 20/30, and ranged from 20/30 to 20/50. This is the corrected vision. In the rest (2) the sight was not determined. The vast majority of patients who had advancement ranged in age from 15 to 30 years, that period of life during which the duty of looking one's best is most imperative.

In 32 cases the strabismus yielded to atropin and glasses; in nine more cases to glasses together with persistent and systematic orthoptic training with prisms, the stereoscope, etc. The corrected visual acuity in the 41 cases whose squint was righted by other than surgical means, amounted for both eyes in 18 instances to 20/20, in 15 to 20/30, and in 1 to 20/50. One eye was highly amblyopic in 5, and in 3 the sight was not definitely ascertained.

Thus, out of 158 cases treated in some measure a cure was accomplished in 111, leaving 47 who are either reporting from time to time or have wandered off. Were I not so strongly opposed to the operation of tenotomy, excepting for its effect in combination with that of advancement, I might not now have the satisfaction of reporting these 41 cures of strabismus accomplished without surgical interference, for I believe that the very ease and facility with which that operation is performed, and the comparatively little inconvenience to the patient which it occasions, has led to its abuse. We should not lose sight of the fact that surgery is only one of the means toward the end in question.

I find that, as time goes on, I make relatively fewer advancements on the other eye. Not that I have changed my views as to the beneficial effects of double advancement, but chiefly because of the difficulties or the obstacles in the way of bringing the patient to submit to the second operation. I have, therefore, in the more recent operations, been striving for greater effect at once.

Donders was unquestionably right in asserting that strabismus is essentially a binocular affection. The tests of motility and fixation in a vast majority of the cases will show limitation in the direction opposite to that of the squint in both eyes. Hence, were it practicable always to have one's choice in the matter, I believe it would be better to make a moderate advancement of the corresponding muscle in each eye, than to confine all to one. It is true, in one sense, that what we do toward changing the position of one eye is done also to the other, so that while it is feasible to correct the strabismus by operating on only one eye, the squinting eye, for instance, in the constant monolateral form, and on the worse eye, if there be a difference, in the alternating variety, I do not, however, regard the procedure as strictly scientific. The increased tension put upon a muscle by a properly gauged advancement is a means of putting new life and vigor into it, but there is a limit, beyond which

the stretching of the muscle should not be carried. Even granting that we right the deformity by a single operation, and without drawing up the muscle too tightly, the improved tone of the operated muscle is only in a measure imparted to its fellow of the opposite eye, and the result is somewhat one-sided after all. For these reasons, when the faulty muscle of each is proven to be markedly inefficient, I give the patient plainly to understand that two advancements will be necessary. It will be observed that it is not so much the degree of the squint which is taken as the criterion for the extent of the advancement, as is the strength, or weakness, if you choose, of the offending recti, some of the very slight deviations often requiring a most decided moving forward of the tendon. Again, it is not uncommon to find that the eye which habitually squints is possessed of the better muscular system of the two. Under such conditions, the vision being equally good in both eyes, and only one operation being contemplated, it is good practice to make the advancement on the working eye. I would deem it advisable, always, where exists a pronounced difference in the strength of the faulty muscles, to allow this, and not the deviation, to determine which eye should be operated upon, were it not for the fact that the squinting eye is so often but poorly endowed with vision. It is the dread of that possible mischance. In careful hands there is no safer operation made than this, yet eyes have been lost from slighter things, and one can not ignore the possibility, be it ever so remote. Especially is this applicable in dispensary practice, where many irresponsible patients may be expected to go into homes and surroundings which are not calculated to favor the traditional "uneventful recovery," and to report back to the surgeon at their own sweet will.

In all of my experience, however, in the management of several hundred advancements on hospital and dispensary patients, I have had to contend with but one eye that gave any cause for uneasiness. It was that of a young man treated at the North Star Dispensary, who reported on the fourth day after the operation with suppurative tenonitis, beginning at the site of the advancement. He was put at once into the hospital, the thread removed, and by vigorous measures the process was arrested before anything really serious occurred. It will be observed that this operation means advancement in the true sense of the word, in that it gives a new insertion for the tendon, nearer to the cornea than the original one. Many of the so-called advancements consist merely of a shortening, inasmuch as they do not move the insertion at all. Even though a small section of the tendon may be removed, the quality of the operation is not altered. Often, in the early stages of healing, the tendon can be clearly seen firmly adhering to the globe forward of its former place of attachment. But to attempt to regulate to the millimeter the exact point at which this union of the tendon with the globe shall occur, as some operators assume to do, is surely an illusion. By exercising care in obtaining firm holds for the thread, both in the tendon and in the places of anchorage above and below the cornea, we may be confident of a positive and permanent advancement, but gauge it to a mathematical nicety we can not. As Landolt has neatly said, "Nature does it; *with* us, if we make use of her efficient help, *against* us if we neglect it." We must always allow for some dropping back by producing primary over-effect.

Number.	Age.	Convergent eye.		Other forms.	Degrees.	Vision at first visit.		Corrected vision.		Refraction.		Treatment and result.	Remarks.		
		Divergent eye.				O. D.		O. S.		O. D.	O. S.			O. S.	
		and which	and which			2.									
126		O. S.	O. D.	Strabismic	50	Fingers 2.	20/30	3/200	20/15		+1.5 cyl. ax. 90	Adv. rt. right internus; result perfect.	The capsule of T. was advanced with muscle.		
226		O. S.	O. D.	Strabismic	45	20/30	4/200	20/20	20/20		Fitted glasses	Fitted glasses	Three years later result still perfect.		
317		O. D.	O. D.	Strabismic	55	20/20	20/30	20/100	20/20		+1.5 s. c.; +2 c. ax. 90	Adv. rt. right externus; result perfect			
417		O. D.	O. D.	Strabismic	50	20/20	20/20	20/200	20/20		E.	Fitted glasses			
517		O. S.	O. S.	Strabismic	45	20/20	20/30	20/20	20/20		E.	No treatment			
623		O. D.	O. D.	Strabismic	50	8/200	20/30	8/200	20/50		+3.5	Fitted glasses			
808		O. D.	O. D.	Strabismic	45	20/20	20/30	20/20	20/30		+5	Fitted glasses			
906		O. D.	O. D.	Strabismic	40	20/20	20/40	20/30	20/30		+4.5 s. c.; +0.75 c. ax. 25	Fitted glasses			
1022		O. D.	O. D.	Strabismic	45	20/20	20/20	20/30	20/30		+2.5 s. c.; +1.50 c. ax. 15	Fitted glasses			
1120		O. D.	O. D.	Strabismic	45	20/20	20/40	20/30	20/30		+2 s. c.; +1.50 c. ax. 180	Pres. glasses			
1210		O. S.	O. D.	Strabismic	45	20/30	20/40	20/30	20/30		+0.50 s. c.; +0.50 c. ax. 135	Pres. glasses			
1344		O. D.	O. D.	Strabismic	45	20/20	20/30	20/30	20/20		+0.50 c. ax. 90	Pres. glasses			
1511		O. D.	O. D.	Strabismic	50	5/200	15/200	20/200	20/20		+1.5	Pres. glasses			
1616		O. D.	O. D.	Strabismic	45	20/30	15/200	20/20	12/200		+5.5	Adv. left internus; result perfect.			
1807		O. S.	O. S.	Strabismic	35	7/200	20/70	7/200	20/70		E.	No treatment			
1919		O. S.	O. S.	Strabismic	45	20/20	20/200	20/200	20/200		+1.5 s. c.; +2 c. ax. 90	Adv. left externus; result perfect.			
2013		O. S.	O. S.	Strabismic	55	6/200	8/200	20/100	20/50		E.	Indectomy advised.			
2117		O. S.	O. S.	Strabismic	55	20/20	1/200	20/30	20/100		+3	Pres. glasses			
2227		O. S.	O. S.	Strabismic	45	20/40	20/100	20/30	20/100		+5.5	Pres. glasses			
2313 1/2		O. D.	O. D.	Strabismic	45	5/200	20/50	20/20	20/20		+0.75 s. c.; +1.50 c. ax. 180	Pres. glasses			
2522		O. D.	O. D.	Strabismic	45	20/20	20/30	20/20	20/20		+1 s. c.; +2 c. ax. 135	Pres. glasses			
2641		O. S.	O. S.	Strabismic	45	20/20	20/20	20/20	20/20		+0.50 s. c.; +0.50 c. ax. 115	Adv. left externus; result perfect.			
2717		O. S.	O. S.	Strabismic	45	20/20	20/20	20/20	20/20		E.	No treatment			
2827		O. S.	O. D.	Strabismic	45	20/100	20/100	20/70	20/50		+2	Pres. glasses			
2927		O. D.	O. D.	Strabismic	45	20/200	20/30	20/20	20/20		+1 s. c.; +1 c. ax. 90	Adv. left internus; result perfect.			
3021		O. D.	O. D.	Strabismic	45	20/200	20/45	20/20	20/20		+2.5 s. c.; +2.5 c. ax. 125	Adv. right externus; result perfect.			
317		O. D.	O. D.	Strabismic	35	20/20	20/20	20/20	20/20		+1	Adv. right externus; result perfect.			
3221		O. S.	O. S.	Strabismic	35	3/200	20/20	3/200	20/20		+2.5	Adv. left externus; result perfect.			
3311		O. S.	O. S.	Strabismic	40	20/20	20/20	20/20	20/20		+2.5 s. c.; +1 c. ax. 90	Adv. left externus; result perfect.			
3427		O. S.	O. S.	Strabismic	30	20/20	4/200	20/30	4/200		+3.5 c. ax. 90	Adv. left externus; result perfect.			
357		O. S.	O. S.	Strabismic	45	20/20	20/20	20/20	20/20		+1.5 s. c.; +1.5 c. ax. 90	Pres. glasses			
3622		O. D.	O. D.	Strabismic	37	Percep. high	20/50	20/50	20/40		+2	Pres. glasses and massage			
377		O. D.	O. D.	Strabismic	50	20/20	20/20	20/15	20/15		+0.50 s. c.; +0.50 c. ax. 90	Adv. right externus; result perfect.			
3840		O. D.	O. D.	Strabismic	40	20/20	20/30	20/20	20/20		+1 s. c.; +0.50 c. ax. 135	Pres. glasses			
3940		O. S.	O. S.	Strabismic	40	20/20	20/30	20/20	20/30		+0.75 s. c.; +0.50 c. ax. 45	Pres. glasses			
4019		O. S.	O. S.	Strabismic	50	20/20	20/50	20/20	20/30		+2	Pres. glasses			
4112		O. S.	O. S.	Strabismic	45	6/200	20/20	6/200	20/30		+1	Pres. glasses			
4233		O. D.	O. D.	Strabismic	45	20/20	20/20	20/20	20/15		+2.5 s. c.; +1 c. ax. 85	Pres. glasses			
4313 1/2		O. D.	O. S.	Strabismic	35	20/30	20/20	20/20	20/15		+2	Pres. glasses			
4423		O. D.	O. S.	Strabismic	45	20/20	20/20	20/20	20/15		+1.5 s. c.; +0.50 c. ax. 90	Pres. glasses			
4529		O. S.	O. S.	Strabismic	45	20/30	20/30	20/20	20/20		+3	No treatment			
4620		O. S.	O. S.	Strabismic	45	20/30	20/30	20/40	20/20		+5.5	Pres. glasses			
4726		O. D.	O. D.	Strabismic	25	20/20	20/20	20/20	20/30		+3.5	Pres. glasses			
4821		O. D.	O. D.	Strabismic	40	20/100	20/40	20/100	20/30		+3	Pres. glasses			
492		O. S.	O. S.	Strabismic	50	20/20	20/20	20/20	20/30		+3	No treatment			
5029		O. S.	O. S.	Strabismic	50	20/30	20/30	20/20	20/20		+7	Pres. glasses			
515		O. S.	O. S.	Strabismic	50	20/20	20/20	20/20	20/20		+4	Pres. glasses			
5243		O. S.	O. S.	Strabismic	35	20/20	20/30	20/20	20/20		+5	Pres. glasses			
538		O. S.	O. S.	Strabismic	35	20/20	20/20	20/20	20/20		+2	Pres. glasses			
5415		O. S.	O. S.	Strabismic	55	20/20	20/20	20/20	20/30		+2	Adv. left externus; result perfect.			
5526		O. S.	O. S.	Strabismic	50	20/20	20/40	20/30	20/30		+2 c. ax. 75	Pres. glasses			
567		O. S.	O. S.	Strabismic	50	20/20	20/20	20/20	20/20		+2.5	Pres. glasses			
5746		O. S.	O. S.	Strabismic	20	20 and more.	20/30	20/20	20/20		+0.50 c. ax. 180	Pres. glasses			
585		O. S.	O. S.	Strabismic	45	20/30	20/30	20/20	20/20		+2	No treatment			
5924		O. S.	O. S.	Strabismic	30	20/30	20/30	20/20	8/200		+4 s. c.; +0.75 c. ax. 135	Pres. glasses			
6022		O. S.	O. S.	Strabismic	50	20/20	20/30	20/30	20/20		+4	No treatment			
612		O. D.	O. D.	Strabismic	25	20/20	20/20	20/20	20/20		+4	Adv. right externus; result perfect.			
626		O. D.	O. D.	Strabismic	45	20/20	20/20	20/20	20/20		+5	Adv. left externus; result perfect.			
634		O. D.	O. D.	Strabismic	44	20/20	20/20	20/20	20/20		+3.5	Adv. right externus; result perfect.			
646		O. D.	O. D.	Strabismic	30	20/100	20/50	20/70	20/30		+5.5 s. c.; +1.50 c. ax. 90	Adv. right internus; result perfect.			
659		O. D.	O. D.	Strabismic	45	20/20	20/100	20/30	20/30		+5.5 s. c.; +1.50 c. ax. 90	Adv. right internus; result perfect.			
6618		O. S.	O. S.	Strabismic	45	20/20	20/100	20/30	20/30		+5 s. c.; +1.50 c. ax. 90	Adv. both externus; result perfect.			
6722		O. S.	O. S.	Strabismic	45	20/30	20/30	20/15	20/30		+0.75 c. ax. 180	No treatment			
6828		O. S.	O. S.	Strabismic	30	3/200	20/40	20/30	20/30		-0.75 c. ax. 180	Adv. left internus; result perfect.			
695		O. D.	O. D.	Strabismic	30	3/200	20/40	20/30	20/30		+1.5	Adv. right internus; result perfect.			
7024		O. D.	O. D.	Strabismic	60	20/20	20/40	20/20	20/30		+1.5	Adv. left externus; result perfect			
7127		O. D.	O. D.	Strabismic	45	20/20	20/20	20/20	20/30		+3 c. ax. 90	Adv. both externus; result perfect.			
7253		O. D.	O. D.	Strabismic	40	20/200	20/20	20/20	20/20		+4	Pres. glasses			
738		O. D.	O. D.	Strabismic	35	20/200	20/100	20/30	20/50		+3.5	Pres. glasses			

74-86	O. D.			20 100	20 70	-1.5.	0.50s.C. +1.75c.ax.106.	Adv. right externus; result perfect.	Eyes straight with glasses.
75-17	Alter g	4	200	20 20	10	-10.	Pres. glasses	Pres. glasses	
76-7	O. S.		20 20	20 20	6.5.		No treatment.	No treatment.	
77-17	O. S.	45	5 200	20 20	2.5.	1.75s.C. +1 c. ax. 90.	Pres. glasses	Pres. glasses	
78-8	Alter g	20	20 20	20 20	1.		No treatment.	No treatment.	
79-3	O. D.		20 20	20 20	4.		Pres. glasses	Pres. glasses	
80-10	Alter g	40	20 20	20 20	E.		No treatment.	Congenital atrophy of rt. optic nerve.	
81-20	O. D.	50	20 100	20 20	1.5.	0.5 c. ax. 90	Adv. right externus; result perfect.	Eyes straight with glasses.	
82-35	O. D.	35	3 200	20 20	3.5.		No treatment.	Traumatic cataract in left eye.	
83-20	O. S.	30	20 40	20 30	4.		Adv. both externus; result perfect.	Eyes straight with glasses.	
84-30	O. S.	60	20 100	20 20	1.5.	1 s. C. +1 c. ax. 135.	Adv. left externus; result perfect.	Three years later result still perfect.	
85-28	O. S.	20	20 40	20 20	5.	0.75s.C. +0.50c.ax.180	Adv. right externus; result perfect.		
86-16	O. S.	20	20 40	20 20	1 s. C.	+1 c. ax. 180	Pres. glasses	4 yrs. after eyes straight with glasses.	
87-28	O. S.	45	20 30	20 20	3.5.	0.75 c. ax. 180	Pres. glasses	5 yrs. after eyes straight with glasses.	
88-25	O. S.	20	20 30	20 20	4.5.	2.5 s. C. +0.5 c. ax. 90	Pres. glasses	4 yrs. after eyes straight with glasses.	
89-25	O. S.	20	20 30	20 20	3.		No treatment.		
90-42	O. S.	45	5 200	20 30	16.	18	No treatment.		
91-37	O. S.	50	can see pen by in le ft...	20 30	E.		No treatment.		
92-27	O. S.	20	Percep. light	20 30	10.		No treatment.		
93-12	O. S.	50	5 200	20 70	3.5 s. C. +2.5 c. ax. 60		Adv. both internus; result perfect.	Tenotomy of both interni 5 yrs. ago for [esophoria.	
94-16	O. S.	20	20 50	20 40	4 s. C. +1 c. ax. 78		Adv. left externus; result perfect.		
95-37	O. S.	20	20 200	20 40	5 s. C. +0.75 c. ax. 90		No treatment.		
96-43	O. S.	20	18 200	20 20	4.	0.5 c. ax. 90	No treatment.		
97-33	Alter g	20	20 30	20 20	0.5 c. ax. 90.		No treatment.	Advised to wait till child is older.	
98-17-42	Alter g	Varies	20 30	20 30	4	2.5 s. C. +2.5 c. ax. 102	Pres. glasses		
99-21	O. S.	40 to 50	20 70	20 30	1.	1.5 s. C. +2.5 c. ax. 102	No treatment.		
100-5	O. S.	45 to 50	20 30	20 20	4.		No treatment.		
101-22	O. S.	20 to 50	20 30	20 20	3.		Adv. right externus; result perfect.		
102-27	O. S.	45	20 50	20 30	3.5.		Adv. left externus; result perfect.		
103-18	O. S.	45	20 30	20 30	6 s. C. +1 c. ax. 90		Adv. both internus; result perfect.		
104-25	O. S.	50	20 30	20 15	1.5 c. ax. 30		Pres. glasses		
105-8	O. D.	45	20 30	20 20	4.	3 s. C. +0.75 c. ax. 45	Adv. both internus; result perfect.	Still considering operation.	
106-18	O. S.	45	20 30	20 30	4.	3 s. C. +0.75 c. ax. 45	Adv. both internus; result perfect.		
107-29	O. S.	45	20 30	20 30	4.	3.5	Pres. glasses	5 yrs. later eyes are straight, w. glasses.	
108-5 1/2	Alter g	5	20 30	20 30	3.5	0.5 c. ax. 125.	Pres. glasses		
109-23	O. D.	50	10 200	20 40	5.	0.5 c. ax. 125.	Adv. both internus (7); result good		
110-21	O. D.	50	20 20	20 15	0.75.	2.5 s. C. +0.5 c. ax. 90	Pres. glasses and prism gymnastics		
111-12	O. D.	12 to 35	20 30	20 20	0.5 s. C. +0.5 c. ax. 90		Pres. glasses		
112-15	O. S.	45	20 20	20 20	1 c. ax. 10		0.75 c. ax. 170		
113-38	O. D.	45	20 200	20 20	0.5 c. ax. 45		No treatment.	Apparent correction of strabismus with [glasses.	
114-23	O. D.	50	20 40	20 30	0.5 s. C. +1.5 c. ax. 90		Pres. glasses		
115-7	O. D.	25	20 30	20 30	20	0.5 s. C. +1.5 c. ax. 90	No treatment.	Eyes are straight with glasses.	
116-32	O. D.	50	20 30	20 30	20		No treatment.		
117-23	O. D.	25 to 35	20 30	20 30	6.		Adv. right internus; result good		
118-34	O. D.	50	20 200	20 40	4	4 s. C. +0.75 c. ax. 90	Pres. glasses.	Squint still exists.	
119-27	O. S.	45 to 50	20 70	20 20	4.		No treatment for strabismus	Old corn. opac. from interst. keratitis.	
120-5	O. S.	50	20 70	20 20	4.		Pres. glasses	8 mos. after str. w. glasses; not without.	
121-7 1/2	O. S.	55 to 60	20 100	20 20	4	4 c. ax. 90.	Adv. right internus; result perfect.	15 months after eyes still correct.	
122-20	O. D.	45	20 20	20 20	Hyperopic As		Adv. right internus; result perfect.	Eyes are straight with glasses.	
123-14	O. S.	35 to 45	20 20	20 20	1.25 s. C. +0.5 c. ax. 90		Pres. glasses	See note 2.	
124-40	O. D.	35	20 20	20 20	0.5 c. ax. 90.		Pres. glasses		
125-13	O. D.	35	20 20	20 20	1 s. C. +3.5 c. ax. 90		Pres. glasses		
126-12	O. D.	35	20 20	20 20	E		No treatment.		
127-12	O. D.	35	20 20	20 20	3.	0.5 s. C. -1 c. ax. 65	Pres. glasses	This was a case of congen. strabismus.	
128-12	O. S.	40	20 30	20 30	1.5 s. C. +0.5 c. ax. 45		2 s. C. +0.5 c. ax. 135	Condition improved by glasses.	
129-24	O. S.	40	20 15	20 15	2 s. C. +0.5 c. ax. 180		No treatment.	For 3 years has not squinted w. glasses.	
130-22	O. S.	40	20 20	20 20	2 s. C. +0.5 c. ax. 180		Pres. glasses		
131-5	Alter g	50 or more.	20 30	20 20	2 s. C. +0.5 c. ax. 45		Pres. glasses		
132-12	O. D.	50 to 50.	20 30	20 20	2.5 s. C. +0.75 c. ax. 115		Adv. right externus; result perfect.	[tion.	
133-19	O. S.	50 to 50.	20 30	20 20	2 s. C. +0.75 c. ax. 115		Adv. left externus; result perfect.	5 yrs. after no strabismus, has not worn [glasses for years.	
134-9	O. S.	35	15 200	20 20	4.		Adv. right externus		
135-5	O. D.	35 and more.	20 20	20 30	2 s. C. +1.75 c. ax. 70		Pres. glasses	3 yrs. later eyes straight w. glasses.	
136-4	Alter g	40	20 30	20 30	2 s. C. +1.75 c. ax. 70		Pres. glasses and orthoptics	Result perfect.	
137-17	O. S.	20 and more.	20 20	20 15	0.5 s. C. +0.5 c. ax. 90		Pres. glasses		
138-15	O. S.	30	20 20	20 15	0.5 s. C. +0.5 c. ax. 90		Pres. glasses		
139-32	Alter g	Varies.	20 30	20 30	6 s. C. -0.75 c. ax. 65		Pres. glasses		
140-10	O. D.	Varies.	20 20	20 40	5 s. C. +1 c. ax. 90.		Pres. glasses		
141-34	O. S.	Varies.	20 20	20 20	0.5 s. C. +0.5 c. ax. 45		Pres. glasses		
142-19	O. S.	25 and more.	20 20	20 15	0.5.		Pres. glasses		
143-63	O. S.	45	20 30	20 30	1.	0.5	Pres. glasses		
144-22	O. S.	35	20 30	20 30	5	5 c. ax. 20.	Adv. fight internus		
145-17	O. D.	25 and more.	20 30	20 15	0.5 s. C. +0.5 c. ax. 90		0.75 s. C. +0.25 c. ax. 90	No treatment.	
146-24	O. D.	40	4 200	20 20	3.5 s. C. +1.5 c. ax. 100		Pres. glasses		
147-25	O. D.	40	Percep. light	20 20	E		No treatment.		
148-28	O. S.	Varies	20 20	20 20	4	4 s. C. +2 c. ax. 130	Pres. glasses	5 yrs. later eyes straight, does not wear [glasses.	
149-9	Alter g	90 and more.	20 40	20 20	1.5.		Adv. of both externi; result good.		
150-13	O. D.	45 to 50.	20 20	20 20	E		Pres. glasses		
151-8	O. S.	55	20 30	20 20	2.	3.5.	Pres. glasses		
152-10	O. S.	55 and more.	20 20	20 30	E		No treatment.		
153-27	O. S.	50	10 200	20 50	6.		Adv. both externi; result good		

Number.	Age.	Convergent eye. and which	Divergent eye. and which	Other forms.	Degree.	Vision at first visit.		Corrected vision.		Refraction.		Treatment and Result.	Remarks.
						O. D.	O. S.	O. D.	O. S.	O. D.	O. S.		
151	20				18 and more	20/30	20/30	20/20	20/20	-0.75 cyl., ax. 135.	Pres. glasses.	No treatment.	No glasses.
152	20				50	20/40	20/40	20/20	20/20	E. 2.5.	Pres. glasses.	No treatment.	No glasses.
153	20				50	20/40	20/40	20/20	20/20	-1.5 c., ax. 45.	Pres. glasses.	No treatment.	No glasses.
154	20				20	20/15	20/15	20/15	20/15	-0.5 c., ax. 135.	Pres. glasses.	No treatment.	No glasses.
155	20				20	20/20	20/20	20/20	20/20	-0.5 s. C.; +0.5 c. ax. 90.	Pres. glasses.	Adv. left internus; result perfect.	2 years later eyes are correct.
156	20				12 to 20	20/30	20/30	20/20	20/20	-3.	Pres. glasses and prism exercises.	Adv. left internus; result perfect.	6 months later most satisfactory. Result perfect.
157	20				35	20/20	20/20	20/20	20/20	-0.75 s. C.; +0.25 c. ax. 90.	Pres. glasses and prism exercises.	Adv. left internus; result perfect.	5 yrs. later mus. anomaly disappeared.
158	20				30 and more	20/70	20/70	20/20	20/20	-1.	Pres. glasses and prism exercises.	Adv. left internus; result perfect.	5 yrs. later eyes straight with glasses.
159	20				30	20/30	20/30	20/20	20/20	-0.5 cyl., ax. 90.	Pres. glasses.	No treatment.	3 mos. later eyes straight w. glasses.
160	20				30	20/40	20/40	20/20	20/20	-0.5 c., ax. 90.	Pres. glasses and prism exercises.	See note 4.	See note 5.
161	4				18 to 30	20/40	20/40	20/30	20/30	-0.5 c., ax. 90.	Pres. glasses.	Adv. left externus; result perfect.	6 years after still perfect.
162	11				30 to 45	20/20	20/20	20/20	20/20	E. 2.5 s. C.; +1 c. ax. 90.	See note 4.	No treatment.	No treatment.
163	16				35	20/70	20/70	20/30	20/30	-1.	Pres. glasses.	Adv. left externus; result perfect.	6 months later eyes straight w. glasses.
164	11				35	20/30	20/30	20/30	20/30	-1.25 s. C.; +0.5 c. ax. 180.	Atropin.	No treatment.	See note 5.
165	13				40	20/30	20/30	20/30	20/30	-2.5 s. C.; +0.75 c. ax. 135.	Pres. glasses.	Adv. left externus; result perfect.	6 years after still perfect.
166	10				40	20/30	20/30	20/30	20/30	-3.5 s. C.; +1 c. ax. 45.	Pres. glasses.	No treatment.	No treatment.
167	20				12 to 20	20/20	20/20	20/20	20/20	-1.25.	Pres. glasses.	Adv. both internus; result perfect.	Had previously had tenot. both externi.
168	20				14	20/100	20/100	20/40	20/40	-2.5 s. C.; -3.5 c. ax. 180.	Pres. glasses.	Adv. both internus; result perfect.	4 yrs after eyes are correct.
169	40				19 and more.	20/20	20/20	20/20	20/20	-0.5 c., ax. 90.	Pres. glasses.	Adv. right externus; result perfect.	After 1 year less divergence.
170	40				30	20/20	20/20	20/20	20/20	-16.	Pres. glasses.	No treatment.	Traumatic cataract in right eye.
171	21				45	20/70	20/70	20/40	20/40	-0.5 s. C.; -1 c. ax. 90.	Pres. glasses.	Adv. right externus; result perfect.	After 6 months there is orthophoria.
172	36				Worse for ur.	20/70	20/70	20/20	20/20	-1 c., ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	3 years after eyes are still correct.
173	22				20 and more.	20/40	20/40	20/20	20/20	-4 s. C.; +2.5 c. ax. 80.	Pres. glasses.	Adv. right internus; result perfect.	6 yrs. after eyes correct with glasses.
174	20				40	20/70	20/70	20/30	20/30	-3.5 s. C.; +2.5 c. ax. 90.	Pres. glasses.	Adv. right externus; result perfect.	Traumatic cataract in right eye.
175	18				35	20/20	20/20	20/20	20/20	-6.	No treatment.	No treatment.	Traumatic cataract in right eye.
176	41				Varies.	20/40	20/40	20/20	20/20	-1.25 s. C.; +1 c. ax. 45.	Pres. glasses and orthoptics.	Adv. both externus; result perfect.	After 6 months there is orthophoria.
177	25				20	20/20	20/20	20/15	20/15	-0.25 c., ax. 75.	Pres. glasses and orthoptics.	Adv. both externus; result perfect.	3 years after eyes are still correct.
178	21				50	20/30	20/30	20/20	20/20	-3.	Pres. glasses.	Adv. right internus; result perfect.	6 yrs. after eyes correct with glasses.
179	12				40	20/30	20/30	20/30	20/30	-1.	Pres. glasses.	Adv. both internus; result perfect.	Traumatic cataract in right eye.
180	15				35	20/30	20/30	20/10	20/10	-6.	No treatment.	No treatment.	Traumatic cataract in right eye.
181	25				45	20/20	20/20	20/30	20/30	-8.75.	No treatment.	No treatment.	Traumatic cataract in right eye.
182	24				40	20/20	20/20	20/20	20/20	-5 s. C.; +2 c. ax. 90.	Adv. right externus.	Adv. right externus.	6 yrs. after eyes correct with glasses.
183	21				50	20/30	20/30	20/20	20/20	-1 c., ax. 75.	Adv. right externus.	Adv. right externus.	Traumatic cataract in right eye.
184	30				40	20/30	20/30	20/20	20/20	-3 cyl., ax. 135.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
185	35				45	20/30	20/30	20/20	20/20	-1.5 s. C.; +2.5 c. ax. 45.	Pres. glasses.	Adv. both externus; result perfect.	Traumatic cataract in right eye.
186	5				45	20/100	20/100	20/30	20/30	-0.5 c., ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
187	46				45	20/100	20/100	20/30	20/30	-1.5 s. C.; +1.5 c. ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
188	40				40	20/100	20/100	20/20	20/20	-1 c., ax. 75.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
189	14				40	20/100	20/100	20/30	20/30	-3 cyl., ax. 135.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
190	26				55	20/100	20/100	20/30	20/30	-1.5 s. C.; +2.5 c. ax. 45.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
191	28				55	20/70	20/70	20/30	20/30	-0.5 c., ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
192	40				Down.	20/50	20/50	20/30	20/30	-0.10 c., ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
193	25				45	20/30	20/30	20/20	20/20	-4.5 s. C.; +0.5 c. ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
194	20				20	20/30	20/30	20/20	20/20	-1.25 s. C.; +0.5 c. ax. 180.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
195	25				25	20/30	20/30	20/20	20/20	-4.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
196	8				45	20/200	20/200	20/20	20/20	-6.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
197	52				35	20/20	20/20	20/20	20/20	-1.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
198	12				45	20/20	20/20	20/20	20/20	-0.5 s. C.; +0.5 c. ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
199	18				35 to 40	20/20	20/20	20/20	20/20	-2 s. C.; +3 c. ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
200	49				Varies.	18/200	18/200	20/20	20/20	-6 s. C.; +1.25 c. ax. 180.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
201	32				Varies.	10/200	10/200	20/20	20/20	-5.5 s. C.; +0.5 c. ax. 90.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
202	14				Varies.	20/200	20/200	20/15	20/15	-1.5 s. C.; -0.5 c. ax. 180.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
203	10				20 and more.	20/20	20/20	20/20	20/20	-3.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
204	26				25	20/70	20/70	20/20	20/20	-2 s. C.; +2.5 c. ax. 180.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
205	24				35	20/70	20/70	20/20	20/20	-13.	Pres. glasses.	Adv. both externus; result perfect.	6 yrs. after eyes correct with glasses.
206	13				40	20/20	20/20	20/20	20/20	-1 s. C.; +5 c. ax. 90.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
207	14				Varies.	20/70	20/70	20/20	20/20	-2 s. C.; +0.75 c. ax. 90.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
208	23				55	20/20	20/20	20/15	20/15	-E.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
209	25				47	20/20	20/20	20/20	20/20	-3.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
210	23				20 and more.	20/20	20/20	20/20	20/20	-3.	Pres. glasses and orthoptics.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
211	20				20	20/20	20/20	20/20	20/20	-2 s. C.; +2.5 c. ax. 180.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
212	14				35	20/70	20/70	20/20	20/20	-12.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
213	67				35	20/70	20/70	20/20	20/20	-1 s. C.; -1 c. ax. 90.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.
214	66				45	20/20	20/20	20/20	20/20	-10 s. C.; +3 c. ax. 45.	Pres. glasses.	Adv. both internus; result perfect.	6 yrs. after eyes correct with glasses.

1 I removed congenital capsular cataract from both eyes in this case when the child was less than 2 years of age.

2 There is paresis of the accommodations, requiring +3 for near vision. These glasses prevent squint.

3 Adv. right externus, curved tenotomy right internus; advt. (later) of right inferior rectus; result perfect.

4 Adv. right externus; tenotomy all outer portion of right superior rectus.

5 After using drops one month eyes became straight and have remained so for five years.

6 Extracted cataract from right eye; needled left pupillary membrane.

In conclusion, I would add that the more I study the anomalies of the ocular muscles, the more I see and the more I do, the stronger becomes my conviction that muscular advancement is the only operation—not the only *treatment*—but the only operation, not only for all forms of strabismus, but also for the strabio tendencies. De Wecker of Paris, in a recent magnificent paper on the results of strabismus operations (*Annals d'Oculistique*, January, 1898), recommends advancement whenever binocular single vision is the end in view, and *tenotomy*, or *tenotomy and advancement* when the ultimate aim is a cosmetic result. A stronger endorsement than this of advancement as the best procedure in *all* cases could hardly be conceived.

ADDITIONAL NOTES ON EMPLOYMENT
OF ABSORBABLE SUTURES IN
THE OPERATION OF LOOP-
ING THE TENDONS OF
OCULAR MUSCLES.

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY JOHN O. McREYNOLDS, B.Sc., M.D.
DALLAS, TEXAS.

In my original paper on this subject before this ASSOCIATION in 1897, I briefly referred to a method of employing kangaroo tendon in the operation of shortening the ocular muscles, but additional experience has taught me the importance of certain modifications, which I will attempt to present for your consideration today. And I shall feel more than amply rewarded for the labor of this pleasant task, if the members present will kindly contribute their suggestions from their wealth of vast and varied experience.

In the first place, I should like to say that the kind of suture material and also the method employed should vary according to the amount of correction desired. Speaking in general terms, I would consider that for the different forms of heterophoria of moderate degree, the catgut suture will supply the requirements and should be preferred because of the fact that it is practically absorbed within three or four days and will involve the minimum amount of reaction. But when this material is used the heterophoria should be over-corrected in order to allow for relaxation of the sutures and the stretching of the newly formed adhesions. In cases of extreme heterophoria and in heterotropia, kangaroo tendon offers the most reliable results, because of the fact that it does not become absorbed for two or three weeks and does not weaken rapidly from contact with the tissues, and hence will maintain the structures in the desired apposition until firmer adhesions have formed. And when this kind of suture material is used, we should secure at the time an amount of over-correction proportionate to the tension placed upon the sutures.

With regard to the method of operating, I would say for small degrees of heterophoria employ this method: with broad fixation forceps provided with teeth sufficiently long and sharp to engage all the structures down to the sclera, grasp the conjunctiva, capsule of Tenon and ocular tendon in such a way as to produce a vertical loop of the ocular tendon. Then fix this loop by a single suture passing through it horizontally. If it is desired that the thread should

sink beneath the conjunctiva, a slight incision through this membrane will allow this suture to bury itself in the tissues within its grasp while the conjunctiva closes above it.

For high degrees of heterophoria and moderate degrees of heterotropia, I would advise the following: Make an incision along the border of the tendon penetrating the capsule of Tenon. Then with strabismus hooks lift the tendon gently from the subjacent sclera. Then take a thread armed at each end with a sharp, delicate needle, and introduce one needle beneath the tendon close to its scleral attachment, while the other needle is introduced beneath the tendon as far from its scleral attachment as possible. Then carry each needle straight through the tendon, avoiding the conjunctiva, which is simply held aside with fixation forceps. Then tie the free ends of the thread, thus fixing the loop of the tendon; then bring together the conjunctiva and leave the loop to form adhesions and atrophy.

Where the degree of deviation is very considerable it is well to precede the advancement of the weaker muscle by a tenotomy of the stronger one; and then the advancement can be made in accordance with the methods already described, or we may employ another plan, which has the advantages of great leverage upon the eyeball and at the same time less puckering of the tissues. The procedure is as follows: Along the border of the rectus make an incision through all the structures down to the sclera, then with strabismus hooks lift up the tendon gently from the adjacent sclera. Introduce the two armed extremities of the thread beneath the muscle at points as remote as possible from the insertion of the tendon, one needle entering the muscle near its lower border and the other needle entering the muscle near its upper border. These needles are carried from within outward through all the tissues till the conjunctiva is reached and then the needles are carried beneath the conjunctiva, one passing along the superior corneo-conjunctival junction and the other passing along the inferior corneo-conjunctival junction. When the threads have reached the opposite side of the cornea from the tendon to be advanced the threads are made to approach each other, while the necessary traction is exerted by the tying of the threads, thus producing a decided rotation of the eyeball toward the tendon to be shortened. The conjunctival wound can now be closed and the sutures left for absorption. In all these operations for muscle shortening the great advantages over the various tenotomies, graduated and complete, are the accuracy with which the adjustment can be made, the freedom from danger of over-correction and the fact that the process is one for making shorter the weaker muscle and not making weaker the shorter muscle; in other words, the advantages are accuracy, safety and strength.

DISCUSSION ON PAPERS OF DR. BEARD AND McREYNOLDS.

Dr. H. V. WÜRDEMAN of Milwaukee—Since Dr. Beard first demonstrated this operation to me, probably about six years ago, I have used it somewhat extensively, at least more than any other form of advancement operation for heterophoria and for cases of strabismus in which a decided amount of reposition of the recti muscles is needed. I have used it most satisfactorily in cases of strabismus of more than 15 degrees. For cases less than this, or for heterophoria I prefer one of the minor forms of advancement, such as described by Stevens and others. I do not as a rule cut off the tendon stump as described by Beard, as I believe the laying of one portion o

the tendon over the other gives us a more secure hold, as in the healing process we get agglutination, and the little thickening is absorbed sooner or later, so it is of no particular consequence. Immediately after the operation is finished we frequently find that the cornea is practically covered by a fold of conjunctiva, but that is an advantage, for it lies under the stitch and is a protection to the cornea. After seven or eight days the reaction entirely passes away, sometimes sooner. It is advisable to use braided silk for the sutures. I object to the use of absorbable sutures in any form of advancement on account of the tendency for relaxation. We frequently find by this method, as well as by others, an over-effect of apparently 5, 10 or 15 degrees, but the next day, if the suture has slipped at all, we may have an under-effect, so I think it more desirable to have a stitch that will hold. I believe it is advisable to leave a loop in the stitch during the operation in order to pass the suture through, and find it more convenient than having to pick up the loop afterward, and I wish to lay stress upon the necessity for the needles being very sharp. We must get a good hold on the sclera.

Dr. MELVILLE BLACK—I would like to demonstrate on the blackboard a little operation of my own that resembles this one of Dr. Beard's very closely. A curved needle is threaded with No. 5 iron-dyed silk and the two ends tied into a hard knot. The needle is passed through the conjunctiva into the sclera for a good bite just below the cornea. Before pulling the thread through up to the knot, the needle is passed back between the two strands of thread close to the knot and then pulled home. You will observe that I now have a point of scleral fixation close to the cornea, and at the free end of the thread is the needle. A similar procedure is now gone through with above the cornea. You see that I now have two sutures similarly tied into the sclera at corresponding points above and below the cornea. With a strong pair of mouse-toothed forceps the belly of the muscle to be advanced is now raised, and with a pair of scissors the conjunctiva and underlying tissue are incised along the border of the muscle above and below. A tenotomy hook is passed underneath the muscle and the forceps withdrawn. One of the needles is passed through the muscle, or tendon, according to whether it is desired to do a strict advancement or a shortening. I forgot to say that the needle is passed from below upward. The thread is pulled about halfway home. The other needle is now passed in a similar manner. If it is desirable to do an advancement, the tendon is severed from its attachment. If it is deemed best to shorten as well as advance, the needles have been passed through the muscle at an appropriate distance from the tendinous insertion, and the muscle should be severed about two millimeters or more from the needles, or rather the threads. The tenotomy hook is now removed and the attached end of the muscle is grasped with forceps and severed from its attachment to the globe. The conjunctiva should be removed at the point where it is desirable to pull up the muscle for re-attachment. Now comes the advantage to be gained by having performed the operation as described. An assistant is not needed, because the operator can grasp with one hand the two threads, and with his other hand the globe is rotated in the desired direction with a pair of forceps. When the eye is drawn into the desired position the two threads are tied over the muscle, and the operation is completed. You will observe that there can be no torsion of the globe caused by one suture being shorter than the other, because there is enough play of the sutures in the muscle to overcome any such inequality. The sutures are allowed to remain in position for five days, when, as you will observe, they are very easily removed. This operation has proved universally satisfactory, both for advancement in heterophoria and for shortening and advancement in extreme cases of true squint. I always perform the operation under cocain anesthesia, except in very young children, and

find that it takes but little longer than simple tenotomy. A wet bichlorid dressing is applied and the eye bandaged for twenty-four hours. The patient experiences but little pain, and there is scarcely any reaction on the following day.

Dr. G. C. SAVAGE—"Man wants but little here below, nor wants that little long," but we all want credit for any operation we may have devised. Dr. McReynolds will acknowledge that the operation he described was devised by me. I have seen Dr. Beard perform his operation and I want to say that I believe the operation is rather too severe for the effect to be accomplished. I agree with him on this point, that in straightening the eyes it is better to do a partial tenotomy of the offending muscle and an advancement of the other, than to cut the muscle completely loose from the eyeball. A partial tenotomy ought always to be done in squint, and the rest accomplished by advancement, and having done the partial tenotomy I think the Stevens advancement is the best operation to conclude with. The reaction is slight and there is no torsion. Of the two operations described here today I want to say that I believe Dr. Black's is the simpler, secures the same effect and does not require a general anesthetic. In any operation the less traumatism we produce in accomplishing our purpose, the less danger there is of infection. Muscle shortening is applicable only in the heterophoria. In heterotropia its effect is too little.

Dr. BEARD—I used to tie the sutures in a bow knot at first, and it may be a good idea still, but I found it difficult to get the patients to come back and have the knot adjusted. I came to the conclusion that it was not practicable and lately have not used it. This is only one method of treating strabismus, and I have only used it in cases that would not yield to any other treatment. As regards the degree of turning that one can get, that depends merely on where you place the suture, for you can get up to thirty or forty degrees with ease.

Dr. KINNEY—Do you have any difficulty with torsion and do you both shorten and advance?

Dr. BEARD—One idea of this operation is to prevent torsion. If the thread is properly inserted and there is no snarl, the muscle comes forward directly in line with its axis, and the tension on the thread is equal at every point. In reply to Dr. Savage, I would say that I never use a general anesthetic for operation, except in cases of little children or excessively timid adults.

Dr. McREYNOLDS—One of the most important features, to my mind, was the employment of an absorbable suture instead of silk, because of the difficulty I found in getting the silk out of the loop. This was almost as much of an operation as the original one. I consider the kangaroo tendon the best because it is absorbed the more slowly. In my experience I can secure as much correction as I desire, if I can get a hold as far back as I please, and if I want the maximum of correction I pass the suture clear around the cornea to the opposite side.

A STORY OF CHICKAMAUGA.

[PART II.]

BY R. STANSBURY SUTTON, M.D.

Major and Chief Surgeon U. S. V., Commanding Second Division, First Army Corps Hospital at Chickamauga.

There was a great deal of sickness at Chickamauga Park. You would not expect to put 60,000 men in a camp seven miles square and keep them there all summer without sickness. Furthermore, a large number, the great majority, were from northern climates and not only had they that to contend with, but their entire mode of living had been changed, and they were necessarily subjected to daily drill of about five hours, required to educate them to be soldiers. In addition to this they had their camp duties to perform

and their own necessities to look after, and it was but natural that some of them should become ill. Volunteer soldiers, without experience in camp life, great numbers of whom at home were unaccustomed to hard work and plain food, would naturally suffer some inconvenience. In every army there is an element which, if not restrained, will abuse themselves by drunkenness, vice and immorality, and this army has been no exception to other armies. There was considerable suffering by reason of these things. In this respect, however, at Knoxville, there has been a marked improvement. This element is being held down by a strong provost guard. Before our army entered Chickamauga Park—and 75,000 troops have been there—typhoid fever was prevailing, as stated, among the farmers living on the edge of this park; they supplied the camp, to the extent of their saleable articles, with milk and general farm products, and it is entirely probable that they introduced the infection. In time the camp became reinfected through the sinks and careless use of the grounds by soldiers. When the rains set in about July 17, the surface infection was washed into the creeks and streams, the soldiers resorted to the swollen streams for bathing and washing purposes, and this was doubtless another cause of the spreading of the disease. The flies were in the camps by myriads, and they carried on their wings, legs and bodies the typhoid germs from the sinks and elsewhere, over the camp, infecting the food and drink to a greater or less extent. Another source of infection was doubtless cases of typhoid imported by regiments coming from other places, but the disease did not assume alarming proportions until about August 10, after the rains had ceased. The water supply has been, by the public press, credited with a great deal of the disease in Chickamauga Park. This supply was from four sources. The springs outside of the park, from which the water was hauled by mule teams, were, I believe, sources of pure water, and from one of these I supplied the hospital, in which our mortality was 14 out of 984 patients. The second supply was by pipe line from Crawfish spring. In regard to the purity of this water there has been a dispute. The influent pipe was, until August 6, at least a mile below the spring, but after that date was carried up the river to a point near the spring, but after digesting all the causes of typhoid in the camp, I am disposed to give credence to those who have pronounced this water to have been pure. The third source was from drilled wells. Into them was dropped a tube with a pump attached, and the surface water reached and polluted that water, and it was impure. For a time some troops got water from these wells, but they were shut off by order of S. H. Hysell, Division Surgeon-Major. The form of typhoid fever prevailing was not always of a severe type. Hundreds of these cases were called cases of malarial poisoning. They went about in camp, unfitted for duty, growing thin and pale and eventually went to bed, or beginning to convalesce, got well, uncertain as to whether they had malarial fever or typhoid. Outside of typhoid fever and the results of indiscretion the troops were comparatively healthy, and cases of ordinary sickness did not exceed a reasonable expectancy in camp life. The medical staff of the army at Chickamauga were men of more than average ability, and I have never before seen a more enthusiastic devotion to duty than was evinced by them. As commanding officer of the second division hospital, I had seven commissioned

officers. Six of these were medical directors. Major H. B. Bagley of Wheeling, W. Va., had charge of the surgical department, with Captain Dutton of Minneapolis as his colleague. Major P. J. Myers of Fostoria, O., had charge of one half of the medical wards, with Lieutenant Little, of Macon, Ga., for his colleague. Major Charlton of Indianapolis, with Lieutenant Nesbitt of Fairmont, W. Va., had charge of the other half. The devotion of these men to their respective duties is best told in the statement that of 984 patients on the hospital register, but fourteen died. The hospital averaged about two hundred and twenty-five patients and occupied within its site for all tentage about three acres of ground. The hospital corps after August 20, consisted of about one hundred and fifty men. Prior to this date it was as low as thirty-nine members. From this corps, nurses, cooks, clerks, guards, men for general utility work, keeping grounds clean, hauling water with mule teams, etc., were furnished. Lieutenant Cary, seventh officer, from Duluth, Minn., had charge of the commissary department, and proved to be an able officer. The rations furnished by the government were of good quality and abundant. In addition a liberal supply of fresh meats was furnished daily. We had three kitchens running constantly, with men cooks, as there was not a woman helper on the plant. The Red Cross Society, the National Relief Society, the Army and Navy League of Cincinnati and also the auxiliary Red Cross of Pittsburg, furnished me with large quantities of supplies, well adapted to the use of the sick. The latter were well supplied with pajamas, night shirts, slippers, towels, soap, jellies and jams. There are many things in the way of new drugs which the government does not furnish, and the division hospitals and general hospitals receive almost the entire attention of the societies mentioned. The regimental hospitals were left almost entirely without any of these things for their sick, whom they were expected to send into the division hospital promptly, but the latter was often so full that they could not receive them as rapidly as was expected, and consequently for this and other reasons there were at all times sick in the regimental hospitals. The Pittsburg Red Cross sent me \$500 in cash, which I distributed largely among the chaplains of the various regiments, for the purchase of milk, butter, poultry and unfurnished drugs for the use of the sick detained in the regimental hospitals. When we take into consideration the fact that the government, in a remarkably short time, aggregated an enormous army of inexperienced and undisciplined soldiers and undertook its maintenance and its detailed care, any unprejudiced observer, with any prior army experience, must arrive at the conclusion that the government has done well. There were times when the supplies of lumber for tent floors and cots were difficult to procure quickly, and unless an emergency had existed requiring their immediate use the delay would not have been serious. Moreover, it is possible that some delay may have occurred in the delivery of these things from other causes than a scarcity of the articles. When you compare the condition of the soldiers in Chickamauga Park in 1898 and in 1863 and 1864, you are forced to the conclusion that the soldiers of 1898 had the best of it. Before I went into the service I wrote to Senator Quay saying that the troops ought to be located and prepared for service in northern camps, and I have no reason to change that opinion. It has been stated

that our Northern troops would naturally suffer more in a southern climate in camp life than Southern troops would, but the First Georgia volunteer infantry was a part of the second division and I received their sick at the division hospital. They contributed a larger portion to the sick than any other regiment in the division. The fact that they were acclimated was not sufficient to enable them to stand up to camp duties in their own State any better, nor as well, as their more sturdy brethren from the Northern States, and I believe now that Southern troops should be drilled in Northern camps, in a summer season pending a campaign. These observations apply only to the portion of the army at Chickamauga, and are not presented as the views of other officers, who may have looked at matters from another standpoint. There has been an enormous amount of exaggeration in regard to the condition of affairs. Of course there have been instances of seemingly unnecessary suffering, but I know of no instance which was followed by death or other serious consequences, and in an army without battle-wounds it is difficult to conceive how the hard conditions of war could prevail to any extent. There were times when sick men were lying on the ground, which was dry and carefully cleaned, and they were under cover. This was only temporary; whereas in the Civil War it was a constant occurrence. This time the rations were abundant, the delicacies more than enough, tents were always at hand. On the night of September 8, a sudden cold wave swept over the camp at Knoxville. The patients in the division hospital did not all have blankets enough, and the army supplies were not at hand, as the emergency was not expected. At 9 P.M., two or three hours after the wave had struck the army, I had a wholesale merchant hunted up in Knoxville and with the money furnished by the Pittsburg Red Cross, I purchased 100 double blankets and sent them up to Major Bagley, then in charge, and some patients were made more comfortable. While it would have been well to have had an extra supply I can scarcely conceive of any negligence on the part of the government to meet an almost unprecedented cold snap at this season of the year in that climate.

Where large bodies of troops are to be kept in one camp for a period beyond fifteen days, the government should provide crematories for the burning of all kitchen garbage and hospital refuse gathered daily. The sinks for reception of stools should be deep, and so inclosed that the pit is perfectly dark. A building of boards should be erected over the sink, proper seats with lids should be within it, and the entire building should be coated with several layers of a solution of lime, carbolic acid and formalin, and several gallons of the latter, in 1 per cent., solution, should be thrown into the sink daily. A solution of formalin is superior for the disinfection of typhoid stools, and such stools should be disinfected in a sink designated to receive infected stools only.

The lessons of the war are many, and are not yet all revealed. The country at large will profit by it, while individuals in many instances will reap sorrow and disappointment. I would again suggest, as I have already done, that inoculation for typhoid fever be tried on all troops going to Cuba, excepting in cases where the soldier has had the disease within a few years. Three soldiers, companions, left Chickamauga for Porto Rico. One, convalescent from typhoid, bemoans his hard luck, two, perfectly well,

were jubilant. On the voyage out the invalid recovered, grew strong and returned well. The other two developed typhoid fever and died in Porto Rico. Here is, in this illustration, the sequel of the whole question of immunity, its importance, and its possibility. Surely a serum can be prepared for the attempt.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT
IN RECOGNITION OF THEIR LABORS IN THE SURGERY
OF THE PERINEUM.

BY BYRON ROBINSON, B.S., M.D.
CHICAGO, ILL.

Continued from page 788.

GENERAL CONCLUSIONS.

1. To cure sacropubic hernia (uterine prolapse), perform amputation of the (sharp) cervix; anterior colporrhaphy; Tait's flap perineorrhaphy.
2. The amputation of the cervix is for the purpose of removing the sharp cervical point; directing the cervix backward; restoring the uterus to normal position.
3. The anterior colporrhaphy is for the purpose of narrowing the vagina; elevating the bladder, directing the cervix backward and the fundus forward.
4. The Tait flap perineorrhaphy is for the purpose of restoring the perineum; restoring the obliquity of the genital canal; restoring such a central floor as will efficiently support the rectum, bladder, and genitals.
5. If the cervix be not pointed and retroversion does not exist amputation of the cervix may be omitted in the above procedure.

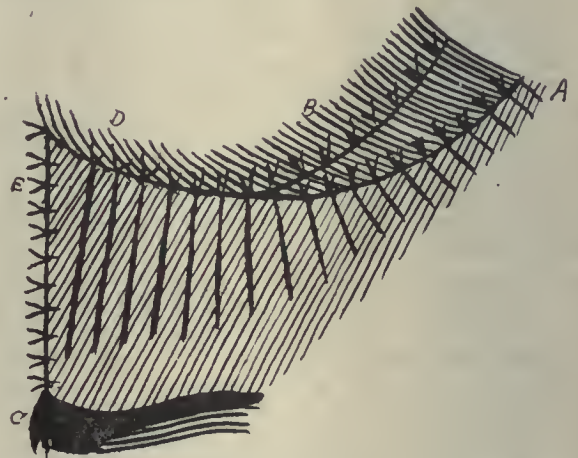


Fig. 30.—Profile view of A. Martin's colpoperineorrhaphy posterior. A, B, elytrorrhaphy; D, E, C, perineauxesis.

6. If the uterus and bladder be in normal position and the vagina not prolapsed, anterior colporrhaphy may be omitted.
7. The permanent success of Tait's perineal flap operation consists in extensive flaps (by means of front and back cuts) and the drawing into the median line of large masses of lateral tissue for a pelvic floor. These lateral masses are drawn in and secured for weeks by deep sutures of silkworm gut. These deep sutures, six to eight in number, act like splints for four to eight weeks, and though part of the wound suppurates, the sutures maintain it in coaptation while it granulates and heals.

8. Our operations have proved definitely that the rectal sphincters may be practically restored to normal, even after long periods of rupture. One case of thirty-four years' standing, with two previous unsuccessful denuding perineorrhaphies and a complete laceration of three inches up the rectum was restored to perfect function.

9. The three surgical procedures described will obviate hysterectomy in many cases.

10. The flattening out of the operation, or the yielding of the union, or the stretching of the parts allowing prolapse, will depend especially on the flaps and the amount of tissue permanently drawn into the middle line.

12. We especially insist that better results are obtained by allowing the silkworm gut sutures to remain in position for from four to six weeks. Should any suppurate they may be removed at any time. Wounds do not heal very firmly under three weeks.

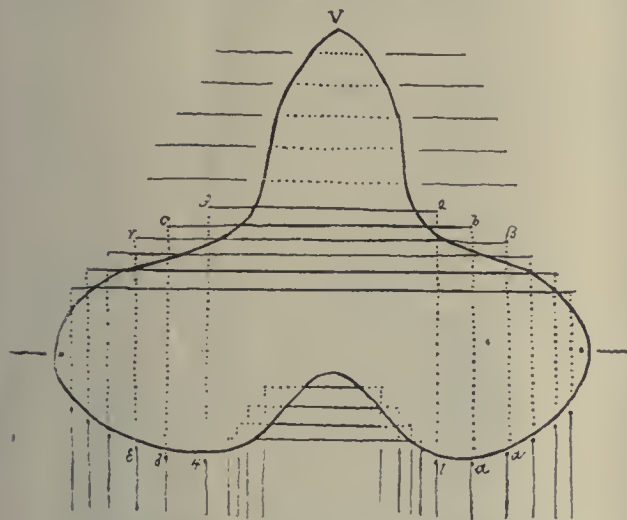


Fig. 31.—Hildebrandt's method of denudation and suturing. The dotted lines show the sutures under the tissues. The denuded area is that of a trefoil. Hepner's method of suture is that of a figure 8. Cleveland's method is simply a peculiar method of suturing.

13. We feel decided in stating from our own experience that the flap operation should not be disturbed by dressings. The patient should be kept quiet for three days, and then a vaginal douche may be given daily. After the first half day the wound is hermetically sealed by its own oozing. The limbs should be tied together at the knees. The bladder will generally require the use of the catheter for two to four days. Morphine injections of 1/16 of a grain may be given to quiet the pain and induce rest.

14. The dissection of the rectum from the vagina for one to three inches, was added from my own experience, as I never saw Mr. Tait do this. This additional procedure lengthens the operation to fifteen to thirty minutes; Mr. Tait performs his operation in five to ten minutes.

15. The result of the foregoing surgical procedure has been gratifyingly successful.

16. The flap operation fits any and every case, for it resplits the old cicatrix and restores and adds what is required.

17. In no single case, in over 150 which I have observed, was the flap operation not applicable.

18. The flap method makes little scar tissue, as the operative procedure is performed in connective tissue while cicatrices form in skin and mucosa. In the flap colpoperineorrhaphy the posterior vaginal wall is made to sustain the anterior.

19. In the flap operation the vaginal walls are made to give their full support to the uterus—the posterior wall sustains the anterior vaginal wall and bladder—and also to support and direct backward the rectal wall.

The flap perineorrhaphy has been chiefly revised and introduced to the profession by Mr. Lawson Tait of Birmingham, England. It is true the flap perineal operation was performed in various ways by others, as Duncan, Colles, Jenks, Marcy and Langenbeck. But Mr. Tait gave it a new impetus, and also performed it with new phases. He performed it with elbow scissors and introduced sutures which neither penetrated skin nor mucous membrane. As a pupil of Mr. Tait, for six months, I had ample opportunity to observe his methods of operation. The principle of operation consists in resplitting the old perineal cicatrix without loss of tissue, with fixed coaptation of the flaps. After observing Mr. Tait's methods I

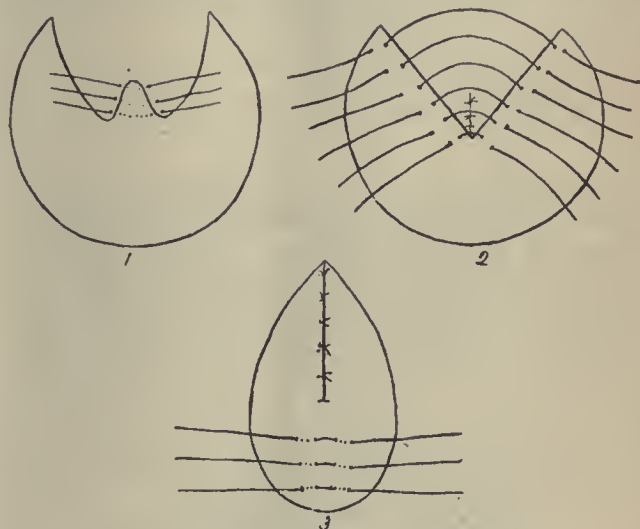


Fig. 32.—(After Pozzi.) Lautenbach's method in incomplete rupture of the perineum. 1, suture of the superior angle; 2, submucous suture of the vaginal wall; 3, buried sutures deep in the wound.

naturally practised the operation as performed by him and his assistants. About a year later I began to modify the operation by dissecting the rectum and vagina from each other for a variable but long distance (1 to 2½ inches) above the vulva or anus. This modification enabled me to apply it to almost all forms of prolapse, relaxed vaginal wall or perineal laceration; in short, in all conditions requiring perineorrhaphy and colporrhaphy posterior. The objections raised against the flap method we found, after over six years' trial, were not well founded. One objection is that Tait's flap-perineorrhaphy is a "skin operation." If performed superficially it may be subject to the above criticism. However, such criticism can only be applied to imperfect execution. The operator must carefully guard against closing the vulva too far. One can easily make an excessive perineum by the flap method. This objection is, as a matter of fact, worthless. Another objection is that the flap method in no way narrows the vagina. This objection will not hold, as the vagina can be narrowed so as to embrace tightly a single index finger. In fact, we can dissect the rectum and vagina from each other for three inches, up to the peritoneum, or as high as desired, and narrow the lower third of the vagina as much as the operator sees fit. The upper two-thirds of the vagina does not require narrowing. Another

objection is that it does not approximate the fibers of the levator ani. It is the operation par excellence to unite the deranged or torn levator ani fibers, because the dissection is carried beyond the levator ani fascia superior and inferior through the levator ani muscle. In fact, it enables the operator to secure both the levator ani fascia superior and inferior, which embraces the levator ani muscle. One must secure the levator ani fascia in order to secure the levator ani muscle, which is guarded and embraced by a definite fascial sheath. The flap operation reunites the posterior vaginal fascial septum without denudation, as Emmet's operation unites it with denudation. Both Emmet's and Tait's operations are based anatomic-

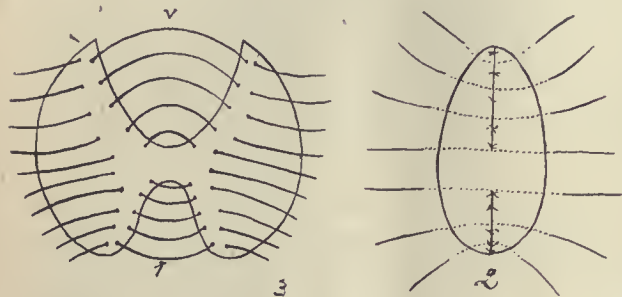
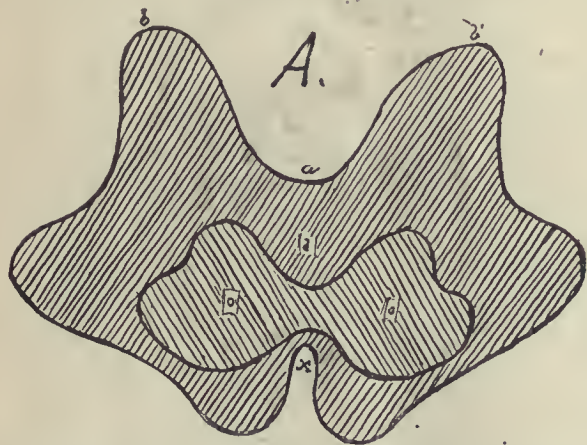


Fig. 33.—Lauenstein's suture in complete laceration. 1. introduction of sutures which coapt the vagina and rectal mucosa; 2. introduction of the perineal sutures after the vaginal and rectal have been fastened.

ally on the same principle—one denudes however, and the other does not, but employs a flap to cover the wound. My practice is to dissect the rectum and vagina in the lateral sulci. In the American Text-book of Gynecology the writer on "Flap-splitting Perineorrhaphy" makes the following absurd statements: "Its field of usefulness is very limited indeed. Practically it is applicable to those cases in which only the superficial and most exterior fibers of the



perineum are torn." The above views can certainly be based only on imperfect knowledge, execution, or observation of the operation. We can affirm that it is one of the most certain and effective of all operations on the perineum. The flap method of colpo-perineorrhaphy is the one above all others that enables an operator to reunite the levator ani fascia superior and inferior with the enclosed levator ani muscle without blind searching, to abolish a rectocele, and to repair prolapse of the uterus. The same writer cited above makes a further statement as ridiculous as the first, that, "In no way possible can this operation (flap-splitting) narrow the vagina, abolish a rectocele, or bring together the separated fibers of the pelvic

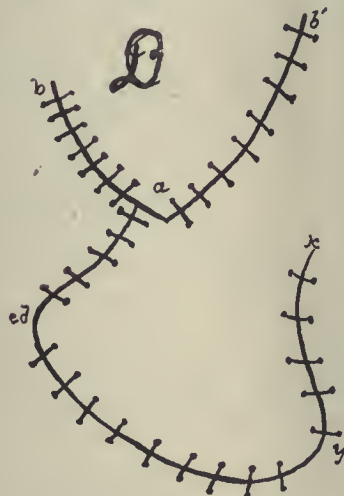
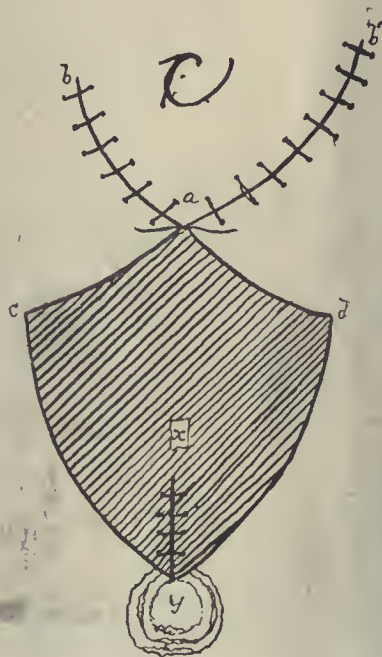
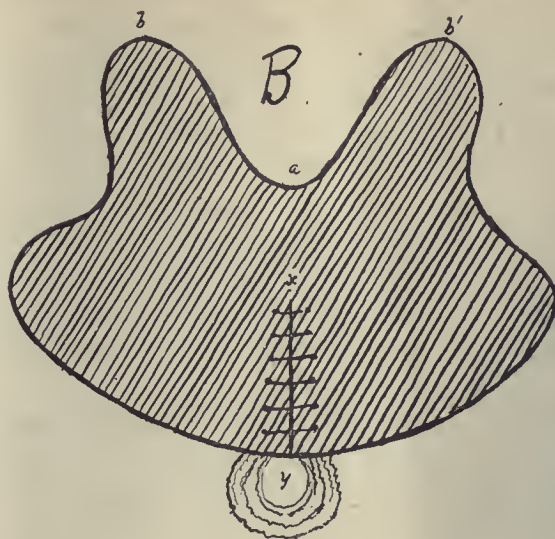


Fig. 34 A, B, C, D.—(After Pozzi.) Freund's method. Freund insists that we should make the denudation exactly as the perineum appeared when originally torn. For example, the cicatrix, O, O, originally appeared as large as B, B, X, in A, and should be denuded to that size; the line X, Y, in B represents the rectal suturing; the line of sutures, B, A, B, in C shows the vaginal part sewed up; X, Y, corresponds to the rectum suturing; A, C, Y, D, in C, the denuded perineal area, which is still unsutured;

D. the final disposition of the sutures in Freund's method. It is an excellent one, but complicated, and is wrought with much sacrifice of tissue if the operation fails.

fascia." It is fortunate that this "American" text-book does not represent the views of all Americans. The flap-splitting perineorrhaphy, in the hands of those who have thoroughly practised it, has proved absolutely that it will narrow the vagina, abolish a rectocele, and bring together the separated fibers of the levator ani fascia superior and inferior with the fibers of the levator ani muscles. Also it securely unites the ligamenta ischio-perinei. The flap method is alike useful in partial and complete operations, and in high rectovaginal dissections does all that Emmet's does, with no denudations, and with a better chance of healing, by avoiding the infectious atrium. Also, like Emmet's operation, Tait's flap-splitting is founded on anatomic structures and designed to restore physiologic functions. Both operations have come to stay. The conception of the flap-splitting operation rests on the pathologic conditions of the wound. If one examines a vulva with lacerations, he will see linear cicatrices, narrow white lines which are transverse in dissection. These white lines are the healed cicatrices of the old perineal lacerations. The linear cicatrix is healed at right angles to the original wound or rent. Wounds generally heal in the direction of the tear.

incision as is practised in Dr. Senn's clinic. In suturing the split cicatricial wound at right angles to itself we restore exactly the original normal structures of the perineum. By this method the perineum and relations are restored to the normal condition, which



Fig. 36.—A perineal laceration to the rectum. Two fingers of the left hand are in the rectum; the recto-vaginal septum is put on lateral tension by the traction forceps on each side; the blade of the scissors is inserted between the rectal and vaginal walls, and the dotted line marks out the flap to be produced.

alone will withstand subsequent labors. The patient should be prepared for three days before the operation by cathartics, so that the digestive tract may be thoroughly evacuated. The cathartics should be so

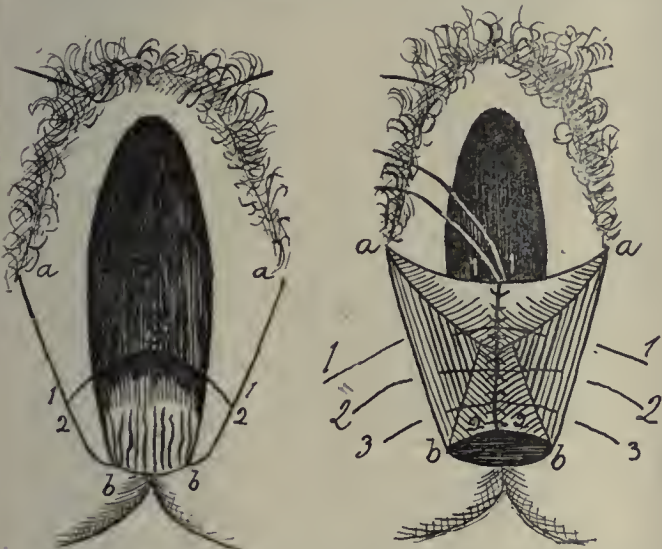


Fig. 35.—(After Pozzi.) A. R. Simpson's method. It is really a flap operation. In the left hand cut, a, b and c represent the lines of incision to make the flaps; S, vagina; 1, 1, vaginal flap; 2, 2, rectal flap. The scissors are first entered at b, and the point emerges at a, and then a clip is made; second, the scissors are entered at 1, and pushed between the vaginal and rectal walls over to 1, and a clip makes the rectal and vaginal flap. Dissect the vaginal flap from the rectal as high as the case requires. To do this, seize the vaginal flap with several small forceps, which the assistant can gently hold; also seize the rectal flaps with several small forceps and allow them to hang, as their weight is sufficient to put the flap on tension; with the two fingers in the rectum and a pair of blunt-pointed scissors the dissection of the flaps is conveniently made. The sutures are introduced as shown in the cut. Observe that in this operation four flaps are made and that the rectal and vaginal walls are sutured separately; also note that the sutures 1, 2, 3, are entered by passing through the skin. The suturing and flap making is absolutely different from that of Mr. Tait's flap method, in which only one flap is made and no sutures enter the skin or mucosa, and all sutures are in dead tissue.

On this peculiar condition of the cicatrix being at right angles to the wound is based the flap-splitting method of Mr. Tait. The transverse cicatrix is split and sutured at right angles to itself. It simulates the Heinike-Mikulicz pyloroplasty when the wound is sutured exactly in the opposite direction to its incision. It is the same procedure as one may employ in varicocele to shorten the scrotum, i.e., incise the scrotum along the spermatic cord for three inches and then suture the scrotal wound at right angles to the

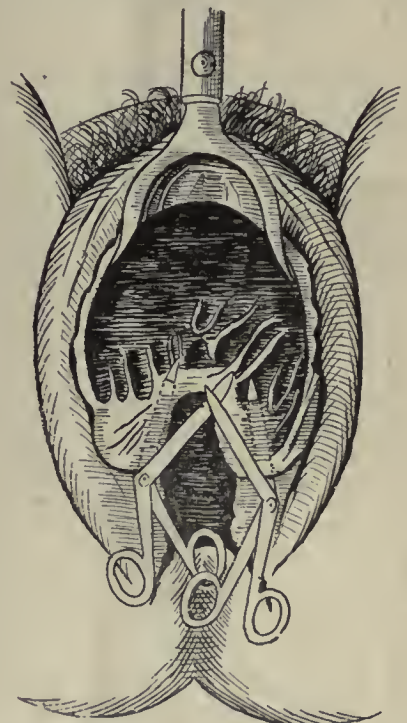


Fig. 37.—(Modified from Pozzi.) A very extensive recto-vaginal laceration of old standing, with large radiating cicatricial tissue showing healing lines. The accissor blades on each side introduced between the rectal and vaginal walls at the cicatricial margins illustrate how the flaps are produced. "Back cuts" extend to the scissor handles; the back cuts are made to produce a larger perineal body. A Sims' speculum is inserted into the vagina, anteriorly.

administered that all defecation should cease 8 to 10 hours before the operation. There will then be no feces in the rectum during the operation nor for some hours subsequent. The patient is anesthetized, and

lies on the back. The instruments useful in this operation are elbow scissors, a handled needle with an eye in its pointed end, and strong silkworm gut. The silk worm gut should be thoroughly washed with soap and water. The index and middle finger are introduced into the rectum, and the recto-vaginal septum is divided in the linear cicatrix. The scissors point is then forced under the skin of the labia and carried upward as far as desired and clipped. The opposite side is treated exactly the same. Back cuts are now made on each side of the rectum as long as desired. In slight operations the back cuts are not required. The anterior vaginal flap is seized with forceps and drawn forward, while the posterior rectal flap is seized and drawn backward. We dissect the rectum from the vagina as high as desired ($1\frac{1}{4}$ to 3 inches). At the same time the lateral space on each side of the vagina is dissected as extensively as is required to make the perineal body. (See Fig. 19) The two fingers of the left hand are kept continually in the rectum as a guide. The extent of the dissection is governed by the condition of the parts, the size of the wound, and the object in view; whether it be narrowing the vagina, extension of the perineum, or almost closing the passage for prolapse. With considerable dissection, a few arteries may need clamping; however, the hot irrigation will nearly always be sufficient to check the hemorrhage. If the bulb be cut it will bleed profusely, but sponge-pressure will soon check it. If the scissors cut open a vulvo-vaginal abscess the whole gland should be dissected out and disinfected, in order to avoid an abscess in the wound.

(To be continued.)

SOCIETY PROCEEDINGS.

Chicago Gynecological Society.

Regular meeting held Sept. 18, 1898.

The President, Dr. HENRY P. NEWMAN, in the Chair.

Dr. JOSEPH PRICE of PHILADELPHIA (by invitation) read a paper entitled

ABDOMINAL VS. VAGINAL SECTION IN PELVIC SURGERY.

He said it was very difficult to consider some of the opinions of recent adoption by surgeons with a judicial temper and impartiality. These different opinions had a surgical importance, in that problems arose, and their discussion would not and should not down until they were satisfactorily settled. If his own views were distinct and had something of a dogmatic ring, it was because they were forced upon him by actual experience and observation. Many practising the vaginal operation had the impression that the operation had not been universally adopted because physicians did not understand it; that it was difficult, dangerous, or impossible in their hands; that it required for its successful performance a peculiar aptitude, a special training and adeptness. This was a mistake. A number of men who opposed the vaginal operation had done it successfully; their mortality had been quite as low as that of those who advocated and made the procedure their adopted one. They did the suprapubic operation, influenced by the logic of their experience, by purely surgical and pathologic reasons, and it was the operation of their choice because it gave the most complete results, left less dangerous or annoying sequelæ, and less risk of the necessity for repeated operations. By the suprapubic route surgical cleanliness and surgical completeness were possible; by the vaginal they were not. The difference between the advocates of the abdominal method and those who criticized it was that the advocate spoke according to his knowledge and of the facts which actual clinical experience had confirmed; the critic according to his failures, disappointments and prejudices. The one had uniform success eu-

taining him; the other humiliating failures which inspired and gave color to his opinions. The French and Belgians were never successful in doing the suprapubic operation. The successful American, English and German operators had practised both methods for years, adopting the suprapubic procedure for tubal and ovarian disease, and the vaginal route for malignancy. The results of these men were uniformly good; they adapted their operation to actual pathologic conditions; they operated for actual disease, and not for all sorts of fancied conditions, or for vague nervous disorders due frequently to emotional susceptibility.

He said it was simply amazing how common it was with some operators to begin two distinct operations and complete neither. Good operators sometimes made a free opening into the abdomen, inspected and backed out, and then attempted the vaginal route and abandoned it after the puncture of one or more accumulations and drainage. The relief following mere puncture and drainage was only temporary. The drainage of one or more pus-pockets, where many existed in a large, tortuous, puriform tube or tubes, and where we had one or more ovarian abscesses, never cured. The only cure was the removal of the diseased member. He thought surgeons need only appeal to actual clinical facts in the experience of some prominent vaginal operators to show how difficult and incomplete their work was when they encountered deep-seated and complicated pathologic conditions, and also in how very many cases the result was fatal. In relation to results from any procedure, no reliance could be placed on the statistics of men who selected only favorable cases for operation and rejected the unfavorable. These men in his opinion had no right to compare their results with those of men who did not reject the desperate cases. Imperfect and incomplete work by the abdominal route was a feeble argument in favor of the vaginal. The fault was not in the procedure, but in the operator, his lack of wide clinical experience in dealing with gynecologic troubles or lack of surgical courage to complete the work he began. The removal of pathologic conditions was easier from above than from below, because the structures were more easily defined and lines of cleavage or enucleation were from important structures and not toward them or into them; there was no difficulty in securing arteries, as they could be seen and felt pulsating beneath the fingers. The operation was precise; it could be made mathematically certain in its limits; the incision was directly under the eye and under the absolute control of the fingers; it was not a stab about in the dark among vital organs as in the vaginal route; it enabled the easy freeing of omentum and bowel when adherent, and the repair of all disorganized parts. These were important considerations.

Careful examination of statistics coming from reliable sources went to show that abdominal pain continued in very many cases operated upon by the vaginal route and followed too many imperfectly, incompletely and ignorantly operated upon by the suprapubic method. These disagreeable symptoms complained of by patients after operation were nearly always the result of leaving omental and intestinal adhesions. The profession was too prone to talk about the septic uterus. A patient with a septic uterus was very ill and usually died speedily. There were few things that killed a woman quicker than a septic uterus. The essayist was daily doing sections, and while dealing with all sorts of complications and adhesions, dangerous twists and contortions, strong adhesions or fixation of crossed viscera, the sigmoid strongly adherent to the anterior face of the right tube and broad ligament, the cecum and appendix out of position and adherent, he could not but experience a sense of surprise that experienced surgeons (who have in the past done good abdominal work) could forget or ignore the lessons of their experience and deliberately extirpate the little healthy uterus and pass by pathologic lesions and complications constituting the real and only source of trouble. Surgery would be more judicious and successful if more care and skill were exercised in determining definitely the trouble for which operations were performed and the procedure strictly adapted to actual conditions. No one method should be pursued in all cases; the symptoms and conditions present must largely guide the surgeon in the selection of a procedure. It was important to select with great care the cases favorable to the application of any particular method. Sinuses were just as frequent and distressing in the vaginal vault as in the abdominal incision. Menopause nervous phenomena were about the same in both procedures, when completed.

In a series of 403 cases of vaginal hysterectomy, including about all conditions for which it was done, total general prolapse, etc., Jacobs had 9 fistulæ after the operations, yet he said that "subsequent fistulæ were exceedingly rare." He had observed 5 intestinal, 3 visceral and 1 ureteral fistulæ. Further, he remarks that "in most of the cases these fistulæ

existed prior to the operation; there were fistulous passages which extended between the purulent foci and some part of the intestine. These passages were so large, and with walls so well organized that the disappearance of the purulent pockets did not suffice to bring about the subsequent and spontaneous cure." In all such cases the speaker relieves adhesions, trims and repairs all lesions, with the most pleasing results, without any of the sequelae of fistulous openings given by Jacobs as following the vaginal procedure.

D. FERNAND HENROTIN opened the discussion with a paper entitled

THE INDICATIONS FOR INTERFERENCE BY WAY OF THE VAGINA IN PELVIC DISEASES: AN ANSWER TO DR. JOSEPH PRICE.

At the outset, he held that the vaginal route was a proper channel to attack pelvic disease in women in certain selected cases only. As better inspection and palpation of the pelvic organs could be obtained by an abdominal incision, it was conceded that all patients to be operated vaginally must present special indications, and that in cases of doubt the abdominal incision was most proper. In favor of vaginal section it may be said that where the same results can be obtained vaginally, this route should be accepted, as it avoids the abdominal scar, lessens the shock and is much less frequently followed by hernia. Although one of the first to advocate the treatment of pelvic affections by way of the vagina in selected cases, he was most willing to admit that this method was not so much in vogue with experienced operators as it was three years ago, and for very good reasons, one of which was that our knowledge of the prevalence of appendicitis in conjunction with pelvic trouble made it incumbent to operate by an abdominal incision when any degree of this affection was even suspected, and we had learned in later years that this condition was common. The primary incision, whether it be through the abdomen above the pelvis, or through the vaginal vault, was to a degree always an exploration. The infinite variety of intra-abdominal complications made it so. This primary incision was as frequently curative by way of the vagina, and even more frequently so, than the abdominal cut. This was by reason of the ease and directness of drainage. The early vaginal incision, to those who understood it and had the skill to perform it properly, was the ideal of conservative surgery. This incision, like all vaginal operations, was only applicable to selected cases. By early vaginal incision was meant an incision that cures the localized septic pelvic infection in its very beginning, the woman remaining thereafter not only symptomatically, but physiologically perfect. It was particularly applicable to the treatment of acute ovarian abscess. This disease, he believes, is more common by far than is generally supposed. Its most general cause was abortion and trauma. It was the most common extra-uterine form of pelvic sepsis that occurred following early miscarriages, criminal abortion and unclean surgical manipulations. After two or three days of fever the presence of exudate could usually be recognized at the sides or behind the uterus. This meant ovarian abscesses in eight or nine cases out of ten.

Vaginal hysterectomy was sometimes advisable, and in some cases was infinitely superior to any abdominal operation that could be performed on the same patient. Experienced operators who were equally skilled in vaginal, as well as in abdominal work, were doing less vaginal work now than they were two years ago. At least, this was his belief; not because vaginal hysterectomy was not a very proper and sometimes the best operation to be performed in certain cases, but because it was a radical operation and because the field of all radical operations had been much restricted for the last few years. Salpingectomy, ovarian resection, vaginal incision; had all done their share in the salvation of scores of uteri. While abdominal operators were improving their methods and perfecting their results, the vaginal workers were developing the possibilities of the vaginal incision, and he claims today that one, if not the greatest of modern conservative gynecologic triumphs, is the thoroughly understood and properly performed vaginal section in selected cases. And there are many. As regards vaginal hysterectomy, it still had, in the opinion of the speaker, a perfectly defined position. In women necessarily sterile and approaching the menopause, where bilateral peritubal disease existed, and was situated low in the pelvis and with a roomy vagina, particularly in those with extensive and disseminated suppuration, who were low with septic fever, and especially where the abdominal wall was very fat, vaginal hysterectomy was still by far the preferable operation, and when skillfully performed, in a large series would always give the best results. To demonstrate his own opinion as regards selection, Dr. Henrotin presented a table showing the frequency of vaginal as compared with abdominal incision,

and the character of the intervention, from which it will be seen what an important factor the conservative operation has become, and frequently he believes vaginal section applicable. These operations were performed from January, 1897, to July, 1898. Reference is made only to such as were done for clearly defined pelvic disease, and the list does not include abdominal operations on the kidney, liver, gall-bladder, appendix, intestine (hernia) or any miscellaneous intra-abdominal work in which the internal genitalia were not involved. Of 180 such operations there were:

SUPRAPUBIC CELIOTOMIES, 132.

Conservative operations on the adnexa, always leaving ovarian tissue and uterus	62
Double salpingo-oophorectomy	4
Single salpingo-oophorectomy for ruptured ectopic gestation	8
Myomectomy	3
Hysterectomy for fibroids	14
Hysterectomy for sepsis	8
Hysterectomy for prolapse	3
Miscellaneous operations for adhesions; ovarian, dermoid and intra-ligamentous cysts; sarcomas and hard ovarian tumors, etc.	30
	132

VAGINAL OPERATIONS, 44.

Early section for recent disease	8
Late section for old disease	18
Single salpingo-oophorectomy	1
Section for large ovarian cyst, and its removal after tapping	1
Section for septic ruptured ectopic gestation	1
Hysterectomy for sepsis	10
Hysterectomy for fibroids	2
Hysterectomy for cancer	1
Hysterectomy for prolapse	2
	44

Vagino-abdominal operations for cancer, 4. Total, 180.

Dr. FRANKLIN H. MARTIN said that the best all-around gynecologist was the one who selected the operation suitable for the particular case in hand. It was impossible to do good surgery by operating suprapubically or by the vagina in all cases. It was his belief that all major surgery could be done best through the abdomen, as a rule, while all minor surgery could be done by the vagina. All surgery of importance should be done through the abdomen: 1, because the surgeon could see what he is doing; 2, he could do what he wanted; and 3, he could do it quicker. The cases he would reserve for the vaginal route would be those of carcinoma of the cervix of the proliferating variety, or flat cell epithelioma filling up the vagina, but which seldom extended beyond the cervix, and infected the lymphatic glands. In all other cases, where there was any question as to cancer involving the vagina, he would remove the uterus from above, and if later it was found that the glands were diseased, he would remove them also. Cases of double pyosalpinx, large fibroids, cystomata, and all cases of extra-uterine pregnancy should be dealt with suprapubically.

Dr. HENRY T. BYFORD held that to operate on all cases either suprapubically or by the vagina was unreasonable. He believed that just as efficient work could be accomplished by the vagina as through the abdomen. There were certain pathologic conditions in the bottom of the pelvis in some cases that could not be operated as well from above as from below. He emphasized the importance of carefully selecting the cases for either route.

Dr. JAMES H. ETHERIDGE thought the discussion had the appearance of placing the advocates of the two operations in the attitude of rivals. He did not believe this. He held that we have two separate things to deal with, and that good work could be done by the vaginal or suprapubic method of operating. There were cases in which the vaginal route was applicable, while there were others in which the abdominal method was suitable, and the wisdom and experience of such men as Drs. Price and Henrotin could define the limits of those cases to be operated upon vaginally and those that were best adapted to the suprapubic route. A strong objection to the vaginal route was that operators worked largely in the dark. Hemostasis was unsatisfactory and, added to this, there was danger of wounding the bowel. He had seen one case in which death was caused from wounding the bowel, but which was only discovered postmortem.

Dr. REUDEN PETERSON said that any one who had done considerable abdominal work must have seen cases that he dreaded to approach by the suprapubic route. For many years nearly all work was directed entirely through the abdomen in dealing with the pathologic conditions under discussion. Each method had its field of usefulness and it remained for gynecologists to select their cases and choose the method to employ.

Further discussion of this subject was deferred until the next meeting.

Dr. EMIL RIES read an inaugural thesis entitled "Results of the Extended Operation for Carcinoma Uteri."

PRAGTICAL NOTES.

Artificial Serum in Epilepsy.—De Fleury announces that injections of artificial serum enhance the effects of potassium bromid in epilepsy, so that much smaller doses are effective, with two or three injections of serum a day.—*Gazette Méd. de Liège*, September 15.

Creosote and Ichthyl for Tuberculosis.—H. Goldmann reports marked improvement in patients treated with ten to thirty drops of the following after each meal; Creosote carbonate, 15 grams; ichthyl, 15 grams; glycerin, 30 grams; peppermint water, 10 grams.—*Semaine Méd.*, September 7.

Gelatin for Gastric Hemorrhage.—V. Poliakov of Moscow reports a case of ulcer of the stomach with cardialgia, pyrosis and almost daily vomiting of blood for four months, which he treated with 10 per cent. gelatin three times a day, 2 c.c., for four weeks. It cured the hemorrhage and gastric pains, with no recurrence to date.—*Semaine Méd.*, July 27.

Automatic Kelene Tubes.—The *Gazette Méd. de Paris* mentions with approbation the automatic tubes for local anesthesia with chlorid of ethyl, which require but one hand, a novelty exhibited at the French Dental Congress, adding that experiments with chlorid of ethyl for general anesthesia now in progress promise very encouraging results.

Operative Dislocation of Goiter.—This is proposed by A. Wölfler for cases of inoperable goiter which threaten suffocation or interference with other vital functions. The goiter is detached from its bed, without disturbing the arteries, and transplanted to another place where it will not interfere to such an extent, usually higher up or farther around. He thermocauterized one case to reduce the size of the goiter, but he thinks it probable that the goiter would recede without this.—*Beiträge z. klin. Chir.* xxi, 2, in *Cbl. f. Chir.*

Mercury for Snake Bites.—The *Tribune Médica* of Rio de Janeiro, for June 10, describes the recovery of a young man after having been bitten by a cobra, causing in fifteen minutes intense headache, absolute blindness, copious hemorrhage in the spot, with alarming sweating of blood. He was given two grams of calomel and two of rhubarb at once, the spot disinfected, and the calomel kept up, six decigrams every six hours, until he had taken five doses. The writer has cured 128 persons with this treatment.

Subcutaneous Rupture of Large Arteries.—Traumatic occlusion of the large arteries from immediate obliteration, or a gradual obliteration from thrombosis, may heal without accident, but it is usually followed by gangrene—thirty out of forty cases. When called at once, and the indications of arrested circulation are noted, the first step is a careful disinfection of the skin, followed by wrapping the member in a thick layer of cotton without compressing it. This will prevent septic complications and if gangrene does occur, the chances are in favor of its remaining localized. The extent and gravity of the gangrene will also be reduced if the collateral circulation is promoted with prolonged hot baths. As the gangrenous accidents proceed less from the localized traumatic lesion of the artery than from the consecutive thrombosis and compression produced by the effusion of blood, it is wise to open into the periarterial sanguine focus, at least during the first few hours after the traumatism, evacuate it and ligate the ruptured vessel. At a later period, if the gangrene is menacing, high amputation may be required, but sometimes unexpected results are obtained with embalming, combined, if necessary, with extensive incisions, injections of very hot boiled water and wrapping in compresses dipped in alcohol. When the gangrene is dry and circumscribed, radical intervention should be postponed as long as possible, as it may prove unnecessary.—*Revue de Chir.*, April and June, 1898.

Lead Oxid Test for Urine.—Loubiou recommends the following simple test as very sensitive to small amounts of albumin, rapidly clarifying the most turbid urine. 1. Put 10 c.c. urine in a test-tube with one drop of phenol phthalein and add normal sodium drop by drop until the fluid is slightly pink, reversing the tube on the thumb after each drop of sodium. 2. Add 1 to 1½ gram of lead oxid; shake well and filter. 3. The pinkish tint is removed by the addition of a few drops of Tanret's reagent. The fluid is then brought to the boiling point and the albumin precipitated as usual.—*Bull. de la Soc. de Pharm. de Bordeaux*, July.

Midwifery Practice.—Muir (*Annals of Gyn. and Ped.*, September), in "Notes from Midwifery Practice," says that 75 per cent. of the gynecologists, so called, live from errors or incidents occurring during the parturition state, and that seven-eighths of the women coming under his observation (about 1600 confinement cases) for treatment, have been delivered by forceps. "Many a first-class, honest, careful physician is turned to one side because he gives his patients time to be delivered naturally, and another employed simply because he has the reputation of not allowing his patients to suffer, but uses chloroform and instruments early. The latter is the man who gives the gynecologist his inning." His rule is to never remove the placenta until he can feel the insertion of the cord quite easily, and he never gives ergot unless he knows his patient's habits and that it is indicated; he gives it hypodermatically. "Another thing I have learned by experience," he says, "is never to underrate the idea of the patient that things are not right. Time after time, I have been told this, but thinking it only some hallucination on my patient's part, afterward I have learned to my surprise, if not regret, that she was correct." In breech or foot presentations he has found the pain continuous, and in some cases was obliged to resort to chloroform, slightly, on account of the severity of the pain. He has never noticed an excessive quantity of liquor amnii in breech or foot presentations, but has in a case of club-foot. Whenever he has found an excessive quantity of amniotic fluid, the pains have been continuous from the first, also excessive and unnatural, and the patient has believed all was not right.

Fritsch's Incision in Cæsarian Section.—Steinthal (*Centralbl. f. Gyn.*, April 9, 1898) reports a case of Cæsarian section illustrating a complication which may arise in delivery through the transverse uterine incision of Fritsch. The patient was 34 years of age, and exhausted by long labor. The cause of obstruction was a myoma. Steinthal performed Cæsarian section by the method of Fritsch. There was little hemorrhage, as the uterine and ovarian arteries were controlled by manual compression. The child was partly extracted by the feet, but the head was held firmly in the uterine wound. It could be released only by making a vertical incision in addition to the transverse. An elastic ligature was then passed over the uterus down to the tumor. The placenta was extracted with but slight loss of blood. The tumor was found to be a subperitoneal growth with a broad pedicle, springing from the posterior surface of the uterus at the level of the os internum. Several knuckles of intestines were adherent to the tumor and had to be separated. Hysterectomy was performed, and the stump stitched to the lower angle of the wound. The author remarks that the object aimed at in the transverse incision was defeated by the necessity for adding the vertical section. Dr. C. Jewett (*Brooklyn Medical Journal*, September) believes Fritsch's incision can scarcely have any advantage over the longitudinal, provided the cut is confined to the upper or fundal portion of the uterus. Transverse section does not necessarily avoid the blood-vessels. Incision strictly in the median line would probably result in no more hemorrhage. Moreover, the vessels are easily controlled by manual compression or by the use of the cervical constrictor. All the advantages claimed for the transverse incision are realized in the longitudinal, by limiting the uterine wound to the thickened upper portion of the uterus.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, OCTOBER 8, 1898.

THE ANTITOXIN TREATMENT OF PNEUMONIA.

Dr. ANDREW H. SMITH of New York, in a recent paper¹ with the above title, read before the Association of American Physicians in May, states that it is very likely that in ordinary pneumonia there must be infection with succeeding generations of microbes. WELCH and others have shown that the virulence of the micrococcus lanceolatus is greatest when the coccus is youngest; that the most virulent microbes come from the edges of the consolidation. When the local process ceases to advance, it means that then young micro-organisms are no longer produced. This might be a reasonable explanation of the remarkable crisis in pneumonia, and yet the question arises, what share do the antitoxic products play in the result?

As long ago as 1888 NETTER² showed that mice and rabbits can be made immune to the micrococcus lanceolatus by injection of fluid from the dried spleens of infected animals. FOA observed that attenuated cultures of the micrococcus may render an animal immune for several months. Taking the serum from an immune animal, he was able to produce immunity in a second animal by its injection. The KLEMPERER brothers verified these observations. They also found that dogs may be protected against pneumonia by the use of serum of immune animals. This serum does not kill the cocci in the body, but prevents the formation of toxins in the infected animal, either by hindering the toxicogenic powers of the cocci, or by rendering the toxin inert after it is produced.

The KLEMPERERS also showed that man is but slightly susceptible to the action of the micrococcus lanceolatus, especially to its action when injected subcutaneously. They conclude that in man it is not the exudation into the lung substance that renders pneumonia such a grave disease, but the general intoxication that results. Eventually antitoxin is produced and recovery may result. Serum taken from patients after the crisis, is found to have a curative action in dogs, and the crisis in human pneumonia is due to the production of antitoxin. The resulting immunity is in man only temporary, and while we await the formation of antitoxin we treat pneumonic patients by supportive measures, but in the meantime the old and weak die.

By using the antitoxic serum from animals apparent benefit in hastening the crisis has been observed, but a final conclusion as to the value of the treatment has not yet been reached. The following are some of the observations in regard to the serum treatment of pneumonia:

LARA used the serum of immune rabbits and dogs, as well as a glycerin extract from the viscera of immune animals; the latter was accompanied by less disturbance, producing no general symptoms. The crisis occurred in from three to five days; the convalescence was rapid and complete, and the reporter considered the results of ten cases thus treated as encouraging. BOZZOLO treated five cases with rabbit serum; the temperature fell rapidly in each case. Four recovered and one died after the crisis. DE RENZI states the results obtained by using antipneumococcic serum as decidedly encouraging. WEISBECKER obtained marked improvement in the subjective conditions very soon after the injection of serum obtained from patients recovering from pneumonia. One of the patients in whom these favorable results were observed was a 3-year-old child. The distressing subjective symptoms in many cases disappear as if by magic. WASHBURNE³ in 1897 employed the serum of a pony which had been treated in the same manner as is now done in manufacturing diphtheria antitoxin, and this serum possessed marked protective powers. In some very unpromising cases this serum seemed to act favorably.

From this review of sero-therapy of pneumonia SMITH properly concludes that no decisive results have been obtained, but that there is sufficient to warrant further effort. There are very many difficulties in the way of this work. The extreme variability of the virulence of the micrococcus lanceolatus, and the corresponding uncertainty of the strength of the toxins produced are serious obstacles. Again, animals readily immunized may lose their immunity, and the serum from them becomes worthless. Hence conclusions can be established only with the greatest difficulty. Applying these laboratory observations to

¹ American Journal of Medical Sciences, October, 1898.

² Quoted by Smith, loco citato.

³ Journal of Pathology and Bacteriology, 1897.

the clinical study of pneumonia, it will at once be seen that the difficulties are still further increased. It is to be hoped that WASHBURN'S method of maintaining the virulence of the pneumococcus at a given point for a longer time may result in the production of a reliable antitoxin, and when a reliable antitoxin can be manufactured then the value of this treatment of pneumonia will soon be determined.

THE MARRIAGE OF THE UNFIT.

It comes, from time to time, within the editorial scope of the JOURNAL to notice propositions from medical sources to advance the public welfare by legislative or other limitations of the liberty or capacity of the individual to reproduce his species. Sometimes it is in the form of a proposal to castrate criminals, sometimes in that of proposed or attempted legislation against the marriage of epileptics or other defectives, and it is not very long since, if we remember correctly, that a bill was before a certain State legislature to have appointed a sort of board of health to pass on the physical and mental—and we trust also the moral—condition of all candidates for marriage. A similar proposition was, it is believed, also offered in France, but went no further than the medical, and probably some of the secular, journals; the conditions there at the present time exciting more anxiety on account of quantity rather than of quality of the population. As a medical question, however, it is still a living one, and probably will be until our medico-sociologic ideals and theories have more fully won their way into the practical usages of life, and can be effectively embodied into actually enforceable laws.

In the London *Lancet* of September 10, Dr. HARRY CAMPBELL publishes an article on "The Marriage of the Unfit," that is as radical in its views, if not in its actual proposals, as any that have appeared upon this general subject. He would prohibit or discourage marriage by, not only those who have suffered or are suffering from insanity, epilepsy, tuberculosis, heart disease, etc., but also by all who have or have had rheumatic fever, strangulated hernia, ovarian cyst, congenital defects of hearing, or any one of the chronic or acute functional nervous disorders; in fact, he would prohibit marriage altogether to that large class who are included under the general head of neurotics. While he does not propose legislation to this effect he holds that, as physicians, we should use all our influence to prevent marriage by those suffering from the above-named disorders and do our utmost to create such a higher ethical standard upon physiologic questions of this kind as would secure that such a self-denying ordinance could be possible on the part of the public that is specially concerned. He goes even further in his enthusiasm for the welfare of the race; while, from a sociologic point of view, he condemns polygamy; as a biologist, he regrets its discontinuance in civilized communities, and wishes that it could be utilized for

multiplication of the progeny of our athletes and intellectual giants.

The basal idea of Dr. CAMPBELL'S argument appears to be that, while natural selection is interfered with in the human species, the subsequent modification of the process called by WEISSMANN—"panmixia" is still more interfered with, and the result is a racial deterioration. Mankind does not advance physically by natural selection and does not adapt itself to its environment by panmixia for the simple reason that every one follows blindly his impulse and recklessly procreates, whether fitted for the function by a good heredity or not. Heredity is universal; the structure of any organ determines its reactions to any given environment, and structure is determined by heredity. Hence, according to his theories, the importance of an unexceptionable heredity and the need of restricting marriage where such does not exist.

The weak point in Dr. CAMPBELL'S argument—and it is the same in other similar statements of theories that would restrict marriage to any general or large extent—appears to us to be chiefly in that it does not take due account of the fact that Nature, in the operation of natural selection and panmixia, does not produce its results except through numerous experiments and failures, so to speak, and that these are as essential in its processes as are its successes. If we could eliminate all morbid or variable heredity in humanity or any section of it, it would require an absolutely unchanging environment to preserve its immunity, and progress in any direction would be perilous or impossible. The higher the state of culture or civilization the more complex are the conditions or problems of evolution and the more difficult will it be to modify them by any mere legislative restrictions or even by recommendations of individual self-restraint. We may advise as physicians but it would be presumptuous for us to expect our professional opinions to often outweigh the strongest personal impulses, to say nothing of social and other factors involved.

The State can reasonably interfere in prohibiting the marriage of the insane and also—perhaps, with less prospect of success—that of the tuberculous and epileptics. As regards the other disorders mentioned by Dr. CAMPBELL, it is hardly likely that even medical advice will be often asked, much less accepted. When we take account of all the vicissitudes of nervous and mental development and the absolute lack of any positive normal standards, any wholesale discouragement or even disparagement of the marriage of neurotics—including under this head all those who have suffered from functional disorders—might in certain points of view seem actually perilous to the welfare of the race. The existence of a functional nervous disorder may be only an incident of a higher evolution, not by any means an indication of deterioration demanding the extinction of the family of the possessor.

RENAL STONE.

One of the most curious facts of our latter day science is the correction of statements of symptoms which have been calmly accepted by medical writers for many years. It is perhaps too much to expect of a writer that he should have personally verified all statements of which he is the accredited author. Indeed, the experience that would warrant one to write a book on such terms would take several centuries of constant clinical work and study to acquire. Thus it is then that assertions made by many writers become finally elevated to the dignity of facts, and it is not until some self-assertive scientist, who only believes what he himself is able to prove, happens upon the scene, that the flimsy foundations upon which some of our most important diseases are constructed become suddenly undermined. Again, with the accession of new instruments of precision many new symptoms are necessarily added and others are proved to be false.

The introduction of the centrifuge into the examination of urine has elicited many facts not before in evidence, on account of the chemic changes occurring in this excretion during a lengthy sedimentation. This instrument has brought out some new facts in regard to renal stone as related by MUSSER. It has always been held by all authorities, and text-books have so stated for many years, that while hematuria is a common symptom in renal calculus, the appearance of blood is intermittent and can usually be appreciated by the naked eye. MUSSER has shown in some twenty cases that blood is persistently present, that is to say, from week to week, though individual specimens may occasionally show an absence of red cells after the usual examination. While acknowledging an intermittent macroscopic hematuria, he claims and bears out his claims with laboratory facts, that blood in the urine is, in stone, a practically constant symptom, though oftentimes the microscope becomes a necessity for its clinical demonstration. "A few corpuscles only may be found, but one alone means hematuria." With the older writers, hemorrhage not appreciable to the naked eye necessarily escaped attention; and this latter symptom occurring only at irregular intervals, bears out their statements of an intermittent hematuria. Thus it is with the introduction of new instruments: symptoms once looked upon by us as well-grounded, must, as a matter of course, undergo more or less change.

On the other hand, a symptom assumed by almost all the writers on this subject as of constant occurrence, pyuria, is claimed by MUSSER to be frequently absent. He says: "Of the twenty-eight cases I examined, in fifteen there was no pus; in six a few cells of a very small quantity was found (four, womb, cause obvious); in one it was noted as considerable (old gonorrhoea and syphilis, four examinations); in one only a small quantity (male, cause assignable); in one it was

small in amount, twice only in some fifty examinations; in one it was abundant and due to genito-urinary infection as well as pyelitis." That the diagnosis of calculus was correct in these cases, subsequent operation or colic with the passage of the stone proved beyond a doubt. From these facts, thoroughly worked up as they have been, the author is justified in his statement that pyuria is not a symptom of stone, except that there exist in addition to the calculus, some other lesion or lesions of the genito-urinary tract, which latter could of themselves account for the pus.

In the microscopic examination of his cases, MUSSER has in many instances found hyaline casts, long and thin, undoubted evidence of renal irritation. Other forms of casts do not occur unless a co-existing nephritis be present. This point, together with the presence of a small amount of albumin in a urine of high specific gravity, he looks upon as of great importance both from a diagnostic and prognostic outlook. Here we have a symptomatology formulated, at once greatly opposed to the previous ideas held upon the subject, and it is to be hoped that further and more extensive observations will be made, that the diagnosis of this important affection shall not be compelled to remain in doubt.

ACROSS THE PACIFIC IN TRANSPORTS.

Manila is a long way from the United States. The troops of the first expeditionary force sent out to support Admiral DEWEY passed thirty-seven days on shipboard before coming in sight of the scene of their future operations. They embarked May 24 at San Francisco, Cal., and reached Manilla bay on June 30. It takes a much longer time for detailed medical reports of the voyage to make the return passage across the ocean and the continent to the Surgeon-General's Office at Washington, D. C., because they have to pass through so many headquarter offices while en route. Sanitary reports are called for by the Surgeon-General on the last day of every month, and some of those written June 30 by medical officers who accompanied the expedition have but now reached their destination. These give a brief but interesting view of the conditions affecting the troops on their long voyage; and in them there is nothing of the sensationalism which attended the movements of nearly every troop-ship on the Atlantic side of the country.

The steamship *Australia*, which carried General ANDERSON, his staff and 777 officers and men of the Second Oregon Infantry, was a passenger steamer hastily fitted out as a troop-ship. The berths were originally planned to be in sections of five abreast and three tiers high, but as it was considered that this would crowd the men too much, the middle row of berths was removed from each of the sections so as to have an aisle or free passage-way between every set of two rows. Major M. H. ELLIS, surgeon of the regi-

ment, regarded these berths as commodious and comfortable considering the conditions. The men occupying those parts of the vessel that were most crowded or least desirable were permitted to bivouac on the main and hurricane decks in favorable weather, and the weather was favorable during no less than thirty-five of the thirty-seven days. The *City of Sidney*, which touched at Guam Island, carried 398 officers and men of the Fourteenth U. S. Infantry, 343 of the Second Oregon Infantry, 21 marines and 60 Spanish prisoners, without inconvenience or overcrowding, according to a report by Captain H. E. McVAY, assistant surgeon, U. S. Army. The water-supply was pure on both vessels. It is reported of the *Australia* that after leaving Honolulu the issue of water was kept under careful surveillance to prevent waste. The average daily consumption by the troops and crew was 1,200 gallons, of which one-half each day was condensed and filtered through charcoal. All refuse material was thrown directly into the sea, and the latrines were constantly flushed with running water. The food-supply was ample, although bacon was but little used. Dr. ELLIS considered that the absence of fruit from the food issued to the men, with the sedentary habits necessarily imposed upon them by confinement on board ship, was productive of a tendency to constipation. Dr. McVAY characterized the clothing as wholly unsuited to the climate. The blouse, cap, campaign hat and underclothing were all too heavy, and the overcoat a mere incumbrance. Canvas uniforms were issued during the voyage to the troops on the *Australia*, but these were found also to be too heavy. It is to be noted, however, that after the arrival at Cavite light underclothing and gingham blouses were immediately issued; and it is reported that the campaign hat proved more serviceable than was expected, for during the heavy rains it was preferable to the cork helmet.

Notwithstanding the difficulties in the way of effecting cleanliness of the person and of the clothes, the condition of the troops at the end of the voyage was commendable. On the *Australia* the underclothes of the men were regularly exposed to sterilization by steam in the absence of laundry facilities. The health of the men was good. Measles prevailed on the *City of Sidney*, but no case was serious. One death occurred on this vessel from appendicitis, for which operation was performed.

These records of pleasant and healthful voyages on the Pacific lead us to consider whether the War Department, under whose orders they were made, should be held responsible for the sickness and suffering incurred on other troop transports sailing under similar orders and under the same military regulations.

Suicides in Italy.—During 1897 suicides numbered 1997, which corresponds to a mortality of 8.41 for every 100,000 inhabitants. The majority of the cases were in provinces where the ratio of illiteracy was the lowest.

CORRESPONDENCE.

Camp Thomas and the Second Division Hospital—The First Army Corps.

INDIANAPOLIS, IND., Sept. 24, 1898.

To the Editor:—In view of the great concern now being manifested with regard to our military hospital service, I feel that a short statement as to the real condition will not be amiss.

Leaving Indianapolis as Surgeon of the One Hundred and Fifty-eighth, with Dr. H. I. Jones, First and Dr. Paul Barcus, Second Assistant-Surgeon, we reached Chickamauga, May 18, 1898. The country was slightly rolling, with an almost regular alternation of wooded and open land. Everywhere were evidences of a lime formation, with many vertical outcroppings of the strata. In the necessary trenchings the soil was found to be a clay so impervious to water that collections in sinks, etc., would evaporate rather than seep away into the subsoil. Owing to the rocky formation at the depth of about seven feet, sinks were at that time a practical impossibility. On May 25 I was ordered away from the regiment and detailed as Division Surgeon, having charge of the Second Division Hospital, First Army Corps. At this time there was more or less confusion in all departments, nor could anything else be expected. There were thousands of troops pouring in daily, few of whom were experienced in the matters of government account, all eager and questioning as to their individual duties. It is a matter of wonder that the service was conducted so well. We were on the line of the Southern R.R. and traffic was tremendously congested, the time not having allowed of building of switches and facilities for loading and unloading cars. For a short time it was a question of doing the best that could be done until these faults might be remedied and the various departments maintained with some system. I saw no instance nor heard of one where these temporary delays caused either suffering or hardship.

Early in June I was ordered to begin the formation and organization of the Second Division, First Army Corps Hospital. Police details were made, and requisitions forwarded asking for the necessary supplies. These could not always be immediately had for the asking, but never was I told to "rustle" for myself. The officers at the supply stations were universally courteous, and particularly Major Comegys, Chief Medical Purveyor. With certain articles not at hand, the question would naturally follow, when can I get them? Whereupon the reply would likely be: "I can not say definitely; they have been shipped and as soon as they reach us you will be welcome to them." Often the invoice would be shown showing date of shipment from the contractors. This uncertainty was, I suspect, in a large measure due to inadequate railroad equipment and an enormous shipment of all sorts of supplies. As time went on these difficulties were obviated and delays became fewer and fewer. The hospital was soon opened, the regular United States army hospital tent being used; these were floored. The natural drainage of the site was good. Our water-supply came from distant springs, being hauled in new, clean, sweet oak barrels. Later, filters were added to our equipment, and the question of water-supply was settled for all the time we remained in Chickamauga. Food was always sufficient and of good quality. On rare occasions the milk-supply would be found sour, leaving us until the following day short of this one article of diet, which was invariably made up by soups, broths, bouillions, etc. The medical supplies and surgical outfits, so far as essentials were concerned, was ample. Men with pet remedies and hobbies would probably have been disappointed. Flies were present throughout this great camp in unnumbered millions, but for this the medical department refuses to assume responsibility. We met this

annoyance by use of mosquito nettings. The success of the measure was not complete, for much of the time the weather was close and sultry to an extreme. In going through the wards these nettings would be found wadded up and lying on the foot of the patient's cot or on the floor, with the explanation that it was thought to be cooler without them, that "they stop the breeze," etc. So, in many and the majority of cases, these sick boys chose what little breeze might be finding its way into their quarters, and fanned the flies away in preference to being covered by a mosquito-bar. When we left Chickamauga it was with 100 large, new, unused and uncalled for mosquito-bars.

As to the criticism of their being too many autopsies, personally I remember of but two, and there was a universal feeling that where it could be dispensed with it should be so in consideration of "the folks at home." This criticism is uncalled for and absolutely can not be substantiated. Up to the time of treating about 900 patients there had been but fourteen deaths, one of these a broken neck, another a typhoid hemorrhage that occurred on the night of the afternoon of admission; still another of cerebral effusion, when death occurred on the same day. These are just three of the fourteen that I happen to recall, and when you consider the seriousness of the class of cases treated, the record can stand almost without a challenge. Inspectors from the Medical Department at Washington were frequent in their visits, and their reports gratifying to the entire hospital staff.

In the One Hundred and Fifty-eighth Indiana, during the almost five months, there have been but five deaths, and this an organization of over 1300 men living under new and perhaps adverse circumstances, and certainly with a most radical and complete change in their habits of living. This, I believe, will speak for itself. Instead of indulging in cheap criticism I would rather feel the gratification of great work accomplished in wonderfully short time and practically without any preparation.

FRED R. CHARLTON, Major and Surgeon,

One Hundred and Fifty-eighth Vol. Infantry.

224 North Meridian St.

Judge Kohlsaas and the Probate Court.

CHICAGO, Oct. 3, 1898.

To the Editor:—As long as the medical profession prides itself on keeping out of politics, it will be discriminated against by the politicians and the courts. The action of Judge Kohlsaas toward our profession and our bills has become so outrageous that it is of vital importance that we take steps to protect ourselves from his lawless treatment. The judge has made some rulings about which every one of us should know and we should thoroughly understand their effects on our welfare. There have been many criticisms of his arbitrary rulings, but two in particular, which are thoroughly authenticated, I will give. It must be understood that only claims against estates come up in the probate court. The two decisions which, according to his own statement, are permanent in his court, are as follows: First: "I will not allow more than one doctor bill against an estate." This statement was made to the writer in the presence of Dr. Bayard Holmes. Dr. John A. Robison is authority for the second, which is: "I will not allow any doctor's charge of more than \$2 a visit." But few words are needed to emphasize the utter injustice of these decisions. Not one operation in a thousand can be safely performed by one doctor working with other than professional assistance. It is essential to have two or more physicians at every operation of importance, but only one of them can secure remuneration for his services before Judge Kohlsaas. I have a patient who lives nine miles from my home and at every visit I spend an hour dressing two large suppurating wounds. Judge Kohlsaas thinks \$2 ample remuneration for this work.

A short time ago I was called out at 1 o'clock A. M., and found a man with impaction of feces, in pain like a woman in labor, with perineum bulging two or three inches under the involuntary straining, the patient in imminent danger of rupturing an intestine or a blood-vessel. I spent three hours with hot soap water, an irrigator and a spoon in removing the contents of the rectum and opening up the bowels. A more disagreeable task it would be hard to find, and yet had my bill come before Judge Kohlsaas he would have considered \$2 ample pay.

If Judge Kohlsaas's decisions were in accordance with the law, an anesthetist could not recover pay for his services and neither could the consultant. There would be nothing left but for them to demand their fees before responding to a call. I have no doubt that Judge Kohlsaas has many times, as a lawyer, charged, in his office during office hours, \$10 for answering a question involving a few hundred dollars. Some lawyers have told me that it is the probate judge's business to protect estates. I understand that it is the province of a judge to see that justice is done between litigants, and not to take one side or the other under his wing and waive off all claims whether they are just or not. If it is foreordained that one judge is to decide all cases which come before him in favor of the defendant, and that another will decide all cases coming before him in favor of the plaintiff, we might as well abolish courts altogether. People who inherit money are very apt to grasp at every dollar and to be unwilling to pay even the most sacred obligations of the man who accumulated the money and left it to them. There are altogether too many men who are willing to live at the expense of others, and particularly are they willing to be parasites on the medical profession. But why should such avaricious parasites be the special wards of a court that has been instituted to the end that justice and not injustice prevail? Judge Kohlsaas has allowed three liquor bills against one estate, but he will not allow more than one doctor bill. Are liquor bills three times more important than doctor bills? Judge Kohlsaas seems to think so. It is likely, however, that liquor dealers are three times more active in politics than doctors are. If we, as a profession, will be a little more active in politics, we will be treated a little more respectfully by politicians and by courts.

Judge Kohlsaas arrogates to himself the right to establish for our profession a fee-bill and to control our method of doing business, and since he does so he is not a fit man to hold the position he occupies, and I propose that we unite and oppose his re-election with all the influence at our command. I now have the names of twenty-five republicans who have promised to vote against him at the coming election, and if each doctor who is in sympathy with this protest will get ten republicans to vote for his opponent, we can defeat him and then we may hope to have our position in the community respected and our services appreciated even in the probate court.

D. H. GALLOWAY, M.D.

Tubal Pregnancy at About Two Weeks.

WASHINGTON, D. C., Sept. 27, 1898.

To the Editor:—The report of the case of tubal pregnancy with rupture at about the fifth week, by Dr. J. E. Cowles of Los Angeles, Cal., in the *JOURNAL* of September 17, recalls a case of early pregnancy in which I made a postmortem examination April 4, 1893, on the wife of a physician who had suddenly died. She was 28 years old and had been married ten months. Her menses had recurred regularly, the last period being about the middle of March and unusually profuse. March 30 there was a show of blood by the vagina, two weeks after cessation of the last flow; April 2, sudden nausea, vomiting and tendency to collapse but no pain. Death next day, about twenty-four hours after these symptoms appeared. The postmortem examination showed a general bloodless condition,

and a large quantity of blood and clots in the pelvic cavity. The uterus was three inches long and contained a decidua. The right tube just beyond the tubo-uterine junction was somewhat enlarged and showed on its upper side an opening of rupture. The ovum was found and was about two weeks old, the membrane and villi distinct but the embryo not distinguishable. The right ovary contained a corpus luteum. There were old peritoneal adhesions around the left tube and ovary. The specimen is in the museum, No. 10,545. The husband stated that intercourse occurred on the second or third day after cessation of menses.

D. S. LAMB, A.M., M.D.,
Army Medical Museum.

PUBLIC HEALTH.

Variola and Tuberculosis.—Landouzy called attention ten years ago to the fact that variola predisposes to tuberculosis, and Lop now reports sixty-four observations that confirm the statement, with fifty-four from Professor Revilliod and twenty-two from Chauvin. The tuberculosis is more severe as the intervening period is shorter.—*Bulletin de l'Acad. de Méd.*, September 6.

Treatment of Nervous Dyspepsia.—Murdoch (*N. Y. Med. Jour.*, September 24) believes strychnin and electricity the most efficient agent in restoring the lost balance of the secretory nerves, while bathing is not to be neglected and diet to be properly regulated. Much patience is required on the part of both patient and physician. Often patients take too little food, only increasing the difficulty, the stomach also suffering from lack of nutrition.

Veneral Diseases in the Russian Navy.—The report of the Sebastopol division shows that the strict hygienic measures, careful medical supervision and instruction of the men in regard to venereal diseases by popular lectures, reduced the number of cases from 887 in 1893 to 556 in 1894. The number of soft chancre fell from 297 to 70, and the proportion of venereal diseases in the hospital from 45 to 25 per cent., in spite of the constant increase in the number of the marines.—*St. Petersb. Med. Woch.*, September 4.

Nitrous Poisoning By Canned Food.—A special committee of the London Chamber of Commerce has for some time past been engaged in investigating cases of alleged poisoning through eating tinned foods, with the result that it has generally been found that such allegations were unfounded. The latest case investigated was that of a young woman whose death was said to be due to ptomain poisoning consequent on eating tinned salmon, the contents of her stomach having been analyzed by Dr. Stevenson of Guy's Hospital, the well-known Government expert. Dr. Stevenson's opinion was that the death was due to poisoning by niter, and could not be attributed to ptomain poisoning through eating tinned salmon. In the course of his evidence Dr. Stevenson said that if, as had been stated, as many as 200,000,000 tins of food were consumed in one year, the cases of poisoning were infinitesimal. His opinion was that so far from ptomain poisoning being specially identified with tinned provisions, it also arises in connection with fresh meats of all kinds.

Yellow Fever.—Since the reports from the South, in our last issue (p. 803), the press dispatches have given the following data: September 27, 5 new cases were reported at Jackson, Miss., 4 at Taylor's Station, 2 at Orwood, 4 deaths at Oxford, 1 new case at New Orleans, with 1 death, 8 cases at Wilson, and 5 deaths at Franklin, the total cases at this town being 129 to date. The reports for September 28 give 5 new cases at New Orleans, with 1 death, 11 new cases at Wilson, 8 at Franklin, 1 at Oxford, Miss., and 2 suspicious at Clinton, near Wilson. September 29, New Orleans reported 1 new case, Houma 1, 4 at Wesson, 8 at Franklin, 2 at Taylor's Station, Miss., and

3 at Oxford. Six new cases at Wilson, 13 at Franklin, and 1 at Jackson, Miss., and 6 with 2 deaths at New Orleans, make up the record for September 30, while October 2 reports gave 2 new cases at Taylor's Station, 1 at Oxford, 10 at Jackson, 3 and 2 deaths at Harrison, and 1 suspicious case at Port Gibson. As we go to press, dispatches of October 3 announce 9 counties and 13 towns infected in Tennessee. The Port Gibson case is declared genuine; 1 new case at Jackson, 2 at Water Valley, and 16 with 1 death at Oxford.

School Quarantine to Diphtheritic Cases.—Dr. Hand of Philadelphia has offered a suggestion which, if fully and officially confirmed, will tend to lighten the onerous treatment of scholars, teachers and nurses in our public schools and elsewhere who have been the subjects of school-detention on account of diphtheria. His suggestion is not unreasonable, and it appeals to our conservative feelings, in that it appears to open the way to a reduction of the term of ostracism now regarded as necessary by very many of our health officials. He has recommended a solution of nitrate of silver, 60 grains to the ounce of water, to rid the throat of bacilli after the disappearance of diphtheritic membrane. Often after the throat is entirely clear and the patient apparently well, examination shows that bacilli are still present. In such cases quarantine must still be observed. Hand reports good results from this method, the bacilli usually disappearing within a very few days. The solution should not be used until the membrane has disappeared. Now it may be that the silver solution may be less desirable than some others. It may be that a solution of formalin will "fill the bill"; we incline to think it may, but we trust that Dr. Hand's suggestion may lead up to a mitigation of the scholastic penalties that are visited upon diphtheritic pupils in almost all of our cities.—*Cleveland Med. Jour.*

Free Medical Assistance in France.—We note in the official reports that France, with a population of thirty-eight millions and a half, has nearly a million and a half of indigent persons, of whom 375,000 are inscribed as sick. The country physicians are paid to attend them and the total thus disbursed in 1895, the first year the scheme was practically in operation, amounted to 1,771,472 francs. Each one of the 12,000 practitioners received, on an average, about 150 francs. The average to each physician is thirty patients, with three or four visits to each, at about thirty cents (a franc and a half) for each visit. The *Gazette Méd. de Paris* observes that there are a number of departments in which this service is not yet fully organized, and there are many districts too poor to meet the expense, others in which the remuneration is much below the average, "but on the whole, the philanthropists who have conceived and carried this law into execution have accomplished an excellent work, from the social point of view, if not from the medical." The total expense includes hospital and midwife service, transportation, instruments and medicines, and amounted to 4,898,680 francs. This expense was shared by the community, the department and the State, respectively: 3,600,002; 1,104,710 and 305,196 francs. The first article of the law states in effect: "Every sick French person without resources receives, free of charge, from the community, the department or the State, medical care at home or in a hospital. Lying-in women are included in these provisions. Sick foreigners without resources are also included if the government has entered into a treaty of reciprocal assistance with the nation to which they belong."

Good Sanitary Results at Santiago de Cuba.—General Leonard Wood, M.D., as military governor of Santiago de Cuba is almost working miracles with the dirty old town. Along with a committee of surgeons he has made a house-to-house visitation, and enforced a general cleaning up of houses and other buildings as well as of streets and public places. At the time of American occupation the deaths in Santiago numbered 103 a day, but after three weeks of General Wood's rule they had

been reduced to 37 a day. Our editorial prediction of the salutary results that would follow General Wood's appointment as military governor of Santiago have been verified. In this relation the *Medical Record* says that under General Wood's system Santiago is divided into five sections, each one under the general supervision of a medical man, who has under him inspectors of sewers, streets, houses and dispensaries, and a number of street cleaners. Five hundred cubic yards of refuse are burned daily, disinfectants are distributed wherever they are needed, and a heavy fine is imposed for uncleanness or for any failure to report unhealthful conditions and deaths. The results are shown in a decrease in the death-rate within a month from an average of seventy to one of twenty a day. Among the troops the principal diseases are typhoid, malarial and yellow fevers and dysentery. The cases of yellow fever, several of which have been among the so-called immunes, are few in number and the disease is of a very mild type. The mortality from malaria or dysentery is much greater than that from yellow fever. Now that the Spanish troops have all left for Spain, it is hoped that yellow fever can be made still less dangerous through the continuance of Dr. Leonard Wood's good work.

Scarlet Fever of Swine and Kine.—In the *Centralblatt für Bacteriologie*, Dr. Behle of Frankfort has a paper on the above subject. It has for several years been, in England and Germany at least, fairly well proven that kine are susceptible to scarlet fever, though in a modified form, dependent on histologic and other difference, transmitting it again to man, in whom it resumes its normal characteristics. The disease of swine, known as *rothlauf* in Germany, and as *rouget* in France, is in England popularly called "pig's scarlatina," on account of the red erythematous eruption on the skin, but the absence of renal phenomena, and the fact that lesions of the intestines are an essential feature, would suggest a nearer relation to enteric fever. But Behle reports a remarkable outbreak of what appears to have been the true human scarlet fever in swine. He states that in a district where *rothlauf* had never been known, a severe epidemic of scarlet fever among the children was followed or accompanied by a very fatal disease among the pigs at the same farmhouses and cottages. The symptoms included erythema, angina, albuminuria, and those of uremic poisoning, which (or the angina) were the usual causes of death, while in such as recovered desquamation of the skin was well marked. The lesions in the kidneys, observed after death, were very characteristic. A previously healthy pig having been inoculated with the blood of a child suffering from a severe attack, died after a week's illness with symptoms and postmortem appearances which were identical with those seen in the human subject and in the animals which had contracted the disease presumably from the children or from one another. If the facts be correctly reported, the conclusion that swine are susceptible to true scarlet fever is irresistible.

Vaccination Laws of Pennsylvania.—Dr. Benjamin Lee, in *Public Health*, September, speaks favorably of the situation, in his State, as to the prevention of smallpox. The existing enactments are not up to the ideals of an experienced sanitist, but they accomplish great good. He says to his colleagues in health work: "We shall make a great mistake if we attempt to interfere with the law. I believe that with persistence in enforcing it our people will become educated to it and the difficulties will vanish." The phrase "successful vaccination" is the stumbling-block, and I believe that every local board has the right to interpret that phrase and give the decision according to its judgment. The decision of the State Board of Health, by resolution, is to the effect that "successful vaccination" means vaccination proven by the characteristic mark of vaccination on the skin, that nothing else would be proof of successful vaccination. It is unquestionably true that the

school board must accept the physician's certificate, and if the physician is willing to perjure himself I do not see what the board of health is to do except to proceed against the physician. The physician is the one who is putting himself in a false position. Now comes the question, is it worth while to prosecute physicians who undertake to avoid the law in that way? My belief is that the proportion of such physicians is so small that it would be a mistake to attempt it. We do not want to start any agitation in the community which would lead to another attempt such as was made during the past session of the Legislature, when an attempt was made to defeat the vaccination clause of the law of 1895, but fortunately the law stands as before. You can scarcely imagine how strong the appeal was. Petitions came from all parts of the State through the efforts of the Anti-Vaccination Society, and we do not want to give them any such chance again. If boroughs and cities will enforce the law correctly there will be no trouble.

Advantages of London in the Study of Smallpox and other Contagious Diseases.—At the present time five of the admirable hospitals of the London authorities, the Eastern at Homerton, the Western at Fulham, the South-Eastern at Deptford, the South-Western at Stockwell, and the North-Western at Hampstead, are open to students and medical practitioners, while instruction in smallpox is also afforded at the smallpox ships in the Long Reach, near Dartford. A student desirous of taking a course at one of the hospitals must have completed his third year and have held the offices of clinical clerk and dresser; he must then obtain the sanction of the medical school to which he belongs and pay a fee of three guineas for the first three months, and one guinea for each subsequent month, to the clerk of the board, from whom he receives a card indicating the hospital to which he is to be attached. At this hospital he must attend at stated times for at least two days in the week for a minimum period of two months, and on the completion of his attendance he receives a certificate from the medical superintendent whose lectures and classes he has attended. While in the hospital the student places himself under the control of the medical superintendent, and is bound to observe the regulations in force for the prevention of spread of infection. These rules comprise the wearing, while within the hospital wards, of brown holland overalls, consisting of coat, trousers, and cap, which are provided by the board, and the use of what may be termed a discharge block, which consists of an infected room where the overalls are left, a lavatory, and a theoretically uninfected room. The students are further required to keep their hair short and to be efficiently protected against smallpox. A duly qualified medical practitioner has equally to conform to these regulations and must obtain the consent of the medical superintendent of the hospital at which he elects to attend. The student who attends these courses will obtain a fair knowledge of infectious disease, which will stand him in good stead in years to come, while he will also get an insight into the management of fever hospitals and the methods of disinfection practiced therein. The provisions with regard to instruction in smallpox differ somewhat from the above, as it is necessary for the student to reside for two weeks or upward on the smallpox ships, where he is provided with rations, apartments, and washing at an extremely moderate sum. The student has to travel to and from the hospital ships on the ambulance steamer and to furnish himself with a suit of clothes to which he does not attach much value, in order that it may be disinfected or destroyed at the termination of the period.

Another So-Called "Water Familee" in London.—The situation in the district supplied by the companies that deliver water to the northeast of London, has not altered for the better during the latter part of August and the early part of September, for the heavens still refuse rain. That it has not altered materially

for the worse and that the public health remains fair must be looked upon as a piece of good fortune for the company, commensurate at least with the bad fortune which they are experiencing in running short of water during a drought. For if an epidemic of any kind should break out in northeast London the medical men would have hard work to keep the mischief under when deprived of the most natural and efficacious remedy against zymotic diseases, water. Proceedings are now being taken to place the mains of the company in communication direct or indirect with those of the other companies, and when this has been done all fear of an absolute water famine will be at an end. But with the tiding over of the temporary difficulty we hope that the occurrence of these annual breakdowns will not pass from the recollection of the people of London. They ought not to occur, and if the company can not prevent them the company would appear to be unable to carry on its business. There is an alternative. It may be said that the company can manage its works at least as well as any municipal or central body would be able to manage them, but that if there is no water it can not be supplied. In this way the relations during the last two or three summers of the East London Waterworks Company with their clients form a strong argument for the augmentation or alteration of the present source of the metropolitan water-supply. It is said that in East London two million people now have their water-supply only four hours a day at the most. "We do not wish to inspire alarm, but if the present abnormal condition of meteorologic things continues, the consequences may be most serious. The rivers are depleted to the utmost. The drains are not adequately flushed and there is little flow in the upper reaches of the city to carry off the daily discharge of sewage," says the *Lancet*, and points out the necessity, if disaster is to be warded off in the future, of seeking new and adequate sources of water-supply. It argues that this supply must come from Wales. As an illustration of its argument the *Lancet* mentions Loch Katrine in Scotland, which is now lower than it has been in seventeen years. The depreciation in its water level is now about ten inches, and yet it is still an unfailing source of supply for Glasgow. "It is a similar source of supply," says the *Lancet*, "to which, in view of the present conditions, London must turn, though not so favorably situated as Glasgow in this respect. There is, however, the wonderful and inexhaustible watershed of Wales to which we may turn."

BOOK NOTICES.

Manual of the New York County Medical Association. Cloth. Pp. 60. New York: Geo. L. Goodman & Co., 1898.

This, the 1898 edition of the "Manual," contains the revised by-laws as adopted May 16, 1898, and the "Code of Ethics" of the AMERICAN MEDICAL ASSOCIATION, with list of members.

Michigan a Summer- and Health-Resort State. By ROBERTS P. HUDSON. Paper. Illustrated. Pp. 142. Lansing: 1898. Robert Smith Printing Co., State Printers.

This volume was compiled under the direction of the Michigan State Board of Health and "issued in compliance with a concurrent resolution of the legislature." It is gotten up on excellent paper, and contains many excellent illustrations of Michigan resorts, etc., in colors.

Bulletin of the Harvard Medical Alumni Association. No. 12. Paper. Pp. 64. Boston: Published by the Association, 1898.

The "Bulletin" contains a report of the eighth annual meeting, held in Boston, June 28, 1898; officers of the association; constitution; address by the president; report of the committee on the medical school, etc. It is on excellent paper and the presswork likewise excellent.

Transactions of the Michigan State Medical Society. Vol. xxii. Cloth. Illustrated, pp. 452. Published by the Society, 1898. These "Transactions" are for the thirty-third annual meet-

ing at Detroit, May 5 and 6, 1898. The papers presented at the session and included in the volume are grouped under the heads of: "Septic Diseases of the Abdomen and Pelvis," "Obstetrics and Gynecology," "General Medicine," "Surgery and Ophthalmology." Under the first heading are papers on: "Etiology," "The Blood," "Septic Infection of the Peritoneal Cavity, its Diagnosis and Treatment from a Medical Standpoint," "The Medical Treatment of Septic Peritonitis," "The Treatment of Septic Diseases of the Pelvis," "The Haughey Suture." Other papers are: "Bottini's Operation," "Nephrectomy," "May a Rapid Pulse in Appendicitis Contraindicate Operation?" "Reflections on the Treatment of Appendicitis," "The Frequency, Causes and Prevention of Post-operative Ventral Hernia," "Transillumination of the Stomach with Demonstration on the Person," "The Four Tonsils," "Practical Value of Diagnosis of Presentation in Instrumental Delivery," "Some Anomalies of the Kidneys," "Kraurasis Vulvæ," "Physical Training an Essential Factor in the Radical Curative Treatment of the Pelvic Disorders of Women," etc.

Transactions of the South Carolina Medical Association. Paper. Pp. 262. Charleston. 1898.

The forty-eighth annual meeting of the society was held at Harris Lithia Springs, April 13 and 14, 1898, and the papers presented at that session are included in this volume. The following reports contain much of value: On Obstetrics, on Ophthalmology, on Laryngology and Otology, and on Practice of Medicine. The papers number twenty-three. There are also various reports of committees, list of presidents and meeting places for the last decade, officers for 1898-99, besides the minutes of the annual session and memorial notices of Drs. Charles Rhett Taber, Oliver Miller Doyle, William Joseph Garner, Alex. N. Talley, Thos. Jefferson McKie and Cornelius Kollock.

Transactions of the Maine Medical Association. 1898. Vol. xiii. Part I. Paper. Pp. 240. Portland. 1898.

This volume of transactions covers the fifty-sixth annual meeting held in Portland, June 1-3, 1898. The following papers are included in the volume: President's Address; "Tatro-Theurgic Symbolism"; "The Local Treatment of Sinuses of the Extremities"; "Accident as a Cause of Appendicitis"; "Caesarian Section on Account of Cyst of Ovary"; "Tuberculous Bone Disease"; "Talipes Equino-Varus, with Report of a Case Successfully Treated by Cuneiform Osteotomy"; "The Treatment of Uterine Displacement"; "Myxedema as a Form of Anæmia"; "Treatment of Diabetes Mellitus"; "Management of Epidemics of Diphtheria in Isolated Communities"; "Notes on a First Series of Ten Thousand Eye Patients in Private Practice"; "Relation of Medical Experts to the Courts and to Each Other"; "Necessity of Additional Hospital Accommodations for the Insane"; "Unusual Sized Rhinolith Removed with the Lithotrite, etc."; "Anastomosis of Gall-Bladder with Large Intestine by Means of the Murphy Button"; "Case of Cerebro-Spinal Meningitis, with Extraordinary Range of Temperature."

PAMPHLETS RECEIVED.

Abscess of the Septum Narium. By W. E. Casselberry, Chicago. Reprinted from Jour. Amer. Med. Ass'n.

Acute Chloral Dementia Simulating Paretic Dementia; the Value of Surgery in Nervous Diseases. By Henry Waldo Coe, Portland, Ore. Reprints.

Advances in the Domain of Preventive Medicine. By F. M. G. Carter, Waukegan, Ill. Paper. Pp. 13.

Advantage of Physical Education as a Preventive of Disease. By Charles Denison, Denver, Colo. Reprinted from the Bul. Am. Acad. of Med.

Beneficial Effects of the Withdrawal of Bromids in Treatment of Epilepsy; Case of Amaurotic Family Idiocy with Autopsy; New Paths in Psychiatry; Vibratory Therapeutics. By Frederick Peterson, New York. Reprints.

Contagion and Infection with Reference to Yellow Fever. By C. Faget, New Orleans, La. Reprinted from N. O. Med. and Surg. Jour.

Contribution to Surgery of Gastroptosis and Enteroptosis; Preparation of Patient for Operation. By Byron B. Davis, Omaha, Neb. Reprints.

Contributions to Orthopedic Surgery. By James W. Cokenower, Des Moines, Iowa. Paper. Pp. 21. Illustrated.

First Annual Meeting of the Medical Society of the State of Wyoming. Paper. Pp. 16. Portland, Ore.: Medical Sentinel. 1898.

Fracture of Femur and Its Treatment. By W. A. Kulewski, Chicago. Reprinted from Chicago Clinic.

Glaucoma with Detachment of Retina; Orthoform and Extract Suprarenal Glands. By W. Cheatham, Louisville, Ky. Reprints.

Hemorrhagic Glaucoma—Report of a Case with Micro-photographs; Report on Use of Argonin in Gonorrhoeal Ophthalmia; Acute Inflammation of the Middle Ear; A Case of Tenonitis; The Determining Cause of the Site of Ulcers on the Nasal Septum. By E. C. Ellett, Memphis, Tenn. Reprints.

Kalatonja. By Frederick Peterson, New York, and Charles H. Langdon, Poughkeepsie, N. Y. Reprinted from Proc. Am. Medico-Psycholog. Ass'n, 1897.

Pathogenesis of the Nasal Reflex Neuroses. By Walter A. Wells, Washington, D. C. Reprinted from Phila. Med. Jour.

Principal Poisonous Plants of the U. S. By V. K. Chesnut. Bulletin No. 20, U. S. Dep't of Agri., Division of Botany. Paper. Illustrated. Pp. 60. Washington, D. C.: Government Printing Office. 1898.

Report of Case of Acute Glaucoma Complicated by Cataractous Formation of Lens, etc. By S. Potts Eagleton, Ocala, Fla. Reprinted from Ga. Jour. of Med. and Surg.

Report on the Care and Prevention of Rinderpest. By Geo. Turner and Wilhelm Kolle. Paper. Pp. 87. Cape of Good Hope Dep't of Agri. Cape Town; Richards and Sons. 1898.

Rheumatic Pharyngitis. By Lewis S. Somers, Philadelphia. Reprinted from Med. News.

Sarcoma of the Medulla Oblongata and Pons. By O. H. Fretz, Quakerstown, Pa. Reprinted from Phila. Polyclinic.

Second Hospital for the Insane of the State of Maryland. By Geo. H. Rohé, Sykesville, Md. Reprinted from the Am. Jour. of Insanity.

Sectarianism in the Medical Profession. By G. W. Brooke, Ellsworth, Ohio. Reprinted from Cleveland Jour. of Med.

Semi-Annual Report of Loomis Sanitarium for Consumptives. By J. Edward Stubbert, Liberty, N. Y. Reprinted from Phila. Med. Jour.

Some Remarks Concerning Rectal Affections, with Especial Reference to the Physical Exploration of the Rectum. By Lewis H. Adler, Jr., Philadelphia. Reprinted from Therapeutic Gaz.

Treatment of Chronic Naso-Pharyngitis. By Lewis S. Somers, Philadelphia. Reprinted from Memphis Lancet.

TRADE PAMPHLETS.

Caroid. American Ferment Co., Jersey City, N. J.

Catalogue of Edison Batteries. Edison Mfg. Co., New York City.

Cremation, Disinfection, Sterilization. W. F. Morse, New York City.

Kryofine. C. Bischoff & Co., New York City.

Medical Department, College of P. and S. of San Francisco, Cal.

Report of Kensington Hospital for Women, 1896-97. Paper. Illustrated. Pp. 36. Philadelphia.

Stuebenville Sanitarium, Hornellsville, N. Y.

University Medical College, Kansas City, Mo. Announcement, 1898-99.

SOCIETY NEWS.

Wyoming Medical Society.—The next meeting of the State society will be held at Rock Springs, Wyo., Nov. 1, 1898.

The Erie Railroad Surgeons' Association.—This association will hold its annual session at the Grand Pacific Hotel, Chicago, Oct. 19-21, 1898. W. W. Appley, M.D., Cochetod, N. Y., is secretary and treasurer of the association.

Railroad Surgeons' Meeting.—The Association of Surgeons to the Pennsylvania Company West of Pittsburg will hold its annual meeting in Cleveland, Ohio, October 11. E. C. Brush of Zanesville, Ohio, is President and G. B. Stemen of Ft. Wayne, Ind., secretary.

New York State Medical Association.—The Committee of Arrangements has secured a reduction in railroad fare from the Trunk Line Association, of one and one third fares for the round trip, to members of the association and their families visiting New York at the time of the meeting, October 18, 19 and 20, provided that 100 persons who pay full first-class fare of 75 cents, or upward, coming to the meeting, avail themselves of this privilege. To make this reduction effective, certificates must be obtained from the ticket agent at the starting point, or nearest station issuing through tickets to place of meeting. This certificate, to be valid for the reduction on the return fare, must be endorsed by the chairman of the Committee of Arrangements, and *vised* by a special agent of the Trunk Line Association, who will be present at the place of meeting for that purpose on October 19 and 20. The committee has also completed arrangements for a banquet at the Manhattan Hotel, Madison Avenue and Forty second Street, which will take place on the evening of October 19. F. H. Wiggin, M.D., Chairman Committee of Arrangements.

Wayne County Medical Society.—At the regular meeting of this society, September 29, Dr. D. H. O'Donnell read a paper on "The Physical Development of Girls." The Doctor treated

the subject from the standpoint of the reformer. He first enumerated the many defects of the body in womankind as it is today, making comparison of the average young woman in our cities with the strong, vigorous, well-developed Venuses of olden time, and laid the blame to such factors as fashion, ambition, giddiness of youth, faults in our schools and colleges, inattention and lack of interest on the parents' part, ignorance of laws of health, depravity of morals in young girls, ill-fitting and useless clothing, fadism, etc. The down-trodden corset came in for its share of the rebuke which the Doctor administered to these evils. He described it as the straight, stiff, well-ribbed coat of mail worn by many women next the body and drawn recklessly close around the stomach and liver. The Doctor described the ideal woman as the companion and equal of man, a creature of beauty, amiability and goodness, fully equal to the duties of maternity without undue pain or discomfort—the domestic goddess—at once a Venus and a Hebe. The avenue to this lay through the efforts of the physician in his advice to the parents, giving them the most enlightening rules for the proper physical development of their girls and boys. As heredity plays an important part in a girl's career, both her father and mother should be healthy and well developed; they should have no enervating or corrupting habits or surroundings, and the whole conduct of their lives should be well ordered and temperate. An advance in this direction should be made all along the line by the medical advisers and family physicians. Doctors should set the example by bringing up their own girls and boys with a rigid regard to their moral and physical well-being, and nothing should be neglected to make the standard of true, pure womanhood the brightest and holiest thing on earth.

NECROLOGY.

BENJAMIN M. GRIFFITH, M.D., St. Louis (Mo.) Medical College, 1859, died in Springfield, Ill., where he resided, September 24, aged 67 years. He was a native of Shelby County, Ky., and a well-known sanitarian, having served several years on the Illinois State Board of Health. He was identified with the AMERICAN MEDICAL ASSOCIATION and many other general medical societies. His was a record of the greatest activity.

GEORGE W. LINDHEIM, M.D., assistant-surgeon of the 8th N. Y. Volunteer Infantry, died at his home in New York City, September 16, of typhoid fever. He was in charge of a hospital train which brought sick soldiers of his regiment from Chickamauga none of whom save Dr. Lindheim himself have died up to the date of his funeral.

DIETRICH NASSE, M.D., of Bergman's clinic at the Berlin University lost his life in the Alps by the giving away of a snow-bridge, during the week ending September 17.

JOHN F. ISOM, M.D., Western Reserve University, Cleveland, Ohio, 1877, and a resident of that city, died of cardiac disease, September 26, aged 67 years.

WINTHROP B. HALLOCK, M.D., Long Island Hospital College-1864, of Cromwell, Ct., died from apoplexy in a New York hotel, September 24, aged 65 years. He left a wife and two children.

JOHN W. DETWILLER, M.D., University of Pennsylvania, 1873, died at Newport, R. I., September 26, aged 47 years. Until about two years ago he resided in Bethlehem, Pa., and had been located in Newport only a few months. His death was due to appendicitis, a week after operation.

GIOVANNI TROJANA, M.D., an assistant medical inspector of the Board of Health, Philadelphia, died September 26, aged 35 years. Dr. Trojana was graduated from the University of Naples, Italy, in 1881.

F. A. TODD, M.D., Toledo, Ohio, assistant superintendent of the Ohio State Hospital for Insane, died at the Presbyterian

Hospital, Chicago, September 30, the result of a bite from a rabid dog. He was 33 years of age.

C. D. MANNING, M.D., Chicago, Rush Medical College, 1870, was killed while riding on a street-car, September 24, in collision with a wagon. Dr. Manning was born in Dixon, Ill., in 1848.

W. E. FOWLKES, M.D., Owensboro, Ky., a graduate of the Louisville Medical College and also of Bellevue Hospital College, died at his home September 25, aged 50 years.

J. V. HARMON, M.D., Secretary of the Trumbull County Medical Society, died at his home in Warren, Ohio, September 18.

M. A. BACON, M.D., Salem, Wis., September 24, aged 54 years.—Judson Brooking, M.D., Athos, Va., September 20.—John R. Chappell, M.D., Petersburg, Va., September 26, aged 70 years.—Thomas R. Clement, M.D., Osterville, Mass., September 24, aged 75 years.—Julius W. Cox, M.D., Mapleton, Iowa, September 8, while on a hunting trip in Idaho.—J. A. Douglass, M.D., Center Star, Ala., September 22.—W. P. Griffiths, M.D., Townanda, Pa., September 21, of rheumatism of the heart.—B. N. Herring, M.D., Decatur, Ga., formerly of Clarksville, Tenn., September 19, aged 76 years.—Thomas Snodgrass, M.D., Crossville, Tenn., September 22, aged 76 years.—W. H. Sykes, M.D., Plymouth, Ohio, September 20.

MISCELLANY.

Personel.—Dr. J. C. Minor, late surgeon, U. S. V., has resumed practice at Hot Springs, Ark.

Correction.—In the JOURNAL for September 10, page 605, column one, in the title of Professor Landenzy's article, read "serum and toxin" for "aerumated toxin"; in column two, line 56, read "beef serum" for "beer serum."

Closing the Drug Stores on Sunday.—The druggists of Bordeaux, France, have entered into an agreement to close all drug stores Sunday at noon, with the exception of one in each district. The closed stores indicate the address of the one still open and the papers are also asked to give the address, without mentioning the proprietor's name. The drug stores are to remain open in turn.—*Bull. de la Soc. de Pharm. de Bordeaux*, August.

Tests for Standardizlog Toxias.—It is announced from Behring's Experimental Institute that animals react much more sensitively to intracerebral than to subcutaneous or intraperitoneal injections, and hence tests made with fluids introduced directly into the brain are much more delicate and reliable. Guinea pigs will die from $\frac{1}{50}$ of the usual fatal dose, and a tuberculous animal from $\frac{1}{500}$ or $\frac{1}{1000}$.—*Deutsche Med. Woch.*, September 15.

Malaria Perniciosa Tetanica.—A Russian exchange reports a case: Patient unconscious; rectal temperature 37.5 degrees C.; reactionless dilated pupils; jaws clenched; muscle mass, like a board, and every group of muscles except those of the back and respiration in tonic contraction; spleen enlarged, heart and lungs normal. As the patient came from Batum, where malarial infection is known to produce the strangest manifestations, he was treated with subcutaneous injections of quin. bimuriat, carbamidat. 2.0 in aq. dest. 4.10, which promptly cured him.—*St. Pet. Med. Woch.*, September 4.

Uriae of Healthy Children.—Churchill (*Archives of Pediatrics*, September) reports results in detail from an examination of 146 specimens taken from seventy children from 1 day to 12 years old. His records show three points of interest: the small amount of urine, the high percentage of urea, and the high specific gravity, i. e., comparatively concentrated urine, and he raises a query as to whether the results represent a coincidence, or whether Americans do pass less urine in health and the probable later renal trouble from the constant irritation of the kidney.

Duty of Person Bitten by Vicious Dog.—Where a person was bitten by a vicious dog, through the alleged negligence of another person, from whom the former seeks to recover damages, the court of civil appeals of Texas holds, *Trinity & Sabine Railway Company, vs. O'Brien*, it became the duty of the person bitten to have taken such care of her wounds as a reasonably prudent person would have employed under like circumstances, and she can recover such damages only as she would have sustained if she had taken such care, and not for increased injury attributable to want thereof. Negligence which allows damages to accumulate, the court continues, is not, like that which helps to cause the injury, a complete bar to recovery. It simply prevents the recovery of damages which proper care would have averted.

A Vegetarian Orphan Asylum.—The late Professor Baron bequeathed to the city of Berlin money to found an orphan asylum, with the conditions that no physician was ever to be appointed on the Board, and vegetarian principles were to be strictly observed. The mayor accepted the bequest, but the city council, which includes Virchow, Fürbringer, Fraenkel, Strassmann, and Renvers, has interfered, and the legacy will probably be declined, as the city authorities are unwilling to accept a bequest which compels them to submit orphan children to the experiment of a vegetarian diet.

Operations for Goiter at Berac.—Kocher's method is described in detail in the *Rev. de Chir.*, No. 4. It never leads to hemorrhage, avoids injuring any nerve, and retains a portion of sound thyroid tissue, while the cosmetic results are fine and the wound heals by primary union without relapse. The 204 operations described include 159 thyroidectomies, 12 enucleations, 19 resections, 16 enucleations and resections, and 2 ligatures of the large thyroid arteries. Kocher only enucleates unilocular goiter cysts, easily shelled out nodules, or large nodules in immovable goiters, while he performs thyroidectomy in all other cases, including those of acute and chronic strumitis, and considers exothyropexy only justified when the operation has to be performed without the necessary instruments. He has obtained good results in morbus Basedowii by ligating the third thyroid artery, followed later by ligature of the fourth.

The Eyesight in the Open Air.—Prof. H. Cohn asserts that examinations of the eyes in-doors is no test of their actual capacity, and that all examinations of the eyes of school children, etc., should be made out-of-doors, as otherwise there can be no true standards. He states that the superior visual acuity of Indians and other savages, is due to the necessity of concentrating their attention on objects on which their food and safety depend, and proves his assertions by statistics—many new and personal—which demonstrate that the out-of-door eyesight of civilized peoples averages as high as that of the uncivilized. He concludes that any one can make his eyesight equal to that of a savage by concentrating his attention sufficiently. He adds a plea for more out-of-door life for children, even at the expense of their studies, and training in closer observation.—*Revue Gen. d'Ophthalmologie*, August 31.

Fibrils in the Nerve-Cell.—Golgi's latest preparations, exhibited before the Societa Med. Chir. of Pavia, showed clearly the delicate fibrillary arrangement and network in the Perkinje cells of the cerebellum and of other groups of ganglion cells of the central nervous system. The fibrils are very distinct toward the periphery of the cell, but grow smaller toward the interior, and after a perceptible enlargement they penetrate into and blend with the innermost strata of the body of the cell. The fibrillary apparatus differs with the age of the animal (cats, rabbits, dogs, horned animals and pigs). In the new-born this fibrillary apparatus is much less complicated, the network much less evident. In the adult animal the fibrils are more delicate, the network more distinct, the nodular enlargements more pronounced and the apparatus as a whole

encroaches more upon the body of the cell. Golgi's report enhances the interest of Ewing's and Nissel's communications (JOURNAL, pages 131 and 674).—*Gazzetta degli Osp. e delle Clin.*, August 14.

Cæsarian Operations.—The number of these operations is increasing as asepsis enables the indications to be extended. Leopold and Haake report 100 in the *Arch. f. Gyn.* (lvi, 1), with 10 deaths, all very difficult and desperate cases. The conservative Cæsarian operation was performed 71 times, all the children taken alive, but two died later from the results of the operation, the Porro 29 times with two dead fetuses. They consider a conjugata vera less than 6 cm. an absolute indication for the Cæsarian operation, and amputate the uterus when the patient is debilitated by a serious disease, when there is reason to suppose it is infected, and when there is complete inertia or insufficient pains. Gonorrhœal infection, a malignant tumor or ruptured uterus render the conservative operation impossible.

Ambulance Legislation.—Every now and then the ambulance surgeon gets his bitter dose of rebuke in the police court or in the newspaper. He is sometimes at fault, but more often he is the scape-goat. In New York State, some wiseacre legislator has had a law enacted that is designed to deprive the ambulance surgeon of all discretionary power in the removal of the alleged sick or injured person. The law was passed in 1896, but it has not been generally known or enforced. A legal officer of that city is reported to have said that, in his opinion, need exists for such legislation and that the act "to insure prompt medical treatment for the sick or injured" is a most beneficent one, and should receive the cordial co-operation of all our citizens. This law makes it a misdemeanor for any person in charge of an ambulance, hospital or house or place of reception for the sick or injured, which shall be wholly or partly supported at the public expense, to refuse to answer to a call or demand for an ambulance, or to take the person for whom the call may be made to the hospital or place of reception for the sick or injured from which the ambulance came, for examination and treatment by the house authorities of the hospital or place of reception. The act applies to the drivers of ambulances as well as to the physicians, and the penalty for its infringement is a fine not to exceed \$500 or imprisonment for not more than one year, or both fine and imprisonment. If the act is enforced (it will probably not be) the various city institutions will have a very arduous duty procuring competent officers to operate their "little wards on wheels."

The Abuse of Alcohol.—Prof. Kräpelin described the results of his recent research in regard to the effect of alcohol, at the annual meeting of the German Society against the abuse of alcohol. His conclusions explain the peculiar phenomenon noted by Exner in 1773, that when a person under the influence of alcohol is ordered to perform a certain movement, determined beforehand, following a certain external stimulus, he thinks that he performs it easily and promptly, while scientific measurement of the time elapsing between the stimulus and the movement proves a considerable delay in the response. Kräpelin finds: 1, that the perception of impressions received by the senses is much retarded by the influence of alcohol; even a small amount, $\frac{1}{4}$ – $\frac{1}{2}$ liter beer, will suffice for this; 2, the combination of ideas is much slower; processes of thought are altered; speech becomes more and more prominent; "thought spreads out in a level;" 3, the voluntary movements occur much more easily and rapidly. This explains the contradiction between the objective record and the subjective impression in Exner's tests; the movement occurred more readily and rapidly, but time had elapsed before the stimulus was perceived. Observation in everyday life shows the correctness of these scientific data. The effect of alcohol on the psyche lasts more than twenty-four hours, often several days. Leixner

accused the medical profession of the responsibility for the spread of the use of alcohol, and others observed that there is more adulteration and fraud in the so-called tonics and invigorating alcoholic beverages sold than in any other class of goods. Much amusement was caused by the arraignment of several members of the Congress for having imbibed a few "tenths" of beer with their lunch, which led to a clearer statement of the purpose of the Congress: to combat the abuse of alcoholic drinks, although Kripelin's research has converted him to "total abstinence."—From report in *Deutsche Med. Woch.*, September 15.

Medicine now in Disrepute.—An editorial of the *American Medico-Surgical Bulletin*, Sept. 25, 1898, is justly caustic on certain usages of the times. The reflections upon "the yellow journals and their willing medical tools," are to the point, and the medico-political critic, virtuously indignant for a purpose, shares deservedly in the animadversions. There are many hints of loose charges for the sake of a notice through the daily press and some looks askance at sensation-mongers, but as no remedy is proposed, the profession at large must take its chances of survival. "Before the present war," says the writer, "the newspapers were filled with glowing reports of the wonderful things medical science is capable of doing. Exaggerated accounts of our prowess were copied from journal to journal and the hospital surgeons and dispensary doctors were eulogized in glowing headlines, surmounted by their photographs. . . . Now we are all in for condemnation, whether we had anything to do with the army or were mere stay-at-homes." *Sic transit gloria mundi.*

Can Exhibit Actual Condition.—Although it pronounces it an irregularity, the supreme court of Wisconsin holds, in the recent personal injury case of *Selleck vs. the City of Janesville*, that it was not reversible error for the judge and jury, the latter in charge of the sheriff, to go to the plaintiff's house, a distance of more than fifteen miles from the county seat, so that the plaintiff, who was carried into their presence upon a lounge and was administered to by her physician, could be sworn and testify as a witness in her own behalf. Following this up, the supreme court says that it perceives no error in allowing the plaintiff to exhibit her actual condition to the jury, nor in allowing her daughter to weep. It also holds that the following charge is supported by authority as well as reason: "The plaintiff is not held responsible for the errors or mistakes of a physician or surgeon in treating an injury received by a defect in the street or sidewalk, providing she exercises ordinary care in procuring the services of such physician. Where one is injured by the negligence of another, or by negligence of a town or city, if her damages have not been increased by her own subsequent want of ordinary care she will be entitled to recover in consequence of wrong done, and the full extent of damage, although the physician that she employed omitted to employ the remedies most approved in similar cases, and by reason thereof the damage of the injured party was not diminished as much as it otherwise should have been." The wrongdoer, the supreme court says, may well anticipate that the person injured will employ a physician or surgeon, and in doing so will exercise ordinary care in making the selection; but, where that is done, such person can not be expected to assume the responsibility of the very highest degree of skill. Indeed, it calls attention to the fact that it has gone so far as to hold that where personal injuries result proximately from negligence or other tort, the wrongdoer is liable for the damages actually sustained, although they are increased by a tendency to disease on the part of the person injured.

Effect of Altitude on Anæmia.—According to the *British Medical Journal*, Paul Bert, as early as 1882, called attention to the fact that the blood of an animal on a mountain absorbs more oxygen than under lower conditions. Mercier and others have

found that while counting the corpuscles of men and rabbits returned from the mountains to the plains, the daily decrease ceased on the thermometer falling 13 mm., and in two rabbits there was even an increase of corpuscles. Whether on a mountain or under a bell jar, the most noticeable alteration in the blood is an increase of the red corpuscles, which appears earlier and is more rapid than the increase of hemoglobin. Egger has had the same results in man at an elevation of 1890 meters; the average increase of red corpuscles after fifteen days was 16 per cent. Mercier confirms this. Those observers (Loewy and Kohlbrugge) who have failed to note this property of mountain air were not careful to exclude vitiating conditions from their experiments. All the most reliable evidence goes to show that the increase of red corpuscles is real, and has nothing to do with a supposed concentration of the serum through evaporation. Viault and others have remarked the great number of small discs in blood received on elevated places, which are probably developing erythrocytes. This explains the fact that hemoglobin does not increase so rapidly as the corpuscles, since the young globules do not contain their full amount. Finally, Schauman and Rosenquist have observed nucleated red corpuscles in the blood of dogs and rabbits living for some weeks under a bell jar under a depression of 45 to 48 cm. of mercury. Suter and Jaquet found that in rabbits which had lived at Davos for four weeks not only was their blood one-sixth richer in hemoglobin than that of those left behind at Basle, but the quantity was more per kilogram of body weight (about one-tenth). The mechanism of the increase of red corpuscles is still not properly understood. It is certain that in healthy persons the increase is not permanent, but disappears on a return to the plains as rapidly as it came. However, the most important fact is that anemic people retain more red corpuscles than they had before their mountain sojourn for long after their return.

Creasote in Gastric Affections.—According to Zanger of Zurich, in a paper on creasote, contributed to the *Correspondenzblatt für Schweizerische Aerzte*, the present tendency to think that the larger the dose of this drug the better in phthisical cases, is by no means justified by experience, for the best results are often obtained with very small doses indeed. He believes that their beneficial effect is due to their action on the stomach, causing it to do its work better, and so to improve the nourishment of the system. He finds that in many cases of purely gastric affections, with or without diarrhoea, or other intestinal symptoms, minute doses of creasote will often succeed when other remedies have failed. In the gastroenteritis of children and in the vomiting of pregnancy, he has been greatly struck with its effects. The doses he gives vary from $\frac{1}{16}$ gr. in children to $\frac{1}{8}$ gr. in adults. He prescribes it with enough spirit to dissolve it in a spoonful of water, with or without water. Black coffee or mint tea may be employed, if necessary, to disguise the taste. When infantile diarrhoea exists, without vomiting, he has often found creasote valuable. In the milder forms of the vomiting of pregnancy small doses of creasote have always produced an improvement, and he thinks that even in severe cases a trial of the same treatment should be made.—*Public Health*, August.

Syphilis and Divorce.—There are two recent decisions on this subject that should be noted. In the case of Smith vs. Smith, the supreme judicial court of Massachusetts holds, that where a wife ascertains, within a short time after the performance of the marriage ceremony, and before the consummation of the marriage, that her husband has syphilis, which has advanced to such a stage as to be probably incurable, whether he acquired it through unchastity or has become constitutionally affected with the disease from his birth, she is entitled, after refusing to consummate the marriage, to have it annulled. Few, if any, says the court, would be bold enough to

say that it was her duty, on discovery of the fraud, before consummation of the marriage, to give herself up as a sacrifice, and to become a party to the transmission of such a disease to her posterity. There are reasons why a fraud of this character, discovered before the consummation of the marriage, and at once made a ground for separation, should move the court more strongly in favor of the wife than if the discovery had come later. And the court takes particular pains to state that it does not intimate that the concealed existence of venereal disease in one of the parties to a marriage will ordinarily be a sufficient ground for a decree of nullity. In most cases, presumably, it significantly remarks, the disease is curable. The other decision referred to is one of the supreme court of Pennsylvania, rendered July 21, 1898, in the case of McMahan vs. McMahan. Here was a case of a young woman, whose innocence was not at all impeached, having been infected with syphilis by her lover (who subsequently became her husband) during the period of his courtship, probably by kissing her frequently, and after marriage having been kept constantly in a diseased condition from the same source, until she had passed into the secondary condition of the disease, and had approached on the tertiary stage thereof, having endured for upward of five years the constant presence of one of the vilest, most shocking, and dangerous diseases with which the human body can be afflicted. Is such a person legally bound to remain in such relation with her husband during the whole of her subsequent life, and has she no redress whatever, in the way of divorce? asks the court. But it says that, in its opinion, to state this question is to answer it. It says that it does not see how it is possible to imagine a more direct and palpable case of cruelty to a wife by her husband than this, and that it comes within, not only the spirit, but the very letter of the Pennsylvania statute which allows divorce "when any husband shall have by cruel and barbarous treatment endangered his wife's life, or offered such indignities to her person, as to render her condition intolerable and life burdensome, and thereby force her to withdraw from his house and family." It is of no consequence, continues this court, that inoculation occurred before marriage. It is the continuation and constant presence of the disease after marriage, making her condition intolerable, and endangering her health and life, that entitles her to a divorce.

A Child can not Maintain an Action for Injuries Sustained Before its Birth.—The appellate court of Illinois, first district, holds on appeal in the case of Allaire vs. the St. Luke's Hospital, May 26, 1898, that the action not being given by any statute, a child can not maintain one, by the common law, for injuries sustained before its birth. That a child before its birth is, in fact, a part of the mother, and is only severed from her at birth, can not, the court thinks, be successfully disputed. The doctrine of civil law and the ecclesiastic and admiralty courts, that an unborn child may be regarded as in being for some purposes, when for its benefit, the court pronounces a mere legal fiction, which, so far as it has been able to discover, has not been indulged in by the courts of the common law to the extent of allowing an action by an infant for injuries sustained before its birth. If the action could be maintained, it would necessarily follow that an infant might maintain an action against its own mother for injuries occasioned by the neglect of the mother while pregnant with it. Mr. Justice Windey dissents. He argues that if the willful and malicious conduct of a person causing an injury to an unborn child resulting in its death after it has been born alive, will fasten on the person the crime of murder or manslaughter, there seems no sound and logical reason, since the crime includes the injury to the child, and since the public offense is also a private and special wrong to the helpless infant, why, if the child should be so fortunate as to survive the injury, which, had it caused death after being

born alive, would have made the wrong-doer a criminal before the law, the child should not have his action at law against this same wrong-doer, for damages because of his tort. Could it be successfully contended that for an injury to Chang, one of the famous Siamese twins, he could not maintain an action because he was a part of his brother Eng—that he was not a separate entity? Could it be contended that in such a case Eng was the person to bring the suit, because the injury to his brother Chang was an injury to him, Eng? The judge thinks it quite as reasonable to say that the mother can recover for injuries to her living, moving child because contained in her womb or lying beside her after its birth, attached by the umbilical cord, as to say that in the case of an injury to one of the Siamese twins, the other could have brought suit. The child, when capable of being born alive, is, in the judge's opinion, a distinct entity, under the common law, and although no distinct civil case, so far as he knows, has so held, humanity and enlightened civilization, he insists, demand that the common law as administered in Illinois in the 19th century should so declare. What will a still higher tribunal say if called on for a decision on this point?

Behring's American Patent on Antitoxia.—The *Munich Medicinische Wochenschrift* of September 6, contains the following editorial: "Professor Behring of Marburg has at last, after a number of ineffectual attempts, succeeded in obtaining a patent in the United States for the production of diphtheria serum. The patenting of a scientific discovery by a physician contradicts to such an extent the cherished traditions of the medical profession that it is not surprising that Professor Behring has been assailed with violent criticisms on account of this patent. He replies to these criticisms in the following explanatory letter which has appeared in a Marburg paper: 'It is true that a patent has been granted me in America for the production of diphtheria serum, and it is true that the American firms who have hitherto been commercially benefiting by the production of diphtheria serum are angry about it. When the Americans interested express their anger in the American way, that is their own concern; but when in this case, entirely contrary to their usual customs, they declare that to take advantage of existing laws to exploit an important practical discovery, is immoral and scandalous, I can not accept their verdict seriously. For my part, I do not consider a legitimate means of making money dishonorable; I might even go so far as to say that I consider the renunciation of a considerable pecuniary profit, legitimately one's own, unpardonable folly. Time will show whether the American courts will be coerced by this newspaper clamor into interfering. If this, as I confidently anticipate, does not occur, then the American public will derive much benefit from the patent, as they will then secure the diphtheria serum better and cheaper. The denial of my right of invention and discovery is based on ignorance and injustice. Ask any one of the scientists whose names are mentioned as having co-operated with me in the discovery of diphtheria serum; not one of them will wish to contest the priority with me.' This explanation can only arouse the most painful sentiments in medical readers. The last statement is correct. To Behring alone belongs the honor of the glorious discovery of diphtheria serum. But the gratitude which the world, and especially the medical profession, owe him for this discovery should not induce us to accept in silence such principles as are enounced in the foregoing explanation. It is not true that every way of making money which does not conflict with the laws, is honorable for the physician. It would be the severest blow to the prestige of the medical profession if these principles, which sound like a sneer at the efforts of physicians to raise themselves above the level of the trades, should be accepted. As far as the patenting of a remedy is concerned, the German patent laws do not allow it; even the diphtheria serum is not protected in Germany. This restriction does not seem to exist in America, although the Code of Medical Ethics, endorsed by the better American

physicians, declares that it is 'derogatory to professional character to hold a patent for any surgical instrument or medicine

inconsistent with beneficence and professional liberality.' The American, as well as the English professional press, regard Behring's application for a patent as a breach of the ethical foundations of the medical profession, and criticize it in the severest terms, which we must regret all the more as we can not consider them unjustified."

Behring disclaims that he is still a physician. In a letter to the *Deutsche Med. Woch.* of September 15 he remarks: "I gave up my professional practice when I entered upon my career as an experimenter and inventor, and I am compelled to seek means in a commercial way to carry on my experimental-therapeutic work."

Nerve Fatigue of School Children.—Dr. R. C. Scheidt, of the Franklin and Marshall College, presented a voluminous address (*Public Health*, July) on the hygiene of school-attendance, before the fifth annual meeting of the Associated Sanitary Authorities of Pennsylvania (*vide JOURNAL*, June 18, 1898, p. 1469), in which he urged an ampler protection of the health of the overworked children of the public schools. He argues against the afternoon session as being unnecessary confinement, if the pupils have a long and properly arranged morning session. The following are some of his conclusions: 1. I am convinced that the esthesiometer is the proper instrument for the measurement of fatigue. 2. My tentative experiments with American boys prove a superior normal strength of their mental vigor under favorable conditions of the atmosphere. 3. Unfavorable conditions of the atmosphere show an unusually large percentage of abnormal fatigue of the nervous system. 4. I attribute this condition to the utter lack of systematic open-air exercises. 5. I advocate such exercises for children as a prime necessity, because the foundations of a healthy and useful life are laid between the seventh and fifteenth years, but never afterward. 6. Training of all the functions of the physical organism should precede instruction, because it will develop the necessary mental strength. 7. Children should be classified according to their individual characteristics, and stress should be laid upon the development of their weakest organs, in such a way, however, as to leave plenty of room for individualization. 8. Such exercise should take place every afternoon, and should be continued until the limit of normal fatigue is reached. 9. The exercises should be grouped into muscular, cutaneous and respiratory. 10. All these exercises should be essentially exercises of the nervous system, to lead to a proper development of character. The writer holds that it is not learning, primarily, but health and character should be the watchword of our schools; first training, then instruction, the sequence of a rational educational policy. Pedagogics, as a science, should therefore no longer be based upon philosophy, but upon physiology and hygiene. The chief factor in every school board should be the well-trained physician, and the physician only. His investigations, carried on for a number of years, have led him to the firm conviction that the American boy is the superior of the boy of any other nation on the face of the globe; he is worthy of special considerations because his training will in the end produce the superior man, for only during the years of boyhood, from the seventh to the fourteenth, fifteenth and sixteenth year, can training be made successful; if neglected then it will forever remain neglected. Considering the large number of heterogeneous branches now taught in our public schools, and, at the same time, the intense interest in all sorts of ill-directed physical exercises manifested by both girls and boys, we conclude that the endurance for every specific activity can be but small, while the sum total of all the energies consumed is rather larger than in former ages; however, the mere external exhibition of ability is, in the case of children, not by any means the absolute criterion for the sum total of living forces within the human organism. Let us abolish afternoon instruction. No matter how vigorous the nervous system may be, the brain ought not to be taxed

while in the process of growth, while digestion is going on. Under unfavorable external conditions, abnormal fatigue will prevail throughout the whole afternoon, and in the course of time the brain will become unfit for mental work. Afternoon instruction is therefore absolutely unhygienic. Teachers are unanimous in pronouncing afternoon mental work a failure in the majority of cases. One long morning session, with a number of recesses, ought to suffice. Let that instruction be rational, let it largely be object-teaching; do not overfeed children with grammar, which presupposes mastery of speech and the power of developed thought. The brain-cells required for such work are as yet but imperfectly developed, and the natural result is a mechanical memorizing resembling the training of a parrot. How different the effect of the introduction of the various mechanical arts. They appeal at once to the various organs of sense, and through them to the intellect. Large playgrounds should be provided in every city, and every school house should be joined by a large roof-covered area, equipped with the most important apparatus necessary for physical training, for both summer and winter. The authorities ought to see to it as much as possible that each child is given the opportunity to develop its individual inclinations, for in the nature of the case, and necessarily so, class-room work has a levelling tendency, its laws are those of a liberal sometimes even of an illiberal, despotism; a child becomes one of a dozen, and nothing more, and the only virtue practiced is that of obedience, which it should have acquired at home. On the play-ground the development of individuality ought to be given a chance, but always under the control of the wiser parent or teacher.

Detroit.

HEALTH REPORT for week ending September 30: Deaths, under 5 years, 36; births, male 33, female 32; diphtheria, 5 cases, 12 new cases, 4 recovered, 1 dead, 12 sick now; scarlet fever, 4 cases, 7 new cases, no recoveries, no deaths, 11 sick now; smallpox, 2 sick, 5 new cases, no recoveries, 7 sick now.

Cincinnati.

DR. P. S. CONNER, of this city, has been appointed to the commission for the investigation of the war department. Dr. Conner was born in West Chester, Pa., in 1839, served with distinction as an assistant-surgeon in the War of the Rebellion, but did not retire from service until 1866. Since leaving the Army he has practiced in Cincinnati. He has been president of the American Surgical Association, the Ohio State Society, the Cincinnati Academy of Medicine, is Professor of Surgery in the Ohio Medical College and in the Dartmouth Medical College, and also surgeon to the Good Samaritan Hospital and, until a few years ago, to the Cincinnati Hospital.

Louisville.

HEALTH OFFICE.—In the forthcoming annual report the Health Officer, Dr. M. K. Allen, will urge the following recommendations: A milk and food inspector; the establishment of public urinals; the establishment of public baths for the use of the poor; the setting apart of a hospital for the care of consumptives; the establishment of a detention ward at the City Hospital for persons suspected of being insane, and for the surgical treatment of patients from the work-house and almshouse; the furnishing of diphtheria antitoxin to the poor by the city; requiring all physicians to report the following diseases to the Health office, not to be placarded: consumption, typhoid fever and whooping-cough, and the placing along the thoroughfares baskets or boxes to be used as receptacles for waste paper, fruit peelings, etc.

BOARD OF PHARMACY.—Governor Bradley has appointed Mr. Addison Dimmit a member of the State Board of Pharmacy, to succeed Dr. J. W. Fowler, whose term had expired. Mr. Dimmit is a member of the firm of Geo. A. Newman & Co., wholesale and retail druggists of this city.

MATHEWS.—Dr. J. M. Mathews has just returned from an

extended trip east, having been in attendance upon the American Association of Obstetricians and Gynecologists at its recent meeting in Pittsburg.

MORTALITY REPORT.—The mortality report for the month of September shows a total of 230 deaths against 262 for the same month last year. Consumption caused thirty-eight deaths, typhoid fever eleven, old age thirteen. Only sixty of the deaths were colored people.

GILLETTE.—Miss Nellie Gillette, who for five years has been the efficient Superintendent of the John N. Norton Memorial Infirmary and Training School, has left for her home in New York on a year's leave of absence on account of ill health. She will return at the end of that time to resume her duties. A class of four will graduate this month from the Training School.

Washington.

HEALTH OF THE DISTRICT.—The report of the Health Officer for the week ended September 24, shows the total number of deaths to have been 104, of which 52 were white and 52 colored. The principal causes of death were nervous diseases, 12; circulatory, 8; genito-urinary, 5; respiratory, 16; intestinal, 11. There were five deaths from typhoid, 7 from diphtheria and 3 from malaria. There were 79 cases of diphtheria and 57 cases of scarlet fever under treatment at the close of the week. There are no cases of smallpox in the city at present, the last case having been discharged from the isolation hospital on the 15th ult.

HEALTH OFFICER AFTER FREEDMAN'S HOSPITAL.—Health Officer Woodward has called upon the surgeon of the Freedman's Hospital for an explanation of the fact that the contagious disease regulations are being repeatedly violated by that hospital, in not properly caring for and reporting contagious diseases to the Health Office. Dr. Woodward has appealed to the Interior Department in order to secure its co-operation in checking the reported violations. If Congress would abolish the "political-plum-feature" of this hospital and place the control of the institution under the District Commissioners, where it rightly belongs, the existing friction would be promptly removed.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—The annual report of the Central Dispensary and Emergency Hospital for the year ended June 30, 1898, shows the total number of new patients treated was 11,927, making 35,333 visits; of this number 7722 patients were treated in the Dispensary and 4205 in the Emergency Department. There were 2120 operations performed, 308 patients committed to the wards, 579 ambulance calls, 36,196 prescriptions compounded and 41 deaths. Dr. Burnett, the President of the Attending Staff, calls attention to the necessity for more room for the treatment of patients, and notes that there was a slight falling off of new patients in the dispensary during the year, due to the rigid enforcement by the hospital authorities of the rule of the Medical Association, requiring applicants for treatment to present a certificate of dependency before being admitted to the different services. He also calls attention to the munificent gifts of Mrs. Phebe A. Huret. Last year she presented the hospital with a very valuable X-ray apparatus, and this year she has presented a large plot of ground and house for the nurses of the hospital. The work of the Ladies' Auxiliary Board, in improving the operating rooms of the hospital is highly commended, and the excellent work of the resident physicians specially noted. The superintendent, Miss Simonton, reports that the training school, which has been started in conjunction with the Washington Asylum, the Washington Training School for Nurses and this hospital, is being conducted very satisfactorily, and a large number of pupil nurses have been admitted. The treasurer's report shows the total receipts to have been \$17,531.65, and the total expenses to have been \$17,528.55, with a balance of \$3.10.

PHYSICIAN TO THE POOR APPOINTED.—Dr. James R. Tuban, the faithful substitute physician to the poor, has been pro-

moted to fill the vacancy caused by the resignation of Dr. J. D. Bradfield, physician to the eighth district.

ARMY APPOINTMENTS.—Drs. Edmund Barrie and Samuel N. Hannon have been appointed acting assistant-surgeons in the Army. The former leaves to take charge of the Red Cross Hospital at Camp Mead, the latter goes to Santiago de Cuba for special detail.

VISITED WASHINGTON.—Dr. Joseph M. Matthews, President of the AMERICAN MEDICAL ASSOCIATION, and Dr. I. N. Love of St. Louis, made a flying visit to Washington on the 30th ult.

Philadelphia.

ANOTHER INFECTED SCHOOLHOUSE.—A serious epidemic threatens the district of Paschalville, where thirteen cases of diphtheria have recently occurred, eleven of which can be traced to the John Bartram school. An investigation of the throats of several children who had been ailing for a few days showed the presence of the specific germ. In one instance in which several children from one family were suffering with diphtheria, it was found that there had been no physician in attendance, and on further inquiry it was learned that the family were Christian scientists. It is stated that Dr. Taylor of the Bureau of Health detailed a corps of medical inspectors to make a thorough investigation of the suspicious cases occurring in the district and report same to the proper authorities, and institute quarantine where necessary. The schoolhouse has been thoroughly cleansed and fumigated.

APPEAL FOR FUNDS.—Owing to the heavy drain necessarily entailed in bringing to this city and caring for a thousand sick soldiers, the National Relief Society of Philadelphia has made an urgent public appeal for funds in order to carry on its work. It is not all to simply care for the soldiers while they remain in the hospitals, but the heaviest burdens will fall upon the families of those who have been discharged from the hospitals in shattered health and without any permanent employment. It is stated that in some instances of this character, a few poor unfortunates have actually had to pawn their clothing before employment was found. Mr. George C. Thomas, treasurer of the National Relief Commission, acknowledges the following contributions: Cash previously acknowledged, \$66,627.32; other contributions and supplies, \$40,265. The Red Cross Society of Philadelphia has been very active in the relief of the sick soldiers, and up to date \$14,888.14 has been received, which will go to those who most need support while seeking for permanent employment. The hospitals of the city also receive contributions to be expended in this manner, and by the co operation of all channels it is hoped that every unfortunate patient brought here may be cared for and his wants attended to.

UNIVERSITY OF PENNSYLVANIA.—Several familiar faces were missed at the opening exercises, and a touching tribute was paid to Dr. William Pepper by Provost Harrison, who recited the wonderful advances made by the University under his direct guidance. The venerable master of surgery, Dr. John Ashhurst, was referred to with the heartfelt hope of his early recovery. The University begins the session with much greater facilities for teaching, such as new laboratories, etc. The lengthened course has not prevented an increase of numbers over the period when only a three years' course was required, and there are now more students enrolled up to the present time than there were last year.

PERSONAL MENTION.—Dr. William White, professor of clinical surgery in the University of Pennsylvania, who has been spending the summer in Europe, has returned home to resume practice and clinical teaching at the University.

Dr. Benjamin Lee, Health Officer of Philadelphia, who has been in attendance at the twenty-sixth annual meeting of the American Public Health Association, has returned. It is reported that at this meeting a resolution was passed favoring the appointment of a committee to secure the co operation of

the United States, Canada, Mexico, and as far as possible the countries of Europe, to adopt the Bertillon system for the classification of diseases, on account of the inaccuracies of the other systems now in vogue. Pennsylvania adopted the Bertillon system at the last meeting of the State Board of Health, and it is hoped that its results will prove both convenient and useful.

Surgeon-General W. K. Van Reypen, U. S. N., has recently made a thorough inspection of the naval hospital situated at this point, and pronounces the condition of things eminently satisfactory.

FACULTY CHANGES.—Since the death of Dr. William Pepper professor of the theory and practice of medicine at the University of Pennsylvania, there has been much speculation as to his successor. Nothing was known of the action which the Board of Trustees might take toward choosing his successor, and while the Board recently placed Dr. James Tyson in this coveted chair, it seems that this action is not entirely final, and Dr. Tyson will only be the nominal head of that department, while the didactic lectures will be given by several capable teachers of the faculty. The University has always conformed to the civil service reform by promoting those it has brought up into the places made vacant by the death of one of its members. Dr. Tyson will have full supervision over the branch of general medicine, both didactic and clinical, while Dr. John H. Musser, Dr. Alfred Stangel, Dr. M. Howard Fussell and Dr. Frederick A. Packard will give didactic lectures to members of the graduating class. The names of Dr. Judson Daland and Dr. John K. Mitchell were also mentioned for this honor, but as they both now hold chairs in the teaching faculty, it was thought best not to make any changes in their departments. Owing to the unfortunate illness of Dr. John Ashhurst, his chair remains unfilled and will probably remain so during the coming term. In the meantime, Dr. J. William White will be the nominal head with full supervision over the department, while Dr. H. R. Wharton and Dr. A. C. Wood will give some of the didactic lectures until final action is taken by the Board of Trustees.

AYER LABORATORY.—The foundation of the Ayer Laboratory has been laid and the building is now assuming definite proportions. The building was given to the Pennsylvania Hospital by Mrs. Josephine Ayer of Lowell, Mass., who left a legacy of \$50,000 to the hospital for the erection of this building. The material used will be red brick with gray granite, but the style of architecture of the simplest kind, with Doric pilasters and symmetric arrangement of the windows so as to maintain as much as possible the old colonial taste. The basement will be utilized as a museum, the first floor for autopsies and a mortuary chapel, the second floor for bacteriologic and chemie studies, and the attic for scientific photography. The building will have an endowment of \$25,000, so that the work in the different departments will never become embarrassed from the lack of funds.

WOMAN'S MEDICAL COLLEGE.—At the opening session of the Woman's Medical College of Philadelphia, Dr. Gertrude Walker delivered an address dealing with the influences in and around the medical profession, and pointing out to the students the evils to be avoided and urging a high preparatory course before beginning the pursuit of medicine. In the opinion of the speaker, a large proportion of the ills of humanity were due to hysteria, and from this source Christian scientists gained a foothold upon the community. The speaker also warned the students against all forms of quackery and associations of "pathists" of every school. A four years' course has been instituted at this college.

ANOTHER WAIL FROM HOMEOPATHS.—From the recent meeting of the homeopaths of Pennsylvania, recently held in Pittsburgh, comes a complaint of the unfair treatment accorded the Hahnemann by the innumerable officials of Philadelphia over.

the distribution of soldiers who were brought to the city for treatment, and it was thought the Hahnemann did not have a fair chance to get at them. Dr. Mohr is reported as saying: "When the first train left Philadelphia to bring the sick soldiers from the South, we made application to the Director of Public Safety and other officials in the city, but although we stated that we could care for twenty-five cases, we received only one. When the second train left we still gave them the option of sending twenty-five cases, but we received only "one." Fortunately, however, for us as a school and a hospital, we had placed ourselves in communication with the — and from his representative in Philadelphia an aggregate of sixty-two soldiers were received."

PRESIDENT OF WISTAR INSTITUTE.—At a recent meeting of the Board of Trustees of the Wistar Institute of Anatomy and Biology, Provost Charles C. Harrison of the University of Pennsylvania was elected president to succeed the late Dr. William Pepper. The Wistar Institute of Anatomy, while its work is not fully comprehended, being for post-graduate students only, will some day take first rank with any institution of its kind in America, for its endowment and large collection of anatomic specimens could hardly be duplicated on this side of the Atlantic. The institution is governed by a board of managers, six of whom are elected by the trustees of the University.

WOMAN'S HEALTH PROTECTIVE ASSOCIATION.—This Association, which has taken such a prominent part in the crusade against the filthy Schuylkill water and is instrumental in bringing about reforms in hygiene among the poorer classes, recently had its first fall meeting. The president, Mrs. John Scribner, delivered an address outlining the work for the coming months, and stated that the principal subjects which would receive attention would be contagious diseases, meat, milk, the schoolhouse question and the "consumptive poor."

SHAIN SCHOLARSHIP.—As a result of a competitive examination held recently, Robert Sawford Scott was awarded the Shain scholarship* in the Jefferson Medical College. This scholarship was established from the legacy of Dr. Francis W. Shain, who bequeathed \$4000 for this express purpose. The scholarship entitles the recipient to a four years' course in the Jefferson Medical College, and as the examination is a rigid one, makes the honor the greater.

Societies.

The following recent meetings are noted:

Iowa.—Northwestern Medical Association, Sac City, September 21.

Maryland.—Baltimore County Medical Association, Baltimore, September, 22.

Michigan.—Kalamazoo Academy of Medicine, September 27.

Missouri.—St. Louis Medical Society of Missouri, October 1; Medical Society of City Hospital Alumni, September 15.

New York.—Medical Society of the County of New York, New York, September 26; Syracuse Academy of Medicine, September 20.

Ohio.—Delaware County Medical Society, Delaware, Oct. 4.

Pennsylvania.—Suequehanna County Medical Society, New Milford, October 4; Venango County Medical Society, Franklin, September 20.

Tennessee.—East Tennessee Medical Society, Newport, September 22.

Texas.—Houston District Medical Association, Sept. 26.

Wisconsin.—Central Wisconsin Medical Society, La Crosse, September 27.

American Public Health Association.—This Association elected the following officers at the recent meeting: President, George H. Rohé of Baltimore; secretary, C. O. Probet of Columbus, Ohio; treasurer, Henry D. Holton of Brattleboro, Vt.; executive committee, Prof. F. C. Robinson of Brunswick, Me., Irving H. Watson of Concord, N. H., Frank W. Wright of New Haven Conn., and others. The Association will meet in Annapolis in November, 1899. An abstract of the proceedings will appear in the JOURNAL, beginning next week.

CHANGE OF ADDRESS.

Adams, S. S., from Mt. Lake Park, Md., to No. 1 Dupont Circle, Washington, D. C.
Butterworth, A., from Chicago View Hotel to Central Music Hall, Chicago.
Braun, O., from Asbland to Merrill, Wis.

Boyer, J. S., from Chicago, Ill., to Marganna, Va.
Butler, W. J., from 670 Grand Av. to 1361 Jackson Boul., Chicago.
Cassidy, W. W., from Wabasha, Minn., to 740 Jackson Boul., Chicago.
Carson, C. J., from Mortimer, Ill., to 204 S. Lincoln St., Chicago.
Danielson, C. A., from Omaha to 320 Jackson Boul., Chicago.
Downey, W. S., from 925 W. 56th to 4501 Wallace St., Chicago.
Evans, E. E., from Sumner to Stephen's Store, Mo.
Felix, T. O., from St. Louis, Mo., to Downs, Kas.
Finley, G. W., from Harmony to Brazil, Ind.
Gallen, G. E., from Calumet, Mich., to 715 W. Harrison St., Chicago.
Honan, J. H., from Reusselaer, Ind., to 78 Lülzow Strasse, Berlin, Ger.
Heyt, F. C., from Clarinda, Iowa, to 5337 Madison Av., Chicago.
Jones, Mrs. S. B., from Rahway to 67 Monticello Av., Jersey City, N. J.
Jones, W. D., from Devil's Lake, N. D., to Rising City, Neb.
Ketchersid, J. N., from Abilene to Hope, Kas.
Lewellen, W. P., from Clarinda to Brookfield, Iowa.
Miller, W., from Thurman to Rio Grande, Ohio.
Musson, E. E., from 1206 Locust to 258 S. 16th St., Philadelphia, Pa.
Pomeroy, H. M., from San Diego to Los Angeles, Cal.
Runkel, W. W., from Johnson's Creek to 2324 Violet St., Milwaukee, Wis.
Reese, L., from Chestnut Grove to Minerva, Ky.
Smith, F. L., from Sheffield, Mass., to 1130 Bridgeport, Conn.
Sheldon, J. G., from 204 S. Lincoln St. to 656 Jackson Boul., Chicago.
Searles, L. M., from Mt. Airy, Iowa, to 1025 O St., Lincoln, Neb.
Schmidt, O., from Fond du Lac, Wis., to 202 Lincoln St., Chicago.
Titterington, M. B., from Norwalk, Ohio, to Jerseyville, Ill.
Taylor, J. M., from Bar Harbor, Me., to 1504 Pine St., Philadelphia, Pa.
Terry, M. C., from Ft. Shaw, Mont., to 628 Adams St., Chicago.
Thompson, G. N., from New Milford, Ill., to Keokuk, Iowa.
Taylor, P. K., from Kingston, R. I., to 211 W. 139th St., New York City.
Wirt, W. E., from 122 Euclid Ave. to 477 Prospect St., Cleveland, Ohio.
Wooding, B. F., from Denver, Colo., to Fortress Monroe, Ohio.
Zimmermann, M. W., from 117 S. 17th to 1522 Locust St., Philadelphia.

LETTERS RECEIVED.

American Therapeutic Co. (2), New York City.
Bailey, W. C., Las Vegas Hot Springs, Mexico; Bascom, H., Ottawa, Ill.; Bailey, Milton, Sheldon, Iowa; Brown, F. F., New York City; Book-keeper Co., Ltd., Detroit, Mich.
Campbell, R. D., Grand Forks, N. D.; Breveling, Geo. B., Philadelphia, Pa.; Comstock, H. C., Sioux City, Iowa; Culbertson, J. C., Cincinnati.
Emanuel, H. W., Milnor, N. D.
Fisher, Lewis, New York City; Fuller's Adv. Agency, C. H., Chicago.
Gardner, R. W., New York City; Gihon, A. L., New York City; Greenleaf, C. R., Washington, D. C.; Greenley, T. B., Meadow Lawn, Ky.; Girard, A. C., Camp George Gordon Meade, Pa.
Hawley, B. C., Burlington, Vt.; Hartshorn, W. E., Minneapolis, Minn.; Henley, G., Ann Arbor, Mich.; Hummel Adv. Agency, A. L., New York City; Hektoen, L., Chicago.
Johnston, C. H., Grand Rapids, Mich.
Kindred, J. Jos., Astoria, L. I., N. Y.; Kempson, J. F., New York City.
McLean, Donald, Ft. Monroe, Va.; McConnell, E. P., Kirksville, Mo.
Minor, J. C., Hot Springs, Ark.
Parker, E. F., Charleston, S. C.; Powell, E. W., Omaha, Neb.; Punton, Jno., Kansas City, Mo.; Potts, Mrs. R. D., San Francisco, Cal.
Reese, Lester, Minerva, Ky.; Riley, W. H., Boulder, Colo.
Stillwell & Co., Melbourne, Australia; Saunders, W. B., Philadelphia, Pa.; Scott & Bowne, New York City; Sotheron, Mrs. J. T., Washington.
Townsend, W. G., Baltimore, Md.; Tucker, F. E. S., Battle Creek, Mich.; Tripp Adv. Agency, W. H., New York City.
Wessinger, J. A., Ann Arbor, Mich.; Wood, W. F., Mishawaka, Ind.; Wharton, J. E., Chrisman, Ill.; Weeks Drug & Chemical Co., Jackson, Mich.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To Santiago, Cuba, via New York City, First Lieut. E. Howell, 5th U. S. Vol. Infantry, from the general hospital, Ft. McPherson, Ga., to join his regiment, and the following acting asst.-surgeons: George B. Heinecke, Alexander McF. McMaster, Samuel L. Hannon, Edwin P. Hayward, Dudley W. Welch and Wm. H. Block, all from Washington, D. C.

To Ponce, Porto Rico, via New York City: Acting Asst.-Surgeons W. C. Berlin, J. Carlisle DeVries, George G. Morris, from Washington, D. C., H. E. Sears from Camp Wikoff, L. I., and Robert W. Andrews from Camp George H. Thomas, Ga.

To duty at Camp Meade, Middletown, Pa.: Acting Asst.-Surgeon Geo. Dock. To duty at Camp Hamilton, Lexington, Ky.: Acting Asst.-Surgeons Harry R. Lemen from Camp Wikoff, L. I., and H. L. Gilchrist from Camp George H. Thomas, Ga. To duty with troops at Anniston, Ala.: Lieut. Marshall M. Cloud, asst.-surgeon U. S. A., from the U. S. general hospital at Ft. McPherson, Ga. To duty with troops at Jacksonville, Fla.: Acting Asst.-Surgeon Raphael Echeverria from Tampa, Fla. To duty with troops at Willet's Point, N. Y.: Acting Asst.-Surgeons H. W. Eliot and R. C. Holcomb from Camp Wikoff, L. I. To report to the Surgeon-General at Washington, D. C.: Lieut.-Col. Rush Huidekoper, chief surgeon U. S. Vols., from duty in Porto Rico; Acting Asst.-Surgeon H. Lincoln Chase from Ft. Crook, Neb.

Honorably discharged: Majors George Cook and Clayton Parkhill, chief surgeons of volunteers, Major W. H. Devine, brigade surgeon, and Major Thomas G. Summers, surgeon 2d Tennessee Inf. and brigade surgeon of volunteers.

Resigned: First Lieut. Frank E. Bateman, asst.-surgeon 5th Massachusetts Infantry; First Lieut. Norman D. Harvey, asst.-surgeon 1st Rhode Island Infantry; First Lieut. Charles H. Schlichter, asst.-surgeon 3d New Jersey Infantry, and Capt. Theodore Rethers, asst.-surgeon 1st California Infantry.

Acting Asst.-Surgeon Donald Mclean from Detroit, on duty at Camp Meade, is the son of Donald Mclean, Sr., who is on duty as chief surgeon of division at Ft. Monroe, Va.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, OCTOBER 15, 1898.

No. 16.

ADDRESS.

THE EVOLUTION OF SPECIALISM IN MEDICINE.

The Presidential Address delivered before the American Association of
Obstetricians and Gynecologists, at Pittsburg, Penn., Sept. 21, 1898.

BY CHARLES A. L. REED, A.M., M.D.
CINCINNATI, OHIO.

*Fellows of the American Association of Obstetricians
and Gynecologists:*

In conforming to the custom which demands an address from your retiring president, I cheerfully and feelingly comply with that other usage which requires that my first expression, on this occasion, shall be one of profound gratitude for the honor conferred in electing me to preside over this, your eleventh annual convention.

We have at this meeting entered upon the second decade of our organic existence. The moment is opportune for a brief reflection upon the purpose which brings us into annual convention. That that purpose is real and deep and earnest is shown by the fact that each of our reunions but serves to increase the enthusiastic devotion to work which has always characterized our proceedings. From the day of the preliminary convention at Buffalo, April 19, 1888, to this moment, there has been no flagging in the task to which we, as a body, have set our hands—the task of broadening, deepening and refining those beneficent departments of the healing art embraced in the title of our organization. To this congenial task we shall continue to devote the best energies of our nature. But while our object and purpose is clear and distinct, it may be well for us to pause a moment and consider, in a somewhat philosophic way, not only our present status, but those forces and conditions which brought us into existence and those influences which shall determine our destiny.

It is safe to accept ourselves, in our organic form, as an integral part of a complex social fabric. Social fabrics such as ours have their origin in primitive conditions from which they are evolved in conformity to established laws—laws which deal with matter and motion and force. We can fancy that the starting-point was a stable equilibrium, which, in fact, can be nothing more than a theoretic conception that marks the transition between growth and decay, between life and death. In the course of those changes which we recognize as developmental and progressive we are constantly confronted by phenomena which display on the one hand the persistence of immutable force, and on the other, the diversion of that force into multitudinous channels through the instrumentality of resistant inertia. The results are not only correspondingly multitudinous, but each result is susceptible of further segregation, in the course of progression to final effects.

Thus, each division of initial force results in the changing of a uniform into a multiform force, while each separate form of the latter becomes itself a specialized force, susceptible of further subdivision. It follows, therefore, that we must accept as a fundamental sociologic doctrine, based upon primary biologic law, that progress is due to the gradual evolution of heterogeneity. This process is exemplified, not only in the complex social organisms, but in every phase of organic life. The seed that drops into the soil speedily loses its homogeneous character in the process of germination, and, still further, in each successive change, until maturity is attained in shrub or tree or plant. In the act of human reproduction, the same phenomena are exhibited in even more complex form in the mysteries of embryologic development and in the conditions of subsequent individual existence. What is true of the individual members of the vegetal and animal kingdoms is still further manifested in the origin and development of species in those departments of nature. The ultimate products are manifested in the complex flora and fauna that today entrance our naturalists in their efforts of analytic research.

We find the lesson that best subserves our purpose exemplified in the initial changes which take place among the most primitive of peoples. Let us take, for example, as suggested by Mr. Spencer, a tribe of North American Indians. Living as they do chiefly by the chase, an early necessity which they encounter is the means of killing their game, and let us say, each man provides himself with arrows for the purpose. Presently one of the number, as the result of accidental influences or conditions, discovers that he can make better arrows than can his fellows. They, in turn, desiring the best implements, go to him for their arrows, for which they compensate him with mats or baskets or fishing gear; while he, stimulated by reward and the distinction implied by patronage, restricts his labors to his new-found task, improving his product in excellence with that increasing skill which comes alone from practice. The influence is reciprocal, and its widening range is noticed in the improving quality of the mats and baskets and fishing gear made by those who find it no longer necessary to make their arrows. Here is the multiplication of effects from an initial cause, and here too, we observe the commencing specialization of function and of labor exemplified among the most primitive of peoples. What is true of these simple folk, is true in a more pronounced degree throughout the increasing complexity of civilized society. So true is this, that today there is not a single department of human activity; there is not a single product of human labor, mental or physical, but is dependent for its possibility upon numerous other highly-specialized human activities. In the building of a house, how many special activities are exercised in forest, in quarry, in kiln, in.

factory and in the final act of construction, until the finished structure stands ready for the coming of its owner? In the construction of the stately bridges that span the three rivers that here mingle their tides, how many "specialists" have been engaged in the mine, the forge, the foundry and the coffer-dam? In making and operating the railroads over which you came hither with such comfort, safety and speed, how many "specialists" have been and are employed? The telegraph, the telephone, illuminating plants, and hydraulic institutions are but a few—a very few—other examples made possible only by employment of highly-specialized human skill. From these observations, we are forced to conclude, with that master-genius who has formulated with such clearness the philosophy of evolution, that a "part-cause of evolution is the multiplication of effects, and that this increases in geometric progression as the heterogeneity becomes greater"—conclusions which are not only "established inductively but are deducible from the deepest of all truths."

But if primitive people required arrow-makers or the fabricants of other implements, other necessities speedily arose, chief among which was attendance on those who were injured in the chase, who were wounded in battle, or were sickened by the effluvia of the primeval swamps. It was at this point that your progenitor, "the medicine man," stepped upon the scene. He is the necessary and inevitable incident of every primitive people. The Egyptians had their sages, soothsayers, and *pastaphori*; the Persians had their *genii*; the Phœnicians their *cabiri*; the Hindoostanes their *vaidyas*; the Tartars, their *shamans*; the Scythians, their *enares*; the people of Borneo and Sumatra, their serpent-charmers; the Zulus, their rain doctors and *tnwalas*; these are among the examples of the earliest formation of the medical branch in the social segmentation of primitive peoples.

In compliance with the law governing the multiplication of effects, these primary specializations were speedily followed by secondary specializations, traceable among peoples whose progress in civilization enables us to follow the successive phenomena of their evolution. Thus, among the earliest Greeks, who inherited much from antecedent peoples, and who appear in the arena of history with a complex civilization, we find, at the Homeric period, medicine locked up in the noisome cabinet of superstition, zealously guarded by an ignorant priesthood; yet in the days of Hippocrates there were regular surgeons to the armies, there were midwives, or navel-cutters, there were oculists, dentists and lithotomists, and there were *iatreia*, or clinics, both public and private. Rome, which began with the *augurs* and *haruspices* and other practitioners of base superstition, had so far exemplified the process of specialization, that by the time of the Empire, there were not only general practitioners, but there were, according to Baas, "oculists, aurists, surgeons, dentists, uroscopists; specialists in bleeding, catheterization, and clysterization; herb doctors, milk doctors, gynecologists, movement curers; specialists in private diseases, in the treatment of fistulae, in the cosmetic art; hair doctors, wine doctors, hernia doctors, etc."

We all understand that this high degree of specialization occurred as the distinguishing feature of the highest civilization ever attained before our own epoch. It was the highest degree of social organization known to other than modern history. This was true, not only of the medicine of that period, but of all the avoca-

tions of life. The process of segregation had been carried to its logical limit, until each resultant product was without that potentiality essential for its perpetuation. A cycle in the evolution of the race had been defined—a cycle as clear, as distinct, as inevitable as that which marks the moulting of the dove, the flowering of the rose, or the precession of the equinoxes. Majestic forces operating under resistance had sustained deductions at each successive stage, until motion had practically ceased; and humanity, a trivial plaything in the arcana of nature, was brought to a state of relative equilibration. The heterogeneous had resolved itself into the homogeneous, the specialized had become the generalized, and the inactive the inert, as the world, wrapped in the Lethæan mantle of the church, dropped into its long, reposeful sleep. From this sleep the giant of humanity finally awoke, refreshed and surcharged with potential force with which to inaugurate another cycle in the evolutionary development of our race. Again we see in the great laboratory of what we are pleased to call civilization the same laws producing the same results under the same conditions. Again do we see the homogeneous undergoing division, and the process of specialization again at work. In illustration of this fact, it is to our present purpose only to speak of our own profession since the breaking of that dawn which shed its most effulgent rays in the dark corners of the cloister. At that period, the church, in its complete dominance, had usurped practically all the functions of society. The church was, in fact, the form and expression of the homogeneity of that somber period. As a consequence, when the work of social segregation was again inaugurated, the healing art was exercised exclusively by the priesthood, which had been the custodian of its secrets during the long, dark centuries. The sons of the monasteries were in those days, in the broadest possible sense, "general practitioners," but the natural process of specialization was again soon manifest in this as in other departments of social evolution. In France, for instance, at the end of the Middle Ages, the work of segregation was manifested by the separation of medicine and surgery. The surgeons were, in turn, further segregated into classes, one of which was composed chiefly of barbers. Other specialties, more or less crude in conception, ill-defined in limit, and inefficient in application, were developed in numbers quite as great as those which characterized the "specialisms" of the Roman epoch. The same evolutionary changes were manifest in England and Germany; indeed, all of Western Europe was demonstrating the operation of those sociologic laws, the existence and effect of which I have endeavored to emphasize in your presence today.

But it were impossible and quite aside from my purpose to trace the gradual development of our art along the lines which I have indicated. Modern specialism in medicine—a present product of this process of social segregation—may be said to date from the period when the French schools, in the early decades of this century, took up seriously the question of pathologic anatomy. This was the basis upon which the work of division began. The imitative Germans zealously followed the example of their more progressive neighbors of the South, with the result that, today, the great profession north of the Rhine, through the influence of specialism, has attained a dignity and a distinction which it never before enjoyed. In Great Britain the division of work, scien-

tific and practical, was inaugurated at about the same time, although in this regard, as in others, the profession of our mother country has been very conservative. The United States, during the earlier decades of national existence, was largely controlled by European influence—at first French, then German, latterly English—while today she is thinking for herself and moving for herself, quite independently of foreign initiative, along lines which make for progress. The obstetric art is as old as the function of reproduction, although the latter ages have witnessed its present refinements. It has been said “obstetrics married surgery, and that the fruit of the union was bright-eyed gynecology.” The accouchement probably occurred at the time Récamier invented the speculum in 1801. Abdominal surgery had its rational beginning in 1809, under the masterly hand of the immortal McDowell of Kentucky, and must stand as America’s conspicuous contribution to surgical progress. Everything in medicine and surgery from that day to this is essentially contemporaneous history, in which occur conspicuously many of our proudest American names. But pardon these references; they are not made to revamp an old story, but rather to give force and illustration to my contention that specialism became a verity in response to natural laws, which even today determine its destiny.

We have come to that point in our discourse when we may with propriety ask: Has specialization today been carried to that degree that its resultant products stand without the potential force necessary for their further perpetuation? Is our science today in the imminence of a fatal equilibration? To each of these inquiries I answer “no.” And I say it, too, in the presence of the fact that never before in the history of human activity, neither in Greece nor in Rome, has specialization reached its present degree of refinement. But, happily, the present cycle of civilization is characterized by the operation of forces which found no exemplification in the earlier plays on the great stage of the world. Today, responsive to the edict of the gentle Nazarene, neither cloister, halls, factory, shop, college, school, family nor profession, withholds its modicum of knowledge that may make for the common weal. The proclamation of love heralded from the Mount, today reverberates through the nations. In conformity to natural laws love itself has segregated into emulation, generosity and benevolence. Herein is the corrective tendency of the specialism of today. It is fully exemplified in the proceedings of this and similar organizations, which meet annually to discuss the accumulated knowledge of the year, and then, not only in the convention hall, but through the avenues of the medical press, to lay the matured products of their wisdom, as a freewill offering, upon the common altar of the profession. In this way, knowledge, instead of remaining in the hands of those who evolve it, becomes disseminated for the common welfare. There is not a day but that the general medical profession becomes enriched in resource and potentiality by the accretions derived from specialism. It would seem that in this way one specialty after another must sooner or later lose its distinctive characteristics and return to the great body of the profession from which it was derived. What with our colleges, universities, clinics, hospitals, journals and societies, the connection between the specialties and the general profession is always close and intimate. The characteristic of the present

era, one that distinguishes it from former civilizations, is that the process of specialization is never carried to the point of complete segmentation. Each specialty, however assiduously cultivated, remains an integral part of the great general profession, the masters of which must ever stand as our ideals. All specialists today are primarily the products of general medical culture. The act of specialization takes place after and not before entrance into the general profession. When this order is changed, then comes the day of danger. Unlike the specialists of Greece and Rome, those of today are physicians and something more, and happily, their influence is to make something more of physicians. This tendency, which in Germany has come to its fullest fruition, is already marked the world over. But a few decades ago, the practice of gynecology, as now known and understood, was in the hands of a few practitioners, to whom it brought compensation and distinction; today it is in the hands of the multitudes, to whom it brings neither. It may be said that the general knowledge of gynecology has gone back to the profession where it belongs. Those who remain practitioners of that department maintain their position by the joint influence of voluntary self-assertion and special adaptability. It is undeniable, however, that with reference to our own department of practice the lines are shifting. From the pelvis to the abdomen was but a natural step in the application of our surgical resource. Those who were gynecologists but a few years ago are, many of them, abdominal surgeons today, with an unmistakable tendency to become general surgeons tomorrow.

While all this is true, there remains a *raison d'être* for organizations such as this, devoted to the cultivation of special departments of knowledge, and there will continue to remain a reason for the continuance of specialists in each of the recognized departments of medical science and medical practice. This reason is to be found, first, in the highest interests of the general medical profession, and next, in the highest interests of the masses, who are its beneficiaries. From the standpoint of the medical profession, each specialty, as has already been stated, is to be recognized as an integral and organic part, a distinct member controlled by its distinct center in the general sensorium, but a center in thorough correlation with its associated centers. With this idea the development of a specialty is nothing more nor less than the development of a particular part with a particular function—a development which tends in the direction of increasing general efficiency. No matter how generally diffused may become the knowledge of, for instance, gynecology, there will yet remain within the domain of those subjects which are capable of still further development attractive incentive for work. The cultivation of these departments must remain in the hands of those who honestly concentrate themselves upon the task. To such devotees as honestly assume this attitude and its attendant responsibilities, will always be accorded recognition and reward. But the condition which can perpetuate specialism, in this or any other department, is a narrowing rather than a broadening of limits. The broadening of limits tends to ultimate mergence and to homogeneity. A large number, possibly a majority, now identified with special work, may elect to shift their personal activities in this direction, while there are others who, standing upon an equally strong basis of general culture, will

decide to concentrate their energies in carrying to further refinement and perfection a more limited department of science. Thus, happily for the progress of the world, specialism will not disappear from society. On the contrary, specialism is manifestly to be even more distinct than in the past, while specialists, as known to the broad and progressive profession of America, will be able to gain recognition only by conforming to severer tests than are now applied. It is safe to predict, therefore, that in the not distant future there will be fewer specialists, but, happily, better ones. The lines may, and possibly will shift. Existing specialties, or certain of them at least, through the influence of further segregation and final equilibration, may, and probably will, disappear into the general profession, while segmentation will be inaugurated at other points to result in the development of other specialties. Thus shall the great future witness the mutations of progress.

ORIGINAL ARTICLES.

A CONTRIBUTION TO THE PHARMACOL- OGY OF CANNABIS INDICA.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. R. MARSHALL, M.D.

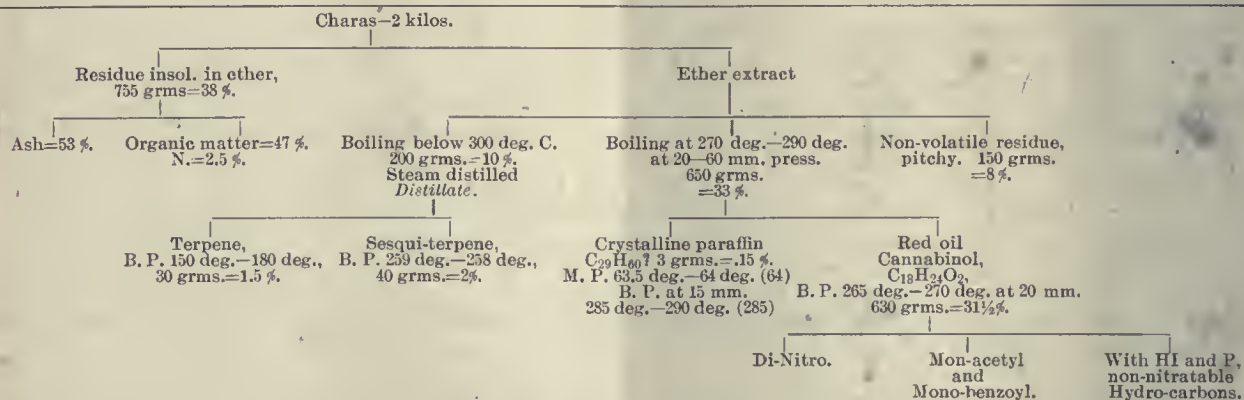
ASSISTANT TO THE DOWNING PROFESSOR OF MEDICINE, CAMBRIDGE.

Notwithstanding the large amount of labor which has been expended on Indian hemp, we know comparatively little of its pharmacology. The active principle, it is true, has been isolated, in a more or less impure form, by O'Shaughnessy, Robertson, the brothers Smith, and more recent investigators, but the more important question of the changes this undergoes has not, as far as I am aware, until recently,

active principles of Indian hemp, I shall confine myself in this communication to the work of the most recent observers. Two and a half years ago three Cambridge chemists—Wood, Spivey and Easterfield—commenced a re-investigation of the chemistry of Indian hemp. They worked with charas, as being the most active preparation of the plant, and by extraction with organic solvents (alcohol, ether, petroleum ether, etc.,) and subsequent fractional distillation, they isolated a mono- and sesqui-terpene, a crystalline paraffin and a resinous body (cannabinol); an indistillable pitch and an insoluble sandy residue were left behind.² The proportions of these substances are shown in the subjoined table, taken from a communication by Easterfield and Wood to the Cambridge Philosophical Society.³

Other samples more recently examined have not been found to be so good as this. A second lot contained only 15 per cent. cannabinol; and a third only 10 per cent. Furthermore, the cannabinol from these samples was not so pure as that obtained from the first sample and from the cannabinol obtained from the last the acetyl derivative of a higher homologue of the pure substance has been prepared. This homologue was present to the amount of 10-20 per cent.

The products (with the exception of the paraffin) and certain impure intermediate substances were passed on to me for pharmacologic examination. I naturally turned my attention first to the resin. The terpenes were present in too small an amount, and their chemic constitution and physical character were not such as to suggest a cannabis-like action. Personne,⁴ it is true, attributed the activity of the drug to an oily liquid, *cannabene* ($C_{18}H_{20}$), which Valenti,⁵ and more recently Vignola,⁶ have shown to be an impure sesqui-terpene; but Roux⁷ has proved physiologically that cannabene is not the active principle. On the other hand, numerous



been attempted. To me this is the most interesting part of the inquiry. Apart from the great financial loss entailed by the growing inertness with age of the drug, the variability in the strength, its preparation has led to numerous misfortunes in medical practice, and a distrust in its use as a therapeutic agent. The isolation of the active principle of the drug would not matter if we could only insure our preparations being of constant strength. But, without knowing the cause of the increasing inertness, this it is impossible to do. With this cause, among other questions, I intend to deal in this paper.

As I have dealt elsewhere¹ with the history of the

investigators had shown that the active principle is of a resinous nature. The paraffin was only present in very small amounts, and from its constitution and properties it is easy to infer that it possesses no marked physiologic properties.

The resin was found to be active. It possessed, as far as I could see, all the peculiar effects of the hemp plant. The question to be settled was its purity. As it boils at 265 to 270 degrees C, under 20 m.m. Hg pressure, and possesses a constant composition, the

² Journ. Chem. Soc., Vol. lxxix, i, p. 539, 1896.

³ Proc. Camb. Philosoph. Soc., Vol. ix, p. 148, 1897.

⁴ Journ. de Pharm. et de Chem., Vol. xxxi, p. 48 (1857).

⁵ Journ. Chem. Soc., Vol. xl, p. 284 (Abst.).

⁶ Ibid., Vol. lxxvii, i, p. 625 (Abst.).

⁷ Bull. Gén. de Therap., 1886, p. 492.

¹ The Lancet, Jan. 23, 1897, p. 235.

presence of an impurity seemed improbable. At least it could only be due to a stereo-chemical isomer or a substance with closely allied composition and properties. The possible presence of an alkaloid was avoided by treating the crude drug with dilute sulphuric acid before commencing the investigation. But no alkaloid has been found in charas.

In a more or less impure form cannabinal has been isolated from various commercial preparations, viz.: Merck's cannabinal, extractum cannabis Indicæ ethericum, resina cannabis Indicæ, and T. & H. Smith's cannabinal.

PHYSIOLOGIC INVESTIGATIONS.

Experiments have been carried out on cats, dogs, rabbits and myself, and the investigations have been mainly confined to the administration of the various substances by the mouth—a condition necessitated by the comparative insolubility of the drugs. With the experiments in detail I do not intend to deal—admirable descriptions have been given by various observers, both in this and other countries—but in appendix I will be found types of experiments and in appendix II a synopsis of the experiments made. By combining these and referring to the text, little difficulty will be experienced in forming mental pictures of the condition in each individual experiment.

Most of my experiments were made upon two dogs. One was a mongrel puppy something like an Airedale terrier in breed; the other was a young adult fox-terrier. Later a third dog, an English terrier, was added. The first two dogs were of very different temperament; the one (Airedale terrier) was self-reliant and intelligent; the other was affectionate, but nervous to an extreme degree. The English terrier, although timid, possessed much more character than the last one. This question of temperament, I believe, is of considerable importance in dealing with the finer effects of cannabis indica. The cats were adults; the rabbits young, usually 3 to 4 months old.

The *terpenes* in the comparatively small doses in which I was able to give them, produced no noteworthy symptoms beyond slight diuresis. In rabbits there seemed to be slight transient excitement, but the compound given to these animals was impure. On myself 0.5 c.c. produced no effect; 2 c.c. (sesquiterpene) slight and transient listlessness and heaviness of the head.

The *resin*, cannabinal, in dogs constantly produced the same qualitative effect, although it varied slightly in the different animals and in the same animal from time to time. The first noticeable symptom (one-half to two hours) was slight lassitude and an appearance of heaviness about the eyes. Gradually the depression increased and sleepiness and usually sleep followed; yawning and sighing were not infrequent; the body when standing swayed from side to side and this gradually increased until the animal fell over or suddenly pulled himself up with an effort. Usually, after falling, he remained in this position and went to sleep. Sometimes the rocking motion occurred in an antero-posterior direction, especially in the fox-terrier. In this animal, too, the standing position was more characteristic, the hind legs being half bent. In this position and markedly unsteady he usually stood gazing into the fire. Distinct ataxia during walking was present or absent according to the dose. After large doses the attention was blunted, but after small ones no effect in this direction was noticed. After

three to six hours the animals began to improve. At this period the larger sometimes became extremely frolicsome and if played with would run about barking in a high-pitched voice. Usually both animals slept or lay before the fire until taken to the kennel for the night.

When under the influence of the drug, the pupils were sometimes slightly dilated, sometimes unaffected, occasionally contracted; the pulse and respiration were slowed, but whether more than could be accounted for by the condition of rest it was often difficult to decide. My general impression is that the pulse was slower than during ordinary sleep. The temperature, with one exception, invariably fell; at the most not more than 3 degrees C., usually not more than 1 to 2 degrees C. The fall naturally varied with the temperature of the room. It was most marked in the fox-terrier, and in this dog trembling was not an infrequent symptom. The reflexes were always present and the sense of pain was doubtfully blunted; the olfactory sense, however, seemed depressed. Vomiting was a frequent symptom; salivation, independent of any emesis, a rare one. In the fox-terrier, increased micturition was occasionally obtained. The influence of dose was not marked. Generally speaking, the symptoms were fairly constant; but owing to the insolubility of the material complete absorption was difficult to insure. Consequently, in dogs at least, a strictly quantitative comparison could not be made. Occasionally a small dose produced more marked symptoms than a larger one, but this was rare, and in the fox-terrier the onset of the symptoms as a rule was later and they lasted longer than in the other dogs. On the whole, however, the symptoms were fairly proportioned to the amount given. After small doses (0.02 g. per kg.) quietude, heaviness about the eyes, sleepiness and usually slight unsteadiness occurred; attention was not appreciably affected, and the symptoms almost passed away in five or six hours. In the English terrier this dose produced a very marked effect, the ataxia being as severe as after much larger doses to other dogs. After large doses (0.1 g. per kg.) there were marked depression, ataxia, vomiting and sleepiness, although sleep was not an invariable symptom. In the evening food was refused, but the following morning they seemed quite well.

In cats effects similar to those occurring in dogs were obtained, but the action was more severe and prolonged. After a dose of 0.058 g. per kg. improvement did not commence until after twenty-five hours. The depression and muscular weakness were more marked than in dogs, and salivation was a more constant symptom. Total anorexia and consequent loss of weight occurred after large doses. A detailed description of an experiment will be found in appendix I.

On rabbits preparations of cannabis indica exert comparatively little effect. This was observed by O'Shaughnessy, and it has been noted by more recent investigators. The same effect was obtained in my own experiments with cannabinal. But I am inclined to believe that the immunity is more apparent than real. After large doses, slight depression and quietude are the only observable symptoms, but on further examination a fall in the number of heart-beats and respiration and the temperature was found to occur; the animal refuses to eat and death usually ensues. The low cerebral development of these animals prevents them showing unmistakable signs of cannabis poisoning, and these are only found in observations

on the vegetative functions. The lethal dose, however, is much larger than for dogs or cats.

The effect on myself was very similar to that described by other observers as peculiar to Indian hemp. After large doses (0.1 g.) there was a sensation of dryness of the lips, and of increased viscosity of the buccal mucus, a pleasurable tingling throughout the body, muscular weakness, slight ataxia, risibility and loss of time sensation. My pulse was said to be increased in frequency, sensation was somewhat blunted, and the pupils were slightly dilated.

After small doses (about 0.02 g.) the first symptom was usually loss of power for mental work. A typical condition of mental exhaustion set in. Sentences could not be conceived, except by powerful efforts, and these were not often forthcoming.

After intermediate doses (0.05 g.) the ability to work was lost altogether. I usually sat before the fire doing nothing, almost thinking of nothing. There was a marked unwillingness to move. Pleasurable tingling in the limbs, very slight ataxia and other symptoms similar to those obtained after a larger dose were present. Time passed quickly. Sleepiness was sometimes, but not always, present. As an early symptom a peculiar indistinctness of the periphery of the visual field occurred, and later it was found that the point of regard was made to travel with greater difficulty, as along the line of a page. Depression usually continued throughout the following day.

The residual *pitch*, when dissolved in oil, was active, but much less so than cannabinal. The symptoms were the same. Given in the solid form it exerted little effect. In all probability the activity was due to unchanged cannabinal present. Certain intermediate impure products were tried, but none of these was as active as cannabinal. The insoluble residue was inactive.

THE ACTIVE PRINCIPLE.

Thus, by a process of elimination, cannabinal was found to be the most active ingredient of the charas products. But in order to determine its comparative activity, control experiments were made with the crude material and extracts obtained from it. The natural product exerted much the same action as cannabinal, but both spirituous and oily extracts were somewhat more active; a similar result was obtained with Merck's cannabinal. This raised the question as to whether cannabinal is the sole active ingredient of the plant. I think we must assume that it is, at least, the active principle. The symptoms produced by the natural product and the resin are practically the same, and this is an important point. It suggests that we must look for changes occurring in the resin either during its manufacture or subsequently; or to a diminished absorbability as compared with extracts of the crude product. That faulty manufacture, etc., will produce a more or less inert substance, will be seen from evidence given later; but I am inclined to attribute to the lessened absorption the more important role. The terpenes probably increase the rapidity of absorption of crude extracts, but this I have not yet been able to put to the test. That cannabinal does not possess all the activity of the hemp plant I am prepared to admit; but this is the case with most other crude drugs and their so-called active principles. In the case of charas the terpenes probably aid in its physiologic action, as the crude drug seemed to produce more excitement than pure cannabinal; and when the drug is smoked

it is possible that pyrodene and other bases, which are produced by the destructive distillation of the substance, may aid in its intoxicating effects. If any other substance aids in its action, we have at present no indication of it. Moreover, that cannabinal is the chief active ingredient is supported by the fact that the activity of different products is roughly proportionate to the amount of cannabinal they contain, and that the growing inertness of Indian hemp can be explained by changes occurring in this resin.

The question of the purity of cannabinal can only be settled by further research, and this, I may add, is being undertaken. The only demonstration of its purity in the present state of our knowledge, viz: the reconversion of the crystalline acetylated derivative into cannabinal, failed. The acetyl derivative was not crystalline, and the reconverted cannabinal was much less active, physiologically, than the parent substance. This might be explained in many ways, but at present it is idle to speculate.

The last and worst sample of charas yielded a substance which contained a higher homologue of pure cannabinal. This homologue regenerated from its acetyl compound was physiologically inactive. Whether it is active previous to acetylizing is at present impossible to say.

THE CAUSE OF THE INACTIVITY OF INDIAN HEMP.

The different samples of the same preparation of Indian hemp possess varying physiologic effects, and that good samples darken and deteriorate in keeping has long been known; but until recently no satisfactory explanation of this has been offered. In 1894 Leib Lapin,⁸ by means of fractional precipitation prepared a substance which he termed *cannabindon*. This presented the appearance of "a beautiful dark cherry-red mass of thick consistency, which took the form of the vessel in which it stood, and showed a smooth horizontal surface." Its formula he gives as $C_8H_{12}O$. It possessed distinct reducing properties, and rubbed up with chocolate and left a week, its physiologic action was in great part lost. The latter he explains as being due to an oxidation of the preparation resulting from its finely divided state and its contact with fat and air; and he strengthens his position by a reference to the similar behavior of ergot, which undergoes oxidation less readily than *cannabindon*. The oxidation product he states "is inactive or very slightly active."

Although I was aware of Leib Lapin's views, my own researches were carried out independently. What first drew my attention to the matter was the gradual darkening which cannabinal underwent when left exposed to the air in a test-tube; the darkening commenced on the surface and gradually extended downward; the superficial layers being affected rapidly, the deeper layers very slowly. In order to determine whether this was due to oxidation, and whether in consequence the activity was affected, oxygen was slowly passed through cannabinal kept fluid by immersion in a sulphuric acid bath at 150 to 160 degrees C. The material rapidly darkened and the consistency increased. After passing the oxygen through for six hours the activity was found to be decidedly less. It was then bubbled through for thirteen hours more, the temperature toward the end of the experiment being raised to 185 degrees C. in order to keep the substance fluid. On cooling, the substance set to a

⁸ Ein Beitrage zur Kenntniss der Cannabis Indica. Diss. Jurjero, 1894.

hard, brittle mass, exactly resembling pitch in appearance. No loss or gain of weight, within the limits of experimental error occurred. This pitchy material given in the solid form possessed scarcely any action, but this in part is due to the lessened solubility and higher melting-point, for if previously discolored in oil, a distinct, though comparatively slight, effect is obtained. Dr. Easterfield, who has made all the analyses in connection with the charas research kindly undertook one of the oxidized cannabinal. The percentages obtained, compared with those of cannabinal, were:

Calculated for $C_{18}H_{24}O_2$ (cannabinal)	Found.	Calculated for $C_{18}H_{22}O_3$
C=79.4	C=77.7	C=75.0
H= 8.8	H= 7.5	H= 8.3

The product obtained was therefore not completely oxidized, and the activity it retained was in all probability due to unchanged cannabinal. As a control experiment carbon dioxide was passed through a similar sample of cannabinal similarly treated. Very slight darkening, probably owing to slight admixture with air occurred, but there was no increase in consistency. Only a slight diminution in activity was observed.

The influence of temperature was tried. Cannabinal distilled at 400 degrees C. under atmospheric pressure was found to be slightly less active than cannabinal distilled at 265 degrees C. under 20 mm. Hg. pressure, but when the substance was heated in sealed tubes at 220 to 260 degrees C. for twenty-four hours, no very great loss of activity occurred, although this was distinct. As slight oxidation may have resulted during the process, the influence of temperature *per se* may be disregarded. The action of aqueous vapor has not been determined.

It would therefore seem as if the loss of activity of Indian hemp was due to oxidation of the active ingredient. The terpenes, like other members of this class, readily hydrolize, and this, doubtless, exerts some effect in the deterioration of the crude drug. The obvious remedy is to keep cannabis preparations in air-tight vessels until they can be used. For practical purposes a well-corked bottle seems to be sufficiently protective, but hermetically sealed packages, especially for transport purposes, are to be prepared. In sealed tubes we have kept cannabinal for seventeen months without the slightest change.

The limitation of the oxidation to the superficial layers probably explains many of the accidents occurring in practice. If the preparation has been long in stock and imperfectly protected, these may have become comparatively inert, and scarcely any effect may be produced, while a renewal of the prescription from deeper parts—or the substitution of a more recent preparation—may produce very marked effects. I am certain that the accidental administration of superficial and deep layers of cannabinal will explain some discrepancies in my own results, which previously were inexplicable.

As regards a chemical test for the physiologic activity of cannabis compounds, none exists; and the only indication at present is in the direction of their reducing power. This will probably give us some information, and I hope to deal with the question later. As far as cannabinal is concerned, the transparency is the best ready indication of its purity. When placed in an ordinary test-tube print ought to be read through it with ease; any blackening is due

to admixture with oxidized material. If not carefully prepared impure products are readily obtained, and such give no more constant results than the ordinary preparations on the market. The transparency, however, is not an absolute indication of its purity, for the higher homologue of cannabinal, which, when derived from its acetyl compound is inactive, is almost as transparent as cannabinal itself. What the physiologic effect of this compound is in the natural state, it has not been possible to determine.

SUSCEPTIBILITY.

But the variation in activity of the preparations of Indian hemp will not account for all the differences in effect produced. A difference in individual susceptibility also exists. What this is due to we do not know. It is probable that certain types of men are more susceptible than others, and that certain habits, such as the alcoholic, have an inhibiting influence in this direction. The subject is a difficult one to treat from a purely experimental point of view. In the dogs the greatest effect seemed to be connected with greatest mental stability, but how much of this was due to variability of absorption and how much to individual differences it is difficult to say.

The following case which recently came under my notice is of interest in this connection, as it enabled me to compare the effect of the same dose on myself. A gentleman suffering from neuralgia took $\frac{1}{4}$ grain extractum cannabis indicæ (B.P.) in the form of a pill. The pills were made up by a well-known London druggist. The following account was written by the patient himself: "At about 4:30 on Sunday, feeling neuralgic pain in the right eye, I took one of the pills. I then had tea and read aloud for some time, feeling nothing unusual. But about 7:30, when dressing for dinner, I began to suffer from very curious feelings. I felt giddy and seemed to lose command of my actions; thoughts seemed to pass rapidly through my brain and I hardly felt responsible for myself. I went to my wife's room and described my feelings. She was alarmed at my appearance and said I was very white. I felt a sort of burning uncomfortable feeling inside and I tried to make myself vomit by drinking several tumblerfuls of hot mustard and water. This was partially successful, but I felt very ill and a doctor was called in. When he came I was unable to speak coherently; sentences were disjointed, and my memory partially failed me. I was ordered to bed and undressed with difficulty. I then shook violently all over, and my hands were cold and tended to contract. I was given some brandy and water and gradually I became more natural. Afterward I took some soup and fish. During my sleep I felt inclined to laugh, but I do not think I actually did so. The next morning I was comparatively well, but throughout this day and the next I did not feel quite well; there was a numbness and coldness in my legs and I feared I was in for an attack of influenza, but my temperature was normal." The neuralgia was cured, but afterward he told me he would rather bear the pain than the effects of the remedy. The remainder of the pills were given to me and on two occasions I tried them on myself. On both occasions the usual effects of Indian hemp were produced, viz., paresthesia in the extremities, inability to do mental work, and sleepiness, but not the giddiness and other symptoms produced in the case cited. The less effect may in part be due to my previous experience,

and the absence of fear in consequence, but this is insufficient to account for all the difference. The prescription was dispensed by a first-class pharmacist and there was no reason to believe that the extract was unequally shared.

THE ABSORPTION OF CANNABINOL.

For all practical purposes, cannabis preparations may be regarded as being quite insoluble in water. They are soluble in fats and organic solvents generally, but with the exception of fats these are not common constituents of the contents of the alimentary canal. It is even doubtful what part fats play in the absorption of the drug. If Moore and Rockwood's⁹ view of fat absorption be accepted, the only influence they could have would be a physical one—the substance would be brought into a state of finer division and thereby rendered more susceptible to other agencies. When given dissolved in oil, the onset of the symptoms is not distinctly earlier than in other cases, but as absorption probably only occurs from the intestine this observation is of little consequence. The more important question is the solubility of the active principle in dilute acids and alkalies respectively. According to Kionka¹⁰ the resin of Indian hemp is insoluble in alkalies. From the therapeutic point of view Germain Sée¹¹ states that cannabis is the peculiar sedative of the stomach. Both these statements suggest that the active principle is soluble in an acid medium, and this is supported by the fact that cannabinol is actually soluble in strong sulphuric acid and glacial acetic acid. But my results for dilute acids are opposed to this view, and contrary to the statement of Kionka, I find it soluble in dilute alkalies. The following experiment proves this: Two Erlenmeyer's flasks were taken; into one (A) was put 2.127 grammes cannabinol; into the other (B) put 2.335 grammes. Both were left over sulphuric acid until they attained a constant weight; 100 c.c., 1 per cent. caustic soda solution was then added to A and 100 c.c., 1 per cent hydrochloric acid (gas) to B. Both were shaken occasionally and left twenty-four hours. The alkaline solution soon became of a purplish color, which deepened; the acid solution remained perfectly clear. After standing twenty-four hours, both solutions were poured off and the remaining cannabinol was rapidly washed with distilled water until the washings were free from acid and alkali respectively. The flasks were again put over sulphuric acid and left until the weight became constant. The alkali-containing flask (A) had lost 0.03 gramme cannabinol; the acid-containing flask (B) 0.005 gramme, the latter being within experimental error.

It is therefore probable that the cannabis resin is absorbed under the influence of the alkaline juices of the upper part of the intestine. In the mouth, solution occurs to a slight extent, as is evidenced by the peculiar unpleasant taste, but this can not be of practical importance. The influence of other alimentary conditions has not been determined.

The condition of the stomach, however, plays an important part in the time of appearance of the symptoms, probably by hastening or retarding the course of the drug to the intestines. Thus in one case, when the drug was taken on an almost empty stomach, four hours passed before the onset of the symptoms, whereas if taken just before a meal, the first symp-

toms invariably occurred within one and a half hours. Taken after meals the appearance of the first symptoms is variable. In atony and dilatation of the stomach cannabis is said to be inactive (as a gastric sedative). The small solubility of the drug, even in alkalies, probably accounts for the insidious onset of the symptoms and its prolonged effect.

HABITUATION.

In order to determine roughly the influence of continued dosage on the activity of cannabinol, the two dogs were given very large doses every day for a week. A small dose, similar to one given just before the experiment, was then administered and its effects watched. The influence was certainly less than on the previous occasion, but the diminution was not marked. Whether habituation to this remedy occurs less readily than with other hypnotics can only be determined by practical experience. I know of no reliable observations on the subject, although it must be well known. In any case the tolerance is not likely to be so great as in the case of opium.

During my experiments with the two dogs, this question of tolerance often presented itself, and it was on this account that a third dog was obtained. Of the greater susceptibility of this there could be no doubt; but to a certain extent it was only apparent. The experience was new to him; he walked about and stumbled when the other dogs would have laid down. The same thing happened in the earlier experiments with these dogs; the ataxia was marked; later, they learned wisdom by experience, and laid down soon after the drug was given. It was often difficult to get them to stand sufficiently long for any indications to develop.

Although my experiments did not show any great amount of tolerance, they seemed to me to show some mental depression; the normal physical life of the animals seemed to run on a lower level, although this was difficult of proof. That cannabis indica exerts a powerful depressing influence, on some individuals at least, there can be no doubt, and from experiments on myself I have little hesitation in joining the ranks of those clinicians who regard Indian hemp as a causal factor of insanity. But this point, and others, I hope to develop in a later communication.

EFFECTS ON SPECIAL ORGANS.

Owing to the insolubility of cannabis preparations and the pressure of other work, exact experiments on the different organs have not been carried out. A solution of cannabinol was made by heating an excess of the substance in a 1 per cent. solution of sodium bicarbonate on a water bath, but the resulting product, which was of a brownish color and probably contained about 1 in 1000 cannabinol, had no distinct influence on blood-pressure. A solution of cannabinol phosphate (8 per cent.) in one experiment caused a slight fall and subsequent rise of blood-pressure, but from other points of view this substance was but slightly active.

Cannabinol is, however, somewhat depressant to the heart. A fall in the number of beats was constant, and in many cases this seemed greater than could be accounted for by the rest and sleep. Thus, in the largest dog, a pulse of 108 fell to one of 48, and a slight irregularity, also noticed in rabbits, occasionally occurred. That the blood-vessels were not dilated was inferred from a comparison with the action of chloral. After this drug, there was not the

⁹ Journal of Physiology, Vol. xxi, p. 58.

¹⁰ Liebereich's Encyclopaedia der Therapie. Erst. Bd. s. 556.

¹¹ *ibid.* s. 557.

same marked fall in the number of the heart-beats, and the character of the beat was slightly different. After a large dose of cannabinal my own pulse increased in frequency; after a small dose no effect was noticed; after intermediate doses I invariably forgot to take it. No distinct effect on the respiration was observed. It was slower and deeper, as in ordinary sleep.

In the fox-terrier increased micturition was not infrequent; but this was not observed in the other dogs. Constipation was not an obvious symptom. After continued dosage some evidence of it existed, but this was not seen after single doses. In myself it was rarely present. Salivation was an occasional symptom, but as this occurs in dogs and cats after the exhibition of drugs possessing no specific properties in this direction, it is not probable that cannabinal exerts any specific action in this way. In my own case dryness of the mouth was a more constant feature.

The main action of cannabinal, however, is on the nervous system, and probably on the cerebral cells. From introspective analysis it is difficult to avoid the conclusion that some peripheral action exists, but as all the symptoms can be explained by a central influence, it is simpler, in absence of proof, to accept this.

One of the most prominent physical symptoms is the loss of time-sensation. This is mentioned by most writers. But it is not peculiar to Indian hemp, as it occurs after mescal button and other drugs of a similar nature. Its explanation, to my mind, is simple. The estimation of time is a complex act and dependent upon our calling to consciousness a series of events. When the physical state is depressed by Indian hemp a succession of ideas cannot be maintained; time ceases to exist, and it can not therefore be estimated. Even the apparently slowly travelling second hands of a watch, which is observed when under the influence of Indian hemp, may be explained in a similar way. The power of conception is more or less lost; current events are rapidly forgotten, while those fixed in the memory by older associations may still be recalled. Under the full influence of the drug, even those too are forgotten, and one's whole previous existence seems to be blotted out.

A most interesting condition, after large doses, is the occurrence, alternately, of loss of control and lucid intervals. During the latter, all the elements of complete sanity are present, but the physical state is below the normal level. In it the processes on which consciousness depends are readily exhausted, and the condition of irresponsibility develops. Slight mental strain during the lucid periods seems to hasten the occurrence of a state of irresponsibility. A more complete rest from thought brings back the rational intervals. The over-estimation of distance was never distinctly observed by me, except to a slight degree on one occasion. The effect is probably connected with the increased effort made to accommodate the ocular muscles to the required distance, and is dependent on deficient will-power. Hallucinations, too, of a very slight character, were only present in one instance—a result probably attributable to my lack of imagination. In dogs, after large doses, the attention was blunted, and they became less obedient. As far as I can see, there seems to be no selective influence on any psychical phenomenon. All such processes are depressed, but whether to an equal degree I am not prepared to state. With this question, however, I hope to deal at some future time.

ILL EFFECTS.

The most common ill effect, or rather after effect, I have experienced, has been depression, lasting the whole or greater part of the following day, after a large dose (0.1g.) This, and the accompanying mental exhaustion, were decidedly painful, and the effect was markedly prolonged by attempts to do an ordinary day's work.

In dogs, vomiting was not an uncommon symptom but this was much less marked than with morphin. A slight, occasional irregularity of the heart in these animals and rabbits, has been mentioned; and a similar condition, viz: an increase in the cardiac irregularity of heart disease has been observed by Prior¹² after cannabis preparations, in men.

DERIVATIVES OF CANNABINOL.

These have been investigated in connection with experiments on the constitution of this body. Oxy-cannabin ($C_{11}H_{11}NO_4$) is inactive, at least in moderate doses. Acetyl-cannabinal and the cannabinal regenerated from it were but slightly active. The acetyl compound of the higher homologue of cannabinal, as well as the substance (regenerated from the acetyl compound) itself, was inactive.

Tri-brom-cannabinal, a brownish powder, was found to possess hypnotic properties. In dogs the action was very slight, but on myself (after 0.1g.) sleep and depression were marked, and three days of mental exhaustion followed.

Attempts were made to obtain a more soluble preparation of cannabinal, and this was best accomplished by making a phosphoric ester. Cannabinal was heated to 100 degrees C. with phosphoric anhydride. The melt was boiled out with alkalies, which dissolved nearly the whole of it, and this was then neutralized by hydrochloric acid. An amorphous substance was obtained, which, on analysis, gave results agreeing with the supposition that it was cannabinal phosphate. Physiologically, however, the substance was not very active, and injected subcutaneously into a dog produced an abscess.

THERAPEUTIC INDICATIONS.

Therapeutically, cannabinal is likely to be a valuable hypnotic. It is purer and more reliable than the cannabis preparations on the market, but it does not appear to possess any other advantages over them. It is not a powerful cerebral depressant (except in relation to its dose), and belongs rather to the substances termed "sleep producers" than "sleep forcers." Owing to its comparative insolubility its action is prolonged, and this in my own case leads to depression. Its advantages are, that its lethal dose is considerable; it does not inhibit secretory activity; and it does not readily induce habituation. Its disadvantages are, the excitement produced by early doses and the depression which follows its use. It appears to be a slight analgesic, but how far its activity goes in this direction it is impossible, in the absence of experiments in which pain is present, to say. This can only be proved by clinical observation. Purely pharmacologic investigations do not support any other actions of this drug, but so far as they have been carried they do not deny their existence.

In conclusion, I express my thanks to Messrs. Wood, Spivey and Easterfield, for the material supplied me, and especially to Dr. Easterfield for the help he has given me during the progress of the work.

¹² Münch. Med. Woch. No. 33, 1888.

APPENDIX I.

TYPES OF EXPERIMENTS.

Descriptions of personal experiments will be found in the *Lancet*. P=heart beat; R=respiration; T=rectal temperature.

Dog (English terrier); wt. 7180 grams; P., 102; R., 16; T., 38.2 degrees C.; (room temperature 20 to 22 degrees C.); 12:10 o'clock, 0.14 gram cannabinal; 12:40, slight depression, distinct unsteadiness; 12:45, ataxia more marked, head unsteady, eyes heavy; 12:55, very unsteady, will not lie down, pricked up ears when cart passed window, no dilatation of pupils; 1:10, extremely unsteady, continually falling over; will not touch milk, P. 96, T. 37.7 C.; 1:40, ataxia rather worse, still walking about; 1:50, vomited small quantity, mainly yellowish fluid; 1:54, vomited again; 2:10, condition same, constantly falling over, P. 108, T. 38.6 C.; 2:20, vomited again; 2:30, circus movements, then sat down, got up and repeated several times; 2:40, vomited; 2:50, vomited; 3:10, slightly better, but still falling over, P. 108, T. 38.9 C.; 3:40, been laid down last twenty minutes, slept partly, just got up, ataxia very much better at first but soon developed again; 4:10, sleepy, P. 96, T. 38.5 C.; 4:40, still marked ataxia but much better; 5:15, further improvement, still unsteady and depressed, P. 96, T. 38.9 C.; following morning, apparently well. This was the only case in which a rise of temperature was noted.

Dog (Airedale puppy), wt. 6500 grams. 10:30 o'clock, 0.5 gram cannabinal given in bread, P. 192; 11:30, lively, no obvious effect; 11:45, sleepy, lay down; 12:30, still in same position, yawning, came when called but seems rather stupid; 1:00, walking about, when played with commenced to run about and bark in a higher pitched voice; 2:00, been asleep for last half hour, does not answer to name so readily, weak on legs, can not stand steadily; 3:00, condition same, asleep, P. 96; 4:00, still asleep, occasionally awakens up, yawns and stretches, will not answer to name; 5:30, condition much the same, still weak on legs and tired, sent to kennel, would not eat; following morning, apparently normal.

Cat, wt. 3600 grams. 1:30 o'clock, 0.15 gram cannabinal given in meat; 2:30, no apparent effect; 3:00, sleeping; 3:45, awakened, rather weak on legs, gait slightly unsteady; 5:00, much worse, distinct inco-ordinate gait but does not move about much, has been laid down mostly, with chin on ground, passed a loose motion, would not drink milk although seemed eager for it and only ate two small pieces of meat.

Second day, 9:30 o'clock, no apparent alteration, still stupid. would not come when called, distinct muscular weakness, gait still unsteady, pupils somewhat dilated, would not drink milk although a little had been drunk during the night; 2:30, slightly better, gait less unsteady; 5:30, still better, looks up when called, ataxia still present; following morning, seemed quite normal.

Rabbit, wt. 620 grams; P., 300; R., 76; T., 38.4 C.

First day, 2:25 o'clock; 2.4 grams cannabinal given in mucilage; 5:25, has been quiet since drug was given, eyelids partially closed, slightly depressed, doubtful muscular weakness; P. 216, R. 30, T. 34.1 C.

Second day, 10:00 o'clock, somewhat worse, head trembles slightly, sensation blunted but kicks on being handled, has not eaten any food, P. 204, R. 54, T. 31.4 C., placed before fire; 5:45, seems slightly better, P. 150, R. 30, T. 32.7 C.

Third day, 12:15 o'clock, condition much the same, trembling of head present, eyes half closed, P. 168, R. 60, T. 29.1 C.; 5:30, slightly increased muscular weakness, pupils more dilated, been laid before the fire all day. P. 204, R. 36, T. 31.8 C.

Fourth day, 11:00 o'clock, no noticeable change, P. 133, R. 39, T. 30.6 C.; 6:00, much worse, trembling very marked.

Fifth day, 9:00 o'clock, found dead, rigor mortis, cold; afternoon, few small petechia in stomach, otherwise normal, stomach and cecum full of food.

APPENDIX II.

This appendix contains a summary of the experiments made on which the foregoing account is based. Only the briefest description is given, but some attempt has been made to indicate the comparative value of the experiments. The experiments are given in the order they were made. The time in parentheses indicates the period after administration of the drug at which the preceding symptom was noted; m., minute; h., hour.

EXPERIMENTS ON DOGS.

Three dogs were used; at first only two. All were fed at 9 o'clock A.M. Unless otherwise indicated the individual substances were given in gelatine capsules by the mouth.

1. May 5, 1897; Airedale terrier; weight 3100 gms.; 0.4 g. cannabinal phosphate; slight depression and sleepiness.

2. June 4, 1897; Airedale terrier, 4400 gms.; 0.4 g. cannabinal phosphate hypodermically; slight depression and sleepiness, fall in pulse rate; longer effect than in last case.

3. June 16, 1897; Airedale terrier, 5400 gms.; 1.1 g. acetyl-cannabinal; sleepiness and depression (30 m.), unsteadiness, occasional slight excitement, vomiting (3 h.), dilatation of pupils. Quite well next morning.

4. July 1, 1897; Airedale terrier; 0.5 g. cannabinal; slight sleepiness (75 m.), stupidity, muscular weakness and unsteadiness; slept most of day; normal next morning; effect more marked than 3.

5. July 15, 1897; Airedale terrier, 7520 gms.; 1 g. charas; tired, yawning (30 m.), sleepy, ataxia, etc., pupils somewhat dilated, very much excited (6 h.); seemed normal next day; effect somewhat greater than 4.

6. July 22, 1897; Airedale terrier; 0.3 c.c. $\frac{1}{6}$ alcoholic extract charas; depression (60 m.), temporary excitement (100 m.), weakness and unsteadiness (most marked 5 to 6 h.), shivering, involuntary micturition; slightly excited next morning; very marked effect.

7. July 28, 1897; Airedale terrier; 1 c.c. $\frac{1}{6}$ alcoholic extract charas; lay down (75 m.), but excited if played with; sleepiness, unsteadiness, etc., as in 6, but symptoms less severe; normal next morning.

8. July 30, 1897; Airedale terrier; 0.9 c.c. mono-terpene from charas; no effect.

9. Aug. 2, 1897; Airedale terrier; 1.1 c.c. sesqui-terpene from charas; no effect.

10. Aug. 3, 1897; Airedale terrier; 0.5 g. cannabinal distilled at 406 degrees C. (atmospheric pressure); lay down (30 m.), vomited (55 m.), depressed, head falling to one side (75 m.), afterward sleepiness, unsteadiness, etc., vomited twice (6 h.); effect almost as marked as 4.

11. Aug. 11, 1897; Airedale terrier; 1 c.c. greenish oil, intermediate between sesqui-terpene and cannabinal, unpleasant smell; vomited (45 m.); no effect beyond slight depression.

12. Oct. 19, 1897; Airedale terrier, 9650 gms.; 9.97 g. intermediate product between sesqui-terpene and cannabinal (distills below 300 degrees C.); slight depression, increased micturition; otherwise normal.

13. Fox-terrier, 7550 gms.; 0.75 g. intermediate product between sesqui-terpene and cannabinal (distills below 300 degrees C.); vomited four times (70 to 100 m.), increased micturition; no other effect.

14. Oct. 27, 1897; Airedale terrier, 10,700 gms.; 1.15 g. cannabinal, from Merck's cannabinal; depression (40 m.), sleepiness, muscular weakness and unsteadiness, dilated pupils, vomiting (140 m., 240 m., 255 m.); somewhat better, but still severely affected (5 $\frac{1}{2}$ h.); would not touch food; apparently well next morning. Most marked effect yet.

15. Fox-terrier, 7950 gms.; 1.04 g. cannabinal, from T. and H. Smith's cannabinal. Unsteadiness (35 m.), which increased; became tired and sleepy but walked about much, vomited (4 $\frac{1}{2}$ h.); more unsteady but less depressed than other dog; would not touch food; well next morning.

16. Nov. 11, 1897; Airedale terrier, 11,250 gms.; 0.99 g. Merck's cannabinal. No effect (30 m.), usual symptoms marked (60 m.), continued to 180 m., afterward gradual improvement, very much better (6 $\frac{1}{2}$ h.), salivation (2 h., continued 1 h.), vomiting (2 h.); depression and unsteadiness more marked than 14 but more transient.

17. Fox-terrier, 8100 gms.; 1.04 g. ext. cannab. indic. ether (Merck). Slight effect (60 m.), unsteadiness (75 m.), vomited (3 $\frac{1}{2}$ h.), ataxia main symptom; not much better (6 $\frac{1}{2}$ h.); very little sleep, apparently well next morning; effect about the same as 15.

18. Nov. 18, 1897; Airedale terrier; 0.19 g. ext. cannab. indic. ether (Merck). Depression (45 m.), marked unsteadiness (60 m.), slight salivation (90 m.), sleepy, excited, vomited (3 h.), ataxia not much better when left (4 h.).

19. Nov. 22, 1897; Airedale terrier; 1.95 g. cannabinal. Slight effect (30 m.): unsteadiness, sleepiness, etc., developed, but symptoms not more severe than 18.

20. Fox-terrier; 1 g. ext. cannab. indic. (Merck). Commencing weakness (45 m.), more marked (60 m.), afterward became very severe; incontinence of urine, vomited (130 m., 135 m.), trembling from cold; slight improvement (3 $\frac{1}{2}$ h.).

11. Nov. 26, 1897; Airedale terrier; 0.19 g. cannabinal (Merck) given in a piece of meat. Slight effect (2 h.); distinct unsteadiness (2 $\frac{1}{2}$ h.), subsequently worse, depressed but not sleepy.

22. Fox-terrier; 0.55 g. extract cannab. indic. Sicc. (Merck). No distinct effect.

23. Dec. 1, 1897; Airedale terrier, 12,400 gms.; 0.15 g. alco-

hol ether extract charas [previously heated three times with dil. H_2SO_4]. Sleep main symptom, depression (60 m.), unsteadiness (90 m.), vomiting ($2\frac{1}{2}$ h. $3\frac{1}{2}$ h.); distinct improvement (5 h.).

24. Fox-terrier; 8800 gms.; 0.15 g. alcohol-ether extract charas [previously heated three times with dil. H_2SO_4]. Slight depression (35 m.), slight unsteadiness (75 m.), afterward very distinct; slept, salivation (3 h.), vomited (4 h.), not much improvement (6 h.); well next morning.

25. Dec. 3, 1897; Airedale terrier; 0.15 g. alcohol-ether extract charas [previously heated 14 hours at 260 degrees C.]. Effects similar to 23, but somewhat less marked and delayed—no obvious action except slight depression and sleepiness for three and one-half hours.

26. Fox-terrier; 0.21 g. alcohol-ether extract charas [previously heated 14 hours at 260 degrees C.]. Slight depression (60 m.), slight unsteadiness (3 h.), much more marked ($3\frac{1}{2}$ h.); improvement ($4\frac{1}{2}$ h.).

27. Dec. 6, 1897; Airedale terrier; 0.15 g. cannabinal rapidly distilled from alcohol-ether extract. No apparent effect (70 m.), later, usual symptoms developed, very distinct unsteadiness.

28. Fox-terrier; 0.54 g. pitch from extract, contains a little cannabinal. Slight depression; no other distinctive action.

29. Dec. 9, 1897; Airedale terrier; 0.15 g. distillation fraction previous to cannabinal than latter. Depression (30 m.), sleepiness, unsteadiness (85 m.), but not marked; attention good, excited ($5\frac{1}{2}$ h.).

30. Fox-terrier; 0.21 g. distillation fraction previous to cannabinal than latter. Mostly laid down at first; slight unsteadiness (2 h.), worse ($3\frac{1}{2}$ h.), slight sleepiness; symptoms not marked.

31. Airedale terrier; 0.21 g. charas extract, further heated for 60 hours at 220 to 260 degrees C. (cp. 25). Depression (60 m.), unsteadiness (105 m.), slept fairly well, much better ($5\frac{1}{2}$ h.); symptoms more marked than 25 but less than 23.

32. Fox-terrier; 0.39 g. charas extract, further heated for 60 hours at 220 to 260 degrees C. (cp. 25). Slight depression and unsteadiness (90 m.), much more marked (2 h.), still severe ($5\frac{1}{2}$ h.), sleepy; symptoms about equal to 24.

33. Dec. 28, 1897; Airedale terrier; 1.07 g. cannabinal (oldest). Laid down at first, could not be induced to stand long; very slight unsteadiness (3 h.) and depression, more severe (5 h.) but still fairly well; normal next morning.

34. Fox-terrier; 1.03 g. cannabinal (oldest). Slight depression (60 m.), unsteadiness (90 m.), still distinct (5 h.); depressed following morning.

35. Dec. 29, 1897; Airedale terrier; 0.92 g. cannabinal, distilled from another sample of charas. Asleep (55 m.), very unsteady (90 m.), continued as long as observed (6 h.); slept mostly.

36. Fox-terrier; 0.96 g. cannabinal, distilled from another sample of charas. Unsteadiness (55 m.), became very marked afterward, vomited (65 m. and 5 h.); slight improvement (6 h.).

37. Dec. 31, 1897; Airedale terrier; 1.1 g. cannabinal (oldest). Slight depression and unsteadiness (70 m.), increased later, slept mostly; more marked effect than 33.

38. Fox-terrier; 0.97 g. cannabinal (oldest). Unsteadiness (70 m.), which increased, still marked ($5\frac{1}{2}$ h.); effect greater than 34.

39. Jan. 3, 1898; Airedale terrier; 0.97 g. cannabinal, distilled from another sample of charas. No effect (60 m.), afterward slept, very slight unsteadiness, (2 h.), did not increase, lay down occasionally; slept remainder of day, playful when aroused.

40. Fox-terrier; 0.95 g. cannabinal, distilled from another sample of charas. No effect (60 m.), very slight unsteadiness (2 h.), soon became more marked, continued as long as observed, slept somewhat; slightly depressed next morning.

41. Jan. 4, 1898; Airedale terrier; 1.1 g. cannabinal, distilled from another sample of charas. Slight depression; no marked symptoms.

42. Fox-terrier; 0.99 g. cannabinal, distilled from another sample of charas. Depression and unsteadiness (2 h.) not very marked; slight depression next morning.

43. Jan. 5, 1898; Airedale terrier, 12,110 gms.; 1.03 g. cannabinal, distilled from another sample of charas. Slight depression (60 m.), slight unsteadiness, slept mostly; unsteadiness increased, vomited (125 m.), awakened to be taken to kennel, very unsteady.

44. Fox-terrier, 8210 gms.; 0.97 g. cannabinal, distilled from another sample charas. Slight depression and unsteadiness (60 m.), became more marked and continued as long as under observation ($6\frac{1}{2}$ h.), vomited a little ($5\frac{1}{4}$ h.), slept partly; apparently normal next morning.

45. Jan. 6, 1898; Airedale terrier; 1.01 g. cannabinal, distilled from another sample of charas. Slight depression (60

m.), slept mostly, unsteadiness less marked than 43; apparently well the following morning.

46. Fox-terrier; 0.97 g. cannabinal, distilled from another sample of charas. Slight depression (60 m.), unsteadiness (70 m.), effects similar but ataxia less marked than 44.

47. Jan. 7, 1898; Airedale terrier; 0.98 g. cannabinal, distilled from another sample of charas. Slept most of the time, unsteadiness slight.

48. Fox-terrier; 0.97 g. cannabinal, distilled from another sample of charas. Depression (30 m.), unsteadiness (60 m.), became very distinct, laid down mostly, slept partly; very slight depression next morning.

49. Jan. 8, 1898; Airedale terrier; 1.04 g. cannabinal, distilled from another sample of charas. Depression (60 m.), unsteadiness (90 m.), not further observed.

50. Fox-terrier; 0.99 g. cannabinal, distilled from another sample of charas. No apparent effect (90 m.); not further observed; apparently normal next morning.

51. Jan. 9, 1898; Airedale terrier; 1.02 g. cannabinal, distilled from another sample of charas. Not observed.

52. Fox-terrier; 1 g. cannabinal, distilled from another sample of charas. Not observed.

53. Jan. 10, 1898; Airedale terrier; 1.02 g. cannabinal, distilled from another sample of charas. Depression, distinct ataxia, but not marked; slept most of the time.

54. Fox-terrier; 1 g. cannabinal, distilled from another sample of charas. Sleepiness, depression and slight unsteadiness, symptoms less marked than usual; slight depression next morning.

55. Jan. 11, 1898; Airedale terrier; 0.22 g. cannabinal (as 31). No evident effect (60 m.), later transient depression, but no ataxia developed. Compare with 31.

56. Fox-terrier; 0.4 g. cannabinal (as 31). No effect (60 m.), later depression and unsteadiness but less than 32.

57. Jan. 25, 1898; Airedale terrier, 13,150 gms.; 0.21 g. cannabinal (as 31). Slight depression (60 m.), afterward sleepiness, unsteadiness, excited (5 h.)

58. Fox-terrier, 7980 gms.; 0.42 g. cannabinal (as 31). No effect (60 m.), later sleepiness, slight unsteadiness and depression.

59. Feb. 11, 1898; Airedale terrier; 0.16 g. third fraction cannabinal dissolved in .64 g. olive oil. Depression (30 m.) followed by sleep, no distinct unsteadiness, excited at times, vomited a little ($4\frac{1}{4}$ h.); still depressed ($5\frac{1}{4}$ h.).

60. Fox-terrier; 0.18 g. third fraction cannabinal dissolved in .64 g. olive oil. Depression (35 m.) and sleep, no ataxia observed but could not be induced to stand long; still depressed (5 h.).

61. Feb. 15, 1898; Airedale terrier; 0.16 g. second fraction cannabinal in .64 g. olive oil. Symptoms similar to 59.

62. Fox-terrier; 0.18 g. second fraction cannabinal in .64 g. olive oil. Slight depression and unsteadiness ($2\frac{1}{2}$ h.) but less marked than 60, vomited (5 h.).

63. Feb. 17, 1898; Airedale terrier; 0.16 g. first fraction cannabinal in .64 g. olive oil. Depression somewhat more marked than 61 but no unsteadiness, vomited slightly (3 h.).

64. Fox-terrier; 0.18 g. first fraction cannabinal in .64 g. olive oil. Some depression and slight unsteadiness, but doubtful if as marked as 62.

65. Feb. 22, 1898; Airedale terrier; 0.21 g. cannabinal distilled at atmospheric pressure, then heated 5 hours at boiling point. Slight depression and sleepiness, no ataxia observed; much better ($5\frac{1}{2}$ h.).

66. Fox-terrier; 0.23 g. cannabinal distilled at atmospheric pressure, then heated 5 hours at boiling point. Slight depression, no sleep; almost well ($5\frac{1}{2}$ h.).

67. Feb. 24, 1898; Airedale terrier; 2.1 g. cannabinal distilled at atmospheric pressure, then heated 5 hours at boiling point. Depression and unsteadiness, but symptoms not very marked, slept somewhat, vomited ($3\frac{1}{2}$ h., $4\frac{1}{2}$ h.), slight improvement (6 h.).

68. Fox-terrier; 2.2 g. cannabinal distilled at atmospheric pressure, then heated 5 hours at boiling point. Depression and distinct unsteadiness, did not sleep; somewhat better ($5\frac{1}{2}$ h.).

69. Feb. 28, 1898; Fox-terrier; 0.43 g. acetyl-derivation of higher homologue of cannabinal. No effect ($2\frac{1}{2}$ h.).

70. March 1, 1898; Airedale terrier; 0.2 g. cannabinal distilled in vacuo. Depression, sleep and unsteadiness, more marked than 67; decided improvement ($5\frac{1}{2}$ h.).

71. Fox-terrier; 0.22 g. cannabinal distilled in vacuo. Distinct unsteadiness (60 m.), slight depression; symptoms similar to 68; much better ($5\frac{1}{2}$ h.).

72. March 3, 1898; Airedale terrier; 0.45 g. pitch dissolved in 1.5 g. olive oil containing some cannabinal. Slight depression and unsteadiness; much better ($4\frac{1}{2}$ h.).

73. Fox-terrier; 1.03 g. cannabinol regenerated from old acetyl compound. Slight depression and sleepiness, no obvious ataxia.

74. March 8, 1898; Airedale terrier; 0.06 g. morphin acetate in capsule. Vomited frothy mucous-like vomit (12 m., 14 m., 17 m.), marked depression, much worse than any previous observation, retching (22 m.), rapid breathing, quick pulses, head-nodding (40 m.), salivation (44 m., continued to 120 m.), still much depressed, constant moaning, slight myosis (130 m.), fall of temperature 1.1 degrees C., sleepiness, slight unsteadiness; improvement (4 h.), but still depressed (5½ h.).

75. Fox-terrier; 0.1 g. morphin acetate in capsule. No effect (20 m.), head-nodding (30 m.), retching and vomiting of frothy colorless fluid (35 m., 38 m., 50 m., 55 m., 90 m., 105 m.), salivation, unsteadiness, depression (130 m.), not sleepy, salivation stopped (3¼ h.), fall of temperature 2.3 degrees C; could not be induced to stand up, somewhat better (4½ h.).

76. March 16, 1898: 0.93 g. olive oil extract of charas, containing about .2 to .25 g. soluble charas products. Slight depression and unsteadiness (60 m.), sleepiness, vomiting (160 m.), ataxia more marked, excited (3½ h.), slight improvement (5¾ h.).

77. Fox-terrier; 1.86 g. olive oil extract of charas, containing .4 to .5 g. soluble charas products. Sleepiness and depression (30 m.), distinct unsteadiness (60 m.), which became more marked later, vomited (105 m.); no obvious improvement (5¾ h.).

78. March 18, 1898; Fox-terrier, 8840 gms.; 0.15 g. extract cannab. indic. (B. P.) in pills (from London chemist). No effect (90 m.), afterward depression and marked ataxia, vomited (2½ h.).

79. March 22, 1891; Airedale terrier, 13,580 gms.; 1.03 g. partly (¾) saponified acetyl derivative of higher homologue of cannabinol. No distinct effect.

80. Fox-terrier; 0.35 g. oxycannabinol. No obvious effect.

81. March 25, 1898; Airedale terrier; 1.02 g. cannabinol. Depression, very distinct unsteadiness (60 m.), sleepiness, vomited (2 h., 3¼ h.), no distinct improvement (4¼ h.).

82. Fox-terrier; 0.99 g. cannabinol. No obvious effect (60 m.), depression (75 m.), vomiting (105 m., 115 m., 130 m., 135 m., 255 m.), slight unsteadiness (120 m.), symptoms increased; no improvement (4½ h.).

83. March 30, 1898; Airedale terrier; 1 g. chloral hydrate in capsule. Sleepiness (15 m.), very slight ataxia, somewhat more marked (30 m.); fall of temperature 0.4 degrees C., apparently normal (4 h.).

84. Fox-terrier; 1 g. chloral hydrate in capsule. Sleepiness (15 m.), slight muscular weakness but no distinct ataxia; fall of temperature 0.4 degrees C., apparently normal (4 h.).

85. April 5, 1898; Airedale terrier; 0.5 g. chloraloe in capsule. Slight depression and sleepiness, transient; fall of temperature 0.5 degrees C.

86. Fox-terrier; 0.0195 g. hyoscine hydrochlorid. Uneasiness (30 m.) followed by whining, dryness of the tongue, dilatation and less marked reaction of pupils to light, increased rapidity of heart beat (60 m.), improvement commenced (2 h.); no fall of temperature.

87. April 11, 1898; 0.21 g. cannabinol. Slight depression, sleepiness and unsteadiness, continued 6 hours.

88. Fox-terrier; 0.2 g. cannabinol. Slight depression (30 m.) but not much affected until (90 m.), became very unsteady, sleepiness, incontinence of urine, trembling, vomiting (2 h.); fall temp. 3 degrees C; most marked effect obtained with this dose.

89. English terrier, 7180 gms.; 0.15 g. cannabinol. Less reserved (20 m.), slight depression (30 m.), sleepiness chief symptom, no obvious ataxia; slight improvement (5 h.).

90. April 15, 1898; Airedale terrier; 0.2 g. cannabinol kept in sealed tube since Dec. 12, 1896. Slight depression and sleepiness (45 m.), became much more marked; unsteadiness developed, attention became impaired, vomited (5 h.), then improved.

91. English terrier; 0.14 g. cannabinol, kept in sealed tube since Dec. 12, 1896. Slight depression and very distinct unsteadiness (30 m.), gradually increased until fell over every few steps, vomited (100 m., 104 m., 150 m., 200 m.), slept a little (3½ h.), much better but still markedly depressed (5 h.); temperature fell 0.5 degree C, then rose 1.2 degree C.

92. Fox-terrier; 0.39 g. cannabinol, through which oxygen has been passed 3 to 4 hours at 150 degrees C. Slightly depressed (45 m.), very slight unsteadiness (60 m.), became somewhat more marked, slight sleepiness; symptoms not severe but temperature fell 1.4 degrees C.

93. April 19, 1898; Airedale terrier, 12,840 gms.; 0.22 g. cannabinol (as in 90), subjected to oxygen for 6 hours at 150 to 160 degrees C. Slight depression and sleepiness (30 m.), increased; distinct unsteadiness; not much improved (6 h.).

94. English terrier; 0.16 g. cannabinol (as in 93). Depressed,

restless (20 m.), sleepy (30 m.), slight unsteadiness (40 m.), gradually became worse, but not so bad as in 91; vomited (55 m., 115 m.), somewhat better (4½ h.), but no further improvement (5¾ h.).

95. Fox-terrier, 8270 gms.; 0.21 g. cannabinol (as in 90). Slight depression (30 m.), but not much affected during first hour, afterward much depressed, slight unsteadiness; no improvement (5¾ h.).

96. April 23, 1898. Fox-terrier; 0.19 g. cannabinol (as in 90). Asleep (30 m.), but no marked symptoms for three hours, then slight unsteadiness, which increased; distinct (6¾ h.).

97. Airedale terrier; 0.22 g. cannabinol through which CO₂ has been passed for 20 hours at 150 to 185 degrees C. Slight depression and sleepiness (30 m.) became more marked, unsteadiness (60 m.), vomited (105 m.); afterward improved but still under influence (6¼ h.).

98. English terrier; 0.2 g. cannabinol through which oxygen has been passed for 20 hours at 150 to 185 degrees C., pitchy appearance. Very slight depression and restlessness (30 m.) which quickly (1 h.) passed away; no ataxia.

99. April 27, 1898; English terrier, 7760 gms.; 0.2 g. tribrom-cannabinol. Depressed (60 m.), slight sleepiness but no distinct unsteadiness, apparently normal (4 h.).

EXPERIMENTS ON CATS.

100. Dec. 11, 1895: 2500 gms.; 3.5 g. charas given in mucilage (65 c.c.), chloroformed during injection. Vomited most of the substance (about 50 c.c.) after recovery from chloroform, depression, weakness, narcosis and death (4 h.); no characteristic macroscopic changes.

101. June 20, 1896; 2600 gms.; 0.15 g. cannabinol in meat, Sleepiness (90 m.), muscular weakness, marked ataxia, stupidity; commencing improvement (25 h.), complete recovery (44 h.).

102. May 26, 1896; 2700 gms., same cat; 0.27 cannabinol as pills with starch. Quiet (90 m.), restlessness and micturition, then salivation (3½ h.), muscular weakness and unsteadiness, anorexia; improvement (25 h.), almost well (28 h.).

103. June 2, 1896; 1.3 g. cannabinol in capsules. Tired, quiet (60 m.), salivation and unsteadiness (100 m.), marked ataxia, sleepiness, dilated pupils: improvement (30 h.), almost well (53 h.).

EXPERIMENTS ON RABBITS.

Substances were made into an emulsion with gum and injected through a catheter into the stomach.

104. Nov. 1, 1895; 1730 gms.; 0.895 g. impure (sesqui) terpene. Slight excitement.

105. Nov. 4, 1895; 1730 gms.; 0.895 g. charas with sodium bicarbonate. Slight excitement.

106. Nov. 5, 1895; 1730 gms. 0.876 g. petroleum ether extract. Slight excitement.

107. Dec. 17, 1895; 1440 gms.; 1.44 g. charas. No distinct effect.

108. Jan. 16, 1896; 1500 gms.; 3 g. petroleum-ether extract. Became quieter; number of heart-beats and respiration, and temperature fell; death occurred on third day.

109. June 5, 1896; 1100 gms.; 2.2 g. cannabinol. Depression (60 m.), sleepiness, fall in pulse (252 to 100), respiration (142 to 18) and temperature (40.4 to 35.7 degree C.), diminished reflexes; improvement (20 h.), much better but not normal (29 h.).

110. June 10, 1896; 930 gms.; 2.2 g. charas. Quieter (90 m.), fall in pulse, respiration and temperature; died on fourth day, cold and marasmus.

11. April 5, 1898; 620 gms.; 2.3 g. cannabinol. Depressed, slight muscular weakness, sleepiness, fall in pulse, respiration and temperature; death, 3½ days.

PERSONAL EXPERIMENTS.

112. Feb. 19; 0.1 g. cannabinol, taken about 2:45 P.M.

113. Feb. 8, 1896; 0.1 g. cannabinol in 0.05 c.c. alcohol and 20 c.c. water. Slight mental depression.

114. March 9, 1895; 0.5 c.c. monoterpene in 20 c.c. water. No effect.

115. March 10, 1896; 0.05 g. cannabinol in 0.1 c.c. alcohol and 20 c.c. water. No distinct effect for 4 hours, then feeling of dryness in mouth, pleasant tingling, slight unsteadiness, happiness, unpleasant visions on closing eyes, time relation not completely lost, feeling of tiredness but no marked tendency to sleep.

116. March 28, 1897; 0.05 g. cannabinol regenerated from acetyl compound. Taken at 8 P.M., retired to bed at 10:30 feeling a little tired, slept soundly till 6 P.M., no distinct effect.

117. April 5, 1897; 0.05 g. cannabinol regenerated from acetyl compound. Taken at 10:30 A.M., slightly depressed in afternoon, no other effect.

118. April 5, 1897; 0.1 g. cannabinal regenerated from acetyl compound. Taken at 11 A.M., tired and sleepy in afternoon.

119. April 10, 1897; 0.2 g. cannabinal regenerated from acetyl compound. Taken at 1 P.M., slight dryness of mouth and paresthesia (160 m.) followed by sleepiness, depressed during evening, retired at 11:30.

120. April 13, 1897; 4 cannabinal tablets (a commercial preparation) — g. cannabinal. Taken at 5:08 P.M., feeling of lightness in head (5:55), dinner 6:00, afterward felt sleepy and slightly intoxicated; time relations altered but not annulled.

121. June 7, 1897; 0.2 g. cannabinal phosphate. Taken at 10:30 P.M., Retired at 12 m. no evident effect.

122. June 9, 1897; 0.4 g. cannabinal phosphate. No distinct action.

123. June 6, 1897; 0.8 g. cannabinal phosphate. Taken at 10:45 P.M., 11:40 very sleepy, retired, awoke at 7:20 A.M., feeling very sleepy, depressed all the morning.

124. March 17, 1898; 0.05 g. oily extract of charas, containing .013 g. soluble products. Dinner at 6:20, taken at 8:00, slight sleepiness and mental exhaustion followed.

125. March 18, 1898; 0.105 g. oily extract of charas, containing 0.13 g. soluble products. Taken at 6:25 P.M., dinner 6:50, 7:35 peculiar feeling of lightness in head, continued to work, 8:00 rather better, 11:00 retired feeling sleepy.

126. March 20, 1898; 0.016 g. ($\frac{1}{4}$ grain) ext. cannab. Ind. (B. P.) pill. Tea 5 P.M., slight indigestion, pill taken at 7:30, 10:30 no evident effect, 10:35 slight light-headedness, warmth of face and mental exhaustion, afterward fell asleep.

127. March 21, 1898; 0.14 g. partly ($\frac{3}{4}$) saponified acetyl derivative of higher homologue of cannabinal. Taken at 5:30 P.M., no effect.

128. March 22, 1898; 0.1 g. third fraction cannabinal. Taken at 5:45 P.M., dinner 6:30, 8:25 feeling of lightness in head and mental exhaustion, continued working, effect passed off in about 30 m.

129. March 23, 1898; 0.1 g. second fraction cannabinal. Taken at 5:45 P.M., dinner 6:45, 7:20 no effect, 9:25 slight dryness of lips and lightness in head, seemed to pass off but worse again at 7:43, happy, have difficulty in reading, sleepy, 10:00 just awakened from a short nap, read a little but soon exhausted, 11:20 retired, 6:45 A.M. awoke, felt well.

130. March 24, 1898; 0.1 g. first fraction cannabinal. Taken at 5:45 P.M., dinner 6:45, 7:45 no effect, 7:50 feeling of slight dryness of lips and lightness of head, 8:00 somewhat more depressed, not working well, 8:45 working better, 10:00 still somewhat depressed, 11:30 retired but did not succeed in sleeping for some time.

131. March 25, 1898; 0.1 g. cannabinal (oldest). Taken at 5:45 P.M., dinner at 6:30, 7:30 peculiar light-headedness and dryness of the lips, 7:45 slightly unsteady, parasthesia in head and legs, heaviness of eyelids, no correct estimation of time, 9:30 awakened from short sleep, 10:00 rather better but unable to work, 10:30 retired, somewhat depressed the following morning.

132. March 27, 1898; 0.35 g. acetyl derivative of higher homologue of cannabinal. Taken at 7:30 P.M., no effect.

133. March 29, 1898; 0.05 g. cannabinal pill made 18 months ago. Taken at 5:50, dinner at 6:30, 8:30 unsteady symptoms, cannot work, estimation of time not so good, 9:15 worse, energyless, 10:30 went out for few minutes, improved, 11:00 can read moderately well but eyelids heavy.

134. March 30, 1898; 0.09 g. Merck's cannabinal. Taken at 5:45, dinner 6:30, 7:20 lightness in head, loss of time relation, happy, amused, pleasant tingling, etc.; sleepy, 8:00 lay down, slept till 10:30 then retired, awakened (7:00 A.M.) feeling dull and depressed, lasted the whole morning.

135. April 14, 1898; 0.05 g. opium. Taken at 9:00 P.M., 10:00 no obvious action, 10:05 slight heaviness of eyelids, very slightly tired, 10:20 rather better, 11:10 feel somewhat tired, head rather heavy, slight sense of "well-being," 12:00 still heaviness of eyes and tiredness of head but have worked fairly well last half hour, not sleepy; retired, soon fell asleep, awakened at 7:00 A.M. feeling well, pleasant sense of gravity, which continued most of morning; no constipation.

136. April 15, 1898; 0.1 g. cannabinal through which oxygen passed 3 to 5 hours at 150 to 160 degrees C. Taken at 5:45, dinner at 6:30, 9:15 slight visual indefiniteness, slight and transient paresthesia, afterward felt slight incapacity for work but no marked effects, 11:45 not sleepy but retired.

137. April 17, 1898; 0.05 g. cannabinal sealed up since Dec. 28, 1896. Tea 4:30, drug taken 5:45, 6:50 slight mental exhaustion and feeling of lightness in head, 7:20 rather sleepy, 8:00 trying to read but have little energy for anything, 9:00 condition same, no estimation of time, feeling of warmth in face and head, 10:00 sleepy, retired.

138. April 21, 1898; 0.065 g. same cannabinal treated with

oxygen for 20 hours at 150 to 185 degrees C. Taken at 5:45, dinner 6:40, 8:05 slight feeling of lightness in head, 9:30 have been reading some time, at first had a little difficulty, now feel quite normal.

139. April 22, 1898; 0.05 g. same cannabinal treated with CO₂ for 20 hours at 150 to 185 degrees C. Taken at 5:50, dinner 6:30, 7:00 commencing light-headedness, 8:00 more distinct, a want of energy, 9:45 condition same, trying to read, 10:00 not able to do any work, 10:45 no improvement, retired.

140. April 24, 1898; 0.1 g. tribrom-cannabinal. Taken at 8:00 P.M., supper at 8:30, 9:30 slightly sleepy, 11:00 sleepy, no other peculiar effect of cannabinal, retired, slept till 6:45, depressed, suffered from mental exhaustion during three following days.

141. May 4, 1898; 0.065 g. oxycannabinal (as in 138) dissolved in oil. Taken at 5:45, dinner at 6:30, 7:15 went out for a walk, 8:15 arrived home, slightly tired, peculiar feeling in eyes and head grew slightly worse and continued the whole evening, but was insufficient to prevent me writing; 11:10 retired, slept soundly, 6:40 A.M. got up, felt sleepy.

142. May 6, 1898; 0.1 g. charas (best). Taken at 5:45, tea at 4:30, dinner at 7:00, 7:00 slight effect in head, worked in garden, felt want of energy, 8:30 influence more marked, agreeable heaviness of eyelids, very little energy, 10:00 retired, condition same, slept well, depressed following morning.

143. May 12, 1898; 0.016 g. ($\frac{1}{4}$ grain) ext. cannab. Indic (B. P.) in pill (cp. 126). Taken at 5:50, dinner at 6:30, 7:25 lightness of head, peculiar feeling about eyes, 7:50 pleasant tingling in face and feet, no other marked effect, reading fairly well, 8:40 tingling still present, unable to read with benefit, can not calculate time very well, symptoms continued throughout evening, became sleepy but managed to do some copying, 12:30 retired, 7:30 got up feeling tired but soon well.

144. May 19, 1898; 2 c.c. sesqui terpene taken in weak mullage. Taken at 12:45, lunch 1:10, 1:15 slightly listless and slight heaviness of head, which soon passed away.

THE THERAPEUTICAL ECONOMICS OF OPEN COMPOSITION.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ALBERT B. PRESCOTT, M.D.

ANN ARBOR, MICH.

There is only one restriction upon the character of medicines supplied to the public, to be expected at the hands of the law-makers in the period now before us, namely: restriction, with the intent to put a stop to concealment of composition and identity. That legal restriction to this effect may be instituted in some of the States at any time, and is likely to become prevalent, appears manifest from the temper of the law-making mind, shown in various ways, especially in the scope of the enactments against adulterations. Any alteration of composition is prohibited if it be not made known to the purchaser (or consumer), but is allowed if it be so made known. Various irregular admixtures are specifically authorized upon the one condition that they shall be explicitly announced on the label. On the other hand, various colorings and facings of food, which are harmless in themselves, are prohibited because they tend to deceive the consumer as to identity or quality of the article. The same intent appears in legal rulings for uniform standards of concentration of foods and of medicines, and it appears in the early requirements of poison-labels, lately extended, in some instances, to proprietary mixtures sold without a physician's order and without any account of contents.

Granting that some of these prohibitory measures have been worked for as a means of protection to certain industries, and that in other cases the legislation has been proposed by unscrupulous persons, who seek opportunity to levy bribes, etc., it still remains true

that the laws already enacted in this direction have been made possible by a prevailing conviction in the minds of common-sense people, holding as they do, the ultimate balance of power in legislation, that it is dangerous to leave covers of concealment over articles of medicine or food in the market. The average intelligent citizen, and the average plain man of the law, when the question is put fairly before him, will say without hesitation that medicines sold in packages, without the direction of a physician, ought to be compelled by law to bear a statement of their contents in terms known to science. This average man of sense will maintain that it is no affair of the State whether an article of medicine purchased in the market be pharmacopeial or not, made by patented or concealed processes or not, trade-marked by a proprietor or not, monopolized in production or not, but that it does matter to the man who is to take the article of medicine or give it to his child, whether or not he shall be informed what the article really is, in terms such as any physician or pharmacist could define and interpret; and furthermore, that the right of the man to this information might well be made an affair of the State. In fact, the layman is likely to enforce a classification of therapeutic agents, more simple than any of the systems known in pharmacology, a mere division of medicaments into the knowns and the unknowns. And legislative enactment is more than liable to separate the one of these divisions from the other "as a shepherd divideth his sheep from the goats," when these matters are brought into judgment.

With this outlook, therefore, the concern of this brief paper is not one of professional ethics, but rather one of social economics. Neither the physician nor the pharmacist has any economic interest in the use of secret remedies, or any reason to delay prohibitory measures against secrecy of composition. The custom of medication by remedies named from the diseases they are alleged to cure is a custom that has no actual use for pharmacists or physicians at all.

The physician within whose function it falls to select remedies and confine their application to certain needed results, may, in his discretion, either countenance or discountenance secrecy of composition. He is liable to think little of his responsibility in this matter, because while he is acting as an expert for his patient the latter has no need to be informed of the contents of medicinal mixtures. For his own judgment, the physician may believe himself able, in some cases, to arrive at the character of a medicine without a statement of its contents, and may avail himself of the convenience of a ready-made secret mixture, which thenceforth holds the benefit of his approval.

The pharmacist, on the contrary, is not to judge of the selection and application of remedies of his own knowledge as an expert, neither is he to question his patron's choice among various systems of medication. So long as articles of concealed composition are not made contraband in law, it is difficult for the pharmacist to refuse to furnish them, especially difficult when they are directed by physicians. He can only do so upon the ground that such articles can not be made subject to record, as to the identity and quantity of the distinct agents they contain, therefore, he can have no check upon them and will not supply them.

While secret medicines are tolerated by the laws, the physician or the pharmacist has but limited re-

sponsibility for their use, little influence as to their employment one way or the other. If he do not go beyond his proper province, the secrecy of remedies is not of his doing, nor can he stop the use of these articles by the people. But both the physician and the pharmacist have marked influence, as authorities in regard to medicines in use, and have influence upon law-makers as to legislation in the question of open composition by the demand of the law.

A policy of prudence, and of courage as well, with a careful study of the bearings of every legal provision proposed on the part of the staunch men of medicine and of pharmacy, can do most effective service in behalf of better economies in medication.

THE MODERN INTESTINAL ANTISEPTICS AND ASTRINGENTS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WM. FANKHAUSER, M.D.

NEW YORK.

The last decade has been very fruitful as regards the introduction of intestinal antiseptics and astringents. To comprehensively describe each and every one introduced during this period, would be beyond the scope of a paper the reading of which will not prove tiresome to the listeners. I will therefore confine myself to those which have made their first appearance during the past five or six years. The modern intestinal antiseptics and astringents belong chiefly to one of two classes of preparations: derivatives of tannic acid, or salts of bismuth. The former will be alluded to first, the articles being described in the order of their introduction into the materia medica.

Among internal astringents tannic acid has long occupied a prominent position; but it has a number of serious drawbacks, chief among which is that it acts undesirably on the mucosæ of the mouth and stomach, where the larger portion of its effect is expended before the remedy reaches the intestines. Prolonged administration of tannic acid, furthermore, is known to be productive of gastric disturbances—*anorexia*, pain, nausea, and even vomiting. With a view to obviating these disadvantages, experiments have been made with various derivatives of tannic acid, resulting in the production of a number of eligible compounds.

Tannin albuminate was the first preparation introduced, which has a less disagreeable taste than the acid itself and acts less vigorously on the stomach; but, owing to the fact that it is largely absorbed in the latter organ, its astringent action becomes to a great extent lost to the intestine, and for this reason the remedy has been practically abandoned as an antidiarrheal. The dose in which it was given is from 5 to 20 grains, in cachets.

Tannigen was the next preparation brought forward which, with a few of its congeners since introduced, is not acted upon to any great extent in the stomach, and manifests its astringent action chiefly on reaching the slightly alkaline (in health, but in morbid conditions, vastly increased alkaline) secretions of the intestine, where a gradual and equable decomposition ensues and continues to the end of the gut. *Tannigen* was introduced by Prof. Hans Meyer of the University of Marburg, Germany, in the fall of 1894 (see *Deutsche Med. Woch.*, 1894, No. 31). It is known,

chemically, as diacetyltannin, and has the formula $C_{14}H_8(C_2H_3CO_2)_2O_6$. Its formation is based on the replacement of two hydrogen atoms of tannic acid by two molecules of acetyl. It occurs as a light-gray, slightly hygroscopic, practically odorless powder, of a chalky and faintly astringent taste; soluble in alcohol, and in dilute solutions of the alkalis or their phosphates and carbonates; insoluble in cold water and in diluted acids.

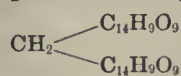
The first to put tannigen to a clinical test was Prof. F. Müller of Marburg (*Deutsche Med. Woch.*, 1894, No. 31). He found it specially serviceable in chronic intestinal catarrhs, in which improvement was noted, usually in a short time, from doses of from 3 to 8 grains three times daily. The next report was from Carl Künkler of Bonn (*Allgemein Med. Central-Zeitung*, 1894, Nos. 13 and 14), who used tannigen in some forty cases, covering chiefly chronic diarrheas of various origins and occurring mostly in children. To adults he gave 3 to 8 grains, to children $1\frac{1}{2}$ to 3 grains, three or four times a day. The results as a rule were highly satisfactory, and in some cases a prompt cure was effected. It is advised to continue the administration of the tannigen for some time after the disappearance of the catarrhal symptoms, to guard against relapses. D. De Buck of Ghent reports (*Belgique Médicale*, 1895, No. 37) prompt results from tannigen in acute inflammatory conditions of the intestine, and a beneficial though less speedy effect upon chronic catarrhs. Prof. Escherich, of the Pediatric Clinic of the University of Graz, gives a detailed report (*Thera. Woch.*, March 9, 1896) of his experience with tannigen. His results are described as excellent in subacute and chronic intestinal catarrhs of children, characterized by mucous stools. In the former category of cases often as early as on the second day of treatment, there was a marked diminution in the quantity of the mucus in the stools, and in a few, after several days the evacuations assumed a normal character. In the chronic cases no such remarkable results were obtained; yet, in the commencement of the treatment at least, the decrease of mucus and the dry character of the passages was always noted. It goes without saying, that an appropriate dietary was strictly observed in every instance. In acute intestinal catarrh, with watery, projectile stools, as well as in the beginning of follicular enteritis, the results were inferior to those of calomel and bismuth subnitrate. As regards administration, Escherich prescribed 4 grains in infants up to $1\frac{1}{4}$ years, and 8 grains to older children, from four to six times a day, mixed with the food. Injurious after-effects, or disturbance of the appetite or digestion, were never observed. Numerous additional reports are extant, chief among them being those of Richard Drows of Hamburg (*Allgemeine Med. Central-Zeitung*, 1895, Nos. 35 and 36); Professor Biedert of Hagenau (*Therapeutische Woch.*, 1896, No. 12); W. Kölzer (*Jahrbuch für Kinderheilkunde*, 1898, pages 280-370); and the American physicians, G. A. Hewitt of Philadelphia (*Medical Bulletin*, 1896, No. 1), E. W. Bing of Chester, Pa. (*Medical Times and Register*, Sept. 22, 1893), and H. A. Griffin and V. H. Norrie (*Daily Lancet*, March 30, 1896.)

The writer has found tannigen a mild yet efficient antidiarrheal in catarrhal enteritis and in catarrh of the large intestine, particularly when characterized by copious mucous dejections. As a rule, untoward effects were not observed. At times tannigen leaves a strongly astringent sensation in the mouth, which

renders it impossible to administer the remedy to some children; then again, it is occasionally vomited by sensitive children. The simultaneous administration of pepsin often corrects this. In the writer's opinion tannigen is contraindicated in pronounced inflammatory diseases of the intestine accompanied by profuse effusion of serum into it. In cases of the secretion of a thin, serous fluid, such as results from acute irritation of the upper part of the intestinal canal, it is of little service. It is particularly the lower portion of the intestinal canal that reacts well to tannigen. The amount of mucus is diminished at once, and its over-production does not recur unless the use of the remedy is discontinued too soon. As a consequence, not only are the irritated state of the mucous membrane and the particular cause of the disease overcome; but the loss of the nitrogenous material and the heightened peristalsis are reduced, and the absorption of water and nutrient matter in the large intestine is promoted. But this is not all that tannigen and its congener, tannalbin, accomplishes. In spite of the paucity of clinical evidence, it can hardly be denied that tannin has a certain disinfectant power by impeding bacterial development; as with alkaloids, so with numerous bacterial poisons, such as toxalbumins, it unites to form insoluble, and consequently non-poisonous, compounds, as is shown in Cantani's treatment of cholera. Tannigen occasionally colors the stools black.

As regards dosage, large quantities are preferable and more reliable; for children under one year of age, up to 4 grains every two hours for a few doses and then from four to six times a day; for older children, from 5 to ten grains; and for adults 15 grains, or even a few 30-grain doses followed by 15-grain ones every four hours. Tannigen has a tendency to "cake"; hence it is best to dispense it with, say 1/10 its weight of silica or some other insoluble and inert substance. In painful conditions 1 grain of powdered opium, or, in cases where this drug is illy borne, $\frac{1}{4}$ grain of codein, is a necessary addition; for tannigen and its congeners of the tannin series are not capable of arresting severe pain or violent tenesmus. It is best taken, triturated as above indicated, in a little glycerated, freshly boiled water.

Tannoform was the next tannin derivative brought forward, a condensation product of formaldehyde and nutgall tannin. Chemically it is methylene digallate, and its composition is represented by the formula



It occurs as a pinkish, light, odorless, tasteless powder, insoluble in water or acidulated fluids, but soluble in alcohol, ammonia water, and sodium hydroxide or sodium-carbonate solution.

Tannoform was introduced by Prof. J. von Mering (*American Medico-Surgical Bulletin*, 1896, p. 137) as a remedy for hyperidrosis, bromidrosis and "weeping" eczema. The physiologic fact that the preparation is but slightly attacked by the gastric juice and decomposed into its components chiefly on reaching the intestine, led to its employment also internally, as an intestinal disinfectant and astringent. Von Mering found tannoform quite effective, particularly in chronic catarrhs; and De Buck and De Moor substantially confirmed his results (*Belgique Médicale*, 1896, No. 33). These clinicians employed doses of 8 grains three or four times a day; to children 4 grains was

given with an equal quantity of peppermint-oil sugar, and taken with tea, milk or chocolate.

Though recommended by the above-quoted authorities in chronic intestinal catarrhs, tannoform does not appear to have been employed to any great extent in the capacity of an anti-diarrheal. The next report on it appeared first in the summer of 1897. It was by M. Ebersson of Tarnow, who used the remedy with success in 15 cases of chronic intestinal catarrh. (*Aerztlicher Centralanzeiger*, 1897, No. 26.) Carl Sziklai (*Therapeutische Woch.*, 1897, No. 41) reported having used tannoform in 40 cases of intestinal catarrh in children, with failure in but one case. Considerably smaller doses were employed than von Mering had advised, 1/6 to 3/8 grain every two hours. The only other clinical report extant is by J. Braun of Mokrin, who detailed his results in acute diarrheas of children, and in simple and tuberculous diarrheas of adults (*Therapeutische Woch.*, 1897, No. 46). In the former cases he gave 8 grains every two hours until relieved; and to adults 15 grains was administered four or five times a day. Braun highly lauds the action of the remedy, without referring to any untoward accessory influence of the medication. Prof. R. W. Wilcox stated editorially in a recent issue of the *American Journal of the Medical Sciences* that his observations seem to indicate that tannoform is too irritating for internal use; and this opinion the writer shares. Tannoform appears to decompose partly in the stomach, in pathologic conditions of the gastro-intestinal tract, and the liberated formaldehyde in its nascent state is calculated to irritate the gastric mucosa. Tannoform had best be confined to external application; and the writer of this paper can warmly recommend it as an efficacious antihydrotic and siccative antiseptic.

Tannalbin was the next tannic-acid compound introduced as intestinal astringent. It is tannin albuminate rendered insoluble in the gastric juice by heating it at a temperature of about 120 degrees C., and washing the resulting product with diluted hydrochloric acid and with alcohol. It occurs as a light-brown, odorless, tasteless powder, containing approximately 50 per cent. of tannin. It is insoluble in water or acidulated fluids, but soluble in alkaline solutions. Of the various newer intestinal astringents tannalbin has been the most extensively reported on, and appears to be the ideal form of tannic acid for internal administration in inflammatory affections of the intestines. The advantages claimed for it over uncombined tannic acid by the first investigators of its physiologic action—insoluble in the gastric juice of normal stomachs, and consequently causing no disturbance of that organ; slowly and equably decomposed by the intestinal fluids, thus manifesting its astringent action gently but persistently throughout the entire intestinal canal—seem to have been fully confirmed by extensive clinical experience; and the writer can unqualifiedly recommend tannalbin in all cases of intestinal trouble where tannic acid is indicated and calculated to be of benefit. Tannalbin was introduced into therapy by Prof. R. Gottlieb of the Pharmacologic Institute of the University of Heidelberg, in the spring of 1896, and first employed clinically by R. Von Engel, senior physician of the Moravian Provincial Hospital in Brünn, Austria, who reported his results in 40 cases in the *Deutsche Med. Woch.*, 1896, No. 11. An excellent effect was observed in the entire group of chronic intestinal affections,

and the results obtained in simple catarrhs of two to seven weeks' standing are designated as surprising. In such cases from 45 to 60 grains per day for a day or two, usually sufficed to check the diarrhea, after which daily doses of from 15 to 30 grains for a few days or weeks longer effected a permanent cure. Of 12 patients with phthisis 11 were cured of the diarrheal complication; and of 10 cases of acute intestinal catarrh 9 were promptly checked by tannalbin. In profuse acute diarrheas of a functional or catarrhal nature the remedy was given every two hours, or even every hour for three or four doses. As a rule the treatment was continued for from two to four days, when the desired effect was usually attained. In toxic or infectious enteritis, in dysentery and in cholera morbus, it had better be avoided. Von Engel never observed disagreeable or injurious by-effects, not even on continued large dosing for weeks, nor did he notice any aversion to taking the tannalbin. The form of exhibition was in powder without any vehicle. The second clinical report on tannalbin is by Prof. O. Vierordt of the Medical Polyclinic of the University of Heidelberg, who used the remedy both in children and in adults in some 30 cases (*Deutsche Med. Woch.*, 1896, No. 25). It was always gladly taken, and no effect on the tongue, the stomach, or the appetite occurred even on long-continued dosage of 2½ drs. daily. Those cases were primarily selected which had not proven amenable to dietetic measures nor to the usual medication. Most of these were subacute and chronic enteritic catarrhs, 5 were of tuberculosis, 6 of renal origin, 1 from pelvic sarcoma and 5 of acute enteritis. In all these various diarrheas thorough and prompt antidiarrheal action was manifested by the tannalbin. Its markedly distinctive feature, as compared with the older intestinal astringents, was found to be its equable and uniform action throughout the entire gut. In view of his experience, Vierordt places tannalbin unconditionally ahead of all preparations, tannigen included. As regards dosage, he recommends starting, in adults with from 8 to 15 grains four times a day; and to increase the dose rapidly after the first twenty-four hours if the action be found insufficient up to, say 30 grains per dose and 2½ drams per day. When a sufficient action has been sustained uniformly for a number of days in simple enteric catarrhs, the daily amount may be gradually reduced, if the condition continues satisfactory, until nil is reached. For children beyond the first year the smallest initial dose should amount to 15 grains a day. Vierordt administered the tannalbin either between or immediately after meals, with a spoonful of sterilized water or milk, or with gruel. T. G. Rey of Aachen, Prussia, is a strong believer in the powers of tannalbin (*Deutsche Med. Woch.*, xxxiii, page 46). He used it in 68 cases of diarrhea, chiefly in children under two years of age; among them 33 cases of cholera infantum and 12 of acute catarrh of the large intestines. In all the former the tannalbin was combined with frequent small doses of calomel (1/20 to 1/12 grain every two hours), to intensify the deficient antiseptic action of the tannalbin up to the requisite point: and with this combination it is claimed every case of gastro-enteric trouble in nursing infants can be positively cured, excepting, perhaps, certain peculiarly fulgurant attacks of cholera infantum and the tuberculous form of chronic enteritis. A peculiar beneficial action of tannalbin on the stomach has been observed by Prof. W. H. Porter (*Post-Graduate*,

Nov., 1897). Its free administration will often arrest the superabundant outpouring of mucus, precipitating the mucus and thus destroying one of the favorable media for the growth of micro-organisms. In this manner it very decidedly aids in overcoming the so-called hyperacidity of the contents of the stomach. Among others who have reported on tannalbin the following may be mentioned: K. Holzapfel, of the Medical Polyclinic of the University of Strassburg (*Deutsche Med. Woch.*, 1896, No. 50); Scognamiglio of Naples (*Wiener Medicinische Blätter*, 1897, No. 2); Joseph Friedjung of the Pediatric Clinic of the University of Berlin (*Jahrbuch für Kinderheilkunde*, xlv, No. 1); J. Czernetschka of the Medical Clinic of the University of Prague (*Wiener Med. Presse*, 1897, No. 22); Hans O. Wyss, of the Children's Hospital of Hottingen, Zürich (*Correspondenzblatt für Schweizer Ärzte*, 1897, No. 15); L. Roemheld, of the Pediatric Clinic of Professor Vierordt at the University of Heidelberg (*Münchener Medicinische Wochenschrift*); W. Koelzer, of Professor Heubner's Clinic at the University of Berlin (*Jahrbuch für Kinderheilkunde*, 1898, p. 280); and the American physicians, Leonard Weber of New York (*Post-Graduate*, Nov., 1897); Max Einhorn of New York (*ibid.*); T. V. Smith of Westfield, N. J., and Hermann T. Wolff of Marion, Texas.

Tannalbin has met with more than ordinary attention and favor by the medical profession. The writer has found tannalbin particularly efficacious in mucous catarrhs of the intestinal tract; and chronic catarrhs of the large intestine yield very promptly indeed. Like tannigen, in acute infectious diarrheas, accompanied by profuse effusion of serum and severe tenesmus, tannalbin is likely not to prove effective alone, for it has not pronounced disinfectant power, nor has it, as is to be expected, any distinctly anodyne effect; in painful conditions, therefore, some codein or other opiate has to be associated with it. Tannalbin, owing to its perfect insipidity, is willingly taken by the most sensitive patients, and in the writer's experience has never been productive of vomiting. Tannigen, on the other hand, while practically equally efficacious, not infrequently leaves a strongly astringent sensation in the mouth, which renders it impossible to administer it to some children; and occasionally it provokes vomiting, an effect never observed by the writer to follow the administration of tannalbin. It appears that tannigen is decomposed to an appreciable extent in the stomach, and in this way is quite apt, on being pushed or long continued, to induce gastric disturbance. In certain chronic conditions the writer has given tannalbin daily for weeks without causing, as far as could be observed, any digestive derangement. In infectious diarrheas of children, in which tannalbin or tannigen alone is not effective, good results can be obtained by a combination with the purely disinfectant remedies, betanaphthol benzoate (benzonaphthol) or calomel; the former in doses of from 1/20 to 1/10 grain. As regards administration, tannalbin is best taken with glycerinated sterilized water.

Tannopine, the newest tannin compound introduced as an intestinal astringent, is what was first called tannon. It is a condensation product of three molecules of tannic acid and one molecule of hexamethylenetetramine (known by the various trade names "urotropin," "formin," etc.). It contains 87 per cent. of tannin. It is described as a grayish-brown, odor-

less, tasteless, non-hygroscopic powder; insoluble in the ordinary solvents and diluted acids, and slowly soluble in alkaline fluids, analogously to tannalbin. The only clinical report thus far met by the writer is by E. Schreiber, of Professor Ebstein's clinic in Göttingen (*Pharmaceutische Centralhalle*, 1897, p. 839). In doses of 15 grains for adults and from 3 to 8 grains for children, three or four times a day, tannopin never produced untoward effects. Good results were obtained specially in tuberculous enteritis, and next in order in subacute and chronic non-tuberculous intestinal inflammations, both in adults and in children. Tannopin is decomposed more slowly by the intestinal fluids than is tannalbin or tannigen, and hence, it is claimed, exerts a more prolonged astringent effect on the intestinal mucosa. At the time of this writing tannopin was not as yet obtainable on the American market.

Tribenzoylgallic acid is probably the latest addition, in the line of purely organic compounds, to the ever-growing list of intestinal astringents. It was introduced by W. Cohnstein of Berlin, and has thus far been reported on only by W. Koelzer (*Jahrbuch für Kinderheilkunde*, 1898, pp. 280-307), of Professor Huebner's Pediatric Clinic connected with the University of Berlin. The new substance is described as colorless (or white), odorless and tasteless, insoluble in water, but readily soluble in hot alcohol or in alkaline solutions. It appears to be unaffected by keeping or by the saliva or gastric juice, for it reaches the intestines, when the stomach is in a normal condition, practically undecomposed, and is there disassociated, gallic acid being liberated and exerting its specific astringent action, while the rest remains physiologically inert. According to Koelzer, tribenzoylgallic acid acts similarly to tannalbin and tannigen, but in a lesser degree. He administered the remedy to infants in doses of 15 grains four times a day, and at times he even gave single doses of 30 grains repeated once or twice at two-hour intervals. The writer has not had an opportunity to test tribenzoylgallic acid, as the remedy was not obtainable on the American market at the time of writing; and the chemical-physical description above given is taken from the preliminary announcement of the manufacturer. This ends the list of the tannin derivatives introduced as intestinal astringents and antiseptics during the last decade.

Bismuth subgallate, also known as "dermatol," is the first of the various bismuth compounds to receive our attention. It is a basic gallate of bismuth of the formula $\text{Bi}(\text{OH})_2\text{C}_7\text{H}_5\text{O}_5$. It occurs as a canary-yellow, heavy, odorless, non-hygroscopic, almost tasteless powder, containing 55 per cent. of bismuth oxid. It is insoluble in the ordinary solvents, but dissolves in sodium hydrate solution without separation of bismuth hydrate, which behavior distinguishes it from other bismuth salts. Bismuth subgallate does conglutinate and get lumpy, and is indifferent to light and air. Though first described in 1841, bismuth subgallate was not employed therapeutically until 1891, when Heinz and Liebrecht (*Berliner Klin. Woch.*, 1891, No. 24) recommended it as a substitute for iodoform externally, possessing the antiseptic and astringent action of the bismuth salts and the reducing action of gallic acid. Internally it was used first by Prof. C. Colosanti of the University of Rome, and U. Dutto, Assistant of the Physiological Institute in Rome, who employed it in 100 cases of phthisical.

diarrhea, as well as in a number of cases of dysentery and typhoid fever (*La Reforma Medica*, 1891, Nov. 30). Although these investigators reported very favorably on the efficacy of the remedy, the internal employment of bismuth subgallate has not become so extended or general as its virtues would appear to bespeak for it. Perlmutter recently published a paper in the *Münchener Med. Wochenschrift* on its employment in gastric ulcer and diarrhea, his observations being made on an extended series of cases and being inspired by Professor Moritz, who recommended it to his notice. In diarrhea of phthisical subjects and in acute and chronic enteritis, he found it most valuable, all cases of this kind benefiting by its use, and the result being by no means only of a transient character. The bismuth subgallate was given in doses of from 8 to 30 grains, in water, twice daily. It is non-poisonous and produces no by-effects except a tendency toward constipation, which, however, can be readily combated by means of glycerin enemata. The stools will be dark, and care must be taken not to mistake them for those colored by blood. A. Flint (*New York Medical Journal*, 1893, No. 776) used bismuth subgallate in fermentative dyspepsia, in doses of 5 grains after meals.

The writer's results agree perfectly with those of Perlmutter. He has found it an excellent remedy in phthisical diarrhea, and in acute serous diarrhea of an inflammatory nature. In the former cases he administers 15-grain doses three times a day, in cachets, followed by a good swallow of water. In the acute diarrheas the same quantity is given every two hours until its effects become manifest, when the remedy is discontinued. As a rule it does its work in a few hours, and rarely are more than three doses required. In cases of severe pain or tenesmus, the writer gives with the bismuth subgallate 1 or 1½ grain of powdered opium. Bismuth subgallate is undoubtedly a powerful intestinal siccative, in consequence of which it should not be administered, in acute cases, after it has reduced the frequency of the movements and altered their consistence; its action will continue for some hours after the discontinuance of the medication. As a disinfectant in infectious diarrhea it is inferior to many other remedies; but as a simple astringent in phthisical diarrhea and in acute gastro-intestinal disturbances attended with profuse serous discharges, the writer has found bismuth subgallate one of the best remedies at the disposal of the physician.

Phenol-bismuth was the next bismuth compound brought forward, or, more properly, bismuth carbolate, of the formula $\text{Bi}(\text{OH})_2\text{C}_6\text{H}_5\text{O}$. It is a whitish or gray, neutral, almost odorless and tasteless, insoluble powder, containing 80 per cent. of bismuth oxid and 20 per cent. of phenol. It was introduced by M. F. A. Jasenski, of Professor Nencki's laboratory at the St. Petersburg Institute for Experimental Medicine, who found (*Archives des Sciences Biologiques*, ii, No. 2), that it is slowly decomposed by the gastric juice into phenol and bismuth oxid; the larger portion, however, which has not sufficient time to be decomposed in the stomach, passes into the intestines, where the conditions are more favorable for its complete decomposition (especially in the presence of the pancreatic juice). In spite of the well-known toxic property of phenol, phenol-bismuth did not have the least injurious effect, although admin-

istered for three weeks in daily doses of 75 grains. In acute proctitis, enemas of 30 grains in two fluid ounces of water, once daily, brought about a cure in two days. In a number of cases of chronic intestinal catarrh phenol-bismuth had a beneficial effect. Prof. A. W. Wilcox reports (*Post-Graduate*, May, 1895) that in the various forms of chronic gastritis characterized by pyrosis, pica or boulimia, bismuth carbolate is an excellent remedy; and in gastric cancer, while bismuth subnitrate may mechanically protect the ulcerated surface, phenol-bismuth will diminish the accompanying fermentation and decomposition.

The writer has obtained good results from bismuth carbolate in fermentative conditions of the gastro-intestinal tract accompanied with diarrhea, and in chronic gastro-intestinal catarrh; but he does not regard the remedy as in any manner superior to the older remedies, such as bismuth salicylate, betol and benzonaphthol. The dose is 15 grains several times a day, in cachets, followed by a draught of liquid.

Bismuth naphtholate was the next claimant for favor, also known as "orphol" and naphthol-bismuth. This has the formula $2 [\text{Bi}(\text{C}_{10}\text{H}_7\text{O})_3] + \text{Bi}_2\text{O}_3$, and occurs as a neutral, brownish, almost odorless and well-nigh tasteless powder when recently made, and consisting of 80 per cent. of bismuth oxid in chemic combination with beta-naphthol. It is insoluble in the ordinary solvents, and with age it is prone to darken and develop the odor and taste of naphthol. It is partly decomposed in the stomach; the major portion, however, passes unchanged into the intestines, where the secretions furnish the conditions necessary for its complete dissociation. Some of the naphthol is eliminated with the urine, while the greater portion of it is eliminated with the feces, the bismuth oxid being excreted with the stools, as is the case with the other bismuth compounds. The first clinical reports on bismuth naphtholate are by Schubenke, Blackstein and Petkewitsch, and appeared in *Vratch*, 1892, Nos. 41 and 51. They used the remedy in cases of ordinary bacillary diarrhea and of choleraic diarrhea, in daily doses of 15 to 30 grains, with good results. Then came M. F. A. Jasenski and Professor Von Nencki of St. Petersburg (*Archives des Sciences Biologiques*, ii, No. 2). They employed the remedy in daily doses of from 45 to 60 grains, in a number of cases of chronic intestinal catarrh and in diarrhea accompanying cirrhosis of the liver. The results obtained are designated as better than those obtained with the older preparations of bismuth. Prof. Ferdinand Hueppe of the German University of Prague characterizes (*Berliner Klin. Woch.*, 1893, No. 7) bismuth naphtholate as a most powerful yet non-toxic antiseptic. Among other foreign physicians who have employed bismuth naphtholate with good effect should be mentioned Edmund Chaumier of Touraine, Tours, France, who reported his experience at the Congress for Internal Medicine, held at Bordeaux, August, 1895. The first American physician reporting on the use of this new bismuth salt is Prof. R. W. Wilcox, who read a paper before the Clinical Society of the New York Post-Graduate Medical School and Hospital, Dec. 15, 1894. He related the results he had obtained in some one hundred cases. He believes that better results have been obtained, and in a shorter period of time, than could have been expected with the inorganic bismuth compounds. In typhoid fever, he says, there is probably no remedy so generally useful as an intestinal antiseptic as bismuth

naphtholate, provided it is used in the early stage of the disease; and in phthisical diarrhea a rapid increase in the dose to 60 grains or even 120 grains per day, has given brilliant results. Louis Fischer (*Medical Record*, July 13, 1896) gives decided preference to bismuth naphtholate in summer complaint in children. To a child one year old 5 grains may be given every two, three or four hours, with a little boiled (sterilized) water, and preferably when the stomach is quite free from food. If there is persistent vomiting he gives the remedy per rectum in suppositories, double the dose per mouth being employed for each. Hugo Engel of Philadelphia has used (*New York Medical Journal*, March 30, 1895) bismuth naphtholate in a considerable number of cases of fermentation and bacterial diarrhea arising from the presence of infectious material in the alimentary canal, and considers it a most reliable intestinal disinfectant and astringent in these instances.

The writer has employed bismuth naphtholate in various disorders of the gastro-intestinal tract of bacterial origin. Very good results were obtained in chronic catarrhal gastritis characterized by sour stomach, eructations, pyrosis and regurgitations of acid fluids. Five-grain doses were administered three times a day in capsules or with syrup, and followed by a draught of hot water. Ordinary fermentative diarrheas were also promptly relieved by doses of from 5 to 8 grains every four hours. As already stated, bismuth naphtholate with age assumes a dark-brown color and develops a naphthol odor and taste, referable to partial decomposition; and in this condition it is apt to be rejected by the stomach. A preparation of a pronounced naphthol odor and taste should not be employed.

Tribromphenol-bismuth, known chemically also as bismuth tribromphenate or bismuth tribromcarbolate, and styled by the manufacturer "xeroform," was the next introduction in the field of intestinal astringents and antiseptics. It has the formula $(C_6H_2Br_3O)_2BiOH + Bi_2O_3$, and it occurs as a yellow or greenish-yellow, nearly odorless, neutral powder, of a faintly sweetish taste, containing 50 per cent. each of tribromphenol and of bismuth oxid. In the stomach it undergoes but little change, while in the intestinal canal it is gradually decomposed into tribromphenol, which possesses great disinfectant power, and bismuth oxid, which unites largely with the ptomains or their toxins, forming with them insoluble substances. A small portion of the tribromphenol is eliminated with the urine, and the bismuth oxid is removed with the feces as sulphide. Tribromphenol-bismuth was first recommended by Prof. F. Hueppe of the German University at Prague as a remedy in Asiatic cholera (*Berliner Klin. Woch.*, 1893, No. 7). He employed doses of 8 grains every two hours, after an initial dose of 15 grains; two to four doses of 8 grains being given at night. Hueppe contends that with this treatment the diarrhea improves by the removal of its cause; that is, the products of the comma bacillus are in some way neutralized by the remedy. If we accept his statements, tribromphenol-bismuth is an excellent and non-toxic disinfectant in cholera. Prof. R. W. Wilcox read a paper on the preparations of bismuth, before the Clinical Society of the New York Post-Graduate Medical School and Hospital on Dec. 15, 1894. The author expressed the opinion that tribromphenol bismuth possesses marked antiseptic power, as well as the soothing effect common to bismuth com-

pounds, and advocated its use in fermentative diarrheas. L. Rynders of the Medical Faculty of Nancy, concludes, from his investigations of xeroform, that this is an excellent gastro-intestinal disinfectant, and calls special attention to its deodorizing power on the stools of the typhoid patients (*Aerztliche Rundschau*, vii, p. 694); and Bouchard confirms this opinion fully (*Wiener Med. Blätter*, 1897, p. 807).

The writer can commend tribromphenol-bismuth as an antizymotic and disinfectant in gastro-intestinal fermentation and in typhoid diarrhea; in the latter cases it exerts a decided deodorizing effect on the stools. Toxic effects from ordinary medicinal doses are not likely to be observed, but the remedy often produces nausea and eructations if administered in wafers, powders, or capsules. It is, therefore, best given in an acacia emulsion. As regards dosage, in simple fermentative conditions, 8 grains every four hours suffice, but where pronounced disinfection of the intestinal tract is indicated, it is advisable to give an initial dose of 15 grains and follow with three or four doses of 8 grains at two-hour intervals, and then to continue this dose, administered every four hours, until the desired effect is produced. From 30 to 45 grains a day are ordinarily sufficient for a thorough asepsis of the intestinal canal in an adult.

Bismuth phosphate, soluble, is another bismuth compound of recent introduction. It contains 20 per cent. of bismuth oxid, and is soluble in about three parts water. G. Leiser, O. Doerffler and C. Soehle (*Deutsche Aerzte-Zeitung*, 1896, No. 3) employed this remedy in acute diarrheas, intestinal tuberculosis, and typhoid fever of adults, as well as in choleraic diarrheas of children. In the latter, the following formula was resorted to:

Bismuth phos., soluble . . . gm.	1.5 to 2	gr.	23 to 30
Distilled water gm.	90	fl	$\frac{3}{4}$ 3
Syrup poppies gm.	100	fl	$\frac{3}{4}$ 3½

Teaspoonful every half-hour or hour.

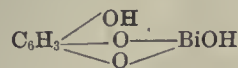
In acute diarrhea of adults the following mixture is prescribed:

Bismuth phos., soluble . . . gm.	3 to 4	gr.	45 to 60
Distilled water gm.	180	fl	$\frac{3}{4}$ 6
Syrup fennel gm.	200	fl	$\frac{3}{4}$ 7

Hourly, half to one tablespoonful.

No further clinical reports than the preceding are extant.

Bismuth pyrogallate—pyrogallol-bismuth or "helcosol"—will be dismissed with a brief description of its physical properties, as it does not appear to have been tested clinically as yet. It has the composition shown by the formula



It occurs as a greenish-brown, amorphous, odorless, tasteless powder; insoluble in water or alcohol, and but sparingly soluble in 0.3 per cent. solution of hydrochloric acid. Vittorio's physiologic experiments (*Pharmaceutische Zeitung*, 1894, p. 639) seem to prove that the remedy is non-poisonous, even when ingested in large doses, and that it appears to be indicated specially in infectious intestinal diseases.

Bismal—designated chemically as bismuth methylenedigallate—was the next bismuth compound brought forward. It has the formula $4(C_{15}H_{12}O_{10}) + 3Bi(OH)_3$, and it occurs as a grayish, voluminous powder, soluble in water or acidulated solutions. Clinical reports on bismal are as yet quite sparse. F. von Oefele recommends it (E. Merck's "Bericht,"

1896, p. 123) in very chronic diarrheas where opiates are but little or not at all effective—in such as accompany certain gynecologic and tuberculous affections. He administers from 3 to 8 grains in cachets, three times daily or every three hours, according to the urgency of the case. D. de Buck and P. Vanderlinden (*Belgique Médicale*, 1896, No. 36) also successfully used bismal in tuberculous enteritis. They gave 15 grains from three to four times a day, in oatmeal gruel.

Eudoxine was the next claimant to favor. It is the bismuth salt of tetraiodophenolphthalein ("nosphen"). The latter is obtained by the action of iodine on solution of phenolphthalein. It has acid properties, combining with alkalis or oxids of the metals to form salts. Of these, two have thus far been prepared for medical use: the sodium compound, known in the trade as "antinosine," a readily soluble surgical antiseptic, and the bismuth salt, eudoxine, which is the intestinal disinfectant and astringent under consideration here. Eudoxine occurs as a reddish-brown, odorless powder; insoluble in the ordinary solvents and undergoing decomposition into an alkali salt of nosphen and bismuth oxid on contact with alkalis. It contains approximately 53 per cent. of iodine and 14.5 per cent. of bismuth. On internal administration eudoxine passes the stomach unchanged (unless the contents are alkaline), while in the intestines, where the natural faint alkalinity is enormously increased in morbid states, it is decomposed, as above indicated, into bismuth oxid and sodium tetraiodophenolphthaleinate. The latter passes through the intestinal coats by way of the absorbents, and, according to Binz and Zuntz (*Fortsehrifte der Medicin*, 1896), it is again secreted into the intestinal lumen, and thus exerts a continuous disinfectant action. The first clinical test of eudoxine was made by Ph. Rosenheim, of Prof. Senator's clinic, Berlin (*Berliner Klin. Woch.*, 1895, No. 30). He used it in a few cases of chronic dyspepsia and of summer diarrhea of children, and in 24 cases of enterocolitis in adults. Of these latter, 7 were tuberculous, and in them no result was attained by the eudoxine; 17 were of simple catarrh, of which 5 remained unchanged, 3 improved, and 9 almost entirely recovered. The ordinary dosage was from 5 to 8 grains, from three to five times a day. The next clinical report was by Anton Lieven, and was made at the Fourteenth Congress for Internal Medicine, held at Wiesbaden, April 8-11, 1896; and all the remaining reports discoverable by the writer are American physicians. Prof. R. W. Wilcox of New York (*Medical News*, 1897, July 31) employed eudoxine in 35 cases. Fourteen suffered from chronic intestinal catarrh; of these, six presented coincident hepatic and cardiac lesions. Naturally, the latter class would be benefited by drugs which would influence the liver and heart; but Dr. Wilcox is confident that the benefit was more rapidly obtained than it would have been without the use of the bismuth preparation. Three patients presented intestinal fermentation, with discharges of muco-pus, considerable pain, and foul-smelling stools; these experienced relief, although one required treatment for several months. Four patients suffered from simple intestinal fermentation; these were permanently relieved, although in one instance, nearly five months elapsed before treatment could be suspended. Two women presented exfoliative membranous enteritis; both were put to bed, and received high intes-

tinal irrigations with salol, with a carefully regulated diet and general supervision of all matters which are conducive to restoration of health. In addition, the drug was used in maximum doses. Both patients passed some months without the passage of shreds or membranes. Nine patients presented symptoms of both gastric and intestinal catarrh. They all improved, but not so rapidly as could have been wished until resorcin in 5-grain doses was given before meals. The final result was satisfactory. Two patients suffered from acute catarrhal duodenitis, with cutaneous itching, absorption jaundice, tender liver, and clay-colored and offensive stools. Both were relieved, so far as their intestinal symptoms were concerned, although calomel in small doses (1/10 grain) at hourly intervals was given at the same time. Both presented well-marked conditions, and obtained relief from the intestinal decomposition with more than usual rapidity. The drug was not irritant, although Dr. Wilcox believes that the effect of the iodine content of the drug upon the glands of the intestines is to render the stools less consistent. Prof. N. S. Davis, Jr. of Chicago, reports (*Medical Standard*, September, 1897) having used eudoxine in a large number of cases. In many mild cases of chronic enteritis he has been able to almost completely check intestinal fermentation with it in a few days, and it seemed to accomplish this more promptly than any other remedy except naphthol, over which it has the advantage of being agreeable to take and harmless. In mild cases he gives from 3 to 5 grains four times daily; if intestinal fermentation is considerable, he administers these doses every two or three hours. In gastritis the remedy has done no perceptible good; but in enteritis, whether associated with inflammation of the stomach or not, it has uniformly seemed to be of benefit, except when intestinal fermentation was unusually great. The only other reports extant are by E. P. Herscher of Denver, who speaks well of eudoxine in chronic intestinal inflammation (*Western Medical and Surgical Gazette*, 1898, No. 4), and by Schön-Ladniewski of Lemberg (*Weiner Med. Presse*, 1897, No. 45).

The writer has found eudoxine serviceable in chronic gastro-enteritis and entero-colitis, where it manifests a mild and continuous disinfectant and astringent action. In acute infectious diarrheas, and in cases of extreme intestinal fermentation, it is not likely to be of benefit, and is here calculated to prove vastly inferior to stronger disinfectants and antizymotics, such as benzonaphthol, for instance. I have never observed untoward effects from its use. As regards dosage, to adults from 5 to 10 grains may be given; to children from five to ten years of age, from 1½ to 3 grains; to babes of four months, 3/3 grains; to nurslings of two months 1/3 grain, and to those still younger, 1/6 grain.

Benzonaphthol—Naphthol benzoate, $C_6H_5.COO.C_{10}H_7$ was introduced by Yvon and Berlioz (*Semaine Médicale*, 1891, p. 91) to supersede betol (naphthol salicylate), over which it was claimed to have the advantage of being less irritating and not as toxic. Benzonaphthol occurs as a white, odorless, tasteless, insoluble powder. Its therapeutic employment depends chiefly on its content of naphthol. In the intestines it is decomposed into benzoic acid and naphthol, the former being eliminated with the urine as alkaline hippurates, the naphthol as naphthol-sulphuric acid. Prof. C. A. Ewald (*Berliner Klin.*

Woch., 1893, No. 35) has found benzonaphthol of the greatest service in various dyspeptic disturbances, flatulence and chronic meteorism from intestinal atony, particularly when associated with bismuth subnitrate and resorcin. He gives 8 grains every two hours. However, the remedy is not absolutely infallible; furthermore, in a few exceptional cases of Ewald's, intestinal colic and diarrhea supervened, but promptly disappeared on discontinuing the medication.

M. Bernitt (*Wiener Med. Presse*, 1892, No. 51), Bruck (*Pester Med. Presse*, 1892, No. 46), and Zinnis (*Deutsche Med. Woch.*, 1892, No. 30) recommend benzonaphthol in infectious gastro-intestinal diseases of children and babes, while Kuhn of Giessen (*Deutsche Med. Woch.*, 1893, No. 19) denies it all virtues in these affections.

The writer has found benzonaphthol an efficacious antizymotic in conditions characterized by inordinate fermentation, whether functional or inflammatory in nature. The dose for adults is from 8 to 10 grains every two hours, or about 80 grains a day, administered best in cachets; for children up to one year of age, from 1/2 to 2 grains every few hours; from one to three years, five times daily, 3 grains; from four to seven years, 24 grains per day; from eight to fourteen years, 30 grains daily, with an equal part of sugar or a trace of saccharin. In chronic cases full action sets in only after four or five days; its astringent properties are not very pronounced.

I believe I have alluded to all the antidiarrheal remedies introduced during the last few years. Should any member desire information regarding any other intestinal remedies, the writer of this paper shall deem it a pleasure to supply the desired data so far as lies in his power.

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THE MEDICINAL TREATMENT OF SOME DIGESTIVE DISEASES.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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There has always been a tendency, both within and without the medical profession, to scoff at drugs. The tremendous development of certain scientific and mechanical departments of the healing art, within the last two decades has, by contrast, placed the homely skill of using medicines in the background. Teachers and students of medicine have alike neglected the old-fashioned details of therapeutics; therapeutic nihilists have arisen who have sought to discredit the value of drugs and, naturally enough, the preconceived notion that ponderable therapeutic agents have little use, has made it possible for those who hold such a view to demonstrate their belief from their own experience. The writer is sufficient of an old fogey to hold that if the regular profession would devote to the physiologic and therapeutic study of drugs the same amount of pains that the homeopaths bestow upon what we believe to be false theories, a great advance would follow, and internal medicine would be correspondingly dignified.

Disease is, in the main, a chemic disturbance, though often of so recondite a nature that we are

forced to employ some such non-committal term as "vital" and to abandon all thought of cure through the agency of an ordinary chemic reaction. Even in this latter kind of disturbances, we often find a well-established antagonism between disease and drug, which can not be explained but to which we allude under the term "selective affinity." In general, it may be said that a priori, there is just as much rationality in expecting relief from the action of a chemical circulating in the blood as from the effervescence of a briny bath, or the hanging of a nervous case by the chin and occiput till cured, or the kneading of dermal and subcutaneous tissues, or from reducing a human being to a vegetative state, all of which are methods of therapeutics in good repute and of great value.

Digestive disturbances afford an especially favorable field for the application of drugs, 1, because they are usually more or less chronic and yet not sufficiently urgent to induce the patient to make the sacrifice of time and business interests demanded by hygienic therapeutics; 2, because an exact diagnosis, at least of the immediate physiologic failure, is usually possible, though requiring skill and special methods of examination; 3, because these abnormalities are, to a far greater degree than those of other organs, either chemic or vital in so simple a way as to be amenable to drugs; 4, because surgical treatment is applicable to but few cases and, to these, with a grave prognosis; 5, because really valuable means of local therapeutics have been greatly abused, as to technique and frequency of employment.

For practical purposes the majority of gastric disturbances may be considered functional. The writer's personal opinion is that they are much more frequently dependent on organic change than is usually supposed, but as death seldom occurs, and as post-mortem changes can very rarely be prevented or anticipated, for obvious sentimental if not better reasons, we know very little about the actual state of the gastric mucosa in dyspepsia. Even the microscopic examination of particles of epithelium obtained by siphonage or spontaneous vomiting, is not reliable, since there is normally a shedding of more or less degenerated epithelium. Probably 70 per cent. of gastric diseases, taking them as they occur, are essentially atonic dyspepsias, characterized by deficiency of hydrochloric acid and by sluggish motor action. The immediate relief of the former condition is ideally fulfilled by the administration of the same acid, while without obvious catarrhal involvement, local treatment is not indicated. As to the motor function, probably nine out of ten physicians who were thoroughly impartial, that is to say inexperienced, would declare that the ideal treatment was the intravental use of faradism. But, considering carefully the various experimental studies as to the action of electricity on the muscle of the stomach, we must conclude that, while it is not absolutely impossible to note a contraction during the time that the battery is in use, there is no evidence that the faradism stimulates the gastric muscle to contract when subjected to this method of treatment. On the other hand, we have a drug, strychnin, which most certainly does stimulate smooth muscle, whether of the stomach or elsewhere in the body, and whether we depend upon physiologic experiments or clinical experience. Such cases—and others—might be thought suitable for the employment of hygiene. But we find that ordinary gymnastic exercises do not produce much improve-

ment; that the fresh air of the country or sea-side is overbalanced by the difficulty of finding proper food in either the typical farmhouse or hotel. Heaven forbid that we should expose such patients to the bacterial and mental infection of a sanitarium or that we should initiate them into the mysteries of invalidism by prescribing massage and rest-cure. They may be cured with great éclat by lavage, but they simply do not need to subject themselves to the discomfort and expense of this method, unless the case is extreme. Neither are they fit subjects for the believer in the elaborate simplicity of dietetics. Some few atrocities of modern cookery may be forbidden but, as a rule, the stomach needs the stimulation of varied and appetizing food, and the more such patients are dieted the more they have to be, the gastric power failing concomitantly with the diminution of the task set before it. Not rarely we find patients who are relieved by hydrochloric acid and strychnin but who do not regain the power to digest without this assistance. Then hygiene, change of air and scene, rest and recreation, come into play, but they must follow, not precede, medication.

In the rather rare cases in which the stomach produces too much acid, avoidance of chlorids, of stimulating food and of irritating circumstances of all kinds, are the prime indications. If treatment, except in a negative sense, is needed, alkalies and secretory depressants are efficient. Rest is undoubtedly the ultimate need of most such patients, though there are a few who are lithemic, and who need some offset to idleness and high living. Very rarely indeed is the rest-cure indicated, there being a great difference between *rest* and *rest-cure*.

As to ferments, the following general statements may be made: 1, there is no information or reasonable supposition that a ferment of the digestive glands is ever produced in excess; 2, the failure of a ferment occurs only in the most serious organic disturbances—though not necessarily locally organic, thus, fever is often attended with failure of ferments. The salivary ferment is particularly resistant to disease, though not of very great importance in health; 3, the administration of ferments should never be resorted to without first demonstrating their absence; 4, after proving that a ferment really is deficient—something that occurs in scarcely 1 per cent. of cases—we must ask whether the stomach and intestine are in a condition to digest on the mere supplying of the ferment, or whether predigestion, rectal nutrition, etc., are not indicated. As a rule, the body which lacks ferments lacks the power of using them if artificially supplied.

Gastric catarrh, ulcer and cancer, for many therapeutic considerations, duplicate the indications of purely functional dyspepsia, if such a thing exists. The lack or excess of acid, the need of a motor tonic, the indication for an antiseptic or anesthetic, must be worked out, case by case, without attempting to rely on a general rule. While a stomach which is badly dilated and diseased so that food actually ferments and putrefies can be cleansed only by repeated lavage, there are efficient internal antiseptics which are all that are needed for the milder cases, and which usually are indicated in addition to lavage, in the severer conditions. All things considered, oil of peppermint is the best of these, but oil of wintergreen may be used if there is a joint indication—no pun is intended—for the employment of a salicylate. For more gradual antiseptic action, when we must consider the

bowel as well as the stomach, salacetol is of the highest rank. The writer's experience is not so favorable for the benzo-compounds though these are also antiseptic. Hydrogen peroxid is especially valuable when there is muco-purulent matter present.

Surgery suggests itself mainly in the relief of gastric cancer and ulcer. With the former, the theoretic indication for surgery is balanced by the difficulty of making a diagnosis in time and by the grave prognosis, so far as the operation itself is concerned, so that at present the average case of cancer will continue to receive mainly medical attention. Although the result is inevitably fatal, it must not be forgotten that the duty of the physician is all the more urgent to maintain comfort, and that the ordinary gastric cancer does not occasion the sharp pain that is too frequently connected with malignant disease; hence there is much room for rational treatment in improving digestive deficiencies, in maintaining gastric motility, in keeping the chyme aseptic and even in obtaining healing of malignant ulcerations. Morphin is by no means a drug to be freely used. Gastric ulcer, superficially considered, might be thought to indicate ligation of the bleeding part, but medical and surgical opinion is very nearly unanimous that operation is not feasible. The local use of styptics is plainly contra-indicated; first, because it is impossible to get them to the site of hemorrhage in sufficient quantity and sufficient concentration; secondly, because they are all irritants, and tend to cause retching, which aggravates the primary trouble. The real indications are two—absolute quiet obtained by morphin, and vascular constriction by ergot. Both should be given hypodermically. To the best of the writer's knowledge, there is no satisfactory preparation of ergot for such use, all being irritating and some of the so-called ergotins being of unfixed dosage. On the whole, the official fluid extract is about as good as the more expensive preparations. Few physicians realize that many of the unpleasant symptoms and part of the actual danger of gastric ulcer are due to absorption of decomposed blood. Indican is found in the urine in enormous amount and there is great need of intestinal asepsis. Still, for the first twenty-four hours at least, the need of quiet is so urgent as to forbid cathartics, enemata, or even intestinal antiseptics. A little ice is usually given, simply to keep the patient from being too restless, but even this is to be avoided as far as possible. After a day or two, salacetol or bismuth subgallate may be given and, after the bowels have been freed from blood, it is well to give bismuth systematically, rather as an astringent dressing than as an antiseptic. The writer's preference is for a 10 per cent. emulsion of bismuth hydrate in water, or pure liquid petrolatum, if the patient shows no distaste for the mineral oil.

In gastric catarrh, with or without dilatation, bismuth subgallate is an excellent and efficient remedy, though by no means able to supplant lavage and inflation with menthol or similar sprays. In any condition in which the gastric mucosa is involved, we must make a sharp distinction between the needs of the stomach itself and the needs of the digestive process. Usually, there exists quite a definite opposition between these two indications, the more or less alkaline and astringent application which is generally needed for the gastric wall interfering with digestion, while the hydrochloric acid and secretory and motor stimulants required to assist digestion are somewhat

irritant to the diseased mucosa. In cases that are absolutely or practically functional, we naturally pay attention only to the digestive deficiencies; in severe organic diseases, such as acute catarrh, ulcer and some manifestations of cancer and chronic catarrh, gastric digestion must be discontinued entirely for at least a few days, the body being nourished by the bowel and skin while the stomach is being medicated. A large number of cases fall between these two extremes and, as a number of favorite ready-made tablets and liquid mixtures show, many physicians simply stir together the various drugs indicated and administer them all at once, letting their diverse activities battle for the supremacy. In such cases, the rational treatment consists in doing one thing at a time. Give such foods as may be digested in, say, three hours; in other words, rather plain but still appetizing and ordinary articles of food. Administer such digestive aids as shall insure digestion and emptying of the stomach in about this time. Then, every morning and afternoon, a period of two or three hours is at our disposal for medicating the gastric wall, while a drug administered at bed-time has a much longer period of possible action. The writer would confess that his conception of a drug acting on the stomach and bowel itself is pretty nearly limited to bismuth. The various vegetable astringents lack the property of a powder dressing; silver, copper and zinc are too active for more than temporary use, and each, moreover, possesses special objectionable features. Cerium oxalate has no obvious advantage over bismuth, while, in most of the cases in which one or the other must be used, there is altogether too much oxalic acid formation in the system. The main point in administering bismuth is to give enough of it. With the possible exception of some of the newer antiseptic compounds, the minimum dose should be half a gram, and twice or three times this amount should usually be given. Yet, within a few days, a cautious druggist has telephoned the writer in regard to overdose in the case of a prescription calling for a gram of the subgallate, three times a day.

For the long reach of bowel between the accessible portions of the alimentary canal, the same general principles of medication apply as to the stomach. It is of the greatest importance to be sure that the intestinal disturbance is not the final breaking down of the power to perform vicariously the duties of the stomach. Many stomachs habitually shirk digestion, and the owner is unaware of the suspension of function so long as the gastric motor power is sufficient to pass the chyme on to the duodenum. Next, by high enemata, we must keep the lower bowel clean and healthy. Finally, we must administer the slowly soluble antiseptics, occasionally ferments inclosed in stomach-proof coatings, and usually the astringent bismuth, preferably now in pure petrolatum. Juggling with cathartics and constipating drugs is not therapeutics, although it may be an inevitable makeshift.

Although in scolecitis, surgery affords the safest and most thorough treatment, there are certainly many mild cases which recover under either constipating medication with opium, or laxative treatment with salines or belladonna, with or without intestinal antiseptics and hydrotherapy. If we could be sure that free drainage existed from the mouth of the appendix and that gangrene and virulent ulceration could be excluded, medical treatment of even acute cases might be justifiable. But, at present, the only

cases in which operation should not be insisted upon, are mild and more or less chronic ones, the patient being so situated that surgical aid may be called almost at a moment's notice. If we carefully consider the history of scolecitis cases, we must conclude that not grape seeds, nor other foreign bodies, not constipation, not necessarily catarrh of the bowel, not taking cold, not even anatomic peculiarities as to meso-, blood-vessels, and lymphoid tissue, are the essential causes. The real cause, in the writer's belief, is unusual virulence of intestinal bacteria, marked by prolonged intestinal indigestion and fermentation. Thus, there is a rational field for the use of antiseptics, drugs to regulate the proper discharge from the bowels, including water, and, in addition, some of the slowly soluble compounds of iodine as resorptives.

In our appreciation of the seriousness of scolecitis and the danger of too long delay of operation, we have gone rather too far in abandoning the old-fashioned conception of typhlitis. There most certainly do exist cases of catarrh and atony, especially of the head of the colon, though not absolutely limited by an arbitrary anatomic division. Here we find the sausage-shaped fecal tumor just as truly as did our predecessors, and, in the absence of leucocystosis, of a septic temperature and pulse, we have as plainly as ever an indication for medical treatment, including salines, antiseptics and, later, such means as will check the tendency to catarrh and prevent an atonic yielding of the bowel.

THE TREATMENT OF HEART DISEASE BY SALINE BATHS AND RESISTED MOVE- MENTS—SCHOTT METHOD.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The value of a therapeutic agent or method can not be measured by the volume of its literature nor yet by the enthusiasm of its advocates, and no doubt too great a measure of faith in the testimony of false witnesses has bred in us that skepticism which, however admirable as a mental attitude in scientific work, may nevertheless, if too greatly expanded, become a serious stumbling-block in the path of medical progress. We are right in insisting upon something more than dogmatic assertion or the voice of authority in the determination of therapeutic values; we may justly demand the right to withhold judgment, ask for substantial proofs and thoroughly sift our evidence, but behind all this there must be a sincere and earnest desire, not alone to detect error, but also to know the truth, and the ultimate test must after all be derived from personal experience and the repetition of such experiences.

If a new procedure is rational, if the evidence in its favor seems fairly good, and if it promises more than the old, we are in duty bound to give our patients the benefit of the trial. The world has not moved very greatly in this direction in the last 200 years. We may now read with astonishment the vituperative paragraphs which proved with a most imposing show of logic and a vast amount of physiologic and anatomic

data that Harvey's great theory was the acme of absurdity; but we must also admit with some shame that nearly fifty years of this nineteenth century were required for the establishment of typhoid fever as a distinct clinical and pathologic entity. Upon the other hand, we wonder at our simplicity in accepting scores of therapeutic novelties, only to find them worthless and not always harmless. Curiously enough, too, that old stumbling-block—the blind worship of great names—has in the last two decades been stimulated by bacteriologic and pathologic discovery only to be discredited later by some unsatisfactory and hazardous therapeutic methods derived from the same sources. We have learned, for a little time at least, that even the greatest investigators must be allowed a little leeway when they enter the field of clinical diagnosis and therapeutics, and that important and valuable discoveries may lack the endorsement of a great name. During the past forty years there have come from time to time communications from certain medical men in the little town of Nauheim, Germany, and these claimed that remarkable results might be obtained in chronic heart disease by the proper use of gymnastics and baths. Beneke, Groedel, and August and Theodor Schott in admirable articles, stated again and again the facts as we know them now. Their treatment was rational, their results extraordinary, yet only a casual notice was granted them and their work. Suddenly, after four decades of neglect, a few men in this country and in England began to write of the treatment and publish their own experience; then followed a flood of literature and Nauheim, formerly an unimportant station, was visited by one hundred thousand patients in a single year. It will be seen then that the so-called Schott method is not new, but that after forty years of sheer neglect it has received a partial recognition and been placed upon trial by our profession.

The greater part of its literature, strange to say, is to be found in British journals, the most conservative in the world. It is for the most part very recent. As late as 1894, when the writer first used the treatment, there was but little in the English language—or indeed in any language—and curiously enough, American physicians, the most progressive in the world, have been almost as little concerned with it as the French, whose indifference has at least the excuse of racial antipathy. Heineman, Babcock, Camac and the writer have been the only American clinicians who have reported upon it. In England the flood of medical controversy was initiated by Bezley Thorne's enthusiastic advocacy of the treatment, and as a result the method was brought prominently before the most conservative element of our profession. The result has been remarkable. The favorable reports of several of the most eminent English clinicians, who visited Nauheim and personally investigated the effect of the baths and movements; the fact that the special commission of the *Lancet* also endorsed the treatment, and the confirmatory case reports from many sources combined to place it before the profession of the British Isles in a very favorable light. Such criticism as has developed has been, with one or two exceptions, of the honest and helpful variety, which seeks to correct hasty conclusions, modify extravagant statements and establish a correct theory as a basis for therapeutic application. For here, as elsewhere, there are extremists; and men who will tell us to a millimeter the shrinkage of a dilated heart after a bath, and who court disaster by an undis-

criminating advocacy of a powerful agent, are opposed by men who deny the evidence of their own senses—and still more emphatically that of other men's senses—and condemn the treatment without a fair trial. There is a middle ground. Four years' experience with the Schott method in public and private practice has convinced the writer that it is a method which is well-nigh indispensable to the efficient treatment of chronic heart disease, provided always that it be applied intelligently and only in appropriate instances. Indiscriminate use of so potent a remedy means certain disappointment and positive injury in many cases.

The Schott method ought rather to be called the Method of Treating Chronic Heart Disease by Baths and Resisted Movements, the brothers August and Theodore Schott having been instrumental in securing the wider acceptance of the therapeutic method, and in combining the baths and Swedish movements to make a rational system, but having no genuine claim to original discovery. To Beneke, who wrote first in 1859, and to Saetherburg, the originator of the resisted movements, must be granted a large portion of the credit, hence no one man's name should be given to the method.

DESCRIPTION OF METHOD.

What is the so-called Schott Method? It may be stated briefly as consisting of the systematic use of saline baths of definite strength and temperature, and the coincident or alternative employment of a certain series of resisted movements. The treatment originated in Nauheim, Germany, where the natural springs are strongly saline and heavily charged with carbonic acid gas, their varying temperature and strength making them admirably adapted to therapeutic use. The chief of a multitude of chemical constituents of these baths are sodium chlorid (1 to 3 per cent.), calcium chlorid (.1 to .3 per cent.), with a considerable quantity of iron and a large amount of free carbonic acid gas. Their temperature varies from 81.7 to 95.5 degrees F. In practice the higher temperature and weaker waters are first used, the water being freed from the carbonic acid gas; a lower temperature, effervescent bath and greater strength in saline constituents being gradually attained as the treatment progresses. Baths are given daily, rarely more than three being taken consecutively, that of the third or fourth day being omitted. While the natural baths are better adapted to treatment, perfectly satisfactory results may be obtained from artificial baths made after the following formula:

Formulae.—To 40 gallons of water (usual amount required) add sea salt, 3 to 10 pints (approximate strength 1 to 3 per cent.); calcium chlorid, pure, 11 to 15 ounces. It is important to note that this latter ingredient is not the commercial chlorid of lime, which, by giving off chlorin, would become a source of discomfort and danger. To introduce or generate carbonic acid gas we may use a soda siphon with conducting tube or the following formulæ of Bezley Thorne:

Mild— NaHCO_3 , $\frac{1}{2}$ pound; HCl (25 per cent.) $\frac{3}{4}$ pound.
Medium— NaHCO_3 , 1 pound; HCl (25 per cent.) $1\frac{1}{2}$ pounds
Strong— NaHCO_3 , 2 pounds; HCl (25 per cent.) 3 pounds.

The salts are first dissolved, the hydrochloric acid is then added and thoroughly distributed. The writer has found the best agent for adding the acid to be a douche bottle and tube, the acid being thus evenly distributed throughout the mixture.

Immersion.—The patient remains immersed from five to twenty minutes, the first bath being brief and

the period gradually lengthened. If the patient be very ill he should be carried to and from the bath and spared any exertion. While in the bath he should remain absolutely quiet, breathe regularly and refrain even from speaking. Upon leaving the bath he may be rolled in warm blankets to rest for at least one hour.

Temperature.—The temperature is at first about 93 degrees F., and may be considerably reduced after the six or eight baths have been taken and the use of carbonated baths begun, provided such reduction is considered necessary. Usually, the patient's sensation is a safe guide to the regulation of temperature. The bath should feel pleasantly and quite definitely warm throughout the period of immersion, and the patient should be cautioned and told to report at once any tendency to chill.

The movements are very simple Swedish movement, and as recommended by Schott, comprise nineteen exercises, so planned as to bring into action every muscle group in the body. These are best illustrated by plates, such as I now place in your hands.¹ The movements are intended to produce without fatigue the beneficial result of exercises, and are of decided value in the treatment of almost all cases to which the baths are applicable.

Before considering the effect of these baths and movements let us inquire what are the conditions which must be fulfilled by the ideal remedy for chronic heart disease. They are the following: *a*, the heart must be rested and strengthened and its own cell-metabolism and circulation be improved; *b*, the peripheral resistance must be lessened; *c*, the general venous engorgement and failure in metabolism must be overcome. That these indications are fairly met by this treatment in the larger number of heart lesions is positively proven by a study of the effect of baths or movements upon our patients as noted below:

Effect of baths.—1, There is a fleeting sense of oppression and dyspnea (rarely seen by the writer); 2, a feeling of exhilaration and well-being; 3, slowing of the pulse, and coincidentally, a fuller and stronger beat; 4, brightening of skin, nails and mucous membrane, indicating relief of cyanosis, freer capillary circulation; 5, secondary reduction of pulse tension with maintenance of lower rate; 6, marked reduction in cardiac area, most marked primarily in right heart, but involving both lateral and vertical dimensions. The effect of the movements is almost precisely similar, but as long maintained.

The elaborate theory of Schott, which assumes the inhibition of saline and gaseous constituents and reflex stimulation through the skin, must, I think, be regarded as unnecessarily elaborate and very unsatisfactory. It is not necessary to make a theory to fit any particular sort of a bath, for a simple and adequate explanation would seem to be found in the well-known effects of warm baths in general upon the circulation. The chief effect of such baths is to free the circulation in the peripheral vessels, thus reducing the work of the heart and enabling it to receive and pass on more blood with less effort. Rest and warmth after the baths prolong this effect for a considerable period. Thus, venous engorgement is relieved, normal cell-metabolism re-established, and the products of suboxidation are either consumed or swept away into their proper eliminative channels. The stronger

the bath and the more CO₂ it contains, the more stimulating it will be and the less likely to be attended with chill during or after the bath, and the more marked and sudden its effects. The flowing baths at Nauheim are almost precisely like surf baths in their effects, and are never used until late in the treatment. In the movements much the same effects are produced as by the baths, through the opening of the immense drainage area embraced in the capillaries of the muscles. To understand this we only need to remember that rapid or protracted contraction of a muscle hinders circulation and induces vasomotor constriction, while gradual contraction produces dilatation of the capillaries and mechanically assists the onward flow, thus favoring greatly the general circulation. The initial rise in blood-pressure noted in using the baths is, in the case of the movements, almost entirely lacking.

Having thus briefly discussed the general methods without any attempt to cover minor details, you will perhaps permit a few deductions from a personal experience with this treatment extending over a period of four years, and embracing nearly one hundred cases. Let us consider, 1, the necessity of scrupulous adherence to the exact formulæ representing the constituents of the Nauheim baths; 2, the relative value of the baths and movements; 3, the cases best adapted to treatment; 4, the cases in which the treatment has proven less useful, though harmless; 5, cases in which it is contraindicated; 6, the precautions necessary if the best results are to be obtained; 7, the actual results obtained in suitable cases.

Is strict adherence to formulæ essential?—In the writer's opinion strict adherence is not essential, though the general make-up of the baths should be about the same. The important features are warmth and moisture, and excellent results are obtained without the use of any ingredient save the salt, which prevents chilling and acts as a cutaneous stimulant. Carbonic acid acts in much the same way, but, while delightfully stimulating, is not absolutely necessary, unless the colder baths are used. It is doubtful whether these cool baths may be safely used elsewhere than at the natural springs, and they are moreover entirely unnecessary in most cases. It must be remembered that immersion in plain warm water will slow the pulse in precisely the same way as the regulation bath, but such baths are not advisable, because the feeling of exhilaration and well-being is not marked, the effect upon the heart is less decided and less enduring, and the liability to chill is increased.

Relative value of baths and movements.—The effect of baths is more permanent than is that of the movements, but both should be used, the movements in the morning and the baths at night.

Cases best adapted to treatment.—It is admirably adapted to cases of incompensation of moderate severity where rest is not to be had, and to those severer cases in which rest and cardiac stimulants have proven useless or reached the limit of effect. The particular class of cases best adapted to treatment are the mitral cases, particularly those of regurgitation, even if very advanced, and all cases of slight incompensation, in which marked arteriosclerosis and myocarditis are not present. In exophthalmic goiter, cases of functional irregularity, of neurasthenia, in all cases of anemia and in chronic rheumatism it is very useful.

Cases in which it has proven of little use.—In the writer's hands aortic cases, whether stenosis or regurgitation, have not as a whole yielded good results.

¹ Author: Extreme Dilatation of the Heart due to Valvular Disease with Special Reference to Treatment by Schott Method. International Clinics, Vol. ii, 2d Series.

No harm has been done, and many have improved, but the writer is not satisfied that the treatment is here of any decided value, and believes that simple rest and the resisted movements are much to be preferred.

Cases in which it is contraindicated.—These are aneurysm, marked arteriosclerosis, chronic myocarditis and chronic Bright's disease, yet, while baths are in these cases distinctly dangerous and harmful, the movements may be decidedly beneficial.

Precautions.—To obtain the best results, the tub should be large and the patient immersed to the chin if possible. The baths should never be given hot, nor, on the other hand, should the patient feel any chill during the bath. Great pains must be taken to avoid voluntary movements during and after the bath. If the circulation in the extremities be poor, brisk, light friction may be used. If calcium chlorid be used it must be pure. A very sick patient must invariably be watched by a skilled attendant throughout the bath. If CO₂ is actively generated it is well to fan it away before placing the patient in the bath. Cases of extreme incompensation are best treated at the outset by rest in bed, and the usual remedies; they will almost always show marked improvement, and when this improvement begins to flag one may begin the baths and use the exercise with slight daily increase in the resistance. Allow an exceedingly gradual resumption of voluntary movement and accept no case of severe incompensation for less than six weeks of treatment.

The following rules must be observed in using the movements: Remember that they are intended to produce the beneficial result of exercise without fatigue, and you have the keynote of success, and can appreciate the scrupulous care necessary in using them in chronic heart cases. The nicest judgment and most painstaking skill are required, and increase of the pulse-rate, pallor, or evidence of dyspnea warns us to stop at once. The amount of resistance, rest intervals, and number of movements well borne by the patient must be left to the operator's good sense. Furthermore, the clothing must be loose; each movement should be performed deliberately and smoothly; the breathing must be deliberate and regular; the resistance should be varied according to the strength of the patient and the effect produced; and no movement should be repeated in the same limb or muscle group. Thus simple and rational are the principles of this treatment.

Results obtained.—If proper care in the selection of cases and strict supervision be exercised, the results are really remarkable. The writer has never seen such extraordinary shrinkage during the first bath as has been described by some writers (3 inches), but in an old mitral case a man must be strongly biased or a trifle weak in his physical diagnosis if he can not easily demonstrate a decided recession of the borders during the bath. That this is not due simply to the somewhat deeper breathing induced by the bath, as has been asserted, may be easily demonstrated by testing the effect of similar breathing before the bath. It must be remembered, however, that rest alone may produce remarkable shrinkage in a dilated heart, and it is probably wise to try rest, digitalis and strychnin for the first week or two and thus get a very gradual rather than rapid change in the conditions. As before stated, we always arrive at a point where progress is slow, and then the baths are indicated. While the

writer believes that the effect of the baths is often overestimated, by reason of the fact that the effect of simple rest is underestimated, yet the shrinkage of the cardiac area, the improvement of the heart action, the pronounced diuresis, and the prompt removal of secondary symptoms under this rational and simple treatment are decidedly impressive and, in the writer's opinion, no treatment of dilated heart can leave the salt baths and movements out of that great therapeutic combination which includes digitalis and strychnin, baths and resisted movements, walking on the flat and hill-climbing. The rational therapist can omit none of these from his list, yet he might find it hard to fix their relative importance. If the writer were forced to discard all means but one, baths and resisted movements would be his choice as being of the broadest application. But fortunately we are not thus limited, and the measure under discussion forms in any event one of the most important adjuncts to the successful treatment of heart disease.

NOTES ON TYPHOID FEVER.

TWO HUNDRED AND TWENTY-FIVE CASES TREATED DURING AN EPIDEMIC OF THAT DISEASE.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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Typhoid fever remains a most interesting study. Its pathology, which was supposed to have been settled years ago by the discovery of the bacillus of Eberth, will have to be remodeled to fit certain facts of recent research. The bacteriologist, who has done so much to illuminate this disease, can not yet call his labors finished. The best efforts of the therapist to evolve a treatment which will abort, or even materially modify, the course of the disease have signally failed. The clinician must often confess his shortcomings in its diagnosis.

An epidemic of this disease began in the city of Minneapolis in February, 1897, and was traceable directly to the water-supply. Drs. Westbrook and Wilson,¹ of the laboratory of the State Board of Health, isolated the bacillus typhosus from the water in April of that year. Nearly every case seen during the months of March, April and May was typic and severe. The spring floods, which came about the middle of May, were unusually severe and the river, from which the water-supply is taken, remained comparatively high during the remainder of the summer and fall. Then followed a series of most interesting cases, more than half of which were atypic. The total number of cases seen by the writer from March 1, 1897, to May 1, 1898, was 225. Of this number 114 were typic and could have been easily diagnosed clinically. The remaining 111 were atypic, and many of them could not have been identified without the aid of certain laboratory tests. For convenience these 111 cases are divided into three classes, as follows: 1, the extremely mild, 55 cases; 2, abortive, 28 cases; 3, beginning concurrently with some other disease, 28 cases.

The first class of cases is well illustrated by the following history:

Class 1.—C. B., male, aged 32, had been feeling ill three days; headache, anorexia, lumbar pains, general muscular soreness; temperature 99 degrees F. at 3 P.M.; tongue slightly furred

with white coating; slight tenderness on deep pressure over right iliac region; diazo-reaction and serum test both negative.

Fourth day. Temperature, 9 A.M., 97.6; 3 P.M., 99 degrees; other symptoms about the same; urine and blood tests both negative.

Fifth day. Temperature, 9 A.M., 97.8, and 5 P.M., 99 degrees; headache and muscular pains increased; tongue more deeply coated; bowels constipated; urine shows faint rose color with diazo-reaction; serum test negative.

Sixth day. Temperature, 9 A.M., 99, 4 P.M., 99.8 degrees. Distinct rose-colored diazo-reaction; serum test negative.

Faint grouping was noted with the serum test on the eighth day, and a perfect reaction on the tenth, twelfth, fourteenth and twentieth days. Slight enlargement of the spleen was noted on the tenth day. The temperature vacillated between 97.6 and 99 degrees from the eighth to the eleventh days, after which it remained normal. The tongue cleared off, appetite returned and the patient felt as well as usual.

This class, of which the above is a good representative, presents many variations in the symptoms. But, as a rule, the usual prodromata are present, with a very low fever of ten days' to two weeks' duration. All have reacted to the diagnostic tests for typhoid fever.

Class 2.—Alice W., female, aged 13 years. Had eaten inordinately of sweetmeats three days ago; has been vomiting ever since; intense headache, epigastric pain and tenderness. Temperature 103, pulse 90; respiration 20; diazo-reaction and serum test absent.

Fourth day: Temperature, 3 P.M. 104, respiration 20; pulse 96; vomiting ceased; tenderness over entire abdomen; diazo-reaction intense; serum test negative.

Fifth day: Temperature 9 A.M. 102, 4 P.M. 103; headache not so severe; feels much more comfortable; no pain in epigastric region, but still tenderness on pressure over abdomen; area of splenic dullness considerably increased; no spots; serum reaction present.

Seventh day: Temperature 9 A.M. 97.5; 4 P.M. 99. She feels well and wants to sit up. The temperature registered between 97.5 and 99 for three or four days, the tongue cleaned off, appetite returned and she felt as well as usual. The serum reaction was present on the 6th, 8th, 9th, 12th and 20th days.

This is a fair representative of this class of cases. The outset is generally rapid, sometimes sudden with chill or, if the patient be a child, convulsion. The temperature rises to 104 or 105, or even higher, for three or four days, then suddenly the disease terminates by crisis similar to that of pneumonia. There is generally no cough in these cases, and in none of them could there be detected the slightest physical sign of lung involvement. None of them have shown the rose-colored spots. In some, splenic enlargement could be plainly detected. There was sometimes tenderness in the epigastric, or in the right iliac region, but often these signs were wanting. All of them reacted to the urine and blood tests, and as a rule each test appeared early in the disease, the diazo-reaction almost invariably appearing first.

Class 3.—Pneumonia, 7 cases, severe acute bronchitis 10, amygdalitis 3, otitis media 1, pleuritis 2, peritonitis 1, renal hematuria 2, cystitis 1, periostitis 1.

I would call attention to this as a very interesting class of cases. In 23 of them there is a suspicion that the respiratory tract was the point of invasion of the infection. Sicard¹ believes that one-tenth of all cases are infected in this manner. Henrots'² report of 112 cases of typhoid fever among a troop of 1600 soldiers, who during a sham battle passed over a very dry and dusty field which had been fertilized with human excrement, would indicate the respiratory tract as a point of invasion of the bacillus typhosus, especially as it was noted that a great number of them had pneumonia and other pulmonary complications. Flexner's³ case, in which the typhoid bacillus was found in the lung, liver and spleen, while the intestinal mucous

membrane was normal, and the mesenteric glands not enlarged, would seem to add additional weight to this theory. There is abundant evidence in the recent literature of this disease to show that the intestinal lesions are not a necessary part of its pathology. Nichols and Keenan⁴ have recently reported a case and collected nine others in which no lesion of the intestine was found, although the typhoid bacillus was cultivated, usually from the spleen. Sanarelli⁵ maintains that the disease is, properly speaking, not an intestinal one; that the spleen and lymphatic system are the points where the bacilli produce their peculiar toxins, and the intestinal lesions are due to secondary causes. Osler⁶ makes the clinical observation that "the severity of the symptoms of typhoid fever bears no relation to the extent or intensity of the intestinal lesions."

There have been two deaths; a little less than 1 per cent. This is not mentioned to bolster up any particular treatment, but rather, to show the fallacy of mere figures, unconnected with other facts, when used to prove the efficacy of any so-called abortive treatment. One-third of these cases have either aborted before the tenth day or run a course so mild as to make the diagnosis of scientific interest without the use of the particular remedies which are claimed to produce these results. While not decrying medicinal treatment in this disease, the writer believes that other factors play a much greater part in affecting the mortality. The attenuation of the specific infection, the amount received, the individual resistance or degree of immunity, may be mentioned among these factors; and the peculiar circumstance of this epidemic would tend to show that at least one of them had much to do with lessening its severity.

It is desirable to call attention to the value of the chemist and bacteriologic tests in the diagnosis of this disease. In a former article⁷ the writer has shown the relative values of these two tests. The diazo-reaction appeared first or at the same time in 80 per cent. of the cases in which it was used side by side with the serum test. It has failed to appear in 12 out of 200 cases, and in only one of these was it fairly tried. It almost always appeared before the eighth day, even in the mildest cases; but in some of these it is present only on one or two days. To be certain that it has not appeared, tests should be made daily. Although it is found in some other diseases—measles, scarlatina, parotiditis, varicella, tuberculosis and cancer—by careful attention to the clinical symptoms, this test is a valuable aid in making an early diagnosis in typhoid fever. Simon's⁸ method, with Green's⁹ modification of the formula, has been used and no test accepted unless a pink or rose color was given in dilution with five to ten parts of water.

The serum test is the anchor in the diagnosis of this disease, and is very nearly, if not quite, pathognomonic. Dr. Wilson,¹⁰ assistant bacteriologist to the Minnesota State Board of Health, has made 1450 tests from 365 of my patients. Wyatt Johnston's dried blood method with dilution of about 1-25 was used in about one-half the tests, and Dr. Wilson's¹⁰ method of collecting the blood on aluminum foil, weighing and diluting it accurately to 1-25, was used in the latter half. Of those cases in which the reaction was negative throughout, one was typical typhoid fever clinically. Two others were twin infants ten weeks old whose temperature ranged from 100 to 103 for three weeks. Each had rash which was not typical.

They had diarrhea, distension of the bowels and enlarged spleen. The urine of each gave diazo-reaction throughout the illness. They had been partly bottle-fed, the family using infected water. No other members of the family had typhoid fever. One other case of doubtful diagnosis was reported by the writer¹¹ in a former article. These four would make a percentage of about 1.8 in which the reaction was absent. On the other side there were two cases, one of which has been reported,¹² in which the reaction was present during the course of another disease, in which there was at least a suspicion that typhoid fever was not present. The second case was one of severe erysipelas, during the course of which the serum reaction appeared on the fifteenth day. The spleen was enlarged, and there was diarrhea with characteristic stools. There was at the same time another case of typhoid fever in the family.

Gwyn's¹³ case of typical clinical typhoid fever with rose spots, diazo-reaction, hemorrhage from the bowels, serum reaction negative, in which cultures from the blood showed only Gaertner's bacillus, may throw some light on such reports as Brill's,¹⁴ who, in seventeen cases clinically resembling typhoid fever found the serum test negative. And further research along this line may prove Widal's test pathognomonic of infection with the bacillus typhosus.

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CLIMATIC VERSUS SERUM TREATMENT OF PULMONARY TUBERCULOSIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The climatic treatment of disease is a most important subject, and one that I am convinced has not been fully studied and appreciated. No doubt many failures are to be attributed to the fact that neither proper cases nor proper climate have been selected. Because a patient has tuberculosis is no reason or excuse why he should be sent two thousand miles or more from home and comfort and friends, only to find, perhaps, his malady increased, and to die among strangers. We should prescribe a change of climate with as much discretion and judgment as any other remedy. Whether a patient should be sent from home in search of health will depend upon several conditions. The stage of the disease, the vigor, vitality, disposition of the patient, and the means with which to live comfortably, are all to be considered. Physicians in the Rocky Mountain region are continually meeting with cases that should never have been sent to this country. Too frequently we are obliged to advise their immediate return. Tuberculosis in the last stages is only aggravated, and the condition of the patient made worse and more uncomfortable by a residence in this altitude.

Climatic treatment, like any other treatment of disease, should be applied early. The earlier the application of the remedy, the more certain and positive the results. It may be said, with little fear of contradiction, that tuberculosis in the first stage, and often in the second, is cured by a proper change of climate. In selecting cases for climatic treatment, therefore, by all means select the early ones. Do not wait until the golden opportunity is lost in the hope of arresting the disease by less effective measures.

It must be stated in this connection, however, and it must be admitted, that tuberculosis originating in this climate, as a rule, runs a rapid and unfavorable course. This has been the observation of those who have had the opportunity of watching these cases. It has been my misfortune to have met with a few such patients, and they have formed no exception to the rule.

There is another factor of no little importance that should be considered in the selection of cases appropriate for climatic treatment, and that is, the financial circumstances of life. Many seem to entertain the impression that no matter what the stage of the disease, if they can only live to reach this land of promise, their ills will take wings; they will find ready employment and health will soon be restored. By the irony of fate, many find no employment, and, as a result of anxiety and forced economy, the ills are increased. If a patient's circumstances are such that he can not live in comfort and idleness, if necessary, for at least a year, it would seem hopeless to send him in search of health. Something more is needed than mere climate. A contented mind, freedom from worry and anxiety, good and abundant food and cheerful surroundings—these are all essential factors. I contend that it is more humane to allow a patient to die in peace at home, even if his days are shorter, than to send him in the later stages away in search of health, unless he has means with which to command every comfort.

The selection of the proper climate is quite as important as the proper selection of cases. There is no climate suitable to all cases, although in general terms we may say that the essential features are altitude, dryness, abundant sunshine, and uniformity of temperature. Wherever these conditions prevail, a tubercular patient has the best chance to recover. Early cases, with no heart lesions do best, as a rule, in a high altitude with its invigorating and stimulating atmosphere. These are the cases that do remarkably well in Colorado. More advanced cases need a warmer and a less elevated climate. Such cases do better in New Mexico, Southwestern Texas, Arizona, or the interior of Southern California. Many cases do well in Colorado during the summer and fall, but do not bear well the cold of winter, and it becomes necessary for them to go southward during this season; and, again, there are many who do wonderfully well in winter in New Mexico, Texas or Arizona, but who can not endure the heat of summer in those regions. It becomes necessary, therefore, to shift a patient about from one climate to another in order to take advantage of the best seasons until he has recovered.

Another important consideration is the fact that tubercular patients recover slowly. It requires from six months to three or four years, according to the condition of the patient and the stage of the disease, to entirely recover, and even after this period it is

usually necessary for a patient to live in that climate where he has recovered, or a similar one. Too frequently patients come to this country with the idea that within a very few months their disease will be eradicated in some magical way, and that they can then return with safety to their eastern homes. This is a most erroneous impression, and should not be encouraged. The earlier the cases are recognized and sent to appropriate climates, the more likely that they will be able to return to their eastern homes, providing every vestige of the disease has been eradicated. Such patients must, however, be prepared to flee for their lives on the slightest return of their malady. As a rule, we can not trust them, and they will remain long after they have been warned, and often until it is too late to regain the lost ground. The success of climatic treatment will, therefore, not only depend upon the proper selection of climate, but upon the proper selection of cases as well.

At the present time the serum treatment of tuberculosis is attracting widespread attention. The almost specific action of antitoxin in the treatment of diphtheria has inspired many of our best and brightest men to seek a like remedy for the cure of that arch enemy of the human race—consumption. At the present date it is generally admitted that the serum treatment of chronic tuberculosis is disappointing. It remains yet to be proven whether it is effective in the early stages. If it produces immunity, if it arrests the progress of the disease in incipient cases, it still remains to be proven how long the immunity continues.

If antitoxin is nature's remedy for overcoming disease, it would seem that in a disease which is essentially chronic, with no tendency to self-limitation, if immunity is conferred it would be necessary to supply the system continuously and indefinitely in order to preserve the immunity and to prevent relapse. A patient with tuberculosis in its early stages may be cured by the administration of antitoxins. Will he remain cured and how long are equally important considerations. In diphtheria it has been proven that the immunity produced by antitoxin in full protective doses lasts at most only three weeks. Is it reasonable to suppose that an antitoxin for tuberculosis would produce immunity for a longer period? If a patient's environment is not altered, if the same conditions and surroundings exist after as before treatment, or if the patient again inhales the fatal bacillus, will there not be a return of the disease?

It has been proven beyond all doubt that proper climatic treatment almost invariably arrests early tuberculosis. I will not occupy the time of this society by reporting cases to prove this assertion. That even many late cases improve and remain in a fair degree of health for years, and that many second stage and most (at least 90 per cent.) of the first stage cases, entirely recover, is a fact so well established that it is unnecessary for me, on this occasion, to enter upon a detailed history of cases. It is true, however, that with very few exceptions a patient can not return to a low altitude and previous environment without great danger of the redevelopment of the disease. The immunity conferred by climate is thus lost. Why should this be so? We recognize that altitude, pure air, sunshine and uniformity of climate are essential factors in promoting the cure of tuberculosis. Why? May it not be because these conditions invigorate the system and stimulate the pro-

duction of the normal antitoxins of the body? May this not be the reason why immunity is lost sooner or later when a patient cured by climatic treatment, returns to former conditions and surroundings? If climatic treatment must be continuous in order to preserve immunity, is it not equally true that the artificial introduction of antitoxins into the system must also be continuous in order to maintain immunity? The brilliant work that has been done the past few years in the bacteriologic laboratories of the world presages victory in the discovery of a remedy for tuberculosis. There are, however, unseen forces that must yet be understood and overcome. The mysteries and difficulties of artificial antitoxin production and application are distracting and apparently unfathomable, but it ill becomes any man to say that these difficulties and mysteries will not be solved.

Until we have more light to guide us, until we are more fully convinced of the utility of the serum treatment of tuberculosis, we should continue to take advantage of climatic treatment, which has been fully tried and seldom found wanting.

A FEW CONSIDERATIONS REGARDING CLIMATIC CHANGE AND SERUM THERAPY IN PULMONARY TUBERCULOSIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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If an apology is necessary for the introduction of that concerning which so much has already been written, it is found in the vast importance of the subject, the wide diversity of opinions, the rather general absence of clearly defined knowledge and the increasing mass of literature extolling without limit the virtues of special methods of treatment. It is not my purpose to advocate unduly the adaptability of any climate or climates to the various stages of the disease. To present a plea for the more rational and conservative measures of treatment in a climate appropriate to the individual case, in opposition to the present employment of serum-therapy in its various modifications, is the object of this paper. As a preliminary postulate, I will submit that climate in conjunction with painstaking attention to details of management offers to the pulmonary invalid greater assurance of improvement than can be otherwise obtained.

Waiving for the present the acceptance of this proposition, it is perhaps well to allude briefly to the errors of judgment often observed in the early history of pulmonary tuberculosis prior to arrival in Colorado. I do not refer merely to mistaken or deferred diagnosis with its unfortunate results, but more especially to the ill-considered advice imparted, when the nature of the condition has at last become clearly established. The temporizing delay at this stage of the disease, more important than any other, forms too frequently a portion of the evidence which may convict the medical adviser of culpable and contributory negligence. I have been impressed, repeatedly and forcibly, from a study of my records, that the vast majority of the pulmonary invalids in Colorado arrive

only after moderately active and extensive infection has taken place. It is by no means infrequent in my experience to feel compelled to advise an immediate return for the unfortunate who has but finished his journey of one or two thousand miles only to find that he has come too late. The history of such cases usually discloses the duration of a several years' illness, with ample opportunity for earlier climatic change had it been advised or properly insisted upon. It is pertinent to state that out of a total of 350 selected cases which have remained under my supervision, more than half presented themselves with extensive pulmonary involvement averaging about a year and a half subsequent to the recognition of their condition. The fact that 213 of the cases in the entire list came to Colorado with pronounced signs in each lung should emphasize, not only the necessity of earlier diagnosis, but the wisdom as well of more prompt climatic treatment.

The patient with pronounced physical signs of pulmonary tuberculosis often states upon arrival that he was advised by his physician to remain at home during the summer and early fall and prepare to visit this climate for a few months in order to escape a bad winter. The history almost invariably shows a progressive decline in weight, strength and appetite, with increase of fever, cough and expectoration during the so-called favorable season at home. He consequently arrives in Colorado less prepared to respond to the influences of her climate, and is deprived, for the year at least, of a considerable portion of her most favorable and delightful season. Others, after one or two years' illness at home, are frequently instructed to come to this State for a definite period, of perhaps three to six months, regardless of climatic results. As a matter of fact, many such cases do not live out their expectancy in Colorado.

It is interesting, but discouraging, to note the large proportion of cases coming here as a last resort. A reference to my records show that a very considerable number of cases first sought climatic change elsewhere. When it is considered that the distinctive climatic conditions in Colorado are especially applicable to the early cases and contraindicated for those with the most extensive infection, the true significance of such procrastination will be more fully appreciated. This would be less worthy of comment were it true that a recourse to only a few localities was usually observed before a resort to Colorado. The unfortunate fact remains that in a great many instances the patient has exhausted the climatic influences of the entire country in a vain effort to secure arrestment, before applying to Colorado as a court of last appeal. As a fair illustrative example I will cite the following brief and imperfect report: Mrs. X., aged 29, New York State. Arrived in Colorado Feb. 11, 1898. Present illness began October, 1896. Two months later was sent to Thomasville, Ga. Remained two months; improved; was directed by her physician to Aiken, S. C.; remained one month; gained. Returned to New York; remained three months and failed; successively sent for short periods to Canada, Northern New York, Bethlehem, N. H., and advised to return to New York City, where she was for three months under daily inoculations with oxytuberculin. She was finally sent to Colorado, one year and four months after recognition of disease, equipped with special hypodermic syringe and a full complement of the tuberculin, but with exhausted

energies, depleted finances and extensive infection of both lungs, moderate pyrexia, severe distressing cough with copious expectoration, disturbed digestion, loss of weight, cardiac excitement and insomnia. I will state that the patient is improving at the present time and is likely to remain for a considerable period in Colorado, in spite of the adviser in New York, who is, even now, counseling another change. It seems strange that patients should receive directions to keep constantly on the move, irrespective of adaptability to climatic conditions and of benefits already received in any location.

It is to be regretted that certain physicians have seen fit to order their patients away from home with instructions to beware of the doctors, or at most, to secure an opinion as to results obtained after the lapse of several months. Unfortunately many of these are compelled to seek medical aid much sooner than anticipated as a direct result of the injudicious counsel of their home advisers, with reference to exercise, work or manner of living. It is safe to say that nearly one-third of the pulmonary invalids seeking direction in Colorado for the first time, present the history of several months' residence in the State, usually under decidedly improper conditions and with unsatisfactory results thus far attained.

The spectacle is also occasionally witnessed of the physician, who has perchance never been in this region, presuming to dictate in advance, or later at a distance of 1000 or 2000 miles, the policy of therapeutic management. There came under my observation not long ago a young man from an eastern city who, during a period of six months' residence in Colorado, had prepared fortnightly cover-glass specimens of the sputum, to be mailed to his physician in the east. The cheering intelligence was regularly returned that the bacilli were diminishing in number and that favorable progress was being maintained. The actual results attained were as unsatisfactory as could have been expected from the character of the medical advice. It does seem that there should be a tremendous liability for such errors of professional judgment as are responsible for the loss of human life and happiness, and for which there can be said to exist no extenuating circumstances. From the history and character of the cases almost daily coming under observation in this climate it would appear that the medical counsel was occasionally delivered without the encumbrance of knowledge or the handicap of conscience. Is it not fitting in a discussion of this character to enter an emphatic protest against the indiscriminate character of the medical advice frequently given with reference to the question of an appropriate climatic change? As far as pertains to Colorado, I can only report that cases suitable for this climate should come early, come to stay, and come prepared to receive competent counsel.

Despite the rather unsatisfactory character of the cases generally observed in this State, the combined results of climatic influence and management are nevertheless extremely gratifying. From my own experience and that of my colleagues in Colorado, I am sustained in stating that, in round numbers, from two-thirds to three-fourths of all cases taken as they come may be expected to exhibit pronounced improvement under proper conditions. Instances of incipient pulmonary involvement constituting, as they do, but one-fifth of the entire number, show material gain. If not permanent arrestment, in nearly four-fifths of

these cases. If with slight tubercular infection is combined other favorable considerations with reference to temperament, nervous system, digestion, finances, and domestic relations, the percentage of improvement in such instances is raised to 90. The authenticity of these statements is subject to verification by a reviewed analysis of my own recorded cases and the reported observations of others. The significance of these figures is remarkable in view of the obvious difficulties constantly experienced in maintaining a strict and proper regimen for somewhat indefinite periods. The fact that but one-fifth of all the cases observed in Colorado are incipient ones, and that the accorded results of the climatic change are not relatively increased, reflects a certain responsibility upon the general profession and offers a justification for these remarks.

In the midst of the present enthusiasm and interest in the treatment of pulmonary tuberculosis, the laudable search by strictly scientific men for new and specific remedies, the undue haste in heralding the results of serum-therapy as applied frequently to a limited number of cases totally devoid of adaptation to the means employed, and in the midst of the unfortunate tendency to experiment with the various special methods in private practice, to the exclusion of climatic considerations and systematic management, let me ask, "What have been the ultimate authentic results?" It is comparatively easy to sound the praises of certain methods and ingenious appliances, but, after all, "the proof of the pudding is in the eating." Have the patients shown a satisfactory and enduring improvement? The arguments should be summed up and conclusions reached with reference to the practical results upon the unfortunate consumptive, rather than from laboratory inferences derived from guinea pigs. The alleged immunization of this animal is of but slight interest or value to the pulmonary invalid, if the modified tuberculin preparations are to continue to exert their distinctly deleterious influence upon the course of the disease. What well-substantiated clinical evidence has as yet been adduced to justify, in the slightest degree, the increasing employment of such preparations outside of carefully-conducted experimental institutions? Great interest has been attracted of late to the new tuberculin of Koch, the derived serum of Fisch, and the oxytuberculin of Hirschfelder. The later German consensus of opinion upon tuberculin preparations may be safely considered to reflect more favorable estimates upon their present utility than could be generally entertained elsewhere in any responsible manner. The extent of German disfavor upon the use of the new tuberculin, from the latest clinical reports, is well understood. Numerous authorities in Europe, from their own personal experience, have unhesitatingly stamped their disapproval of its employment. The following from the *Philadelphia Medical Journal* of March 12, 1898, possesses much significance in this connection:

At the last three meetings of the staff of the Charité, Berlin's largest public hospital, the therapeutic worth of Koch's new tuberculin was discussed. It is now in use over ten months and some definite conclusion as to its specific therapeutic efficacy, it would seem, should be given to the profession at large, who look to those with hospital opportunities and material for practical results. Not a single voice was raised in its favor, except that of Professor Brieger, Koch's assistant in the institution for infectious diseases, and even that voice, it must be confessed, in somewhat apologetic tone rather than in any convincing way.

The *Medical News* of March 19, 1898, contains an interesting reference to the clinical discussions at the Charité and to the absolute failure to produce immunization in animals with the new tuberculin. It states:

The experiments seem to have been carefully carried out, the dosage of tuberculin was exact and sufficient and the observations numerous enough to do away with the idea that perhaps coincidence played a rôle in the results obtained, and yet there was utter failure to get the desired immunity. . . . After supposed immunization, all the animals died when inoculated with tuberculous material, and, interesting enough, most of them before the control-animals inoculated with the same material at the same time. . . . The history of the second tuberculin forms an interesting commentary on the enthusiastic reception of the first. In Berlin it has had practically the effect of destroying faith in all so-called specific remedies for tuberculosis. Constitutional treatment is now the only method receiving any attention.

Subsequent to the decision of the Académie de Médecine of Paris, that the therapeutic value of oxytuberculin had not been established by sufficient experimentation, a committee of the Cooper Medical College of San Francisco was appointed to institute an investigation and render a detailed report upon this remedy. The committee has bestowed its unqualified endorsement of oxytuberculin and urged its extended use. From a review of the published evidence presented to the committee, upon which its findings were based, I am unable personally to accept their conclusions, on the ground of insufficient clinical testimony. The reported results of other observers, as far as I am able to ascertain, have since been quite unsatisfactory. My own experience with various tuberculin preparations, save for occasional diagnostic purposes, has been limited to observation of results from their antecedent employment. I have never considered the request of the patient for the use of tuberculin a sufficient justification for its administration, adjudging this to be in the same category with similar appeals for morphin or the performance of ovariectomy if contrary to the judgment of the attending physician. Despite protestations to the contrary, from lay and professional sources, the patient is unable to assume the entire burden of responsibility in such cases.

A very considerable number of cases have subjected themselves to my care, presenting the history of several months' daily inoculation with tuberculin preparations prior to arrival in Colorado. In none of these have I been able to secure a statement of favorable results attending its employment, save in the occasional instances of conjoined climatic influence. The record has almost invariably shown subsequent failure, which with the involved loss of time, in early stages, must constitute a factor of no mean importance. It is manifestly fair, for the purposes of comparison, to allude briefly to those who have come under my observation, following the use of various tuberculin injections in Colorado under the same climatic conditions. Admittedly a certain proportion of such cases should be expected to exhibit improvement from the climatic change, irrespective of therapeutic management. I have been rather surprised, therefore, to note the generally unsatisfactory results attained by those in this class whom I have had opportunity to observe. I can recall no instance in which, from a review of the history of the case after arrival, material improvement could be inferred to have taken place during the inoculations. Of further significance, I can conscientiously report a marked gain in the majority of such cases upon

cessation of special treatment and the observation of rational methods with strict insistence upon appropriate daily regimen.

Relative to the reported experience with tuberculin preparations of some of my colleagues in Colorado, I can not refrain from the statement that I can see no justification for their employment in this State, nor any scientific value to be derived from such observations. It is recognized by even their warmest advocates that their use should be limited chiefly to early cases. It is precisely such cases that have been demonstrated to respond most readily to the favorable influences of the climate. I submit the proposition that such cases, showing an exceedingly large percentage of improvement from climatic conditions, should not be lightly subjected to the influence of a powerful agent, the utility of which as yet remains undemonstrated by clinical experience or laboratory investigations. I insist, also, that the improvement reported in early cases during the first year in Colorado is no evidence that benefit was derived from the coincident employment of serum-therapy. Further, inasmuch as the use of tuberculin preparations is not considered to be generally applicable to cases with more extensive infection, there would seem to be still less excuse for its indiscriminate administration in Colorado in cases to which this means is not adapted according to its most experienced and enthusiastic supporters.

It has been suggested by some that the moral effect, if nothing more, of daily inoculations should exert a favorable influence upon the pulmonary invalid. This is presumably advocated from the apparent hopelessness of many cases, the inability for various reasons to enforce proper therapeutic management, and the desirability of producing a suitable impression upon the patient to the effect that definite means are being constantly employed for his relief. I am convinced, from my own experience, that the moral effect of this is distinctly bad. I have repeatedly had occasion to observe the increased susceptibility of pulmonary invalids to depressing or exciting influences. The mental effect of the daily subjection of such patients to this procedure, with the prolonged confinement in the physician's office, with its incidental annoyances, must necessarily be disturbing and depressing. Added to this, should be considered the enforced infringement of systematic management pertaining to an unbroken period of rest with as many hours daily of sunshine and of fresh air as possible, removed from the thickly settled portion of a city like Denver. The trip to town, with its frequent delays, is sufficient to completely destroy the entire system of regimen for the half day at least, interfering with proper nourishment between meals, interrupting naps, or periods of rest, and affording varying degrees of physical exhaustion, with disquieting if not depressing mental influences.

I have found it to be comparatively easy and infinitely more satisfactory to appeal directly to the intelligence of the patient by a judicious explanation of the situation, securing thereby a more active and hearty co-operation. The personal influence of the local physician, with the establishment of confidence and trust, is calculated to produce an effect for good far greater than the moral influence of routine hypodermic injections.

I present these very common-place remarks with much hesitation, but with the conviction that relative

to a subject of such importance no harm can result from a plain statement of facts gathered from personal experience.

ACCIDENTS IN EYE OPERATIONS.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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While it is more flattering to one's vanity to record successes, it is often quite as profitable to study failures and embarrassments, with a view to learning how to avoid or master them in the future. It will be the aim of this paper to consider briefly a few accidents occurring in eye operations.

Some years ago, as I was making a paracentesis on an Irishman's eye with a Graefe knife, the patient made a sudden violent movement on the entrance of the knife point into the anterior chamber. A serious accident in this case was avoided by depressing the handle of the knife quickly so that the point could not injure the lens, but a good lesson was learned—not to operate too soon after instilling cocain. A more serious accident occurred on attempting to do an iridectomy, without an assistant, on an intractable patient who moved her eye violently at the worst possible moment, causing considerable irido-dialysis. In this case two mistakes were made. The first was in attempting to use the scissors with the left hand; it is much easier to operate with the scissors in the right and forceps in the left hand. I am inclined to think, however, that it is usually a mistake to do an iridectomy without an assistant, although I have many times done so successfully, and many will agree with Dr. Reeves' statement at the Montreal meeting of the British Medical Association that "it is better to operate alone than to have unskilled assistance, if such a term can be used."

Of greater interest than these are my embarrassing experiences in three cataract cases, and they form the occasion for writing this paper. In case first the combined operation was performed. On cutting the iris the hemorrhage was profuse; the anterior chamber was soon filled completely and the blood could not be removed in the manner ordinarily advised, nor any other so far as I could see at that time. The capsulotomy and delivery was therefore done in the dark, so to speak, and considerable cortical matter remained. The blood was absorbed in a day or two and the eye healed rapidly, but the lens matter uniting with the capsule formed a secondary cataract. This was left to nature, and while absorption was slow the patient ultimately obtained very useful vision. Possibly using a cold compress for some time to cause the blood to coagulate, and then removing the clot with forceps, would have obviated all difficulty as to extraction of the lens in this case.

Case second was most unfortunate. This patient had the most deeply seated eyes I ever saw, which not only increased the difficulties of the operation, but made subsequent examinations very difficult and unsatisfactory, as the upper lid could not be raised without touching the inflamed eyeball. Although the patient saw well at the close of the operation, and I could not see any lens matter remaining, I felt that

I had failed to make a complete delivery. Later on some loose lens matter was found forcing apart the lips of the wound and was easily removed, but it had already set up a cyclitis which was followed by sympathetic inflammation of the other eye, necessitating enucleation of the exciting eye. The result was particularly deplorable, as the sight in the remaining eye, upon which I had done a successful extraction the previous year, was considerably impaired. There was additional disappointment, perhaps due to the fact that I had done double cataract extractions on two of his friends with a resulting vision of nearly 20/20 in each eye. Earlier removal of loose lens matter might have prevented the cyclitis, and earlier enucleation would certainly have been better for the sight of the other eye, but this case was at a distance from me and could not be seen as often as I wished.

In case third the nucleus of the lens with the thickened capsule dropped down into the vitreous, the capsule remaining attached above so that it swung as if upon a hinge. Efforts to get hold of it and extract failed, although a properly made wire loop might possibly have been used successfully. The eye was closed and a cool compress of cotton applied for a half hour, in the hope that the anterior chamber would refill and the lens float back into position, as it were. At the end of that time, the aqueous showing no tendency to reform and the cornea remaining depressed or collapsed, the usual dressings were applied. A little vitreous had been lost and its appearance indicated the occurrence of liquefaction. At the end of twenty-four hours the anterior chamber was re-established and the lens had come up into place. It was then a question whether to attempt its immediate removal or leave it to nature (supplementing what nature failed to do in the way of absorption by a secondary operation later on). The success of this course with case first, and the fact that the patient was a nervous invalid, led to the adoption of the latter plan. The corneal wound healed kindly and there was but little iritis, slight adhesions below serving to fix the lens and capsule more firmly in place. The iritis having subsided, we began to consider the question of a secondary operation, when the patient, who had long been an invalid, commenced to decline and soon died from causes having no connection with the eye or operation. It is, therefore, a matter of speculation whether it would have been wiser in this case to have gone down into the vitreous with a wire loop immediately, or attempted the extraction of the lens remnant the day following, in lieu of the conservative course adopted. I hope this phase of the subject will be thoroughly discussed.

The text-books at my command say comparatively little about accidents in operations. deSchweinitz gives the most, but even he does not cover all the points connected with such cases as I have here reported. Of such accidents as the iris falling in front of the knife I have had no experience, nor have I ever lost much vitreous. In one case only have I been compelled to enlarge my corneal incision. The accidents mentioned in this paper have been the worst in my experience, but they have taught me such valuable lessons that I thought it might be more profitable to report them than my successes, hoping that the discussion thus introduced might bring out many points of value to those who feel there is yet something to be learned in this branch of our art.

17 West Ohio Street.

AN INEXPENSIVE 60-LENS OPHTHALMOSCOPE WITHOUT REKOSS-DISC.

Presented to the Section on Ophthalmology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEORGE M. GOULD, M.D.

PHILADELPHIA.

It is said that if within five years after graduation an oculist does not devise "A New Ophthalmoscope" his wife and intimate friends begin to make mysterious visits to the best alienists concerning the man's mental condition. I have concluded that it will not do for me to hold out any longer. The little device I show you today is designed to give the working oculist an instrument with double or treble the number of useful lenses in the ordinary ophthalmoscope, without the complicated and bothersome RekoSS-disc, without a handle, that does not need a case, and that is comparatively inexpensive. The lenses are arranged in two sets independent of each other, each set in parallel continuous grooves or channels similar to the Morton instrument in this one respect. Each set of lenses is propelled by a drive-wheel operating a toothed wheel for each of the two sets of lenses, this having a disc on which is the designation of the particular lens at any time before the sight hole. The set of lenses in one end of the ophthalmoscope contains the lenses most used by an emmetropic oculist, and all the rarely-used lenses are in the set at the reverse end. A highly ametropic oculist could have a different set of lenses placed in the most-used end according to his personal needs. The mirror, instead of tilting to either side, is reversible on its axis and thus can be placed at any angle desired for use when patients are in bed or with the light in any direction. The mirror is readily taken out and inserted in either end of the instrument. Side-illumination is excluded by a tube containing the mirror and the body of the instrument. The instrument itself is used as a handle. The arrangement of the lenses is as follows:

At one Extremity (that most used.)		At the other Extremity (that less used.)	
Concave.	Convex.	Concave.	Convex.
		8.00	8.00
		8.50	8.50
0.50	0.50	9.00	9.00
1.00	1.00	9.50	9.50
1.50	1.50	10.00	10.00
2.00	2.00	10.50	11.00
2.50	2.50	11.00	12.00
3.00	3.00	12.00	14.00
3.50	3.50	13.00	16.00
4.00	4.00	14.00	18.00
4.50	4.50	15.00	20.00
5.00	5.00	16.00	25.00
5.50	5.50	18.00	30.00
6.00	6.00	20.00	
6.50	6.50	25.00	
7.00	7.00	30.00	
7.50		40.00	

The present crude instrument, the first one made, is designed to show its essential principles and methods; the finished instrument will be made of aluminum, and therefore much lighter in weight.

DEMONSTRATION OF AN "AUTO-FUNDOSCOPE."

Presented to the Section on Ophthalmology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEORGE M. GOULD, M.D.

PHILADELPHIA, PA.

The little device for which I have dared to coin the

terrible word "Autofundoscope," is a very simple bit of mechanism, designed to slowly and accurately revolve a pin-hole through, and placed about two millimeters from, the center of a black rubber disc. The word should have been *autoretinoscope*, but as *retinoscopy* has been given another signification, *autofundoscope* is the only word left to designate the observation of the vascular system of one's own retina. The method essentially is the very old one described in books on physiologic optics of moving a pin-perforated card, held in the hand, before the eye, and observing an illuminated blank space through the perforation. In this way, however, one secures only faint, movable and indefinite images of the retinal vessels, which disappear and reappear with provoking rapidity. The common newspaper puzzle of revolving concentric alternate circles of black and white rings, when upon stopping the movement, the circles seem still to revolve, suggested to me this improvement and device. Both facts rest upon conditions explained in books on optics, which you well know—the position of the capillaries in front of the retina, the shadows they cast, the physiologic influence of fatigue, and the slight change in the position of the shadows affected by the revolving perforated disc. One may place the instrument, without the tube, five or ten feet from a brilliantly illuminated white card-board, and thus obtain a very fair and steady image of the macular region and the entire perimacular vascular system. A little patience and considerable care is needed to hold the eye very steady, at the right angle, and to rotate the disc at exactly the requisite rapidity and uniformity to bring out the image most perfectly and immovably. Had I thought the experiment worth the expense and trouble, it would have been possible to provide an automatic clock-work mechanism much superior to the present crude device.

Physiologically the method is something more than a curiosity, as showing one the exact shape and relative dimensions of his yellow spot of Sömmering, or macular region; the comparison of the different picture of the two eyes; the perfection of the vascular supply of the retina, etc. I have been astonished to see how clearly the finest capillaries are seen, how much closer they penetrate to the macula than I supposed, etc.

I can imagine that the method may have use in demonstrations of pathologic conditions, but all such must depend upon the fact that it is only one's own retina that one can thus see. I have noticed in my own images certain opalescent spots in the perimacular space, invariable in each eye, though entirely different for each, in size, number and location. I do not know what causes them. They are not muscæ.

THERAPEUTIC VALUE OF SOME MEDICINAL AGENTS IN PHYSICAL DISEASES AND SOME PSYCHICAL TROUBLES.

Presented to the Section of Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY T. B. GREENLEY, M.D.

MEADOW LAWN, KY.

It has occurred to me that a short sketch of the value of a few remedies I have used with good results in certain cases, might be appropriate.

First, I will speak of spirits of turpentine. I have found it to be one of the best antihemorrhagics I have

used. I regard it almost as a specific in hematuria. Within the last year I have had some ten cases of this trouble. I give small doses frequently repeated, say fifteen drops at intervals of three or four hours. As a matter of convenience I give on sugar in a teaspoon, instead of preparing an emulsion. Of course, in order to aid the action of the remedy I freely employ dry cupping over the kidneys. Usually in twenty-four to thirty-six hours the bleeding is arrested. In hemoptysis, either from the stomach or lungs, it is an admirable remedy, especially so when due to trauma. I also use it in hemorrhage from the bowels and uterus. In the latter case ergot would greatly assist the turpentine. In oozing of blood from the surface of a wound, it is not only antihemorrhagic, but also antiseptic, and at the same time exerts some healing property. In cases of bowel affections, where flatulency is present, turpentine serves an admirable effect in its relief. The most painful and unpleasant symptom in typhoid fever is flatulency of the bowels. Turpentine in such cases is our best remedy. Beside removing the painful distension of the organs, it also serves as an excellent antiseptic. It is also a fairly good vermifuge. In old times when intermittent fevers were so prevalent in the Ohio valley, and quinin so high priced, and when I had so much charity practice to do, I studied up an antichill medicine, of which turpentine was the principal ingredient. It had the desired effect in arresting the disease. As quinin at present is so low in price, it is not worth while to speak of the formula.

In speaking of the virtues of turpentine, I do not wish it understood that I regard it a king cure-all, as some of the patent medicine proprietors assert their preparations to be.

Next I would mention ammonium chlorid as an alterative in certain hypertrophies, etc. I have used it in enlargement of the spleen and liver with very happy effect. A case of the largest spleen I ever saw was that of a lady about forty years old, who lived in a very malarious locality. The organ had extended considerably across the median line, producing quite a prominence of the abdomen. I put her on the chlorid and continued it several months. The spleen gradually became greatly reduced, relieving the patient of much discomfort from weight and distention. While using the chlorid, I had the patient apply irritants, such as tinct. iodine, turpentine, etc., over the abdomen, and two or three times drawing blisters with fly plasters. These agents were aided by adjuvants in the way of tonics and laxatives, as quinin, etc. The patient finally recovered her usual health.

I have also used the chlorid in hypertrophy of the liver with very happy results. In these cases, we have to use, aside from the alterative, such adjuvants as are indicated in each particular case. I was very much gratified by its use in a case of chronic pneumonia in a woman of some thirty years of age. Her acute attack occurred some six or eight months before I saw her. She was up and able to attend to her household matters, but complained of pain in her right side, and had a troublesome cough. On examining her I found consolidation of lower lobe of right lung. I put her on the chlorid of ammonia and blistered the surface over the part of lung involved. The surface was kept partially raw by repeating the plaster when necessary. At the end of four or five weeks the lung was restored to its normal condition. This

treatment was aided by medicines to promote appetite and aid digestion, as tonics, etc. The chlorid is one of my favorite remedies in sore throat, especially when it is accompanied with hoarseness. I prepare a syrup of the following formula:

R Ammonium chlorid
 Sodium bromid
 Chloral hydrate, aa ℥v
 Syrupus simplex (½ pint) Oss.
 M. and Sig. Teaspoonful swallowed slowly.

This syrup also serves as an admirable cough medicine. In taking it for sore throat it should be swallowed slowly, as before remarked, and nothing else taken for some ten minutes or more, so as to afford time for its local action on the mucous surface of the throat.

In irritable cough due to the effect of cold, in bronchitis or phthisis, where sleep is greatly interfered with, this syrup will be found a most admirable remedy. On retiring take a teaspoonful and if not relieved in fifteen or twenty minutes repeat the dose, and as a rule, in a short time rest and sleep will be secured. I keep this syrup, already prepared, in my office, ready to dispense in all such cases as those alluded to. In cases where the cough is tight, I add a little syrup of ipecac to each dose.

When a man practices medicine over fifty years it is not an unusual thing for him to have some favorite remedies, or you might say hobbies in medicine. I must acknowledge I am one of the old time fogies who believe we can not with safety lay aside our old pharmacopeial remedies for the late preparations in pharmacy, although I am not prejudiced against them and frequently use some of them.

In some instances we can, with advantage, combine some of the preparations. I have been fortunate in this respect in combining two of the chlorids as a quick alterative. Some fifteen years ago I was called to see a child with membranous croup. The little thing was in its mother's lap, gasping for breath, with sinking at the upper and lower end of the sternum. I told its mother the baby was virtually dying. She begged me to do something, and to gratify her I put up some medicine. I had never used before in that disease, but told her I had no hope of relieving the child, as I had seen only one case in over thirty-five years get well. I combined the protochlorid of mercury—calomel—with the chlorid of ammonia, one grain each, in powders to be given every two hours, the child being about fifteen months old. It was in the morning, and I told the mother if the child lived through the day and night to let me know next morning. When I saw her little boy coming to the house, I supposed he was sent to let me know the patient was dead, but happily, on inquiry, he informed me it was better and wished me to see it again. I very gladly answered the request and found my patient greatly improved, in fact out of danger.

Since then I have treated six other cases of the disease in the same way, with the same happy results. I omitted to say that in conjunction with the internal remedies I had a towel, kept wet with warm water, applied around the child's neck, so as to keep the parts relaxed. The only case of true croup I ever saw recover, before the widow's child above spoken of, was treated by the method recommended by Dr. Green of New York, over fifty years ago. He, with a piece of sponge fastened to the end of a whalebone probang, dipped into a strong solution of nitrate of

silver, introduced it into the child's glottis. I only tried this treatment in one case, the one before alluded to, and never had the heart to repeat it. The treatment and its effect was explained to the parents, and as the child was nearly moribund, they requested me to do anything that offered any possible chance to save its life. Dr. Green had reported several cases cured by this plan of treatment. In speaking of my plan of treating croup, it was feared by some that bichlorid of mercury would result, by the combination of the two chlorids, but I have never observed any unpleasant effects resulting from their union.

In old times, as a general thing, we treated croup with emetics, syrups, etc., but only to look on and wait for death to relieve the patient. Fortunately, membranous or true croup is comparatively a rare disease.

Respecting the medicinal virtues of nux vomica, I have used this agent in the form of normal liquid, mostly, as a tonic and alterative, for many years. I use it as a heart tonic in most cases of debility of that organ, in preference to the ordinary heart tonics, such as digitalis, strophanthus, convallaria, cactina, etc. In cases of rapid action of the organ, digitalis for a short time might be preferable. I also give it in debility of the muscular coats of the stomach and bowels, resulting in dyspepsia and constipation. By toning up the muscles of these organs, relief is afforded in many instances. I have also relieved paralysis of the bladder in a short time with nux and belladonna. I have relieved one case of locomotor ataxia with these two remedies. It was in the early stages of the disease.

In regard to fads in medicine, I might say a few words respecting a favorite prescription I use in diarrhea. I have used it for this trouble for several years, and find it almost a specific, especially so in summer complaint of children. It is as follows:

Paregoric	℥ ij	62 206
Ext. witch hazel	℥ j	31 103
Carbolic acid	℥ j	3 887
F. Ext. Kino	℥ ij	7 775
Jamaica ginger	℥ ij	7 775
Precipitated chalk	℥ j	3 887
Simple syrup to make	℥ viii	248 82

Mix thoroughly and always shake bottle well before dosing. For an adult a teaspoonful is a dose, to be repeated at intervals of three hours, until desired effects result. Dose for children in proportion to age.

Perhaps I have said enough respecting favorite remedies, and will say a few words in regard to medicines which prove to have psychologic effects, or cure imaginary diseases. It is frequently the case that such troubles come under our observation. I am at times at a loss whether to term these cases psychologic or due mainly to credulity. Sometimes I think a great many people are hypnotized by their credulity in the virtues of certain so-called remedies, and will take them for months, or even years, for imaginary troubles. In some cases of this character the so-called remedy, by its long continuance, produces derangement of some organ or organs, if not actual disease. I have known cases of this character. We are occasionally puzzled how to treat successfully some cases of hysteria. Patients of this class are easily affected by suggestion, and when we thoroughly acquaint ourselves with their peculiarities, we are much better enabled to manage them. You have, in a great measure, to treat the mind. In the first place gain their confidence that you can cure

them. I recollect having a case years ago, a girl about twenty years of age, who was laboring under the belief that she was paralyzed in one leg and arm. These spells of paralysis, I soon discovered, were intermittent in character. When I learned this and got the run of her symptoms, as expressed by herself and her mother, I assured her that I could cure her. I put her on a simple plan of treatment, and requested her mother to be very particular in observing my directions. I did this in her presence, laying a good deal of stress on small matters, such as massage of the parts, diet, etc. On my next visit she was a great deal better of the paralysis, but had a spell in the night different from any she had before. Her mother described the symptoms to me in her presence and wished I had been there to see how she was affected. I was well satisfied that after her mother's description of the attack in the night, I would soon see it repeated. Sure enough, in less than an hour a similar spell came on, which was of a convulsive character. After it was over I called her mother aside and charged her not to speak of her case in the presence of any one again, as it was a suggestion to the patient to repeat the symptoms. On my assurance that she would get well by observing my directions in every particular and that she would be well by the time I came back in two days, she was satisfied and was all right on my next visit.

I might speak of another case of hysteria in a young woman, who came to the conclusion she could not speak above a whisper. She was apparently in good health otherwise. I put up a little medicine to be taken at regular intervals, with a solution to be applied to her throat with a feather, at the same time she took the medicine, and also used external applications, assuring her that by following the directions strictly she would be able to talk when I returned. She was all right on my next visit. She had not talked above a whisper for two weeks. More cases of a psychologic character might be mentioned, but those alluded to are sufficient for the present occasion. In fact, we should, to some extent, treat the mind in a majority of cases. There are many patients of a more or less nervous temperament laboring under physical ailment, where assurance to the mind that they will get well, is of great benefit.

We, as regular medical men, have now and then been charged, and in some cases truthfully, of administering bread pills in cases of imaginary diseases. But our homeopathic friends can beat us two to one in hypnotizing a patient when there is not much the matter. They will put up their granules of charcoal, chalk or sulphur and tell the patient to take them at regular intervals and strictly obey the directions about diet, etc., and he will certainly get well. The assurance of getting well and the observance of the dietary are the elements of success in such cases. It would be a good thing on our part if we would treat the minds of our patients more carefully than we do.

Salophen in Articular Rheumatism.—The gastric disturbances that frequently follow the prolonged use of sodium salicylate in rheumatism, can be avoided if after three to five days' treatment, and the disappearance of the principal morbid manifestations of acute articular rheumatism, salophen is substituted, giving 2 to 3 grams a day. Salophen passes through the stomach unchanged, to be split into salicylic acid and acetylparalidophenol in the intestines, and can be administered without inconvenience until all fear of a relapse is past.—Professor Mosler of Greifswald, *Semaine Méd.*, Sept. 7.

THE SULPHOCARBOLATES.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM F. WAUGH, A.M., M.D.

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CHICAGO, ILL.

The earliest mention I have been able to find of the sulphocarbulates as remedial agents is by Sansom, in the *Practitioner*, iii, 5-13, 1869. Papers by him upon these salts also appear in the *British Medical Journal* in 1870, and in the *Transactions of the Obstetrical Society of London*, 1870-71. Sansom claimed that the sulphocarbulates were beneficial in phthisis, typhoid fever and the eruptive fevers, especially scarlatina, for which he considered them specific.

Subsequently papers upon these salts have been contributed by Q. C. Smith (*Nashville Journal of Med. and Sur.*, 1878); D. Cerna (*Philadelphia Med. Times*, 1879-80); Withers (*Dublin Jour. of Med. Sciences*, 1880); H. P. Farnham, *Medical Record*, xxiii, 8, 1883, and F. Vigier (*Bull. et Mem. Soc. de Thera.*, 1884). Since the latter date there have been few papers listed under this title, but every year sees an increasing number of references to the sulphocarbulates in the treatment of various affections.

Leading manufacturing chemists furnish the carbolates of zinc, soda, lime, potash and ammonia. The sulphocarbolate of zinc, $Zn(SO_3C_6H_4OH)_2 \cdot 8H_2O$, is prepared by decomposing barium sulphocarbolate by zinc sulphate, filtering off the barium sulphate and evaporating. It forms beautiful white crystals when pure. It is soluble in twice its weight of water or of alcohol, and has no acid reaction. The aqueous solution becomes violet on the addition of ferric chloride; should yield but a slight turbidity with barium nitrate; is unaffected by ammonium oxalate or by sulphuric acid, and after precipitation by an excess of ammonium sulphid the filtrate on evaporation and ignition should yield no residue. Heated to redness it yields 14.6 per cent. of zinc oxid.

My attention was attracted to the value of zinc sulphocarbolate in 1881, by Dr. C. L. Mitchell, who found it of much merit as a local application. The first use I made of it was in the various forms of summer diarrhea, especially in cholera infantum. In this affection I had noted the coldness of the extremities, with heat of the forehead and the epigastrium, contracted pupils and small rapid pulse, with profound depression of the vital forces. Precisely similar conditions are manifested in nasal diphtheria, excepting the epigastric heat; and yet all these subside promptly when the nasal passages have been thoroughly cleansed and the absorption of toxins generated in the nasal passages has stopped. The radical and immediate change for the better following such a cleansing by hydrogen dioxid solution had made a strong impression upon me, and when I noted the same aggregation of symptoms in cholera infantum, it was obvious that the cause was here also a toxin absorption, and that the long-sought remedy was to be found in the antiseptic group.

The first experiments were made with much difficulty. The sulphocarbolate was generally so impure that half a grain excited local irritation and vomiting. But when the chemically pure salts were obtained it was found that a child in the second summer could take from one-half to one grain every half

hour with impunity; and with this dosage the method at once gave evidence of its value. So remarkable has been the change effected by this remedy that it is now more than fifteen years since I have had a child die of cholera infantum, and I am convinced that the circumstances must be rare in which a child properly fed, with proper attention to the sanitary condition of the premises, and treated with the sulphocarbonate of zinc, will yet die of cholera infantum.

From this was readily deduced the employment of the same remedy in all other affections of the alimentary canal attended with decomposition or fermentation, as evidenced by fetid or unhealthy stools, and the symptoms now known to be due to autotoxemia from fecal absorption. The importance of this principle in the genesis of symptoms manifested in the nervous, circulatory or respiratory system, or in any other part of the body, is beginning to be realized, and would probably degenerate into a "fad," if such enthusiastic adoption ever occurred to a truth. But it is only such discoveries as Perkins' tractors, Bergeon's gas inflations, and tuberculin, that receive the instant and unanimous approval of the public. Truths, like vaccination and intestinal sepsis, must fight their way to acceptance.

The next trial of the sulphocarbonates was in typhoid fever. It requires, on an average, forty grains daily to render the stools of a typhoid patient odorless; but in some instances it has required 120 grains daily. This amount is easily taken and does not irritate, if a pure salt is employed. As a rule, I prefer to give it in powder, with a few grains of bismuth subnitrate, or in the pills made by the Upjohn process. When the stools have become inodorous, the following alteration has occurred in the condition of the patient: The diarrhea, tympanites, pain, tenderness, distention and gurgling in the abdomen have ceased; the aching of the head and the muscles, nocturnal delirium and ataxic symptoms have disappeared; the tongue has become moist and clean; the appetite has returned; the mind is clearer, and the temperature has fallen from one to two degrees. In fact, the case has been reduced to the category of the mild form, the temperature falling below 103 degrees, the point at which advocates of the Brand method employ cold baths. Many cases are aborted, and of those in which the physician is called so early that a diagnosis is not sure except by bacteriologic methods, but where the conviction is that we are dealing with the initial stage of typhoid, nearly every case is stopped within four days. If, as I believe, the action of zinc sulphocarbonate is limited to the alimentary canal, the symptoms relieved by the administration of this drug are fairly to be attributed to absorption of toxins from the bowels, and the attack is reduced to the direct effects of such bacteria as have migrated beyond the alimentary canal before the drug is given.

These effects are as uniform as those of any drug given as medicine; they have been noted in numerous cases, without a single exception. The proof is so easy and so complete, that it only remains to explain how these effects are produced. It seems evident that the zinc is not a germicide; that it acts by preventing the multiplication and functioning of micro-organisms, rather than by directly destroying them. Indeed, it seems doubtful if any germicide can be introduced into the alimentary canal in sufficient strength to kill bacteria and yet not injure the patient. But the bile does not kill spores, and yet

the absence of the bile occasions a large part of the symptomatology of all febrile diseases. Fever checks the secretion of bile, and this, with the increased heat and lowered vitality, favors the action of micro-organisms in the whole alimentary canal. The food, not properly digested, also decomposes more readily than in health, and this adds another element. It follows, then, that in every febrile affection intestinal sepsis and autotoxemia are necessarily present and furnish a share of the symptomatology. Hence, the use of the sulphocarbonate is indicated in all fevers, not alone those that have their focus of operations in the bowels, like typhoid. In pneumonia, for instance, a reduction of the temperature and a corresponding amelioration of the symptoms follow the sulphocarbonate antiseptics, and this method may be prophylactic also, as it is known that the pneumonia is especially fatal if vomiting and diarrhea complicate it.

This brings us to the latest development of sulphocarbonate therapy—its use in tubercular phthisis. As the salt had reduced the temperature so certainly in all other forms of febrile disease, I concluded to give it in a case of pulmonary tuberculosis, with countless bacilli, high fever—104 degrees and over—and the nausea, anorexia, indigestion and diarrhea usual in such severe cases. The patient improved at once, the fever dropping to 100 or 101 degrees, and the gastro-intestinal symptoms completely disappearing, leaving the patient with the appetite and digestion of a plowboy. As other remedies were employed, I can not credit the cure, in this case, to the sulphocarbonate alone, but as Dickson used to say that we could cure consumption when we learned to control the digestive difficulties, I am sure the sulphocarbonate contributed largely.

It may be asked: Since the sepsis and consequent toxemia are largely due to the diminution of the biliary secretion, why not restore it? Our fathers relied on calomel, and by its help flooded the bowel with nature's own antiseptic. But there are *a priori* objections to this. Nature sees fit to reduce to a minimum the action of the liver in all febrile diseases. We do not know the reason for this, any more than we knew the importance of the thyroid gland a dozen years ago; but it is the part of wisdom not to interfere with the course of nature unless it is unavoidable, and especially when we do not comprehend her processes. Since we do not know why the activity of the liver is reduced during fever, we had best let it alone; but we know very well the effects of intestinal sepsis, and hence, we interfere to prevent them. Besides, the results of actual trial have shown that we can accomplish our object far more effectually, safely and pleasantly by the exhibition of the sulphocarbonates than by the use of chologogues.

As to the choice between the sulphocarbonates and other antiseptics, there is this to say: the sulphocarbonates are extremely soluble. Bouchard prefers naphthols on account of their comparative insolubility, believing that soluble salts leave the intestinal canal too soon to render it aseptic in its entire course. But the action is strictly chemic, and he fails to inform us how a chemic antiseptics is to be secured without solution of the reagent. It appears probable that the good effects of the naphthols are really due to the small portion that is dissolved. Besides, in numerous instances, the limit of tolerance of the naphthols by the stomach is reached before the stools are rendered odorless.

Salol breaks up into salicylic and carbolic acids, and in full doses is apt to produce hemoglobinuria. The same objection holds good against all the carbolic derivatives, except the sulphocarbolates. I have given these salts to many persons and never saw nor heard of a case of hemoglobinuria. The iodine antiseptics occasionally cause iodism, even in small doses. Eczematous individuals especially appear to possess the power of setting free iodine from iodoform, eucrophen, etc. The biniodide of mercury has been strenuously advocated by Illingsworth, and the action of copper arsenite upon the duodenum demonstrated by Aulde, while mercury bichlorid has also its advocates. But the highly toxic character of these and similar antiseptics confines their use within narrow limits. The volatile oils, various chlorine preparations, sulphurous acid, hydrogen dioxide and potassium permanganate, are among the other antiseptics that have been urged for internal use; but the objections to all, for indiscriminate prescription, are obvious. It is, however, notable that good effects have been obtained from many agents of this class. The principle is of wider applicability than that of any agent in the group.

The sulphocarbolates labor under the disadvantages of being common and cheap—they cost about 60 cents a pound, as against a dollar an ounce for the proprietary articles; they can be prepared by any manufacturing chemist, and have no commercial interests to push them; and finally, they have no name great in the councils of medicine to back them up. Deprived of the potent support of printers' ink, they rest solely upon their merit, without puffing, and on this basis have won a place in the armamentaria of thousands of physicians to whom utility is the only incentive to the employment of medicine.

I have only spoken of the sulphocarbolate of zinc, but there are two other salts of this group that deserve notice. Sodium sulphocarbolate may be given in doses of 20 to 30 grains. The bodies of animals to which it has been given resist putrefaction for a long time. It has been recommended as a remedy for vomiting, for fermentative affections, and for pseudo-membranous diseases, with gangrene or necrosis, such as scarlatina and diphtheria. Several reports appeared some years ago as to its value in these affections. J. W. White pronounced it antacid, astringent, sedative, styptic, antiseptic and disinfectant. The sulphocarbolate of lime is also quite free from local irritant effects, and somewhat more antiseptic than the soda salt. Of the three, I prefer the zinc when a strong and certain effect is required, as in cholera infantum, typhoid fever, or marked intestinal sepsis; the soda sulphocarbolate, when the stomach is irritable, for milder forms of sepsis, or when an antacid is also indicated; the calcium sulphocarbolate for strumous or tubercular cases, or any other in which the reconstructive effects of lime are required, or where other lime-salts are indicated. These three sulphocarbolates have been combined in tablets, and for indeterminate cases these have fulfilled every requirement, being effective and non-irritant.

Transplantation of Stenson's Duct.—In a case of recurring fistula, Goris opened the duct from its starting-point to its termination in the mouth, which he detached from all adhesions, excising all the surrounding connective tissue. He then fastened it with a couple of stitches behind its natural location; endermic suture of the cutaneous incision. Recovery was prompt and by first intention.—*Presse Méd.*, September 3.

INCOMPATIBLES.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY E. A. RUDDIMAN, PH.M., M.D.

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To the practitioner, as well as to the patient and pharmacist, the prescription is an object of importance. Upon it the welfare of each one of these more or less depends. If it fails the mission of the physician and of the pharmacist fails. Heretofore, schools and colleges of medicine have not laid sufficient stress upon the combining of medicines. Within the last few years there has been a change for the better, and the graduates at the present time know more than did the graduates of a few years ago. However, even yet it is the exception rather than the rule to meet a young man who knows more than a little about writing prescriptions, and he may consider himself fortunate if he knows more than a little about the individual ingredients of the prescription. It is not his fault, but that of his professors, that he is not better prepared for this part of his work. The student, while in college, should be so thoroughly drilled in combining the best preparations in the best way that it will come naturally to him to write a correct prescription from the start.

The mere writing of a list of substances is not all that is necessary for a good prescription. In the first place, the physician must have diagnosed the case properly, and when he has determined what drugs will probably meet with the best success, he must choose what individual preparations will go together with the best result. It is in choosing the preparations that he so frequently fails. Let me illustrate with a single example. Suppose it is desirable to give tincture of chlorid of iron, strychnin sulphate, some preparation of arsenic and some preparation of cinchona, with the syrup of orange as a vehicle. Naturally the physician would choose Fowler's solution and a tincture of cinchona. In filling such a prescription there is danger of the alkali in the Fowler's solution precipitating the strychnin, the alkaloids in the cinchona and also the iron, and the ferric hydrate thus precipitated would combine with the arsenic to form an insoluble compound. And again, the tannin in the cinchona would combine with the iron, forming the black, inky, ferric tannate. In place of Fowler's solution the solution of arsenous acid should be used, it having the same physiologic effect and being of the same strength, but acid in reaction. In place of the tincture of cinchona there should be used quinin sulphate, or some such preparation as the National Formulary compound elixir of quinin, or the detannated tincture of cinchona.

In writing a prescription the physician must bring into use his knowledge of materia medica, therapeutic, physics, chemistry and pharmacy. No single one of these divisions will give him the requisite information; he must know therapeutics, in order to avoid physiologic incompatibility; he must know pharmacy and the physical properties of drugs in order to avoid pharmaceutic incompatibility; and he must know chemistry to avoid chemie incompatibility.

Perhaps the two great stumbling blocks to the physician in this line are pharmacy and chemistry. Without a knowledge of both he is at sea. His only

safeguard is to prescribe one or at most two substances together. This is no doubt desirable sometimes, although not always. I have had medical students ask me what good it will do them to spend so much time on these subjects. My answer has been to study assiduously now and they will know the use hereafter. That actual harm has sometimes come to patients from taking incompatible prescriptions is a fact beyond dispute, and we have the watchful pharmacist to thank that there are not more such cases. And even though no ill effect may result from an incompatible mixture, frequently no good comes from it, and we blame our books, the drugs, and the pharmacists for not getting the results that we expected, when our ignorance of pharmacy and chemistry is the cause. No doubt we have all had our nerves somewhat rudely shaken by being told that a pet combination of ours is rendered either dangerous or inert by chemic reaction.

A few general rules can be given in regard to what will form incompatible mixtures, but the majority of cases must be learned as isolated facts. These general rules are given in nearly every book on materia medica as fully as I could give them in such a paper as this. Many times we see the bare statement that two substances are incompatible, and to know this and nothing more is unsatisfactory and frequently useless. Because chemic reaction takes place, it does not necessarily follow that the mixture should not be prescribed, or that the products formed will not have a similar physiologic action. We should know what changes occur and what compounds are produced, otherwise how can we tell what the effects will be? Will the action of a mixture of spirit of nitrous ether and potassium iodid be the same as either or both taken separately? Or is the effect of an application of a mixture of lead water and laudanum similar to the effect of these preparations when applied separately? Are the effects of the green isonitroso-antipyrin what are wanted when antipyrin is prescribed with spirit of nitrous ether? Then let us not denounce the pharmacist as having worthless preparations, or accuse the physiologist of having made mistakes in regard to the actions of medicines, until we know that the failure is not due to incompatibility.

The number of incompatibilities is one which will increase rather than decrease with time. With the advent of nearly every new remedy the number is increased. Particularly is this true of the new synthetic compounds with which the country has been flooded for the past few years. Physiologic incompatibility does not occur in a prescription nearly as frequently as chemic or pharmaceutical. This is not because the physician has given this part of the subject more consideration, but due partly, at least, to the fact that he is not generally tempted to put into the same prescription remedies that are antagonistic.

To become convinced that the subject of incompatibility is one which has not received the attention which its importance demands, we have but to glance over the appended prescriptions, which are a few of those to be found in standard works on medicine and therapeutics. When our best authorities fall into such errors, it is not to be wondered at that the beginner should make many mistakes. Those of us who come in contact with students in medical colleges should give more instruction along this line. It is one of the weak points in the curriculum of many

colleges. A neglect of this subject by a physician means a continual menace to the life of his patient.

R Collodii,
Spt. ammonia,
Tinct. iodi, aa part aeq.
Sig.—Paint over part with a camel's-hair brush.
—Potter's Mat. Med. and Ther., 6th ed., p. 716.

In this prescription the iodine is changed chiefly to ammonium iodid with a little ammonium iodate. Did the prescriber know this and did he wish to get the action of these instead of the action of iodine?

R Hydrarg. iodid viridis. gr. ʒi 0485
Potass. chlorat. gr. iij 1943
Potass. iodid. gr. ʒi 0485
Chocolate, q. s.
M.—Ft. in tabellum No. 1.
—Hare's System of Prac. and Ther., Vol. ii, p. 160.

In the presence of moisture the potassium iodid reacts with the mercurous iodid, causing the formation of metallic mercury and the much more active mercuric iodid (the red iodid of mercury). The potassium chlorate in the presence of a mineral acid, as the hydrochloric acid of the gastric juice, causes the iodine to be set free.

R Hydrarg. chlor. corrosiv. gr. ss 0324
Potassii iodidi. ʒ ss 15555
Decocti cinchonæ. flʒ viij 236195
S.—Flʒj ter die post cibum.
—Farquharson's Ther. and Mat. Med., p. 334.

The potassium iodid combines with the corrosive sublimate and forms first the red iodid of mercury, and then combines with this to form the soluble double compound—potassium mercuric iodid. This double compound combines with the alkaloids of cinchona in the decoction and forms a precipitate. The danger in this prescription lies in the mercury being thrown out of solution. Did the physician realize that it is possible for the patient thus to take most of the mercury at one dose?

R Sodii sulphitis ʒ ij 7775
Sp. ætheris. nit. ʒ ss 15555
Liq. ammon. acet. ʒ iij 93309
Aq. dist. ʒ ij 62206
Mix.—Sig. Teaspoonful every two hours.
—Hare, Vol. ii, p. 391.

The spirit of nitrous ether is decomposed, giving off the gas, nitric oxid, and part of the sodium sulphite is changed to sodium sulphate.

R Hydrargyri. gr. ʒi 008
Iodini. gr. ʒi 0323
Ac. tannici. gr. ʒi 0388
Glycerini m. xv 0615
M. —Hare, Vol. ii, p. 125.

The iodine will change the mercury to mercuric iodid. The tannic acid will change part of the iodine, with the formation of hydriodic acid, which will further combine with the red iodid of mercury.

R Tinct. ferri chloridi. ʒ ij 7775
Acidi sulphurosi ʒ j 3887
Potas. chlorat. ʒ j 3887
Glycerinæ ʒ ss 15555
Aq. calcis., q. s. ad ʒ iij 93309

Miscs. Dose: one teaspoonful every hour to two hours for a child of three years.
—Smith's Diseases of Children, 6th ed., p. 321.

On adding the sulphurous acid to the tincture of iron the mixture becomes of a much darker color at first and then nearly colorless. The glycerin may now be added and then the potassium chlorate dissolved in the water. There is barely a sufficient amount of water to dissolve the chlorate, and after

mixing with the ingredients some of the salt is thrown out of solution by the alcohol in the tincture. The possible reactions are as follows: 1, Between the ferric chlorid and sulphurous acid, forming ferric sulphite and hydrochloric acid; 2, the ferric sulphite thus formed changes to ferrous sulphate; 3, between the potassium chlorate and the hydrochloric acid in the tincture, forming chlorin; 4, between this chlorin and the ferrous sulphate, forming ferric sulphate and hydrochloric acid; 5, between the chlorin and the sulphurous acid, forming sulphuric and hydrochloric acids; 6, between the chlorin and the glycerin; 7, between the potassium chlorate and the sulphurous acid, forming potassium sulphate and hydrochloric acid; 8, between the ferric chlorid and the lime water, forming ferric hydrate and calcium chlorid; 9, between the sulphurous acid and the lime water, forming calcium sulphite.

Did the prescriber determine beforehand what products would be formed and that these were the compounds whose actions were wanted?

GLANDULAR EXTRACT.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ISAAC OTT, M.D.

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Glandular physiology in its widespread ramifications has revolutionized many parts of physiology and pathology. It is only in its infancy and its maze of metabolic changes holds many facts to be discovered. The secretion of the ductless glands opens up new avenues of investigation, which will enrich the science of physiology and the practical application of these facts in therapeutics. We have a silent and hitherto unsuspected secretion going on which plays a most important and unknown part in our economy. Very potent remedies are the ductless glands, where but a few thousandths of a grain of a gland like the pituitary greatly elevates the arterial tension. I have made over one hundred experiments upon the lower animals with the various extracts obtained from Armour & Co. of Chicago. The experiments upon the reflexes were made upon frogs, those on pulse pressure, respiration and temperature upon rabbits. The results were as follows:

Adrenals.—The adrenals caused an increase of reflex activity, which was as fugitive as the rise in arterial tension. It also depressed the pulse rate. The rise of blood-pressure was due to an action upon the walls of the artery. It decreased the rate of respiration.

Pituitary.—It depressed reflex activity for a short period; reduced the heart-beat and elevated arterial tension. This elevation was due to an action upon the arterial wall. The respiration rate was increased by it.

Spleen.—The spleen diminished reflex action. It also depressed the pulse and temporarily the arterial tension. Afterward the arterial tension increased. It had an unusual action in increasing the peristaltic movements of the intestine. The respiratory movements were also increased.

Iodothyryn.—It had no general action upon frogs. Upon the pulse-rate and arterial tension it had no

marked effect, except a slight increase of pulse-rate at times. It increased the respiratory movements.

Thyroid.—In the frog it depresses the reflexes. It lowers the blood-pressure and heart-beat. It accelerates the respiratory movements.

Pancreas.—It decreased the pulse and arterial tension.

Testicle.—It lowered the pulse and slightly increased the arterial tension.

Upon the temperature nearly all these agents caused an elevation.

THE WOUNDED OF THE PORTO RICAN CAMPAIGN.

BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

The Cuban and Porto Rican invasions have confirmed the experience of the past in showing that the greatest horrors of war are caused by disease and its consequences rather than the implements of destruction. If the battle-grounds are in the extreme north or south, climate enters as an important factor in decimating the ranks and in increasing the sufferings of the contending armies. A war of invasion requires more preparation, foresight and forethought on the part of those who plan and conduct the campaign than one of defense, a fact we have been painfully made aware of during the last two months. The more remote the seat of conflict, the more difficult the task of providing food and clothing for the army, and the more serious becomes the problem of properly caring for the sick and wounded, and the greater becomes the difficulty in returning the survivors to their homes. Nostalgia, a very common affection among unseasoned troops, becomes more prevalent in proportion to the distance between home and the seat of war, as we had abundant opportunities to observe during the late war. The depressing effect of this common ailment has a decided influence in increasing the rate of mortality of the sick and wounded, and in impairing the effectiveness of the fighting line. Nostalgia is a contagious disease, not in the sense we use the word contagion ordinarily, but when once established in camp it increases rapidly by suggestion. The onset and spread of this common ailment of camp life are promoted by interruptions of the mail service, the only medium of communication between the soldier in the field and his distant home. Among the many sins of omission of those in charge of the management of the late war was a glaring neglect to provide for the much-needed and anxiously looked for mail facilities. If those who have the management of this branch of the government service in charge could be made to understand what an occasional letter will do in keeping up the spirit of the citizen soldier, nostalgia would have been less prevalent and its effects less disastrous during the late campaign. From the time I left Fortress Monroe for Cuba, July 3, and until I arrived in New York from Porto Rico, August 19, I received only two letters of the probable two hundred sent to me during this time. In summing up the casualties of the war just ended, it is safe to make the statement that the number of killed and the number of deaths resulting from the immediate effects of wounds will not exceed 280. The number of wounded will in all probability reach 1425. The number of deaths from malaria, dysentery, yellow fever and typhoid can not be estimated at this time, as these

diseases are still prevailing and will claim many victims before the troops are recalled. The loss of life and the suffering as well as disability, as a claim for pension, caused by disease and the effects of climate will exceed by far those caused by Spanish bullets. During the Porto Rican campaign no pitched battle was fought. The force of the enemy in all of the skirmishes was small and in ambush. Only a few were killed and not more than forty were wounded. Among the wounded, bone injuries were rare, many of the wounds slight. All of these cases tend to confirm previous observations to the effect that the small caliber bullet of the Mauser rifle, the one used exclusively by the Spaniards, causes wounds of the soft parts, which if left alone under the first dressing, will heal by primary intention in the course of a week or two, unless complicated by serious visceral injuries. All of these cases corroborate the statement previously made that the small caliber bullet does not infect the wound and that it seldom carries with it into the tissues clothing or other infectious substances. This observation, so abundantly supported by substantial facts, is an extremely important one for future field service, as it must satisfy the military surgeons that such wounds will heal promptly if left alone under the first-aid antiseptic dressing. On the other hand, I have seen the evil consequences following meddling surgery in the form of unnecessary probing. Such wounds are very susceptible to secondary infection caused by the use of the probe. For the purpose of again calling attention to the humane nature of the modern weapon, and with a view of showing how rapidly wounds inflicted with the small caliber bullet will heal under the most conservative treatment, I will report briefly the nature of the wounds and the results of those wounded in the Porto Rican war:

Case 1.—Lieut. J. C. Byron, Troop F, Eighth Cavalry, wounded in the skirmish near Mayaguez, August 10. The bullet passed through the foot from side to side on the dorsal aspect, making a groove on the upper surface of the second and third metatarsal bones without fracturing them. Healing by primary intention under the first dressing. He was in the saddle when injured.

Case 2.—Lieut. John Haines, Battery F, Third Artillery, was wounded in the attack on Aibonito, August 13, and is probably the last man shot by the Spaniards during the invasion of Porto Rico. He was in the advance of the line, with his battery planted on a high hill in full view of the enemy. After firing the number of shots ordered, the gun was turned, and at this moment a bullet struck him in the left lumbar region, postaxillary line, and escaped about the sixth intercostal space, anterior axillary line, on the same side. No indications of bone injury or penetration of the chest. The wounds were dressed in the field and healed by primary intention. He was conveyed in an ambulance from the front to Ponce, a distance of twenty miles, and transferred to the hospital ship *Relief*. At no time has he suffered much from pain or even a sense of discomfort which could be referred to the wound. The patient must have been in a stooping position the moment the injury was received.

Case 3.—Lieut. T. H. Hunter, Battery B, Fifth Artillery, was accidentally shot by one of his own men by a Krag-Jorgensen bullet, which entered the right side of the ilium, passed downward and backward, emerging from the gluteal region on the same side below the ramus of the ischium. The course of the bullet excluded bone injury in this case. Notwithstanding the length and depth of the tubular wound it healed rapidly by primary intention. The indications are that the patient will recover without any functional impairment of the parts implicated in the injury.

Case 4.—William H. Walcutt, Company E, Fourth Ohio Infantry, was wounded in the skirmish near Guayamo, August 8. The bullet entered the plantar surface of the left foot between the first and second metatarsal bones, at the junction of the middle with the distal thirds, and escaped from the dorsal side, at a point a little nearer the distal side. From the course of the bullet it is clear that he was running in a direction op-

posite to the enemy when the shot was fired. The wounds were healed a week after the injury was received.

Case 5.—William J. Edgington, Company A, Fourth Ohio Infantry, was wounded during an engagement, August 8. The wound of entrance was at a point two inches to the left of the median line on a level with the sacro-coccygeal joint, the wound of exit at the base of the opposite thigh over its inner and middle aspect, directly over the adductor muscles. No evidence of any serious visceral injury of any of the pelvic organs. The temperature remained normal, the wounds healed by primary intention, and when I examined the patient in the hospital at Guayamo, five days after the injury was inflicted, the patient was free from pain and able to leave his cot without assistance. The course of this bullet explains the position of the patient at the time the bullet reached its unwilling, moving mark.

Case 6.—Noble W. Horlocker, Company C, Fourth Ohio Infantry, was wounded in the same skirmish. The bullet entered one inch in front of the right malleolus and escaped two and three-fourth inches below and a little behind the external malleolus. Although the bullet must have passed through the ankle joint and the astragalus, the injury was followed by very little pain, except on moving the ankle joint, and no indication of infection had set in five days after the injury was received. It is reasonable to expect that the wounds will heal by primary intention, and that the patient will recover with a useful, movable ankle joint.

Case 7.—Stewart J. Mercer, Company E, Fourth Ohio Infantry, was wounded August 5, in a skirmish on the way from Arroya to Guayamo. The bullet made a flesh wound over the inner margin of the left patella, and healed by primary intention in a few days.

Case 8.—Samuel T. Jones, Company C, Fourth Ohio Infantry, received a wound above the right patella, August 8. Wounds of entrance and exit one inch apart. Primary healing under the first dressing.

Case 9.—Edward O. Thompson, Corporal Company K, Fourth Ohio Infantry, was wounded near Guayamo, August 8. The bullet entered the forearm two-thirds of an inch above the wrist joint, on radial side, and after passing through the soft tissue in front of the bones, emerged from the inner aspect of the forearm just above the wrist joint. Wound healed by primary intention under the first dressing.

Case 10.—Harry Lee Haynes, Company C, Fourth Ohio Infantry, was lying down in a ditch at the time he was wounded, August 8. The bullet struck the arm two inches above the insertion of the deltoid muscle and emerged over the sterno-clavicular articulation on the same side. A third wound was found on a line with the course of the emerging bullet one inch below the mastoid process and in the direction of the sterno-cleido-mastoid muscle. A fourth wound, an inch and a half in length, one-quarter of an inch in depth and an inch in width, was found on the dorsum of the right forearm an inch above the elbow joint. All the wounds healed rapidly, caused but little suffering, and the patient was in a fair way to recovery when seen a few days after he was wounded.

Case 11.—Clarence W. Riffer, Company A, Fourth Ohio Infantry, was wounded August 8. The bullet entered the right thigh at a point five inches above the knee joint and about the middle of the external surface, passed through the soft tissues making its exit three inches to the left of the point of entrance. It re-entered the left thigh at a point two and a half inches above the knee joint, and an inch and a-half to the right of the posterior median line and emerged on the opposite side an inch and a-half above the knee joint. Both flesh wounds deep and long as they were healed primarily without suppuration.

Case 12.—John O. Corder, Company C, Fourth Ohio Infantry, was wounded August 5. The bullet made a flesh wound at the lower border of the patella, the wounds of entrance and exit being separated by a space an inch and a half in length. Primary healing under first dressing.

Case 13.—William Rositer, Company G, Eleventh U. S. Infantry, was wounded in the skirmish near Mayaguez, August 10. He was shot through the inferior maxilla. The bullet entered just below the margin of the bone on the right side about an inch in front of the angle and emerged over the angle of the bone on the opposite side, perforating the soft tissues of the neck in a transverse direction. The bullet appears to have passed through the bone without fracturing it. The only pain the patient complains of is produced when he undertakes to masticate food. Wounds of entrance and exit healed in a few days by primary intention.

Case 14.—Amos Wilkie, Eleventh U. S. Infantry, was on the march when wounded near Mayaguez, August 10. The bullet entered the right lumbar region just above the crest of the

ilium, mid-axillary line, and emerged about two inches to the left of the spine and four inches above the left sacro-iliac synchondrosis. No indications of intra-abdominal complications. He suffered considerable from cramping pains, which he attributes to cold and fever which he contracted by exposure to rain. A week after the injury was received, when the patient was an inmate of the Hospital Ship *Relief*, his condition warranted the hope of an early and complete recovery.

Case 15.—Harry C. Errick, Company C, Eleventh U. S. Infantry, was wounded August 10, in a charge on the enemy in ambush. Wound of entrance in left leg over the outer aspect of the middle third; the bullet passed downward and inward and emerged about five inches above the inner malleolus. Hemorrhage slight, no fracture. Wound healing rapidly under first dressing.

Case 16.—William H. Wheeler, Company A, Eleventh U. S. Infantry, was wounded August 10, near Mayaguez, when in a standing position with his side in the direction of the enemy, his gun down, ready to reload. The bullet struck the tenth intercostal space, left side, in the post-axillary line and made its exit about four inches from the spine in the lumbar region close to the margin of the last rib. No serious complications followed the injury, and at the present time, August 14, the patient is improving rapidly.

Case 17.—George Curtis, Company D, Light Battery, Fifth Artillery, received a wound of the chest August 10, being in his saddle at the time. The bullet passed through the chest from the second left intercostal space in front to the middle of the outer border of the scapula on the same side. No hemoptysis or any other serious symptoms indicating the existence of the visceral wound of the lung. The only thing he complains of is a sense of numbness in the left arm. Primary union of both wounds.

Case 18.—Joseph P. Ryan, Corporal Company A, Eleventh U. S. Infantry, was wounded August 10. The bullet passed through the ankle joint. Wound of entrance over the internal malleolus of left leg, wound of exit two inches below the outer malleolus. No infection or signs of synovitis. Wounds healing by primary intention.

Case 19.—Samuel Copp, Company A, Eleventh U. S. Infantry, received a scalp wound, August 10, while he was lying on his abdomen on the summit of a hill. Wounds of entrance and exit about two inches apart, healed under the first dressing. He is suffering from a contusion of his abdomen he sustained by falling over an embankment during the same skirmish.

Case 20.—Arthur Sparks, Company C, Eleventh U. S. Infantry, received a wound of the lower third of the left thigh, August 10. Wound of entrance on external anterior aspect of thigh about five inches above patella. The bullet passed directly backward and came out on the opposite side on the same level without injuring the femur. Healing by primary intention.

Case 21.—George W. Whitlock, Company C, Sixteenth Pennsylvania Infantry, was in a kneeling position when wounded near Guayamo, August 9. The bullet entered the thigh near the perineum, over the adductor magnus muscle, passed in an outward and backward course and emerged from the gluteal region near or over the sciatic foramen. Hemorrhage slight. Paralysis of the foot and lower part of the leg points to injury of the sciatic nerve. Healing of wound without complications.

Case 22.—James Drummond, Company K, Sixteenth Massachusetts Infantry, was wounded near Guayamo, August 9. The bullet entered the neck on the left side, behind the sternocleido-mastoid muscle, two inches below the mastoid process. Wound of exit on the opposite side in front of the trapezius muscle. No immediate or remote complications. Wound healed by primary intention. Patient has suffered from slight attack of malarial fever.

Case 23.—Paul J. Mytzkie, Company D, Eleventh U. S. Infantry, was wounded in the skirmish near Mayaguez, August 10. The bullet made a flesh wound three inches above the external malleolus, which healed in a few days by primary intention under the first dressing.

Case 24.—Daniel J. Graves, Company M, Eleventh U. S. Infantry, received a gunshot wound of the thigh near Mayaguez, August 10. The bullet passed through the thigh in an antero posterior direction, fracturing the femur at the junction of the middle with the lower third. A week after the injury the patient was in excellent condition, the wounds remaining aseptic and healing rapidly.

Case 25.—Theodore H. Newbold, Company I, Sixteenth Pennsylvania Infantry, was shot while retreating during the skirmish near Guayamo, August 9. The bullet entered the right arm above the olecranon process and emerged from the extensor side of the forearm between the radius and the ulna. The olecranon process was broken off. The X-ray reveals the

presence of a fragment of the bullet, or its mantle, lodged in the wound. Aseptic healing of the wound.

Case 26.—Clyde C. Frank, Company C, Sixteenth Pennsylvania Infantry, was injured near Guayamo, August 9. The bullet entered the inner surface of the middle of the right thigh, passed upward and backward, and in grazing the femur made a groove without fracturing the bone, emerging from the external and posterior aspect of the thigh. Both wounds healed by primary intention. In making a skiagraphic examination of the seat of injury a fragment of the bullet was discovered in the groove. The piece of lead, as well as a few loose fragments of bone, were removed August 17 by enlarging the wounds of entrance and exit. Operation by Dr. Shultze.

Case 27.—John L. Johnson, Company D, Eleventh U. S. Infantry, received a gunshot injury near Mayaguez, August 10. The bullet passed in an antero posterior direction through the middle third of the left leg, going through the space between the tibia and fibula. Hemorrhage slight. Healing by primary intention.

Case 28.—Samuel G. Frye, Company D, Fifth Artillery, was injured by a deflected bullet, as he stood by his cannon, near Mayaguez, August 10. The bullet passed through the soft tissues in the right anterior axillary fold without doing any further damage. The wound healed by primary intention.

Case 29.—Henry Gerrick, Company E, Eleventh U. S. Infantry, received a superficial wound over the pronator muscles, near Mayaguez, August 10. The wound healed promptly by granulation.

Case 30.—John Browning, Corporal, Battery D, Fifth Artillery, was wounded near Mayaguez, August 10. The bullet passed transversely through the soft tissues of the right forearm on a level with the wrist, in front of the radius and ulna. The bullet evidently cut the ulnar nerve and vein, as shown by the paralysis of the parts supplied by the nerve below the seat of the wound and the free venous hemorrhage which immediately followed the injury. Healing by primary intention.

The marked contrast in the results of the treatment of the wounded in Cuba and Porto Rico, I attribute entirely to the better preparations made for the last invasion, and not to any difference in the surgical skill of the medical officers. The surgeons engaged in the Cuban war were men exceptionally well prepared for their profession, and performed their onerous task with energy and enthusiasm. Ambulances were scarce, the fighting line far away from the base hospital, conditions which made it difficult to render timely and efficient first aid. Another circumstance which had its influence in interfering with the prompt and effective first aid to the wounded in Cuba was the large number of men who fell in battle in three days. The war in Cuba precipitated in a pitched battle; in Porto Rico it consisted in a number of skirmishes in which only a small number needed surgical attention. In Porto Rico the rear of the different armies was supplied with an adequate number of ambulances and Hospital Corps men. The first aid was rendered almost immediately after the wounds were received, after which the patients were conveyed to the hospital at once. A sufficient number of medical officers were on hand during each engagement to take immediate and proper care of the wounded. In most instances the wounds healed by primary intention under the first dressing. The value and importance of early surgical attention, and the first-aid dressing, became apparent in comparing the condition of the wounds, a week after the injuries were received, during the Cuban and Porto Rican campaigns.

Carcinoma of the Esophagus.—Carcinoma of the esophagus can remain latent, that is, not cause any difficulty in swallowing nor in the passage of a sound, until death, if it extends lengthwise and does not invade the entire circumference. Leichtenstein recently exhibited a number of preparations to the Cologne Medical Association in which a narrow, elastic groove had remained free from carcinomatous invasion to the last, allowing the ingestion of food, although the carcinoma had extended 9 cm. perpendicularly.—*Munich Med. Woch.*

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT
IN RECOGNITION OF THEIR LABORS IN THE SURGERY
OF THE PERINEUM.

BY BYRON ROBINSON, B.S., M.D.
CHICAGO, ILL.

Continued from page 860.

The second step of the operation is to introduce the sutures of silkworm gut. The two fingers are removed from the rectum and well cleaned. The point of the handled needle is introduced at the upper angle of the wound (No. 2 in Fig. 21) without penetrating the skin or vaginal mucous membrane, carried along about one-half inch from the distal edge of the vaginal flap and made to emerge at the median raphe. It is then threaded and drawn out. The point of the needle is again introduced at the upper angle of the wound on the opposite side (No. 4 in Fig. 21), forced along the distal edge of the flap about one-half inch

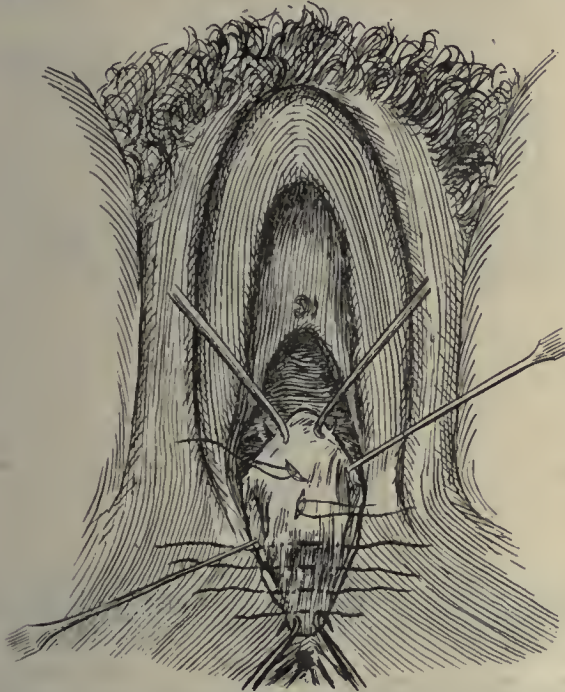


Fig. 38.—(Author.) A stage in progress of the flap-forming colpoperineorrhaphy. Here the sutures appear as if the process had started at the anus, but the safest and most practical method is to begin to introduce sutures and tie from the anterior end. All sutures are threaded in the median line. The needle may be thrust across the entire denuded field, but one can make more perfect and deeper suturing by doing one-half at a time.

from the edge and made to emerge again on the median line. It is threaded and drawn out. This constitutes the first suture. Generally three anterior sutures are introduced in the above manner. To introduce the posterior sutures (three or four) the index finger should be placed in the rectum as a guide, to avoid passing the needle too close to the rectal mucosa, endangering fistula. The fistula may arise quickly or slowly. If quickly an abscess will arise; if slowly (two to four weeks) a fistula will arise and remain a longer or shorter time. In one case a fistula persisted for three years. The posterior sutures are introduced similar to the anterior. However, they should be deeper and should thoroughly include the levator ani fascia superior and inferior with the enclosed levator ani muscle. The point of the needle is passed into the edge of the wound, avoiding

the skin, and pushed onward to the median line, where the point emerges, is threaded and drawn out. It is again introduced on the opposite side and threaded in the middle. In all cases requiring extensive dissection the needle should be passed through half of the wound only. In the less extensive part of the wound the needle may pass through the whole wound at once. Mr. Tait employed three to five sutures. We employ five to seven sutures.

The third step is to tie the sutures of silkworm gut. All the sutures are seized at the distal end by the left hand while the right hand pushes the tissues of the wound as far toward the loop of the sutures as possible. This is a partial step, as it narrows and puckers the wound very much, so that when each individual suture is tied it assumes its final location. The sutures should not be tied too tight, as they are apt to cut through considerable tissue. After the sutures are tied, a linear gap of considerable width will exist in the median line, for the sutures do not penetrate the skin, and hence will not draw it in close coaptation. Here some of the inexperienced will be

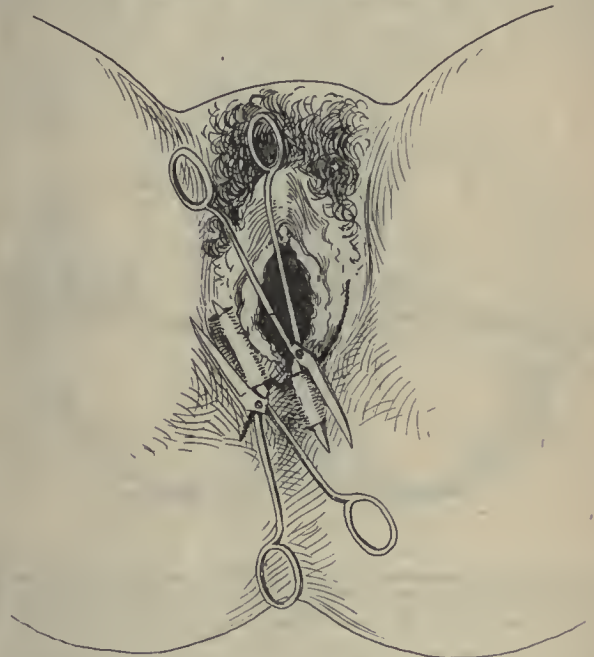


Fig. 39.—(Robinson-Holland.) Method of formation of anterior and posterior flaps in the flap method of executing colpoperineorrhaphy.

tempted to place a few skin sutures to avoid the gaping of the wound. Be sure not to do it, for they cause pain and may produce an abscess; when the legs are placed together the edges of the wound will coapt. The ends of the sutures should be left long and all tied into a single bundle. The after-treatment consists in applying no dressing or chemicals to the wound. If there be considerable pain small hypodermic doses of morphin may be used for thirty-six hours. Most patients will require catheterizing, from trauma to the distal ends of the pubic nerves. After forty-eight hours we begin to give two quarts of a vaginal douche, evening and morning. The bowels should be moved on the third or fourth day by means of calomel given in small doses (1 grain two or three times) and followed by teaspoonful doses of $MgSO_4$. Diet should be regulated and limited for three days before and three days subsequent to the operation. The patient should lie in bed for at least two weeks, and afterward get up as she is able. The sutures

should be watched. If one becomes loose it should be removed. If none become loose or separate they may remain for three, four or even six weeks. Three weeks is soon enough to remove the sutures. The wound heals more firmly with the sutures in for four weeks or more. The sutures act like splints, holding the surfaces in fixed coaptation, avoiding motion, which interferes with perfect union. The sutures often give pain on removing, and it would perhaps be better in some neurotic cases to anesthetize the patient. However, I never practise it. Amateurs must be warned not to close the vulva unnaturally tight as it might disturb marital relations. The cuts in the article will show the steps in the technique.

THE EMMET OPERATION.

This operation is in marked contrast to all previous ones for similar purposes, as union of the denuded labia was the first procedure. The peculiarity of Emmet's operation consists in denudation of the lower median posterior vaginal wall; bilateral denudation of triangular portions of the lateral sulci of the vagina; in the method of introducing the sutures, which are so arranged that on tying they lift the prolapsing parts toward the pubic arch, restoring ana-

denuded by the operator cutting off long strips of vaginal mucoea with scissors curved on the flat. Others denude with the scalpel, rolling the denuded vaginal flap on a staff or on the fingers. With experience, large areas may be rapidly denuded. The area requiring denudation in the lateral sulci depends on the amount of slack in the posterior vaginal wall, for this operation has the special merit of narrowing the vaginal canal. With a typically relaxed vaginal outlet a large area of denudation will be required, and especially high in the right and left vaginal walls. The denudation should consist of the whole thickness of the vaginal wall. Continuous hot water irrigation over the denuded surface will check the hemorrhage. The operation is eminently a posterior colporrhaphy, and the success will depend on denudation in the lateral vaginal sulci, and not on the denudation of the so-called perineum. In case the vaginal wall is very slack and thin it is well to extend the denudation deep into the bilateral subvaginal tissue in the vaginal sulci. Perfect denudation is a requisite; no islands

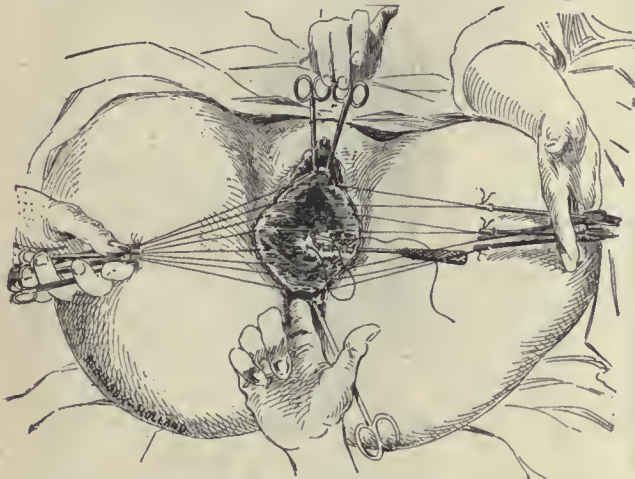


Fig. 40.—(Robinson-Holland.) Method of introducing the sutures in the flap method of colpoperineorrhaphy. Note that the handed needle is threaded in the median line. This cut was drawn from a photograph taken of a patient during the operation.

tonic structures, as the H-shape to the vagina and the normal curve of the vagina. The patient should be prepared for several days by cathartics and daily skin baths. The bowels should be evacuated by eight to twelve passages, so that no feces will be in the rectum while operating, nor for 24 to 36 hours after. Thorough salt rubbing of the skin not only stimulates the apparatus of the skin to the climax of secretion but reflexly stimulates the bowels and kidneys to active secretion. In short, place all secretory organs—skin, bowel and kidney—at their maximum activity for the operation. Place the anesthetized patient on the back, with an assistant holding each limb. With tenacula fixed to definite points of the vagina, as for example, one at the median crest of the rectocele, one tenaculum on each side of the vagina at the highest point of the triangle of denudation in the sulci and one on each side of the posterior vaginal wall at the junction with the skin and mucoea, one can mark the outline of the denudation with a scalpel. It is well, before denudation, to test whether the area is too large to insure coaptation of the wound without undue tension. The area defined by the tenacula is

of vaginal mucosa must be left. The second step of the operation, equally important with denudation, is the plan of introducing the sutures. The object of the special planning of the sutures is to lift the lax vaginal outlet upward toward the pubic arch, restoring the vaginal condition. The skill in planning the denudation in the right and left sulci of the vagina is no less than that employed in the introduction of the well-devised plan of sutures. The chief materials for sutures are silver wire, silkworm gut, and catgut. To suture the denuded surface expose one of the triangles in the lateral vaginal wall. Begin to suture at its apex, passing the suture transversely across the angle, after which immediately tie it. The second suture is passed one-quarter of an inch from the first (four sutures to the inch). The needle is passed through the vaginal wall and subvaginal tissue toward the operator (in an anterior posterior direction), whence it emerges, and is re-entered at the same point and passed in an antero-posterior direction under the subvaginal tissue through the denuded triangle, emerging on the vaginal mucoea at the edge of the wound. This makes the suture, before tying, represent a tri-

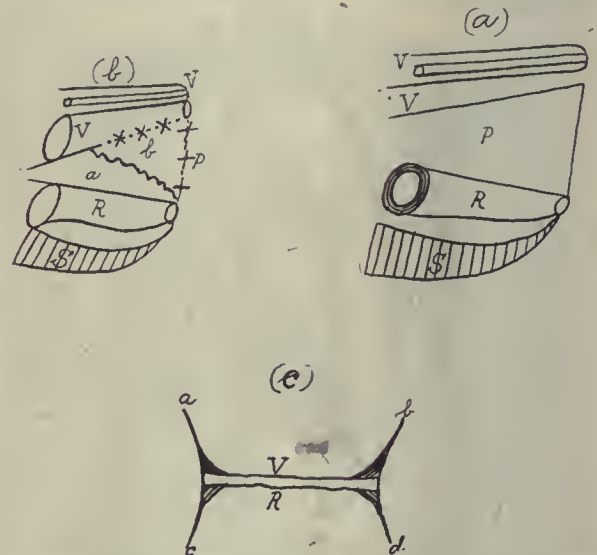


Fig. 41.—(Author.) Diagram of the plan of Tait's flap colpoperineorrhaphy: a, S, sacrum; R, rectum; P, intact perineal body; V, vagina, with urethra above it; b, has had the torn perineal body, P, repaired by the six sutures marked by stars; c, shows the H-shaped anterior cuts, a, b, c, d, the posterior cuts; R, rectum; V, vagina.

angle, with its apex (at the emerged points of the suture in the denuded triangle) toward the operator, and characterizes the plan of suturing; i. e., they are introduced in an antero-posterior direction, and by tying, they lift the vaginal outlet toward the pubic arch. The next suture is introduced by passing the needle through the vaginal wall (on the internal side of the triangle) deep into the subvaginal tissue of the denuded triangle (directly toward the operator), whence it emerges, and is re-entered at the same point and carried upward and outward (away from the operator) very deeply under the denuded area, emerging on the vaginal mucosa at the external side of the triangle. The sutures on the external side of the denuded triangle should be especially deep and should include extensive tissue. Generally three or four sutures are sufficient to close the triangle of each sulcus. The suture at the base of each triangle may be called a tension suture. It can be tied as soon as

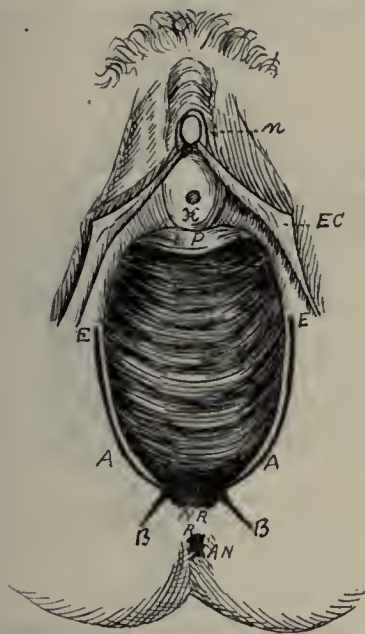


Fig. 42.—The outlines of the anterior "cuts," (A, E.) and posterior "cuts" (A, B.) in the flap colpoperineorrhaphy. *n*, Clitoris; *h*, urethra; *L, P*, anterior vaginal wall; *A, N*, anus; *N, R*, perineum; *E, C*, labia. The vaginal orifice is wide open. The laceration is not complete, *i. e.*, it does not reach the rectum.

passed, which will enable more superficial sutures to be applied to the upper part of the triangle. The crown or pursing suture is now passed within the vagina by introducing the needle in the mucosa on the lateral vaginal wall close to the incision, a short distance below the center of the triangle. The needle should emerge in the subvaginal tissue in the sulcus below the point of introduction. The needle is re-entered and carried across the vaginal sulcus just below the vaginal incision, emerging at the opposite side. One or two auxiliary pursing sutures are added and the several sutures tied; superficial sutures are then added, as required, to close the gaps in the wound. The deep sutures should be of silkworm gut and the superficials of catgut.

In this essay it is not the purpose to discuss immediate repair after labor, but the views are directed toward chronic damage of the vulva, vagina and pelvic floor. It will require careful examination of the vulva, vagina and uterus to decide in certain cases what will be the wisest plan to pursue. Some cases show extensive laceration with but few symptoms,

while others show little damage, but complain of severe suffering. Such differences rest on visible and invisible supports. Extensive perineal lacerations demand repair whether they create symptoms or not, as such lesions will in all probability lead to illness. One may occasionally meet a patient who has had a perineal operation, and the perineum to all intents and purposes appears normal; yet an examination reveals the fact of a rectocele above the restored perineal body, and the patient confirms the results of the examination by still announcing herself as suffering. In operating, the dissection of the so-called perineal body should extend as high on the rectovaginal septum as there appears redundancy of the posterior vaginal wall (rectocele). Nothing less will cure the patient. The perineal body, in its broadest



Fig. 43.—Dissection of the flap and the anterior vaginal wall. *N, R*, drawn up with forceps. The posterior flap, *S*, is drawn backward by forceps, two sutures, *b, n*, are already passed; three more sutures, one being introduced by passing the curved-handled needle from the lateral edge of the wound to the middle of the denuded surface and threading it from the median line with silkworm gut; *D, I*, anus; *V*, perineum; *E*, clitoris; *X*, urethra; *L, P*, anterior vaginal wall.

sense, is a resistant ligamentous, fibromuscular structure which closes the abdominal cavity below. The body begins to be supported from the curved white line located on each side of the pelvis, as one may be impressed by looking into a pelvis from above. It is bowl-shaped, and as soon as this peculiar shape becomes lost, the supports have given away at some point. Observed from below the perineum is narrowed to the space between rectum and vagina. The flap operation is capable of repairing any defect in the pelvic floor. In complete laceration the anal and vulvar orifices are in direct communication, like a cloaca. The rectovaginal septum may show a boot-jack angle or an irregular arched outline. The irregularly-torn outline of the rectovaginal septum shows a double-walled layer or curved sides. At the upper angle of the lacerated rectovaginal septum the rectal mucosa pouts, rolls and appears as a red or pink ground which aids in locating the line to split the flaps.

After the rectovaginal septum has been lacerated.

for a long time it presents irregular cicatricial bands, some of which are thin, others thick, assuring different stages of atrophy and contraction. Bridges or bands of tissue may stretch from one point to another showing a penetrated condition. Again, the lower edges of the lacerated rectovaginal septum may be drawn upward by the fibers of the levator ani still embracing the parts by the aid of its double fascial sheets. Besides small, irregular depressions may be felt or observed where the stump of a bundle of the levator muscles has been torn away and retracted. The deep sutures applied after splitting the septum will include these stump ends of the muscles by means of fascia so that they may be again forced to the median raphe and fixed there. The flap operation does not need to observe whether the sphincter, anus or rectovaginal septum be lacerated, for it is alike applicable to each and all. On examination we may find all kinds of associated conditions with extensive colpoperineal lacerations, as lacerated cervix, subinvolution of the vagina, cystocele, rectocele, and retro-

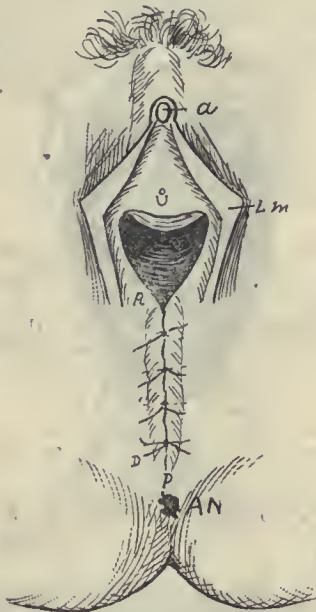


Fig. 44.—Sutures tied in the operation for colpoperineorrhaphy with incomplete laceration. A, N, anus; L, M, labia; A, clitoris; V, urethra; R, D, median line of the perineal raphe; P, posterior point of perineal space.

version of the uterus. Now if the uterine appendages are freely movable we can generally cure the patient by curettement, repair of the cervix and colpoperineorrhaphy, for much of the disease observed is due to disturbed circulation. The vessels have been torn from their supporting bed by the deranged fascia. The veins have become straightened out, dilated locally, and have lost their elegant spiral form, resulting in blood stasis, congestion. Restore the supports and circulation will resume.

The diagnosis consists of observation and palpation with the aid of a large Sims speculum. In the diagnosis a notably striking feature is the changed appearance of the vulvar outlet. Normally the perineum is widest at its upper end. With lacerated perineum or relaxed vulva the whole external appearance is changed. The narrow puckered chink or slit-like aperture of the natural vulvar orifice is transformed into a patulous gaping. Again, the normal vagina presents a sigmoid curve with the posterior vaginal wall coapting and embracing the anterior, like a valve. But in deficient vaginal apparatus these

two concentric coapted curves have lost their relations, especially the posterior vaginal curve. It should be remembered, in diagnosing this deficiency at the vulva, that the non-closure is not due especially to loss of the perineal body, but to defect in the levator ani muscle and its double fascial layers. The levator ani muscle endows the rectum with its anterior curve and drags the lower end of the vagina upward and forward against the pubic arch. This fact can be demonstrated by introducing the finger into the vagina and forcing backward and downward, when by removing the finger, the vagina quickly returns to its normal position. The vaginal orifice has no distinct sphincter like the mouth or anus, but has an indirect sphincter, the horseshoe loop of the levator ani, aided by the pubic arch. The arch acts like a fixed point and the vagina is indirectly closed by shortening, contracting of the anterior bundle of the levator ani

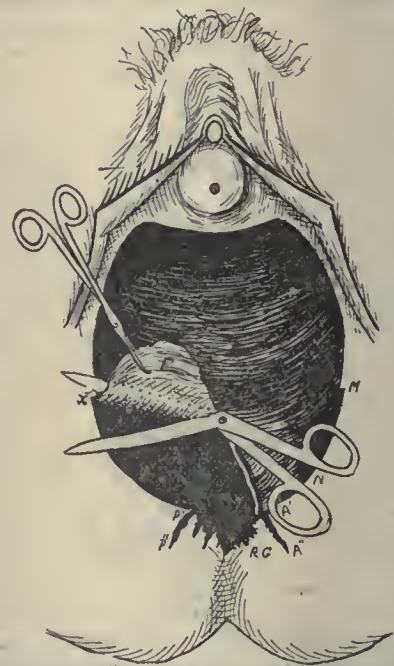


Fig. 45.—Flap formation in a case of complete laceration of the rectovaginal septum into the rectum. The scissor blade is splitting the vaginal from the rectal wall to form the flap, F, whose margin comes from the mucocutaneous line X, P; P, P, is the back cut; A to A, the opposite back cut; A, M, the anterior scissor clip.

muscle. The vagina is closed by flattening its walls antero-posteriorly between the rectum and pubic arch. It is H-shaped. There is a slight puckering of the vagina at its external orifice by means of the weak bulbo-cavernosus muscle, but practically this amounts to nothing in physiology and anatomy. On account of the position of the rectum in relation to the levator muscle it produces a sigmoid curve to the rectum, with its convexity forward. This is due to the fact that the strongest bundles of the levator muscle encircle the rectum about an inch above its orifice or lower end, whence by contraction it yields at the point of greatest force, i. e., at the sigmoid bend. On account of the position of the vagina, levator ani and pubic arch, the lower end of the vagina is dragged upward, producing its sigmoid curve forward, in the opposite direction to that of the rectum. In other words, the plane of the pubic arch is anterior to the plane of the levator ani muscle, and when it contracts it must necessarily drag the lower end of the vagina upward and forward. These considerations may be appreciated by introducing the finger into the vagina and the

thumb into the rectum. It is best studied first on a multipara and second on a nullipara, and third on one with a deficient vaginal sphincter apparatus. The closure of the vagina well forward toward the pubic arch produces a kind of valve, which acts almost as a certainty against prolapse while intact. This is one of the elements of success in both the Emmet and Tait perineal operations. The vast difference in appearance between the virgin and the relaxed vaginal sphincter apparatus of the multipara is due to the yielding of supports by the process of labor in nearly all cases (visceral ptosis excepted). This does not appear so strange when we consider that the virginal passage of the vagina is about an inch in diameter, while the passing head, shoulders and breech demand ten to twelve inches in diameter. It is not strange that tissues forced to stretch from one to twelve inches should forget to return. The levator ani muscle is arranged in fasciculi or bundles, or it would become defective more frequently. The sphincter and vaginal apparatus may be injured by external accidental trauma, but labor is the chief factor.

(To be continued.)

SOCIETY PROCEEDINGS.

American Public Health Association.

Twenty-sixth Annual Meeting, held in Ottawa, Ontario, Sept. 27-30, 1898.

The American Public Health Association for the third time in its history met in the Dominion of Canada, this being the twenty-sixth meeting since its organization in 1872. It was feared that the prior quarter-centennial jubilee of the State Board of Health of Michigan and the coincident meeting of the Conference of State Boards of Health at Detroit in August, and the unfortunate announcement of the meeting of the Illinois Auxiliary Sanitary Association at Chicago on the same date as had been months before published as having been selected by the executive committee for this twenty-sixth annual meeting, would affect the attendance, but this did not prove to be the case, the number of old members present, having a record of fifteen to twenty or more years of service, being particularly noticeable. The Mexican and Canadian members were as earnest and conspicuous in their participation in the work of the Association as they have ever been since they became constituent parts of the organization, their papers being of that high order which habitually characterizes the contributors to the transactions. It was a matter of comment that six of the former presidents were present, three others having been prevented from coming by unavoidable official duties. This attendance of so many ex-presidents is especially gratifying, since it shows the wisdom of the provision of the constitution of this Association making them ex-officio members of the executive committee, thus securing that uniformity and persistence of policy which are so apt to be influenced in a body changing its locality and officers from year to year. About seventy-five new members were added to the rolls, an unusual proportion of these, as well as of the contributors of papers, being non-medical men interested in sanitary matters. The character of the papers was far above the ordinary, many of them, in the shape of exhaustive committee reports, precluding any satisfactory abstract or epitomizing, without injustice to the writers and reporters. This, however, is less necessary since the executive committee, at its preliminary meeting on Monday afternoon, had unanimously resolved to abandon the quarterly form of publication of the transactions and revert to the annual volume, which had been formerly issued, the publication committee having announced its intention to have the transactions of the current meeting in print and distributed within two months after adjournment.

TUESDAY, SEPTEMBER 27—MORNING SESSION.

The routine sessions of the Association were held at the Parliament Buildings, where, at 11:30 A.M., Tuesday, September 27, the Association was called to order by the President, Prof. CHARLES A. LINDSLEY, of Yale University, Secretary of the State Board of Health of Connecticut, who introduced the Chairman of the Local Committee of Arrangements, Dr. JOHN SWEETLAND, Sheriff of Ottawa, by whom the customary announcement of proposed entertainments, etc., was made.

The carefully prepared minutes of the preceding meeting at Philadelphia in 1897, were then presented by the Secretary, Dr. CHARLES O. PROBST, secretary of the State Board of Health of Ohio, but having been already published in the quarterly transactions, they were affirmed without reading.

The Secretary then read the report of the executive committee, always a matter of the greatest interest in this body, which while conferring extraordinary powers upon the committee in the matter of the revision and amendment of resolutions, the digestion of propositions, the suggestion of courses of procedure, etc., jealously exercises its own prerogative of final approval or veto.

1. With respect to the resolutions offered at the preceding meeting by Mr. Henry Lomb of Rochester, N. Y., contemplating the publication of journal appeals on the part of the Association to State, municipal and town corporations, and the widespread distribution to the public, through the newspapers of this appeal, urging the necessity for the establishment of local sanitary organizations, the committee reported that it was of opinion that the measures for the enforcement of regulations designed to prevent the spread of disease could be best advanced by employing men educated in sanitary science as sanitary agents and inspectors, and that this could be best accomplished through the establishment of separate institutions for the education and training of such sanitary inspectors. The resolutions, as amended by the committee, were adopted after discussion by Dr. Benjamin Lee of Philadelphia, Pa., who said that all institutions should have departments of sanitation, since naturally, health officers and inspectors would be of a better and more efficient class if properly instructed in sanitary science, whereas the fact is, that in the United States men are put in positions for the enforcement of regulations for the protection of the health of the community who are not qualified to serve, and this because they have had no opportunities of prior education; and by Dr. Henry Mitchell of Asbury Park, N. J., who said that the United States ought to pay tribute to England in this matter, where for twenty years a system has been in operation for the training of men for the inspection service, and though it is not obligatory to have a certificate of the Sanitary Institute as a precedent of employment, still it is customary to employ such by preference. In New Jersey the first step has been taken toward the training of sanitary inspectors. Rutgers College of New Jersey has already begun to grant certificates of competency in matters relating to details of the sanitary inspector's duties. The resolutions offered are designed to encourage this effort, especially for the education of executive sanitary officers. The men engaged in this work are usually physicians, who have no knowledge of the practical details of their work, which they have to learn for themselves in the school of experience, so there ought to be post graduate courses in colleges to supply the particular information lacking.

2. The second resolution reported by the executive committee with the recommendation that it be adopted, which was done, directed the publication committee to abandon the form of publication of the transactions in quarterly issues, and return to the former plan of a single annual volume, uniform in type, paper, size, make-up and binding with such volumes, the chairman of the publication committee having explained that it was entirely feasible to have their single volume printed and distributed as soon as the first number of a quarterly series could be issued.

3. The resolutions offered by Dr. Cressy L. Wilbur of Lansing, Mich., Chairman of the Committee on Demography and Statistics in their Sanitary Relations, were recommended for adoption, which was unanimously done, and seventy-five dollars appropriated for the necessary clerical work of the special committee in carrying them into effect. The resolutions contemplate the procurement of the establishment of Vital Statistics officers in non-registration States, the general adoption of the Bertillon system of identification as a basis of classification, the institution of uniform methods of registration in the next census report, and the establishment of an international alliance and co-operative method between all national and foreign departments of vital statistics.

4. The resolution offered at the previous meeting to reduce the annual dues from five dollars to three was referred back

without recommendation, and was on motion laid upon the table by the association.

The Secretary then read the names of fifty applicants for membership, who were recommended for election, which was accordingly done.

The reading of papers announced upon the program was then begun with

A SHORT HISTORY OF SEWAGE DISPOSAL AT THE ASYLUM FOR INSANE AT LONDON, ONT.,

by Dr. R. M. BUCKE, superintendent, the paper being read in the absence of the author, by Dr. Peter H. Bryce, secretary of the Provincial Board of Health of Ontario.

Dr. BUCKE described the various systems of sewage disposal at this hospital since its opening for the reception of patients in 1870, down to the present day. The sewage was first thrown into a small creek, a branch of the Thames, which in dry weather constituted a nuisance of which the neighbors complained. Charcoal and gravel filtration was in vogue, with varying success, for fifteen years. Complaints were made from time to time and intensified by the appearance of typhoid fever in London. The system of intermittent downward filtration was finally instituted. Alternate beds and trenches with drainage through tile-lined conduits were spread over a wide area, but experience showed the latter were useless, and when subsequently taken up it was found that nothing had passed through. The sewage beds are on a higher level than that of the asylum. One thousand inmates, of whom two hundred are sane people, produce daily 75,000 gallons, requiring two and a half hours to flow through to the beds, and in six hours it is completely absorbed in the soil, reappearing as pure spring water. There is no pollution of the soil. The sewage always disappears. The experiment of establishing a vegetable garden has been successful, crops of fruit and vegetables of the value of \$200 to the acre having been produced. The system of sewage disposal so completely satisfactory at Dr. Bucke's institution is simply nature's own plan of refuse ridance by returning it to the earth.

THOMAS MACFARLANE, Esq., F. R. S. C., chief analyst of the Inland Revenue Department of the Dominion of Canada, followed with a paper entitled

REMARKS ON THE DISPOSAL OF REFUSE IN SOME EUROPEAN CITIES.

detailing results of official visits and inspection of the methods in vogue in England and Germany. He agreed with Dr. Vogel that no one method can be arbitrarily said to be the best everywhere. In his opinion the direction of improvement in the large cities lies in the exclusion of surface water, and in towns of 30,000 inhabitants, he believed the moss litter system will be the best, as used at Caledonia Springs, Ont. He exhibited a specimen of moss litter, which he described as an intermediate form of peat. He strongly indorsed the system practiced at the asylum for the insane at London, Ont.

Mr. G. G. HORETSKY, C. E., read a paper entitled "The Most Recent Methods of Sewage Disposal and their Application to Certain Cities in Ontario," and was followed by Capt. W. F. VAN BUKIRK, C. E., of Stratford, Ontario, "On the Filtration of Sewage."

Discussion of the groups of papers on sewage disposal was opened by Dr. Hurlig, secretary of the State Board of Health of Indiana, who, having inquired of Mr. Macfarlane, where moss-litter can be obtained, was told by the latter that it was found on the upper layer of broad savannas in Canada and that it was simply moss which had ceased to live. It was not peat, but was intermediate between this and the green moss of the surface. It differs from peat in that it is spongy and can be broken up, while peat can not be. Moss litter has an extraordinary power of absorbing moisture and ammonia, which makes it valuable for bedding in stables. It gives off its absorbed water readily but retains the ammonia. It is eight times more effective than dry earth; one hundred pounds of it will render inoffensive eight hundred pounds of excreta.

Dr. BOARDMAN of Ottawa said the objection to most methods of sewage disposal was the fact that the products of the several expensive mechanical processes have no value.

"The Interpretation of the Chlorin Number in Well Waters" by A. MCGILL, Esq., M. A., was read by title and was followed by

THE FARM WELL

by F. T. SHUTT, Esq., M. A., urging the importance of instructing the rural population as to the dangers to health from the polluted wells, since four-fifths of the population reside outside of the cities, and cited the 'barnyard well' as an especial and very common source of danger.

Mr. MACFARLANE dissented from the opinion that legislation can not accomplish much but that we must trust to education,

and said that education was a very slow process. If only existing legislation is properly carried out, it will accomplish much. Health officers have the right, if they can fearlessly exercise it, to expose existing nuisances and call the attention of the authorities to them, and this as well with respect to the care of cattle and the supply of water for man and beast.

Dr. PROBST of Columbus, Ohio, said that there was no doubt that the majority of cases of typhoid fever in rural districts was due to impure well water, and recited an interesting case in his experience as member of the State Board of Health of Ohio of a recent outbreak of twenty-one cases of the disease in a locality where fifty years ago a similar outbreak had occurred. A well used at that time had been filled up and abandoned over thirty years. New owners came into possession, and the old well, which was in the side of a hill, was cleaned out and deepened—and its use followed by the renewed poisoning of those who drank its water.

Dr. PATTERSON of Winnipeg, Manitoba, said there was no doubt that typhoid fever is the prevailing disease of this region and equally no doubt that polluted well water was its source, and he insisted that the necessity that the farm well should be abandoned is as great as that privies in cities should be disused.

Dr. HURTZ agreed with the other speakers as to the objectionable sites of the ordinary farm well and insisted that it should be in front of the house instead of in the rear as customary.

Dr. CURTIS of Ottawa, did not think cementing a well was sufficient to exclude polluting agents.

TUESDAY, SEPTEMBER 27—AFTERNOON SESSION.

Dr. JOHN L. LEAL, Health Officer of Paterson, N. J., read a paper entitled

AN OUTBREAK OF TYPHOID FEVER DUE TO AN INFECTED PUBLIC WATER-SUPPLY,

which he presented because it established the fact that a single case of typhoid may so infect a large body of water as to reproduce itself among those dependent upon this same body of water for their public supply, even though said supply was taken at some distance from the point of infection. Most hitherto well authenticated outbreaks of typhoid fever have been where the infected water was small in bulk or the infection great and its action more or less continuous. In this outbreak, the bulk of water infected was large, its infection sharply defined, and its origin in a solitary case of typhoid in the person of a resident, who returned from a summer resort ill with the disease. The water-closet receiving the discharges of this patient was connected with a series of cess-pools by overflow pipes, the last of the series discharge through a hidden pipe into the river, which was more or less continuously infected from September 18th to November 14th, when the hidden discharge-pipe was discovered and further infection from that source prevented. Subsequent to this, the cases of disease gradually diminished and within a fortnight entirely ceased. Dr. Schwartz of Rhode Island and Dr. Connelly of New Jersey, commented upon Dr. Leal's paper without questioning his conclusions.

The Report of the Committee on "The Cause and Prevention of Infectious Diseases" was presented by its Chairman, Dr. PETER H. BRYCE of Toronto, secretary of the Provincial Board of Health of Ontario; ordered to be printed, and the committee continued. The excellence of Dr. Bryce's report was universally admitted. Its literary merit, conciseness of expression and exhaustive character entitle it to be considered among the admirable committee reports, which have emanated from this association.

WHAT CONSTITUTES AN EPIDEMIC?

was the title of a paper read by Dr. BENJAMIN LEE, secretary of the State Board of Health of Pennsylvania and Health Officer of the city of Philadelphia, and which ably discussed the question as to whether numbers of cases, rapidity of spread or malignity of disease should determine the epidemicity of an outbreak. Machiavelli uttered the famous aphorism "Words are the counters of wise men, the coin of fools." Another equally distinguished diplomat (liar) has informed the world that the object of language is to conceal ideas. In the word epidemic—a "coin" or a "counter"—practically, as employed at the present time, it is simply used to describe the presence of a communicable disease in some other fellow's town." Inasmuch as the reluctance of the resident physicians and especially the authorities of a town, to acknowledge the existence of an epidemic is founded upon a purely commercial basis, having no other motive than the fear of the diminution of trade, while the readiness of those of the neighboring town to proclaim it is based upon a wholesome and instinctive aversion to contracting the supposed infection, is it not remarkable that

the view of the latter rather than that of the former should be adopted as that of the sanitarian? In other words should not rapidity of spread rather than the number of cases be recognized as the true test? Dr. Lee's contention is that the actual number of cases of a contagious disease in proportion to the population as the criterion for the declaration of an epidemic "has nothing to do with the case any more than the flowers that bloom in the spring," but that the rapidity of spread should be solely considered. The Board of Health which, having knowledge of such condition, purposely conceals it, or still worse, denies it, is guilty of a crime of hideous proportions, none the less so because it is acting in obedience to the behests of the business portion of the community or from a mistaken sense of local patriotism.

The discussion following the report of Dr. Bryce and the paper of Dr. Lee became general. Respecting the former, Dr. Gehrman of Chicago suggested the question as to the proper time of isolation of diphtheritic cases, since the bacillus often persists after the case is apparently well.

Dr. HOLTON of Brattleboro, Vt., spoke of the undoubted presence of the bacillus of diphtheria in individuals who have not been sick with the disease. He asked what should be done with people going around with them who are apparently well? Is it fair to quarantine those who have been ill and yet who are apparently well, but still have bacilli discoverable in their throats?

Dr. BRACKEN of Minneapolis, Minn., said if any healthy person was found to have the bacillus in his throat he ought to be quarantined. The time limit in Minnesota was four weeks.

Dr. CHAPIN of Rhode Island thought it very rare that the bacillus was found in healthy people, but he believed it to be equally dangerous. In families where diphtheria has prevailed about 20 per cent. are found to have bacilli in their throats. In an orphan asylum within his knowledge, twenty-five cases of the disease occurred, and about 20 per cent. of all the children were found to have bacilli, and of these two or three became sick with the disease, and one case was carried to another institution by a child who was not sick.

Dr. PATTERSON of Winnipeg, Man., knew of three cases, in one of which the bacillus was found thirty days, in a second thirty-five, and in the third forty days after they were severally supposed to be well.

Dr. JONES, health commissioner of Baltimore, detailed the precautionary measures enforced in that city; Dr. Probst of Columbus, Ohio, Dr. Burroughs of Asheville, N. C., and Dr. Wright, of New Haven, Conn., spoke of the practice in their respective cities.

Dr. SCHWARTZ, secretary of the State Board of Health of Rhode Island, asked, referring to Dr. Lee's paper, whether tuberculosis ought not to be considered epidemic throughout the civilized world.

Dr. LEE said that the distinction ought to be made between endemic and epidemic, under the former of which tuberculosis might be properly classed.

Dr. WINGATE, health commissioner of Milwaukee, Wis., thought a special committee might be created to define "What is an epidemic?" and offered a resolution to this effect, which was referred to the executive committee. The discussion was closed by Dr. Hurty, the secretary of the State Board of Health of Indiana.

The paper presented by Mrs. ELLEN H. RICHARDS, of the Institute of Technology, Boston, Mass., on "The Urgent Need of Sanitary Education in the Public Schools," was read by Dr. Henry Mitchell, secretary of the State Board of Health of New Jersey. The writer claimed that the Cuban war has shown that sanitation has not been taught to the people, and that the only way in which this can be reached is through the public schools. The lamentable ignorance of the volunteer soldiers in matters of food and clothing would not have existed had they been properly educated. Professor Robinson of Bowdoin College, Brunswick, Me., and Medical Director Gihon, U. S. N., dissented from the opinion that public school education could accomplish much in this direction.

Dr. HURTY of Indiana read the paper on "Theater Sanitation," prepared by Mr. WILLIAM PAUL GERHARD, C. E., of New York City.

EVENING SESSION.

The customary public meeting for the formal reception of the Association by the local authorities and the annual address of the President was held in the city hall and was opened with prayer by the Rev. WILLIAM MOORE, D.D.

Addresses of welcome were then delivered by Hon. Sydney Fisher, M.P., Minister of Agriculture, whose department embraces the sanitary interests of the Dominion of Canada; by Sir James Grant, M.D., K.C.M.G., F.R.S.C.; by Samuel Bingham, Esq., Mayor of Ottawa, and by W. G. Black, the

several speakers being introduced by Dr. John Sweetland, chairman of the local committee of arrangements.

Dr. GREGORIO MENDIZABAL of the City of Mexico responded eloquently in French to the special greeting extended to the Mexican members.

Dr. BENJAMIN LEE of Philadelphia then took the chair, introducing, after some witty and felicitous remarks, the president of the association, Prof. Charles A. Lindsley, M.D., of New Haven, Conn., who then delivered the President's Annual Address.

WEDNESDAY, SEPTEMBER 28—MORNING SESSION.

The Association was promptly called to order by the president at 9 o'clock, to permit acceptance of the excursion to Hull, Aylmer and Victoria Park and thence on the Ottawa River to Chats Falls and a dinner at Victoria Hotel, Aylmer, P. Q., tendered by the municipality and citizens of Ottawa.

Dr. PROBST, the secretary, reported from the executive committee the resolutions offered by Dr. WILBUR of Lansing, Mich., for the appointment of a commission of nine members, three from each of the nationalities represented in the association, to co-operate in the establishment of bureaus of vital statistics for the collection of such statistics under the Bertillon system of classification, and these were adopted as recommended.

The names of twelve new members were recommended for election and were accordingly elected.

The report of the committee "On the Etiology of Yellow Fever," was then presented by the chairman, Dr. HENRY B. HORLBECK, health officer of Charleston, S. C., and a supplementary report on the same subject by Dr. EDUARD LICÉAGA, president of the Superior Board of Health of the Republic of Mexico, a member of the committee.

The committee was continued, and also the committee of seven appointed at the previous meeting to wait upon the President of the United States with a view of obtaining the appointment of a bacteriologic commission to go to Havana to study the causes and methods of prevention of yellow fever. This special committee was reconstructed to consist of Dr. Henry B. Horlbeck of Charleston, S. C.; George M. Sternberg, Surgeon-General U. S. Army; Dr. Alvah H. Doty of New York City, Dr. Samuel H. Durgin of Boston Mass.; Dr. R. D. Wilkinson of New Orleans, La.; Mr. Josiah Hartzell, and the State Health Officer of Texas, to succeed Dr. R. M. Swearingen, deceased.

Dr. LICÉAGA presented the seventh of a series of reports on yellow fever, to modify a former statement in the report of last year, that "there are only two foci of endemic yellow fever in the whole of the Gulf Coast of Mexico and these foci are found in the Canton of Vera Cruz and in the district situated in the northern part of the Peninsula of Yucatan." This statement was made before the Superior Board of Health had absolute knowledge of the two cases observed in Campecho and before the appearance of the epidemic in Tampico, and consequently before the investigation was commenced which proved that these cases were *not* the result of the importation of the disease. Hence, Dr. Licéaga said, we have to withdraw our absolute statement that there are only two foci of endemic on the Mexican Coast of the Gulf of Mexico. Dr. Licéaga's declaration that the sanitary authorities of Mexico have firmly resolved *never* to hide any case of transmissible disease that may come to their knowledge and that they have determined that their official documents shall express the truth only so far as absolute facts are known, was greatly applauded—as an evidence of the proper spirit in which the work of the committee of which he is a member should be conducted.

Dr. WALTER SUITER of Herkimer, N. Y.; Dr. WILKINSON of New Orleans, La., and Dr. S. W. BATTLE, U. S. N., participated in the discussion of the reports of Drs. HORLBECK and LICÉAGA, eliciting the declaration that there was no analogy recognized between any of the forms of malarial fever; that the "calentura" of Mexico is paludic, and that neither it nor the severest forms of bilious remittent fever give any immunity against an attack of yellow fever; that the microbe of Laveran is positively distinctive; that so far the microscopic germ of yellow fever can not be said to have been discovered, but that the bacteriologic investigation which it is the object of Dr. Horlbeck's special committee of seven to induce the President of the United States to inaugurate, may confidently be expected to reveal its identity.

The report of the committee "On the Cause and Prevention of Infant Mortality" was then presented by the chairman, Dr. ERNEST WENDE, commissioner of health of the City of Buffalo, N. Y., and pursuant to the recommendations of the committee, Dr. SUITER of Herkimer, N. Y., offered the following resolution, which under the rules, was referred to the executive committee:

Resolved, That it is the opinion of the Public Health Association that the State, city and town health authorities and local sanitary societies generally should exercise every possible effort to procure the enactment of laws in their respective States, cities, towns and villages to prohibit the sale of the so-called long rubber-tube nursing-bottle as being a perniciously active agent in the cause of preventable disease in infancy of the most serious character and fatality.

Dr. IRVING A. WATSON of Concord, N. H., president of the State Board of Cattle Commissioners and secretary of the State Board of Health of New Hampshire, read an admirably written paper entitled

SOME OBSERVATIONS FROM PRACTICAL EXPERIENCE WITH BOVINE TUBERCULOSIS IN NEW HAMPSHIRE.

The tenor of the paper was to the effect that the danger of infection from bovine tuberculosis has been greatly over-rated and that whatever danger exists arises almost entirely, if not wholly, from those animals in which the disease is so far advanced that it may be detected by a competent veterinary surgeon upon physical examination, barring, possibly, the localized appearance of the disease in the udder, in which event the tuberculin test would determine the diagnosis. The following concluding propositions were presented:

1. That it is impossible to eradicate bovine tuberculosis, but that it may, without inflicting too great a burden upon the State, be reduced to a degree that will subserve the interests of the stock-raisers and likewise protect the public health.

2. That a very small percentage of the animals infected with tuberculosis in any way endanger the public health, and that an indiscriminate slaughtering of the cattle reacting to the tuberculin test is wholly unnecessary, inasmuch as many of them either recover or the disease is permanently arrested.

3. That a proper sanitary condition of stables and stable inclosures would do more toward preventing the spread of bovine tuberculosis than any other measure that could be adopted.

4. That the danger of infection from bovine tuberculosis may be reduced to very small proportions, if not wholly eradicated, by sanitary measures, inspections and physical examinations by the State, in co-operation with local authorities.

5. That such inspections once inaugurated could be maintained without an expense that would be burdensome to the State.

Dr. A. DE SCHWEINITZ, chief of the Biochemic Division of the Bureau of Animal Industry, Washington, D. C., read a paper on "A Convenient Method of Staining Tubercle Bacilli."

Sir JAMES GRANT, M.D., of Ottawa, commended very strongly the propositions advanced by Dr. Watson.

Dr. GINSON of Iowa dissented as to the ability of veterinarians, however skilful and experienced, to recognize tuberculous cattle by mere physical examination however thorough. He would quarantine a tuberculous cow reacting to the tuberculin test as he would a glandered horse. The slaughtering room is the only place for them.

Dr. BRACKEN of Minnesota, deprecated the effect of Dr. Watson's paper as calculated to occasion loss of confidence in the tuberculin test.

Dr. DURGIN said that we must have the people with us if we hope to succeed in sanitary work. In Massachusetts, radical and extreme measures had been found to defeat their object.

Dr. WOODWARD, health officer of the city of Washington, asked who were the people—the dairymen who sell, or the citizens who consume the milk? In Washington the people themselves demand the application of the tuberculin test.

After further remarks by Dr. Bryces of Toronto, and Dr. de Schweinitz of Washington, Dr. Watson closed the discussion, defending the propositions he had presented, and the association then adjourned until Thursday morning, to accept the courtesies tendered by the city of Ottawa for the afternoon and evening.

(To be continued.)

Cincinnati Academy of Medicine.

Regular Meeting, September 26.

Dr. MERRILL RICKETTS exhibited a patient who had been operated on just one week previously for right inguinal hernia. The radical operation was the one performed. The operator reported the cases as he wished to call attention to the short time the operation required, eight and one-half minutes, and also to emphasize his opinions as to the great value of properly prepared kangaroo tendon for buried sutures. The sutures he always kept, until used, in alcohol, to which a little resin had been added. The resin he claimed prevented the hands slipping when the suture is pulled home.

Dr. LYLE exhibited the specimens of a case in which a tubercular infection had involved the pericardium and peritoneum, while the lungs were but little diseased. The trouble probably originated in the bronchial glands. The pericardium showed a caseous exude about half an inch thick over the left ventricle and about a quarter of an inch over the right side of the heart. In the abdomen was found, in addition to the tubercular peritonitis, great thickening and involvement of the omentum. The stomach had been invaded by a large carcinomatous growth at the pyloric orifice; this had ulcerated through into the general peritoneal cavity, which proved to be the immediate cause of death. The man was 44 years of age. Dr. E. W. Mitchell, who had had the case before he had been sent to the consumptive hospital, had had considerable trouble in deciding upon the diagnosis. The examination of the blood repeatedly showed the absence of the plasmodium, and the reaction of Widal had also proved negative. The lungs were apparently normal. The stomach contents showed the absence of free hydrochloric acid, and also of lactic acid. Chills and fever occurred not infrequently. The use of tuberculin was determined upon for diagnostic purposes, but the first injection proved entirely negative. Not satisfied with this, however, a new solution was obtained, and the injection this time was entirely successful, a decided chill, some fever, and marked constitutional reaction following.

Dr. MAGNUS TATE reported a case in which a double pyosalpinx operation had been performed, the patient at first reacting strongly; within forty-eight hours of the operation, she unfortunately fell out of bed; soon collapse set in, and in spite of every aid, she went from bad to worse and soon died. Opening the wound, just before death, he found a small opening in the gut. The case, during operation, has been a most difficult one on account of strong adhesions present. He had been most careful to examine the bowel before closing the external incision for this very thing, but had been unable to find a weak point. He thought that the accident after the operation had caused some weak point to give way under an increased strain. Discussion was by Drs. Reed, Bonfield and Zinke, who agreed with the speaker as to the cause of the perforation.

Dr. ED. RICKETTS reported a case of appendicitis in which a concretion had ulcerated through the appendix, producing a fatal peritonitis. He also exhibited a gall-stone he had removed by operation, which weighed 388 grains. Discussion was by Drs. Twitchell, Reed, Zinke and Bonfield.

Dr. MEYER HEIDINGSFELD read the report of a case of spontaneous rupture of a prostatic abscess into the rectum and urethra, followed by recovery. L. A., 21 years of age, was infected with gonorrhoea on July 3; prostatic abscess formed and opened into the rectum on July 30. Reinfection from the rectum followed; a second abscess formed and ruptured spontaneously into the urethra, August 30. The case then became complicated with epididymitis, hydrocele and abscess of the left testicle, which latter was incised, and patient was discharged one week later without urinary fistula.

Dr. S. E. ALLEN reported a case of mastoiditis in which septic infection with the formation of abscesses in various parts of the body occurred without involvement of the lateral sinus. He thought that the emissary veins carried the infection.

The German Congress of Ophthalmology.

Held at Heidelberg in August.

Landolt of Paris presided at the first session. The first address was by NORMAN HANSEN of Copenhagen on

SYSTEMATIC SUTURE OF THE CONJUNCTIVA ALONE, WITHOUT SUTURE OF THE SCLEROTIC, FOR SEVERE WOUNDS OF THE EYEBALL.

He recommends suturing the conjunctiva, even in deep perforating wounds. This protects from infection and produces an even pressure which holds the lips of the wound in contact on an even plane. In all cases of large perforating wounds of the sclerotic, with or without the participation of the cornea, he first enlarges the conjunctival wound to the corneo-sclerotic limbus and then carries the scissors half around the corneal margin, detaching the conjunctiva, with the subconjunctival tissue, after which the two flaps are drawn together over the wound in the sclerotic and over the corresponding segment of the corneal surface, with two or three fine stitches. He then applies a cotton pad, held in place with a wide gauze bandage, but without compression. He changes the pad twice a day on account of the copious serous, non-infective secretion. His clinical experience proves that this suture is sufficient to prevent infection and that it is an effective defense against prolapsus of the vitreum and choroidea. Experiments have shown that the largest wound gap in the sclerotic is completely filled.

with granulations in six days. The sutures will certainly hold that length of time if they are taken deep enough in the sub-conjunctival tissues, and in the episclerotic, with extensive lesions. He added that every case he now cures so simply and easily without either primary or secondary infection, is haunted for him by the ghosts of the eyes he has lost in former years with expectant treatment, by primary or secondary infection, staphylocoma or cicatricial shriveling. If the lens is injured, or it is found difficult or impossible to replace it without loss of vitreous humor, he performs iridectomy, to allow the lens more space. The suture in the conjunctiva does not tear out; with cocaine it is painless, and it is applicable to the most extensive lesions. He related a typical case thus treated: a workman hit in the eye by a sharp chisel falling from a height, as he was looking up. It cut the eyeball from the upper edge of the cornea to the inferior conjunctival fold, slitting also the iris and lower eyelid, the lens escaping through the long gaping wound. He sutured the conjunctiva alone, as above described, over the wound to the center of the cornea. The wound healed in ten days and now, a year later, the functions of the eye are perfect, counting fingers at six meters, with a restricted field.

AXENFELD explained the fact that the newly-born can not shed tears until about the seventh week, due to the unfinished condition of the central nerve tracts, not only the cortical—necessary in psychic weeping—but also the reflex tracks. The lachrymal glands are comparatively completely developed.

SUGRIST called attention to the

DANGER OF BLINDNESS FROM LIGATION OF THE CAROTIS COMMUNIS OR INTERNA,

describing a couple of observations in which the corresponding eye became atrophied and blind after the carotis communis and interna had been ligated to arrest hemorrhage, during the extirpation of a carcinoma of the tongue in one case. In the other, the carotis externa and interna had been ligated in a young man on account of exophthalmus pulsans traumaticus. Embolism of the central artery followed in both, and the necropsy of the first case showed a thrombus in the arteria ophthalmica, and an obstructing embolus in the arteria centralis retinae.

UHTHOFF reported some cases of "Visual Hallucinations from Affections of the Eyes" a few limited to one side.

SILEX of Berlin stated that the "Central Innervation of the Muscles of the Eye" is derived from hitzig center, part of the facialis center. It controls the voluntary movements of the eye, at least of the abducens and obliquus superior. Stimulation of this center in a case of unilateral traumatic nystagmus produced movements in the eye of the opposite side.

ABELSDORFF stated that Malays, Mongolians and negroes examined were remarkably free from astigmatism of the cornea, compared to civilized races; when found it was very slight.

GROENOUW judges from a study of forty cases of ophthalmia neonatorum that the clinical picture is not an absolute guide to the bacterial agent of the affection. Gonococci were found in the conjunctiva in some cases, after the secretion had ceased. The pneumococcus was found in a number of cases. It indicated a benign course of the affection.

RAHLMANN recommended the mucous membrane of the lips for "Marginal Plastic Operations," as owing to its resemblance to the conjunctiva, it is especially adapted to heal in its new situation without delay or alteration of structure.

SATTLER described his simplified operative treatment of myopia. He extracts the lens in cases of extreme myopia without preceding dissection, first incising the cornea, 6 to 8 mm., lifting the anterior capsule with a hook and taking out with the Daviel spoon as much of the lens substance as possible. The final dissection is not hastened. Thirty cases thus treated were distinguished by the rapid recovery and slight post-operative astigmatism.

On account of the International Congress of Ophthalmology to be held next year, at Utrecht, the German Congress will not convene again until 1900.

French Congress of Alienists and Neurologists.

Held at Angers in August.

The chief subject under discussion at this meeting was

POST OPERATIVE MENTAL DISTURBANCES.

As already noted in our editorial (page 798), RAYNEAU stated in his address that all the various pathologic mental conditions have been encountered in the psychoses consecutive to operations, and that there is no special type. A hereditary or acquired predisposition is generally admitted (except in certain operations on the skull and thyroidectomy), the traumatism is only the last drop that makes the vessels overflow. Some

patients even request an operation, simulating a disease if necessary, because they are already mentally affected. In a number of cases related, the psychosis following the operation was found to have been preceded by more or less transient mental disturbances in the past when thoroughly investigated. Statistics, he stated, show an average of one psychosis to fifty surgical interventions. Out of 68 cases on record, 5 have become chronic; 13 lasted a month or two; 33 nearly a year; in six duration is unknown.

RÉGIS considers the confusional the usual type. Delirium immediately following the anesthesia is due to chloroform intoxication supplementing the nervous shock. Delirium appearing from the second to the tenth day is due to septicemia, to accidental infection or to auto-intoxication caused by the interference with the nutritive processes by the nervous shock.

PICQUÉ observed that, in his experience, mental disturbances very rarely follow operations on the uterus and adnexæ, while they are frequent after vaginal or perineal operations on predisposed nervous subjects. In these cases the lesions are accompanied by subjective symptoms, and the patient is already under the dominion of a fixed idea when she comes to the surgeon.

TERRIEN described three typical cases of post-operative hysterical paralysis and mental disturbances, cured by suggestion supplemented by the thermocautery and electricity, using a different style of battery on account of the "suggestion," if the first proved ineffectual. He also urged the necessity of special training in mental pathology in the medical colleges, to enable the general practitioner, particularly in the country, to handle the cases of insanity he may meet. Out of nineteen delirious cases in the last ten years, he has only sent five to asylums. He treats the rest at home, where they are better off, while it relieves the crowded asylums.

RÉGIS attributes the unsettled condition of the question of post-operative psychoses to the fact that they are not seen by alienists until fully established.

MONTPROFIT reported five in the course of 3000 operations.

GRANDJUX observed that they are not encountered among soldiers, as selection eliminates the predisposed, and that the rôle of the traumatism is insignificant, mentioning as an instance in proof that not a single psychosis occurred among the 931 soldiers wounded at Froeschwiller and exposed to innumerable privations.

LADAME called attention to the dangers of morbid suggestion, relating the case of a lad of 10, trephined for some traumatism, but recovering perfectly and in excellent health for years, when he met the surgeon again. The latter expressing his surprise and gratification at his patient's good health, happened to describe the mental disturbances that might have resulted from the intervention. A psychosis promptly followed.

DOLÉRIIS has recently reported three cases of mental disturbances consecutive to a benign gynecologic operation. One patient imagined that the entire external genital region had been removed, unconvinced, except for the moment, by inspection and palpation. Another returned again and again for the surgeon to assure her that her anus had not been closed; another was convinced that the perineum was unbroken by any orifices. The cases were otherwise in perfect health. One recovered after several months of hydrotherapy, exercise and hypodermic injections of glycerophosphate. He observes that if we could divine the secret morbidity that leads women to ascribe all their troubles and ailments to the hypogastrium, many interesting problems in gynecology might be solved.

The second address, on

TRANSIENT DELIRIUM FROM A MEDICOLEGAL POINT OF VIEW, classified this delirium according to its etiology as: 1, melancholia mania; 2, emotive; 3, brief, irresistible impulses; 4, puerperal and menstrual; 5, a neurosis—epilepsy, hysteria, neurasthenia or ophthalmic migraine; 6, intoxication—alcohol, etc.; 7, affection of the nerve-centers and nerves; 8, diseases other than nervous; 9, disturbances in sleep—state intermediate between sleeping and waking; somnambulism; prolonged dreams; 10, momentary aberration. The French school do not admit the idiopathic, transient insanity accepted by the Germans—Krafft-Ebing, Kroepfling, Swarzen and Wendel—who believe that a form of transient mental alienation may occur in perfectly normal individuals free from any hereditary predisposition and any pathologic anterior conditions, such as epilepsy, alcoholic intoxication, etc.

MOTET has never encountered such a case in all his long experience. It has often been difficult to discover the determining cause of an apparently insane act, but he has always discovered it at last; in some cases it was epilepsy, in others intermittent fevers, etc. There are crimes of passion which resemble the acts of insanity but must not be confounded with them.

CHARPENTIER observed that besides the transient delirium depending upon known causes, there are others whose cause is unknown, but that it does not follow that they have no cause, adding that Motet's experience reminded him of the judge who remarked that during his entire professional career he had never seen a single example of a judicial error. He claims that a crime committed during an attack of transient delirium, whatever may be the known or unknown cause of the delirium, does not come under the jurisdiction of the laws which assume criminal responsibility.

LALANNE called attention to the transient delirium that may proceed from a transient congested condition of the brain, citing an instructive example.

In concluding a discussion of a case of myelitis and flaccid paraplegia, PIERRET explained the fact that the inferior members have convulsive movements when the neurons controlling their movements are separated from the cortical centers, by the assumption that there is a constant tendency in the entire nervous system to the realization of an equilibrium of latent dynamism; the medullary segment, isolated, is forced rapidly to a condition of exaggerated potentiality, whence the discharges, spasmodic in character. But healthy cells are indispensable to the phenomenon. If the neurons are diseased, if the nerve tubes are altered or if the muscles are no longer normal, the convulsion does not occur. The connection between general paralysis and mental degeneracy was noted by Joffroy, although Magnan considers the latter secondary, and that general paralysis depends more upon the "way one lives" than any other cerebral affection. It is rare among imbeciles, but ten cases are on record, confirmed by the necropsy.

An interesting study of "Arteritis in the Pathology of the Nervous System" was presented by COULON, who restricts its rôle almost exclusively to the secondary lesions it occasions: aneurysmal dilatation and the phenomena, generally local, which it determines; diminished size from the thickening of the arterial walls, which may lead to ischemia; obliteration by embolism or thrombosis which causes softening in spots, and finally the rupture of arteries with all their concomitant symptoms.

The next Congress will meet at Marseilles in April, 1899; the subjects selected for discussion are: "Secondary Systematic Delirium;" "Polyneuritic Psychoses," and "The Unrecognized and Condemned Insane."

PRACTICAL NOTES.

Lipoma of the Foot.—Kleinknecht reports one case in the thirty-two observations on record, in which the lipoma was mistaken for a sarcoma and the foot unnecessarily amputated, but usually the diagnosis is unmistakable. The treatment is the complete ablation of the tumor, which can be accomplished without a plantar scar, through a dorsal incision, if the metatarsal bones are spread wide enough apart.—*Beiträge z. Klin. Chir.*, xx, 2; *Semaine Méd.*

Test Paper for Iodin in Saliva and Urine.—A sheet of filtering paper is dipped in a 5 per cent. solution of cooked starch. When dry it is marked off into 5 cm. squares, and in each square two or three drops of a 5 per cent. solution of ammonium sulphate are dropped and dried, sheltered from intense light. The ammonium sulphate loses its power in two or three weeks; it is best applied fresh. To test the intestinal absorption let the subject swallow a glutoid capsule containing a little iodine. Then mark the hour on the first square, and number the rest. The subject then deposits some saliva on the corresponding square every hour, and an exact record of the intestinal absorption is obtained, as the paper turns blue in contact with any traces of iodine.—*Semaine Méd.*, September 7.

Iodin for Acute Gastro-Enteritis.—Iodin has been recently recommended by Grosch (*JOURNAL*, page 302), and P. A. Bizine of Russia also proclaims its remarkable efficacy in acute gastro-enteritis. He administers to children with diarrhea or cholera infantum, a teaspoonful every hour, of the following: Emulsion of castor oil, 180 grams; essence of peppermint, 3 drops; essence of cloves, 5 drops; tincture of iodine, 10 drops; chloroform, 2 drops. The bottle must be kept on ice to prevent decomposition. If a slight diarrhea persists after the contents

have been taken, he gives two powders a day, in water, as follows: Iodized starch, 75 centigrams. For six powders. The proportions are increased for an adult: Emulsion of castor oil, 180 grams; essence of peppermint, 5 drops; essence of cloves, 7 drops; tincture of iodine, 15 drops; chloroform, 5 drops. A tablespoonful every hour. When the principal morbid symptoms have subsided—usually in twenty-four hours—he gives 60 centigrams of iodized starch every four hours. In cases of cholera nostras he administers the following at one dose: Castor oil, 20 grams; essence of peppermint, 3 drops; tincture of iodine, 10 drops; chloroform, 2 drops; supplementing the medicine with an injection of tepid water if the purgative effect is not prompt; hydrochloric lemonade for beverage; mustard plasters on the joints to relieve cramps, and hot water bottles to keep the patient warm, completing the treatment with the iodized starch as above.—*Semaine Méd.*, September 7.

Aseptic Catheterism.—Dr. C. Mansell Moullin has given an interesting and practical paper to the London *Lancet* of September 10, on the subject of urinary fever at the beginning of catheter life and of aseptic catheterism. He says of aseptic catheterism that it is one of the problems of modern surgery. He has been called upon to deal with it especially in cases of which there has been a large amount of residual urine. The following are the essential features of Dr. Moullin's very successful measures: All instruments must be disinfected first by boiling. The hands, the prepuce and the skin of the penis must be cleansed as thoroughly with soap and water as if a surgical operation were going to be performed, and then sponged over with a solution of corrosive sublimate, 1-5000. The glands of the meatus require especial care. An irrigating catheter is then introduced into the fossa navicularis, and this part of the canal is thoroughly washed out from behind with boric acid. Then the catheter is pushed on into the deep part and the process repeated. Finally, Melchior's double catheter is introduced and the urine drawn off. In this way it is possible to obtain a very high degree of asepticity. When catheters have to be passed at frequent intervals, the disinfection of the hands, penis and front part of the urethra will manifestly be never carried out each time. At the outside it will only be done night and morning, and often one has to be content if it is done thoroughly once a day. But catheters can be kept clean. Those made for me, as smooth and polished on the inner surface as they are on the outer, will stand boiling day after day (if they are kept straight while in the boiling water and drained afterward) and continued immersion in boric acid without injury. Each patient is provided with two glass catheter cases. One of these is filled with boric acid lotion for instruments that have been used; the other, provided with a rubber cork as well as a metal cap, is dry and aseptic. These cases are so arranged that they can be hung up in the patient's wardrobe, out of sight and out of dust. No catheter is used more than once a day. As soon as a catheter is withdrawn from the urethra it is dropped into the case filled with boric acid solution and left there. Once a day all the catheters are taken out, boiled for five minutes, and placed in the dry case until required. The plan is not perfect and I have no doubt is capable of improvement, but it works fairly well with an intelligent private patient who can be made to understand the necessity of observing strict precautions. Unfortunately they are not all intelligent, and in the case of a hospital out-patient such a complicated plan is out of the question. The best that can be done is to start such people as well as possible and hope that by degrees they will acquire a certain amount of immunity against the toxins they are bound to absorb. There is a little evidence to show that a certain degree of immunity may be acquired, but I am very skeptical as to its ever being sufficient in the face of a virulent growth, or when the bacterium coli is assisted by other germs such as the streptococcus and the proteus.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, OCTOBER 15, 1898.

STEREOCHEMISTRY AND VITALISM.

The sensational presidential address of Sir WILLIAM CROOKES at the late meeting of the British Association for the Advancement of Science, beginning with a prophecy of the failure of the world's wheat supply and ending with what seemed at least an endorsement of or expression of faith in the theories of telepathy, was, it appears, not the only utterance of scientific facts or possibilities that is especially noteworthy and exciting. The address of Professor JAPP of Aberdeen, in the Chemical Section, appears also to have at least stirred up comments, and forms the subject of a rather bilious editorial in the *London Saturday Review*. His subject, which has its interest to medical as well as to scientific readers and to cultured laymen, was the proof of a distinct vital agency or energy as afforded by the facts of stereochemistry, or by the optical effects of the molecular composition of substances. Many years ago PASTEUR, whose high standing as a chemist has been so eclipsed by his biologic researches that it has been forgotten, expressed the opinion that the molecular asymmetry of natural organic products was probably the characteristic that best established a natural line of demarcation between the chemistry of living and that of non-living matter. This molecular asymmetry is shown by the power these products have of turning the ray of polarized light to the left or right—a property which, according to Professor JAPP, is not shared by any inorganic substance in its natural states. So far as known, PASTEUR, it seems, never changed his views on this subject, and, according to the Scotch professor, modern chemistry has

developed nothing to invalidate them. He, therefore, offers as a contribution to the literature of the vitalistic controversy a very elaborate discussion of the whole subject of the asymmetric arrangement of the atoms in the molecules of organic products, reviewing what investigations have been made, and coming to the conclusion that we have in this twisted or one-sided atomic disposition a distinguishing characteristic of natural compounds of vital origin. He finds as a result of all the data obtainable, that when the asymmetrically arranged atoms of which the inorganic world is composed are acted upon by symmetric forces in such a way as to produce asymmetric compounds, the constant result is either to form pairs of enantiomorphous molecules (those in which the asymmetry of one counteracts that of the other), or similar pairs of atomic groups within the molecule, and in either case the result is the same—mutual compensation and optic inactivity. The same, he holds, would be the case with symmetric matter interacting under the influence of asymmetric forces—supposing such to exist—provided that the latter are left to produce their effect unguided, and under conditions of pure chance. His own conclusion from it all, stated in his own words, is as follows: "The production of single asymmetric compounds or their isolation from the mixture of their enantiomorphs is, as PASTEUR firmly held, the prerogative of life. Only the living organism, with its asymmetric tissues, or the asymmetric products of the living organism, or the living intelligence with its conception of asymmetry, can produce this result. Only asymmetry can beget asymmetry."

It will be seen that the last of these three conditions of the formation of asymmetric compounds leaves a considerable margin of possibilities in chemic manipulation, and affords room for the possible synthetic production of any amount of organic substances. It would seem even to hint the possibility of a new origination of vitality: life producing life, not by direct propagation, but through the action of intelligence and intelligently directed manipulation of non-living matter. Admitting this would be, in some respects at least, a long step toward the position of the anti-vitalists. There is also some assumption, perhaps, in the statement that under no conditions of pure chance could an asymmetric compound be produced. As an argument for vitalism in its common acceptation, therefore, Professor JAPP's address is not absolutely complete or convincing, while it is an interesting contribution and shows up very prominently one of the distinctions that exist in nature between living and non-living matter and their respective products.

The anti-vitalists, however, are as dogmatic as, if not more so than, their opponents, and the temper of the editorial writer in the *Saturday Review* is an evidence of this. There is no reason why we should

accept his assumptions any more than those of anybody else; we need not admit it as beyond possible doubt that the disproof of spontaneous generation will be overthrown, or that all vital processes will be demonstrated to be mere chemic or physical ones. It is more scientific to wait the absolute proof of such views before accepting them as correct, and in the meantime we have many puzzling problems to solve before we can legitimately adopt them. If admitting that vital phenomena are yet in their essence beyond our comprehension and as yet unaccounted for by the known laws of matter, is accepting the theory of vitalism, then a vitalistic point of view is really the only scientific one to adopt.

RENAL HEMATURIA.

Hematuria may occur in disease of any portion of the genito-urinary tract. It is usually considered that the farther removed the lesion from the meatus, the more intimately mixed the blood and urine, When renal affections are causative, then we meet with the best type of an intimately mixed fluid of blood and urine. While local conditions of the kidneys, as stone, new growth, parasites, are responsible for many cases of what might be called renal hematuria, general pathologic systemic conditions must frequently be held to account. Such conditions as the latter occur in the various acute infections, in the anemias, in the hemorrhagic diathesis. Putting aside for the present the consideration of the above causes, there still remains a large number occurring for the most part in chronic rheumatic affections, in gout and in atheroma. This hematuria is explained by MUSSER as due to trauma. We know that in rheumatic disorders, in gout and in the various gastric and nervous complications attending these diseases urinary salts are excreted in excess. The excess of these salts explains the trauma on the grounds of mechanical irritation, and more or less blood appears in the urine. To be sure the hematuria thus resulting is as a rule microscopic, but is none the less a hematuria, and it might be said here the constant drain produced may partly account in not a few instances for the anemic condition observed in these diseases and especially in neurasthenic states. MUSSER, who has studied this question most closely, found in almost three thousand examinations of urine obtained from nearly two thousand patients, hematuria in 364 distinct individuals. "In 250 of the patients with hemorrhage the presence or absence of urinary salts was noted. Of these, in 90 uric acid alone was found; in 49 uric acid and other salts; in 17 oxalates alone; in 19 phosphates alone; in 4 oxalates and phosphates were found. In 71 it was stated there were no salts." He also states that the patients who were reported as without salts in their urine were afflicted with other disorders that readily explained the hematuria. In conclusion one other point established by MUSSER must be noted:

that in all the patients in whom renal stone was diagnosed (and in whom time showed the diagnosis to be correct), blood, though often microscopic, was an almost constant ingredient of the urine in all instances.

OUR PROSPECTS AS A PROFESSION.

It is so easy to prophesy evil, and easier still to believe it. From the days of Jonah and Jeremiah to those of Mother Shipton and the Millerites, men have been fatuously ready to believe the future big with portents of disaster. We appear to be morally certain of only two things: one that the world is, the other that it is soon coming to an end. We can not refuse to admit that the past has been triumphant, and the present fairly satisfactory, but the future! The "signs of the times," whether religious, political or professional, are invariably baleful, and we can not help believing that a little of this pessimism is tingeing the vision of the prophets within our own ranks, in respect to the future outlook of our profession.

Never was the outlook so gloomy, we are told; all the stars in their courses are fighting against us. First of all the profession is overcrowded already to the starvation point, and a flood of hungry graduates is poured into its ranks every spring. Then the dispensary abuse has reached such monstrous proportions that two-thirds of our population get their medical attention for nothing. Next to this is the eye of jealousy, and only charlatans can succeed. Finally—and most fatal of all—we are nobly but mistakenly destroying our own livelihood, sawing off the bough that supports us, by preventing disease so efficiently that ere long there will be none of it left for us to cure.

That there is some truth in every one of these allegations it would be foolish to deny, but that all of them together are competent to bring upon us half of the injurious results so freely prophesied is utterly unproven, and, we think, can be shown to be improbable. First of all, the general statement can be made in regard to all of them, that things are no worse in any of these regards now, than they were fifty or even a hundred years back, with the exception of the hospital and dispensary abuse. This is particularly true of the first count in the indictment. Two generations ago there was exactly the same cry about "overcrowding" that we hear today, and it has turned out just as it did in the celebrated case of MALTHUS. A century ago that renowned economist declared that our population was the root of all evil, and that the slightest increase upon the existing density would mean the ruin of the English race. Since then the population of the island has quadrupled, and instead of its condition having been made worse by the change, it is far better than ever before—less crime, less pauperism, longer lives, lower death-rate; more meat, sugar, fruit, etc., eaten per capita than ever before in history; more money in the small savings-banks; higher wages,

lower taxes, and our professional MALTHUSES have been equally stultified. So far from being ground down by competition into poverty and discredit, never was the doctor better paid, better equipped, better dressed and housed, and best of all, more respected and more trusted than he is today. If any one doubts the latter let him take one glance at the literature of the past century and a half and see what figure the doctor cuts in it. Previous to GEORGE ELLIOT'S "Lydgate" there is scarcely a medical man mentioned in English fiction or drama without a sneer or a slur; "the doctor" is invariably a pompous fool, a shrewd old ignoramus, or a whining cheat. Look at the fawning cads and impostors of SMOLLET, FIELDING, and MOLIERE, of DICKENS and THACKERAY, and contrast them with BALZAC'S medical hero, and with that highest compliment and noblest tribute ever paid our profession—"Maclure of Drumtochty," and whichever way we turn we find the same sort of contrast between now and then; in fact, it can be abundantly proven that the marked increase of the already "overcrowded" state of the profession in the past seventy years has been attended by no deterioration, but on the contrary, by a great improvement in our condition and status.

And the same contrast can be seen between different countries at the present day. In "density" of doctors, the United States heads the list with one to every 600 of her population; then comes England with about one to 1800, then Germany with one to 4000, and finally, Russia with one to 7000, and Turkey with one to 9000. If "crowding" is what we are most to dread, the position of the Turkish doctor ought to be the best in Europe, but as a matter of fact, it is the worst. And our Russian *confrère* comes next, both being wretchedly paid, and not infrequently mobbed or murdered by the populace during an epidemic. In fact, the paradox is absolutely true that the world over, the smaller the doctor's clientèle the better he is respected. Doctors are an index to civilization, and the more of them there are, the higher in the scale the country is, and the better off in every way. There may possibly be a relative proportion of doctors so high as to be injurious both to the community and to each other, but it certainly never has yet been reached in actual experience, and we can not even say how high it would have to be. Certain it is that six hundred intelligent, soap-using, civilized Anglo-Saxons profitably occupy more of a physician's time and thought than six thousand filthy Russian *Moujiks* or nine thousand Turkish peasants, or four thousand German *Bauern*.

And it is quite possible that the physician of the future, who has more than three hundred souls in the aggregate of his family will find himself overcrowded. Judging alone by the hard facts of experience hitherto, "overcrowding" of the profession is as pure a bug-bear as "overpopulation" *a la* MALTHUS.

Next, as to the dispensary abuse and loss of legiti-

mate fees caused thereby: That this is an evil and a serious wrong alike to the profession and the laity is unquestionable, but that it has so far done any serious injury to the profession as a whole we utterly deny. In the first place, from the medical point of view, its injustice lies, not in robbing the profession of its financial dues, but in unequally and unfairly distributing those dues in the interests of the more "pushing" and dramatic individuals, at the expense of the more modest and less distinguished. There can be no question that it "pays" well on the whole and in the long run, or there would not be such an eager rush for positions of any sort upon its staff; and as the practice of medicine is supporting nearly twice as many physicians as ever before, it can hardly be fairly said that any considerable proportion of the profession is *absolutely* injured thereby, although it may be *relatively*. In spite of many striking and disgraceful exceptions, the vast majority of those who attend our dispensaries are so much "clear gain," so to speak, to the profession, as they would otherwise never have employed *any* doctor, except the county or parish physician, either from ignorance, prejudice or unwillingness to pay the fee, and the formation of the "doctor habit" in these large classes is worth, financially, ten times as much to the profession as any possible loss of fees from the small percentage of really probable "pay patients" among them. This consideration is one which, we think, is hardly given its full value in discussing "hospitalism."

Even though 60 per cent. of the population of New York did come upon the lists of her free dispensaries in 1897, 90 per cent. of these would never have consulted a doctor, at all—one-third, for fear of the fee, depending upon household remedies, patent medicines or counter prescriptions; one-third, from sheer inertia or ignorant distrust, and the balance from absolute inability to even think of paying for anything not positively necessary to the continuance of their lives.

The first class object to calling a doctor, not so much from stinginess as from a sort of principle of economy—a feeling that it would be an extravagance, like butter with meat, or real cream in tea—and the only way to get them out of the notion is to give them practical experience of the saving of time, suffering and bottles of medicine, which comes from consulting a competent man at the start as to what medicine to take, instead of blindly blundering through three, six, or even twelve bottles of advertised cure-alls.

The second class is much larger than we can easily believe in this nineteenth century. The old, ignorant distrust, and even dread of doctors, has by no means died out of our communities. We are often painfully surprised to find the strong undercurrent of suspicion of the motives of "you doctor fellers,"

which sweeps through the minds of all the less intelligent classes. We are gravely suspected of "experimenting" upon our patients, of "giving medicine to keep one sick," of rejoicing in the spread of epidemics, and even of such insanities as hastening the end of hospital patients to get their bodies for dissection, or of performing gruesome operations for the purpose of securing certain portions of the viscera to use in making medicine. The celebrated "White-chapel murders" were firmly believed, in the locality itself, to be the work of a doctor who was determined to have fresh, human kidneys for some such purpose, and this precious theory was actually exploited in some of the daily papers, whose sapient reporters declared that the shocking mutilations of the victims was evidently the work of a "surgical hand."

In short, both these large classes of the community have to be educated up to using the doctor, as they have to take a weekly bath, and their reluctance is due to something the same queer mixture of economy and distrust in both cases.

With all its abuses, the free dispensary has done and is doing us yeoman service with these large masses of the laity, teaching them by actual experience that the doctor is a necessity instead of a luxury, a good investment instead of an extravagance, a true and valiant friend instead of an enemy and a heartless *exploiteur*.

Last of all, what of the danger that by our vigorous and successful championship of sanitary reforms—a championship whose sincerity and devotedness not even our enemies have ventured to impeach—we are actually closing our own field of labor, destroying our own hopes of a livelihood? It need hardly be said that we are not raising this question with any reference to the advisability of continuing such a course of conduct. Any such suggestion would be even more futile, thank God, than contemptible, for we are unalterably pledged to mortal and relentless warfare against disease and pain in every form, and by every weapon suggested alike by our ancestry and our interest as physicians and as men. And even should such a course ultimately result in the complete extinction of our craft from lack of occupation, we would be the first to hail the event as a blessing to humanity and seek other less saddening and certainly not more arduous occupations.

The question simply is: Do the sacrifice and laborious services of the physician in behalf of the public health result in impairing his own chances of earning an honorable and adequate livelihood? If we put the query in the past tense it answers itself at once. As everyone at all familiar with vital statistics knows, the number of physicians supported by any country and the adequacy of their support is in exactly inverse ratio to the mortality and morbidity rate, from Turkey with its one physician to 9000 and its death-rate of 70 per 1000 per annum; Russia with 1 in 7000 and a

death-rate at 50 per annum, up to England with her 1 to 2000 and death-rate of 16, and the United States with 1 to 600 and a death-rate in some cities as low as 9. In fact, paradoxical as the statement may appear, the countries which have the most sickness support fewest doctors, and vice versa, those which have most doctors have least sickness.

Nowhere have sanitary measures diminished the demand for physicians one iota, but rather, the higher the standard of health has risen, the keener the request has become for that most efficient and only agent for its attainment—the family physician. Instead of being in danger of extinction he is barely at the threshold of his full usefulness to the human race. A very large proportion of even our most highly civilized communities avail themselves but little of the services of the doctor save in mortal or serious illness. The realm of what might be termed "personal preventive medicine" is only just opening up to us. Get rid of the old and irrational method of summoning us only in disease and too often long after hopeless mischief is done, and let us be engaged by annual compact to keep our families in health, instead of simply curing them more or less imperfectly when ill, and we could profitably devote our entire time to the care of less than half the clientèle which at present we are attempting to care for, and the benefit to the race would be enormous.

Contrary to popular impression and legend, the race is improving physically every century, and men's standards of health are rising just as their standards of living and of morals are. The more efficient our sanitary precautions and the wider the spread of hygienic knowledge among the people, the higher and more exacting does this standard become. The intelligent Englishman and American of today would be no more satisfied with the standards of health, comfort and bodily efficiency of the citizen of the Middle Ages than he would with the latter's rancid undergarments, stinking floors, unglazed windows and filthy streets. What his ancestor called a trifling running of the nose or huskiness of the voice, and expected to put up with his life long, he dubs "catarrh," and insists on having it cured. A deformed arm or leg, instead of being endured as a dispensation of Providence, must be cured or else amputated and a rubber one substituted; his sight must be perfect and his head free from aches, or lenses are at once demanded, and so on all along the line. It is not that disease has increased—far from it—but our toleration of it and of discomfort or inefficiency in any form has greatly diminished.

So that while, three generations ago, there was simply one doctor in the town or even county—to be called, with the priest, only in cases of mortal urgency—there are now ten family advisers and a dozen specialists of every sort needed to meet the higher demands of the community for "Health, more

Health." And when we further remember the numerous official avenues of usefulness which sanitary progress has opened up to physicians—such as that of health officer, the board of health, the sanitary inspector of factories, of mines, of schools, the railroad surgeon, the insurance examiner, the food inspector and a score of others—we can readily see not only why the diminution of endemic disease has not limited the field of activity of our profession in any way, but on the contrary, immensely widened it, but also that there is no prospect of its doing so for generations to come. Half of our present membership could be profitably employed in studying and supervising our schools and systems of education alone, and in less than a generation more the school physician will be considered as necessary as the teacher or superintendent.

In fine, our ideals already rise faster than our attainments, in hygiene as elsewhere, and there will ever be a broad field for honest, conscientious workers who are willing to assist in their realizations. Our prospects as a profession were never brighter and more hopeful than they are today.

MEDICAL SIGNERS OF THE DECLARATION OF INDEPENDENCE.

A recent article in a magazine has claimed that the vast majority of the cultured people of what are now the United States were opposed to the movement for independence from Great Britain. It is difficult to see on what data this claim is based, since a fair estimate of the position of people of culture can be formed from their number in the Congress which drew up the Declaration of Independence. A decided majority of the signers not only had what would now be a high school education, including Greek and Latin, but several were prominent in the science and literature of the time. Many graduates of universities were elected to and took part in the formation of the Declaration of Independence. Five were physicians, not only prominent in public affairs but in science and general literature as well. Drs. JOSIAH BARTLETT, MATTHEW THORNTON, OLIVER WOLCOTT, BENJAMIN RUSH, and LYMAN HALL, were five physicians who signed the Declaration. Dr. JOSIAH BARTLETT was a descendant of an English family, whose founder had entered England with William the Conqueror and had been ennobled by him. The founder of the American family settled in Massachusetts in the 17th century. Dr. JOSIAH BARTLETT was born in Amesbury, in November, 1729. Albeit, not a college-bred man, he became an excellent Greek and Latin scholar. The literature of these languages remained a favorite study until the close of his career. At sixteen he began the study of medicine, as an apprentice of Dr. ORDWAY, a distant relative of the family. This apprentice system prevailed in New England until the beginning of the 19th century. After the completion of

his medical studies he settled at Kingston, N. H., as a practitioner. He gained a reputation even beyond the bounds of the State for his success in the treatment of malignant diphtheria, then called "black canker." The treatment he adopted in this disease was practically that of the present day, other than the orrhoterapy. He employed local anesthetics, chiefly essential oils, and mecurials. The patient at the same time was supported by nourishment in fluid form and stimulants. As the BARTLETTS had imbibed the republican principles of the English Puritans, who founded the British commonwealth, it was but natural that one of their scions should take an early stand for representative government. The standing of Dr. BARTLETT in the community is shown in his appointment as a civil magistrate, and as a colonel of a regiment of provincial militia, by the royalist governor, BENNING WENTWORTH. In 1765, Dr. BARTLETT was elected a member of the provincial legislature. He was foremost in the opposition to the corrupt, tyrannic system pursued by Governor WENTWORTH. In violation of the principles on which New Hampshire had been settled, and in violation of the religious rights of the settlers (the vast majority of whom were Puritans), Governor WENTWORTH attempted to establish a State church. In the endowment of this he reserved lands belonging to the public. Foremost in opposition to such procedures was Dr. BARTLETT, who, in 1774, led the movement to choose delegates for the Continental Congress, which met in September 1774. Dr. BARTLETT was chosen a delegate thereto, but was unable to attend, on account of his house having been destroyed by fire. Because of his movement against British tyranny, Dr. BARTLETT was dismissed from his military command and his commission as a magistrate annulled. In August, 1775, he was chosen a member of the Continental Congress, and was foremost in its deliberations. In 1776, being reelected, he became a member of the committee which devised the articles of confederation, under which the United States were ruled until the adoption of the Federal constitution, in 1788. After the Declaration of Independence had been discussed and was laid before the Congress for adoption, Dr. BARTLETT was the first to vote for, and the second to sign it. JOHN HANCOCK, being president of the Congress, first signed the document. In 1777 he was reelected to congress, but was unable to attend, because of ill health. In 1779 he was elected chief justice of the court of common pleas, and was also made mustermaster of the troops then being mustered in for the continental service. In 1788 he became a judge of the state court. In 1788 he was promoted to the office of chief justice of the supreme court. He was an influential advocate of the federal constitution in the convention of New Hampshire. In 1788, when that went into operation, he was elected a senator in the first Congress under it, but declined. In 1790 he was chosen president of New

Hampshire. In 1793 he was elected first governor of the State. He remained in office one year and then resigned. Dr. BARTLETT's interest in public affairs did not conflict with his interest in science. He was prominent among the physicians who early began the movement which was to result in a pharmacopeia for the United States. He took a wide interest in the literature of the time and was familiar with the leading Greek, Latin and English classics.

No less prominent in New Hampshire was Dr. MATTHEW THORNTON. He was born in the North of Ireland in 1744 but came to the United States when three years old, where he was given an academic education. He was apprenticed after this to Dr. GROUT of Leicester, N. H. On the completion of his apprenticeship he settled at Londonderry, N. H. Here he gained an extensive practice which was only interrupted by an appointment as surgeon during the French and Indian War. In 1775, when the royal government was subverted in New Hampshire, Dr. MATTHEW THORNTON was appointed president of the State. Like Dr. BARTLETT he was a judge and a colonel in the Colonial army. On the abdication of Governor WENTWORTH, Dr. THORNTON proceeded to organize the State in its relation to the coming war and the Continental Congress. He was elected a delegate to the Continental Congress. Although taking his seat in November, 1776, he was permitted to sign the Declaration of Independence adopted in the previous July. He lived to be 89 years old. After he had passed his eightieth year he was attacked by pertussis, which finally developed asthma, from which he suffered for several years.

Dr. OLIVER WOLCOTT (to whom the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION has previously devoted some little attention) was the descendant of a Puritan family which emigrated to New England in 1630. He was born Nov. 26, 1726, and was graduated at Yale College in 1741. When he left Yale he entered the army for the French and Indian War. Peace being declared, he returned to Connecticut and began the study of medicine with his brother, Dr. ALEXANDER WOLCOTT. Like many of the medical men of the time he was appointed a judge. He served in every capacity from a captain to a major-general. He was elected to the Continental Congress in 1776, signed the Declaration of Independence, and then returned to Connecticut, to take command of the militia destined for the defense in New York. He was elected Lieutenant-Governor of Connecticut in 1786. As the JOURNAL has already pointed out, he was one of the foremost financiers of his time. His ability in this particular was recognized by both HAMILTON and JEFFERSON; representatives of opposite financial schools which still exist.

Dr. BENJAMIN RUSH, the foremost American clinician of his time in every department of medicine, was the great-grandson of an officer of the British com-

monwealth. Dr. RUSH was born Dec. 24, 1745, at Berbery Pa. His widowed mother gave him an excellent English education and then placed him under her sister's husband, who qualified him for admission to college. He was graduated at Princeton in 1766. He subsequently began the study of medicine under Dr. REDMAN. After some time spent in this study he went abroad, spending two years in the British medical schools and one year in those of Paris. He was graduated as doctor in medicine by the University of Edinburgh. Dr. RUSH early became a prominent practitioner. He was associated during the first year of his practice with Drs. SHIPPEN, MORGAN, BOND and KUHN, then the leading professors in the medical college of Philadelphia. He seems to have had all the trials of the practitioner. He believed in the beneficial effects of running in debt, for in a letter to a young man about to study medicine he seriously advises him to run in debt, because he will thus be compelled to be more steady.

During the 1793 yellow fever epidemic RUSH showed the highest heroism possible to a physician. Philadelphia had become panic-stricken because of the widespread nature of the epidemic, vividly depicted by BROCKDEN BROWN in "Arthur Mervyn." The city was badly organized for sanitation. The public institutions were in the hands of a thievish crew compared with whom TWEED was an enlightened philanthropist. Under these circumstances it is hardly surprising that some medical men, despairing of doing anything to check the epidemic, should have fled to places of safety. Dr. RUSH, when many of the resident physicians had hastened from the scene of danger and left the inhabitants to seek for medical aid where they might, called some of his brethren and pupils together to consider the question of their duty in that urgent emergency. RUSH eloquently remarked:

When gentlemen entered into the medical profession they voluntarily assumed responsibilities and duties to society, which depended on them for aid in their necessities, that they were obliged conscientiously to perform. The present was a case in which the physicians of the city were bound in duty to remain at their posts, however dangerous they might apprehend it to be. The community were already justly alarmed. If it saw physicians fleeing from the danger, it would enhance their fears. Fear was one powerful predisposing cause of taking disease. In this instance it would produce the most baneful effects upon the sick by depressing their spirits and banishing the hope of recovery. It would most probably prove indirectly the cause of many deaths in that way, as well as by depriving the sick of the aid which they need, if the physicians sought their own safety by flying from the field. As for myself, I am determined to remain and render all the aid I can. I may fall a victim to the epidemic and so may you, gentlemen. But I prefer, since I am placed here by Divine Providence, to fall in performing my duty, if such must be the consequence of staying on the ground, rather than to secure my life by fleeing from

the post of duty allotted in the providence of God. I will remain if I remain alone.

He did remain in the city together with some of his noble-spirited pupils and a few medical brethren, and all labored uninterruptedly night and day for the benefit of his suffering and distressed fellow-citizens until he was attacked by the fever. Even then he did not remit in his labors, but according to his remaining strength, he prescribed for those gathered around his bed for counsel and advice. Some of his pupils fell victims to the disease while laboring to preserve the lives of others.

The first professorship held by Dr. RUSH was that of chemistry in the College of Philadelphia in 1769. In 1789 he became professor of the theory and practice of medicine in the same college. As a teacher of medicine (Dwight's "Lives of the Signers") his reputation was deservedly high and widely extended. He had many private pupils from the commencement of his practice. His public lectures as a professor in several chairs which he filled were the most popular of any delivered at that period in this country. His fame drew medical students to the school in Philadelphia from every part of the United States and some foreign countries. In the nine last years his private pupils amounted to fifty. In 1812 the class which attended his lectures numbered four hundred and thirty. During his professional life he gave instruction to more than two thousand pupils. From the ancestry of Dr. RUSH he could not be other than a Republican. He was prominent among those who roused the country by their writings. Albeit a man of a judicial mind, he was no fanatical hero-worshipper, since he did not spare even Washington in his criticisms. He was not an original member of Congress during the debates on independence. He, however, succeeded the men who retired from that Congress on their refusal to sign the Declaration. Although not elected until after July 4 he was permitted to sign the Declaration. In 1777 he was appointed by Congress, physician-general of the military hospitals for the Middle States. His criticisms on the generals of the army and the contractors were during this period as acrimonious as any that have appeared since. In company with Dr. TILTON of Delaware he took an active part in remodeling the commissary service of the militia, which under the British colonial system was as rotten as that of the British army during the Crimean war. It was in consequence of these efforts that the first pharmacopeia was published at Philadelphia in 1778 under the title: "Pharmacopœia simpliciorum et efficaciorum in usum noscomii militaris, ad exercitum fœderatum Americæ civitatum pertinentis; hodiernæ nostræ inopiæ rerumque angustii, feroci hostium sævitia, belloque crudelia ex inopinato patriæ nostræ illato debitis, maxime accommodata." He was prominent among those through whom the Federal Constitution was adopted. The standing of

Dr. RUSH in literature and medicine has already been extensively discussed in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Dr. LYMAN HALL was born in Connecticut in 1731. He received a thorough classical and medical education. He emigrated from Connecticut to Sunbury, Ga., with a party of forty New England families. He had attained an extensive practice when the agitation anent taxation without representation broke out. He was foremost among those who took a part in organizing resistance to the exactions of the government of GEORGE III. It was with difficulty that Georgia was led into a union with the other colonies. Dr. HALL presented himself to the Continental Congress as a delegate from the Parish of St. John, the rest of Georgia declining to send representatives. He was admitted by Congress as a representative from Georgia, but voted only when votes were not taken by colonies. Four months later a delegation of five, including Dr. HALL, was elected by the colony of Georgia. In May, 1776, he was again elected delegate and took an active part in the debate on the Declaration of Independence. Like BARTLETT and RUSH, HALL was an excellent clinician and had a very clear literary style, of the Addison type, then dominant.

Beside the five physicians, the Congress which adopted the Declaration of Independence contained two great contributors to medical sciences. The greatness of both these men in statecraft and economics has caused their contributions to medicine to be ignored. It is seldom remembered that BENJAMIN FRANKLIN was one of the committee of the French Academy of Sciences which exposed the pretensions of MESMER anent the objective nature of hypnotism. Among this committee FRANKLIN's opinion was justly valued. It is a singular illustration of the nature of FRANKLIN's mind that he should have recognized that while many persons were benefited by sparks from the Leyden jar, still in the vast majority of these cases the influence of the mental defect was so demonstrable, that he was unwilling to see any but a mental effect in all cases. He took an active part in all sanitary movements during his time. The fame of THOMAS JEFFERSON as a statesman and as the founder of a party which still exists, has so overwhelmed his contributions to science that these are generally forgotten. He took a great interest in biology, and discovered a fossil sloth, named after him the "Megalonyx Jeffersonii." Through his efforts Dr. SEAMAN was largely aided in the introduction of vaccination into the United States. It is a singular illustration of the falsity of the personal liberty cant, through which the opponents of vaccination have obtained a seeming victory in Great Britain and Switzerland, that JEFFERSON, the greatest advocate of personal liberty who ever lived, should have regarded compulsory vaccination as within the police powers of the government, and should have written a most

enthusiastic, most appreciative, and most laudatory letter to JENNER after some years' trial of vaccination in Virginia. The logical nature of JEFFERSON'S mind, his deep regard for the rights of individuals, and his scientific acumen render this letter a most emphatic demonstration of the falsity of the anti-vaccination cant. As Dr. CALDWELL has shown (History of the American Declaration of Independence), every one of the fifty-six delegates who signed the Declaration of Independence were men of well-balanced and well-cultivated minds. Of them, two died of accidents in the prime of manhood. The other fifty-four averaged sixty-six and three-quarter years—an illustrious example of the influence of well-cultivated and regulated brains, WINSLOW remarks, in conferring longevity upon those who possess them. Several of these delegates lived beyond their eightieth and some of them to their ninetieth year. The medical members averaged seventy-one years each. The history of the Declaration of Independence, therefore, demonstrates that since the stream can not rise above its source, the cultured people of what are now the United States took an active part in establishing, permanently, the principles of constitutional liberty which the colonists had inherited from their English-speaking ancestors. This is further shown by the great proportion of physicians and scientists among the signers. When commercialism and demagoguery are dominant, the medical man is regarded as unfit for the "business" end of politics. When culture, common sense and public spirit without the plutocratic taint are uppermost, the physician always comes to the surface as an ideal representative.

CLAUDIUS HENRY MASTIN, M.D.

CLAUDIUS HENRY MASTIN, M.D., University of Pennsylvania, 1849, died at Mobile, Ala., October 3, aged 72 years. He served as a surgeon in the Confederate Army and was a member of several scientific bodies.

In the death of Dr. MASTIN the medical profession has lost one of its most learned and active members. The American Surgical Association will miss him, and the Alumni Association of the University of Pennsylvania is deprived of one of the ablest and most efficient workers for the University. A loyal friend, a gentleman and a scholar, his life is now only a sweet memory, but his surviving friends will cherish it while they remain on earth as an undying possession.

CORRESPONDENCE.

Case of Fetal Monstrosity—Thoracopagus.

WEATHERLY, VA., Oct. 6, 1898.

To the Editor:—July 15, 1898, I was hastily summoned to the bedside of Mrs. ———, a primipara, who presented the following history: She had been greatly molested by pains in the abdomen, principally during the night, for about a fortnight.

During the night of July 15 she was startled by a sudden gush of liquide, which was none other than the amniotic fluid, and apprising her mother of what had happened, a messenger was sent for me. Arriving at her bedside I discovered her with a severe intermittent pain, characteristic of labor. Washing and disinfecting my hands, I proceeded to make a digital examination to ascertain the cause, since the woman declared to be only six months pregnant. I found the os soft and dilatable, and a fetal foot presenting.

Firmly grasping the presenting part I applied gentle traction, and presently I had what I presumed to be the mate to the foot presenting, but noticed the singularity of both feet facing each other. On high examination I was positively convinced that they were not members of the same body. My next procedure was to replace one foot and bring down the mate, but my efforts at this were futile. I however, brought down a third foot, and mating them, I attempted replacing the odd member back into the uterine cavity by gently pulling and simultaneously pushing back the one foot. No success in these manipulations, inasmuch as my pulling perceptibly affected the other foot. I now began to search cautiously for the missing fourth. This was not an easy task, because by this time the expulsive pains and efforts of the woman were very severe. After much patience I ultimately located it and succeeded in hooking my index finger around the groin, forcing it down. I must admit that I now had on hand an experiment which embarrassed me not a little, but gave no vent of it, so worked zealously on as my judgment suggested. Grasping the handful of feet with one hand while I busied the other in supporting the perineum and "ehelling out" I had the two bodies down to the axilla. I now had the satisfaction to take *stock account*, as it were, and found that I had not only twins to deal with, but that they were closely joined together from the umbilicus on up as far as I could find. I shook off all remnants of perplexity at this point, knowing full well, however, that the problem was not solved. Gentle and patient manipulations delivered the arms and shoulders. As every accoucheur will readily perceive I now had arrived at the climax or trying point—to deliver the heads. This was accomplished with apparent ease. I gently rotated the bodies so as to present them obliquely, to have advantage of the largest diameter of the maternal pelvis. By external pressure and traction, and encouraging the woman to bear down forcibly, I had the satisfaction to feel the lower head yield, and by swinging the bodies forward at right angles to the woman it was soon in the sacral cavity, the other head following in the same manner. Rotating the bodies now so that one head should rest against the perineum, the other against the pubic arch, and still holding at right angles, the complete expulsion was ultimately effected, and this, without the use of an anesthetic, no damage to the soft parts. The placenta was delivered with ease, and the subsequent history of the case uneventful.

The placenta was normal in size—one common umbilical cord and near the placental insertion was a large clot of blood which had the appearance of being several days old, and undoubtedly created the pains and also precipitated the labor, as well as a providential interference to rectify a mistake of nature. Had the woman arrived at full term of gestation a difficult and serious labor would have been inevitable. Now a brief description of the product of this labor. The double monstrosity was 12¾ inches long and weighed six pounds. Both fetuses were well-developed and symmetrical, of the male sex, and united together along the sternal-clavicular articulation to the umbilicus. The possession of it was denied, much to my utter disappointment since I very much desired it. The union was very close, and not only tegumentary but evidently the two sterni were cemented together without any communication of the thoracic centers. They were dead *in utero* probably three or four days and showed evidences of maceration.

Playfair's work on Obstetrics quotes nineteen cases of similar nature but the presentations differed.

I have thus modestly recited my procedure and success in this rare case, and I report it not with a view of expecting to call forth praise and admiration for terminating a case of such extraordinary character, but with a hope that by reporting this to the professional fraternity some brother may escape the embarrassment which confronted me, as well as to be instructive to the readers of this valuable JOURNAL as it has been to me.

W. P. LONG, M.D.

Complete Congenital Separation of all the Bones of the Cranium.

FLORENCE, COLO., Oct. 8, 1898.

To the Editor:—Recently I attended a lady in confinement, who gave birth to female child at term—presenting such a remarkable and unusual anomaly of osseous development—that I herewith hand you the details, in brief, for publication. The fetus presented by the occiput and nothing unusual was observed till the head engaged in the vulvar outlet, when great mobility was apparent to the touch. After delivery, which was normal—assisted by traction with the hand only—all the cranial bones were found to be completely disunited at their sutural lines. *Not one* was united with its fellow, and in the case of the frontal bone, the two halves were ununited as in very early fetal life. No union anywhere had ever existed, although the individual bones were perfectly formed, and when held in proper position in the hands, made a cranium of normal shape and size. In fact, after delivery of the head from the outlet, there was not much displacement with the head lying at rest, the bones seeming to be held in relatively proper position by the connective tissue underlying the scalp. The scalp itself was normal, not perforated or broken at any point, and manipulation of it gave the impression of a bag or sack containing separate bones loosely attached to its inner surface, which was in fact the case. The fetus was dead, and from appearances had been so for several days. The mother felt "motion" last about three days previous to the onset of labor, which was slow and prolonged by reason of the conditions set forth.

There was nothing remarkable about any other portion of the osseous system; the child was well developed, and would, perhaps, have weighed eight or nine pounds. The parents are healthy, and there is no history of any constitutional taint or dyscrasia on either side. The mother has aborted twice—once at four and a half-months, once at seven and a half—the only times, save this last, of pregnancy.

An interesting circumstance connected with the case is the fact that *each parent was a seven months' child*. What rôle, if any, this circumstance may have played in the case, I will not attempt to say. I was unable to procure the infant for dissection and preservation of specimen, much to my regret. In a careful search of all the literature at my disposal bearing upon anomalies and monstrosities, I have been unable to find a similar case, and in an experience of a quarter of a century I have not before seen anything approaching it.

Since its rarity makes it extremely interesting, I publish it, hoping that if any one else has seen a duplicate, he or she, will do the same.

Yours,

B. ROSEBERRY, M.D.

P. S.—The condition was not due to hydrocephalus.

Disease of Intemperance.

NEWARK, N. J., Oct. 4.

To the Editor:—In your timely article on "The International Temperance Congress," in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Oct. 1, 1898), you well say, "The questions concerning the action of alcohol and inebriety and its cure and prevention, are vital in almost every neighborhood of the

land, and it would seem to be a most practical subject for medical men to discuss and study," for physicians pre-eminently possess the power to arrest and prevent the spread of the disease of intemperance. They alone can prohibit with authority the use of alcohol in the nursery, hospital and general practice, and so prevent the acquirement of the appetite for alcoholic drinks—slowly induced in some, in some more rapidly—which, Tantalus-like, torments and devours the sufferer with a perpetual thirst.

According to the best authority, experience has demonstrated it to be a fact that as regards the drink habit, the first step in an attempted reformation must be the removal of the appetite, and nothing will do this but an entire abstinence from its provocative and inducing causes.

Undoubtedly, opium and alcohol produce effects which differ, but they agree in this: that used habitually, they alike tend, by a law as constant as gravitation itself, to establish a tyranny compared with which chains, racks, dungeons and whatever else go to make up the material apparatus of the most *cruel* despotism are as nothing, for these are outside the man and leave the soul untouched.

Christianity is a principle not a law; Christianity is Christian love. This fulfills all claims, abstinence among the rest.

Respectfully,

J. ACKERMAN COLES, A.B., A.M., M.D.

Hygiene of Music.

MINNEAPOLIS, MINN., Oct. 2, 1898.

To the Editor:—A medical friend having called my attention to your interesting article on "The Hygiene of Music," in your issue of September 24, I beg leave to offer a few suggestions in amplification of your remarks.

The question as to whether music appeals exclusively to the emotional appears to be mooted rather one-sidedly. In music, as in any other field of education, we do not make a sufficiently clear distinction between appreciation and creation. Waiving the discussion as to whether the excessive indulgence in either branch (I use this expression for want of a better one) must needs result detrimentally to the individual, I desire to call attention to the fact that when the intellect is to be employed, there is a vast difference between a mere indulgence in rendered music and the execution of music. Your esteemed colleague, the recently departed Dr. Billroth at Vienna, has left quite extensive notes on music, which were edited and partly published by Eduard Haeuclik, the noted Vienna musical critic, in a little pamphlet under the title "Wer ist musikalisch?" (first published in the *Deutsche Rundschau*, Vol. xxii, Berlin). Among other interesting statements, Dr. Billroth emphasizes the fact that the practice of music draws upon the intellectual powers. To be sure, not in the degree required by the study of Greek, mathematics or the playing of chess, but nevertheless a sufficient call for intellectual activity. The student of music, says Billroth, must have "*die Freude an der Ueberwindung von Schwierigkeiten*, that is, "the joy of over-reaching difficulties." To this it might be answered that the riding of a bicycle requires the exercise of the same faculty, and yet this should not be called an intellectual employment. According to Gladstone (although an axiomatic truth independent of any authority), the safest recreation is a change of employment. Bicycle riding, it will be admitted, draws less upon the intellect than the solution of a mathematical problem, yet the powers of quick decision, discrimination, etc., are more or less needed in pushing your wheel through a crowded thoroughfare. Now, in practicing music, the same, and vastly more, is required. Let me take, for example, the study of the violin.

You will be told by the teacher or the books that you can never get a clear tone from the instrument, unless you hold the bow in an exact angle to the strings. The idea that you

can and must get it solely by repetition is now-a-days discarded by advanced teachers. They know that your hands and fingers are directed from the nerve centers in the brain, and accordingly they practice with the "head" and not with the "fingers." And, recurring for a moment to the bicycle. A tall, strappy Swede, whom I entrusted with the ennobling task of cleaning my office, remarked that he thought he had to give up the attempt to ride a wheel; "he would never get it." "I presume you are riding it with your legs and feet?" I queried. He looked foolish. "Well," I said, "you must ride it with your head."

The independence of the fingers in violin-playing is a matter of progressive education. The fingers of a violin artist are not more fit to exercise a particular employment, requiring dexterity of the fingers, than the fingers of a rapid stenographer or typewriter are for violin-playing. Even the much praised "limbering-up the fingers" is of but limited account in the handling of a musical instrument. "Cheiro," the palm reader, notwithstanding his charlatan platitudes, has it correctly when he asserts that pliable fingers are unfit for music, and that "educated fingers" are essential. The strict observance of the time (tact) in ensemble playing, certainly calls for intellectual alertness, quickness of perception, and independence of thought from mechanical labor. The trained musician reads half a dozen bars ahead while he is playing with "feeling" (natural or artificial), and at the same time watches the baton of the leader.

Another very important function in connection with musical execution is the memorizing of music pieces. This is now done by impressing the image of the musical characters (notes, etc.), upon the mind, against the obsolete method of thoughtless repetition. The great German violinist, Burmeister, some time ago, performed the feat of memorizing a new, difficult piece while riding in a railroad car, by looking it a few times over. He played the bulky concert from memory without missing a single note, or the prescribed shades of forte, piano, etc., so brilliantly that the uninitiated would have sworn this to be the result of mastery gained by many trying repetitions.

ARTHUR L. HERMANN,
Counselor-at-Law.

A Defense of Dr. Huidekoper.

WOODBURY, N. J., Oct. 6, 1898.

To the Editor:—In the *Medical Record* of Oct. 1, 1898, there is a short editorial in re Prof. Rush Shippen Huidekoper, that is so unjust to the man, so absolutely devoid of that *camaraderie* usually characterizing the intercourse of medical men that I ask space to reply to it. It should be all sufficient for a writer in a journal supported by doctors that a man holds a diploma from a reputable school and is himself in good professional standing. That he has devoted a number of years to the study and teaching of comparative medicine should not, I take it, be a bar, but rather a recommendation, for any preferment to which he may aspire, or which (as in this case) may be tendered to him. These ethics of the *Medical Record* are the ethics of "kites and crows," and should be promptly and unmistakably disavowed by the profession. If the only objection to Dr. Huidekoper lies in his title of M.V. Alfort, it would not perhaps be unwise for more of his profession to improve their minds by the attainment of a like disqualification. Respectfully,

T. B. ROGERS, D.V.S.

SOCIETY NEWS.

American Academy of Railway Surgeons.—The following officers were elected for the ensuing year: President, W. W. Grant, Denver; first vice-president, T. F. Pritchard, Manitowoc, Wis.; second vice-president, J. P. Lord, Omaha; secretary,

T. B. Lacey, Council Bluffs, Iowa; treasurer, C. B. Kibler, Corry, Pa.; editor, Fred J. Hodges, Ashland, Wis. Place for holding the next meeting, Omaha, October, 1899. Committee of arrangements: J. P. Lord, chairman; T. B. Lacey and Fred J. Hodges.

Western Surgical and Gynecological Association.—The eighth annual meeting of this Association will be held at Omaha, Dec. 28 and 29, 1898. The local Committee of Arrangements at Omaha is actively preparing for the entertainment and comfort of those who attend. Surgeons and gynecologists, and those interested in the progress of these specialties, are cordially invited to affiliate themselves with us. The secretary will be glad to send application blanks. Titles of papers should be sent to the secretary as soon as possible, but not later than November 20 to insure a place on the program. Geo. H. Simmons, Secretary, Lincoln, Neb.

Association of "Big 4" Railway Surgeons.—The next meeting of this Association will be held in Cincinnati, November 10. The program includes the following papers:

The Diagnosis and Treatment of Lumbago and Back Sprain, J. Schneck, Mt. Carmel, Ill.

The Surgical Consideration of Shock and Its Treatment, A. Rhu, Marion, Ohio.

The Value of the Hot-water Bath in Surgery, T. P. Satterwhite, Louisville.

Address of President, L. E. Russel, Springfield, Ohio.

The best Method for Examining the Eyes and Ears of Applicants for Admission to the Railway Service, C. W. Tangeman, Cincinnati.

The Care of Head Injuries, Webb J. Kelley, Galion, Ohio.

Report of a Case of Brain Injury, T. J. Whitton, Nokomis, Ill.

The Railway Surgeon and the Company, Geo. M. Waters, Columbus, Ohio.

Hemorrhoids and Their Treatment in Railroad Employees, T. M. Kyle, Aurora, Ind.

Anesthetics—How to Minimize the Danger of Their Use, E. H. Hyatt, Delaware, Ohio.

San Francisco Medico-Chirurgical Society.—At the meeting for October, Dr. Rigdon gave a very interesting demonstration of the instrument devised by M. L. Harris of Chicago (*vide JOURNAL*, Vol. xxx, p. 236) for obtaining the urine from either kidney, unmixed. The apparatus, as is well known, consists of a double catheter of special form and construction, and of a second instrument, to be introduced into the rectum in men, or the vagina in women, so formed that when in place it will make a ridge along the longitudinal diameter of the bladder. The two parts of the catheter are then rotated downward so that one section is on either side of the ridge thus formed. If the bladder has been evacuated and washed before the introduction of the catheters, the urine will be drawn from the two sides unmixed, and the condition of the secretion of the two kidneys may then be compared. After calling attention to the often almost vital importance of being able to thus differentiate the two kidneys, as to the character of their secretion, Dr. Rigdon introduced a patient and proceeded to demonstrate the facility with which the instrument could be introduced and the urine obtained. The greatest advantage which this apparatus possesses is that it may be used by any one not equipped with the great manual dexterity required for operating the cystoscope, and also this apparatus may be used in cases where the cystoscope is not available, on account of the abnormal position of the ureters or from profuse hemorrhage or some similar reason. The bladder being empty, great care must be exercised in rotating the two catheters after their introduction into the bladder, for the reason that it is very easy to injure the bladder walls. The demonstration was eminently satisfactory, and the members present were able to see for themselves both the ease of introduction and the rapid-

ity with which the secretion of the two kidneys could be obtained and examined. The patient complained of no pain or distress and seemed not to object in the slightest to the manipulation. The curious fact was noted by several of the members that the rate of secretion did not appear to be the same for both kidneys, the right secreting more urine in the time of observation than the left. Dr. Rigdon expressed it as his opinion that this difference was more apparent than real, as he had noticed that in the course of a little time the other side would in turn secrete more and thus keep the two sides about the same. Dr. F. B. Carpenter suggested that an enlarged prostate might interfere with the proper adjustment of the curved catheter and thus prevent the proper application of the apparatus. Dr. Lane, in discussion, said that he was personally acquainted with two cases where the wrong kidney had been removed by mistake; one of the cases he had himself operated on, and in the second case he had been present at the operation; he therefore called attention to the great importance of differentiating the two kidneys in cases where there was evidently kidney disease but where the exact location of the affected kidney could not be ascertained by palpation or examination. It was his opinion that the device under discussion promised well, and he would await further reports as to its efficiency in actual practice, with much hope for favorable reports.

PUBLIC HEALTH.

Tropon.—This new cheap preparation of albumin, recommended as food for the masses (vide *JOURNAL*, xxx, 1304), is warmly endorsed by D. Finkler of Bonn, after long and extensive tests. It contains almost pure albumin, is well absorbed, and can be taken for months, even years, in various ways.—*Munich Med. Woch.*, August 23.

Hygiene for Children.—The recent death of an eight months' child whose head was caught between the side-bars of its iron crib, suggests the necessity of furniture better adapted to children. How many unnecessary injuries would be avoided if for instance, sideboards, commodes, etc., were made with rounded instead of sharp corners!—*Gaz. Méd. de Paris*.

Culinary Bacteriology.—Jäger of Königsberg has been delivering a popular course of lectures on hygiene and bacteriology, in which he has applied laboratory methods to culinary matters and processes. His jars with cotton stoppers like culture tubes, filled with cooked and uncooked meats, etc., kept unspoil from five to fifteen days in the warm hall.—*Journal de Hygiene*, September 15.

Albumose Milk.—A cheap and easily prepared modification of milk for infants has been prepared at the Göttingen University clinic, which has produced excellent results in the infants fed with it to date. It is based on the fact that albumose will hold casein in an emulsion and cause it to be precipitated in fine flakes, very much increasing its digestibility. They dilute cow's milk with water, add cream and sugar of milk, and finally a certain amount of caseose (casein-albumose), according to age of the child.—*Deutsche Med. Woch.*, August 11.

Alcoholism in Russia.—According to the *Progrès Médical* of September 17, the authorities of the city of St. Petersburg have suppressed the 25,000 saloons where alcohol was sold, and established in their place 5000 shops under their control, scattered a certain distance apart all over the city. The alcohol is all tested and sold in bottles of a certain size, not large, sealed with a government stamp. No one can purchase more than one bottle at a time in one of these shops and he must walk a considerable distance before he can obtain another, which is absolutely refused him if he shows the slightest indication of drunkenness.

Parasites in Game.—Megnin reported recently to the Paris Académie de Médecine that he had noted an epidemic among pheasants last year, caused by a tenia, and that he has found the same parasite again in partridges this year. His investigations were made at Gueville where the game is raised in large numbers, and over 300 died last year. He therefore names the tenia, *Davainea Guevillensis*, as it differs from the others known. The *Bulletin*, September 13, contains descriptive cuts. The parasite obstructs the intestines by its size and numbers, hundreds often being found in one bird.

High Mortality in Chili.—We notice in an article on the sanitation of Santiago in the *Revista Chilena*, that the death-rate in Chili from 1885 to 1889 was 30.3 per thousand, and from 1892 to 1896, 31.2. The number of illegitimate births is also high; in England the proportion is 1 to 13, while in Chili it is 1 to 3, and during the first quarter of the present year, 1 to 1.3. The natality is larger than in other countries; 45 per thousand; in Germany it is 40; England, 36 and France, 26. The infant mortality is correspondingly high; 37.74 per cent. in Santiago.

Contagion Among Nurses.—Cornet states that two-thirds of the members of the religious sisterhoods who work among the sick, die of tuberculosis. . . . Rumpel reports 114 cases of disease with 10 deaths, among the 300 nurses employed in the Hamburg hospitals, and 43 deaths among the 2349 nurses in the eighteen Red Cross hospitals in Germany; seven from typhus and sixteen from other infective diseases, during the last three years. The total number of cases of disease acquired professionally amounted to 640, including 56 cases of typhus, 53 of diphtheria, 15 of scarlet fever, 6 of measles, 20 of wound infection and 118 of various forms of angina.—*Vienna klin. Woch.*, September 15.

International Quarantine Service in Egypt.—This service, established by the International Health Convention at Venice in 1892, now comprises an inspector-general with a salary of \$3,000 to \$3,600; seven superintendents of the sanitary stations: Alexandria, Port Said, Suez, Tor, Damietta, Souakim and Koesir. The salary of the first four is \$2,400 to \$3,000; of the rest \$1,200 to \$1,500. The Tor station is not occupied except during an epidemic, the incumbent residing at Alexandria. Besides these there are six quarantine officers with a salary of \$1,600 to \$2,400, with an indemnity when they are sent to Tor. A laboratory for bacteriologic research has been established at Suez, and all the members of the service must be thoroughly trained and experienced in medicine and practical bacteriology with a knowledge of French, German and English at least. The various nations interested are all represented, France with four, which includes the inspector-general.—*Presse Méd.*, September 14.

Yellow Fever.—According to press dispatches since our last report (vide *JOURNAL*, p. 868), the conditions in the South are as follows: The total cases number 465 in Louisiana for the summer, with 30 deaths, and 351 cases in Mississippi with 35 deaths, 44 cases occurring in Jackson from September 27 to October 8. In Louisiana the distribution of cases reported to October 8 has been: New Orleans, 62 cases, 11 deaths; Harvey's Canal, 14 cases, 3 deaths; Franklin, 210 cases, 7 deaths; Wilson, 247 cases, 4 deaths; Baton Rouge, 22 cases, 2 deaths; Houma, 8 cases, 1 death; Clinton, 2 cases; Plaquemine, 3 cases; Jackson, 22 cases; Bowie, 1 case.

In the following parishes (outside of towns above mentioned) cases were reported: Iberville parish, St. Charles parish, St. James parish, East Feliciana parish, West Feliciana parish, Rapides parish (Alexandria), East Baton Rouge parish. On October 8, Hattersburg, Miss., reported 20 new cases; Jackson, 10; Natchez, 2; Madison, 3; Starkville, 1; Fayette, 2; Hermanville, 1; Taylor's Station, 1; Harrieston, 1; Oxford, 2 and 1 death. The reports for October 9 add Poplarville, Miss.,

with 2 new cases; Lumberton, 2; and 7 new cases at Jackson. October 10 reports give: Canton, Miss., 3 new cases; Crystal Springs, 2; Waveland, 3; all towns hitherto uninfected.

Smallpox in a Summer Hotel.—It is not a pleasant event for a busy summer hotel to have to shut up in August or September, on account of an infectious disease among its guests or servants; especially so when the proprietor knows or is told that the trouble and loss might easily have been prevented. This remark applies with special force to smallpox. Why would it not be a good standing rule for hotel people to refuse to employ waiters and helpers who have not the evidence of a recent and successful vaccination? The recent experience at a large house, accommodating several hundreds of guests, recites the old, old story of the first cases of variola being mistaken for varicella. The mistake corrected itself, after a short delay, and this correction emptied the house. Fortunately every effort was made to prevent the spread of chicken-pox, while the disease was yet thought to be of that nature, but not soon enough to prevent exposures, in greater or less numbers. Late in August the correct diagnosis was made and the usual preventive measures begun. There were several hundred guests at the hotel, on August 28, who left on that day, scattering to the four points of the compass. Twenty-six cases of the disease, all among the servants of the house, were reported. Of these twenty-one were among the colored help, and nearly all of these hailed from Asheville, N. C., in which State not a few cases of smallpox have occurred since January last. There was one death. The hotel was closed and no new cases have been reported since the quarantine was established. Hotel reputations are so susceptible of lasting injury that their proprietors can ill afford to take unnecessary risks about smallpox among their employees. They may with especial propriety keep a sharp lookout as to servants coming from those Southern states where a smallpox is known to exist and where sanitary boards have but little preventive authority. It is almost as important for hotel servants to be well protected by vaccination as for nurses, barbers, and railroad employees.

NECROLOGY.

DEATHS ABROAD.—Professor Crocq of Brussels, in his seventy-fifth year, who has so ably represented Belgium in international gatherings and scientific achievements; founder of the *Presse Méd. Belge*; president of the Federation Méd. Belge; appointed professor in 1855; author of numerous articles: "Le d Acetate in Pneumonia," "Study of the Penetration of Solid Particles Through the Tissues," "Application of Auscultation and Percussion to the Horse," "Treatment of Tuberculosis," etc.—F. Malanco, Mexico, a prominent physician, founder of the *Medicina Científica*, and a frequent contributor to other Mexican exchanges.

HERMAN S. BEAHAN, M.D., Rochester, N. Y., October 2.—F. P. Bibby, M.D., Coffeetown, Miss., September 27.—J. F. Boyce, M.D., Santa Rosa, Cal., September 30.—John Burnett, M.D., Scranton, Pa., September 30.—J. B. Curtis, M.D., Somerville, Mass., October 2, aged 31 years.—Hubert D. Ensign, M.D., Boone, Iowa, October 2, aged 55 years.—J. C. Herrick, M.D., Denver, Colo., September 30, aged 54 years.—W. F. McLean, M.D., Elyria, Ohio, October 5, aged 65 years.—S. B. H. Nichols, M.D., Corning, N. Y., September 30, aged 63 years.—James L. Ord, M.D., Washington, D. C., October 3, aged 75 years.—D. L. Paine, M.D., Oregon City, Ore., September 30, aged 55 years.—R. R. Ruff, M.D., Pitman, Ark., September 21, aged 67 years.—C. H. Sevier, M.D., Brownsville, Tenn., September 30, aged 59 years.—D. W. Whittaker, M.D., Chattanooga, Tenn., October 3, aged 47 years.

MISCELLANY.

Personal.—Dr. Norval H. Pierce has resumed his practice, at 31 Washington St., Chicago.

Dr. Michael Foster, who has just been elected president of the British Association for the Advancement of Science, has been professor of physiology at Cambridge since 1883. He

will assume office next year, at the meeting in Dover. Sir William Crookes, occupant of the chair this year, is a chemist; his immediate predecessor, Sir William Evans, is an archeologist, while Lord Lister was president in 1896.

Requirements for the Practice of Medicine.—We have received from Secretary Egan, advance copy of that portion of the annual report of the Illinois State Board of Health, relating to the legal requirements for the practice of medicine in the different parts of the United States, including the territory of Hawaii. Its completeness is creditable to the energetic secretary.

Higher Standard for Dentists.—The Association of German Dentists passed resolutions at its recent annual meeting at Eisenach, urging the authorities to require higher educational attainments of students of dentistry, and a longer course in the university, raising the standard from the certificate of the first grade in the "gymnasium," as at present, to the diploma of a "gymnasium" or "real gymnasium" (high school).—*Munich Med. Woch.*, August 23.

Science Reveals Nature's Beauty.—In his presidential address before the British Association, Sir William Crookes speaks thus brightly to those who are, with him, engaged in wresting the hidden secrets from nature: "Steadily, unflinchingly, we strive to pierce the inmost heart of nature, from what she is to re-construct what she has been, and to prophecy what she shall yet be. Veil after veil we have lifted, and her face grows more beautiful, august and wonderful, with every barrier that is withdrawn."

Railway Casualties in 1897.—In the year which ended June 30, 1897, 6437 passengers on American railways were killed in accidents, and 36,731 were injured. A *New York Times* writer, with an arithmetic bent, has figured that only one out of 2,204,708 of the whole number of passengers carried was killed outright, and only one out of 175,115 injured. With the total mileage as a basis, the statistician figures that the traveler with average luck escapes injury until his journeyings amount to 4,385,309 miles, and not until his score is 55,211,440 miles is, it is his turn to get killed. Traveling 30 miles a day, 300 days in the year, no one need begin to worry until he is 5,467 years old.

Rush Medical College.—Upon the first year of its affiliation with the University of Chicago Rush Medical College starts out with a class of over 700 students. This is especially gratifying to its friends as it shows that physicians and students throughout the country favor higher medical education and appreciate the rigid requirements that are now being enforced. As a result of the demands for ample preliminary education, many men have been shut out of the Freshman class, and the policy of sifting out the poorer men from the other classes has elevated the grade of those already in the college. After the examinations at the close of the last term, eighty men were notified that they could not advance to the higher classes unless their scholarship could be brought up during the summer months. Many of these have dropped out of the college. Thirty have been required to take the work of the previous year over again, and the remainder have been given until the fifteenth of November to try to make up their deficiencies, at which time, unless they can remove the conditions, they, too, will be remanded to the lower classes.

Oldomycosis.—Besides bacterial infection and infection from the streptothrix, we must now make a place for infection from pathogenic blastomycetes, which has been experimentally and clinically established. The best known of this group is the *saccharomyces albicans*, which usually is content to vegetate on a mucosa, but occasionally invades the entire organism and produces a fatal disease. Buse reported a case of chronic pyemia caused by a *saccharomyces*, which produced similar

lesions experimentally. Curtis also has reported the case of a myxosarcoma of the thigh, containing a yeast fungus, and such cases are multiplying. H. Roger contributes an article to the *Presse Méd.* of August 24, describing the lesions produced by rabbits inoculated with the oidium. The granulations invaded the entire organism, and caused hypertrophy of the kidneys, etc. (*vide* JOURNAL, pages 199 and 417).

Primary Tuberculosis of the Kidneys.—In Professor Israel's operations on the kidneys 10 per cent. have been on account of tuberculosis, and in sixteen out of twenty-one it was evidently a primary affection. He has found it more frequent in women than in men, and unilateral in chronic cases. He removed the entire organ in twenty cases. Three died from the immediate results of the operation; five deaths occurred later, after partial or complete recovery. In regard to the final results: Three of the uncomplicated cases died, but the remaining six were permanently restored to health (observations dating from nine years). None of the cases with complications were cured, although some were benefited to a remarkable extent. He advises an early operation in simple primary tuberculosis, or if the bladder is but slightly involved. He does not operate in secondary ascending tuberculosis, unless to relieve serious disturbances.—*Viennaklin. Woch.*, September 15.

Neuralgia.—A. Eulenburg contributes a study of the pathology and therapeutics of neuralgia to the *Berlin Klin. Woch.*, No. 33. He does not consider it a definite disease of the peripheral nerves, but attributes it to morbid conditions in the nerve-cells, determined by various primary affections of the peripheral sensory neurons. Essential neuralgia is distinguished by the characteristic attacks of pain, with intermissions and spots painful to pressure. Excentric, that is, neuralgia affecting the roots and root-fibers, is characterized by the brevity of the attacks, lancinating pains, while in topic peripheral algias the pain is generally continuous, and there are no especial paroxysms. He separates hemicrania from the neuralgias, and also asserts that what is called intercostal neuralgia is due to entirely different processes. Many cases of ischias, he states, proceed from acute or subacute localized perineuritis of the ischiadicus, propagated *per continuitatem* by the lumbar muscles or primarily affected nerves. He frequently arrests and cures ischias with deep injections of 2 per cent. carbolic solution.—*Munich Med. Woch.*

Ano-rectal Actinomycosis.—This is a rare affection, with only seven cases on record. Poncet described another observation recently, illustrating his remarks with color photographs, the first application to pathology of the new photography of colors, which "opens a new field for medical iconography." The bladder was secondarily affected, with numerous calculi, some containing fragments of wheat grains—the patient confessed to having inserted a head of wheat in the urethra. The ano-rectal lesions might at first glance be mistaken for tuberculous, but their special aspect, their color varying from violet to a yellowish red, punctured with yellow points, the slowness in developing, and the presence of the characteristic yellow grains in the pus, soon differentiate it. The prognosis is grave, although life may be prolonged many years. If internal treatment with potassium iodid proves ineffectual, ablation of the masses and incision of pus pockets are indicated. Extensive interventions are justified, as repair progresses rapidly in the tissues which appear to be so profoundly affected, although intervention rarely proves more than palliative.—*Bull. de l'Acad. de Méd.*, September 13.

The English Tourist, Dr. Henry S. Lunn.—Dr. Henry S. Lunn, the English physician who is well known in England and America for developing the personally conducted touring system, is this year entering upon a decidedly novel plan. He has decided to send a couple of sporting and scientific expedi-

tions into the wild regions of Somaliland. The cost of these expeditions will be about \$3000 for each member; but this includes all expenses for three months, a retinue of fifteen servants, twenty camels and two riding horses each, beside the tents and equipments. Personally, Dr. Lunn is most genial. He has had a rather varied career. In 1887 he left England for the Indian mission field as a medical missionary. As correspondent to the *Pall Mall Gazette*, he attended the Indian National Congress, becoming intimately acquainted with the leaders of the movement, and lecturing to large assemblies of educated Hindus on the development of their national life. The vigor with which he threw himself into his Indian work was responsible for a series of attacks of malarial fever, and he was ordered home only twelve months after he had entered the work. Dr. Lunn is not yet 40 years of age.

A Lesson to the Uawary.—Medical men in England are dissatisfied at the outcome of a libel suit brought by Dr. Morgan Dockrell, physician to St. John's Hospital, against the manufacturer of a medicinal water which the doctor had praised and occasionally prescribed. The defendant printed and published a circular in which he declared: "Dr. Dockrell says nothing has done his gout so much good." The jury found that these words were in no wise injurious to the plaintiff's reputation, and hence the High Court of Justice refused to restrain the further publication of the advertisement. Dr. Dockrell's contention was that the circular conveyed the idea that he was a party to the advertisement, which would be a violation of professional etiquette on his part, and would have rendered him liable to expulsion from the medical societies to which he belonged. The jury, however, refused to take this view, and evidently deemed the language justified by what the plaintiff had actually said in commendation of the mineral water in question.—*N. Y. Sun.*

School of Medicinæ for Women.—New science laboratories in connection with the London School of Medicine, have been opened. The school was established nearly a quarter of a century ago, and during this time the work has been carried on in three houses, under most inadequate conditions. The leases of these buildings having expired, the site has been obtained and cleared for the new building, which will be erected in three separate stages and is to consist of three blocks. The first block, which has already been completed, contains the new laboratories. The cost has been between £9000 and £10,000. There are adequate rooms for the teaching of chemistry, physiology, anatomy and physics. At present women are enabled to obtain a degree or diploma from nine of the medical examining bodies of the United Kingdom, six of them being universities. Since the school started, the students have obtained several gold medals at the London University and at the Royal University of Ireland. At the present time the students number 170. Of those who have passed out of the school with a medical qualification, some are engaged in responsible work as medical practitioners, some at the new hospital, others in workhouse infirmaries, in asylums, and in various provincial hospitals. Others are in India, South Africa, China and Australia.

A Defense of Chief Surgeon Girard.—The many fierce, not to say brutal, attacks on Lt.-Col. and Chief Surgeon Girard, who is well known to be one of the ablest and most painstaking officers in the army, has led many of his colleagues to write him their personal views of his services. We are permitted to extract the following from one of the pleasant tributes thus presented. It is from a volunteer surgeon, now mustered out.

EXTRACTS FROM LETTER.

"I desire to state that I have at all times enthusiastically approved your plan of Division Hospitals, and I am sure that the public mind seems to be gradually coming to its senses in this regard.

"It is a probable and an unfortunate circumstance that the

great mass of the American people will perhaps never fully realize the almost insurmountable difficulties met and overcome in organizing, harmonizing and equipping the medical corps of the various regiments of your command, and the endeavor to elevate their efficiency to something like the standard of the regular army. As you know, many of these regiments were absolutely without arms or equipment of any kind when they reached Camp Alger, and it has been truthfully said that 'in some cases there was scarcely cover for the nakedness of the men.'

"It became necessary to immediately arrange for the care of the sick. This was especially noticeable in the case of the But to return to the subject. With a medical corps scarcely organized, some officers even without commission, with no hospital privates; other regiments but partially organized, none thoroughly equipped, and even if fairly well organized and equipped, the military requisites of subordination and discipline were lacking. The spirit of opposition characterized by delay and general indifference manifested by some of the volunteer medical officers, as well as regimental commanders, is still fresh in my mind.

"The rapidity and completeness in overcoming these obstacles certainly points to the credit of your command, and your many years of military training and business tact are the prime factors in its success.

"It is true that some medical officers did at times complain of trivial delays and possible lack of equipment, but as a rule the basis of these complaints was groundless. There never was a time when their requests were not promptly honored, if reasonable, and supplies promptly granted when circumstances permitted. These complaints as a rule were voiced simply for effect, as a general disapproval of what certain volunteer officials considered an interference on part of the regular army officials with the rights of the volunteer.

"That such harmonizing was necessary is evident; that it was accomplished is apparent in the present efficient management of these departments. Having overcome all these difficulties with complete satisfaction to all, is certainly a glowing tribute to your faithful and untiring efforts to excel in the efficiency of your medical corps. All these conditions I describe fully in my sanitary report which I am now preparing for the Surgeon-General.

"In conversation with a number of my friends shortly after I arrived at Camp Alger, I was frequently asked 'how I liked Chief Surgeon Girard?' It was the general opinion among them that you were the right man in the right place. They said: 'Girard is considered the best disciplinarian in the Medical Department of the U. S. Army.' To some this perhaps seemed a fault; but I consider it to be the highest compliment, and I congratulate myself upon being so fortunate as to have been under your medical direction, as I am fully aware that without discipline organization can not be maintained nor progress assured."

Hospitals.

The new St. Joseph's Infirmary, Fort Worth, Texas, was formally opened September 29. It is a fireproof, three-story structure of brick, 170 by 150 feet.—The new hospital for the special treatment of tuberculosis at Dunning, Ill., was dedicated October 8. The cost of the building, three stories in height, was \$54,200; with furnishings, \$64,200.

Societies.

The following recent meetings are noted:

Illinois.—Chicago Medical Society, October 5; Chicago Pathological Society, October 10; Will County Medical Society, Peoria, October 11.

Indiana.—Upper Maumee Valley Medical Association, Fort Wayne, October 6.

Iowa.—Cedar Valley Medical Association, Waterloo, October 11; Clinton County Medical Society, Clinton, October 4; Polk County Medical Society, Des Moines, October 4.

Missouri.—Jasper County Medical Society, Joplin, October 4; Medical Society of the City Hospital Alumni, St. Louis, October 6.

New York.—Broome County Medical Society, Binghamton, October 4; Onondaga Medical Society, Syracuse, October 4; Orange County Medical Society, Newburgh, October 4.

Ohio.—Marion County Medical Society, Marion, October 4; North Central Ohio Medical Society, Marion, September 30.

Pennsylvania.—Lackawanna Medical Society, Scranton, September 30.

Vermont.—State Medical Society, Brattleboro, October 13 and 15.

Cincinnati.

HOSPITAL INTERNES.—On October 10 the terms of service of four of the internes of the Cincinnati Hospital will expire; they are Drs. H. J. Ware, Edward Francis, William Muhlberg and Percy Shields. Drs. H. H. Hines, C. F. Beeson and A. H. Smith will take their places. Dr. T. S. Morrison, the other successful candidate, is at present in Manila, assistant-surgeon of the First Regiment, Wyoming Volunteer Infantry, a part of General Merritt's immediate command.

ACADEMY OF MEDICINE.—At the regular meeting, October 3, Dr. C. A. L. Reed read a very interesting paper on "Fat and Fecundity."

DR. CHARLES H. CASTLE, surgeon First Ohio Cavalry, is in the city, waiting for the muster-out.

DR. S. P. KRAMER writes from Camp Wikoff as follows: "The typhoids are very typic, but in many cases they are associated with malaria. One sees cases that are clinically undoubtedly typhoid, and in addition the plasmodium of malaria is found in the blood." In speaking of malaria he says: "The malarial cases are not typic at all. Very few are purely intermittent; most of them are remittent, and many of a pernicious nature. In the latter cases the best results are obtained from the hypodermic administration of the double chlorid of quinin and urea." The dysentery prevailing, the doctor thinks, is largely due to malarial poisoning. The yellow fever cases, he says, are few, and there is little or no danger of the infection spreading.

Philadelphia.

PAMPHLET ON YELLOW FEVER.—As yellow fever prevails in several sections of the South, with the probability of its spreading still further, the State Board of Health has been energetic in educating the laity regarding the nature of the disease and its proper prevention. Looking to this end a pamphlet has been printed and is being freely distributed throughout the State, giving all of these necessary details and pointing out that the baneful effects are not so severe as is generally supposed.

DR. PEPPER'S SUCCESSOR STILL SUB JUDGE.—At a recent meeting of the trustees of the University of Pennsylvania, the subject of Dr. Pepper's successor was again presented for discussion, but owing to the action taken at a previous meeting, distributing the work among four of the faculty, no definite action was taken. Didactic lectures will be given by Drs. Stenger, Musser, Packard and Fussell, while Dr. James Tyson will have full supervision over both this department and the clinical lectures until the trustees take some definite action in the disposition of the chair. The four years' course of eight months each demanded by this institution, has not kept down the number of matriculates; but, in fact just the reverse has occurred. It is a matter of serious reflection why so many men go into the medical profession, whether it is due to the hard times which impels them to choose something, or whether it is from other causes.

PUBLIC SCHOOLS AND DIPHThERIA.—From the fact that diphtheria has been so prominent in several of the public schools of the city, the Bureau of Health is using every effort to prevent the disease from spreading. To this end, therefore, it is that suggested to keep down these local outbreaks that the schools be thoroughly disinfected daily in the following manner: "The daily sprinkling of the floors before sweeping with a disinfectant solution, the use of individual drinking cups and the disinfection of pencils. The attention of the Bureau of Public Education has been called to most of these unsatisfactory conditions, but it is doubtful if any special attention has been given to the matter. It is work that can and should be done by the Board of Education. The desk tops should be wiped off daily with a disinfectant solution and the hand-rails should be treated in the same way. It would not be safe to use a solution of bichlorid nor even carbolic acid." It is sug-

gested that these suggestions be given to the janitor in order that they be carried out. A paper was received and referred to the Board, asking that disinfectants also be put in the street sprinkling wagons in order to destroy the germs which make their habitat in the dust of the public thoroughfares.

DR. PEPPER ESTEEMED.—It is stated that members of the International Advisory Board of the Philadelphia Commercial Museum very frequently receive letters of condolence from friends of Dr. Pepper in all parts of the world. These letters not only show that he was known as a physician of distinguished ability, but as a public-spirited citizen. In Mexico, where he presided over the deliberations of the Pan-American Medical Congress, marked honor has been shown. Delegates to the meeting held at the Philadelphia Commercial Museum also pay high tribute to his memory. The Mercantile Confederation of the Republic of Mexico, at a recent memorial meeting, President Diaz being present, and at which time the national flag of that republic, with that of the United States, were entwined about the hall with a tinge of crape, gave a heartfelt feeling to the words spoken in honor of the name of William Pepper.

PAY FOR SOLDIERS.—The government has recently inquired of the hospitals of this city as to the amount required by each of them for the care and treatment of the sick soldiers brought here. So far no definite arrangement has been made toward asking the government to defray the expenses for this trouble, and it seems the action of the government has been voluntary. It is reported that those soldier patients now in the New York hospitals each receive pay at the rate of 93 cents a day. The treasurer of the National Relief Association acknowledged receipts of money and supplies aggregating the sum of \$107,511.48.

TUBERCULOSIS STILL DECREASING.—In the annual report of the Pennsylvania Society for the Prevention of Tuberculosis, facts are tabulated showing a gradual decrease in the number of deaths from this disease. In Philadelphia statistics are presented proving these claims. In 1870 there were 2308 deaths, or 3.42 per 1000 of the population; in 1880 the percentage was 3.17, in 1890, 2.64, and in 1897, with 2385 deaths, the percentage was 1.96. A site at White Haven, Luzerne County, has been offered to the society for a sanitarium, and it is hoped that proper aid will be given by the State for the erection of a building suitable for the care of those suffering from consumption.

BEQUEST OF \$400,000.—Through the death of Joseph M. Bennett of Philadelphia the University of Pennsylvania will receive property to the value of \$400,000. The provision making the bequest is as follows: "I will and bequeath to the trustees of the University of Pennsylvania the property, 1021 Chestnut Street, adjoining the Chestnut Street Opera House, also the properties 3340, 3342, 3344 and 3346 Walnut Street, being east of the properties which I have heretofore donated at the corner of Thirty-fourth and Walnut Streets, known as Bennett Hall, to said trustees. Now, my object in making this bequest is to further aid and encourage the said trustees in carrying out more practically and thoroughly the co-education of women and girls in relation to the scheme which has been commenced in the said houses," etc.

MORTALITY STATISTICS.—For the week just closed the records of the Bureau of Public Health show that there have been 408 deaths, 137 being children under 5 years of age. The following are the principal causes: Alcoholism 2, apoplexy 17, nephritis 20, cholera infantum 8, cholera morbus 1, tuberculosis 42, membranous croup 4, diabetes 1, diarrhea 2, diphtheria 22, heart disease 27, typhoid fever 14, dysentery 4, homicide 1, marasmus 31, septicemia 3, suicide 1, tetanus 1, uremia 7, whooping-cough 2.

HOSPITAL TRAIN SENT OUT.—Jefferson Medical College recently dispatched a hospital train to Camp Meade, returning

with fifty-two patients. It is stated that most of the patients were in a very serious condition. The train was in charge of Dr. H. A. Hare, assisted by Drs. M. H. Williams, E. H. Wiggins, J. L. Scallinger and Hiram R. Loux. A corps of twelve nurses accompanied the train.

CAMP MEADE.—Dr. Shakespeare, a member of the board appointed by the War Department to investigate the prevalence of typhoid fever among the different army camps, has been detailed to make report regarding the conditions existing at Camp Meade. It is stated that in this camp the disease is mostly confined to the troops belonging to the Two Hundred and Second and the Two Hundred and Third Regiments of New York.

THE JEFFERSON AND MEDICO-CHIRURGICAL MEDICAL COLLEGES.—During the week just passed both of these institutions began their sessions for the coming year. At the Medico-Chirurgical, exercises were also held in the dental and pharmaceutical departments, both of which have been recently established.

SALARIES OF PRISON INSPECTORS.—A recent decision of Judge Pennypacker of Philadelphia, handed down in a contested case, states that the Board of Prison Inspectors of the county prison and not the city councils have the right to fix the salaries of officers of the county prison.

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward, for the week ended October 1, shows the total number of deaths to have been 106—48 white and 58 colored. The principal causes of death were: Nervous diseases, 13; genito-urinary, 7; circulatory, 4; intestinal, 10; typhoid fever, 4; diphtheria, 7; measles and whooping-cough, 1 each. At the close of last week there were 79 cases of diphtheria under treatment, and 44 new cases reported during the present week; 19 were reported cured, leaving 104 cases under treatment at the close of the present week. There were 68 cases of scarlet fever under treatment at the close of the week. Dr. Woodward says there are a large number of cases of diphtheria in the district. One year ago the number was 44, while this year, on the corresponding date, there are 108 cases, an increase of more than 200 per cent. The cases existing at present are distributed among 79 places, while those of a year ago were located in 36 places. He says the large increase in the number of cases is accounted for by the improvement in diagnosis. Cases which formerly were called sore throat or tonsillitis or croup, are now known to be diphtheria, and after bacteriologic test, are reported as diphtheria. The increase in the number of cases is of course accompanied by an increased death-rate. The disease is more prevalent among the poorer classes, and ignorance and carelessness on the part of these people is largely responsible for the increase of the disease. I know of five cases where children were ill before a physician was summoned, one of whom being so ill that it died the day the doctor was called. The opening of the schools is usually another cause for the increase of the disease, due probably to the massing of a large number of children. We are doing all we possibly can to check the spread of the disease, but we are greatly hampered by the limited authority of the Health Department.

ARMY INVESTIGATION.—Surgeon-General Sternberg, in reply to the questions relating to the Medical Department management, forwarded to him by the Investigating Commission, replied as follows:

To President of Board to Investigate the War Department:
Sir:—I have the honor to submit for the Committee of Investigation, the enclosed statement relating to responsibility in the Medical Department of the Army. I respectfully suggest that the commission, as a whole or a sub-committee, visit the office of the Surgeon-General at an early day for the purpose of investigating the organization and methods of work which have been employed in my office during the war with Spain. I have received a copy of the questions relating to the Medical

Department, and shall do my best to answer these questions in full at as early a date as is practicable; but considerable time will be required, owing to the enormous amount of important official business, pertaining to the regular administrative work of the office. To neglect this would give just cause for criticism, and I am sure that the commission will agree with me, that my first duty is to provide for the proper care of the sick of our army, in the field and in garrison, so far as this lies in my power. This has been my earnest endeavor from the outset of our short and glorious war with Spain. Very respectfully,
 GEORGE M. STERNBERG, Surgeon-General U. S. Army.

MEDICAL ASSOCIATION.—The regular stated meeting of the association of the district was held on the 4th instant. The Standing Committee, who had been entrusted with the enforcement of the regulations governing medical charities in the district, reported that all the hospitals were carrying out these rules and regulations, both in letter and spirit. The following were elected to active membership: Drs. Chas. E. Furgeon, Bernard L. Hardin, Frederick M. Hartsock, Harry Hurtt, L. Fleet Lockett, C. H. Mechneck, W. P. Malone, Wm. Gerry Morgan, John B. Mullins, Wallace Neff, Edward D. Perkins, T. Lyman Perkins, John J. Repetti and Stanley S. Warren.

DISTRICT MEDICAL SOCIETY.—At the meeting of the medical society, October 5th, the following were elected to membership: Drs. Isabell Haslup, Maurice E. Miller, Jessie Ransburgh, John C. Simpson and Victor E. Watkins. Dr. James Kerr read a paper entitled, "Treatment of Colles' Fracture by Gordon's Splint." He presented the splint of Dr. Gordon of Belfast, explaining its special advantages based upon the skiagraphic study of this fracture, and showed the disadvantages of the other methods of treatment. He said the use of the Gordon splint had given universally good results in his cases. An interesting discussion followed, pro and con, participated in by Drs. Hammond, Van Rensselaer, Hough and Frederick. In closing, among other things, Dr. Kerr said facetiously, that the bad results reported by the speakers occurred in the cases where the Gordon splint had not been used. The president, Dr. Busey, announced the death of Dr. Draughbaugh in the army at Santiago, and upon motion a committee was appointed to draft suitable resolutions to be sent to the family of the deceased.

DR. GALLINGER.—Dr. Ralph E. Gallinger, son of Senator Gallinger, has resigned from the assistant staff of the Central Dispensary and Emergency Hospital, and has begun practice in Concord, N. H.

DEATH OF DR. BREWER.—Dr. Madison M. Brewer, one of the surgeons who recently returned ill from Santiago, died of typhoid fever at Garfield Hospital on the 3rd inst. Dr. Brewer was son of Dr. John Brewer, U. S. A., was a graduate of the Columbian Medical College, and formerly resident physician at the Garfield Hospital.

CHANGES AT THE EMERGENCY HOSPITAL.—The term of service of Dr. James D. Fife expired on the 30th ultimo, and Dr. W. N. Glover was appointed resident physician to succeed him. Dr. W. H. Mohart became first assistant, and Dr. Thompson, of the University of Virginia, who recently passed the competitive examination, was appointed second assistant resident.

REPORT OF COMMISSIONERS OF PHARMACY.—Dr. John T. Winter, president of the Commissioners of Pharmacy, has submitted their annual report for the year ended June 30. The report shows that thirty applicants were examined during the year. Eight of the applicants passed satisfactory examinations and were licensed; twenty-two failed to pass after a second examination, and were refused registration; thirty-seven graduates of chartered colleges of pharmacy were registered on the presentation of their diplomas.

GEORGETOWN MEDICAL SCHOOL.—The Medical Department of the Georgetown University began its session on the 2d, with a large increase in the number of its students. The University Hospital is doing excellent work. The Emergency Department is in charge of Dr. W. C. Gwynne as resident, and Dr. James J. Kilran as extern. Dr. J. J. Kinyon was appointed Professor of Pathology and Bacteriology; D. J. D. Morgan, Professor of Clinical Medicine and Dr. C. L. Allen, Clinical Professor of Diseases of the Nervous System. Dr. J. W. H. Lovejoy resigned the chair of Theory and Practice of Medicine, and was elected Emeritus Professor of Theory and Practice of

Medicine. Dr. Samuel S. Adams has been elected his successor. Dr. Lovejoy was one of the original faculty at the opening of the school in 1851, holding the chair of Professor of Chemistry until 1854. In 1880, after an interval of twenty-six years, Dr. Lovejoy re-entered the faculty as Professor of Materia Medica and Therapeutics, which he continued until 1883, when he was elected to the chair of Theory and Practice of Medicine, on the resignation of Dr. Samuel C. Busey.

MEDICAL DEPARTMENT COLUMBIAN UNIVERSITY.—The Medical and Dental Departments of the Columbian University opened their respective schools on the 3d instant. Dr. W. W. Johnston, Professor of Theory and Practice of Medicine, delivered the address to the medical students, and Dr. J. Hall Lewis, Dean of the Dental Faculty, addressed the dentals. Dr. E. A. DeSchweinetz, Dean of the Medical School, announced the formal opening of the Columbian University Hospital.

CHANGE OF ADDRESS.

Black, J. F., from Springfield, Mass., to 244 E. 19th St., New York, N. Y.
 Bingley, J. H., from Cincinnati, Ohio, to Hicks Bldg, San Antonio, Texas.
 Druet, A. L., from Hiteman to Marysville, Iowa.
 Donohue, M. J., from Chicago, Ill., to Clintonville, Wis.
 Feltwell, A. L., from Altoona, Pa., to 1528 Snyder Ave., Philadelphia, Pa.
 Frahm, M., from Tuscola to 288 Michigan Ave., Chicago, Ill.
 Paris, J. W., from Carthersville to Female Hospital, St. Louis, Mo.
 Gurney, G. S., from 286 E. 7th to 263 Sherburne Ave., St. Paul, Minn.
 Glasgow, F. A., from 2608 Locust St. to 3894 Washington Ave., St. Louis, Mo.
 Haubold, H. A., from Elberon, N. J., to 140 E. 72d St., New York City.
 Hawthorne, E. W., from New Cambria to Gypsum City, Kan.
 Kuhn, G. A., from 2625 St. Louis St. to 2702 N. Grand, St. Louis, Mo.
 Kirkbride, M. F., from Spring Lake Beach, N. J., to 2212 Green St., Philadelphia, Pa.
 Kaestlen, S. E., from 615 Lorain to 50 McLean St., Cleveland, Ohio.
 Little, W. J., from Madison, Neb., to Independence, Mo.
 McDougall, C. D., from Hixon to Athens, Ohio.
 Montgomery, F., from Mt. Sterling to Clayton, Ill.
 Moore, J. E., from Cumberland, Ohio, to Alliance, Neb.
 McGaban, C. F., from New York, N. Y., to Aiken, S. C.
 Nolder, S. M., from Tipton to Elwood, Ind.
 Rogers, M. W., from Carlton to Alexander, Texas.
 Simpson, B. S., from 4555 Delmar to 4227 Finney Ave., St. Louis, Mo.
 Schorr, E., from 361 Antoine St. to 114 Elizabeth St. E., Detroit, Mich.
 Smith, E. F., from 257 W. 44th to 308 W. 45th St., New York, N. Y.
 Smith, P. C., from Bellvue to Assryia Centre, Mich.
 Sloan, I., from 274 W. 12th St. to 486 Hermitage Ave., Chicago, Ill.
 Tabb, D. R., from Chicago, Ill., to U. S. Marina Hospital, Reedy Island, Del.
 Williams, E. C., from Bloomington to 628 W. Adams St., Chicago, Ill.
 Wright, M. J., from Mason to 602 Michigan Ave. W., Lausang, Mich.
 Zapffe, F., from 311 E. North Ave. to 925 Warran Ave., Chicago, Ill.

LETTERS RECEIVED.

American Therapeutic Co., New York, N. Y.; Ammonol Chemical Co., New York, N. Y., (2).
 Bischoff, C. & Co., New York, N. Y.; Blodgett, F. J., New York, N. Y.; Bower, G. S., Ransom, Ill.; Brown, Alice C., New York, N. Y.; Bromine-Iodine Chemical Co., Birmingham, N. Y.; Billings, Frank, Chicago, Ill.; Bailey, S., Mt. Ayr, Iowa; Blackbourne, F. E., Beltown, Wis.; Bailey, Steele, Stanford, Ky.; Briggs, E., Wilmington, Ohio.
 Carter, Geo. D., Saverton, Mo.; Chandler, J. G., Detroit, Mich.; Choate, D., Salem, Mass.
 Daily, M., Sheldon, Iowa.
 Edes, Robt. T., Jamaica Plain, Mass.; Emanuel, H. W., Minor, N. D.; Erwin, A. J., Mansfield, Ohio.
 Fuller's, C. H., Adv. Agency, Chicago, Ill.; Ferguson, E. D., Troy, N. Y.; Forman, B. H., Iona, Cal.
 Gihon, A. L., New York, N. Y.; Galloway, D. H., Chicago, Ill.; Gibson, Robt., Watford, Ontario; Guiteras, John, Philadelphia, Pa.; Garber, S. C., Camden, Ark.
 Haubold, H. A., New York, N. Y.; Holstein, Geo., Bridgeport, Pa.; Haldenstein, I., New York, N. Y.; Howard, C. Norman, Washington, D. C.; Hurty, J. N., Indianapolis, Ind.; Heddens, C. H., Wellsburg, Iowa; Hermann, A. L., Minneapolis, Minn.; Hummel, A. L., Adv. Agency, New York, N. Y., (2).
 Johnson, C. H., Grand Rapids, Mich.; Jarrett, H. S., Towson, Md.
 Kinnaman, R. C., Ashland, Ohio; Kimball, C. B., National Military Home, Ind.; Kreveling, Geo. B., Philadelphia, Pa.; Kefauver, C. A., Stoutsville, Ohio; Kearney, C. A., Farley, Iowa; King, F. R., Anita, Iowa; Keener, W. T., Chicago, Ill.; Kempson, J. F., New York, N. Y.
 Meinert & Fisch, Remsen, Iowa; Malt Diastase Co., New York, N. Y., (2); McLain, W. H., Wheeling, W. Va.; Mathews, J. M., Louisville, Ky.; McLean & Co., S. F., New York, N. Y.; Miner, W. W., Ware, Mass.; Moure, E. J., Bordeaux, France; Mayer, Emil, New York, N. Y.; Moore, W. A., Hindsville, Ark.
 Outten, W. B., St. Louis, Mo.; Ottolengui, R., New York, N. Y.
 Publishers Collection Agency, Chicago, Ill.; Putnam's, G. P., Sons, New York, N. Y.; Parker, E. F., Charleston, S. C.; Plummer, C. G., Salt Lake City, Utah; Pike, E. R., Abington, Conn.; Paquin, Paul, Laboratories, St. Louis, Mo., (2).
 Reeve, D. N., Allison, Iowa; Rogers, John, Jr., New York, N. Y.; Reed, C. A. L., Cincinnati, Ohio; Reed, W. W., Fowler, Colo.
 Shotwell, A. N., Mt. Clemens, Mich.; Sherer, J. W., Kansas City, Mo.; Shaffer, J. W., Sandusky, Ohio; Stout, J. C., Oakland, Cal.; Stewart, F. H., Brooklyn, N. Y.; Sutton, E. M., Peoria, Ill.; Smart, Chas., Washington, D. C.
 Thayer, Chas. P., Boston, Mass.; Taylor, M. B., Trion, Tenn.; Tyson, James, Philadelphia, Pa.; Thilo, Geo., Jr., Chicago, Ill.; Taylor, A. N., Orlando, Fla.
 Womack, C. W., Chapel Hill, Tenn.; Wishart, J. S., Toronto, Canada; Wellington, J. R., Washington, D. C.; Willard, L. M., Wausau, Wis.; Wordin, N. E., Bridgeport, Conn.; Weaver, Geo. H., Chicago, Ill.; Webster, David, New York, N. Y.
 Zenner, Philip, Cincinnati, Ohio.

A NEW FOOD FOR DIABETICS.

Nut Gluten.

PHYSICIANS long ago reached the conclusion that the chief question to be considered in the treatment of diabetics is the matter of diet. Diabetes is, in the majority of cases at least,—certainly in all curable forms of the disease,—a disorder of nutrition in which there is the least oxidation. The amount of sugar consumed being less than normal, this element accumulates in the blood beyond the normal percentage of two or three parts per thousand parts of blood, and in consequence the kidneys are compelled to eliminate the surplus as a foreign and noxious substance. The use of starch, cane-sugar, and glucose markedly increases the amount of sugar eliminated through the urine, a fact which had led to the general interdiction of the use of these food elements by diabetics. Modern investigations, however, have shown that the absolute interdiction of starch is not necessary in ordinary cases. The patient thrives better if a small amount of carbohydrates is permitted in the dietary.

The absolute interdiction of starch led to the general employment of an almost exclusive meat dietary by this class of sufferers. Bran cakes were resorted to as a substitute for bread, but were by no means satisfactory. The investigations of Bouchard and others, within a few years, have shown that an exclusive meat dietary in diabetes is by no means free from danger, though it diminishes the quantity of sugar.

Diabetes is closely related to rheumatism. In the latter disease there is a deficient oxidation of nitrogenous wastes, while in diabetes the failure relates chiefly to hydrocarbons. When, however, a diabetic patient is put upon an exclusive meat diet, the great excess of nitrogenous matter introduced into his system soon saturates the body with uric acid, creatin, creatinin, and xanthin bases of various sorts. The already weakened oxidizing powers of the body are thus overwhelmed, although the condition is the opposite of that which obtains when an excess of carbohydrates is taken. The result is the production of a most pronounced state of uric acid poisoning, or lithemia, and the great excess of meat introduced into the alimentary canal leads to proteid fermentation, or putrefactive processes, whereby a condition of true toxemia, or autointoxication, is produced, through absorption of the ptomains and toxins introduced into the alimentary canal.

Bouchard showed that with a flesh diet, and even with a mixed diet, the amount of fecal matters of a human being is more than twice as great as when meat is excluded from the dietary. When the diet consists of flesh food exclusively, the fecal toxicity is increased to a still greater extent. When the diet consists largely of meats, it is enormously greater than on a more natural dietary. This fact was pointed out by Bernard many years ago. Recent experiments have shown that the amount of uric acid and urea may be increased by an exclusively flesh diet to four times the usual normal amount in a healthy individual.

It is thus evident that an exclusive flesh diet must be an enormous tax to the already overworked kidneys in diabetes, as well by the abnormal quantity of urea and allied substances which require to be eliminated, as by the large amount of decomposition products absorbed in the alimentary canal.

The frequent appearance of positive evidence of general toxemia in cases of diabetes has long been noted. French pathologists have especially given attention to the study of this subject, and have shown conclusively, not only that diabetic coma is a toxemia, but that it may often be attributed to the saturation of the system with toxins. This fact was pointed out several years ago, but seems to have received far less attention than its importance deserves, since not a few physicians continue to feed their diabetic patients upon butcher's meat, allowing and prescribing all sorts of decomposing and readily decomposable food stuffs, such as game, meat with a *hautgaut*, fish, oysters, cheese, *pâté de foi gras*, and the like. A diabetic patient is, in fact, ordinarily allowed to eat anything he cares to eat, with the exception of farinaceous and saccharin foods. Any one who cares to investigate this subject for the purpose of ascertaining the effects of such a dietary, can readily supply himself with an abundance of most damaging evidence against it, by employing the ordinary urinary tests for decomposition products.

In the light of our present knowledge, it can be considered scarcely less than criminal to confine a diabetic patient to an exclusive meat dietary, or, indeed, to recommend such a measure as the large use of flesh foods as an element of his daily ration. Such a dietary is sure to bring about, sooner or later, the premature death of the patient, either from diabetic coma or from acute or chronic nephritis. Haig's observations upon the intimate relation between a meat dietary and Bright's disease are exceedingly suggestive in this connection.

The disgust which diabetic patients soon acquire for flesh food when required to subsist largely upon it is simply the remonstrance of a natural instinct against this unnatural and unwholesome dietary. The diabetic, after following the usual restricted bill of fare for a few weeks, develops an almost irresistible longing for bread. This craving for a natural food is as clear an indication of the wholesomeness of bread as a human aliment as the loathing for flesh food is an indication of its unwholesomeness and unnaturalness.

The diabetic's disease renders ordinary bread in a high degree unwholesome, in the writer's opinion. There are several grave objections to the use of bread in diabetes, in addition to the fact that it contains starch. Catagorically stated, the objections to the use of baker's bread in diabetes may be enumerated as follows:—

1. The large quantity of starch present.
2. Its soft consistency, as the result of which it is so easily swallowed that an excess is taken almost before one is aware.

A New Food For Diabetics.

3. The imperfectly cooked condition of the greater portion of the starch.

4. The presence of large quantities of bacteria capable of giving rise to decomposition of proteids and other food stuffs in the alimentary canal, as well as of ptomaines and substances more or less toxic, from the fermentation and decomposition to which the bread is subjected in the process of manufacture.

The second, third, and fourth objections above mentioned are certainly of not as great importance as the first; nevertheless each has an important bearing upon the pathology of this disease. If the diabetic must take bread, he should take it in such form that it will in the smallest quantity afford him the greatest possible amount of satisfaction. Soft bread requires very little chewing. It is bolted without mastication, and hence affords little gustatory satisfaction. The imperfectly cooked condition of the great mass of the loaf, which is protected by the ordinary crust from the action of the oven heat, may possibly be one of the original causes of diabetes, by filling the blood with a large quantity of dextrins representing different stages along the road toward levulose, the final destiny of farinaceous substances.

The ordinary process of leavening, or fermenting, bread leads to the development of enormous quantities of microbes in the dough, the number of which, far from being diminished by the sojourn of the loaf in the oven, is actually increased. Recent observations made in the bacteriological laboratory of the Battle Creek Sanitarium showed the number of microbes present in ordinary wheat dough to be increased from a few thousands to the gram in the flour to more than a hundred million in a quantity of dough representing the same amount of flour, and to more than double that number in the loaf when removed from the oven. So vast a number of microbes taken into the alimentary canal must have a decided influence upon intestinal asepsis, and must give rise to the production of enormous quantities of ptomaines and toxins, in the elimination of which the liver must certainly be seriously taxed and embarrassed.

Numerous efforts have been made to supply a satisfactory form of bread for diabetics. Various so-called gluten flours and gluten breads manufactured in this country have been widely recommended for use in this disease, but unfortunately, with one or two exceptions, these products have, on examination, proved to be absolutely fraudulent as regards the claims made for them. In one notable instance, a brand of flour sold as gluten flour was, on examination, shown to contain less gluten than ordinary whole-wheat flour. It ought to be generally known that it is practically impossible to manufacture, by any process of milling, a flour which will contain more gluten or proteid matter than is contained in the entire wheat.

For many years an excellent brand of gluten in the form of large oval cakes, has been manufactured and sold in the Paris bake shops, and for the last nine or ten years the Battle Creek Sanitarium Health Food

Co. have manufactured a similar, though somewhat improved, product, known as pure gluten biscuit, together with several other forms of gluten biscuit, containing gluten in varying proportions from twenty to forty per cent., intended for use by cases not requiring the most rigid dietary. None of these products have, however, been altogether satisfactory. The gluten of wheat, when separated from the starch by the usual process of washing (the only way by which the separation can be made), is almost as tasteless as horn, and is so tough that even when thoroughly baked, it can be masticated only with difficulty. Consequently, not a small proportion of persons suffering from diabetes have preferred to forego the use of bread altogether rather than eat these imperfect substitutes.

A Perfect Bread for Diabetics.—As the result of long-continued investigation and experimentation, a bread has been at last produced which answers all the requirements.

First, it is genuine gluten bread, made from the washed gluten of wheat.

Second, it is really a bread, made in the form of a small square biscuit, hard enough to require mastication, but still as crisp and brittle as a soda cracker.

Third, it is exceedingly palatable, and really a toothsome delicacy, the use of which could not in any way be conceived to be a hardship.

This bread is the result of a combination of choice edible nuts with washed wheat gluten, in such proportions and by such a method as to give to it the desirable edible qualities referred to, while at the same time enhancing its value as a food for diabetics, who require fats as well as proteids, and in much larger quantity than the ordinary proportion, for when starch and sugar are withheld, fat must be substituted.

Nut gluten may be fairly said to be the *ne plus ultra* of diabetic aliments. No possible food preparation could offer more suitable nutritive material, and the ingenuity of the pastry cooks has never devised anything more exquisitely delicate in flavor and crisp in consistency than nut gluten biscuit.

It is not expected, of course, that the diabetic patient will confine himself exclusively to the nut gluten when pursuing a prescribed dietary, as green vegetables of various sorts are allowable, together with acid and sub-acid fruits, etc., but the diabetic may take nut gluten biscuit as freely as he likes without the slightest fear of producing diabetic coma, Bright's disease, or apoplexy from premature degeneration of the cerebral arteries. Neither need he fear indigestion, as when feeding upon the grease-shortened products which have sometimes been offered as foods especially prepared with reference to this disease.

The use of nut gluten need not be confined by any means to diabetics, as it is an exceedingly useful food for neurasthenics, for persons suffering from farinaceous indigestion, and for all who require a rapid development of fat and blood, but who are not able to digest starch in any considerable quantity. Taken constantly,

in fact, it is a capital addition to the ordinary bill of fare for all classes of invalids, and not only for sick people, but for the well. Consumptives, lean persons, fever convalescents, infants who have acquired their first teeth, rheumatics, and sufferers from Bright's disease who are obliged to discontinue the use of flesh food because of their maladies, and numerous other classes of invalids, may be benefited by the free use of nut gluten biscuit.

Samples of this and other excellent food products may be obtained by addressing the Battle Creek Sanitarium Health Food Co., Battle Creek, Mich. They are also offered for sale by many of the leading grocers of our large cities.

THE CAUSE OF AMERICAN LEANNESS.

THE AVERAGE American is more or less emaciated. The lank Southerner, as well as the characteristic Yankee type, has "a lean and hungry look," as Shakespeare said of Cassius. The Englishman is fat and sleek headed. He is not only able to "sleep o' nights," but is less likely to die of tuberculosis or cancer of the stomach than is his American cousin.

The causes of this proverbial cadaverousness among Americans may be numerous, but doubtless the greatest of all is the inability to digest in sufficient quantities those elements of food which are chiefly conducive to fat production,—starch, sugar, and fats.

Dr. J. H. Kellogg, of Battle Creek, Mich., recently made a two-weeks' study of the food eaten by one hundred and twenty-five healthy workingmen and one hundred and forty healthy workingwomen. During this time it was found that the average weight of the women remained precisely the same, while that of the men increased four fifths of a pound. The average rate of daily ration was exactly 600 grams, or 20 ounces, of which seven parts consisted of proteids, three parts of fat, and forty parts of starch and sugar. This ration requires the daily digestion of 36 grams ($1\frac{1}{2}$ ounces) of fat, and 480 grams (16 ounces) of starch and sugar. As long as the fat-making elements can be digested in these proportions, viz., at the rate of about seventeen ounces of water-free starch, sugar, and fat per diem, the figure will maintain its natural rotundity; but when the digestion of these elements fails, leanness begins.

This is especially true as regards the digestion of starch, the most important of the several fat-making elements. Fat can be digested only when taken in small quantities, about one and one-half ounces daily, as before stated. Cane-sugar likewise produces mischief unless its use is restricted to small quantities. Starch is the great fat-producer, as well as the chief element for replenishing the stores of vital energy which the muscles and the brain are constantly dissipating.

The failure of ability to digest starch, or amylaceous dyspepsia, as this peculiar form of digestive disorder is known, must contribute, in large measure at

least, to the rapid increase of lean persons among all classes of American people.

It has long been known that water-brash and other dyspeptic symptoms almost universal among the Scotch Highlanders are the result of the habitual use among these people of what is known as Scotch brose, which consists of just simply raw oatmeal stirred up with a little hot water. It is not so generally known that the prevalence of indigestion in this country, which has given us the reputation of being a nation of dyspeptics, is largely due to essentially the same cause; namely, the use of farinaceous or cereal foods in an uncooked or imperfectly cooked condition.

The bread of the olden time consisted of thin cakes formed from a mixture of flour and water, well kneaded, and baked on a tin or stove kept hot by a glowing fire. Bread prepared in this manner is ready for prompt digestion and assimilation.



The illustrations herewith shown represent the results obtained in an interesting laboratory experiment, the purpose of which was to note the effect of thorough heat digestion in the conversion of starch.

The transformation of starch into sugar—in other words, the digestion of starch—takes place by stages. The starch is first converted into—

(A) Amylodextrin, or soluble starch. This is the form in which it is found in well-boiled paste and in ordinary baker's bread, in so-called ready-cooked breakfast cereals, and in mushes, gruels, vegetable soups, and similar preparations of starch.

In the second stage (B) the starch is further transformed into erythrodextrin, the form in which it is found in what might be termed the half-cooked

condition of well-baked ordinary baker's bread, in crackers, rolls, gems, and similar foods.

The third stage is that of (C), or achroodextrin, or that in which the starch is found in such perfectly cooked cereal foods as zwieback, granose, and granola, and in the outer browned portion of the crust of bread.

The fourth stage is maltose, or sugar, the final result of starch digestion.

The digestion of starch is accomplished in nature by the action of so-called ferments or diastases. These are found abundantly in both the animal and the vegetable kingdom. In animals it is found in the saliva and other digestive fluids. In grains, the starch-digesting ferment, or diastase, is found just beneath the bran, ready to form sugar for the nourishment of the young plant. The starch found in green apples and other fruits is, by the process of ripening, converted first into the various ferments or dextrins exclusively, and finally into sugar.

The formation of the last form of dextrin is indicated by the appearance of a slight brownish color in the digesting mass. One additional step only is necessary to convert the starch into sugar. Heat is not capable of producing this step in the process, but when achroodextrin, the last stage of heat digestion, the perfectly cooked starch, is brought in contact with the saliva of any other starch-digesting ferment, the formation of sugar takes place instantaneously. Raw starch, on the other hand, when exposed to the action of the saliva, is not changed at all. Slightly cooked starch; that is, amylo-dextrin or fluid starch, is converted into sugar only by the prolonged action of the saliva. Erythro-dextrin, or imperfectly cooked starch, is converted into sugar somewhat more quickly by the action of the saliva, but in achroodextrin, or perfectly cooked starch, the transformation takes place as soon as it is brought in contact with the saliva. It is for this reason that the brown crust of bread, zwieback, and well-toasted granose develop a distinctly sweetish taste when chewed.

These facts are of great importance to a large class of invalids, particularly to those persons,—an exceedingly common class,—who have lost the power to digest starch, or who are able to digest grains and other starchy foods only with great difficulty. These facts explain the great value of zwieback, the German twice-baked bread, which has been used for so many centuries at Carlsbad, the famous European resort, in the treatment of chronic dyspepsia.

The only objection to zwieback is the extreme difficulty experienced by many people in masticating it; persons who have imperfect or sensitive teeth find the use of zwieback almost impossible, and in the case of persons suffering from dilatation of the stomach, imperfectly masticated masses of zwieback sometimes remain in the stomach for a long time in an undigested state.

The full appreciation of these facts led a well-known physician to undertake a series of investigations for the purpose of producing a dry cereal food

still better prepared for quick digestion in stomachs crippled by disease. Granose is a cereal product prepared directly from wheat, which is first thoroughly cooked, then pressed into translucent films thin as tissue-paper, then exposed to a high temperature, whereby the starch is so thoroughly dextrinized that achroo, the final product of heat digestion, is present in large quantities. These crisp, toothsome flakes are easily masticated, even by toothless persons, and in an empty stomach are quickly dissolved by the digestive juices. Granose is accordingly well adapted to all forms of indigestion, and especially to those cases in which the inability to digest starch is conspicuous, the most common of all digestive disorders. Granose is also nearly a panacea for constipation, an almost constant accompaniment of indigestion.

By a modification of the process of manufacture, granose may be presented in the form of crisp cakes or biscuit, which, when split and toasted, present, according to our notion, cereal food in the most delicious and most wholesome and absolutely perfect form. By a recently perfected device we are able to save the cooks the trouble and inconvenience of splitting and toasting the cakes, as our device accomplishes the work in a much more uniform and perfect manner than can be done by the ordinary method. By the addition of nuttolene, sterilized butter, milk, cream, or fruit-juice, this toasted granose cake becomes a dainty morsel fit for a king. One falls in love with toasted granose cakes at first taste, and never recovers from his infatuation.

The natural process of starch digestion may be artificially imitated by means of heat, the only difference in the result being that the final stage of the process by which sugar is produced is not reached. In other words, by the application of heat of sufficient degree for a sufficient length of time starch may be converted first into amylo-dextrin, then erythro-dextrin, and then achroodextrin. Amylo-dextrin is produced by a temperature sufficiently high to cause the hydration, or gelatination, of starch as in the formation of paste by the cooking of starch or flour. Longer cooking, or cooking for a short time at a temperature above the boiling-point of water, advances the starch one step farther in the process of digestion—to the stage of erythro-dextrin. Exposing it to a still higher temperature for a proper length of time produces achroodextrin.

Our modern methods of bread-making, in which the dough is formed into large masses, or loaves, or small masses under the name of biscuit, buns, rolls, etc., present the starch, or farinaceous elements of cereals, in a half-raw, imperfectly cooked condition, prepared to interfere with digestion, rather than to promote this most important vital process. Half-cooked mushes and porridges assist in the work of mischief, and, as a result, the American people have come to be almost universally afflicted with amylo-dyspepsia, or starch indigestion. This fact explains the extensive use of malt preparations, and the recent introduction of various starch-digesting ferments or diastases, some made from malt, others from vegetable fungi.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, OCTOBER 22, 1898.

No. 17.

ADDRESSES.

THE RISE, PROGRESS AND PRESENT NEEDS OF PEDIATRICS.

Address of the Chairman of the Section on Diseases of Children at the
Forty-ninth Annual Meeting of the American Medical Association,
held at Denver, Colo., June 7-10, 1898.

BY J. P. CROZER GRIFFITH, M.D.

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The honor which you have done me in electing me your chairman brings with it the duty of opening the session with an address. I have chosen as my subject one of great importance to us, one in which I have felt great interest and to which I have given considerable thought during a number of years, and I dwell on it now hoping to awaken in you, if need be, an equal interest in the matter, and that together we may aid in advancing the position of the branch of medical science which we represent today. The subject to which I refer treats of the rise of pediatrics as a specialty, its present position as compared with its past and its needs for future growth. I can give you but an incomplete sketch, lacking in very many of the most important details.

One is often surprised that our medical forefathers knew so much. One is also surprised that they knew so little, and yet were undoubtedly useful members of society. They had the distinct advantage over us that each man, if well trained, knew all of everything medical that there was to be known. This was because there was not so much to know. The enormous additions to medical knowledge which went on as years passed rendered the arising of specialties in medicine an absolute necessity, yet it appears strange that pediatrics should seem to have developed so slowly as a special department. That no special teaching of it was given in any medical schools was probably due to the grave mistake of viewing the child only as a little man, of imagining that the teaching of the "Principles and Practice of Medicine" gave ample preparation for the encountering and mastering of the infant's disorders, and later of making the curious assumption that because a physician understood the diseases of women he must therefore necessarily have special cognizance of diseases of children—a view still prevalent in some quarters but waning rapidly.

But as a matter of fact the recognition of diseases of children as a specialty was developing long before the fact was appreciated. The branch has existed always. Every practitioner of every age had to learn it to some extent, although unfortunately this was accomplished often only at the expense of the lives of his little patients. The urgent demand for post-graduate instruction less costly of life than this was followed naturally by the production of special text-

books, by the development of journal literature on pediatric subjects, and finally, and much later, by the establishment of special hospitals for children, of special medical societies to study their diseases, and of special instruction given to undergraduates—a much better plan than that of trusting to that expensive teacher, Experience.

Let us look briefly at the development of pediatrics in these different respects.

Text-books.—Many matters in the domain of diseases of children are treated of in the works of the ancients, but the first book devoted solely to the subject, as far as I can learn, was written by Demetrius of Apamia about 260 B.C., and was entitled "De morbis puerorum." Then in the Middle Ages we find a work by El Rhazi, about the end of the ninth century, A.D., called "De ægritudinibus puerorum." In 1472 appeared the work of P. Bagellardus of Fiume, "De ægritudinibus et remediis infantum," and in 1473 Metlinger's book "Ein vast nutzlich Regiment der junger Kinder," which, according to Hennig, was the first printed book upon the diseases of children. The first book about children written in England was by Th. Payn, 1569, entitled "The Regiment of Life; whereunto is added a Book of Children." In 1653 Pemel wrote "De morbis puerorum," and some time before 1639 Harris published "De morbis acutis infantum." Sydenham, in a letter to Harris, said: "Without flattery, you are the first man I ever envied; and it is my belief that your little book will be more useful to mankind than all I have written." Very many books in this department of medical science have appeared in Europe since these times, and, as years passed, the rate of appearance constantly increased. In recent years, from the classic "*Handbuch*," edited by Gerhardt, down to the valuable "*Traité*," edited by Grancher and his associates, and just completed, the large number of books on pediatrics of all sizes and range which have been issued bears ample testimony to the great interest in the subject taken by writers and readers abroad.

The development of text-book literature on diseases of children in the United States is even more interesting to us. This matter was so exhaustively reviewed by Adams that I shall touch it only briefly, and refer you to his valuable paper for fuller details. The first pediatric monograph appears to have been by Charles Caldwell, written in 1796, and entitled "An Attempt to Establish the Original Sameness of Three Phenomena of Fever (principally confined to infants and children) described by Medical Writers under the Several Names of Hydrocephalus Internus, Cyananche Trachealis and Diarrhea Infantum." The first book especially devoted to children was published in 1790. This was written by a layman (or rather a lay-woman) and was called "The Maternal Physician." The first book on pediatrics by a physician was entitled "Practical Observations on Dis-

eases of Children, etc.," and was written by George Logan in 1825. In the same year the celebrated Dr. Wm. P. Dewees, so well known as one of the earlier eminent American physicians, published his work on children's diseases. From this date onward the American books upon pediatrics have been rapidly multiplying. Among them may be mentioned the works of Condie, Eberle, Meigs, Lewis Smith, Jacobi, Rotch and Holt, not forgetting the "Cyclopædia of the Diseases of Children," edited by Keating, the only work of the sort in the English language, and one of which we can justly be proud.

Pediatric Journals.—With regard to medical journals devoted to diseases of children, the first of which I can learn was one denominated *Archiv. für die Geburtshilfe, Frauenzimmer-und-neugeborner Kinderkrankheiten*. This was issued in 1787. The first journal devoted exclusively to diseases of children appears to have been *Analekten über Kinderkrankheiten*, which was commenced in 1834. Neither of these journals is longer current. Since this time there have been numerous journals started, some of them still existing. I count at present four in German, the oldest being the well-known *Jahrbuch für Kinderheilkunde*, begun in 1857. The other three are, in order, the *Archiv f. Kinderheilkunde*, the *Kinderarzt*, and the *Centralblatt f. Kinderheilkunde*. There are four in French, of which the oldest is the *Revue mensuelle des Maladies de l'Enfance*, started in 1883, and the others, in order, the *Journal de Clinique et de Therapeutique Infantile*, the *Annales de Médecine et Chirurgie Infantiles*, and the *Archives de Médecine des Enfants*. There are one in Italian, *La Pediatria*, two in Spanish, the *Anales de Obstetricia, Ginecologia y. Pediatria*, and the *Archivos de Ginecologia y. Pediatria*, and one in Russian, the *Dietskaya Meditsina*. All but the two Spanish journals are devoted exclusively to diseases of children. Curiously, of journals published in English, there is not one owned and edited in England.

The United States is well represented in journals treating in part or entirely of the diseases of children. The *American Journal of Obstetrics and Diseases of Women and Children* was first issued in 1868. From the beginning it included articles upon the diseases of children, and later it set aside special pages for this department. The *Archives of Pediatrics* was established in 1884, the *Annals of Gynecology and Pediatrics* in 1890, and *Pediatrics* in 1895.

It is evident, then, that journals treating specially of diseases of children, slow to start, show at present no dearth. Certainly this indicates the rapid strides which the interest in the subject has made nearly everywhere in the medical world.

Children's Hospitals.—Regarding hospitals for sick children, I find that the first of any sort appears to have been the Dispensary for Sick Children, founded in London by G. Armstrong, in 1769. It became extinct on Dr. Armstrong's death. It was intended only for out-patients, as was the one founded by Mastalier in Vienna in 1787. In 1802 the *Maison de l'Enfant Jesus* in Paris was changed, on the suggestion of Tenon, from an orphan asylum into a hospital for children of from two to fifteen years of age. This hospital, still in existence as the *Hôpital des Enfants Malades*, was the first institution designed solely for the care of sick children within its walls. It was not until thirty-two years later, in 1834, that the second hospital was founded—the *Nicolas Children's Hos-*

pital in St. Petersburg. The development since then of similar institutions in different localities advanced at first only slowly, then moved rapidly. In 1852 the Great Ormond Street Hospital was founded in London. At that time, writes Dr. Charles West, there was no other hospital in England or America for diseases of children.

What a wonderful change since these early beginnings! Hospitals for sick children are scattered all through England, London alone having quite a number, and the cities of Continental Europe are thoroughly well supplied.

The first hospital to be started in the United States would appear to be the Nursery and Child's Hospital in New York, founded in 1854 and still in existence. Yet this institution was at first a maternity as well; and the oldest hospital purely for children is undoubtedly the Children's Hospital in Philadelphia, which was established in 1855. Now a glance at the list of benevolent institutions in the United States fills one with astonishment at the number of general and special hospitals for children; the homes, asylums, sanatoria, etc., throughout the country, to say nothing of the children's wards connected with nearly all the general hospitals for adults.

Pediatric Societies.—Next let us consider the subject of medical societies for the study of diseases of children. All advance in this line has been very recent, leaving still much to be desired. Although England has numerous other special societies, such as a Balneological Society, a Medical Temperance Association, two Dermatological Societies, a Society of Anesthetists, etc., I have not yet been able to learn of a single organization devoted solely to pediatrics, out of 79 Provincial medical societies and 71 in London itself! The British Medical Association generally has a pediatric section; but not always, as for instance, at its meeting in 1897. There is not in Germany or Austria, as I am informed authoritatively by correspondents, a single independent society devoted to the study of diseases of children. The same has been true of France until within a few months. I have read very recently in the *Journal de Clinique et de Therapeutique Infantile*, that the hospital physicians of Paris are about to start a society of Infantile Medicine and Surgery. In Russia there appear to be two, one in St. Petersburg, started, as nearly as I can learn, in 1885, and one in Moscow, started, I believe, in 1892. Each publishes volumes of transactions. Of pediatric societies in other European countries I can not speak authoritatively, but I have heard of none. The *Gesellschaft der Naturforscher und Aerzte* has its pediatric section established in 1883 and meeting annually. The International Medical Congress has likewise a pediatric section. There was started in France in 1897 a Congress of Gynecology, Obstetrics and Pediatrics, which is to meet annually. In Berlin, Dr. Baginski holds every two weeks, for the discussion of pediatric subjects, an informal gathering of men who have been his assistants.

This paucity of societies for the study of children's diseases in Europe, is in contrast with the manifestation of interest in this direction which the United States has shown, particularly recently. The AMERICAN MEDICAL ASSOCIATION established the Pediatric Section, whose session we are now attending, in 1880, with Dr. A. Jacobi as its first chairman. The amount of work done is instanced by the overcrowded program before us for our present meeting. There are, as you

notice, sixty-two papers announced, and we were obliged to refuse quite a number of applications on account of lack of time to have the papers read. When we consider that the ASSOCIATION is meeting this year over two thousand miles from the more densely populated Eastern States, the activity and interest in pediatric studies which the program shows is really astonishing.

In 1860 an attempt was made by the New York Academy of Medicine to form a Section for Diseases of Children, but after a few meetings it was abandoned. Years later, in 1887, the present Pediatric Section was started, with Dr. J. Lewis Smith as its first chairman. This organization contains many of the leading writers on children's diseases in the country. It has always been a very active one and has issued a large amount of valuable matter.

The American Pediatric Society was established in 1888, with Dr. A. Jacobi as its first president. It has from its origin been an exceedingly active organization. Its volumes of Transactions contain a large amount of valuable scientific work and are appreciated at home and abroad.

The Pan-American Medical Congress was founded in 1893, with a pediatric among its other sections, and Dr. John M. Keating as the first chairman of this section.

This covers the national pediatric associations. Recently there have been established some State societies. The Ohio State Pediatric Society, meeting once a year, held its first meeting in May, 1895, with Dr. S. L. McCurdy as its first president; and the Indiana State Pediatric Society, likewise meeting yearly, was organized in December, 1897, with Dr. P. J. Barcus as its first president, and holds its first meeting this year. I know of no other State societies up to the present time.

Of independent city societies for the study of children's diseases, there is in St. Louis the Bethesda Pediatric Society, which was organized in the autumn of 1895 with Dr. E. W. Saunders as its first president. Its membership is limited to fifteen, but invitations to outsiders are extended for each monthly meeting. The interest is great and the meetings enthusiastic.

The Philadelphia Pediatric Society was established December, 1896, and holds its meetings monthly. It has proved a success beyond all expectation, has a large membership and interesting and well attended meetings at which much work is done. Its proceedings are published regularly in several medical journals. I feel greatly honored in having been its first president and in having had the opportunity to review the work of the first year in an address published in the *Archives of Pediatrics* a short time ago. It is possible, and even likely, that there are other city societies of which I have been unable to learn. Certainly they are to be welcomed.

Public Teaching of Diseases of Children.—Finally let us consider the status of the public teaching of pediatrics in medical schools. An interesting and valuable contribution has been published on this subject by S. W. Kelley, which approaches the matter from another point of view, and therefore duplicates little, if at all, what I shall have to say.

Dr. Jacobi is my authority for the statement that Rosenstein, who wrote a text-book on diseases of children in 1752, and his predecessor, Roberg, introduced clinical instruction in diseases of children in

Stockholm. This would appear to be the earliest instance of the official special teaching of the subject. As far as I can learn there was no other public teaching in Europe until about 1850, when Giraldès gave instruction in surgical and Bouchut in medical affections of children in Paris; while at about the same time Mauthner was teaching pediatrics in Vienna, and Hauner in Munich. About 1858 Ehlers began lecturing in Berlin. The branch now receives attention in nearly all of both the large and the small universities, and is represented in many of them not by a clinical chair but by a recognized full professorship. In this respect Europe is still decidedly ahead of us, although we are rapidly gaining.

In England, however, the teaching of pediatrics would seem for the most part to be far from satisfactory. According to a recent editorial appearing in *Pediatrics*, taking St. Thomas' and St. Bartholomew's as examples of what prevails in most of the London hospital schools, there are no special lectures on pediatrics given at all. In Manchester, under the teaching of Dr. Ashby, conditions appear somewhat more advanced. In Edinburgh a lectureship on this subject has been established only within very recent years.

How is it regarding the public teaching of pediatrics in the United States? Although Gunning Bedford, about 1850, taught diseases of children in a mixed women's and children's clinic in the University Medical College of New York, the first special chair in this department was established in the New York Medical College in 1860 and given to our distinguished fellow-physician, Dr. Jacobi. Since that time what a change! Yet the change came but slowly. Dr. Jacobi, writing in the *Cyclopedia of the Diseases of Children* in 1888—only ten years ago—says: "To my knowledge there is no school in the country which lays the least stress on that branch of instruction. . . . No examination being required by those to whom the student looks for direction and enlightenment, he neglects the study, to find out too late the mistake he has made in doing so."

Now, as I said, what a change! How the profession throughout the country is awakening to the demands of the time! No need to ask longer whether pediatrics is or should be a specialty. See only what the colleges are doing, for the proof that its position is being fully recognized. In order to illustrate this point I have examined and compared lists of regular medical colleges in the United States and, with the assistance of our secretary, Dr. Rosenthal, have applied to all of them for recent announcements and reports. From the great majority these have been received, but for the information regarding a few I have been obliged to depend upon the schools' advertised list of teachers. I find the names of 130 colleges, from which must be excluded 13 of which nothing whatever could be learned. (The post-graduate schools are not included in the analysis, although all of them have full chairs of diseases of children.) A study of the 117 remaining schools is most interesting. In 64 of them, i. e., 54.7 per cent., there is a special chair for pediatrics. In 43, i. e., 36.75 per cent., the chair is combined with some other department—not by any means always as the minor subject, and never buried in it without mention of the title. In 3 colleges there is only a lectureship. In only 7, i. e., 5.98 per cent., is there no announced teaching of diseases of children; and I have knowledge that in

some of these 7 special instruction in pediatrics is given. In all but 7, then, out of 117, the published announcements recognize the importance of pediatrics and advertise the teaching of it.

Further, of the 64 colleges in which the department has its own independent chair, in 49, i. e., 76.55 per cent., the title is that of "Professor of Pediatrics" or "Professor of Diseases of Children." In only 15, i. e., 23.43 per cent., the title is a minor one, usually "Clinical Professor," sometimes "Associate Professor," and in one instance "Professor of Clinical Pediatrics."

No positive conclusions can be drawn from these facts, but from them, with a study of the catalogues, certain very suggestive inferences are justifiable. It was clear in most cases where the title of "Professor" is given that the teacher is a full member of the faculty, and his department admitted as equal to any other. This shows well the recognition which pediatrics has gained throughout the country. Even in cases where this inference could not be drawn, another was evident, viz., that the Professor is not limited to clinical work alone, but has, if he wishes it, the option of giving a systematic course in his department. In fact, this is distinctly stated in many cases. In the smaller number of colleges where such a title as "Clinical Professor" is employed I know that in some instances at least the teacher has this option. I dwell upon this point because my belief is that pediatrics should be taught both clinically and didactically; and I think the figures I give prove that this is now the commonly accepted opinion throughout the country.

As to the numbers of hours given to pediatrics I can make no positive generalizations. As far as it could be determined the number of hours varies greatly in different schools, and is often much below what it should be.

Some more accurate details may be of interest. About two years ago, with a special purpose in view, I addressed a series of questions to the holders of chairs of diseases of children in a number of the leading medical schools of the United States, selecting chiefly those in which an independent chair existed, and a number of others in which the department was combined with some other, but where active teaching in pediatrics was going on. The questions were personal to a certain extent, and I feel authorized therefore in giving only the results in general, without mentioning the names of the institutions.

I have accurate statistics of 28 colleges, not gleaned from the catalogues, but from the direct answers of the teachers themselves. In 17 of the 28 colleges the department of pediatrics is represented upon the governing medical body of the school. This does not represent the actual percentage which holds good for all the schools of the country, for it happens that the 28 schools selected had an unusually large proportion of *clinical* chairs. In 14 out of 24 colleges suitable for comparison the professor of pediatrics receives a salary. This large proportion does not fairly represent the true importance which is attached to the chair by most schools, since in certainly 5, and probably in nearly all of the remaining 10, circumstances compelled all or nearly all of the other chairs to be unremunerated also. Therefore, in almost every one of the 28 colleges studied, the teacher in the department of the diseases of children is considered of sufficient importance to receive remuneration for his work. In all but 5 of the 28 colleges there are a number of other officers beside the professor who are

actively engaged in teaching diseases of children. In 23 of the colleges didactic as well as clinical instruction is given; in a large number of the 28 ward class instruction is also used, while in a considerable number recitations are likewise held. In at least 19 of the 28 the chair does not depend on dispensary patients alone for clinical material, but has ward patients also.

All these facts are proof—if proof were needed—of the high estimation the medical schools have of the importance of pediatric teaching. Finally, in all but three of the twenty-eight colleges, i. e., in 89 per cent., there is a required final examination by the professor of pediatrics. In most of them this ranks with all other examinations. Here is the evidence that most medical schools are alive to the fact that pediatrics is important enough to *require* their students to study it. How different from the condition of ten years ago, as Dr. Jacobi shows in the words I have already quoted.

We have hastily reviewed the rise of pediatrics as a special branch of medical science, and the astonishingly rapid progress which it has made in very recent years. What now are its needs? The little I have to say here can be said briefly.

First, there is the need that the recognition of the importance of special teaching in diseases of children to medical students shall become universal. Almost all of the newer and more progressive schools do appreciate this. I am sorry to say that in some of our oldest and best known institutions, where one should expect the most advancement, the branch receives even yet by no means the recognition which it deserves, and which the schools of Germany and France are giving it. Conservatism is good in its place, but when pushed too far it becomes merely "old-fogyism." It may be safely prophesied that not many years will pass before the demands of the times, the demands of undergraduates—for these fully realize the value of pediatrics to them—will force even our most conservative colleges to discard for the new garments of modern progress that shabby, threadbare mantle of antiquity and precedent which they have so long and so closely wrapped about them.

Then, in nearly all of our schools there is the need that much more time be allotted to the study of children's diseases, and that more clinical material be provided for practical personal study by the students. In no other way can the students be given that actual knowledge of children's ailments which they are sure to need very early in their career as physicians. Finally, there is a need not to be overlooked—that no attempt shall be made actually to dissociate pediatrics from the main branches. This is equally true of all specialties, both in their teaching and their practice. The effort so to separate can do only harm and can not possibly succeed. Special teaching is absolutely required. It is impossible now-a-days for the professor of medicine or the professor of surgery to cover the ground in the time at his disposal. But for all specialties there must be the foundation of the main branches of medical science, and all special branches must be studied in their bearing upon these. In one sense pediatrics is wider than general medicine. It is different from all other special branches in one important particular. These latter instance the application of general medical knowledge to special organs of the body. Pediatrics, however, is special knowledge of disease as it expresses itself in the general system of the child. The general physi-

cian need know little of children's diseases. The pediatricist must not only know adult medicine but special child-medicine as well.

What must be our aim, then, as physicians interested in this great branch of medical science? To so study it, practice it, write of it, teach it, work for it, that we may fit ourselves and others to aid in the best way the most helpless and defenceless, the most attractive, the most appealing of our patients—the children.

In closing I must express my indebtedness for valuable information obtained from the article by Rauffuss on "Die Kinderheilstalten," and that by Hennig on "Die Geschichte der Kinderkrankheiten," both in Gerhart's *Handbuch der Kinderkrankheiten*, Vol. i; that by Jacobi in the Introduction to the *Cyclopedia of the Diseases of Children*; that by Adams, on the "Evolution of Pediatric Literature in the United States," in the *Archives of Pediatrics*, June, 1897, and that by Kelley on "Pediatrics, Past, Present and Future," in the *Cleveland Medical Gazette*, September, 1896. Meissner's "Grundlage der Literatur der Pädiatrik"; an editorial in *Pediatrics*, Jan. 15, 1897; the Index Catalogue of the Library of the Surgeon-General's Office; Polk's Medical and Surgical Register of the United States; the Medical Directory for England, and the Bibliographical Supplement of the *Cyclopedia of Practical Medicine*, by Forbes and his associates, have all been of service. I am also much indebted for information furnished in personal letters from Dr. Guinon of Paris, editor of the *Revue Mensuelle des Maladies de l'Enfance*; Dr. Frühwald of Vienna, editor of the *Archives für Kinderheilkunde*. Dr. Baginski and Dr. Heubner of Berlin, Dr. Saunders of St. Louis, Dr. Lambert of Indianapolis, Dr. Rotch of Boston, Dr. Adams of Washington, Dr. Booker of Baltimore and Drs. Brown, Adriance and Carr of New York. Last, and especially, I am indebted to Dr. Jacobi of New York for many useful suggestions and much valuable information given, both in personal letters and in conversation.

THE LIMITATIONS OF MEDICINE.

Address Delivered at the Opening Exercises of Rush Medical College.
September 27, 1898.

BY FRANK BILLINGS, M.D.

CHICAGO, ILL.

Medicine has for its object the relief of suffering and the prolongation of life. There exist many limitations to the successful accomplishment of this object. The limitations of medicine are less numerous today than in the past, and many of the obstacles to success in the prevention of disease and the healing of the sick will be removed in the future.

Medicine as a whole is not a science. Of some branches which enter into it our knowledge is exact; of others our information is theoretic, while every day adds to our knowledge and removes many obstacles from the path of progress. The chemist's laboratory and the microscope have done much and will do more to make medicine a science. Progress in knowledge of chemistry and biology has been wonderful in the last twenty years, and this knowledge has removed many of the limitations of medicine. Strange as it may seem, the limitations of medicine which man is striving to remove, are due to man himself.

Man is the highest type of animal, endowed with a mind capable of reason, and gifted with a means of

communication with his fellows; and yet man is the very source of his own undoing. The original man was doubtless perfect in mind and body; the master of all created things. Like all organic life, his span was made up of periods of birth, growth, maturity and decay. He was doubtless able to combat his foes and sink at last, in the fulness of his years, into euthanasiac sleep. The history of man, since the fall, is like the repeated pages of a book. Vicious habits mark his footsteps, whether civilized or barbarian; his habits of work and of rest, his food and drink, are not rational; he contaminates the air he breathes, the water he drinks and the food he eats. The water-sources and the earth, contaminated by man, become soil for the growth of the germs which infest and sicken him. His contaminated body begets a prototype, imperfect in mind and body. From the cradle to the grave a degenerate being, he fights against a mighty host, bred of his own shortcomings. Most of the infectious and contagious diseases may be classed as preventable; most of them are filth diseases, and they can not exist in the presence of perfect cleanliness.

A proper observation of hygienic rules relating to cleanliness of the person, of food, and of the water-supply, renders a population free of typhoid, cholera and other filth diseases. The example of the city of Vienna is sufficient to prove this. Previous to 1878, Vienna received its water-supply from the Danube river, which was contaminated by the sewage of the city. While using this water-supply, Vienna suffered from the constant presence of typhoid fever, and cholera was a frequent visitor. The World's exposition of 1873, at Vienna, was practically broken up because of a visitation of cholera and typhoid fever. In 1878 Vienna's new aqueduct was completed which brought pure water from the Semmering pass in the Carpathian Alps, a distance of seventy odd miles. From that time until the present, typhoid fever and cholera do not exist in Vienna, except as importations. There has been but one exception to this—which emphasizes the lesson of the value of pure water. I think it was in the year 1888 a break occurred in the Semmering aqueduct. The old water-supply was temporarily used, until the aqueduct was repaired. Typhoid fever again promptly appeared in the city, and continued until the pure water was again supplied.

Ideal sanitation would free the world of all diseases due to filth. What prevents ideal sanitation? Many things: ignorance of the people, both rich and poor, educated and unread; an ignorance of what is real cleanliness of mind and body and of the drink and food they take. Health officers and family physicians teach in vain the value of cleanliness, the best methods of removing the contaminations of food and water, and the necessity of precautions in the presence of contagious diseases. Ignorance, prejudice and a love of dirt are often difficult to overcome. Sanitation has done much to overcome the evils of self-contamination of water, milk and other food. Sanitarians have not only the ignorance and prejudice of the people to overcome, but also the avarice of commerce. Air pollution by smoke and odors; sewage increase and consequent increased pollution from the by-products of packing-houses, manufactories, etc., food adulteration to meet competition in trade, are conditions not easily overcome, because of the political influence the dollar commands, especially in our

municipal governments. It is the influence of politics which prevents the enforcement of the laws which exist for our protection. Politics and greed are synonymous terms. Sanitation and the prevention of disease and of death are disregarded if the enforcement of the law should interfere with the official life, pleasures and emoluments of the politician.

Politics in this country not only limits the enforcement of sanitary measures, but politics has had a blighting influence upon the advancement of medical education. We have no law governing the conduct of medical schools or fixing a uniform standard of requirements for graduation, before beginning the practice of medicine. Each State has its own medical law, and no two have like laws. But few place the standard of requirements high, and most of them have very minor requirements. In many States a charter for a medical school may be obtained for a small fee by any body of men who may please to originate a diploma factory. In this city alone are twenty or more medical schools. In this, as well as in some other municipal matters, Chicago leads the world. Other States and other cities boast of medical colleges galore. The most of these are private institutions owned partly or wholly by the teaching faculty. The expenses of the institution are paid from the fees derived from the students. The result in most cases is what one would expect. Students unfit to study medicine are admitted to the schools, while inadequate facilities for teaching prevent the proper and thorough education of the student. He goes forth with a diploma, which is equivalent to a license to practice in most States, for in but a few States is an examination to obtain a license necessary. Thus, the profession is crowded with physicians who are not prepared for the work they should do; the people suffer in consequence and scientific advancement is retarded thereby. Again, once a license is obtained, the State authorities are in most instances powerless to annul it, even if the holder thereof viciously prostitute his practice. In practice the law says all physicians are equal who hold a license to practice. The one may strive by all honest means to conscientiously help suffering humanity; the other may be a fiend on earth. Murder and lesser sins may thus be lawfully committed. The criminal may write the death certificate which affords safe burial of the victim. All medical practitioners are, however, injured and their influence for good is lessened by every evil-doer in medicine. Comment is unnecessary. The influence of politics has more to do than any other one factor in the retardation of medical progress and in limiting the possibilities of medicine.

Science is gradually and surely overcoming this evil. In some States excellent laws have been established, requiring schools to admit only students who are properly prepared to study medicine. The curriculum must contain certain branches and the course of study must extend over four years. State examinations are also required for a license to practice, to which the applicant for examination is eligible only upon the evidence that he has taken a college medical course extending over a period of four years. All of the States will eventually be forced into the plan, not by law but by the people, who are slowly awakening to a better knowledge of things medical. Our State, county and city medical institutions are usually misgoverned by politics, and the patient and scientific

medicine suffer in consequence. The use of anatomic material is so restricted by law in some States that medical education suffers. It is only since 1885—twelve years—that anatomic study has been untrammelled in Illinois. It will surprise many of you to know that previous to 1874 the law of this State made no provision for the use of anatomic material, and at the same time made it a criminal offense to dissect or experiment surgically upon cadavers illegally obtained.

Vivisection has been a means of research which has so enriched our knowledge of physiology, has so perfected operations in surgery and so broadened our knowledge of pathology that thousands of human lives have been saved. Nevertheless, antivivisectionists have secured the adoption of laws in some countries, and in some States so restricted vivisection as to retard medical progress. The charge of cruelty to animals without material addition to our knowledge is not borne out by fact. No scientist worthy of the name is cruel. No scientist desires or asks for unrestricted and general vivisection. By authorized teachers and honest searchers after truth, no cruelty will be practiced. The knowledge gained will, in the vast future, be the means of saving the lives and relieving the sufferings of many times more human beings than the number of animals sacrificed. In the meantime the antivivisectionists will perform a real service and save much brute suffering if they will turn their attention and influence to the relief of the overworked, underfed beasts of burden which drag overloaded drays, tramcars, and carrettes about the streets, and the time they may spend in protection of our birds from the plume hunter will not be lost.

Our knowledge of pathology has been enormously increased in the last few years. The cause of disease is very much better understood. There is now no longer a reason for the existence of the many theories of medicine of former years. The scientific physician whose knowledge of anatomy, chemistry, general biology, pathology and clinical medicine is ripe, will therefore recognize the disease and its cause, if it is known. In the attempt to relieve the individual he will use every endeavor to remove the cause or to neutralize it. He will use anything and everything which his knowledge and judgment dictate for the relief of the patient. Pathies do not exist for him. A liberal and exact education in the foundation studies of medicine, teaches him to take a broad-minded view of all things pertaining to medicine. The adoption of a theory with a pathy attached necessarily includes belief in and practice of a narrow dogma. Recovery of the acutely ill, is frequent enough under all sorts of management to afford argument of a specific cure-all. The man who practices a pathy burrows in a ditch; his horizon of observation becomes narrower as he digs. The existence of pathies is an obstruction to medical progress. To-day there is no reason for the existence of the word "pathy." The properly educated man can no longer ignore the existence of disease and treat the symptoms only. He cannot affirm that only vegetable medicines should be used and that all metallic medicines are poisonous. He can not affirm that water alone should be used and that it may always be applied without danger. He knows that manipulations alone can not remove a disease. He knows that electricity is not understood therapeutically, and ascribes much of its value to its moral effect. He recognizes the fact that certain conditions of the mind

and body are relieved by hypnosis and by hypnotic suggestion, whether it be induced by the incantations of the Indian medicine man, the Buddhist and the black man of Africa; by the laying-on of hands of the mesmerist and faith healer, or by the prayer of the Christian scientist. He may be willing to use any or all of these methods, in the proper and few instances in which they may be indicated. I will not say that the average physician who possesses all the qualifications of a scientific man will try to induce a cure by the laying-on of hands or by prayer. He would probably think that equally good or better effects would be produced by a good dose of calomel.

In the United States but little scientific medical work is done under National or State expense and control. The medical department of the regular army encourages the medical officers to make scientific investigations, and furnishes the necessary apparatus for such research. A few medical officers of the army have distinguished themselves by excellent scientific medical work.

The navy has not recognized its medical officers by proper rank, nor has it encouraged or even given opportunity for scientific medical investigation. The marine-hospital service is composed of excellent medical men. Upon this department has devolved most of the National sanitary work of the last few years. Its powers and possibilities are, however, limited.

A few States have universities with medical departments, and in some of them excellent biologic and chemic work is done at the expense of the State. Most of the States have boards of health, some of them composed of excellent medical men, clothed with sufficient power to be of benefit to the people. The boards of health of many other States are usually composed of medical men selected for political reasons. With every change of the political party in power, the members of the board, whether good or bad, are also changed. The boards of health of many of the States have done excellent sanitary work. Many have done much also to rid the medical profession of unqualified men, and in a measure, to elevate the standard of medical education, by recognizing the diplomas of only those medical schools that fulfilled the requirements of the boards in reference to the medical curriculum and time of study. The full usefulness, however, of the State boards of health, of the teachers in the State universities, and of the medical officers of the army, the navy, and of the marine-hospital service is prevented by political and commercial interests, or by environment inimical to scientific work. The greater part of the real scientific work in medicine in this country is done by individuals working privately at their own expense, or by teachers in institutions supported by the contributions of private citizens. Most of the good scientific medical workers are poor, and are obliged to earn a living by professional practice, a time-consuming impediment to proper scientific investigation. A mind full of anxiety, burdened with the responsibility of a life threatened by disease, is not as clear or as capable of unraveling the problems of medical science as that of the man whose whole time may be given to a special line of research.

In many foreign countries the governments recognize the scientific workers by paying them living salaries and by providing apparatus and opportunity for special lines of investigation. In this country the government maintains an agricultural department for the protection of the products of the farm, and an

interstate commerce commission for the purpose of regulating and equalizing the interchange of the commodities of the States. This is done for commercial reasons. There is a commissioner of pensions—the agent of the government in the financial interests of the soldier. There is reason and justice in the maintenance of these departments. But there is just as much, if not more, reason, for the existence of a National Commission of Health—a commission with power to regulate the sanitary problems of the country and to adjust matters medical between the States as fully and definitely as the interstate commerce commission performs its duties.

In law a human life is worth \$5000 to the State. Why should the National government and the State not establish laboratories, or support those already established by private institutions, for the purpose of discovering the means of saving human life? Commercially a human life is worth more than an ox or a horse, and yet the government is more watchful of the health of animals which go to the slaughterhouse, or of the possible contamination of the farms by Canadian thistles, or by an invasion of grasshoppers, than of its citizens. The probable explanation is that corn, wheat and animals have an immediate visible commercial value, while a human life is the principal which earns only a small visible annual interest.

The limitations of medicine in the management of acute infections and contagious diseases has always been great. The success in the prevention of these diseases has been greater than in the healing of those already sick. The discovery of bacteria and the relation they bear to the infectious and contagious diseases has afforded a still better means of prophylaxis and made a more rational treatment possible. We have looked upon these diseases as self-limited in duration—self-limited to accord with the life cycle of the invading germ. The materia medica does not furnish us a drug which will cut short the disease. The drug strong enough to kill the invading germ is equally deadly to the host. We modify the course of the disease only. We attempt to carry the patient through the illness by hygienic measures, simple food, bathing to modify fever, and by measures to support the patient until the invading army shall disappear. Specific medication is of no value except in the malarial diseases and in syphilis. This limitation of medicine is pronounced. But the microscope and chemistry have discovered a principle which has already worked wonders in the cure of some of the infectious diseases—a principle which appears to be applicable to many if not all of the diseases due to bacteria. It seems that bacteria not only secrete a poison which is the agent producing the symptoms of the patient, but that, like man, the germs are the source of their own undoing, for they also secrete or excrete or manufacture a substance which deals death to themselves and may also neutralize the disease-producing poison in the patient. The chemist has been able to isolate the toxin and the antitoxin in a few diseases. Furthermore, it has been found that an individual treated with the antitoxin, not only more certainly recovers from a particular infection, but that a well individual treated with the antitoxin may be protected for a longer or shorter time from bacterial invasion, or at least from the disease-producing toxin. The accidental discovery by Jenner of the relation of cowpox to smallpox, and the resulting protection against

smallpox by bovine vaccination; the further discoveries of Pasteur, of the possibilities of immunization of animals by inoculation with the attenuated virus of a disease, and the final brilliant discovery of, and the possibility of the utilization of, the respective antitoxins in the cure of, and in the prevention of, some of the infectious diseases, establishes a principle which is so important as to eclipse almost any other event in medical history. The brilliant results obtained in that dreaded disease, diphtheria, alone, from the application of this principle, is enough to fix it as a truth and justify us in the hope that it may be successfully applied in the near future to many other infectious diseases. In that branch of medicine classed as surgery, bacteriology made possible a knowledge of true cleanliness which has enabled the surgeon to invade with impunity, every part of the human body. Hence the horizon of surgery is wide and its limitations now are few.

I have said that many of the present limitations of medicine will disappear in the future. By what means may we hope to remove the obstructions to medical success? We can help to modify, and perhaps in the future hope to see the disappearance of, the abuses of medicine due to politics. We should exert ourselves to influence the establishment of a non-political, National Commission of Health, with power to regulate the study and the practice of medicine by a uniform law in all the States; with power to command the civil officers of the States in the enforcement of sanitation in relation to the contamination of food and drink, in the dissemination of contagious disease, etc. We should try to influence the government, both National and State, to recognize the scientific workers in medicine and the allied sciences by offering inducements in the way of honors and money reward for the discovery of facts which are of use in prolonging life and palliating suffering. A student who enters the field of medicine should be so thoroughly prepared, should have the proper facilities for study, and should give such time to the study of the fundamental branches and of the principles of medicine that he may command every possible means of prolonging life and relieving suffering. So prepared, he will embrace no dogma and recognize no pathy. A physician, he will command the respect and love of the people, who will listen to and heed his advice and instruction. Every physician so educated will exert a wide influence in helping to remove the conditions of the people which tend to limit the usefulness of medicine.

In closing, let me say a few words of the possibilities and the needs of this school. If we add to the great influence which this school possesses because of the reputation gained by fifty years of progressive improvement in medical work, the advantage which must result from the affiliation with the great University of Chicago, we may hope for the ideal in medical education. The broad-minded policy of the University will be admirably executed by the splendid mind of the man who conceived the plan. Over the whole Northwest are schools, academies and colleges that have shaped their courses of study to correspond with the curriculum of the University. Students will be piloted through the preparatory school, the academy, the college and the University, their minds moulded, trained and disciplined with a forethought of the final life-work of the individual. So prepared, a student will begin the study of medicine. The foundation

studies—chemistry, physiology, general biology, anatomy, pathology, pharmacology and materia medica—will either be completed or the principles thereof will be mastered in the first two years of medical study. Then must come the application of the knowledge possessed of the foundation branches to the study of disease in the living and the dead. In hospitals and dispensaries, in chemic and pathologic laboratories, must the student labor to recognize disease by the phenomena termed symptoms, physical signs, and by the changes which occur in the tissues, the blood, and the various secretions and excretions of the body in disease.

To accomplish ideal work in the last two or three years of a medical college course, it is necessary to have at hand a plentiful amount of material with which to work. Not only must the amount of material be sufficient, but it must be situated, in reference to facility of use, that all that is possible may be obtained from it. It is, therefore, necessary that proper buildings be had for both dispensary and hospital patients. The dispensary must be a clinical building, so arranged with rooms for clinical examination and for laboratory research, that all students may come in direct contact with the patient, and be enabled to make the examinations I have named above. A free-bed hospital should also be accessible, to furnish examples of the acute and severer forms of disease, with laboratories and apparatus for thorough examination of everything of which analysis is necessary, in the recognition of disease and in the study of the action of remedies used in the attempt to heal. Facilities should be afforded, in an annex or building closely adjacent to the hospital, for the study of morbid anatomy. Here, under the proper direction of a pathologist, the student should be enabled to carry on the more practical study of pathology, the principles of which he learned in his first two years of medical college work. Here he should be able to trace the relation of the morbid changes to the symptoms, to the physical signs and to the alteration of the secretions and excretions of the body, which he was able to observe in the wards of the hospital. By this means he will be able, not only to understand the principles of the various subjects of medicine, when separately considered, but also their intimate relationship to each other. It is not too much to hope that this institution shall in the near future have a clinical building with all of the modern conveniences which architecture can furnish, including laboratories, with every means which shall afford the surest recognition of disease, and thus give greater comfort and surer means of relief to the sick. It is absolutely necessary that this school shall have a free private hospital governed entirely by its faculty, with all of the laboratories for the recognition of disease, and the examination of the morbid changes which occur in the human body. With a clinical building, and with a hospital such as I have attempted to describe so briefly, this school, possessing as it does, the present means of obtaining students thoroughly fitted for the study of medicine, and with almost perfect facilities for the study of the fundamental branches of medicine, will soon attain an ideal medical course. With such an institution in the West, medical education will be so stimulated that other institutions, even though they have lesser facilities, will attempt to keep in line.

The medical man of the future will thus be, not

only better prepared to meet, but will also be better equipped to further lessen the limitations of medicine.

100 State Street.

ORIGINAL ARTICLES.

THE ESTIMATION OF URIC ACID IN URINE.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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While connected with the Stetson Laboratory of Hygiene, my attention was called to the fact that it was desirable to make a study of the conditions under which there was an increased, and other cases in which there was a decreased, elimination of uric acid. Intimately associated with this would be a physiologic study of tissues and probably also cell metabolism; in other words, determining the place occupied by uric acid in the chemistry of the animal body. The purely physiologic study being out of my line, I determined, on the recommendation of two of my former colleagues, Dr. Judson Daland and Dr. Frank Massey, to take up the purely chemico side of the question.

The first step in the investigation would be to determine on a method for the estimation of uric acid which would be comparatively simple in its application, and which would in the different operations be accompanied with the fewest sources of error. In looking over the literature on the subject we found many contradictory statements as to the accuracy of one and the same method. It is possible that a method under certain conditions will give accurate or fairly accurate results, while in other cases the same process will give results which vary considerably from the truth. It is not absolutely necessary for our purpose to study the cause of variation, but an examination of the methods under various conditions would be sufficient, and from the data thus obtained determine on a method which would be used in the principal investigation.

It would seem fairly simple to determine on an accurate method by taking the simplest case possible and trying the different processes on this one. I refer here to making a standard solution of uric acid of known purity and applying the different tests. But from the very start we have to contend with the ready decomposition of uric acid while in solution. It is a well-known fact that uric acid in an alkaline liquid is more or less rapidly decomposed into a number of distinct compounds which form at the end carbon dioxide, ammonia and oxalic acid. This decomposition is due to oxidation and hydration on the addition of oxygen and hydrogen in the form of water, H_2O , to the molecule of uric acid, $C_5H_4N_4O_6$. A similar change takes place also in urine when exposed to the air without sterilization or preservation in some manner or other. It is necessary, therefore, that a urine should be examined for uric acid as soon as possible after voidance.

The results obtained in estimating the amount of uric acid in a simple solution of uric acid can not be taken as applying with like force to the estimation in urine, as I will show later on. The difference is due very likely in the organic and inorganic compounds

found in the urine, which among other properties show a peculiar solvent action toward the urates, this peculiar behavior residing principally in the phosphates and the urea.

In estimating uric acid in a sample of urine it is decidedly preferable to use that passed in twenty-four hours, as this alone will give a criterion as to quantity and assist very materially in computing the results obtained. It is possible that when the urine usually passed is rather concentrated under the influence of alcoholic beverages, the quantity of water excreted is materially increased, the urine becomes diluted, and if a sample of this latter urine is used the proportion of uric acid is diminished.

For the work in hand it was necessary to apply the tests to the same urine throughout, but it being impossible to obtain the necessary quantity from one person at one time, it was thought best to collect a lot of urine from different persons and then make the estimations on the collective urine. I therefore sent a large vessel to one of the departments of the J. B. Stetson hat factory, and had it filled without paying any attention as to whether persons using the same were in health or under treatment for any disease. The quantity obtained amounted to about four gallons, and was furnished by eighty persons.

The urine showed the specific gravity of 1.021, and contained neither sugar nor albumin. Before taking the quantity for each estimation the urine was thoroughly mixed each time. In reporting on the different methods I will begin with the one first recommended, and which to all appearances would be the simplest, taking into consideration the slight solubility of the uric acid. From this I will continue through the other methods applied, becoming gradually more difficult in application, and ending with the process which I have adopted as being the one which unites accuracy and ready applicability.

The first method we would have to consider is that of Heintz, in which the uric acid is set free by means of hydrochloric or other acid, and after standing for at least forty-eight hours, collecting the precipitated uric acid and weighing. When applying the rules as they pertain to ordinary solutions it would be expected that only a small quantity of hydrochloric acid would be necessary to complete the precipitation. It has, however, been shown that a solution of urea has a solvent action on uric acid, probably forming therewith a chemico compound which, however, is not soluble in a highly acid medium. It is, therefore, usual to add 20 c.c. of strong hydrochloric acid to 100 c.c. urine, which is a considerable excess, but even with this excess a complete precipitation does not take place, uric acid being soluble in water in the proportion of 1 to 16000. According to this the correction would only be slight, and it is given as 0.0038 gm. for each 100 c.c. of liquid in use. Salkowski found that after treating 200 c.c. of urine as above, he could still isolate from the filtrate thus obtained from 0.044 to 0.07 gm. of uric acid by supersaturating with ammonia and precipitating with ammoniac silver nitrate solution. I applied this test with hydrochloric acid and also with acetic acid, and found

With HCl, 1, .0353; 2, .0349; 3, .0369—mean 0.0357 per cent.
With $C_2H_3O_2$, 1, .0338; 2, .0375; 3, .0407—mean 0.0373 per cent.

What surprised me somewhat was that I obtained with the acetic acid macroscopic crystals of uric acid which at first were perfectly transparent and of a reddish color, but on drying became opaque.

The second method is that of Guerin and Thorion, who propose to precipitate the uric acid as the magnesium ammonium urate—to which they ascribe the formula $(C_5H_2N_4O_3H)_{10}(NH_4)_3Mg + 45H_2O$ —by means of the magnesia mixture as used in phosphoric acid estimations. It would be impossible to simply filter off the precipitate and regard it as this compound, on account of the magnesium ammonium phosphate also formed. They therefore incinerate the precipitate, forming magnesium pyrophosphate and magnesium oxid, and estimate the amount of the latter produced. The magnesium oxid is formed from the uric acid compound, as the only incombustible portion present is the magnesium.

In applying this test 100 c.c. urine were used, and after incinerating the precipitate, the amount of magnesium was estimated volumetrically. The residue was taken up with 25 c.c. decinormal sulphuric acid, and when titrating with decinormal sodium hydrate it was found that it required 22 c.c. to bring the liquid to neutrality, leaving 3 c.c. saturated by the magnesium

3 c.c., $n/10 H_2SO_4 = 0.014673$ gm. $H_2SO_4 = 0.003645$ gm. Mg.

According to the formula we have 10 molecules of uric acid (167.8) to one atom of magnesium (24.3), and consequently we have the proportion

$$24.3 : .003 :: 645 : x \text{ (.24684 gm. uric acid).}$$

In a second determination the result was even more unsatisfactory. The quantity of decinormal sulphuric acid saturated by the magnesium amounted to 4.2 c.c., consequently giving even a higher result.

Third. Uric acid forms an insoluble barium salt, and it is on this property that Geelmuyam bases his method. He adds sodium hydrate to the urine in such a quantity that litmus paper remains blue when dry and then precipitates with barium chlorid. Besides the barium urate he also has formed here the barium sulphate, and to separate the two he boils the washed precipitate with dilute hydrochlorid acid, filters off the barium sulphate while hot, and evaporates the filtrate to a smaller bulk. On standing, the uric acid separates, is collected on a filter, washed, dried and weighed. The results obtained with this method are:

1, 0.0425; 2, 0.0439; 3, 0.0393—mean 0.0419 per cent.

With this urine the results were fairly satisfactory, but on applying it in another series the amount of crystals obtained was so small that they were not weighed.

Fourth. On boiling urine which does not contain any sugar with Fehling's test, we find a decolorization and a precipitation of flocculent masses—cuprous urate—part of the uric acid reducing the copper to the cuprous oxid, which then combines with the uric acid present, forming the cuprous urate. Arthaud and Butte add the copper in the form of cuprous hyposulphite to the urine and precipitate the cuprous waste direct without losing any of the uric acid through oxidation. They have arranged it as a volumetric method, using the following solutions:

1. Copper sulphate, 14.84 gm.; tartaric acid, trace (I use, following Ducong, five drops of sulphuric acid), distilled water sufficient to make 1000 c.c.

2. Sodium hyposulphite, 80 gm.; rochelle salt, 160 gm.; carbolic acid, 5 drops; distilled water sufficient to make 1000 c.c.

For estimating, 2 parts of 1 are mixed with 8 parts of 2, giving a solution of which 10 c.c. precipitate 2 cgm. uric acid.

The manner of applying this test is as follows: 100 c.c. urine are made alkaline with sodium carbonate, warmed to precipitate the phosphates and then fil-

tered. A portion equivalent to 50 c.c. urine is treated with the above solution, drop by drop, until no more precipitation occurs. As it is very difficult to notice when sufficient of the cuprous solution has been added, the authors propose a few methods of determining the end reaction. The first and simplest, but not very satisfactory, method is to filter off a small quantity and add a few drops to it from the burette, when, if no precipitation occurs, the titration is complete. The second method depends on oxidizing a possible excess of the copper to the cupric state and noticing the color produced with ammonia; they propose to take some of the above filtrate, add ammonia to it and shake in a test tube, permitting the oxidation to be done by the oxygen of the enclosed air. The third and preferable indicator is a 10 per cent. solution of sodium or potassium xanthogenate. By adding a drop of the filtrate to this solution an excess of copper shows itself by the production of a yellow color.

The first series in which this method was applied gave the following results, determining the end reaction by the precipitation method:

1. Required 20 c.c. for 50 c.c., equivalent to 0.04 gm. in 50; .080 gm. in 100 c.c.

2. Required 21 c.c. for 50 c.c., equivalent to 0.042 gm. in 50; .082 gm. in 100 c.c.

3. Required 16.5 c.c. for 50 c.c., equivalent to 0.033 gm. in 50; .066 gm. in 100 c.c.

In this last the ammonia method was tried, but did not prove to be satisfactory. Having some of the liquid remaining it was thought best to try the other indicator, potassium xanthogenate. With this, results were obtained more closely conforming to those obtained with other methods:

1. Required 12.84 c.c. for 50 c.c., equivalent to 0.02568 gm. in 50 c.c.; 0.05136 gm. in 100 c.c.

2. Required 13.2 c.c. for 50 c.c., equivalent to 0.0264 gm. in 50 c.c.; 0.0528 gm. in 100 c.c.

3. Required 10.8 c.c. for 50 c.c., equivalent to 0.0216 gm. in 50 c.c.; 0.0432 gm. in 100 c.c.

With sufficient practice this method may be made to do the work admirably, but the objection to this, like all processes requiring volumetric solutions, is the extreme care and exactness necessary in its use.

Fifth: Uric acid, like many organic compounds, will take up a certain amount of iodine, or in other words, reduce a certain quantity of iodine solution. I. Kreidl endeavors to make use of this property of uric acid in estimating its quantity. He draws attention to one peculiarity in this respect, viz.: the variation of the power of reduction according to the length of time the uric acid and the iodine solutions were in contact. If standing only a short time the amount of iodine consumed appears to be greater than it does at the end of three-quarters of an hour, at which time 2.3 atoms of iodine correspond to one molecule of uric acid. The application of this process is as follows: A moderate excess of normal potassium hydrate solution is added to the urine and followed by a considerable excess of thirtieth-normal iodine solution. After standing three-quarters of an hour the liquid is acidified with hydrochloric acid, some starch solution added, and the excess of iodine titrated with thirtieth-normal sodium thiosulphate (hyposulphite).

The results obtained by this method, paying strict attention as to time for standing, were as follows:

1. Consumed 39.5 c.c. iodine solution, corresponding to .0727 gm. in 100 c.c.

2. Consumed 39 c.c. iodine solution, corresponding to .0717 gm. in 100 c.c.

3. Consumed 38.5 c.c. iodine solution, corresponding to .0673 gm. in 100 c.c.

Comparing the results thus obtained showed them to be higher than by the other methods. The titration being made in the order here given showed that the time allowed is too short for the proportion as stated by Kreidl. It is possible also that exposure to light has a reducing effect on the iodine solution, which disappeared. Iodine would consequently be estimated as being caused by uric acid. On the whole, the method is unsatisfactory, principally on account of the instability of the solutions used for titrating.

Sixth. The inaccuracy of the Heintz method was first shown by Salkowski by precipitating the balance of the uric acid with ammoniacal silver nitrate solution. On this he based this first method, estimating the uric acid with hydrochloric acid and the silver solution. Ludwig simplified this by simply using the latter, and following him, Salkowski proposed a similar but more round-about process. The Ludwig, or as it is called, Salkowski-Ludwig, method is possibly the one most applied, and is here used. The solutions required are:

Ammoniacal silver solution.—26 gm. silver nitrate are dissolved in sufficient water, then ammonia water added to dissolve the precipitate first formed, and lastly the whole diluted to 1000 c.c. with water.

Magnesia mixture.—100 gm. magnesium chloride crystals are dissolved in the necessary amount of water, ammonia added in excess, and lastly sufficient ammonium chloride to dissolve the precipitate. The solution is then diluted with water to make 1000 c.c.

Solution of an alkaline hydrogen sulphid.—15 gm. potassium hydrate or 10 gm. sodium hydrate are dissolved in sufficient water to make 1000 c.c. One-half of this solution is saturated with hydrogen sulphid and the two again mixed.

The estimation is made in the following manner: For every 100 c.c. urine taken mix 10 c.c. each of the ammoniacal silver solution and the magnesia mixture and sufficient ammonia to dissolve the precipitated silver chloride. This solution is then added to the urine and the whole thoroughly shaken. After standing about one hour the precipitate is collected on a filter, and washed two or three times with water to which a few drops of ammonia have been added. During this time we have taken 10 c.c. of the third solution, mixed it with an equal volume of water, and heated to boiling. This hot solution is then poured on the filter, which has been placed in a beaker, 40 c.c. hot water added, and the whole then heated to boiling. The mixture is stirred repeatedly while cooling and filtered into a porcelain dish, the filter being washed two or three times with water. After slightly acidifying with hydrochloric acid the filtrate is evaporated to 10 or 15 c.c. and allowed to cool. The uric acid as thus obtained usually contains some sulphur, which must be removed. After collecting the precipitate on a filter it is washed with water, alcohol, ether, carbon disulphid, and this then removed with ether, the filter dried and then weighed.

In the experiments I used 200 c.c. urine for each trial and obtained these results:

1. .0793 in 200 c.c.; .03965 in 100 c.c.
2. .0936 in 200 c.c.; .0468 in 100 c.c.
3. .0958 in 200 c.c.; .0479 in 100 c.c.

The cause of the first result of the series being so low was that a portion of the liquid was lost.

Seventh. As shown above, working by Salkowski-

Ludwig, the uric acid is estimated, but there is a possibility of the same reaction being made use of in another manner and arriving at a result which conforms fairly well with the above. Haycraft's method depends on a consideration like this, and is based on the supposition that the precipitate, as obtained by the above method, is of constant composition, containing one atom of silver for every molecule of uric acid. It must be possible to estimate the amount of uric acid present by determining the amount of silver in the precipitate. Haycraft proposes to do this as follows: The precipitate, as obtained by the Salkowski-Ludwig method, in the urine is allowed to settle and the clear liquid is run through a glass wool filter. Before pouring on the precipitate the surface of the filter is covered with lumps of sodium bicarbonate and on top of this the balance of the liquid, with the precipitate, is poured. The vessel in which the precipitation was carried on, and also the filter, are washed with ammoniacal water until the filtrate gives no precipitate either with silver nitrate and nitric acid, nor with hydrochloric acid. The residue on the filter is then dissolved in concentrated nitric acid and titrated with a solution of ammonium sulphocyanate, using a solution of ferric alum as an indicator. The solution of the sulphocyanate is of such a strength that 1 c.c. is equivalent to 1 c.c. 1/50 normal silver nitrate solution and represents then 3.36 mg. uric acid.

The results obtained by this method did not prove so satisfactory, being considerably higher than those obtained by the other.

1. .1213 gm. in 200 c.c.; .0606 gm. in 100 c.c.
2. .1391 gm. in 200 c.c.; .0695 gm. in 100 c.c.
3. .1509 gm. in 200 c.c.; .0754 gm. in 100 c.c.

An objection to this method which, however, is good in theory, is that there is a certain amount of reduction of some silver compound other than that of uric acid. This silver compound is not washed out with the ammoniacal water, but will go into solution with the nitric acid, and consequently increase the amount of silver reckoned as combined with the uric acid. Furthermore, a filter pump is a necessity in carrying out this process, otherwise a much larger quantity of a black compound will be formed.

Eighth. Some years ago Fokker made use of the slight solubility of the ammonium urate for estimating the amount of the uric acid. The want of accuracy induced Salkowski to alter the process to a certain extent. This altered process is as follows: 200 c.c. urine is made alkaline with 20 c.c. solution of sodium carbonate and after one hour 20 c.c. saturated solution of ammonium chloride is added to it. This mixture is allowed to stand for forty-eight hours, then the precipitate collected on a filter and washed two or three times. The precipitate is then repeatedly treated while in the funnel with dilute hydrochloric acid until all the ammonium urate is decomposed. The filtrate is then set aside for six hours and the uric acid which has separated transferred to the remainder of the acid on the filter, which is then washed first with 30 c.c. of water and lastly with alcohol until the acid reaction has disappeared. The acid can now be weighed, but a correction of 0.03 gms. must be added to obtain a definite result.

The objection to this process is that the ammonium urate is not entirely insoluble in the urine, varying amounts remaining in solution. Another objection is the time it takes to finish one estimation, taking in

all nearly three days. Hopkins has found that the ammonium urate is insoluble in a urine saturated with ammonium chlorid and that the uric acid salt is precipitated much more quickly than by the above process, it being only necessary to allow the urine saturated with the ammonium chlorid to stand for two hours, when the filtration can be started. He has even reduced this time to fifteen minutes by simply adding some ammonia water to the mixture. Hopkins has shown that when using this method it was impossible to obtain any uric acid from the filtrate by the Salkowski-Ludwig method. In detail, the process is as follows: 100 c.c. urine are saturated with ammonium chlorid, the quantity usually necessary being 30 gm.; even should an excess of the latter be used the undissolved portions could easily be dissolved in a minimum amount of water just before pouring the last portion on the filter. Hopkins specifies to allow this solution to stand for two hours, but v. Jaksch places it aside for twenty-four hours. Using the shorter method, a quantity of ammonia water is added (I usually use about 5 c.c.), and the liquid filtered after fifteen minutes. The flask in which the precipitation was carried out and the precipitate and filter are washed several times with a saturated aqueous solution of ammonium chlorid, after which the filter is punched through and the precipitate transferred to a small beaker with hot water from a spritz bottle, then 1 to 2 c.c. of concentrated hydrochloric acid added and the liquid evaporated to about 20 or 15 c.c., when it is allowed to stand for about one hour or until it is cool. The precipitated uric acid is then collected on a tarred filter, washed with water, and after drying, is weighed, or the precipitate, after washing with water, is repeatedly treated with alcohol and thus transferred, by means of alcohol from a spritz-bottle to a tarred watch-glass which, after drying, is very hard. The latter method I prefer as being less troublesome, and the exceedingly small quantity of uric acid which adheres to the fibers of the filter may well be disregarded. Besides this gravimetric method Hopkins also estimates the uric acid as obtained at the end of the process by titration with a solution of potassium permanganate. I prefer to weigh the uric acid, as being the most accurate of the two methods. The results as obtained by this method without the addition of the ammonia were:

1, 0.0582 per cent; 2, 0.0606 per cent; 3, 0.0557 per cent.

To confirm my conclusions that the Hopkins method is the most desirable one I selected the processes to which no serious objection could be raised and applied them to another sample of urine, obtaining the following results:

Heintz	0.0181	0.0212
Arthaud and Butte	0.0500	0.0400
Kreidl	0.0664	0.0664
Salkowski-Ludwig	0.0385	0.0446
Haycraft	0.0776	0.0845
Hopkins without ammonia	0.0548	0.0579
Hopkins with ammonia	0.0480	0.0589

It was thought desirable to compare the results obtained with those from a uric acid solution of known purity; .5189 gm of Merck's uric acid was dissolved with 1 gm. lithium carbonate and the solution diluted to 1 litre, 100 c.c. contained consequently, 0.05189 gm.

The results obtained in this case are to a certain extent peculiar, as can be seen by comparing the results, due possibly to the methods being applied to a solution which was at variance with urine.

Heintz	0.0417
Geelmuyden	0.0282
Arthaud and Butte	0.0518
Kreidl	0.0469
Salkowski-Ludwig	0.0419
Haycraft	0.0436
Hopkins	0.0462
Hopkins with ammonia	0.0376

RESULTS OBTAINED BY THE DIFFERENT METHODS.

Number of series.	Name of author.	Number of experiments in series.	Quantity of urine used.	Results.	Mean.	Percentage.	Remarks.
1a	Heintz	1	100	.0353	.0357	.0357	Hydrochloric acid.
		2	100	.0349			
		3	100	.0369			
1b	Heintz	1	100	.0338	.0373	.0373	Used acetic acid.
		2	100	.0407			
		3	100	.0407			
2	Guerin & Thorion	1	100	.2468	.2468	.2468	
		2	100	.0425			
		3	100	.0439			
3	Geelmuyden	1	100	.0393	.0419	.0419	
		2	100	.0393			
		3	100	.0393			
4	Arthaud and Butte	1	50	.04	.041	.082	No indicator used.
		2	50	.042			
		3	50	.033			
		4	50	.02568			
		5	50	.0254			
		6	50	.0214			
5	Kreidl	1	100	.0727	.0706	.0706	Potassium xanthogenate as indicator.
		2	100	.0717			
		3	100	.0673			
6	Salkowski-Ludwig	1	200	.0793	.0896	.0448	
		2	200	.0936			
		3	200	.0953			
7	Haycraft	1	200	.1213	.1371	.0685	
		2	200	.1391			
		3	200	.1509			
8a	Hopkins	1	100	.0582	.0526	.0526	Without ammonia
		2	100	.0468			
		3	100	.0528			
8b	Hopkins	1	100	.0587	.0583	.0583	With ammonia water.
		2	100	.0606			
		3	100	.0537			

The results in the Hopkins method are peculiar in one respect, and that is, that when it is applied to urine with the addition of ammonia the quantity found is always higher than when the chlorid alone is used, while in this case the result with the latter is the higher. The closest result in the examination of the solution of uric acid is that obtained with the method of Arthaud and Butte, varying only 0.00009 from the quantity placed in the solution. With practice the method will give also good results with urine, especially light-colored ones, so as to obtain a sharp end-reaction with the potassium xanthogenate.

Urine in which a uric acid determination is to be made should be examined as soon as possible after voidance or if that is impossible it should be protected in some manner or other to prevent change through the agency of micro-organisms. This can be done by the addition of a small quantity of chloroform or by sterilization. I purposely permitted a urine to stand unprotected for five days to see the variation in the amount of uric acid present. I found it reduced about 40 per cent. when examined in each case by the Hopkins method.

In an estimation like that of uric acid it is of great importance to have a method by means of which the acid may be thrown out of solution either by itself or in the form of a compound in such a form that it does not readily decompose, and still be completely precipitated. These conditions are not fulfilled by Heintz's method, as considerable uric acid remains in solution, as was shown by Salkowski, who isolated from the urine (200 c.c.) to which this method was applied from .044 to .07 gm. uric acid.

The method of Guerin and Thorion is not satisfac-

tory, as the results obtained are too high. Other objections are that it takes too long to finish the estimation and the temperature to which it must be heated, which precludes its use by the physician.

The objection to Kreidl's method is that the conditions do not seem to have been fully studied under which one molecule represent 2.3 atoms of iodine. The only directions are to let stand for three-fourths of an hour, as in a shorter time the reduction of the iodine solution is greater. Another and more serious objection is that there are other compounds present in the urine which have a reducing action on iodine solution.

From a theoretic standpoint the method of Geelmuysen should give fairly accurate results, as the barium urate which is precipitated along with the sulphate is almost insoluble in water. The objection is the extraction of the uric acid from the precipitate.

Arthaud and Butte's method gives tolerably close results when using the xanthogenate of potassium as an indicator, while by simple precipitation or with the use of ammonia as indicator the reaction obtained is not quite so sharp. The method of Haycraft and Herman has one serious objection and that is, if the washing with the diluted ammonia water be continued long enough the precipitate will disappear almost completely. If the urine with the silver stands too long a reduction of the silver takes place. This reduced silver is possibly a dark compound of silver, is insoluble in ammonia and when the silver is then estimated the results obtained will be far in excess of the amount of uric acid present.

The method of Salkowski-Ludwig is considered one of the most accurate of the methods employed; the objection, however, to it is the time necessary for the estimation, which can not be completed under twelve to fourteen hours, while there is also a possibility of loss due to the number of separate operations necessary.

The most satisfactory of the methods examined is that of Hopkins. It is easily applied and has few separate operations. The time consumed amounts to about two to two and one-half hours. It is accurate, as the ammonium urate is insoluble in a saturated solution of ammonium chlorid, in the urine as used. When using the ammonia water along with the ammonium chlorid alone, the result is usually somewhat higher than with the ammonium chlorid alone. I have used this process in many cases, and always with good results, the variations between separate estimations of the same urine being only slight. In one case the variation was only + or - .0005 per cent. and the highest variation being + or - .006. This last was due to a rewashing of the dried uric acid, as it contained some ammonium chlorid, and in transferring to the filter there was more or less loss.

THE PHARMACOLOGIC ASSAY OF THE HEART TONICS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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It is unnecessary to call attention to the great therapeutic importance of the heart tonics since digitalis, strophanthus and others of the group are now universally employed by physicians in their daily practice.

It is my purpose to point out some of the dangers attending the administration of these drugs, and to offer some suggestions in regard to the selection of the crude drug and the processes of manufacture, in order that the danger may be as far as possible circumscribed.

We are not generally accustomed to think of the heart tonics as being the most poisonous remedies employed in therapeutics; yet it is true. According to some of the best authorities the maximum dose of extract of digitalis is about one-half as great as the maximum dose of extract of belladonna; while strophanthin, the active principle of strophanthus, is three times as poisonous as atropin, ten times as poisonous as strychnin, and twelve times as poisonous as absolute hydrocyanic acid.

POSOLOGY.

	WOOD.	BRUNTON.
Digitalis extract.	$\frac{1}{4}$ gr.	$\frac{1}{8}$ gr.
Nux vomica extract.	$\frac{1}{4}$ gr.	1 gr.
Belladonna extract.	$\frac{1}{2}$ gr.	$\frac{1}{4}$ gr.
Strophanthin.	$\frac{1}{200}$ gr.	
Atropin.	$\frac{1}{60}$ gr.	$\frac{1}{20}$ gr.
Strychnin.	$\frac{1}{20}$ gr.	$\frac{1}{10}$ gr.
HCN.	$\frac{1}{16}$ gr. computed	$\frac{1}{12}$ gr. computed.

It would be considered dangerous pharmaceutical practice to allow preparations containing atropin, strychnin or hydrocyanic acid to be sold, without first being subjected to careful chemical assay and standardization. The United States and other pharmacopoeias give elaborate methods for the exact quantitative determination of these constituents; while owing to the fact that the contained active principles of the heart tonics are glucosides, so easily decomposed by chemical manipulation that an assay can not be made, no directions whatever are given for the determination of the physiologically active properties of the galenic preparations and the tests for the purity of the respective glucosides are of little value. Crude digitalis, strophanthus, etc., may be mixed to a greater or less extent with foreign material or inferior drugs when they come into the hands of the pharmacist or manufacturing chemist. By careful botanic examination the adulterating substance can be detected, and the advisability of garbling or rejecting the lot will depend upon the extent of the impurities. Comparatively little difficulty is experienced in obtaining supplies of digitalis suitable for manufacturing purposes, since this drug is collected in civilized countries. With strophanthus seeds, however, which are imported from savage Africa, much difficulty is experienced.

In order to keep the length of this paper within reasonable limits I shall speak mainly of the latter drug, its active constituent, strophanthin, and its pharmaceutical preparations. These will serve as types showing the proposed method of assay. About thirty varieties of strophanthus have been discovered. It is claimed that only six of these varieties contain strophanthin, while a few contain the still more active glucoside, ouabain. Holmes of London, claims that some of the strophanthus found on the British market contains the seeds of other plants. In America, however, the crude drug generally consists of a mixture in varying proportions of strophanthus Kombé and strophanthus hispidus. Opinions vary greatly regarding these, some authorities claiming that they are distinct species, while others believe they are merely varieties of the same thing. Preference is generally given to strophanthus Kombé, since it contains about 0.95 per cent. strophanthin, while strophanthin

hispidus contains only about two-thirds as much. The amount of contained strophanthin is partly dependent upon climatic conditions. It is a well-known fact that the physiologic activity of digitalis leaves varies within wide limits from year to year.

Strophanthin, having the formula $C_{21}H_{48}O_{12}$ (Arnaud), is believed to be the only active constituent of strophanthus hispidus and strophanthus Kombé. Some investigators, however, claim that strophanthidin also is found. Fraser and others oppose this view, believing that strophanthidin is merely a decomposition product of strophanthin. Strophanthin, like other glucosides, is easily decomposed by acids. It is readily soluble in water and alcohol, but almost insoluble in ether and chloroform. Pure or impure strophanthin, or pharmaceutical preparations containing the glucoside, when brought in contact with sulphuric acid, a trace of ferric chlorid being present, yield a bright green color. This reaction is not conclusive, however, since ouabain can not be recognized in the presence of strophanthin. Holmes, who has given this point much attention, claims that only by purchasing the seeds in the follicle and testing a seed from each follicle, can a reliable preparation of strophanthus be made. An assay based on the amount of extractive contained in a given tincture of strophanthus, or other preparations of the heart tonic is of little value to the physician, since the extractives consist largely of chlorophyll and other inert substances.

After a careful consideration of the difficulties preventing a chemic assay of the heart tonics, and of the great importance to the medical profession of some means of standardizing them, I decided to experiment on living animals, believing that data might be obtained whereby the physiologic activity of the crude drug, its pharmaceutical preparations and active constituents might be ascertained. Since it could not be taken for granted that every sample of strophanthus seeds or digitalis found on the market was active, it seemed best to adopt methods for determining first of all, whether the specific action of the heart tonics was manifested by the sample of drug; and second, to find methods for standardizing them.

QUALITATIVE REACTIONS.

Very extensive pharmacologic researches have shown that the several heart tonics act in much the same manner, differing mainly in degree, upon the factors concerned in the maintenance of the circulation of the blood. The most important phenomena observed are slowing and strengthening of the heart-beats and increased blood-pressure. I believe only two series of experiments are necessary in order to show whether a given sample of drug possesses the specific action desired; viz., the application of a solution of the crude drug or active constituent to the laid-bare frog's heart, noting the slowed rhythm, the less and less perfect diastole, increased systole and finally, systolic standstill of the ventricle; and the intravenous injection of such solutions into dogs or rabbits, observing the variations in blood-pressure and heart-beats, as shown by graphic tracings recorded on the kymograph. Other reactions might be obtained in addition, but are not necessary. The physiologic activity of each sample of drug examined should be compared with a standard sample of known strength.

QUANTITATIVE ASSAY.

A quantitative estimation by pharmacologic methods of the activity of the heart tonics is a much more

difficult problem than is a qualitative assay. Many series of experiments were necessary in order to decide what method or methods were best suited for this work. Too great variation was exhibited in the results obtained from blood-pressure experiments on dogs, rabbits, etc., and such experiments are, moreover, quite complicated and difficult to carry out. I found that fairly accurate data could be obtained from the application of a solution containing strophanthin, digitalin, etc., to the laid-bare frog's heart, comparing the action of the drug thus tested with that of a sample of known strength. This method, however, was finally abandoned for a simpler one, which gives much better results. It seemed to me quite probable that the strength of the heart tonics could be determined from their killing power when administered to the lower animals. Accordingly, rabbits, guinea pigs, rats, frogs, etc., were employed for determining the minimum fatal dose of the drug. I finally chose frogs as being best adapted for this purpose. Different species of frogs vary considerably in reaction to the poisons, but the same species behave much alike. I have found it best to employ frogs of a nearly uniform size for the standardization of any particular tonic. Since it is impossible to obtain on the market frogs of exactly the same size, it is best when one has a large number of samples to standardize, to have the frogs separated into lots by weight, those in each lot not varying over three grams; then we can use those weighing 10 to 13 grams for strophanthin, those weighing 14 to 17 grams for tincture strophanthus, those of 18 to 21 grams for tincture digitalis, etc. Frogs weighing less than 30 grams can be obtained at a very reasonable price from fishermen, as they are too small for the table. However, it is necessary that from the moment of capture they be handled with great care and kept in wet moss, etc., until they arrive at the laboratory, when they should be at once transferred to suitable ponds.

The method of administering the poisons and observing results may be briefly stated as follows: Dissolve the strophanthin, or tincture of strophanthus, in normal saline solution. The strength of the medicated solution should be such that the total quantity to be injected shall not exceed .5 c.c. The fluid should be measured by means of very slender pipettes, graduated into hundredths, into round-bottomed capsules of about 1 c.c. capacity, from which the last drop may be taken up in a narrow pipette having a long slender point, and the injection then made through the frog's mouth into the abdominal lymph-sac. Great care should be taken not to puncture the skin, as this will allow a portion of the injected fluid to leak out. After injection the frogs should be placed in wide-mouthed frog glasses, the plates containing about a quarter of an inch of water. It will be necessary to inject several series of about five frogs each for each sample of the drug to be assayed, a first series to be injected with drug of known standard strength. After testing a large number of tinctures of strophanthus I found that 0.00015 c.c. per gram body-weight, represented fairly well the toxic activities of an average sample of tincture prepared from strophanthus (Kombé).

The minimum fatal dose of tinctures strophanthus prepared from various lots of drug obtained from the American market was found to be as follows:

1 . . . . .	.00015	4 . . . . .	.00012
2 . . . . .	.00026	5 . . . . .	.00013
3 . . . . .	.00015	6 . . . . .	.00015

7 . . . . .	.00010	11 . . . . .	.00016
8 . . . . .	.00015	12 . . . . .	.00015
9 . . . . .	.00022	13 . . . . .	.00025
10 . . . . .	.00017	14 . . . . .	.00033

The several tinctures were prepared by one process and with the same menstruum.

The second series are to be injected with doses varying considerably in size. The third series are to be injected after the approximate dose of poison has been found from the second series. From the third series we may almost surely fix the minimum dose. A fourth series should finally be injected, which will fix the limits of strength very closely. The minimum fatal dose should kill at least three frogs out of five. If a less number die it is best to inject another series with doses one point greater.

One very important advantage of the method above outlined for the assay of the heart tonics, is the fact that various kinds and sizes of frogs may be employed at any season of the year, the only essential being that at the time the assay is made the standard and unstandardized preparations should be tested at the same time, the frogs being of exactly the same species and kept under exactly the same conditions, comparative results only being necessary, since the standard solution maintains its activity almost entirely unimpaired, as shown by tables III A and III B.

A standard tincture of strophanthus retains its strength very well, as is shown by the following tests, made on the first standard tincture I employed:

TABLE III A.

	Minimum fatal dose
July 6, 1897 . . . . .	.00015
Oct. 19, 1897 . . . . .	.00015+
Dec. 23, 1897 . . . . .	.00015
Feb. 23, 1898 . . . . .	.00015—
April 25, 1898 . . . . .	.00015

The loss in strength was so little in nearly one year that it came within the limits of error. Similar results are observed in regard to the permanence of a concentrated tincture of strophanthus.

TABLE III B.

	Minimum fatal dose
July 28, 1897 . . . . .	.0000037
Nov. 10, 1897 . . . . .	.0000037

The ease with which we may always keep on hand a standard preparation of the heart tonics greatly facilitates the carrying out of the test and the accuracy of the results as compared with those obtainable with diphtheria toxin or antitoxin, both of which latter lose their active properties in a comparatively short time.

TABLE IV.

	Minimum fatal dose
Strophanthin No. 1 . . . . .	.000009
" No. 2 . . . . .	.000001
" No. 3 . . . . .	.000001
" No. 4 . . . . .	.0000062
" No. 5 . . . . .	.0000001
" No. 6 . . . . .	.0000001

The foregoing table shows the variation in the strength of different samples of strophanthin which were obtained from three of the best manufacturing chemists in the world. They were supposed to be pure strophanthin, yet one sample is ninety times as strong as another, the others varying between these limits. The digitalins also vary greatly in strength, but much less than strophanthin. Both strophanthin and digitalin are given daily in tablet or pill form, the amount of active ingredients being apportioned by

weight. A splendid opportunity for a sudden termination of a favorably progressing heart disease, should the patient be obliged to have his prescription refilled from a fresh bottle. The only way that such remedies can be taken with any degree of safety is to have them prepared from stock of known physiologic strength. I will not dwell upon this subject longer at present, but desire to say in conclusion that the method of assay herein described is put forth in the hope that others will experiment along this line. I do not claim it is the best method of pharmacologic assay that may be devised for this group of therapeutic agents, since I have not yet satisfied myself that it is applicable to every one of the members of the group, but I do claim that some method of assay should be employed.

THE GREAT THERAPEUTIC IMPORTANCE OF A RATIONAL ADAPTATION OF CATHARTICS TO THE PHYSIOLOGIC FUNCTIONS OF THE GASTRO-INTESTINAL SYSTEM.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY E. D. McDANIEL, M.D.

MOBILE, ALA.

The skin or external integument may at first thought seem to constitute a much greater surface than the more hidden part known as the internal integument, but the latter really represents much the greater area. This is due to the smaller number, size and depth of the openings and duplicatures existing on the skin for absorbent, secretory and excretory purposes, while the internal integument possesses much more numerous and larger duplicatures, with more numerous, larger and longer glandular and absorbent structures. The part of the internal integument that pertains to the respiratory system being excepted, the remainder, reaching from the margin of the lips to the verge of the anus, constitutes, with its appertaining or collatitious viscera, what is designated in this paper "the gastro-intestinal system."

By function is to be understood a work or process accomplished in a living part by the operation of chemical, mechanical and vital laws. We shall therefore regard function as synonymous with process. Our allotted time would not suffice for a consideration of all the processes or functions that may take place in the long course and many parts of the gastro-intestinal system. Many such processes may be yet undiscovered and none of them, in the present state of physiology, may be fully understood. Our task will be more feasible, more simple and more useful if we restrict our consideration to six leading processes whose existence may be assumed to be admitted. These processes are the digestive, the secretory, the absorbent, the excretory, the peristaltic and the disinfective. It will doubtless be further granted that these processes, when existing in true relationship, regularity and harmony, contribute a large and essential contingent to human health; that whenever their correlation is disturbed or destroyed there follows a corresponding amount of disease; that this disease with its cause or causes demands remedy, and that a proper application of the needed remedy constitutes the proper therapeutics. Moreover, it seems obvious that whatsoever process or processes—whether digestive,

secretory, absorbent, excretory, peristaltic or disinfective—be primarily or paramoulytly disordered in any actual case, the same must indicate the special remedy or combination of remedies needed in that case.

As analogy easily places all classes of remedies under this general rule, and requires of physicians the use of a like wholesome discrimination in the employment of all remedies, our thesis, abstractly viewed, may be regarded as established, and the query may be raised: Why is it proposed to apply to the class of cathartics alone a rule applicable to all classes of remedies? Or: why is not the rational adaptation of other classes of remedies as much to be enjoined as that of cathartics? The answer is clear and easy. The fact that the rule applies to all classes of remedies does not remove all cause for specially emphasizing it in regard to cathartics, but really furnishes strong reason for its rigorous enforcement in the use of remedies so continually resorted to, so speedy, and so satisfactory in action and so nearly unapproachable in most essential, extensive and beneficial results.

The contents of the gastro-intestinal canal are related to the body as the soil is to the plant, and as the life, growth, and vigor of the plant depend essentially upon the nature and condition of the soil, so do the life and health of human beings depend upon the character and management of the contents of the alimentary canal. And as the cultivation of the soil is tantamount to the cultivation of the plant, so the wise management of the contents of the gastro-intestinal system is a leading instrumentality in the conservation of human health, and while, in this work, the worth of a proper diet, control of the appetite, occasional fasting, massage, etc., are recognized helps, yet in all urgent or grave conditions, the main dependence must be upon the more thorough work of cathartics or purgatives, which are here used as synonymous with each other, and may be defined as that class of remedies therapeutically used to cleanse the gastro-intestinal system by increasing the frequency, copiousness and fluidity of the alvine discharges and otherwise modifying the quality of these discharges. In whatever mode administered, whether orally, hypodermically, epidermically, by enema or by suppository, they serve directly or remotely, primarily or secondarily, to unload the bowels, to deplete the general system, to promote absorption, to produce revulsion, to eliminate morbid matters from the blood and tissues, to modify favorably local action by stimulation, sedation or alteration. With so wonderful a range and power of action, it is no wonder that cathartics are indispensable in virtually all diseased conditions as

1. Fevers—intermittent, remittent, continued, eruptive, ephemeral, or traumatic.
2. Inflammation—acute, chronic, cerebral, thoracic, abdominal, pelvic, or neuritic,
3. Constipation—acute or chronic; colic of the various kinds; dyspepsia.
4. Dysentery and diarrhea.
5. Hemorrhages—active and passive epistaxis; hematemesis; hemorrhoidal menorrhagia; metrorrhagia; hematuria.
6. Neurotic disorders—hysteria, chorea, epilepsy, tetany, neuralgia, lumbago and sciatica.
7. Dropsies—active and passive, acute and chronic.
8. Intestinal worms, all varieties.
9. Intestinal obstruction—impacted rectum, impacted colon.

10. All diatheses, cachexiæ, and dyscrasiæ, and the hosts of skin diseases.

Thus the cleansing action of cathartics, beginning primarily and conspicuously in the gastro-intestinal system, proceeds steadily and surely, advancing step by step and from part to part, until it pervades the entire body, penetrating even the external integument and showing itself indispensable in the treatment of all cutaneous diseases. It must, therefore, be clear that without the great gastro-intestinal system, *on and through which to act*, and the great class of cathartics *with which to act*, the medicine of the past could not have made its great history; the medicine of the present would not possess its mighty power, and the medicine of the future could never accomplish its meditated glorious projects.

May not the great body of representative physicians congregated here today, within one hundred miles of a peak from whose sublime summit one can look down in rapture upon a panorama of forty thousand square miles, in full view, around and below, be pardoned if, centering their thoughts upon the one predominant basic class of remedies and realizing its crowning pre-eminence, they seem to see all other classes as lying far away and far below? And knowing that man's nature is such that, in the end, he accomplishes most by doing one thing at a time, may we not hope that while exercising careful and constant discrimination in the use of that class of remedies which most contributes to our satisfaction, our success, our usefulness and our reputation, we may be making a forward step in a happy habit of like care and discrimination in the use of other classes of remedies?

It may be well here to point out the difference between *rational medicine* and the *rational adaptation of medicine*. Unfortunately an invidious controversy has sprung up in favor of what claims to be *rational* as opposed to *empiric* medicine. And in the literature of the controversy the words "rational" and "empiric" are used, each in two different senses. In one of these senses "empiric" implies recklessness, ignorance and aimlessness; in the other, confidence of cure based solely on former experience or observation of cure of like cases by the same remedy, without any comprehension of the mode of cure. So the word "rational" as opposed to "empiric" generally refers to the effects of remedial agents upon healthy human beings or upon lower animals; these effects, though admitted to be purely physiologic, being considered a basis upon which to found the expectation of curative action in disease. All knowledge, in whatever justifiable way acquired, is useful and desirable, but as all actions and reactions in nature are the outcome of conditions and relations and must vary accordingly, the only sure and reliable basis of therapeutics is clinical experience, or *trial upon the sick*, and therefore, in its origin, *empiric*. Remedies suggested by physiologic experiments, by sanguine reports of credulous or interested persons, by extensive popular use, by aboriginal tradition or other similar insufficient grounds, need not always be sneered at, but must be first tried in the great court of clinical experience before they deserve to be duly accredited. The rational medicine recognized in this paper is that which, tested for an adequate time by a satisfactory number of competent persons, on multitudes of patients, in varied localities and climates, and in ascertained doses and modes of administration, has

been found to relieve the sick most surely, most quickly, most pleasantly and most permanently. And the selection and use of individual medicines and methods so tested, and their careful adaptation to each varied case and condition is what is meant by *rational adaptation*.

Among all the vast multitudes of human beings that have lived, that now live, or that ever will live, no two faces have ever been found, are now found, or ever will be found, with every feature, part and point precisely alike; so, and much more, in the relatively small number of cathartics, it can not be expected that any two of the number will be found completely one in effect. Indeed, there are not now known, in the whole compass of *materia medica*, any two different substances of perfectly identical action. In this, no doubt, is found the reason why, in our generation of authors, the alphabetic order is so much followed in the text-books on *materia medica*—any satisfactory classification being despaired of—and the names of the classes used being compared to “a row of pegs on which to hang ideas.” But class names and subclass names of remedies, indicative of their most conspicuous, constant and regular action, are as old as medical literature and will never cease to be used in our language, our colleges, our hospitals and our homes. “Cathartics” or “purgatives” will continue to be the name of a class, and its subclasses will be differentiated as laxatives, aperients, salines, cholagogues, hydragogues, drastics, etc., according to the characteristic degree or variety of action produced. Their rational adaptation to the functions of the gastro-intestinal system will consist in such selection, combination and employment as may best tend to secure the desired degree or variety of action.

It may be regarded as obvious that *cathartics must counteract and diminish the digestive and absorptive processes* by accelerating the contents of the alimentary canal in their course, so as to allow insufficient time for these processes to be duly accomplished. It must also be obvious that *they must increase secretion, excretion and peristalsis*, as the increased size, number, frequency, fluidity, and other characteristics of the alvine discharges clearly demonstrate.

It is hoped that sufficient has now been said to lead the practicing physician to consider the gastro-intestinal system, not as a single long, homogeneous organ with a single function, varying merely in its progress and stages, but rather as a chain of many distinct organs linked to each other, each organ in succession being the part in which some special process takes place, and to regard the remedies of the great cathartic class, not as all of substantially the same effect, but as each endowed with some individual virtue or combination of virtues, and fitted to accomplish some special purpose, and instead of telling his patient to “take a purgative,” to prescribe definitely the particular remedy, time, dose and mode of administration.

It may be well, however, to append a few practical facts, rules and reports illustrative of the importance of what it has been attempted to inculcate.

1. By excessive or prolonged use of certain cathartics, the gastro-intestinal system may have its susceptibility to their action so increased or diminished as to forbid their use.

2. Different cathartics, for various reasons, act differently on the different portions of the gastro-intestinal system, and should be prescribed in accordance with this fact.

3. Certain cathartics are specially repugnant or otherwise unsuited to certain persons, and should not be administered to such.

4. In case of cathartics, as of other remedies, overaction is apt to be followed by torpor; the special irritability of the part affected becoming exhausted and thus acquiring immunity toward the special remedy used, this immunity being of longer, shorter or even permanent duration.

5. Mercurial cathartics are regarded as antisyphilitic, germicidal and disinfectant; as regulating the flow of bile, increasing this when deficient, moderating it when excessive, restoring it when suppressed and correcting it when morbid. They are specially useful in warm, moist climates and in acute malarial infection, less so in chronic malarial cachexia, in tropic and sub-tropic dysenteries, in sclerosis of the liver and in obstruction of the common bile duct. This great variety and seeming contrariety in their action may be due in part to the doses, combinations and modes of administration used or to some existing condition of the patient.

6. Drastic or irritating cathartics should be avoided in cases in which there is already irritation of the stomach or bowels, or a tendency thereto.

7. In obstruction, in spasm or in great pain in the bowels, the less irritating and most surely acting cathartics, such as calomel or castor oil or the purgative salins, should be selected and combined with opium, hyoscyamus or other efficient analgesics.

8. In numberless conditions of disease the purgative waters of the great fountains of health—too numerous here to mention—wisely, beneficently and widely distributed over the earth, or the pure artificial purgative salts, whether as cholagogues, hydragogues, deobstruents or alteratives, are more safe, sure, prompt, pleasant and efficient than other cathartics. Such are effervescent magnesium citrate in the obstinate nausea and vomiting of bilious and other forms of malarial fever; sodium hyposulphite in hemato-globinuric fever; magnesic sulphate or sodic sulphate in the dysenteries of the warm climates, in dropsies, etc.

Case 1.—V. M., male, about 17 years old. Sick of bilious fever; nausea distressing; vomiting almost constant; restlessness extreme; thirst insatiable; fear of dissolution pitiful, and thought of delayed relief worse than the fear of death.

Treatment: Effervescent citrate of magnesia, improvised by stirring two teaspoonfuls of powdered magnesium carbonate in two ounces of water in one glass and adding to one half ounce of water in another glass the juice prepared from a fresh lemon, then suddenly adding to the suspended magnesia the lemon water, rapidly stirring, and applying hastily to the eager mouth of the patient. At the same time a solution of soap in a half gallon of warm water was being made ready for lavement of the rectum and lower colon and was thoroughly used as soon as practicable. This line of treatment, pursued as required, and supplemented by sinapisms or ice to the epigastrium, forehead and spine, speedily quieted the nausea, vomiting and restlessness, secured thorough cleansing of the alimentary canal and made ready the patient for the reception of quinin sulphate, 4 grains, at four-hour intervals—all that was further needed in the remedial treatment of the case. Sometimes morphin or other anodyne is an invaluable adjunct in the treatment of such a case.

In Dallas, Wilcox and some of the other counties of Middle and Southern Alabama, visitations of pernicious dysentery occurred for several years—appearing and disappearing about the same time of year. Most of the visitations occurred in June, when the days were hot and the nights cool. So great was the fatality that a panic would seize a community whenever the disease would break out, and this happened

here and there almost annually from 1848 to 1858. The treatment was calomel and opium by mouth, and solution of silver nitrate by rectal injection. With rare exceptions the termination was death. About 1859, what is now known as the "saline treatment," was generally introduced. This consisted in first giving in solution magnesium sulphate or sodium sulphate, with the addition of sufficient tinct. opii or tinct. opii camphorata to lessen the atrocious tormina and tenesmus, until copious, soft, semifluid "actions from above" took the place of the scanty daubs of bloody mucus, that are so strikingly characteristic of dysentery. Great good generally resulted from adding to the above treatment pellets of $\frac{1}{8}$ grain of extract of belladonna every four hours, to allay the great irritation about the anus and to relax its sphincters. In a few instances 30-grain doses of powdered ipecac, with one to two grains of powdered opium to each 30 grains of ipecac were given in pills at intervals of two to four hours as a substitute for the saline treatment. Since the adoption of the saline treatment in the localities above mentioned, dysentery is seen mostly in sporadic cases, has a small death-rate and has ceased to excite any great popular dread.

Case 2.—L. W. J., practicing physician, age about 40 years, a constant but not very excessive alcoholic drinker, became subject to spells of pain in the region of the gall-bladder, for which he resorted to the use of blue mass. Regularly in a day—less or more—after taking blue pills his skin and conjunctivæ would become deeply jaundiced, his pain increased and his alvine discharges were paler and more adhesive. This succession of symptoms became so frequent and regular that he was advised to abstain from mercury, on the theory that he was suffering from biliary obstruction, and that the mercury, without relieving the obstruction, was increasing the secretion of bile and thus poisoning and staining his blood and tissues. He was also advised to resort to a saline treatment, by using early each morning before breakfasting teaspoonful-doses of magnesium sulphate, sodium sulphate, magnesium citrate, artificial Carlsbad, or some other purgative saline. In a short while he was much relieved of his troublesome spells, and remained so until he passed from observation.

Case 3.—E. P., a little boy of about 5 years, who had been from tender babyhood, scratching and crying, day and night, with itch, was brought to me by his mother—one of the neatest and best of women and of housekeepers—for treatment. Under the prescription given, the patient improved considerably, but now and then, for months, I would be sent for to see the case. At length, the dear woman sent for me, and meeting me at the door, with streams of tears flowing down her soft cheeks, said: "Doctor, I want you either to cure Edgar or kill him!" "Oh! madam, you don't mean what you say." "Yes, I do," she replied; "I would rather see him dead and in his grave than to have him suffer longer as he does." In deep sympathy for the parent and the patient, and in despair humiliation and discouragement at the utter failure of all the vaunted unguents, lotions, antiparasitics and disinfectants that had been applied to skin, to clothing and to bedding, I sat pensively down and wrote the following:

R Sulphur flores	ʒi	31103
Potass bitart.	ʒiii	62206
Molasses	ʒiii	93309

Mix and put in wide-mouth bottle.

Sig.—Shake or stir well before using, and give one teaspoonful morning, noon and night, or sufficiently often to keep the bowels regularly loose.

In due course of time the case was satisfactorily cured, and the grateful mother so valued the prescription, that to the day of her death, she would furnish a copy of it to such of her acquaintances as suffered from cutaneous eruptions.

This report illustrates how remedies acting through the gastro-intestinal contents, pervade the whole body, pass through the skin and saturate and disinfect the very clothing of the patient.

The parasitic worms, such as tape-worms, lumbricoids and ascariides, have their habitat, not in the human body itself, but in the contents of the gastro-

intestinal system, and such vermicides as destroy them are generally injurious, and many of them, highly dangerous to the patient. They, therefore, require to be combined with cathartics, which, by preventing absorption and increasing peristalsis, hurry on out of the alimentary canal the deleterious anthelmintic substances, the disabled or destroyed worms, and the other morbid and morbid contents of the canal. In this way, oil of turpentine and santonin, not only do better service by being all directly applied to the worms, but being kept from being absorbed and out of the blood, do not produce painful strangury, dangerous irritation of the urinary organs, suppression of urine and fatal nervous intoxication.

This report is made from no particular case, but fairly represents many that actually occur, and aptly illustrates the great therapeutic importance of the rational adaptation of cathartic remedies to the physiologic functions of the gastro-intestinal system.

ACETANILID: ITS USE AS A PREVENTIVE MEASURE IN PREMATURE EXPULSION OF THE OVUM.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY STEPHEN HARNSBERGER, M.D.

CATLETT, VA.

Squibb tells us that antifebrin and acetanilid are identical. This latter drug, under the title of anti-febrin, was discovered by Gerhardt in 1845, but it was left to Cahn and Hepp in 1886 to bring it before the medical profession as a remedial agent. Acetanilid is a neutral chemic body, produced by the addition of glacial acetic acid in excess to anilin. It should be a white crystalline powder, slightly soluble in hot water, sparingly so in cold water, and quite easily dissolved in alcohol, strong wine or ether. To detect acetanilid in the urine the latter is shaken with chloroform, and the residue left on evaporation is heated with mercurious nitrate, when an intense green color develops.

From the published clinical reports on the subject, it is plain that its clinical application has been confined principally to its use as an antipyretic, and to a less extent, to its sedative action in various nervous disorders and for the relief of pain; but so far as I am informed, Dr. J. H. Wolfe, of Elkton, Va., and myself are the first to find acetanilid a serviceable remedy in threatened premature expulsion of the ovum. During the past few years I have used this drug in varying conditions of advantages and disadvantages, in a considerable number of cases, and with decidedly encouraging results. At no time have I witnessed unpleasant symptoms, and from its favorable action heretofore I am naturally led to believe it to be absolutely safe, and injurious only when administered without regard to reason or prudence.

Formerly I had resorted to viburnum prunifolium, alone or combined with potassium bromid, to meet the pelvic symptoms, and to opium, in one of its forms, for its general quieting effect upon the system. But the success of any treatment depends upon the power which the remedies employed exercise over the expulsive efforts of the uterus. Some of the preventive measures used formerly, though they very often restored the disturbed function, at other times excited the uterine action by indirect stimulation, and

thus defeated the final object. Opium, which was of old considered our sheet anchor in assisting to arrest uterine contractions, in its ultimate results, gives unquestionable instances of not being a trustworthy remedy. It must be noticed that its use too often produces a marked aberration of the functions of the stomach and bowels, and sometimes of the kidneys as well, secondarily at least, exciting the uterine contractions to uncontrollable effort.

Of course in administering acetanilid, as with many other drugs, it might be well for those not accustomed to prescribing it, to consider individual susceptibility and begin with small amounts, 5 to 7½ grains—0.32 to 0.50 grams. But even where the dose has been large, 10 to 15 grains—0.65 to 1 gram—and repeated at short intervals (one to two hours), I have observed no objectionable symptoms, certainly no alarming ones. It seems to possess a special relevance in such cases. Though I have frequently seen it pushed almost to the border-line of cyanosis, I am clearly of the opinion that one of the most striking advantages is the absence of any real unpleasant or dangerous effects. I have never had it produce nausea nor vomiting, collapse nor cardiac depression; in fact, I have seen it act seemingly as a cardiac stimulant in weak heart and as a systemic tonic in protracted nervous insomnia; neither cutaneous eruption nor ringing in the ears. The cyanosis of the lips and cheeks, which sometimes appears, is a symptom of no consequence. I have witnessed no marked action upon the secretion of the kidneys, occasionally an increased flow of urine and this only when the drug manifested a bracing influence upon the heart and pulse. Neither have I observed any evidence of its cumulative action. It does infrequently produce a rather profuse perspiration, but this in no wise interferes with the successful progress of the case, for, contrary to the belief of Dulácska, and perhaps of others, that the drug may, through the powerful action on the vascular system, induce dangerous hemorrhages, the close observer must admit that copious sweats cure hemorrhages. This has been determined too often to be laid down as a mere coincidence.

It is not in keeping with the title of this paper to enter fully into the causation of interrupted pregnancies, but to better illustrate the action of the preventive measure I advocate, I think it may serve a good purpose to make a brief suggestion in this connection. I am inclined to believe that when more reliable statistics shall have covered two or more decades a notable increase in the number of interrupted pregnancies will become apparent. From the result derived from a careful study of the circumstances surrounding such cases, I am also of the opinion that the disorder is not due to a great extent to single causes, but to a combination of several. And, in considering the causes, though it may be in conflict with authorities on the subject, nevertheless, I am constrained to believe that the great underlying cause is an inherited or acquired instability—a systemic and nervous depreciation brought on by the early operation of overstrained and other sinister influences incident to modern times and modern modes of living. By directing proper attention to the predisposing first cause, the tendency to abortions and premature labors can be notably limited. This plan certainly suggests itself to the mind as the only rational way, and at the same time, as we all recognize, it is the way not often left to the physician to follow. The great majority of cases of inter-

rupted pregnancies are sprung upon us suddenly. Then what is to be done but to meet the emergency presented? Certainly we can not go back to undo the ravages remote to conception! The remedies at all serviceable heretofore have required adjuvants which have been frequently attended by evil sequences. In using acetanilid, adjuvants are never or seldom necessary, thus avoiding all reactionary phenomena. This, if for no other reason, should recommend its further trial as advisable in the treatment of threatened premature deliveries.

Whether affections of the endometrium are primary or secondary to mechanic or pathologic changes outside of the uterus, the fact remains that the functional integrity of this membrane is vitiated and that its potency as an essential factor of intrauterine life of the ovum is greatly compromised and natural fetal existence constantly jeopardized. During the course of the first two months and perhaps including the third, even where the symptoms are strongly suggestive, it is no easy matter to forecast the probable pregnancy with any measure of certainty, but with grounds for a fairly correct diagnosis and where nature seems too dilatory or unable to accomplish a *restitutio ad integram*, acetanilid, 5 to 8 grains—0.32 to 0.51 grams—repeated in one, two or four hours, can commonly be relied upon as a helpful procedure. We frequently see women, who are usually regular, pass over a catamenial period. Their suspicions may be aroused, but at the appearance very soon thereafter of the menstrual flux, though it should be accompanied by an increased discharge and more pain, it is looked upon as only a delayed period—they being unaware that one of the clots which has been expelled contained the immature ovum. In just such cases, by the judicious administration of acetanilid a little before and continued a little beyond the usual time at which the monthly flux occurs, the vigor of the uterus seems to be increased and the staying qualities of the ovum strengthened. Again, in those cases of ovarian irritation, where there seems a tendency to the separation of the ovum at what would have been a menstrual period, I think most decided benefit will be found to follow the use of viburnum prunifolium and potassium bromid, with more or less regularity, and of acetanilid at the time of each periodic disturbance. The pain in the back during pregnancy is a nervous susceptibility, and all such patients should be specially careful and on every accession of pain should promptly seek rest and be put upon a few doses of this drug.

Acetanilid has proved of no less benefit in habitual than in simple threatened miscarriages. In a few cases of women who bore histories of habitual loss of the ovum during previous pregnancies, even where the symptoms were alarming—rhythmical uterine contractions, considerable hemorrhage and accompanied with more or less pallor and vomiting—a state of calm was quickly reached under the administration of acetanilid in doses of 10 to 15 grains—0.50 to 1 gram—at intervals of one, two or more hours.

But I will desist from the temptation to refer to every clinical aspect in which acetanilid might be used to advantage; neither will I enter into a discussion of the treatment of the endometritis, nor of the many other pathologic conditions which tend to contribute to interrupted pregnancies—these will occur to the thoughtful physician. It may be well, however, before leaving the subject, to call attention to the fact that undesirable symptoms are minimized by admin-

istering acetanilid with alcohol, strong wine or ether.

I was requested to prepare a paper for this meeting of your association and have presented this one, in order, if possible, to have acetanilid more widely used and its virtue as a preventive measure in premature expulsion of the ovum more fully appreciated.

After I had completed my paper, I received a letter from Dr. Wolfe, in which he gave me the following brief notes of three cases:

Case 1.—Was called in August, 1891, to see Mrs. E. H. W., of Elkton, Va. She had on previous occasions aborted three times and said she was confident such would be the case that time. I gave her three powders of acetanilid of 10 grains each—one to be given every hour, if required, until relieved. She took one at 4 P. M. and one at 10 P. M.; the third she never took, as the first two were sufficient to quiet every symptom. Patient was delivered three months thereafter of a fine girl baby.

Case 2.—Mrs. E. H. H., sent for me Dec. 10, 1895. Pains every ten to fifteen minutes and rather severe. I at once gave her 10 grains of acetanilid. Spent the night. No more pains. No relapse for three months, when, after washing some household goods, sent for me in great haste. Found her quite sick. Repeated prescription with the same result.

Case 3.—Mrs. Wm. D., of Elkton, Va. In August, 1895, was called to see patient. Suffering very much; labor pains every ten minutes. Had had ten abortions in succession and no living children. Patient was terribly alarmed. Gave her 15 grains of acetanilid every two hours, with complete success. She went her full time, only taking some dozen powders during that period.

In concluding this letter, Dr. Wolfe says: "No unfavorable effects and but little sweating. I might add that I have used the medicine in many other cases with success."

INTESTINAL OBSTRUCTIONS FROM GALL-STONES, WITH REPORT OF A CASE.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

BY JOHN PRENTISS LORD, M.D.

OMAHA, NEB.

Sunday, March 14, 1898, I was called in consultation to see a man, aged 70 years, who was suffering from acute intestinal obstruction, and suffered from vague gastro-intestinal symptoms for about one year, which had caused him to take medical treatment most of the period, without relief, he had been reduced in general health and strength, although he had maintained a very fair degree of vigor, and had filled his place as clerk uninterruptedly until the previous Thursday, when he was attacked, while at breakfast, with a sudden acute pain in the left side, midway between the umbilicus and the spine of the ileum. He left his breakfast uneaten and went to the office where he continued to suffer from pain and nausea; had an evacuation of the bowels and vomited. At ten o'clock he saw his physician, Dr. Malster, who prescribed and sent him home. The pain did not continue to be troublesome, though the vomiting did; and became stercoraceous on Friday. Large doses of calomel and salts, together with frequent enemas, had not moved the bowels, and on Sunday it had become apparent that relief must be obtained by other means. Vomiting was now frequent and distressing, markedly fecal, and his strength was waning. His temperature was 101 and pulse 120. The tympanites was moderate and palpation produced little pain. A tumor-like mass was recognizable in the pelvis, below and internal to the sigmoid, and it was thought to be most

likely a volvulus, with a loaded loop of bowel producing the tumor, which would account for the suddenness of the attack. An operation was recommended as the only recourse promising relief; its dangers, in our aged and enfeebled subject, were fully set forth to the family, who having lost three relatives following surgical operations, during the preceding two years, did not give their immediate consent. Lavage of the stomach was thoroughly performed at 1:30 P. M., and no vomiting had taken place when he reached the hospital, a distance of two miles, at 5 P. M. The stomach was again irrigated before the operation, which immediately followed.

The bowel containing the obstructing body was readily brought through a two-inch median incision, and while surrounded by gauze and the intestinal contents controlled by the fingers of an assistant, through the usual longitudinal incision, a mass of material was removed. The mucosa was approximated by Czerny sutures, then a continuous of the serosa, when the line of union was finally fortified by Lembert sutures.



Inspection of the gut revealed a considerable deposit of fibrinous lymph upon its surface, which gave the serosa a rather ragged appearance. One particular portion of a rough, grayish character, excited my attention, but resembled the other portions so closely that the gut was considered in condition to return.

The patient was forty minutes upon the table; suffered little or no shock; had no vomiting after operation, and within a few hours took salts hourly until bowels moved repeatedly. The patient's condition was ideal, pulse 85 and temperature 98. Strychnia had been used hypodermatically, since before the operation. No food was allowed by the mouth for forty-eight hours, but nutrient enemata with alcohol were administered. All went well until the third day, when, after a repetition of the saline, evidence of peritonitis manifested itself. The following day the wound gave evidence of infection and the retention worm-gut sutures were removed and on the fifth day the wound margins were separated and a thin pus with a distinct fecal odor escaped, after which there

was an improvement in both local and general symptoms, which had become quite marked, and from this time convalescence rapidly followed. The fecal odor and discharge disappeared with no apparent ill consequences, and the patient has made a complete recovery, he now being better than for more than a year previously.

The specimen removed was of about the size and shape of a small hen's egg, but more sharply conical near its lesser extremity, which had the appearance of having sustained loss of its substance by fracture of its apex. The body was, for the most part, smooth with the exception of a small irregular elevation on its side, which I now believe to have been the cause of the spot of questionable vitality referred to in the history, and which gave way on the third day, producing the small perforation, which by rare chance terminated most favorably.

The lesson from this should be to inspect carefully even apparently smooth solid objects removed from the gut, that their damage to its integrity may be estimated at the time; for the pressure effects from within from even a small elevation upon the surface of the obstructing body, may be very considerable, with but slight evidence upon the serosa; which may be easily overlooked or underestimated.

Section of the specimen shows it, without a doubt, to have a gall-stone for a nucleus, the central portion possessing the characteristic radiation of cholesterol crystal, together with the salts from the decomposition of mucous. The concretion of material about the nucleus is largely composed of biliary sediment, but in the absence of a complete analysis, I am unable to say whether it is wholly of gall-bladder formation or not. A partial analysis shows that it is composed for the most part of biliary sediment and fat. The bile contains a considerable proportion of fat, so that this does not preclude the possibility of its being wholly of gall-bladder origin. There being an entire absence of a history of gall-stone, colic or jaundice, it is probable that this entire body, or the stone represented by the nucleus, found its way into the bowel by ulceration. While the common duct is capable of much distention, yet all will agree that it would not give passage to a stone of the dimensions of this specimen, and certainly not without pain, of which there was no history. The statement of the old-time authors that stones as large as hen's eggs are passed by the duct, must not be credited, and we are forced to the conclusion that their belief in their passage through the duct, was by inference, and mistaken for their exit by ulceration, which process can no longer be in doubt; fistulæ, or evidence of their previous existence, having been shown between the gall bladder and duodenum in thirty-three out of fifty-one autopsies, as well also, were fistulæ found between other organs. "Few stones large enough to produce obstruction come from the duct" is among the conclusions arrived at by Roth. Literature and weight of evidence, however, would seem to indicate that most of these cases of obstruction from gall-stones are developed after the gall-stones have remained in the intestine for a considerable time, and had their size augmented by the concretion of fecal matter upon their surfaces, which is a possibility in the present instance. That single stones of this size do form within the bladder is true, they having been found at autopsy, and also having been passed within a few days after symptoms of local inflammation, ulceration and

obstruction had taken place. The bowel may become dilated or sacculated to accommodate the stone, or it may become lodged in Meckel's diverticulum, in any of which instances it may become dislodged at any time to form a more or less complete obstruction. While obstructions from gall-stones form about 2½ per cent. of the cases of intestinal obstruction, according to Leichtenstern's figures (which are now far from recent) it is probable that with a closer analysis of cases in these later days, when these conditions are much better understood, the percentage will be considerably increased. This inference does not appear unwarrantable when we consider the statement of Bevan that cholelithiasis exists in from 8 to 10 per cent. of individuals from 30 to 60 years of age, and after 60 years, in the surprising number of 25 per cent. of cases examined postmortem. Of the cases of intestinal obstruction from gall-stones, 80 per cent. are women. This affection is very rarely met with in those under middle age, the great majority being well advanced in years.

The manner in which obstruction takes place most frequently is by mechanical obstruction of the intestine from the interrupted passage of a large stone; the stones of less size than the caliber of the intestine are capable, in some cases, of bringing about obstruction, which would seem to be due to an early stimulation and contraction of the circular muscular fibers always found in this as well as in other forms of obstruction. Mayo Robson classified three other varieties of obstruction resulting from the effects of the pressure of gall-stones, which he described as the paralytic form, dependent on local peritonitis in the region of the gall-bladder.

Volvulus of the small intestine depends either on the violence of the colic, caused by an attack of cholelithiasis, or on the contortions induced by the passage of a large concretion through the small intestine, and obstruction depending on adhesions or on stricture the result of past gall-stone-attacks, or of healing fistulæ.

From the foregoing, as well as the fact that gall-stones may exist for years without knowledge of their presence, it can not be said to be a reflection upon us if we are unable to make a diagnosis previous to operation, though with a previous history, causing the straws in the stream of events to point toward the gall-bladder, we may be guided to the source. Then, too, it is usual that pain is sharp and sudden, though not protracted. Vomiting is early and quickly stercoraceous, usually within twenty-four hours, except in chronic or subacute cases, when it may be delayed several days, and distention is not a prominent symptom, for the stone may be, and usually is, above the ileocæcal valve—the lower ileum in half of the cases. The nearer the stone to its origin the less the tympanites. The cases of greatest abdominal distention, it will be remembered, are where the obstruction is in the rectum, sigmoid, or some part of the large intestine. The passage of flatus or feces amounts to no more than a possible evacuation of the bowel below the obstruction, which is most likely to take place during the height of the pain and tenesmus, accompanying the onset of the attack. Palpation may reveal the situation of the stone in subjects not too fat. The possibilities of spontaneous relief by the passage of the stone, is probable in from 30 to 50 per cent. of the cases. The remaining 50 or 80 per cent. will die if unrelieved by operation. The mortality from oper-

ations hitherto has almost equaled these figures, so that these cases which should be naturally favorable for successful operative relief, present difficulties which leave it an open question when to interfere, and how long to wait before operation is resorted to. Delay can not be said to be a safe rule in any form of intestinal obstruction. It is my belief that if all cases were operated upon within the first twenty-four hours the mortality would be reduced. We must therefore impress the general practitioners with the necessity of earlier reference of these cases to us, as we must in all cases of intestinal obstruction. We must lessen the number of last resort operations. More of the unfavorable results in operative cases are due to the condition of the patient and the parts involved, than to the fault of the operation.

The general practitioner may treat a case upon rational lines, in absence of, or because of unobtainable skilled surgical aid, and present statistics will justify him in his course. But under what we may consider favorable surgical circumstances, I believe that fecal vomiting should be the signal for operative interference in gall-stone or any other form of obstruction, where proper and adequate measures have been tried without relief.

The measurement of this stone soon after removal was four and one-half by six inches in circumference, and was two and one-sixteenth inches in length. Marshall of Glasgow reports a case measuring one and three-quarters inches, by three and one-quarter inches in circumference. Smith and Fagge report a stone two and one-half inches, by four and one-half inches in circumference. Conglomerate stones, or those formed by the union of several stones, have made larger bodies than single stones. Enteroliths and pure concretions become larger, but these are almost always formed in the large intestine.

Lavage of the stomach was referred to in the history, which is a treatment of great value in both the medical and surgical treatment of intestinal obstruction, in my experience. And I will here say that it is my usual practice to precede operations for the relief of intestinal obstruction with this procedure; and, while it may be the practice of many operators, I do not recall having seen, nor having heard it recommended, it having occurred to me by witnessing patients of mine almost strangle from vomitus in the larynx during anesthesia. Indeed, effort at vomiting does not have to take place to cause the stomach contents to overflow in many of these subjects, over-distended with phlegm and feces. The lowered head and a final palpation of the abdomen by the operator are quite sufficient to cause a flood of the fluid to embarrass the anesthetizer and endanger the patient, immediately by suffocation, and remotely from the inspiration of the highly infectious intestinal contents. The good results from this practice are always gratifying, not only during anesthesia, but following it. There was no vomiting in this case, which enabled the patient to retain salts as soon as consciousness was restored.

If the vitality of the gut is not free from suspicion it should not be returned until the proper protection has been afforded against subsequent leakage. A few Lembert sutures would have prevented the very dangerous mishap in the case reported. Omental grafts are an additional security to the line of union, and should doubtless be more frequently employed.

THE USE OF ELECTRICITY BY THE GENERAL PRACTITIONER.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CALEB BROWN, M.D.

SAC CITY, IOWA.

In the successful prosecution of any line of work it is necessary to have good tools to work with, and in no calling is this more important than in the treatment of disease, the relief of suffering and the prolongation of life, which are, or should be, the aim of every physician. Were we to examine the armamentaria of the general practitioners of medicine, we would find that where they had electrical apparatus it would, as a rule, be the farthest from up-to-date of any appliances they might have. The reasons for this are twofold: first, the market is flooded with, so far as treatment of disease is concerned, worthless but not always cheap electrical appliances, the fancied merits of these machines being constantly paraded before the medical profession by manufacturers and selling agents; second, physicians are not sufficiently well informed as to what they should or should not buy. Were we to ask every general practitioner in this country: Do you use electricity in your practice? many of them would answer yes, but should we examine their apparatus we would find in a very large per cent. of cases that their electrical outfit consisted of a so-called family or physician's battery, a box containing one or more cells, with a coil attached for the faradic current and possibly an arrangement for the galvanic current, but absolutely no reliable means of regulating the dosage. No rheostat, no milliamperemeter, none of the modern appliances.

While I do not say that such a machine is of no possible use in the treatment of disease yet I would most emphatically say that it is not what we want if we are going to do good, scientific work. As galvanism and faradism are the forms of electricity most used by the general practitioner I will confine my paper to this part of the subject, the electro-cautery being used principally by the specialist, and static electricity, while it is one of the most useful forms of electric energy in the treatment of disease, yet is employed as a rule, only by those who use electricity quite extensively and are, to some extent at least, specialists in electro-therapeutics. Let us see then what apparatus is necessary for the proper use of galvanism and faradism. First is the cell for generating electric energy. Let this be a cell with carbon and zinc immersed in a solution of ammonium chlorid. For the galvanic current we will need from five to sixty or even more cells; connect these to a proper switch-board so arranged that any number of cells can be switched into circuit and also any cell or cells can be examined at any time as to their working capacity. It is then necessary to have a rheostat for controlling the current and a milliamperemeter for regulating the dose. The last named instrument is the most important, for without it no accurate work can be done, as we can only estimate the dose used by the number of cells in the circuit or the sensations of the patient, both of which are very unreliable. I will not attempt, for space will not permit, a description of a good faradic apparatus, suffice it to say we must have two to four or six cells like those in our galvanic battery, and a series of coils varying in length and fineness

of wire, according to the condition we wish to treat, and with an interrupter that can be regulated to give slow or rapid vibrations.

A full description of the proper use of the positive and negative poles in galvanism can not be given in this paper but is better learned by a study of individual diseases in text-books on electro-therapeutics. While polarity of the faradic current has been denied by some yet there is certainly a difference in effect produced by the application of the separate electrodes. We may say as a rule that the most active polarity is the negative and should ordinarily be placed nearest the affected part. Or in general faradization the current should be directed with the blood-current.

In studying these two forms of electricity—galvanism and faradism—in their physiologic effects and therapeutic uses we must remember that the galvanic current is of large ampérage or volume and small voltage and its action is chemic or electrolytic, while the faradic current is electro-mechanical, having a low ampérage but a very high voltage. Having these two thoughts firmly fixed in our minds we have made a start in the right direction in the study of the effects of electric energy on the animal organism.

If we also understand the pathology of disease and have proper electric apparatus we are ready to begin the practice of electro-therapeutics; but to carry it out successfully we must understand the subject of electricity as a physical science, we must know our anatomy, physiology and pathology perfectly, we must learn to use it where indicated and dispense with it when it is contraindicated as we would any other means of combating disease. I am not of those who think electricity a panacea for every ill or that it should be universally made use of, but when intelligently used it makes our medicinal treatment more effective.

First among diseases treated by me in which I have found electricity beneficial I would place goiter. I have treated this subject more fully than the limits of this paper will allow in a paper read by me last year at Harrisburg, Pa., before the American Electro-Therapeutic Association. In that paper I gave results of treatment in quite a large number of cases of this disease. I will not devote space to describe the various forms of goiter further than to say that, aside from a true tumor growth, goiters are hard, soft, vascular or cystic, according to amount of fibrous tissue, fluids or blood-vessels entering into their structure. And we may state, in a general way, that the harder and firmer a goiter the less curative effect as to reducing its size will electricity have, yet on the other hand, although but little may be done in reducing the size of a firm goiter by electricity (aside from electro-puncture), yet it will relieve to a great extent the nervous symptoms and pain, and even in exophthalmic goiter we may do much to slow the heart, calm the nervous system and improve the general condition of our patient.

The proper form of electricity in this disease is galvanism: placing one pole on the back of the neck, or behind the angle of the jaw, the other on the tumor, a very strong current is not necessary. Reverse the poles, placing first one then the other on the back of the neck or one on each side of the tumor, shifting them often enough that too great irritation of the skin will not result. Give medicine if condition of system demands it. I have never used electricity in this disease that the case was not benefited both in decrease

of size of gland and relief of nervous symptoms. Many cases are cured; in some the gland has again enlarged, others have remained cured. But when we remember that latent embryonic cells may be stimulated by an enlarging thyroid body and a true tumor result, amenable to surgical treatment alone, we see the importance of curing these cases in their early stages, and for this, one of our greatest aids is undoubtedly galvanism.

We who do a general practice often have patients come to us who complain of pain in various parts of the body, muscular soreness, lame joints and a general worn-out condition. I remember seeing a statement by some medical writer that when you have a patient with a pain you can not account for in bones, joints or muscles to give iodid of potassium, I usually go one step further and use, in conjunction with the iodid or any other proper medication, general faradization, and with happy results.

In neuralgia we often have great benefit from the use of electricity. If the pain in a nerve is caused by neuritis, electricity is perhaps not our best remedy, but the further we get from the acute inflammatory condition and the nearer to the chronic inflammation or purely functional trouble the better effect we will have from this agent, and in all such cases it is indicated and is very helpful. This is markedly so in sciatica. In using faradism in this disease use a high tension induction coil with negative pole on sacrum using an electrode four to six inches in diameter; connect a smaller electrode with the positive pole and place over the course of the nerve.

To use galvanism in the same disease place a large electrode, five to nine inches in diameter, connected with negative pole over the sacrum, a somewhat smaller one connected with positive pole firmly over one of the most painful points of the nerve, increase the current from zero until a feeling of warmth is produced, hold it so for a few minutes, decrease it gradually and treat each painful point in this way. The current will need to range from five to ten, fifteen, twenty or even more milliampères, according to the effect.

The range of diseases in which electricity may be used to advantage by the general practitioner is very wide and new uses will suggest themselves to him as his experience increases. Where I have found it most useful is in functional nerve troubles, subacute inflammations, such as chronic rheumatism, in neuralgias, lumbago—and here it is particularly useful—also as a general tonic, and last but not least, in goiter, when used in appropriate cases.

In conclusion I would say that when we use electricity let us use it intelligently and with care, let us study it as a physical science, let us study it in its physiologic manifestations on the animal organism, but above all let us study the pathology of the diseased conditions we are to treat. Then if we will get good apparatus and use it with as much intelligence as we would give any drug, we will find electricity to be a most potent factor and a strong ally in our battle against disease.

But let us not make the mistake of considering electricity a cure-all, but ascribe to it its proper place, believing that a force that can propel cars, run the heaviest machinery, light a city or enable us to talk across miles of space, or break up molecules into their ultimate atoms, must have some effect, when properly used, upon the metabolism of the human organism.

CONSERVATIVE TREATMENT OF INTESTINAL OCCLUSION BY INTERNAL ELECTRICITY.

BY R. P. JOHNSON, M.D.
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In reviewing the different means of relief recommended and practised by American medical men for the cure of intestinal obstruction, the investigator is led to believe that what is regarded in some of the European medical centers as safe, successful, not interfering with the employment of the more radical procedure—laparotomy—is entirely ignored, or in fact, not even considered here. From a fair amount of investigation of the subject I am convinced that the American practitioner is neglecting to employ therapeutic means that have been satisfactory for years to many of the most eminent men of Europe.

The physician who is called to see a patient, whose most prominent symptom is one of non-movement of the bowels, may have a very obscure but serious case to contend with. Cathartics and enemas have been ineffectual, so it is a case of obstruction. What is to be done? A surgical operation may be the proper thing. If there is hernia, a stricture or lodgment of foreign body, a knot or a loop in any way strangulated, it will be the proper thing and should be done at once. But how are you to determine? Some say that a laparotomy must be performed, but the operation is too serious as a means of mere diagnosis. If the condition is the result of an intestinal concretion, an impaction of fecal matter, a paralysis, producing some dilation of the walls of the bowel and many other conditions that go to make up the pathology in these cases, laparotomy would be a failure. The last enumerated cases are not to be relieved by surgery. We have excellent authority for saying safer and better means are at hand.

I here quote from a recent article from the pen of Dr. J. Larat of Paris, France. Dr. Larat's experience and standing in the profession are sufficient guarantee. Dr. Larat says, in speaking of the good results of the electric injection as used in the hospitals of Paris: "In cases of intestinal obstruction let us see what the therapeutic results are. Dr. Boudet of Paris, in statistics taken from 50 cases, reports the successful operation of 70 per cent." In speaking of himself, he says: "I have now applied the injections in 250 cases. I have obtained a clearing of the intestines in 101 cases. Thus my successes are less than those given by Dr. Boudet. However, they still remain satisfactory. All my cases have been seen by my colleagues, who called me in to assist their patients, and at least one-half of them are doctors of the hospitals. Thus my statistics have been well tried, and it would be easy for me to secure the testimony of my colleagues and masters. When called to see a case, and after having tried a purgative and an enema without any result, do not insist any longer but immediately administer the galvanic injection. In twenty-four hours it will be recognized successful, or not. In cases of failure, propose a surgical operation to the patient."

If the above statements are trustworthy, they leave no doubt as to the positively curative effects of electric injections on cases of obstinate constipation, where there is great torpor of the nerves supplying the muscular coat of the bowels. The condition of the semi-paralysis is fully proven by the great want

of response to cathartics and also food that is inclined to keep the bowels in a soluble condition. Nothing has so decided an effect on nerves partly paralyzed from a functional condition as electricity, and especially of the form of galvanism, where the muscular fibers are non-striated, as in the bowels and other hollow organs. Dr. Larat's conclusions are worthy the consideration of every physician and surgeon. In the advice which he gives in the management of these cases he certainly shows a fairness and professional dignity worthy of the eminent physician he is. He in no way tries to belittle the grand results obtained by surgery. To further substantiate what may be regarded as an unwarranted and unjust statement that the American practitioner is neglecting to employ therapeutic means that have been satisfactory for years to many of the most eminent men of Europe, I here append a list of sixteen printed medical documents that can be found in one library of Chicago on the obstruction of the bowels cured by electric injections. Of this list of sixteen medical articles, which are generally in the form of reports of different cases, only three are from American writers. For the collection of the above articles I am greatly indebted to Dr. Mangus Moreneus, who has charge of the department referring to electricity, in the Newberry Library. Dr. Larat of Paris, France, gives a list of printed reports on this subject by twenty-four different authors, not one of whom is American. Beside the forty articles above referred to, I have the names of title and authors of thirty other printed articles on intestinal obstruction and constipation, treated successfully by internal electricity, not one of which are from American writers. They would make my article too tedious to give them all here.

It would appear that surgical interference is sometimes resorted to rather rashly. I here quote from the pen of Dr. Mathews, in his most excellent work on "Diseases of the Rectum." Dr. Mathews is president of the AMERICAN MEDICAL ASSOCIATION, and is recognized authority. In speaking of the obstruction by fecal matter, he says such accumulation has ended in the death of the patient. Obstruction caused by fecal matter in the cecum has been confounded, time and again, with appendicitis, and operations have been done, looking to the removal of the appendix, which were unwarrantable, and right here begins the much discussed subject—whether these cases belong to the surgeon or the physician. Dr. John Ashhurst, editor of the International Encyclopedia of Surgery, in a recent article on "Intestinal Obstruction," says: "I very much fear that at the present day, the hasty resort to operative measures, encouraged by the much vaunted modern triumphs of abdominal surgery, is responsible for the loss of a good many lives which might, perhaps, be saved by more rational if less brilliant treatment."

From the statement I have quoted from Larat, it would appear to the unbiased mind that where the pathology is obscure, therapeutics in the form of internal electricity should be tried first. If this treatment will relieve the cases where surgery is not suitable—which are fully 50 per cent. of the whole—and in no way preclude the knife in surgical cases, certainly the mortality can be greatly reduced. The statistics of cures by surgery would be very much better if cases not indicating surgical assistance were treated as here advised. No fair-minded physician or surgeon is so enthusiastic in his own specialty as to de-

sire professional work where his efforts will be unsuccessful. I think you will find no other disease in which the per cent. of cures are so evenly balanced between the efforts of therapeutics as here described and surgery. A monopoly in either department of the science and art of medicine and surgery in these cases can not fail to greatly increase the rate of mortality, and when you consider that the use of electricity need not require more than twenty-four hours to give it a fair trial, it can not be objected to.

The electric enemas not only assist in removing the obstruction by inducing a normal peristaltic action, but impart tone to the vasomotor nerves which supply the non-striated muscular fibers forming the muscular layer of the intestines.

It is a well-established principle in electrotherapeutics that the active pole of the battery should be as near the tissue to be treated as possible. What I mean by the active pole is the one in nearest proximity to the diseased tissue. Convinced that strict observance of this principle was important in order to have success, and having some cases of obstinate constipation to treat, about one year ago I had constructed a special rectal tube inclosing an electrode. The electrode is so constructed that it supports the caliber of the tube, thereby preventing its kinking or doubling, which enables the operator to pass it into and beyond the sigmoid flexure. In this way the colon can be thoroughly flushed, and by connecting the cord-tip of the battery with the binding-post of the positive electrode, and the sponge of the negative electrode over the abdomen, or some other part of the body one can administer a thorough and real electric bath to the mucous membrane of the colon. Peristaltic action is generally set up in from one to five minutes. Certainly no other therapeutic remedy is half so potent, with no danger nor pain.

As to the amount or intensity of current to be used. If the battery is not supplied with a milliamperé-meter or galvanometer, it will be safe to rely on the sensibility of the patient. Commence at zero with either a galvanic or faradic current and slowly advance to the degree of considerable warmth with galvanic current. If you use the faradic current a greater degree of sensation from the current will be required. After the current is continued for a few minutes, turn back to zero and again slowly increase to the former intensity. If at this point of procedure the patient expresses a desire to go to stool, at once discontinue the treatment. If the desired results are not obtained repeat the treatment in from three to six hours.

As to the kind of electricity to be used, Dr. Larat of Paris, whom I have freely quoted in this article, says the galvanic current has the most decided effect on non-restricted muscular fibers, such as compose the muscular wall in the bowels, bladder and other hollow organs; nevertheless, in the list of printed articles and authors I have here mentioned, the faradic current has been the most generally used. As to the fluid to be injected: A 1 or 2 per cent. salt solution is more efficient than mere warm water, on account of more thoroughly dissolving the mucus covering the membrane, and also, of about doubling the strength of current of electricity imparted to the mucous membrane. In speaking of my own success with this form of treatment for the past year I will only say my expectations have been more than realized. The instruments that I have been using and that have been

most satisfactory to several specialists can be found at the Hydro-Electric Instrument Co., Chicago.

If in the large list of authors I have referred to, only three are of our own country, does it not indicate that we are a little slow to investigate this very important matter? Can it be that omissions like this have anything to do with sending so many to European centers to complete their medical education? I do not assert that it is so, but suggest it for the reader's consideration. I would not refer to this so much at length if the remark, in substance, that the virtues of internal electricity in the treatment of intestinal obstruction and constipation have not as yet been fully demonstrated, had not been made to me many times by physicians in the last year.

Some who read this article may suppose it is from the pen of an electrotherapeutic enthusiast, and one not having had experience in surgery. To disabuse the minds of such, I will say that when quite young I was an assistant-surgeon in one of the Ohio regiments in the War of the Rebellion, since which time I have had many years of experience in railroad and general surgical work and am by no means faint-hearted. I could not if I would, and would not if I could, cast a shadow over the grand achievements of American surgeons. In a humble way I am one among the many. But in the van for professional preferment, for which we are all striving, let us not lose sight of the fact that he stands nearest head who does the greatest good to the afflicted, even though it be with the simplest means.

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FORMATIVE NUTRITION.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. W. SCAIFE, M.D.

CHICAGO, ILL.

As defined by Webster, nutrition is an "act or process of promoting the growth, or repairing the waste, of animal bodies," from which it appears there are two divisions of nutrition. The first is a "process of promoting the growth." And it is to a consideration of this that this paper is devoted, and hence it is called "Formative Nutrition."

"Young men for war and old men for counsel," indicates the physiologic superiority in the face of

disease and death which formative nutrition gives to the young. It is then at its best; its capacity for repairing the waste has attained its maximum, and then the frame ceases to be augmented.

On an inquiry into the process of forming and building animal tissue, the first point of importance is to find the seat of nutrition, which is easily determined by reducing tissue to its simplest factor; that we find to be the cell, and the cell, according to classic plan, consists of envelope, protoplasm and nucleus. Each of these has its part to perform. That of the nucleus is unimportant and can be dispensed with in some instances; the protoplasm seeks out and chooses the food; the nucleus, devoid of mobility, presides over the building-up process. The nucleus will replace any part of the cell that has been removed by the knife, and hence we have only to infer that the process of formation is effected by the same agent as that of reformation, and the conclusion is: the seat of formative nutrition is the cell nucleus. Binet says: "The nucleus is the essential factor of the plasmic vitality," and "if, to use an old comparison of Aristotle, we compare the protoplasm to the clay, we must compare the nucleus to the potter that has fashioned it." From which simile an inference is to be drawn which may affect the question as to which parent the child should most resemble. The mother supplies most of the material, the vitelline protoplasm, but this exerts no formative influence; this is food, while the formative impetus is given by the nucleus. By the rapid segmentation of the cell, in which the nucleus always divides first, the being is increased in size and takes on form, it augments in substance, cell arranging itself with the other cells, and appropriating for each organ its separate function.

Another phrase, "As the twig is bent, so the tree inclines," indicates the importance of getting a good start. It emphasizes the responsibility of the physician, whose duty is as the husbandman's, in whose care so many young trees are placed for cultivation. To his judgment the future welfare of many infants is committed. He is the adviser of the young parents as regards tending and feeding their infant offspring, and often is forced on him a dreamy speculation as to the method nature employs to make a normal figure or one abnormal, a plain man, a vigorous giant or a puny dwarf. On either hand that which is abnormal may be considered the cause of a disease, depending on the function of some obscure organ, as the pineal gland. But apart from causes, he knows nutrition is the chief thing for him to understand, to enable him to advise wisely what food to give to form muscle, bone, nerve or brain, according as to what is needed when his advice is asked. He thus is compelled to think at times of the deep secret nature has hidden in formation of animal figures.

In the first place we observe that this process is rhythmic, as all other things in nature, and that we have not to expect the same results at different epochs, but varied success. At one time one kind of food is needed, at another, another kind, and as the seasons and circumstances vary, the food should vary accordingly. The ovum has its time to mature, the embryo its time to quicken, the fetus its time to be born. So the infant has its time to grow chubby and its time to grow lank. As a plant, the child will increase in height between April and August, and in weight between August and December. To learn more of these variations, and to explain cause of the changes

as we do the phases of the moon, or the ebb and flow of tide, is desirable, to take them into account in studying what to do for individual cases is necessary. But as yet, food is the only thing we can understand and control to any great extent, and is therefore the all-important subject to consider in regard to nutrition. It controls the destiny of every child born, and determines whether they shall be great or small. It is said fishes in a small fish-pond are small in size, but if you enlarge the size of the pond the fishes grow larger, which shows that size is often determined by the quantity and quality of food which is available. The change of food from the solid substance to the nutrient fluids, and the internal secretions by which this change is accomplished, are fairly well understood. Its reduction to chyme and chyle, its osmosis and final arrival and reception into the blood-vessels is told us in every physiology. And now the secretions of the ductless glands and their effect on nutrition is being studied by specialists, and new and interesting discoveries are being made. They are found to be necessary to health, their several defects have been found to bear certain relations to diseases of special malnutrition, as, for instance, the relation of defect in the pineal gland to that disease of acromegaly. But when we arrive at the point where assimilation occurs; when we come to the functional physiology of the cell, our task becomes difficult and largely partakes of the character of guesses. The nutrient fluid of the blood passes through the cell. If the cell be one of the salivary glands it comes out ptyalin; if it be one of the peptic glands, pepsin. If it be some other cell it may come out as a white or red corpuscle of the blood, and be ready for building up the organism by growth, or for repairing the waste when growth has ceased.

The process beginning with the act of eating, and going on up to assimilation, is called digestion, and as I have said, is fairly well understood. That beginning with assimilation and ending in excretion is called metabolism. It embraces, 1, pabulum; 2, a substance actually in contact with life; and 3, excretion. This process is again divided into two parts: the first half, in which the cell substance, the cytoplasm, is coming in contact with the living principle and is being builded into living substance, is called anabolism; and the second part, belonging to excretion, the breaking-down process, is called katabolism. That is the process evolving animal heat. Now, when anabolism is greater than katabolism, we have growth, which takes place in two ways, either by multiplication of cells or by individual enlargement. Minot has pointed out the difference between a growing and a matured cell. He says that "the proportion of cytoplasm to the nucleus" was less in the latter. So the cell arrives at maturity when the matter of the cell and its nucleus bear a certain proportion to each other in size. And if the time taken for this be constant, the duration of its existence can be deduced by aid of another proposition.

The normal duration of life of animals is, some think, five times the time it takes that animal to mature. Observation, however, seems to have shown that some animals of the fish species grow as long as they live. Geology shows us animals in earliest ages of enormous dimensions. Mythology tells us of serpents that would measure one hundred feet. We read of the remarkable ages of the patriarchs, and sometimes also of their enormous size. In the plant king-

dom we still meet with remarkable longevity. The common bracken fern never dies of old age. The oak tree may live a thousand years. Nature is in no hurry to separate life from organism, but leaves it in its environment till a purpose in evolution has been accomplished for it. It begins with a growing point in a unit or cell, the arca germinativa or nucleus. This commences to grow. From it radiating lines are sent out through the cryptoplast by which every part of the cell is reached. This in animal life is regarded as the basis of the nervous system. It grows till we get a spinal system, a sympathetic system and a brain, each exerting continuously, severally and combined, an influence on nutrition as at their inception. "It may be," says Halliburton, "that all nerves have power of transmitting trophic impulses." He means the nerves are the builders of the body, and what is behind them is food.

Professor Holt says: "In building up the cell the proteids are first in importance, the carbohydrates second, and the fats the third." And under the head of the mineral salts he says "they are of greater importance in infancy than in later life, because we find that they are stored up in the system at that time more than later on." Is that all? In Parkes' Hygiene we learn something more on mineral salts. They are food for vegetables. The lowest forms of life will not grow without earthy phosphates. "The growth of wheat is more quickly checked," he says, "by the absence of phosphoric acid than any other constituent from the soil." But the mineral salts which are necessary for plants are changed when incorporated in plant substance for food for animals. It was said so when organic chemistry began to be studied, and though chemistry has had many triumphs, as for instance the manufacture of uric acid, it is almost certain that minerals that have not been prepared for our use by being incorporated in vegetable organisms are not food. Therefore it is a misnomer to call those that have been prepared as proper foods mineral salts, or at least it is misleading, unless exception is made of the chlorid of sodium, of which Foster, p. 840, says "200 grams a day are essential for the discharge of metabolic function." In which instance we may regard it as a necessary environment for the living principle, not a pabulum. It assists in the elimination of excreta which the life principle is constantly throwing back into the blood, and which, by the help of sodium chlorid, can be excreted from venous blood through skin, kidneys and lungs. The other salts, and chiefly those of the phosphates and acetates, are given to us for food through the vegetable kingdom, and their absence produces the highest form of acute malnutrition, called scurvy. It is well we emphasize the importance of these salts to the young, but not well to emphasize the adjective mineral. Neither minerals nor mineral waters can be recommended for infants or for the young. The salts they need are those furnished by vegetables, and in point of importance should stand first on the list as tissue-builders in formative nutrition. Protoplasm is the material used in construction of the body; the carbon, the nitrogen and the hydrogen are the brick, the wood and iron of protoplasm. Oxygen is the workman's tool, the hammer and saw, while the builder, the force regulator, is phosphorus.

In plant elevation the process of nutrition is synthetic, accomplished by sunlight through the agency of chlorophyl. By its action the energy of the sun's

rays is stored up and becomes potential. Nutrition in the animal requires a further "very remarkable psychologic process," and constitutes a method by which this potential energy becomes active and is used up or expended, so the animal receives its energy as it should do its substance, from the plant directly, or indirectly through the body of some other animal. Sunlight may be absent from its growth, though it can not be absent from plant life. The glowworm will give up the light absorbed by day in the darkest night; so may sunlight be faintly replaced in animal growth, when building in darkness, by the phosphorescent element derived from plants.

But with writers on biology it is usual to acknowledge that we do not know how a living substance builds itself up. And that means we do not know the process of formative nutrition. A writer on micro-organisms says that "simple cellular psychology is a conception of the mind, rather than a study based on observed facts." Now we have viewed a few facts on which we may try to base our conception of cellular psychology. The fact of long-continued life and gigantic forms in early eocene ages gives us an association of small minds in big bodies. And in giants we have now we do not see higher development of mind attending larger bodies. We expect to find it otherwise, as if the body can be developed at the expense of impoverishing the brain. Consequently the alternative may be true, that the body can be stunted by abnormal development of brain and nervous system. If, then, formative nutrition be arrested, it may be either debility arising on the one hand from improper food, or on the other hand from an insufficient supply. Or it may result from too much mental exercise, too many studies, or too many cares of life. If it be the former, improper or insufficient food, the result is anemia, marasmus, scorbutus or rickets; or if it be the latter, we have precocity. Suppose we take it to be the former condition, then we must remedy conditions.

In house plants we sometimes see luxuriant growth and yet no flowers. The anxious owner knows not what to do with her plants. Accidentally she sees a "plant-food" advertised, buys it and gives it to the soil—marvelous change! The plant ceases growing and begins blooming. That plant-food was perhaps nitrogen in a form that could be assimilated by the plant. Hence the sudden change. Many children are like house plants, in need of a particular change of food. They need phosphorus. Their cartilages must be changed to bone, the phosphates of sodium into the phosphates of calcium, and the phosphates in the food are needed to effect this. The anxious parent inquires, Why is it that my child does not grow? He fills it with medicines that have the best reputation for remedying these troubles, and still no change will come—no improvements. But pure air and poor living would get it, if by poor living we mean brown bread, skimmed milk, peas, cabbage, pork and beans, oatmeal, and less white bread and butter, less tea and coffee, less medicine and fewer school studies.

Now, as to the expression of opinion touching the importance of phosphorus in formative nutrition, we find it supported in the standard works of physiology. Of milk, the ideal food for infants, M. Foster says, p. 613: "The salts in milk consist of phosphates of whose function in the process of curdling we speak elsewhere. The sulphates appear to be

absent. And, beside the phosphorus in the actual form of phosphates, milk contains further considerable quantity of phosphorus in the proteids and in nuclein." To the child who is not fed on milk, with so many factors necessary in nutrient food, one may fail to be supplied by its artificial product. Hence, we may find that a diet prescribed with scientific skill, will fail sometimes, when success attends the other regulation of diet by an untutored mind. One mother says "my baby did well on Eagle Brand;" another, "that brand was no good for mine." One prefers Horlick's malted milk; another, Mellins'; some try them all without achieving any success. Why? Because the ingredient phosphorus is not given in sufficient quantity, while in the instances where prepared food succeeded, it may have been supplied from an independent source, as for instance, by the addition of good cow's milk. For M. Foster says, p. 630, "from a biological point of view, the phosphorus is no less important than carbon or nitrogen."

Manufacturers do not put up a food for the market devoid of carbon or nitrogen; these are blended in exact proportions, but no account is taken of the salts. One says, when cow's milk is properly diluted the salts may be dismissed from separate consideration; and yet the same will acknowledge that an infant may thrive on one woman's milk and suffer immediately from indigestion if put on another woman. "It has sometimes been necessary," he says, "to try a dozen." "It is possible," he says, "to vary the percentage of fat, sugar and proteids in milk to almost any degree desired, and to do this with very great accuracy." "At present," the same author says, "a separate modification of inorganic salts is not attempted." Though this style of preparing food may be of great value, when other important things are not overlooked, it is nothing to be relied on when the salts are regarded as being impossible to regulate. It only teaches the parents and physicians indolent reliance on manufactured articles in false security, instead of studying and practising the proper cooking of natural foods. And we need not believe that accuracy of proportion of carbon and nitrogen a positive necessity; for what was the anus given us if not for the elimination of unproportioned elements? Better leave it with a burden of work to do, rather than omit a small article of diet that is necessary for the proper performance of assimilation.

The numerous prepared foods for infants may all of them be useful for a change, though they may not contain the salts in the proper kind and quantities, for the carbon and nitrogen which they do contain. But life and health can not long be supported by them exclusively, and when the child is healthy we never think of using them.

In general, it is best in directing the diet of children to discard long courses of medicine, or drugs and prepared foods, and to try and select their diet from such foods and condiments as are generally found on the table, for we are then liable to get all those elements of food that constitute the body. Then we shall stand a good chance of succeeding in improving malnutrition of any description, and of proving the benefit of our profession to a needing part of the community.

Physicians' Book-keeping.—The courts in Paris recently decided a case on the principle that a physician's books were sufficient evidence of his claim, unless there was manifest exaggeration.

SOME THOUGHTS ON THE CARE OF INFANTS AND CHILDREN.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY J. A. WORK, M.D.

ELKHART, IND.

Of all the young of God's vast creation of animated nature, none are so helpless as the *newborn babe*. The young of the lower order of animals can all early help themselves to their furnished food; not so with the human species; thus the demand for especial tender care; and how generously the mothers with natural affections bestow their aid and sympathy to the little weakling. Though perfect in its anatomic construction, yet as soon as breath enters the heretofore functionless lungs, the whole animal machinery of many members moves into new activity; and we can now declare, surely, that a new life exists. The first care that the infant's helpless nature demands is at the hands of the accoucheur and nurse, the responsibility largely resting on the former. The proper start in life, as in every other great undertaking, is an important factor to success.

It is fitly asserted, from a moral standpoint, that the beginning of the child's moral culture should precede its birth at least two generations; no less should be required of its physical training. Heredity should receive due consideration as to offspring. The very tender, pliable brain cells become arranged very early in life, in accord with its environments; habits of system, whether good or bad, become soon fixed and it becomes extremely difficult to change them. How deplorable to find a mother ignorant of and not competent to understand the first principles governing the physical interests of her offspring. This condition of mother, together with a careless or perchance impractical, inexperienced medical or physical adviser and nurse, presents anything but a flattering future for the helpless little creature of circumstances; however, we will take a more hopeful view and assume that all parties concerned in the well-being of the infant are adequate for the occasion.

With a mother ordinarily endowed, physically, morally and mentally, an accoucheur of good judgment, ever ready for emergencies, if any should arise, a nurse capable of obedience (at least) to all the details given her by her superior, the doctor; we are in a proper condition to safely assist the little personage to his new and unexplored realm, suited to his wonderful possibilities. However, not a few infants are injured for life (and a miserable life, too) just at the last stage of the labor that gives them an existence. Sometimes this commiserable event is unavoidable; I refer first to the effect on the cranial viscera due to the employment of forceps, which injury of the brain the child scarcely, if ever, recovers from; second, the cervical portion of the spinal cord is often injured, or at least sometimes, by severe traction by the head and twisting of the neck, with or without instruments, when the shoulders are difficult of deliverance; this occurring usually after the head is delivered, and can be avoided by the accoucheur hooking his index finger into the axilla of the child, and thus employ traction which does *not* strain or injure the spinal cord.

All things being equal, the first care of the infant's body is to cleanse the surface of all extraneous or

precipitate substances by the employment of some oleaginous agent, rich in glycerin. Fresh aseptic lard is the most efficient for this purpose of any substance I have yet employed. After the surface has been thoroughly anointed and the precipitate thus dissolved, then wipe with a soft cloth with as little friction as possible, and by not employing any kind of soap, the normal oil of the skin is preserved, and the above procedure adds to, rather than takes from, the normal condition of the surface, and renders it less liable to chafe.

The umbilical cord should be dressed in surgeon's aseptic cotton, and thus treated, as a rule it need not be disturbed, neither will it disturb, until it sloughs.

I do not recommend washing the infant's body oftener than once in two or three days, but during the interim of washings, gentle friction of surface of body with a soft cloth or hand, is good treatment. In washing, soft water should be employed.

Bands around the body should not be too tight, but should be snug enough to support the walls of the abdomen in case of distention. Clothing should be of the softest texture, and its conducting or non-conducting properties should be according to the conditions of the atmosphere. If mothers were taught and impressed with the importance of changing their children's clothing with the change of the atmosphere, I daresay many precious lives might be saved to the home and society, and much grief prevented. The child's clothing should be of equal warmth—that is, if possible, the surface temperature of all parts of the body should be the same and so maintained, and it is important to have clothing so constructed as to have equal pressure. This latter proposition should be also required of grown-up babies, and upon equal pressure, or rather no pressure, depends equal circulation and warmth, to a greater or less degree.

Face and hands should early be habituated to the atmosphere, not forgetting the self-evident fact that the infant is a new and separate being, and must do its own breathing, and should have a living chance to do it. The atmosphere should be of the purest quality, and not from under the bedcovering of the mother. Temperature of the nursery should be from 55 to 75 degrees at first, and gradually lowered to 75 degrees; however, several days should elapse before reaching the lower temperature. Each individual case demands its own peculiar care, and the successful accoucheur must be an efficient nurse, or at least he must be competent to instruct his nurse efficiently, according to the needs of each particular case. The nurse is the physician's agent, or orderly, and should be so instructed as to readily know what constitutes a normal anatomic and physiologic babe, so that she may instantly discern any deviation from the standard; thus the need of trained and educated nurses in general obstetric and nursery practice.

The first few days of the infant's existence will reveal any anatomic or physiologic defect or weakness, and it is within the province of the nurse to notice any defect which has escaped the casual and hurried scanning of the busy attendant physician, and she should report at first opportunity. An effort should be made early in the child's life to correct defects, whether they be structural or functional, with a reasonable hope of success in a majority of cases.

One of the most irrational procedures in child culture is to neglect the physical while developing the mental; in fact, a proper development of being requires

a strict observance of all the immutable laws governing development or evolution. It is a sad mistake to withhold any of the vital stimuli from the *feeble*, whether it be of either body or mind. Pure outdoor air for the feeble infant or child, even at an expense of warmer clothing than is required for in-doors, is a wise investment, and will in time count on the credit side by bringing color to the cheeks and vigor to the priorly lax muscles, especially where the child is properly nourished. And I will note right here, that this department of the nursery is attended with more disaster than any other. There is a great diversity of toleration of food and powers of digestion and assimilation. This being true, it requires greater wisdom than is usually manifested to manage successfully the average child's larder.

If mothers can know the first symptoms of indigestion and take warning, know what to do and do it, if their sympathy did not overcome their judgment, much trouble could be averted. We must institute training schools for mothers, as we have for nurses, or else compel doctors to take time to instruct the young mothers, with authority to enforce obedience to the instructions. The deleterious results arising from the mistakes in the feeding of children are greater than in any other department pertaining to their physical culture. All things being equal, the mother's milk is the best suited to properly nourish the infant. Too often infants are weaned from their natural food too soon, without a reasonable cause, and substitute foods employed suddenly are dangerous. The proper and rational procedure in weaning a child, as a rule, is to wait until we notice an insufficiency of the natural food, and then *gradually* add the artificial, commencing with the smallest possible addition and increasing until we reach a sufficiency. The child will usually wean itself. As a rule, the Creator has wisely and abundantly provided nourishment for the infant; and substitution is unwarranted and is next to criminal. Next to the mother's milk, at our command, is fresh cow milk, if carefully and wisely administered.

Some contend that cow's milk should be sterilized. If it is not properly collected and contained, it is well to sterilize it, but if milked into sterilized containers and used soon after, there is no more necessity of going through the process of sterilization than there is to sterilize the mother's milk. In either case the *fresh milk* is sufficiently sterile, if the source is healthy.

DISCUSSION.

Dr. WILLIAM C. HOLLOPETER, Philadelphia—First I would emphasize the fact that the first cleansing should be done with oil. An infant should not have water applied before several days after delivery. Several years ago I had occasion to study this question particularly in reference to premature infants. I had two patients with deformed pelves, and I have delivered them each of three infants, one at six months and twenty-three days. The care of that infant consisted simply in keeping it in an equitable temperature with oil and not touching it with water, except about the nates with a cloth wrung out of hot water. Such an infant may have its death insured by improper treatment. Many infants die in the winter season by gradual cooling of the extremities, especially after being washed with water. I had a case two or three years ago in which I am sure the infant died from that sort of exposure, although it was in a well-to-do family in the country. On the second or third day after its birth, at the beginning of the seventh month, it was being nursed by a trained nurse before a warm fire, wrapped up in a great wad of cotton on a cold bleak day. The cold draughts of air from the windows and doors going toward the

fire, the side of the child from the fire was thoroughly chilled while the other side was warm. I was called out to bring my incubator on the third day. After the incubator was raised to a temperature of 85 degrees, on unwrapping the baby I found it cold and stiff. While the side toward the fire was red, the side away from the fire was cold and blue. Many infants born at full term after being washed with water are then put in a cradle, and especially in houses heated with a grate, we will get a chill of the side away from the fire, and bronchial trouble and other affections will arise which will cause its death. If the day is cold and chilly, I intend to insist upon keeping the infants in a box, or any way so they are comfortable and will not chill.

Dr. MARY E. GREEN—Some one has said that two-thirds of the diseases of after life are due to the malnutrition of the first two weeks of infancy. I think that probably is largely true. One man has made the statement that nine-tenths of the children are fat starved. In view of all these statements that have come to us as practitioners, it behooves us to consider what the diet should be. The Doctor very correctly said that the mothers should be educated along this line. I have so often noticed the patent foods recommended during the first two months of life. I believe that it is wrong to give the child any starchy food for the first six months of its life at least. I believe the child's food then should be cream, or the upper part of the milk, with water one-half. I like what the Doctor said about the sterilization of milk. No child can remain healthy for a long time upon sterilized food. There is a lacking principle, so the child does not thrive on sterilized food. I think sterilization is unnecessary if perfect cleanliness is carried on in the preparation of the food. Some experiments have been carried on in giving children modified milk. But in all those laboratories absolute cleanliness is observed, and if as much cleanliness is practiced in preparing the usual food for infants, as good results will be obtained. All the attendants are obliged to wear duck suits, and perfect cleanliness is observed. The question of food is a very serious one up to the age of school life.

Dr. E. STUVER, Rawlins, Wyo.—I believe it was Holmes who once remarked that the education of a child ought to begin about two hundred years before it was born. The child ought to have a strong healthy mother, a mother who can provide an abundant supply of the nutriment that nature has intended the child should have during the first year of its life. I believe one of the most important points in securing good healthy children is to pay particular attention to the health of the child's mother; and after the child is born, if the mother has a disinclination to nurse it, try to show her that is one of her duties as a mother to assume that responsibility. Furthermore, I believe most of the patent foods do not supply what they should supply for the infant. Take for instance our condensed milks. A child may grow plump and apparently strong on condensed milk, but it is much in the same condition as the old beer drinker. Let him contract a serious disease and he has four or five times as many chances to die as a person in good health. The flabby, condensed-milk baby stands a good many more chances to die than the baby that has been fed on good natural mother's milk.

Dr. BROWN of Illinois—The problem which I think especially interests practitioners in regard to feeding infants has occurred in the smaller towns where we are without milk laboratories and where it is absolutely impossible to have any form of modified milk. We are called into houses where children are dying of marasmus and malnutrition, where there is no ice in the house in the hottest summer months, where the milk is obtained from a milkman, carried several miles in hot cans on hot days before it reaches its destination. To make a modified milk out of that is entirely out of the question. I am in the habit of giving my better patients a formula for making a

modified milk. But in the poor and ignorant classes it is impossible to give any instructions they can follow. We have to resort either to the patent foods or condensed milk. In choosing one of the two evils I choose condensed milk, because it is the only way to get a food in the smaller towns. I am in the habit of adding cream, because even if you get cream from milk in an unhealthy condition, carried around in tin cans three or four hours in the cities, the cream is less likely to be infected.

Dr. MARY E. GREEN—I was going to make a remark about condensed milk. There are condensed milks and condensed milks. Some of those put up with sugar I think are objectionable, but there are condensed milks put up without sugar, and to those there is little objection. I have seen children brought up on such condensed milk and they have done well. Recently I attended the health exposition in New York. Three hundred cows were presented by Dr. Brush. It was an exhibition of the care of the cows and the milk. Dr. Brush furnishes the milk at 14 cents a quart. It is not sterilized or modified in any way. The only thing about the dairy is absolute cleanliness. That is the one thing I think we should advocate more than anything else. Not long since I attended a dairy convention and I heard a dairyman make the statement that he did not believe there were any dairymen furnishing milk to the cities in the summer who did not use some antiseptic, especially boracic acid or some form of borax. If that is so, I think it is something physicians should know and we should fight against it. Whenever antiseptics are used they render the milk unfit for children. We want milk from a herd of cows rather than from one cow, but let it be clean.

Dr. R. B. GILBERT, Louisville, Ky.—The consideration of artificial food is secondary. If the child can not have its mother's milk, then we have to use something else. One thing is the condition of the mother furnishing the food for the infant. There are many times her milk is injurious. In a great many samples of milk this will be found to be true, if you examine it from day to day, and the doctor should do so continuously. The same thing may occur in the cow that furnishes the milk. I am glad to hear the statement that the milk should be taken from the whole herd rather than from any one cow. Not only that, but the food the mother eats has much to do. Food that contains pickles or anything of that kind, or food such as onions, will affect the milk. Mental anxiety will often modify the milk for several hours so the infant can not digest it. I do not know what the process is, but there is an excess of the casein and a diminishing of the peptones in a fit of anger or anxiety of any kind, or grief, as from a misfortune, for instance. It goes without saying that alcoholic stimulants all modify the milk. One case in particular comes to mind, of a child 6 months of age, that died while under my care. The mother went over in another part of the city to do a day's washing. On her return home she smoked an old strong pipe more than two-thirds of the distance home. Immediately after nursing the infant became limp, decidedly feeble, and I could hardly understand why it was so. It looked like it had been poisoned. On inquiry I found she had used two or three pipefuls of strong tobacco in smoking, and I attributed the death of the child to that. In reviewing the whole subject, you can not find any food, in my estimation, that is equal in any respect to the mother's milk.

COLPOPERINEORRHAPHY AND THE STRUCTURES INVOLVED.

DEDICATED TO DR. THOMAS ADDIS EMMET AND MR. LAWSON TAIT
IN RECOGNITION OF THEIR LABORS IN THE SURGERY
OF THE PERINEUM.

BY BYRON ROBINSON, B.S., M.D.

CHICAGO, ILL.

Concluded from page 925.

Relaxed vaginal outlet, concealed lacerations or deep musculo-fascial tears of the pelvic floor, can not be too forcibly brought to the notice of the physician as an important diagnostic indication for colpoperineorrhaphy. Kelly calls such, concealed relaxation.

This is a condition of loose, gaping vulva, compared to the mouth of a bag without its puckering-string by Dr. Emmet. If the patient lie on the back the fork of the buttocks looks flattened, the anus appears everted, and one may observe the vaginal mucosa bulging out above or below. The condition is frequently described as rectocele or cystocele, or both. Others call it perineal laceration. Some will write that it can not be perineal laceration, because the skin perineum is longer than the normal one. The skin perineum is longer than normal because, when it was stretched at labor, it never returned to normal (sub-involution). Occasionally one can introduce the four fingers of the hand and put the long relaxed perineum on a stretch. It is in these long, lax skin perinei that physicians disagree as to conditions, the one asserting that the perineum is plenty large enough and does not require an operation, while the other rightly asserts that the perineum is but a small part of the support of the sexual organs. The fact is, the whole vagina and sphincter apparatus has become deficient, the vulva pouts, the anus everts, and the floor of the pel-

in the middle one feels an irregular sharp edge of narrow dimensions. Also the loops of the levator are more displaced to the side of the vagina. Though the patient can generally control stool, yet the vigorous elasticity of the muscular loop is definitely impaired. With the patient on the back and the two index fingers in the vagina, one can quickly test the degree of deficiency of the sphincter vaginal apparatus by pressing downward and backward. The vulva may pout with perineal skin intact, and the same may be said of the rectum. The fascia and levator ani may be quite defective on one side and intact on the other side. In very sensitive women, made worse by long-continued irritation, the examination is occasionally delusive, because reflex irritation puts parts on a tension.

We may classify the operations for colpoperineorrhaphy into three general divisions, viz.: posterior median colpoperineorrhaphy, posterior bilateral colpoperineorrhaphy, and the posterior flap colpoperineorrhaphy. Some of the principal originators and advocates of posterior median colpoperineorrhaphy were Dieffenbach, Langenbeck, Baker-Brown, Osiander,

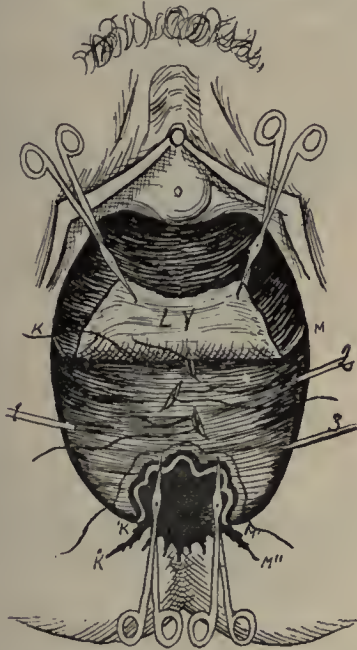


Fig. 46.—Advanced stage of the flap-splitting operation. L, V, anterior vaginal flap held up by forceps; the posterior rectal flap is held backward by forceps; the most posterior suture is placed along the margin of the torn rectum; other sutures are being introduced by being threaded in the median line and drawn out. Note that the needles do not penetrate the skin or mucosa.

vis flattens out. If the patient is requested to bear down, the anterior and posterior vaginal walls will roll outward, often to an astonishing degree. By the act of straining, the cervix can be felt descending. The patient has utero-ptosis. The sacro-pubic hernia is more marked if one examines the patient in the standing position. By careful inspection and palpation while the patient lies on the back, one may feel the retracted cicatricial stump ends of the lacerated levator ani muscle, and by irritating the little cicatricial elevated or depressed stumps we can see the contractions and relaxations in them. Sometimes the perineum or lower posterior vaginal wall is so relaxed that it is large enough to close up the vulva like a valve. The horseshoe loop of the levator ani, which extends from one pubic ramus to the other, presents no more the resisting, broad, elastic loop felt in the virgin, but

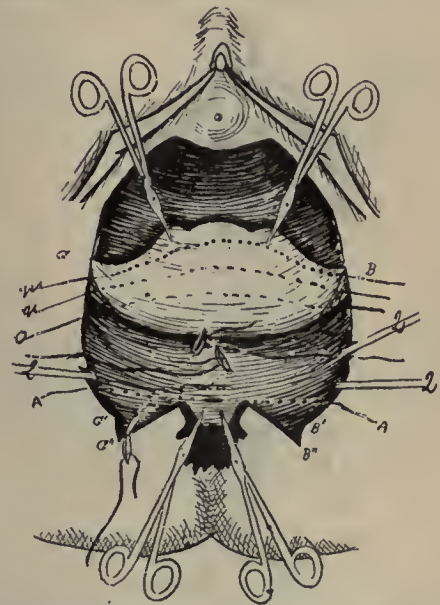


Fig. 47.—Another stage of flap forming. Observe that the most posterior suture is being introduced by the needle passing from one side of the denuded wound to the other, because the space is short, but the denuded surface under the flap is generally so wide that it is most practical to pass the handled needle from the lateral margin of the wound to the median line, where the needle is allowed to emerge and become threaded. Thus the sutures are passed through half of the wound at one time.

Simon, Hegar, Hildebrandt, Jobert, DeLambelle, Le Fort, Schroeder, Werth and Reamy.

The chief originators and promoters of bilateral colpoperineorrhaphy are Emmet, Staude, Freund, Martin, Bischoff, Goodell and Kelly. Some of the pioneer originators and advocates of the posterior flap colpoperineorrhaphy were Langenbeck, Duncan, Tait, Jenks, Voss, Simpson, Marcy, Colles, Sanger.

Whatever the apparent differences of the above three classes of procedure, all the advocates practically agree that definite denudation (flap or otherwise), exact approximation of wound surfaces, and deep sutures (without tension), based on anatomic lesions, are the prerequisites of success. Methods and modifications are not so important as attention to anatomic and surgical principles. The physiology of structure being disturbed by an overstretched peri-

neum or elongated supports (enteroptosis), it must be restored by reproducing as near as possible anatomic integrity.

The relaxed tissue must be corrected with deep sutures and dissection; the blood-vessels must have a definite supporting bed in which to functionate; the peripheral nerves must be protected against continued repeated trauma, and the organs must assume a normal position, all of which belongs to the domain of colpoperineorrhaphy. The genius of Emmet established the utility of surgical procedure in the vaginal sulci. The grand operations of Bischoff sparing the posterior vaginal column (or median vaginal surface) foreshadowed and aided Emmet, as well as the scholarly labors of Schatz on the pelvic floor. As a pupil of A. Martin in 1884, I saw the contemporaneous and independent development of Emmet's operations in the vaginal sulci, in the hands of the most skilled gynecologic surgeons of Germany.

It may be remembered that the Emmet and Tait operations are alike valuable in operations for relaxed vaginal outlet, with the advantage in the Tait operation of a flap to protect the wound. The reason Em-

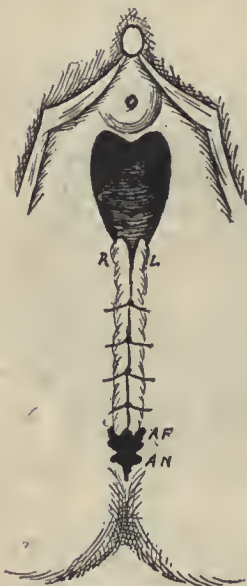


Fig. 48.—Finished operation in a case of complete laceration. R, L, anterior end, and A, P, posterior end of newly-built perineal raphe; A, N, osus ani is a little patent.

met's operation is about of equal value is that healing in the vaginal sulci is almost certain, hence but little danger of loss of valuable tissue by non-healing. Nothing is gained by denuding an area of vagina over retaining that same area intact, for it will contract to its original size shortly after the tension which produced it is removed.

The rational symptoms resulting from lacerations requiring colpoperineorrhaphy are very numerous and varied, but they follow a logical sequence. In general the chain of symptoms is as follows: A local point of irritation—an infection atrium; reflex irritation which unbalances the other viscera (abdominal and thoracic). The irritation, from a focal point, travels up the hypogastric plexus, the ovarian plexus and the lateral chain of sympathetic ganglia to the abdominal brain and thoracic plexus, which aids in disturbing the visceral rhythm. Anatomic facts must be inspected. We find on each side of the uterus a large ganglion, a massive collection of nerve-cells which has been termed the cervico-uterine ganglion. We

may call it the pelvic brain. An enormous mass of nerve-cells—the abdominal brain—is found at the root of the celiac axis, just behind the stomach. Three great ganglionic masses of nerve-cells are found in the neck (superior, inferior and middle cervical ganglia), and a vast, intricate network of nerves in the heart—Wrisberg's plexus. Each of these large ganglionic nerve masses is in intimate and close communication with the genital organs. Many strands of nerves connect each ganglion with the pelvic viscera.

It is the numerous nerve strands which play the important rôle, because many strands, tracts, will carry many messages, and a few ganglion cells can take care of innumerable peripheral reports. A few ganglion cells will receive and dispose of many messages from many lines. Now the ganglion cells—the thoracic, abdominal and pelvic brains—assume a certain control over the rhythm of their respective viscera. Hence the viscus which is the most intimately connected to those three brains by many nerve strands will exercise significant power over the rhythm of the organs. One of the chief functions of a viscus is rhythm. If this be disturbed the organ becomes defective and fails in its final object.

Let it be remembered that the irritation from a diseased organ is emitted at all times, without regard to-

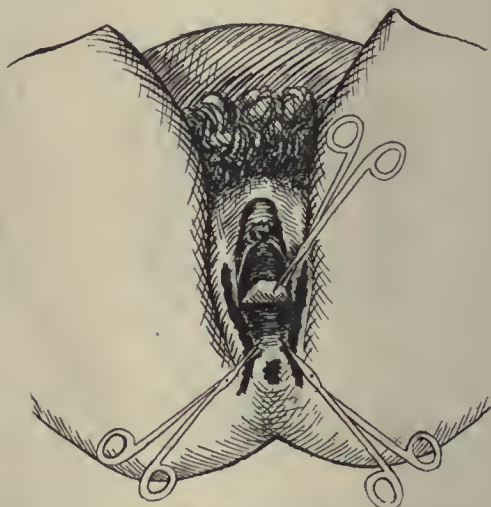


Fig. 49.—(Author.) Method of forming the flaps with a non-complete laceration, with anterior and posterior "cuts" and vaginal flap. ————

physiologic rhythm by which the organ accomplishes its mode of life. The occasion of rhythm is the natural stimulus of an organ, as food for the digestive tract, air for the lungs, blood on the endocardium, urine in the urinary tract, a fetus in the uterus, fluids in the Fallopian tubes, and food material in the liver, carried to it by the portal vein. If we follow a diseased message emitted from the pathologic genitals up to the abdominal brain over the lateral chain—the hypogastric ovarian plexus—where it is reorganized and emitted to the digestive tract, we may observe the following disturbances: Excessive secretion in the digestive tract; deficient secretion; disproportionate secretion. Excessive secretion may induce diarrhea; deficient secretion, constipation; and disproportionate secretion may produce fermentation (bloating); the continuation of such reflex factors institutes indigestion. The reflex irritation, passing from the diseased genitals to the abdominal brain, is reorganized and transmitted to the liver over the hepatic plexus. This pathologic irritation produces excessive, dispropor-

tionate or deficient secretion in the liver. The liver secretes bile, glycogen and urea. It has a rhythm, just as the heart or lungs.

The transmission of pathologic irritation—reflex irritation—to the liver unbalances its rhythm and disturbs its secretion. If the rhythm of any organ be disturbed its function will soon become defective. For example, the rhythm of the small intestines is governed by the superior mesenteric ganglion, which induces a rhythm four to six times daily, according to food indigestion. Improper foods, disturbing the regular rhythm, soon induce indigestion. The descending colon, sigmoid and rectum (the fecal reservoir) is controlled by the inferior mesenteric ganglion, which makes a daily rhythm. The superior mesenteric ganglion has a four- to six-hour rhythm, while the inferior mesenteric ganglion has a 24-hour rhythm. Any one knows that disturbing the rhythm causes constipation, and eventually many neurotic symptoms arise. Long-continued indigestion produces malnutrition. Pathologic irritation passes to viscera at all and any times, in season and out of season, day and night, while organs are attempting to rest or to pass through a rhythm, always causing disturbances. Organs secure rest and repair between rhythms.



Fig. 50.—(Robinson-Scholer.) The flap formation. On the right the scissors are shown forming the anterior "cut;" on the left the blade of the scissors only is shown, forming the posterior "cut" beside the rectum.

Malnutrition is followed by anemia—a disproportion between the blood-vessels and plasm. Long-continued anemia is followed by neurosis. The numerous ganglia are bathed in waste-laden and irritating blood. Innumerable local and distant neurasthenic conditions are manifest. We have, then, as a train of evil symptoms following genital defects: 1, local irritation—an infection atrium; 2, reflex irritation to the abdominal brain, where it is reorganized and sent out to the various viscera; 3, indigestion and malnutrition; 4, anemia; and 5, neurosis.

In the incomplete cases of laceration the disturbance is attributed to gaping of the vulva and the consequent favoring of rectocele and cystocele. This condition is followed by uterine prolapse, endometritis and metritis. The patient suffers from ill-defined pains while standing and walking. These patients complain in a manner similar to that of those who are afflicted with enteroptosis. When the lacerations become complete, not only a physical defect of control of feces and gas exists, but a train of mental symptoms follow complete lacerations or serious lesions and gravely affect life, both physically and mentally. The patient is

easily fatigued, neurotic constantly, liable to exacerbation of infectious processes.

One of the most unfortunate results of extensive laceration of the rectovaginal septum is diarrhea. When the sphincter muscles have been so far drawn apart at the ends that they are almost a straight line, the rectum has lost all control of feces. A straight sphincter is a symptom of complete laceration; the diarrhea accompanying the straight sphincter is very exhausting. The amount of separation in the sphincter muscle tells the story of the degree of laceration. When one can find the deep dimples in the skin, on each side of the gaping vulva, due to the cicatricial ends of the muscular bundles contracting, it may be estimated that the vaginal sphincter is extremely defective and that over half of its arc is wide open. Only a carefully planned operation can relieve this condition. The widely gaping vulva is exposed to much trauma and consequent infectious processes. The congested genitals and rectum produce excessive glandular secretion, which furnishes a culture medium not only to the pathogenic bacteria, but tends to multiply the regular residents of this locality into exces-



Fig. 51.—(Robinson-Scholer.) Flap formation with the scissors at the bottom of gutter between rectal and vaginal flaps. 1, 1, vaginal flaps held aside by the shepherd's crooks, 6, 6; 2, 2, rectal flaps; 3, 3, "back cuts;" 4, rectal lumen; 5, outline of cervix. This represents a complete laceration high up into the rectum.

sive number, and in all probability dangerous kinds, for doubtless bacteria rapidly change from one kind to another by change of food and temperature. It would be strange indeed if all the scores of uterine tubular glands could long remain normal with frequent congestions and decongestions. Excessive bacteria in any locality must produce their dangerous toxins, which become absorbed and carried away by the veins and lymphatics. The rectal veins are known to stand in direct communication with the liver by way of the valveless portal system. Hence may be observed the vicious circle established by the defective sphincter apparatus of the vagina. Again, consider the innumerable reflexes which must necessarily arise from the infected, frequently congested, occasionally acute, inflammatory invasions of the genit-rectal organs. These reflexes arise in all degrees and conditions, and the patient almost imperceptibly passes through the stages of indigestion, malnutrition, anemia and neurosis. Again, many of these patients are operated on by inexperienced surgeons, with consequent imperfect results. Then a conflict of opinion arises as to the perineal defect being the

cause of the trouble or whether the etiology is to be located in the nervous system, for one of the evils of today is the confounding of nervous and genital diseases. After an imperfect operation on the genitals, with a consequent imperfect result, the operator is liable to throw the whole defect on the nervous system. As the nervous system and the liver are the chief scapegoats of ignorance (and knavery) it is

theory that the perineal body is the keystone, the cork which stops the bottle, or the wedge which plugs up the pelvic outlet. Unfortunately, a prominent American gynecologist at one time abetted this false theory.

One of the very common diseases accompanying perineal lacerations is endometritis. Little need be said to defend or explain this condition, for it is evident to all observers how the endometrium may be insulted by trauma, congestion and bacterial invasion,

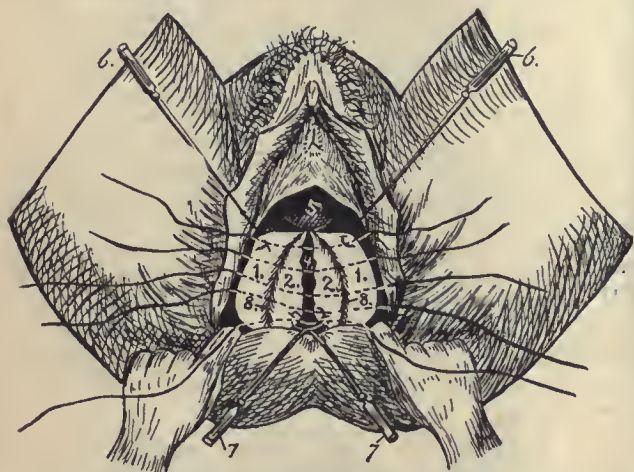


Fig. 52.—(Robinson-Scholer.) The sutures in position in a case of laceration high up into the rectum. 1, 1, the vaginal flaps held aside by the shepherd's crooks, 6, 6; 2, 2, rectal flaps held in place by the crooks, 7, 7; 8, 8, points to the line or angle of junction between the rectal and vaginal flaps.

difficult to demonstrate the error. It requires wisdom, knowledge and experience to discriminate between genital diseases and their consequent train of neurotic effects, and the diseases which definitely belong to the nervous system itself or to other causes than the genitals. I must insist, however, that this requires more time and skill than any general surgeon or physician is able to give.

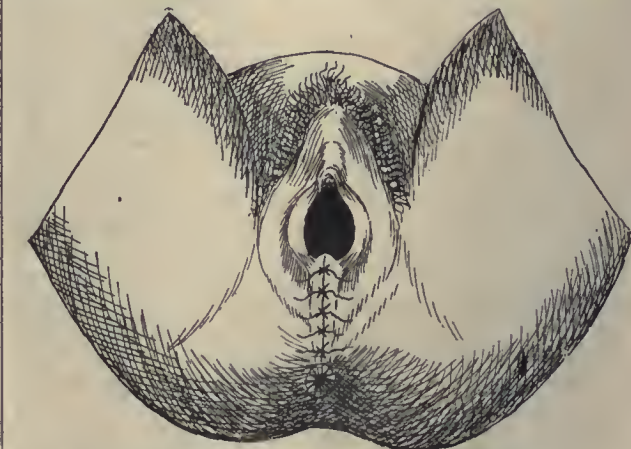


Fig. 54.—(Robinson-Scholer.) Completed operation on an incomplete laceration. Five sutures were employed.

when unduly exposed from deficient support. Excessive glandular secretion arises; leucorrhœa, which may be non-infective, then pathogenic infection soon follows with its consequent train of evils.

This leads me to a subject of vast importance. It is the metritis (subinvolution) which so frequently accompanies laceration of the perineum. The general practitioner calls it subinvolution. But we will call

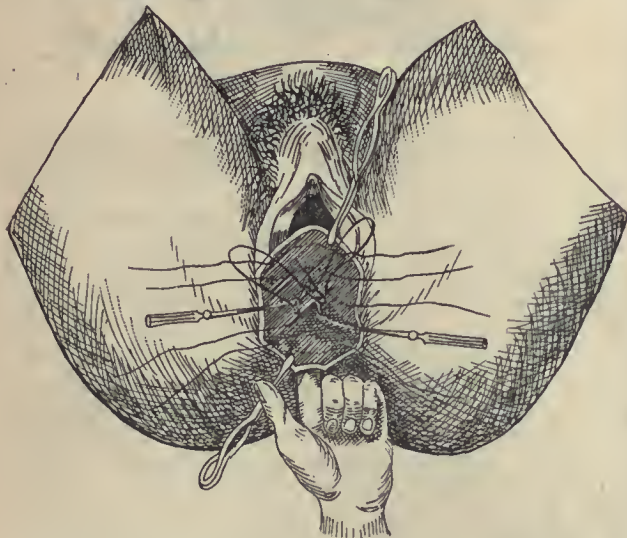


Fig. 53.—(Robinson-Scholer.) A case not ruptured into the rectum, in which the sutures are in position. The sutures are threaded from the median line, as seen in the cut. Observe that the sutures penetrate neither skin or mucosa.

Until one comprehends the practical anatomy, it is almost impossible to interpret the rational symptoms of the deficiency of the supports of the sexual organs. The popular view of general physicians that the perineal body is the chief support is one illusion which I find, after considerable experience in teaching, difficult to eradicate. It is the indefensible mechanical

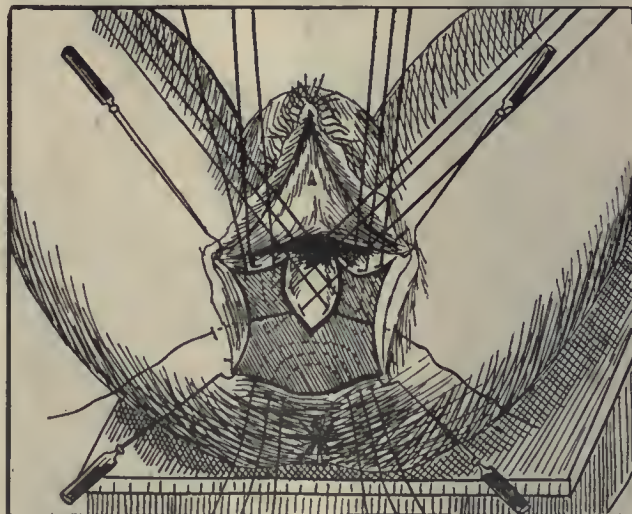


Fig. 55.—(Robinson-Scholer.) First stage of Dr. Emmet's operation, viz.: Denudation of the posterior vaginal wall; denudation of a triangle in each sulcus of the vagina, with the noted method of his peculiar suturing.

it metritis, because we believe it to be of microbic origin. Be it remembered, the uterus above all organs is liable to infection, because its glands pass directly into its muscular walls. It has no submucous layer or barrier to protect the muscle. The intestine has a submucous muscular layer which acts like a barrier against microbe invasion. But the uterus has no muscularis mucosæ. It has no barrier between its glandular apparatus and its muscular apparatus, so

that microbes or their products which gain the uterine glands soon gain the muscular walls of the uterus and produce metritis. Hence metritis is one of the frequent accompaniments of perineal laceration, and as metritis is a very chronic disease, it is apt to continue even beyond the repair of the perineal injury.

From this short view it may be observed that the rational symptoms of injuries to the pelvic floor are generally a train of evils which increase with time, and



Fig. 56.—(Robinson-Scholer.) Another stage, in which the triangle in the right vaginal sulcus is closed with two sutures; sutures in position.

the final brunt is most apparent in the nervous system. Many of the symptoms can only be accounted for by carefully noting the many cases of invisible lacerations—the relaxed pelvic floors, perineal supports and sphincter vagina apparatus—which disturbs circulation by the vessels being torn from their proper fascial beds, the veins becoming elongated, dilated, straight, and losing their normal spiral form, and the nerves being put on the stretch or traumatized.

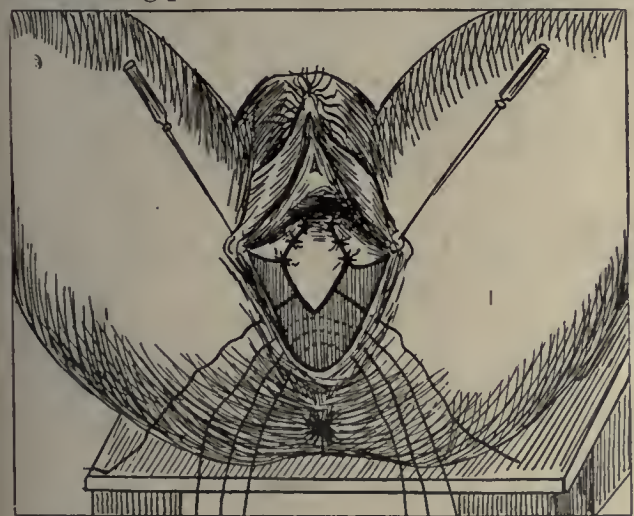


Fig. 57.—(Robinson-Scholer.) The two denuded triangles closed by sutures; the remaining sutures in situ.

We thus have disturbed vascularization; congestions and decongestions of blood and lymph have also disturbed innervation from traumatized nerves. Enteroptosis exists and the avenues of infection are widely exposed. The supports of the pelvic floor have been overstretched by one or more labors and have not resumed their normal integrity. On examining such patients, as Schatz points out, the normal anal cleft is flattened out, the dent and furrow becomes

broad and shallow and the anus, instead of being drawn up under the pubic arch, appears flat, exposed, and fallen back toward the coccyx. The skin perineum may be much larger than normal, being overstretched. The finger introduced into the vagina no more feels the rigid levator ani muscle loop, but in its stead the relaxed, overstretched, flabby tissues lying between the gap made by the separation of the levator ani fascia superior and inferior with its contained muscle in various degrees. Perhaps there is no lesion more overlooked in the pelvic floor by the general practitioner than the relaxed, overstretched outlet. In 1883 Emmet and Schatz first clearly announced their views in regard to relaxed pelvic outlet. The very deep perineum is deficient, while the shallow, short one is the vigorous one. The patient with relaxed pelvic outlet generally begins to complain of bearing-down symptoms on rising from bed some two or three weeks after labor. She feels weak, unable to work or exert herself, pain in the back, general lassitude and prostration.

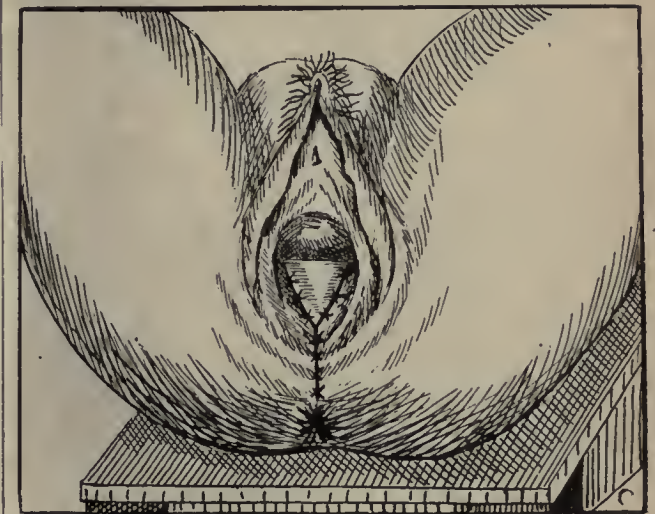


Fig. 58.—(Robinson-Scholer.) Operation finished. The Y-shaped line shows the line of suturing.



Fig. 59.—Author's perineorrhaphy needle.

The relaxed pelvic floor is most impressive to the operator, by examination before and after the anesthetic, when he is about to operate. Before the anesthetic the pelvic outlet is held in partial tension by the remnants of the muscular and fascial supports; the loops of the levator ani muscle being irritated by the non-balance of parts being torn, the patient is constantly losing nerve force by the attempts of the reflex irritation in keeping up the tension. When the patient is fully anesthetized the parts of the pelvic floor show vast relaxation and it becomes at once apparent to the hand and eye of the operator that a significant defect exists, beyond his expectation, in the sexual apparatus. The perineum falls back, the anus flattens and everts, the vaginal walls roll outward, and the deep anal furrow assumes a plane approximating that of the buttocks. Vast changes in subcutaneous and submucous supports have occurred, capable of being repaired only by an operation which restores vessels to a stable bed, nerves to a protected sheath, and organs to a position which will insure normal circulation and innervation—in short, proper nour-

ishment. With such patients in the erect posture the intra-abdominal pressure is continually displacing the viscera by forcing them into and through the weakened pelvic outlet. The pelvic outlet, beyond the normal floor is full of prolapsing organs which often deceive the practitioner by closing up the gap.

The length of time allowed to relapse between the injury and the operation on the perineum should not be less than three months. The parts do not heal well shortly after labor. Old gynecologists, as Byford, recommended at least six months to elapse before the operation should be performed. Perhaps four months after injury it would be fairly safe to operate. The old cicatrix can not always readily be found, but by pulling on the vagina in various directions the puckering tissue about the scar will be discovered. The palpating finger may also find it.

The cicatrix produces new points for the attachment of the torn fibers of the levator ani muscles which may give the outlet a peculiar, irregular, puckered appearance when the muscular bundles contract from their new points of attachments. The flap formation should extend beyond the cicatrices so that the ends of the muscular bundles may be included in the sutures. The time for operation should be midway between the menstrual periods.

In regard to the perineal body: The posterior curve of the vagina must be reproduced by restoring the rectovaginal septum.

A new perineal body should be restored, so that the natural backward curve of the vagina should persist, i.e., normal relations should be established between the perineal center of body on the one hand and fascia on the other. The perineal body, the punctum fixum of vulvar surface relations, should be restored.

In writing this essay I have derived aids and suggestions from all accessible authors and have attempted to duly credit the labors.

Some suggestions were acquired in regard to drawings from the book of W. J. Stewart McKay.

SOCIETY PROCEEDINGS.

The Chicago Society of Internal Medicine.

Second Regular Meeting, Sept. 21, 1898.

Dr. JOHN A. ROBISON, the president, occupied the chair, and delivered the Presidential Address to an audience of 156 members and visitors. After briefly outlining the object and aim of the Society, he directed attention to

A CLINICAL STUDY OF FIFTEEN CASES OF MALARIA.

He referred to the various forms of organisms and what relation they bear as etiologic factors in the production of the various forms of malaria.

1. There is the flagellate form of the parasite, concerning whose age and mode of production observers are not yet agreed. It is seldom observed, but sometimes may be found in the blood a few hours after febrile paroxysm, or less often during the afebrile. It is the small, pale, movable body, having from one to three extremely delicate, pigmented, thread-like processes, which are the locomotive organs of the parasite. It is generally ecto-globular. Some observers believe the flagellate organisms are young organisms, others claim they are not degenerate forms, and a great many authors maintain they do not exist until after the blood is exposed to the air. It seems to him the claim that they are young organisms would stand best for the reason that they are provided with flagella which permit them to seek their prey—the red-blood corpuscles. Sakharoff and Danilewsky believe they are a separate species of organisms, since they possess a very large nucleus, while the non-flagellated forms have small nuclei. They are more frequently observed in the irregular forms of malaria.

2. The parasite of tertian malaria. The ecto-globular parasites invade the red-blood corpuscles, and are seen as small,

pale, hyaline ameba, sometimes star- or cross-shaped. Sometimes no pigment granules are noticed, or one may see a few scattered, peripherally placed granules. Repeated observations show that the bodies have grown at the expense of their host; the pigment granules are more marked, and display very active movements. At the end of forty-eight hours there may be from six to twenty granules, and the blood corpuscles have lost their coloring matter and they look like thin translucent cells. Segmentation now occurs, and this process precedes or accompanies the chill or fever. The pigment granules become motionless and collect in the centers of the ameba, and lines of striation stretching toward the periphery through the finely granular protoplasm cause the organism to have the appearance of a rosette. The segmentation proceeds until it is divided into eighteen to twenty spheres, the shell of the corpuscle bursts, and the small, rounded hyaline bodies, each being a translucent bit of protoplasm, with a highly refractive central spot, are set free in the circulation, being doubtless the spores which develop into the plasmodia. The cycle of development requires two days. Two groups of tertian parasites maturing on alternate days may cause the quotidian form of the fever.

3. The quartan form of parasite. In the quartan form of fever the pigment granules are larger, blacker, and the ameboid movements are more sluggish. Their growth does not decolorize the corpuscle to the same extent, nor do they fill the corpuscle so completely. They mature in from sixty-four to seventy-two hours, and, while they occupy the greater portion of the corpuscle, they are surrounded by a rim of colored stroma. The segments seldom reach twelve in number, and they eventuate in small spherical or ovoid bodies. The quartan organisms may mature in two groups on successive days, with one day's interval between (double quartan fever), or three groups may mature on successive days, producing a quotidian form of fever (triple quartan).

4. The estivo-autumnal, or irregular forms of fever. According to Osler, "the early form of the estivo-autumnal parasite is not unlike that of the tertian and quartan varieties; but the hyaline body is mooring-like, more highly refractive, and the central part often looks shaded, as if a more solid body were enclosed within a vacuole. As this form increases, the ameboid movements are well seen. The pigment is in small amount; at first, in the form of one or two very dark granules at the margin of the ameba, and the pigments never so abundant as in the tertian or quartan forms. The organism rarely occupies more than one-third of the corpuscle, the stroma of which is never entirely decolorized. On the contrary, it often presents a peculiar brassy, green appearance, and looks shrunken or crumpled. The cycle of development of this form is rarely carried out entirely in the circulating blood, but the bodies with centrally placed pigment are not uncommon. The observations of Italian observers seem to show conclusively that the segmentation takes place in the spleen, the bone-marrow and the internal organs. The length of time of its cycle of development has not been determined. Probably groups mature at varying intervals of time. The fever associated with this organism is characterized by irregularity, the paroxysms are not at definite periods, and the pyrexia may be more or less continuous, with remissions. In the irregular form of the fever may be found the crescents of Laveran. Sometimes they are sickle-shaped, oval or circular, and provided with flagella.

Technique.—In examining for plasmodia two methods may be used: 1, the fresh unstained blood may be placed between a cover-glass and a slide; 2, the blood may be dried and stained. In obtaining the blood for the first method square cover-slips and slides must be thoroughly cleaned, so that the blood will spread evenly and not form rouleaux, which would conceal the plasmodia if present. A small drop of blood should be used. The slide and cover-slip should be arranged at the side of the bed so they can be handled without touching the surface of the glass. The ear is cleaned with water and alcohol, allowed to dry, and then punctured. The cover-slip is touched to the apex of the blood drop and quickly dropped upon the slide, when the blood will be quickly spread and may be examined with a one-twelfth oil immersion lens. In some cases it may be necessary to use the dried specimens, if a microscope is not accessible, the weather is cold, or you wish to confirm your diagnosis with the fresh blood examination.

To obtain the blood for staining use two cover-slips and touch the apex of the blood drop with one, and drop it on the other cover-slip, and after the blood has stopped spreading, gently separate them by sliding the one off the other in the plane of their surfaces. These preparations are then allowed to dry in the air and are afterward fixed by immersing for a period of one to twenty-four hours in equal parts of alcohol

and ether. The simplest form for staining the dried slips is with eosin and methylen blue, the eosin staining the red-blood corpuscles, and the methylen blue staining the plasmodium. The specimen should then be melted in balsam and can be kept indefinitely.

In examining the fresh specimens certain conditions are apt to confuse one, if inexperienced. These conditions are: 1, conditions brought about by the refraction of light, which gives the appearance of a hyaline body regularly and sharply defined; 2, vacuolated red blood corpuscles; 3, crenated red-blood corpuscles. In the first case, there are usually in the field a larger number of the seeming hyaline bodies than we would hope to find of plasmodia. By focusing with the fine adjustment it will be found that these bodies increase and diminish in size, whereas the plasmodium does not vary in size, but grows dimmer and becomes clearer as the red-blood corpuscle is found in or out of the focus. The outline of the plasmodium is usually rather indistinct and seems to merge into the protoplasm of the corpuscle, being situated in most cases between the center and the periphery of the corpuscle, and not in the center, as is the case with the so-called refractive bodies. In the second of these conditions the points of differentiation just mentioned will serve to affirm or exclude the presence of the corpuscle, while in the case of the crenated corpuscles it will be found that the corpuscle has a jagged edge and that the above stated features of the plasmodium can not apply.

Dr. ROBISON then details fifteen cases of malaria, two of which were sporadic, and the other thirteen were epidemic and occurred among the returned soldiers of the late war.

Case 1.—W. G., age 38, single, farmer, German descent, lives north of Grossdale on the banks of the Salt Creek, where two cases of malaria have recently developed. He worked in the fields harvesting, but Friday, September 2, felt weak and sweat profusely. Sunday, September 4, was compelled to remain in bed on account of extreme weakness and vomiting. Tuesday morning, at 6 A.M., patient had a chill lasting twenty minutes, followed by high fever and sweating. Thursday at 1 A.M., chill lasted an hour, fever and sweating, accompanied by delirium. Entered Presbyterian Hospital, September 8. Spleen palpable on the 9th. Blood examination on the 9th at 3 P.M. revealed the presence of a crescent, endoglobular and octoglobular plasmodia. The patient was discharged on the 14th, not having had a chill nor a temperature above normal, nor had he taken any quinin. It was a case where the infection was resisted without the use of quinin.

Case 2.—D. P., age 18, male, single, Greek, lives in Chicago. Four months in America. Never was ill before. Tuesday, September 6, had a severe chill at 2 P.M., accompanied by headache, backache and anorexia. Entered the hospital, September 9 at 4 P.M., temperature 104.2 degrees F., pulse 100. At 3 A.M., September 10, the patient was restless and delirious. At 9 A.M. the blood examination revealed the presence of crescents. This patient evidently is one of those who receive their infection in one country, and it is developed later in another, as he doubtless was infected in Italy, and the infection did not develop until he lived in Chicago a while. Received Warburg's Tincture. Discharged cured September 20.

SOLDIERS.

Case 3.—Tertian fever. J. D., age 34, single, Company M, First Illinois V. I. Had yellow fever in July at Siboney. Was taken ill Monday, September 12, at 10 A.M., with a chill lasting two hours, very severe and followed by fever and sweating. Wednesday, had a second at 10 A.M. Was admitted to the hospital, Thursday at 4 P.M. At 5 P.M. temperature was 104 degrees F. Friday at 4 P.M. had a chill lasting half an hour. The spleen was palpable. At 8:15 A.M. Friday, a blood examination revealed a few endoglobular plasmodia, with scant pigment granules, sluggishly motile. The patient responded promptly to quinin.

Case 4.—H. J., age 25, single, Company K, First Illinois V. I. Gives history of two complaints: 1, Six weeks ago, while in Cuba, had chills and fever which yielded to quinin in four days. Two weeks later had an attack lasting three days, and two weeks later was ill two days. That attack commenced with one paroxysm of chills and fever, no recurrence of the same taking place until the effect of the quinin wore away. 2, Four weeks previous to entering the hospital he was attacked with severe pains in the bowels, with looseness of the bowels. Has averaged about twelve stools per day ever since. The stools are dark-brown, unformed, slimy; 2, a light gray and tinged with blood; 3, a light brown; 4, white and like mucus for a few days, and at the present time are returning to their first appearance. The spleen is slightly enlarged. A blood examination at 11 A.M. September 14, revealed the presence of a

large endoglobular plasmodium, the blood corpuscle decolorized, with pigment granules having a sluggish movement. September 15, at 3 P.M., he had a chill lasting twenty minutes, and the temperature after the chill was 104 degrees F. A similar occurrence took place at 3 P.M. on the 16th. There has been no chill or fever since the exhibition of quinin. This is undoubtedly a double tertian.

Case 5.—S. J., age 20, single, Company L, First Illinois V. I. Taken ill August 30 with chills just before leaving Cuba. Had chills every night until after treatment at a hospital in Brooklyn. One week previous to entrance into hospital, had been walking about, although very weak. Had slight chills about 5 P.M., September 18, 19 and 20, followed by a temperature of 104 degrees F. September 20, at 1:15 P.M., a blood examination revealed, 1, numerous small endoglobular plasmodia with small, fine, very active pigment granules; and 2, large endoglobular plasmodia with coarse, sluggish granules. This apparently is a case of tertian and quartan malaria, the paroxysms developing daily. It would be natural to suppose it is a case of double tertian, or triple quartan, were it not for the character of the plasmodia found.

Case 6.—A. E. H., age 32, single, Company H, First Illinois V. I. Had yellow fever in Siboney early in August. Sunday, at 8 P.M., September 10, had a chill, and has had one every day since. Was admitted to the hospital September 15, and had a chill at noon lasting half an hour. The chills recurred September 16 and 17. Ehrlich's reaction was found. September 18, a blood examination at 8 A.M. revealed very small endoglobular plasmodia, with fine pigment granules. One very small ectoglobular body with very fine, scarcely discernible, pigment granules. There has been no chill since the 18th, after placing the patient on quinin. It is undoubtedly a case of double tertian.

Case 7.—J. F., age 21, single, Company F, First Illinois V. I. Early in August he found himself gradually losing strength. One day went to bed, and the next day at noon had a chill. The chills recurred at that hour for four days. Resumed work in ten days, and has been able to be up and around ever since, until September 12, when he had a prolonged chill at night. Entered hospital, September 13. The spleen was palpable. Has had no chill since. September 14, at 11:30 A.M., the blood examination revealed endoglobular plasmodia, the corpuscular protoplasm decolorized, and of hyaline appearance. Fine pigment granules, with active motility. The corpuscle was enlarged one and one-sixth, the plasmodium occupying four-fifths of the corpuscle, and well outlined. Double tertian.

Case 8.—J. C., age 33, single. Company H, First Illinois V. I. Had typhoid fever eleven and four years ago. Was taken ill with a chill September 17, lasting from 3 A.M. to 11 A.M., followed by very little fever or sweating, and the patient has been having daily chills of differing severity at various times of the day, sometimes in the morning, and sometimes at night. Entered hospital, September 18. Spleen palpable. Blood examination at 2 P.M. revealed an ectoglobular body, one-third of the diameter of a red-blood corpuscle, with six sluggishly motile pigment granules, and a crescentic, endoglobular body, with small, fine, sluggish pigment granules. This is apparently a case of triple quartan. Quinin has proven efficacious.

Case 9.—C. C. K., age 21, single. Second U. S. Cav. While in Cuba suffered from chills and fever of an irregular type. Had not felt well since landing in New York. Had a chill severe in character, lasting one hour, at 7 A.M., September 11. Had a second chill September 12, at 1 P.M. Entered hospital, September 15. Temperature at 11 P.M. was 103.4 degrees F. September 16, at same hour, was covered with profuse cold perspiration. A small and young endoglobular parasite, which has undergone fusion, one segment containing motile pigment granules. September 17, at 4 P.M., the temperature fell to 96.6 degrees F., and it has remained subnormal, reaching 98 degrees only once since. He has aching pains in the legs, but otherwise feels very well. This case belongs essentially to the asthenic and adynamic form of the fever, probably of the tertian variety.

Case 10.—J. W. M., age 25, single. First Illinois V. I. This patient was formerly a private patient of mine, whom I had sent to Colorado for incipient tuberculosis. He remained there all winter, and when the war broke out, he came home and enlisted in the army. Was taken ill in Cuba about the middle of August with dysentery and fever. Had no chills, but was weak and dizzy. Two weeks after boarded the transport *New York*, and the sickness was continued, with weakness, diarrhoea and anorexia, but no fever or chills. Arrived in Montauk, August 28, and was helping in the hospital for days, all symptoms except extreme weakness having disappeared. Arrived in Chicago, September 6, having passed a night of severe suffering on

the train, being extremely weak and febrish. Entered the hospital September 6, at 1 p.m. Temperature 104 degrees F., pulse 100. Respiration 28. Some abdominal tenderness. Face flushed, and the pulses small and quick. The spleen was palpable. The temperature followed the course as shown in the chart until, at 8 p.m. of the 8th instant, it fell to 98.2 degrees F., after a profuse perspiration. The temperature then gradually rose to 103.4 degrees F., the next afternoon, and remitted and rose again to 104 degrees, the second afternoon, and dropped to 94.4 degrees F. the third evening, after a profuse perspiration. This case had the facies of a typhoid, and there was a suspicion of a renewal of tuberculosis in some form, and yet the behavior of the fever was more like a case of malaria. Consequently, at 2 p.m., September 10, an examination of the blood revealed hyaline bodies of irregular shape, irregularly pigmented with large, coarse granules. It was diagnosed as the quartan form of malaria. The subsequent course of the disease demonstrated that it required about seventy-two hours for the complete cycle to take place. This case teaches the value of a blood examination. If the circumstances under which the patient was taken ill had not given rise to a suspicion of malaria, it might not have impressed us a necessity to examine the blood.

Case 11.—G. W. S., age 23, single. Sergeant First Illinois V. I. Had malaria in fall of 1896; ill two weeks. Recurrence in February, 1897, continuing until October. Is an athlete. Was taken with fever September 12, but prior to the fever had been having dysentery for one week. Physical state fairly good, but spleen palpable. The physician who sent him to the hospital diagnosed the case as typhoid fever. On admission, the temperature was 103.2 degrees F., pulse 102, respirations 20. What appeared to be one rose spot was found on the abdomen. Ehrlich's reaction was demonstrated. September 17, the temperature ranged from 101.4 degrees F. September 19, at 8 a. m., it was 99.6 degrees, and at 8 p. m., was 100.2 degrees. September 19, at 8 a. m., it was 98.6 degrees, and has not been above normal since. September 19, at 11 a. m., the blood revealed the presence of a large endoglobular plasmodium, with coarse pigment granules, very motile; also crescents with sluggishly motile granules.

Case 12.—V. B., age 30, First Illinois Cavalry. Was taken ill at Chickamauga, and the case was diagnosed as typhoid fever. Had frequent bowel movements, abdominal tenderness and was delirious the greater part of the time. Was admitted to the hospital September 4. Had a daily exacerbation of temperature at 4 p. m., reaching 103 or 104 degrees. No chills. September 4 his blood revealed a crescentic body, and on September 14 a small endoglobular body was observed, with sluggish pigment granules. Ehrlich's reaction was negative. This case did not present the symptoms of typhoid.

Cases 13, 14 and 15, gave unimportant histories. In case 13 endoglobular plasmodia were found, with very motile granules; in case 14, endoglobular bodies, with sluggish granules, and in case 15, endoglobular and hyaline bodies.

CONCLUSIONS.

1. The study of these cases has led me to the conclusion that it is the duty of every physician to examine the blood of every patient in which there is an irregular temperature, where the physical signs do not indicate the diagnosis.
2. That Ehrlich's test can not be regarded indicative of typhoid fever, measles, or tuberculosis, as it is present in malaria.
3. That it is wise to corroborate the fresh blood tests with the stained specimens to prevent the confusion of a vacuole with a hyaline body. This point has already been referred to in a previous part of the paper.
4. While typhoid fever may run concurrently with malaria, the frequency with which this occurs is not great.
5. In some of the irregular forms of the disease we have found that it does not yield readily to quinin.
6. In Case 13 there was an idiosyncrasy as to quinin, it producing, in small doses, itching of the body, roaring in the ears, and gastric pains. Thirty-minin doses of dilute hydrobromic acid were given every four hours for twenty-four hours, before the administration of quinin, when ten-grain doses could be taken without any discomfort, and it broke up the proxyems.

American Public Health Association.

*Twenty-sixth Annual Meeting, held in Ottawa, Ontario,
Sept. 27-30, 1898.*

(Concluded from page 928.)

THURSDAY, SEPTEMBER 29—MORNING SESSION:

The association was called to order at 10 o'clock, Dr. Benjamin Lee, first vice-president in the chair.

The secretary reported, on behalf of the executive committee, the resolution of Dr. Wingate of Milwaukee, that a special committee of five be appointed for the purpose of drafting a definition of the word "epidemic," with a recommendation that its report be adopted, and it was thereupon adopted. Respecting the resolution of Dr. Suiter of Herkimer, N.Y., to procure the enactment of laws preventing the sale of long rubber-tube nursing-bottles, the executive committee reported that it considered such proposed action inexpedient, and recommended that the resolution be not passed, in which the association concurred.

Two candidates were proposed for membership and elected by the association.

Dr. FRANKLIN W. WRIGHT of New Haven, Conn., offered a resolution which was referred to the executive committee, creating a special committee of five members, of whom the president, secretary and treasurer shall be three, to consider the feasibility of issuing instead of an annual volume of transactions a monthly periodical devoted to sanitary science.

Dr. HENRY D. HOLTON of Brattleboro, Vt., treasurer, presented his annual report, showing a balance of cash on hand of \$1,223.03. The report was referred to an auditing committee, vice-president Lee naming as sub-committee Drs. Irving A. Watson of Concord, N. H., Peter H. Bryce of Toronto, Ont., and Dr. Franklin W. Wright of New Haven, Conn.

The first paper on the program for the day was one by Dr. MANUEL SEPTIEN of Queretaro, Mexico, entitled

COMPULSORY VACCINATION OUGHT TO BE IMPOSED AS A PARAMOUNT NECESSITY,

and at the request of the writer it was read by Dr. Cabara of Fall River, Mass.

Dr. SEPTIEN regretted the apathy that seemed to prevail on this subject. It is just one century, he said, since the immortal Jenner announced to the world the most important discovery registered in the annals of medicine; that which undoubtedly has saved the greatest number of lives. Smallpox was in centuries past the most terrible scourge that afflicted the human race. It alone accounted for 10 per cent. of the total mortality, leaving on the victims it could not carry away the marks of its passage stamped, in an indelible manner, on the whole surfaces of their bodies. But neither the people nor the governments have known how to take advantage of the immense good which vaccine is capable of producing. Smallpox ought to have disappeared long ago from all civilized countries, and everybody ought to carry on their arms, as a shield, those everlasting stigmas which vaccination leaves, as a seal printed by the solicitude and paternal care of the enlightened governments, whose lot it is to watch and care for the lives and health of the people, as they are the greatest blessing that man can enjoy here on earth. Its practice, however, has been and is still repulsed in the last years of this century of light, even by the peoples most advanced in civilization. In England itself, who would believe it! there are societies, such as the "Anti-Vaccination Society," "Peculiar People" and others, who have for their object the opposing of vaccination. In this very country, Lower Canada, a great popular movement was started a few years ago, headed by several distinguished medical men, rejecting vaccination. The occurrence of several serious cases of vaccinal ulcerations, probably of syphilitic origin, was the cause of this agitation, which had for consequence such a lamentable end. Compulsory vaccination could not be carried out from the year 1876, till in 1884 and 1885 such a strong epidemic broke out that in nine months, in the city of Montreal alone, thousands were attacked by smallpox, and causing the death of 3500 persons in nine months. Probably this is one of the most notable examples, in these latter years, of the rapid spread of smallpox. The ground was already prepared, and the only thing wanting was the sowing of the seed; a Pullman car conductor arriving from Chicago, where he had contracted the disease, was the vehicle of infection. Smallpox, with rare exceptions, only attacks those who have not been vaccinated. Nor in the most severe epidemics had it ever been seen that the doctors, nurses, or the persons in attendance on the sick had been infected, provided they had been well vaccinated. Let us hope that the disease of smallpox will disappear very soon and forever; that which may be considered the most terrible of diseases, because it is the most mortiferous, cruel, and the most loathsome. The unfortunate that is not killed by it, is left with the face and the body covered with the most horrible scars; and in many cases it destroys the sight and even the hearing. He proposed a petition to the three governments represented in this association to provide more energetic laws than existing ones, making vaccination obligatory and inflicting severe penalties for their evasion.

Dr. J. C. SHRADER of Iowa City, Iowa, second vice-president

of the association, said that in Iowa all children, before admission to the public schools, were required to present marks of vaccination. It is held that the State can not pass a law compelling an individual to submit to the operation, as trenching upon the liberty of the person, but the board claims it has the right to establish this rule, and it has been in practice for years.

Dr. CURTIS of Albany, N. Y., said that every member of this Association knows the name of ELISHA HARRIS and remembers his earnest interest in this matter, and that one of his efforts was directed toward obtaining virus from the Jennerian Society with the view of antagonizing the charge as to the danger of inflicting other grievous injury from the use of impure virus.

Dr. PATTERSON of Winnipeg, Man., doubted whether the courts of any civilized nation will uphold compulsory legislation. Vaccination is a disease and it is doubtful whether you have a right to inflict a disease upon an unwilling person. School boards, however, can adopt the regulation that children, who do not present evidences of protection against smallpox should not be admitted.

Dr. GEHRMANN of Chicago insisted that the results of Jennerian virus can be obtained by modern improved methods—glycerized lymph destroys foreign bacteria and the resultant vesicle is a true "pearl on the roseleaf."

Dr. JONES of Baltimore said that in July last two cases of smallpox were brought into that city from Germany. Their companions were vaccinated and developed such bad arms that the tubes used were carefully examined, and in these and many other points large numbers of pure corpuscles were discovered.

The report of the committee on "Demography and Vital Statistics in their Sanitary Relation" was then presented by the chairman, Dr. CRESSY L. WILBUR of Lansing, Mich., Chief of the Division of Vital Statistics of the Department of State.

The resolutions embodied in the Committee's report having already been adopted on the recommendation of the executive committee, to whom they had been referred, the committee was by vote continued.

Dr. JOSÉ RAMÍREZ, general secretary of the Superior Board of Health of the Republic of Mexico then read a paper entitled

DOUGHT WE TO REOPEN THE LEPER ASYLUMS?

"Leprosy is still," he said, "scattered throughout the world. As its origin is not of a telluric character, we can understand how it invades climates of widely different character. It is a disease exclusively confined to man, of a bacterian character, contagious, and one that respects no race whatever." He then alluded to the disappearance and reappearance of the disease in various countries, making the disease serve as a thermometer to indicate the degree of hygiene of different people. "These facts lead us to a comforting conclusion: That leprosy, an incurable disease, can be suppressed in civilized countries by means that are within the reach of the sanitary authorities. An empiric observation of some centuries has perfectly demonstrated the contagious character of leprosy (still denied by some physicians); and the arbitrary measures that up to the middle ages were employed to prevent this fearful contagion proved by their positive results that these observations were correct—that is to say: That the isolation of the lepers was the most certain method of preventing the appearance of fresh cases." The disease, the doctor thinks, is not hereditary. The long accepted theory that children inherit the disease from contaminated parents has been disproved, and this fact holds out greater hope for the future, besides allowing sanitary precautions to be softened, so that in due time measures may be adopted for preventing contagion. It was a fortunate fact that in the greater part of South America leprosy had gradually disappeared. "Leprosy has very rarely been found in Canada, although well-established cases have been seen. In the United States there are a few small foci, which are especially found in Louisiana, Texas, California, Minnesota and Oregon, but the recent annexation of the Sandwich Islands places the nation in an especial condition to at once undertake measures of defence against that immense focus of leprosy which is so well-known and is so dangerous.

In Mexico we also have leprosy scattered in different States. "We, therefore, find that Canada, on account of the British colonies of India, the United States, on account of the foci in its own territory and the recent annexation of the Sandwich Islands, as well as Mexico on account of the numerous foci it contains, are three nations which ought to come to an agreement with the view to taking steps against the propagation and for the establishment of uniform measures of prevention as far as is permitted by the special conditions of each country. The character of these measures is a subject that undoubtedly will give rise to a great deal of discussion. At the end of the century we can not and ought not to put into practice the ostracism to which lepers were formerly con-

demned. Now, when we know that contagion is something tangible and not a subtle gas or impalpable emanation, now when we have at our disposal means for preventing its propagation, now is the time for us to study the most adequate means in accordance with our knowledge, to fight the disease with greater success. There can be no doubt that these humane sentiments inspired the governments that convened the international conference for the study of leprosy, which met in Berlin during the year 1897. This conference, attended by the most competent specialists of the world, and starting from the principle of the incurable character of leprosy, passed resolutions directed to the prevention of the propagation of the disease."

The deductions are as follows:

1. In countries where leprosy forms foci, or has great extension, isolation furnishes the best means of preventing the spread of the disease.

2. The system of obligatory notification, observation and isolation, as carried out in Norway, is recommended to all nations with local self-government and a sufficient number of physicians.

3. It must be left to the administrative authorities, after consultation with the medical authorities, to take such special measures as are applicable to the special social conditions of the districts.

Dr. HENRY M. BRACKEN of Minneapolis, secretary and executive officer of the State Board of Health of Minnesota, presented and read a paper on the same subject, entitled

LEPROSY IN MINNESOTA AND THE NORTHWEST.

He questioned the accuracy of the statements in Allbert's System of Medicine respecting the Norwegian leper of Minnesota, Wisconsin and Dakota, and said we have knowledge of fifty-one lepers having resided in Minnesota, seventeen of whom had died before 1890. Twenty-one is probably the highest number of lepers known to have been living in this State in any one year (1893). At present thirteen are known to be living there. Dr. Bracken drew special attention to a few facts emphasized by his tables and records:

1. The impression that leprous immigrants from the Scandinavian peninsula are all from Norway is a wrong one. Five of eleven recorded in 1897-8 were from Sweden.

2. The feeling that we can quarantine against lepers by watching immigrants is an unsafe one. The family history of all immigrants from a country where leprosy prevails should be secured before they are allowed to embark for America, and no member of a leprous family should be permitted to land upon our shores.

3. It appears that the conditions antagonistic to the spread of leprosy are also opposed to sterility, as borne out by the families of our lepers who have children, as shown by the following numbers: five, five, six, six, four, six, four, five, eight.

4. It is possible for leprosy to die out in certain favored sections, as Minnesota, without segregation, provided the importation of lepers is discontinued.

5. Even in Minnesota one has but to visit lepers to feel that segregation should be insisted upon in all cases. Entering a filthy house and seeing a leprous mother, careless in her habits, it is evident the children are not safe.

6. Segregation in single States is not practicable, since it would only drive lepers from States enforcing it to those not doing so.

7. A federal home should be provided for these unfortunates where they could be cared for more economically and satisfactorily than through any State's provisions.

8. In spite of all precautions there will be some leprous individuals in this part of the world for many years to come.

9. The Scandinavian peninsula does not furnish all the leprous individuals found in the United States.

The discussion on the papers of Dr. Ramirez and Bracken was very animated. Dr. Henry B. Horlbeck, health officer of Charleston, S. C., urged the establishment of a Federal leper home on one of the islands on the southern Atlantic coast of the United States.

Dr. WILKINSON of New Orleans, said that the State of Louisiana had already rented a tract of land in that State and established a leper home, admission to which was not made compulsory, but where they went willingly. They cultivated the land, so that the home was almost self-supporting. The leper wants occupation. He did not think the Atlantic coast islands the preferable site on account of the gales to which they were subject.

M. W. BOARDMAN of Ottawa, of the Department of Agriculture, described the Dominion Government's Lazaretto at Tracadie, N. B., where he said there were a year ago twenty inmates, sixteen of these males, the youngest eleven and the

oldest sixty-one. Four are in the early stage, ten were advanced, and six far toward the end. There were nine deaths in the year, all having been enfeebled by *grippe*. Eight new cases have been admitted, four from Manitoba. All, including the Icelandic parties, seem surprisingly contented. There is seldom any difficulty in the absence of a law enforcing segregation in removing those affected. When a man is declared leprous by the inspector of leprosy, his neighbors and those giving employment shun him, and he is glad to avail himself of the comforts of the leper's home. The Lazaretto at Tracadie is fulfilling its object, that of segregation, in the most satisfactory manner.

DR. LEE of Philadelphia said that of the two plans, isolation recommended by the author of the first paper, and segregation by the second, he was decidedly of the opinion that segregation was the proper course. His opinion was concurred in by Dr. BURROUGHS of Abbeville, N. C., Dr. GIBSON of Iowa and Dr. PATTERSON of Manitoba.

Dr. JONES of Baltimore instanced the single leper, who is so great a trouble and expense to the health office of that city, that it illustrates the necessity for the national government to establish a home where similar cases can be segregated.

Dr. DURGIN of Boston said that a leper is so dreaded, and the facilities for their care so lacking, that cases are hidden away as long as possible. He has one case who requires a special nurse and all the paraphernalia of a hospital, who ought properly to be in some home.

Dr. HORLBECK of Charleston, S. C., offered a resolution, which was referred to the executive committee, that the American Public Health Association call the attention of the government to the presence of leprosy in the country, and urge the necessity of establishing a home where sufferers from this disease can be segregated and given proper care.

Mr. CROSBY GRAY, health officer of Pittsburg, Pa., related the case of a native Pittsburger, who contracted leprosy in Para, Brazil, ten years ago, and finally returned to his home sick. He entered a hospital, where the case was diagnosed as leprosy and he was surreptitiously removed. He is now in a separate building in the hospital grounds, under the care of a nurse at two and a half dollars a day, making his maintenance rather an expensive luxury.

Dr. GEORGE H. ROHÉ, former health officer of Baltimore, Md., deprecated the sanitary shrieking and hysterics excited by this disease, and said he would just as soon treat a case of it in a general hospital as any other. In fact, it is less dangerous than syphilis. Nevertheless, he believed it would be wise to have a home established where the leprous could be comfortably domiciled and properly cared for.

Dr. BREÑA of Zacatecas, Mexico, said if this resolution accomplishes its purpose, it will alone be sufficient to justify this meeting. He would rather die of diphtheria than live neglected like a leper.

The report of the committee on Sanitation, with Special Reference to Drainage, Plumbing and Ventilation of Public and Private Buildings, was presented by the chairman, Mr. J. W. Hughes of Montreal.

THURSDAY, SEPTEMBER 29—AFTERNOON SESSION.

The Advisory Council convened at 2 P.M. at the Parliament Buildings. Thirty-three members were present, representing as many different States and Provinces—twenty-two American, four Canadian and seven Mexican—the President of the Association, Prof. CHARLES A. LINDSLEY, being ex-officio chairman. The council proceeded to nominate officers for the ensuing year and select the place of the twenty-seventh annual meeting in 1899. Invitations to hold the meeting were presented from Minneapolis, Minn, Asheville, N. C., New Orleans, La., and Chicago, Ill. The fact that this was the third time the association had been invited to Minneapolis determined the choice of the council.

The afternoon session of the association was called to order at 3 P.M., the first vice-president, Dr. BENJAMIN LEE of Philadelphia in the chair.

Mr. J. W. HUGHES of Montreal read the first paper, entitled

THE INTERCEPTING TRAP IN PRIVATE SEWERS,

supplemental to his committee report, and which adjournment for luncheon prevented being read therewith. He unhesitatingly condemns the fitting of the intercepting trap in private sewers. Minute investigation has "shown that when a main intercepting trap was used that it not only modified the speed and partly obstructed the flow of sewage, but it prevented any of the air carried down by the soil and other waste water pipes from discharging into the street sewer, where its aerating functions are so necessary to commence the purification of the sewage in the drains and assisting in preventing sewer gases gen-

erating in the sewers." It has also been shown "that when the main intercepting trap is omitted there is a superior and self-cleansing flow of sewage, and that large volumes of air pass forward to the street sewer, creating a healthy atmosphere and circulation of air down the soil pipe, through which the fluid is passing, and up other soil pipes that are at the time standing idle." Mr. Hughes said that his observation had led him to believe that in houses in which there was an absence of sewer pipes having obstructing traps there was freedom from odors and diseases that could be traced to sewer gas poisoning, while on the other hand those cities which had adopted the principle of interception traps were often quite the reverse, and of disease a great deal was found among the inhabitants who happened to live in the modern built houses, where the obstruction system had been installed; "and this, in spite of the fact that the same towns often spend large sums of money in flushing the drains and artificially ventilating the street sewers, a thing which is never necessary if the sewers are laid down properly and the right unobstructed system is adopted.

Dr. S. H. DURGIN, health officer of Boston, Mass., contended that bad gas-fittings are more dangerous to health than bad plumbing. He said that better regulations are needed to insure the proper fittings to prevent the escape of illuminating gas. He claimed that there is no scientific basis for considering sewer gas an active poison or a serious source of danger to human life. On the other hand, he said illuminating gas contains a most active and deadly poison. No deaths are reported as resulting from sewer-gas poison, but many are reported as caused by illuminating gas. In the last five years, 169 deaths from it have occurred in Boston. He said the medical profession believed that many deaths were caused by slow poison from illuminating gas, but they were not so entered in the public records. Health officers, he insisted, should pay as much attention and teach the danger from coal and illuminating gases circulating in the atmosphere of houses as they do the danger of the escape of sewer gas. In 1897 an act of the legislature of Massachusetts was obtained which requires all persons who desire to engage in or work in the business of gas-fitting in the city of Boston, either as an employer or journeyman, to be examined by a board established for that purpose, and if found to be competent to receive a license as a master or journeyman gas-fitter. The act authorized the board of health and building commissioner to make and enforce regulations for all materials used and work performed in gas-piping and gas-fitting; provided for the appointment of a corps of inspectors, who examine for approval all new work in construction and repairs; authorizes the board of health to inspect the gas fixtures and appliances in any building, and to make such requirements relating thereto as it deems the public health requires, and the owner of such building must comply with such requirements.

As a result of an investigation, it was found that 89 per cent of Boston's houses showed from two to eleven leaks in each house. Out of 153 houses examined 137 had defective pipes, and only 16 were found absolutely free from defects.

The discussion was further participated in by Dr. Chapin of Rhode Island, who inquired if any deaths were positively known to be caused by leaking gas-pipes; by Dr. Schwartz, secretary of the State Board of Health of Rhode Island; by Medical Director Gihon, U. S. N., who asked Mr. Hughes if he believed that gas leakage could ever be attributed to fire holes in old gas-pipes concealed between floors and ceilings or inside walls, to which Mr. Hughes replied that in thirty years' experience he had never known an instance of perforated pipes, but that leakage was always from imperfect connections; by Dr. Wright of Connecticut; by Dr. Woodward of Washington, D. C., and by Dr. Mitchell of New Jersey.

Dr. F. X. VALADE, chief analyst, of Ottawa, Ont., read a paper on

THE ADMINISTRATION OF THE ADULTERATION ACT IN CANADA.

He reviewed the Dominion act in regard to adulterated foods, etc., and said that the analytical department is now in good working order. Each district has its analyst and the analysts are supplied with samples of food products by food inspectors. The samples are analyzed and the results with the names of the persons from whom they are obtained announced. He spoke of the adulterations of milk and said that grave results followed the adulteration of this staple article of food. Lead poisoning results, he said, from the use of lead in the manufacture of house utensils, and in tins used to preserve foods. Rouge is often adulterated with lead, and as it is in a condition to be easily assimilated, lead palsy results from the use of the rouge.

He considered the combination rubber and tin stoppers used in bottles containing carbonated waters most dangerous. The

most dangerous and shameful adulterations are the following: Coffee is adulterated by the process of washing, coloring and drying off in centrifugal machines with sawdust; the furrows of the berries become filled with wood powder, making them a fine white. Weak milk is richly colored with annatto, saffron, turmeric and marigold flowers. Saffron is adulterated with coal tar. Coal tar is adulterated with 75 per cent. of sodium chlorid, and here the chain ends, for salt is too cheap to require adulteration. Cayenne is sometimes too hot; red ochre, venetian red or brick dust corrects that, and a little salt to make it tasty completes the trick. Honey and cocoa are adulterated; oleomargarin is palmed off after being colored with azo dyes and orange red. Musk deer sacs are often opened and filled with stones, bits of metal and brown earth.

Dr. JUAN BREÑA of Zacatecas, Mexico, presented "Rough Notes on the Etiology of Typhus Fever." It was an admirable and exhaustive inquiry into the subject, emphasizing the value of sanitary considerations in preventing the development and spread of this disease. As the individual who cultivates cleanliness of person and dress, tranquillity of mind and, in a word, devotion to the Goddess Hygeia, bears within himself a shield which protects him to a certain extent from infection, so do collective bodies of individuals who enjoy air, light, abundance of water, a fair amount of sunshine, good drainage, etc., represent ground but little fertile for the development of typhus. It would be well if we could accept the theory which attributes the generation of that fever which from time to time plunges us, especially in Mexico, into mourning to the stagnation of organic matter in a state of putrefaction or to that train of misfortunes following on poverty."

The report of the committee on

CAR SANITATION.

was presented by the chairman, Prof. S. H. WOODBRIDGE of Boston, Mass., which was read by Dr. J. N. HURTY of Indiana. Professor Woodbridge's report attracted the closest attention of the members for its admirable presentation of the subject of heating and ventilation of railway cars, and was an unusually acceptable communication, as the information given was in effect the record of a victory won by this association through this committee after a number of years' work, in inducing several of the big railroads in the United States to adopt sanitary arrangements in the running of their cars. Letters from various railroad officials were given, stating their intention to reconstruct all their cars so that cleanliness would be a most important feature. The author referred to sanitary precautions already adopted by the railroads in Indiana, where the interiors are so constructed as to prevent as much as possible dust lying in the spaces in the cars. He outlined two systems of ventilation in use in two United States railroads. In the Pennsylvania Railway system of ventilation of cars, air is drawn from outside the car through ducts, is then passed over steam radiators between the floors and then introduced into the car under the seats. This avoids warming over and over the dead air in the car. The bad air goes out through openings in the roof. The Big Four Railway system of car ventilation is to draw out the bad air from near the floor through ducts between windows in the walls of the car. Pure air is introduced from outside by ducts with filters at the ends of the coaches. This pure air is warmed as it enters by being passed over steam pipes. The Big Four railway officially promises to hereafter construct all passenger cars according to the latest sanitary requirements. The thorough system of cleaning and disinfection of cars by the Big Four was warmly approved by the writer.

Dr. GREGORIO MENDIZABAL of the City of Mexico read a paper "On Diseases of the Skin and of the Hairy Scalp, Which are Commonly Transmitted by Contagion at Schools; Ways of Preventing It." After paying tribute to the benefits that mankind has already received through following the wise councils of hygiene, the author suggested, respecting the prevention of communicable dermatosis, that medical inspectors for schools should be appointed and children be required to furnish clean bills of health before they are admitted to schools. Inspection should be extended to private schools. The parents of poorer children should be furnished with remedies to cure their diseased children. The diseases he had found most frequently are psoriasis, scurf, trichophytia, fabus, all shown to be transmissible and repugnant and dirty, although not fatal.

The remainder of the afternoon and up to a late hour was entirely occupied with the subject of "Disinfection and Disinfectants," beginning with a preliminary report of the Committee on Disinfectants by its chairman, Prof. FRANKLIN C. ROBINSON of Bowdoin College, Brunswick, Me., followed by papers on "Methods of Testing Disinfectants," by Dr. WYATT JOHN-

SON, Montreal; Dr. F. G. NOVY, Lansing, Mich.; Dr. HIBBARD W. HILL, Boston, Mass. "Methods of Using Disinfectants:" In Cities, Dr. ADOLPH GHERMANN, Chicago; In Hospitals, Dr. J. J. MCKENZIE, Toronto, Ont.; Dr. CHAS. D. SMITH, Portland, Me.; In Quarantine Work, Dr. F. MONTIZAMBERT, General Superintendent of Quarantine of the Dominion of Canada.

The lateness of the time prevented discussion of this most interesting and valuable group of papers, which fitly concluded one of the most successful day's work in the history of the association.

A resolution offered to create a special committee to secure co-operation in bacteriologic investigations in the three countries represented in the association was referred to the executive committee.

FOURTH DAY—FRIDAY, SEPT. 30, 1898.

MORNINO SESSION, 10 A.M.

The president, Prof. CHARLES A. LINDSLEY in the chair.

After the final announcement by the chairman of the local committee of arrangements, Dr. JOHN SWEETLAND of Ottawa, of post-adjournment courtesies tendered by the Minister of Agriculture of the Dominion Government, the secretary, Dr. PROBST, presented the final report of the executive committee, recommending:

1. The adoption of Dr. Horlbeck's resolution to urge the establishment by the National government of a leper-house.

2. The appointment of a special committee, as suggested by Dr. Wyatt Johnson of Montreal, for co-operation in bacteriologic investigation by colleges, individuals and committees engaged in this work.

3. The continuance of the committee on Public Health Legislation, of which Dr. Henry P. Wolcott of Cambridge, president of the State Board of Health of Massachusetts, is chairman; that it be urged and required to make every possible effort to promote the purpose for which it was created; and that the American Public Health Association hereby reaffirms its opinions of the advisability and necessity for the establishment of a National Board or Bureau of Health in the United States.

4. The adoption of the resolution of Dr. Wright proposing a special committee of five, consisting of the president, secretary, treasurer and two others to consider the advisability of substituting for the annual volume of transactions a monthly or other periodical devoted to sanitary matters; in all which the association by vote concurred.

On motion of Dr. SUITER of Herkimer, N. Y., the association reconsidered its action of yesterday, declaring it inexpedient to adopt the resolution offered by him advising State, municipal and town authorities to enact laws interdicting the sale of long rubber-tube nursing bottles, and upon his modification of his resolution making it expressive of the opinion of the association that the long rubber-tube nursing-bottle was a positive menace to the health and the cause of much mortality of infants, it was unanimously adopted. It was explained on the part of the executive committee that its former action in declining to recommend the effort to obtain legislation was because of the belief of its members that no educated physician would permit, and no intelligent and competent mother use, one of these bottles, which the veriest tyro in sanitation could not but condemn, but as its action has been misunderstood, as was shown by conspicuous head-lines in the newspapers announcing that "the association had shut down on the effort to abolish the rubber-tube nursing bottle," and that "the rubber-tube bottle had gained a victory over its opponents," and lest these assertions, if uncontradicted, might be taken advantage of for advertising purposes by the unscrupulous makers of these bottles, it was considered proper that the association should assert, notwithstanding the elementary and self-evident nature of the proposition its, unanimous condemnation of their use. As an evidence of the universality of this use, Dr. WENDE, the health officer of Buffalo, who has succeeded in making their sale impossible or punishable in that city, exhibited three long-tube bottles which he had bought in the first three drug stores in Ottawa at which he had applied for them.

Three additional applicants for membership were reported by the executive committee and elected.

Medical Director GHON, U. S. N., read a letter he had just received from Dr. JESUS E. MONJARA, president of the Council of Health of San Louis Potosi, regretting his enforced non-attendance at the meeting by reason of a recent domestic bereavement.

On motion of Dr. GHON, the secretary was directed to telegraph on the part of the association to Dr. JAMES F. HIBBERD of Richmond, Ind., one of its oldest, most zealous and most honored members, its sincere sympathy and regret that he had

been prevented by illness from being present as he had invariably been at previous meetings.

On motion of Dr. DURGIN of Boston, Mr. Mitchell of New Jersey was appointed to draft a suitable memorial expressive of the regret of the association at the recent death of Dr. J. BERRIEN LINDSLEY of Nashville, Tenn., an original member and the long-time treasurer of this association, and to place on record in its Transactions its appreciation of his personal character and disinterested and zealous service in the work of this association and the cause of sanitation.

Dr. IRVING A. WATSON of Concord, N. H., chairman of the auditing committee reported that careful examination of the accounts of the treasurer showed that they were correct in every respect.

Mr. CROSBY GRAY of Pittsburg, Pa., secretary of the Advisory Committee, reported the following nominations for officers of the association for the year 1898-'99:

For President: Dr. GEORGE H. ROHÉ, of Baltimore., Md.

For Vice-President: Dr. JÉSUS E. MONJARÁS of San Luis Potosi, Mexico.

For Secretary: Dr. CHARLES O. PROBST of Columbus, Ohio.

For Treasurer: Dr. HENRY D. HOLTON of Brattleboro, Vt.

For Elective Members of the Executive Committee (for two years) Dr. H. M. BRACKEN, of Minneapolis, Minn.; Dr. IRVING A. WATSON of Concord, N. H.; Dr. FRANKLIN W. WRIGHT of New Haven, Conn. (To fill a vacancy for one year) Dr. GREGORIO MEDIZABAL of the City of Mexico, Mexico.

The Advisory Council recommended that the twenty-seventh annual meeting shall be held at Minneapolis, Minn. All which was by vote of the Association unanimously adopted and the officers unanimously elected. The president then announced the names of chairmen and members of committees, of which there are twenty-one.

Papers on "The Diptera from a Hygienic Point of View," by Dr. Ramon Ramirez of Mexico, D. F., and on "The Spread of Typhoid and Dysenteric Diseases by Flies," by Dr. M. A. Veeder of Lyons, N. Y., were then read, and discussed by Dr. Gardner T. Schwartz of Providence, R. I., and Dr. J. N. Hurty of Indianapolis, Ind., who related an instance within his own experience of the spread of dysentery at Tipton, Ind., from a patient whose injecta, it was discovered on subsequent investigation, had been thrown into the back yard, and where the only possible hypothesis as to the spread of the dysentery was that it had been propagated by flies, which were then especially numerous. The views of the authors of the papers, Drs. Ramirez and Veeder, were quite in accord with the reputed opinion of the military committee of investigation appointed by our ex-president, Surgeon-General Sternberg, U. S. A., Majors Vaughan, Shakespeare and Reed, who are alleged to have declared flies largely responsible for the distribution of typhoid germs in our military camps.

The following reports of special committees were then presented and read: Report of the committee on Transportation of Diseased Tissues, by Mail, presented by the chairman, Dr. E. P. Lachapelle, president Provincial Board of Health, P. Q.; report of the committee to consider and report upon some Method of International Arrangement for Protection against the Transmission of Infectious Diseases, presented by Dr. Frederick Montizambert, chairman, general superintendent of quarantine of the Dominion of Canada; report of the committee on Animal Diseases and Animal Food, presented by D. E. Salmon, D.V.M., chairman, chief of Bureau of Animal Industry, Department of Agriculture, Washington, D. C.; report of the committee on The Duties and Responsibilities of the Healthy Man for His Own and Others' Health, presented by the chairman, Dr. Charles N. Hewitt, Red Wing, Minn.; report of the committee on public health legislation, presented on the part of the chairman by Dr. Henry P. Wolcott, president of the State Board of Health of Massachusetts, by Dr. U. O. B. Wingate, health officer of Milwaukee, Wis.

The following papers were then presented: "An Epidemic of Diphtheria traced to an Infected Milk Supply," by Dr. Benjamin Lee, health officer of Philadelphia, Pa.; "Preventive Antirabic Inoculation Service in Mexico," by Dr. Eduardo Licéaga, president Superior Board of Health, City of Mexico; "Report of Some of the Most Important Papers Presented at the Fourth Congress of Tuberculosis, held in Paris, July 27 to Aug. 4, 1898," by Dr. E. A. de Schweinitz, director Biochemic Laboratory, Bureau of Animal Industry, Washington, D. C.; "The Sanitary Treatment of Inebriates," by Dr. A. M. Rosebrugh, secretary Prisoners' Aid Association, Toronto, Ont.; "Garbage Reduction by Steam," by Dr. M. A. Veeder, Lyons, N. Y., and Mr. J. L. Richards, sanitary engineer, Elizabeth, N. J.; the last eliciting discussion by Dr. de Schweinitz of Washington, D. C.; Dr. Probst of Columbus, Ohio, and Mr. Rudolph Hering, C. E. of New York City.

The customary resolutions of thanks were then adopted for courtesies received from the Dominion Government, especially the Hon. Sidney Fisher, minister of agriculture; the mayor, municipal officers and citizens of Ottawa; the indefatigable chairman, Dr. John Sweetland, and his associates on the local committee of arrangements; the ladies of Ottawa, the proprietor of the Russell House, the railroad officials and the members of the press.

The two senior ex-presidents, Medical Director Gihon, U. S. N., and Dr. Durgin of Boston, were then appointed to conduct the president-elect, Dr. George H. Rohé of Baltimore, to the chair, and after appropriate remarks by himself and the retiring president, the latter declared the Association adjourned to meet at Minneapolis at such time in November, 1899, as the executive committee may appoint, thus concluding one more of the successful and satisfactory assemblies of this flourishing body. The majority of the members remained after the formal adjournment to attend a garden party at the Experimental Farm tendered by the minister of agriculture, Hon. Sidney Fisher, and voluntarily added another day to their sojourn in this attractive and hospital capital of the Dominion, where besides the courtesies of the government and municipal authorities, they were treated to a week of the most delightful weather conceivable. The unparalleled invigorating climate determined the American and Mexican members, who contemplate attending the Third Pan-American Medical Congress at Caracas, Venezuela, to insist that Ottawa shall be the site of the Fourth.

Chicago Medical Society.

At the clinical meeting, October 2, in the absence of the president, Dr. ARTHUR D. BEVAN, Dr. GEORGE W. WEBSTER presided.

Dr. HOMER M. THOMAS reported a very interesting and instructive case of aortic aneurysm, and exhibited the patient.

Dr. WEBSTER exhibited, in connection with Dr. Thomas' case, a pathologic specimen from a similar case of aortic aneurysm.

Dr. I. A. AET described an interesting case of rachitis that came under his observation, and exhibited photographs and skiagraphs of the case.

Dr. CARL BECK exhibited a little girl, 14 years of age, upon whom he had operated, showing the results of a rhino blepharoplasty, the patient having undergone eight operations in all. The second case was one of partial rhinoplasty. The third was another nose case, but in which the destructive process was very extensive, due to erysipelas. The fourth was a case of arthroplasty, the ankylosis of the joint being due to tuberculosis.

Dr. H. W. DAVENPORT reported an interesting case of artificial self-retaining maxillary arch and floating palate in a boy of 10 or 12 years of age. Five surgical operations had been previously performed by different surgeons for the closure of the cleft without success. The boy removes and replaces very easily and dexterously the artificial palate.

Dr. O. T. STEIN reported a case of caries of the skull due to syphilitic infection.

Dr. C. L. LOCKWOOD presented a case which beautifully illustrated the union of old fracture by percussion-irritation. He noticed a marked improvement at the end of two days from this method of treatment, and in about two weeks there was almost complete union.

Dr. CHARLES E. PADDOCK reported a case of placenta succenturiata.

Dr. GEORGE W. JOHNSON detailed five cases of congenital with acquired hernia.

Dr. EDWARD J. BROUGHAM reported a case of carbolic acid gangrene. The patient sustained a slight injury with a knife at the base of the phalanx and fifth metacarpal, and three days after the application of 3 per cent. carbolic acid gangrene occurred.

Washington Obstetrical and Gynecological Society.

The 285th meeting of this society was held on the 7th instant. The President, Dr. T. C. SMITH, read his annual address, entitled

WHAT HAVE YOU TO OFFER THAT IS BETTER?—A QUESTION FOR CRITICS.

He referred to the attitude of the conservative writers, both in medicine and surgery, and drew attention to the injury they did by criticising unfavorably all operative procedures of others, thereby tending to thwart medical progress. He showed how, in early medical history, these conservatives and critics had assailed the work of Ambrose Paré, Gennet, McDowell

and Battey. He extolled the language of Joseph Price, who said "the aim and effort should always be to bring the patient into as normal a condition as possible, and make very improbable the necessity for a repeated operation"; and again, "complete work offers the best chance for complete recovery in about all cases." He admitted that some surgical operations had been done which should have been left undone, so far as the existing state of affairs was concerned, but went on to say that "even these, in the early state of the science, had been beneficial in teaching lessons from which the modern science has been developed." He referred to hysterectomy for fibroids and its early mortality, and compared it with the present death-rate. He referred particularly to the unwise criticisms of our co-associate, Dr. Joseph Taber Johnson, during his early work and asked of the critics what they had to offer as a substitute that is better than the treatment pursued by the surgeons. He referred to the present status of the treatment of unavoidable abortions, tubal diseases and extra-uterine pregnancy, and showed how early adverse criticism had been largely responsible in delaying the acceptance of the modern and successful treatment of these conditions. In conclusion he said: "The surgeon who performs an operation for relief of disease is entitled to just and fair treatment in the matter of criticism of his work. I believe he never removes more than he thinks the case demands, and that he is a better judge of the necessities of the case than the critic who sits at his desk and shoots his arrows, regardless of the harm he may do." He said: "The critic is an obstacle in the way of progress, and while advancing nothing himself, does not want any one else to do that which advances scientific medicine and surgery. In medicine and surgery progress has the right of way, and he who would impede its advance will be inevitably side-tracked. Permit me then to say to those who find pleasure in disparaging the work of others by unfriendly criticism, when you have concluded your strictures on operations devised by faithful men, be kind enough to tell us, in the way of treatment, what you have to offer that is better."

At the conclusion of his remarks a vote of thanks was tendered him, both for his paper and the faithful and efficient manner in which he had conducted the office of president during the past year.

Denver and Arapahoe Medical Society.

At the meeting held October 11, Dr. Wm. P. MUNN read a paper on

THE CHOICE OF ROUTE IN OPERATION OF THE BLADDER.

He said in part: The bladder may be reached for purposes of surgical treatment by the following routes: 1. By the catheter, sound, cystoscope or lithotrite through the urethra, both in the male and female. 2. In the female, by a cutting operation through the anterior wall of the vagina. 3. In the male by aspiration and incision through the rectum. 4. In both sexes by aspiration or incision through the anterior abdominal wall above or posterior to pubic bone. 5. In both sexes, by intraperitoneal incision or aspiration or by urethral catheterization when a prior operative procedure has laid open the abdominal cavity. 6. In the male, by perineal incision which may be directly into the bladder or by prior opening into the urethra. After a careful theoretic consideration of the value of the different routes coupled with a larger clinical experience, the author has arrived at the conclusions that the perineal operation gives ready access and sufficient opportunity for opportunity for operative attack in the following cases: 1. Foreign bodies in the fairly normal bladder; best, surest, safest route. The incision is at the most dependent portion of the bladder, and therefore, nearest to the usual location of stone or any other foreign body; it leaves an open avenue for drainage; the opening is made with the least possible disturbance of the bladder structures, and, lastly, the wound heals with rapidity, leaving no annoying sequelæ. 2. In a moderate percentage of instances of enlarged prostate. 3. Single polypus. 4. For single exploratory incision no other route is justifiable. 5. The prolonged drainage. 6. In dealing with large growths the perineal opening should precede and be used in conjunction with the suprapubic opening to facilitate the manipulations and to permit of proper drainage. As a formal conclusion it may be stated that the suprapubic operation is not often required as a primary surgical procedure, but that its greatest usefulness is when it is resorted to either as a secondary measure or in conjunction with the perineal operation.

Dr. C. A. POWERS, in discussing the paper, expressed himself in favor of the crushing operation, especially in children. He praised, highly, the procedure of distending the bladder with air, especially in cases where the bladder is greatly contracted,

Dr. MUNN, in his concluding remarks, gave the statistics in his own practice: 47 perineal sections with 3 deaths; 9 suprapubic sections with 3 deaths.

Dr. Wm. C. MITCHELL read a paper on "The Gonococcus," which was discussed by Drs. Munn, Stover, Whitney and Axtell.

PRAGTICAL NOTES.

Lymphatic Apparatus of the Uterus.—Peisser has found the lymphatic glands affected in more than 50 per cent. of the cases of carcinoma colli uteri he has examined. This propagation occurs early, while the carcinoma is still operable and the lig. lata are supposed to be still "free." The regional glands should therefore be removed with the neoplasm, which can not be accomplished per vaginam, and renders the abdominal route imperative. He has established by means of injections that the glandulæ hypogastricæ and sacralæ are the first stations of the collum uteri system.—*Munich Med. Woch.*, from *Ztft. f. Geb. u. Gyn.*, xxxix, 2.

Protargol in Ophthalmia.—Darier considers protargol very valuable in acute catarrhal conjunctivitis, which it cures in three days, and also in purulent gonococcus, which it cures in from eight to twenty days. He touches the inflamed surface with a solution varying from 20 to 50 per cent., according to the severity of the case. In a collyrium the dose is only 5 per cent. Protargol (combination of silver with a protein base) is not irritating nor caustic like nitrate of silver. Furst has protected infants from a maternal gonorrhœa with a 10 per cent. solution without the slightest irritation to the eyes.—*Bulletin de l'Acad. de Méd.*, August 23.

The Abuse of Cocain.—Scheppegrell (*Med. News*, October 1), writing on "The Abuse and Dangers of Cocain," attributed the establishment of the cocain habit, in the majority of the cases, to the prescription of the physician, and believes that it should never be prescribed for the patient's use. He has found a peculiar phase evident in New Orleans in the contraction of the cocain habit by the negroes, a few crystals of the drug being snuffed into the nostrils for its exhilarating effects, physical and mental wrecks resulting. He believes the druggist should be compelled to restrict the sale of this as well as of other toxic drugs to the prescription of the physician.

Pernicious Anemia of the Puerperium.—Vinay considers every remedy injurious except arsenic, and to avoid the almost inevitable gastric and local disturbances, he prefers the rectal to the gastric or hypodermic method of administration. Large injections produce intolerance, and he never exceeds five grams. His formula is: four grams Fowler's solution to fifty-six grams aq. dest. The injections are made morning and evening for four days, and then three times a day. In very severe cases he increases the proportion of arsenic: five grams to forty-five grams aq. dest.—*Médecine Moderne*, No. 54.

Hot Air as a Hemostatic.—The jet of hot air from a Holländer apparatus directed upon the bleeding surface of a kidney, liver or severed blood-vessel, will arrest the hemorrhage by the formation of an eschar commencing around the edges and gradually spreading over the entire surface, mechanically checking the flow, in experiments on animals, and Schneider concludes that it would be equally effective on man. The heat is only 39 degrees at 5 mm. from the apparatus, and hence is not sufficient to injure the organ. He found steam less effective, and less convenient, for several reasons, masking the field of operation, etc.—*Semaine Méd.*, August 3.

Progressive Pernicious Anemia.—E. Grawitz relates a number of observations in the *Berlin klin. Woch.*, No. 33, which demonstrate the efficacy of dietetic treatment with an early diagnosis. In some cases repose in bed is the first requirement. Loss of appetite is restored by treating the usual constipated condition; disturbances in the gastric secretions are treated by

stomachica of all kinds and a mixed diet. Treatment in a sanitarium is often indispensable. He considers iron absolutely contra-indicated in the first stages of treatment. Arsenic is cautiously progressive doses, and quinin, are much more appropriate. The effect of transfusion of blood is merely temporary.—*Munich Med. Woch.*

Surgical Treatment of Pericarditis.—Brentano has reported five patients treated by opening up the pericardium, with resection of the ribs, which he considers necessary, as a single puncture will scarcely ever allow the evacuation of the entire amount of pus, and incision without the preliminary resection is much more dangerous and less effective. Pericardiotomy only promises success in acute cases. Two cases of suppurated pericarditis ended in death; two cases of long-existing serofibrinous pericarditis were only temporarily improved; but the fifth case was cured—a 10 year-old girl—pericarditis consecutive to rheumatic endocarditis.—*Deutsche Med. Woch.*, August 11.

A Valuable Disinfectant.—The disinfectant recommended by Krönig and Paul, discovered in the course of their painstaking tests of various disinfectants by the light of the new physico-chemical theories of solutions and electrolytic dissociations, is a mixture of potassium permanganate and hydrochloric acid. This solution kills the most resistant spores from extremely virulent anthrax bacilli in a few minutes, while it is cheap, non toxic, convenient and fully equal to a 5 per cent. solution of sublimate. They ascribe its remarkable microbicidal power to its extremely active ions. As a disinfectant for the hands, for instance, they recommend the formula: 45 c.c. of pure hydrochloric acid; dilute with 1600 c.c. of water; add 500 c.c. of a 5 per cent. solution of potassium permanganate. The solution also stains the skin, but the latter stain is easily removed, with a 1.3 per cent. solution of oxalic acid.—*Ann. de la Soc. Méd.-Chir. de Liège*, June, from *Ztschft. f. Hyg.*, xxv.

Suprapubic Cystostomy for Prostatism.—Poncet has performed this operation 114 times, with 27 deaths, since he proposed it in 1889. The prognosis depends almost entirely upon the condition of the kidneys and other organs. It differs from cystostomy, as the lips of the bladder are sutured to the edges of the incised abdominal walls to form a permanent meatus. It is especially adapted to incurable urinary affections for which he urges its general adoption, recommending an early operation. It has again and again restored elderly men to health, when apparently in the last stages of urinary intoxication. A typical observation is that of a blacksmith cystostomized six years ago, who retains his urine three to five hours and emits it in a stream 30 to 40 centimeters in length, through the hypogastric meatus. Natural miction has never been re-established, as the prostate has remained enormous, fibrous and knobby. Another case, 87 years of age, in acute urinary intoxication with temperature at 40 degrees C., continuous delirium, etc., was relieved at once with cystostomy, and a couple of months later natural miction was restored; the patient is now in good health, a year later. The artificial meatus becomes a fibro-elastic ring, often quite thick, and lined with mucosa throughout. Out of 34 patients who have retained their new meatus, there is continence in 14 cases; partial continence in 7 and incontinence in 13.—*Bulletin de l'Acad. de Méd.*, August 8.

Eighty-Nine Symphysiotomies.—Dr. Pinard of the Baudelocque-Clinic at Paris, has issued a report concerning seven operations by symphysiotomy in 1897, making a grand total of eighty-nine such operations performed in that clinic during the six years, 1892-97. Six of the cases were examples of rickety, flattened pelvæ, while the remaining case was one of a Naegelé oblique pelvis. Of the mothers, two were primiparæ and five multiparæ; of the former one died from sepsis and acute albuminuria, the latter complication being present upon her admission to the clinic. All the children were born alive, three being delivered by forceps and four by version. In one patient the

operation was performed for the second time, her second pregnancy having been terminated by symphysiotomy in 1892. At the first operation a tear occurred through the anterior vaginal wall into the operation wound, and at the second operation a similar accident happened in spite of every care being taken to prevent it. The urethra and bladder, however, escaped injury and the wound healed well. In the event of this patient again becoming pregnant Pinard considers that Cæsarean section would be indicated on account of the cicatricial tissue present in the anterior vaginal wall. That symphysiotomy may produce some permanent enlargement of the pelvis, seems to be shown by the fact that four of the patients delivered spontaneously during the year had previously had symphysiotomy performed upon them; the report is of interest as enabling us to watch the progress of the operation. Pinard has no hesitation in saying that in any future history of symphysiotomy a very important place will have to be assigned to the work done at his clinic.—*London Lancet*.

Extirpation of the Rectum.—For inflammatory strictures this is not proving as successful as anticipated. A study of 69 cases in the *Presse Méd.* of September 14, shows that 10 died from the operation; 4 in the course of the year, from pneumonia, pulmonary tuberculosis, prolonged suppuration or puerperal infection from the sacral fistula. The stricture recurred in 12 out of 24 cases followed over a year. Incontinence was almost the rule, except in very constipated patients. The suppuration was almost certain to persist, and with the Kraske operation the chances were in favor of a sacral fistula (7 in 15 cases.) A number of patients have incontinence whenever the matters are soft, and obstruction when they are hard, with a constant flow of pus. The article concludes with a plea for colotomy and an artificial anus, easily kept clean and the only chance for the inflamed rectum to heal spontaneously, when natural conditions can be restored. "When dilatation, combined with antiseptic lavages of the rectum, does not produce the desired effect, temporary or permanent colotomy is the best palliative. Extirpation has proved impotent to cure and should no longer rank as an approved radical method." . . . "Even in tuberculous lesions the suppression of local irritation by colotomy favors the spontaneous cure of the torpid lesions."

Panas' Total Combined Keratectomy.—This operation avoids all the dangers and deformities of enucleation. It is especially adapted to chronic glaucomatous and painful eyes, as it ends the pain and glaucomatous condition entirely and permanently. It leaves a round, smooth stump, fully three-fourths the size of the normal eye, movable and unatrophied, over which the artificial eye-cap fits so perfectly that its artificiality is scarcely perceptible. The fears of sympathetic ophthalmia are exaggerated in these days of asepsis. He has only encountered one or two cases in the last ten thousand at the Hotel Dieu. The operation as he has performed it on 200 patients, with or without staphyloma, consists in first passing a Reverdin needle through the sclero-corneal limbus behind the iris and lens, carrying a silk thread, which is left for the first stitch of the suture and tied if the vitreous shows a tendency to escape. The cornea is then removed with a Graefe knife held flat, cutting it into fifths and snipping off the last fifth with the scissors. The iris is removed with the cornea if adherent, otherwise he performs iridodialysis. The lens is then removed with the spoon, the escape of the vitreum being carefully prevented. The stump is sutured with a couple of stitches in the sclerotic and rounded off. The surface is rinsed with a solution of mercuric iodid, dusted with iodoform and a roll of iodoform gauze applied with a dry cotton bandage outside. The threads are removed the seventh day. The danger of hemorrhage is very slight—3 cases in 200. If it occurs, the eye can be enucleated or eviscerated. The latter leaves a fairly good stump. He mentions in his communication to the Académie de Médecine (*Bulletin*, August 23), that Pritchard was the responsible author of enucleation, but that we have now progressed beyond it, Keratectomy, effective and harmless, should take its place in many cases—another forward stride in ocular surgery.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2 00
Single Copies	10 Cents

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No. 61 Market Street (Occidental Bldgs.), Chicago, Illinois.

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SATURDAY, OCTOBER 22, 1898.

THE POWER OF EPITHELIUM TO LIVE OUTSIDE
OF THE HUMAN ORGANISM.

It is a well-known fact that when general death of the body occurs all its cells do not at once die. Every surgeon knows that transplantation with bits of skin that have been removed from the body for some time give very good results. Pieces of skin from dead bodies have been observed when placed on wound surfaces to form substantial and permanent cutaneous covering. WENTSCHÉ transplanted skin successfully after having kept the pieces for twenty-four to forty-eight hours in physiologic salt solution. GARRÉ, who examined into the histology of the healing process of transplantation, found that large cell masses could maintain their life and power of proliferation for more than forty-eight hours, although they were simply made to adhere to a wound surface and were without demonstrable blood circulation.

Recently LJUNGGREN¹ undertook a series of experiments for the purpose of further studying the faculty of epithelium to preserve its vitality outside of the organism, especially in relation to transplantation. He carefully preserved more than forty fragments of skin, most carefully disinfected, in glass tubes containing sterile ascitic fluid, for from two days to six months. At different intervals microscopic sections were studied with a view to ascertaining the histologic condition of the pieces; to his great surprise he found that even for as long as three months the epithelial cells on the deeper layers showed well-stained nuclei and a good protoplasmic structure.

LJUNGGREN made twenty-two efforts at transplantation with these pieces, and in sixteen instances the immediate results seemed to be wholly successful; in three cases, however, the grafts died, in two they were absorbed by the surrounding granulations, but in eleven instances permanent skin was formed. The longest time that these pieces had been kept in sterile ascitic fluid was one month.

Finally, in order to prove definitely that the epithelium of the transplanted preserved epidermis played an active part in the growth of new skin and acted not merely as protective coverings under which cells from the epidermis at the margins of the wound could creep, he placed some of the preserved pieces directly upon a muscular surface and 10 cm. from the cutaneous margins, that is at such a distance from the skin that its cells could not possibly become mixed with those transplanted; some time after the transplantation he removed small pieces for microscopic examination, and it was found that there had taken place a marked proliferation of epithelial cells with numerous figures of nuclear division. The epithelial cells not only grew over the surface of the wound but also showed a tendency to penetrate into the granulation tissue in a way that recalled the appearance of the development of a beginning carcinoma.

These observations, although not by any means sufficient to permanently decide the interesting biologic problems involved, nevertheless seem to us to indicate the value of further and more extended and diversified experiments along these lines.

EOSINOPHILIA.

When it was found, not a great many years ago, that the presence of eosinophilic cells in the blood was not only not a characteristic symptom of leukemia, but that these cells were a constant constituent of normal blood, interest in them was to a large extent dissipated. Only of late, since the findings of OSLER, THAYER and CABOT, of an enormous increase of these cells in the blood of patients afflicted with trichinosis, has anything like general interest been excited. But during this interval much work has been accomplished in blood histology and pathology, and not a few important points have been established as regards the eosinophiles. While the eosinophiles may be always found in the healthy circulating blood, yet their proportion to the various forms of white cells exhibits a considerable range, from one-fourth of 1 per cent. In infancy even this ratio may be exceeded, so that we must not look upon an eosinophilia at that period of life, unless very pronounced, as pathologic.

While no definite classification of the causes of eosinophilia can be attempted, yet it seems to be particularly liable to occur when there is some disease affecting the osseous structures, as in osteomalacia and bone sarcomata. It has been shown by NEUSSER and others that even when eosinophiles are very

¹ Nordiskt Medicinskt Archiv, 1892, Häft 2.

scanty in the blood, they may exist in considerable numbers in the marrow of bones (and in other internal locations as well), and many have thought that their appearances in the normal circulating fluid is purely accidental. The very large proportion of these leucocytes in infant's blood may, as suggested by CABOT, have some connection with the very rapid progress of growth in the osseous structures at this time of life. In diseases of the spleen, many skin troubles, and affections involving the sympathetic system and the organs of generation, there may be eosinophilia. Having determined by a differential count that this change does exist, it may be of aid to us in various ways: for instance in hesitating between a tumor of one of the genital organs and a tumor of another part of the body, from what we have said before, an increase in the eosinophiles would favor the former; in a similar manner an eosinophilia in malignant disease would open the suspicion of involvement of bone either by direct extension or by metastasis.

As regards prognosis, eosinophilia can not always be looked upon as a bad omen. Even in such hopeless cases as leukemia, it is most conspicuous in the mildest type of the disease, the spleno-myelogenous; while in the other blood diseases, as pernicious anemia and chlorosis, it indicates a comparatively favorable course. Mention was made above of the presence of this symptom in trichinosis. In this disease the proportion of eosinophiles is largely in excess of that of any other disease as far as we now know. Indeed, in one of THAYER'S cases as high as 62 per cent. was noted during the course of the acute symptoms. In other cases in which tentative diagnosis of typhoid fever and malaria have been made, a blood count yielding an eosinophilia of 20 per cent. has changed the diagnosis to trichinosis, which examination of portions of muscle obtained by puncture has subsequently confirmed. In all these cases of trichinosis, it might be noted, a pronounced leucocytosis has always been present and the eosinophiles have gradually lessened with the disappearance of the acute symptoms.

HOMICIDE BY MICROBES.

The suspicious fear of the unknown which causes primitive races to believe that natural death can not occur, and that all deaths must be due to some malign influence, either supernatural or homicidal by poisoning, survives in this last phase among the English-speaking nations. From this comes the detective mania so often exhibited by the press and the practitioner of "crown's-quest law," who have been ridiculed since the time coroners were originated by the Norman kings to secure forfeiture of goods of felons for royal benefit. (Green's History of the English People, Vol. i.) In English-speaking countries, the coroner, as a rule, true to the detective theories which have given him birth, generally chimes in with the press in its

detective predilection for criminal accusation, in violation of the central principle of the English common law: that every crime must be proven beyond a doubt, and that every circumstance that can be construed reasonably in favor of innocence must be so construed. As a result, whenever a supposed crime due to possible negligence by the paternal powers of the state, ignorantly supposed to be present in English-speaking countries, occurs, the press and the coroner seek for a scapegoat, and generally find it in the long-suffering, public spirited medical profession. Denunciation of it does not affect any plutocratic "vested interest," as would denunciation of newspaper advertisers.

An illustration of the primitive epidemic terror anent poisoning and of the tendency last mentioned recently occurred in England. Sir JAMES CRICHTON BROWNE, one of the English-speaking authorities on forensic medicine, delivered an address before the British Pharmaceutical Society, in which he stated that there were organic poisons known to physicians which could be used with impunity by any criminal so disposed. By keeping his own microbes, a connoisseur in poisons could, without the slightest fear of detection, slaughter hundreds of innocent persons. The statement of such facts was fully in accordance with the scientific principle that science, like fire, purifies everything, and that exact truth must always be known so that its effects can be fully guarded against. It is the unknown nature of poison which so frequently leads the poisoner to use arsenic and strychnin, when with a little knowledge he would be deterred from such crime by his certainty of detection. Without any regard for scientific truth for the medical profession or the interest of justice as already defined in the English common law, A. BRAXTON HICKS, coroner for the Kingston District, Surrey, England, in the course of an inquest held October 6, on the body of a country official who died from the effects of an untraceable poison, took occasion to score CRICHTON BROWNE'S lecture in the strongest terms. "Such talk," he said, "was not likely to further the ends of justice. Dr. BROWNE should have thought twice before disseminating such knowledge."

It is a singular illustration of coronial tendency to omniscient ignorance of forensic medicine and its literature that Coroner HICKS, who has been in office many years, should have forgotten a famous typhoid epidemic at Buenos Ayres half a decade ago. This was distorted by the English-speaking press into a magnificent canard of poisoning by microbes. According to the newspaper story, a merchant of that city, being upon the eve of bankruptcy, invites all his creditors to his house, instructing them to bring their receipted accounts. Before proceeding to business the creditors are invited to a choice little dinner, including several kinds of liqueurs. The Creme-de-menthe is iced with cubes of frozen water containing typhoid and colon bacilli galore. Every

one of the creditors dies from typhoid fever before leaving the house. The crime would never have been detected, according to the newspapers, but that the butler ate one of the cubes. The little touch about instantaneous deaths from typhoid in this tale should have destroyed its credibility. Despite this, it passed muster and was widely quoted in newspapers, and even callow medical journals, with comments on the increased powers given the poisoner by bacteriology, and diatribes on the danger of such knowledge being communicated to the public. Coroner HICKS never scored the skilled "wanderer from the hackneyed limits of the actual," who did this tale evolve from the depths of his inner consciousness. OUIDA, in one of her splenetic, zoöphilic, anti-vivisection degenerate outbursts, wrote a most lurid novel called "Toxin," in which a vivisectionist was led by experiments on animals to the murder of human beings by the use of hypodermic injections of pathogenic bacteria and their toxins. The picture of the vivisectionist physician is a greater caricature of the scientific experimenter, if that be possible, than WILKIE COLLINS' opium vision of the vivisectionist physician in "Heart and Science." Another novel issued at an earlier time, dealing with the same problem, did greater justice to the physician. The use of pathogenic bacteria for homicidal purposes is by a degenerate, in contrast with whom is a physician replete with the altruistic impulses of the medical profession. This novel—GRANT ALLEN'S "Devil's Die"—was published nearly a decade before OUIDA'S "Toxin," which it seems to have suggested. It was widely reviewed in the newspapers of the English-speaking countries as well as in the literary reviews. The story reeks with bacteria. One very dramatic incident turns upon the attempt of the degenerate physician—who is a skilled bacteriologist—to poison his wife by the toxins and germs of cholera for the purpose of marrying a woman novelist. The details of the culture of bacteria are given. The methods of their hypodermic administration are fully described. The physician is a descendant of a cruel East Indian woman who starved a slave girl to death in a cellar beneath her own room so that she might enjoy her death-cries. The slave she regards as a rival claimant of the affections of her European husband. The character of her descendant, the physician, which is of the unstable degenerate type, is chargeable, according to the "Devil's Die," to defective inheritance, not to scientific training. In accordance with GRANT ALLEN'S notions of destroying race prejudice, an altruistic black Mohammedan physician of East India extraction is introduced as a foil to the degenerate before mentioned. The two are friends. Both work at the same problems in bacteriology and biology. The first evidence of ruthlessness of the degenerate occurs when a sot-tish woman of the slums is brought to the hospital, badly injured by her husband for wilfully and bru-

tally slashing her child with a glass bottle used as a candlestick. Together with the injuries she is suffering from cholera nostra. Her death from the latter is essential to the demonstration of a bacteriologic theory which the degenerate has evolved. She rallies rapidly from the wounds and the cholera. The degenerate, fearing for the success of his theory, sews a rubber bag in his coat, fills it with ice and, despite the precautions of the Mohammedan, who suspects him, succeeds in giving the woman a fatal chill with the hand which he has concealed in the ice bag. The woman dies. His bacteriologic theory is laid before the chief London medical society and endorsed by a thinly-veiled wraith of Sir WILLIAM JENNER. Unfortunately the husband of the degenerate's victim is indicted, tried and convicted of murder. Fortunately, however, for the degenerate, the trial violates the legal principle that the cause of death must be proven beyond a reasonable doubt. The husband is therefore pardoned. The degenerate gains great praise for his theory and is made by Queen Victoria professor of etiology in a London university. He takes charge of the daughter of the murdered woman and is esteemed for his kindness to her. She grows up perfectly devoted to him and learns the technique of bacteriology. On visiting Cornwall, the degenerate and his Mohammedan friend rescue the crew of a dismantled ship laden with cholera cases. The cases are taken into the house of a rector of the vicinity. The degenerate and the Mohammedan both fall in love with the rector's daughter. The Mohammedan, remembering the slave girl's story, is apprehensive of the future of the rector's daughter in case she marries the degenerate. The marriage, however, occurs and proves happy for some years, when a female novelist appears on the scene, with whom the degenerate falls in love. Determining to kill his wife, he substitutes a watch-glass containing cholera germs and toxins for a similar glass supposed to contain morphin. The Mohammedan detects and changes the glasses which, however, are rechanged by the slum girl bacteriologist before mentioned. The injection does not prove fatal, but the degenerate infects himself and dies from cholera. The story is so told as to show that the injection of pathogenic bacteria and their germs is not always a success from the homicidal standpoint.

The attempt by Coroner HICKS to limit the statement of scientific truth before a scientific body, can not but remind the student of forensic medicine that the position of the coroner as to forensic medicine is still as sapiently sciolistic as in the days of SHAKESPEARE, who thus ridiculed it in Hamlet:

2d Clown.—But is this law?

1st Clown.—Ay, marry, is't, crowner's-quest law.

Disappearance of Tetanus.—Benicio reports two cases in which the tetanic syndrome vanished with the appearance of measles, and Costa another in which it vanished in the course of an attack of violent diarrhea.—*Brazil Méd.*, September 1.

"THE MOMENT AND THE ARTICLE OF DEATH."

It is not an uncommon practice in recent years for writers of fiction to attempt to portray the feelings of the dying in the supreme moment when the passage from the known to the unknown takes place, especially in case of violent or so-called instantaneous death. *TOLSTOI*, in his "Sevastopol," was perhaps one of the most successful in this line, but he has many imitators, some of them of very recent date in the literature incited by the recent military operations in Cuba and in the Soudan. It is a curious fact that none or almost none of these imaginative writers have made the feelings of the subject in the instantaneous forms of death to any extent painful. It would seem sometimes that the exaltation or intensification of feeling, the illusions of time and space that they describe were derived from some haschisch reminiscences, or something of the kind, rather than from any veritable experience narrated by those who have been very near and yet escaped death, the most obvious and natural source of data for building or modeling upon in such a matter. The popular notion, judging from the sensational fiction, which presumably meets it best, is apparently that there is a hyper-consciousness at the moment of sudden death, but that the element of coarse material pain is generally lacking.

There is a certain reasonable ground for this belief in such facts as those of electric shocks not apparently destroying consciousness but yet benumbing sensation, and other similar phenomena. The facts of sudden death, themselves, so far as we can appreciate them objectively, do not indicate any probability of serious suffering or even of retention of any degree of conscious feeling whatever in most cases. The imaginative creations of fiction writers have no real basis in scientific observation or experience so far as they attempt to portray in elaborate detail the last surviving consciousness of the victim; the fact is, we have no evidence or reasonable presumption that such exists, or that sudden death in appearance is not equally sudden and complete in reality.

The only practical importance of this question, however, is in its relation to euthanasia, and as regards this, for the most of mankind, even this practical importance does not exist. Men do not seek sudden death often for the purpose of avoiding the long drawn out pangs of ordinary dissolution; the normal man clings to life even with suffering. The conscientious physician who attempts to numb with anodynes the tortures of fatal illness does so in fear and trembling lest he may inadvertently cut short the allotted span of life of his patient; it is only with condemned criminals and those among them whose offenses have been so extreme that it is deemed right and expedient to put them out of existence, that modern humanitarianism can have full play in assuring them an absolutely painless exit from this life. This is, in its way, an anomalous fact, and it need not be objected to, as it is

in accord with the spirit of the times, which eliminates the retaliatory or revengeful element as much as possible from legal penalties, but it may be well to ascertain whether there are grounds for the belief that in any modern form of execution the element of painfulness exists to any serious extent. The subject was discussed editorially in this *JOURNAL* a few months since and some apparent objections to present methods strongly stated. It was shown that none of the present methods fully satisfied the humanitarian demands; that there was an apparent possibility of some discomfort, if not of actual pain, in every method of death that had been devised or prepared as a penalty for capital crime. Even electrocution, which was adopted in New York as the method best satisfying modern ideas, has its hitches and delays, and death is not always clearly instantaneous, and now comes the report from Paris, through the public press, that a French physician has ascertained that even decapitation by the guillotine, which was supposed to be as nearly as possible an insurance of instant death, is anything but a success in that regard, and that decapitated heads retain a consciousness and exercise of their special senses for very appreciable periods of time after the operation. According to the authority referred to, the brain retains blood enough for its nourishment for an hour after decapitation and absolute death does not occur for three hours. To be sure, this contradicts well-known pathologic facts and theories, and the scientific exposé of his views and the grounds on which they are based has not reached us, but the statements go the rounds and excite comment and belief. In no way would it seem that capital punishment can be carried out in an unobjectionable manner.

The real question is, however, does actual pain exist at the moment of death; are not the senses so benumbed that the subject feels no pain, and do we not secure this in the methods of sudden taking off used in legal executions? The time-honored method of hanging is as barbarous as any in use in civilized lands, in appearance at least, yet those who have experienced it and been resuscitated do not as a rule describe it as agonizing—some of them, indeed, have described actually agreeable sensations, especially of a sexual order, and the very common phenomenon of priapism in the hanged would suggest that such may be very general. A long drawn out hanging is not, however, a desirable mode of death in a theoretic point of view and the method is open to the charge of being behind the age and in a sense barbarous. All methods that practically insure instant death, as do electrocution and decapitation, can not be really painful, for there is no reason to believe that the actual moment of dissolution is often, if ever, painful in itself, and if divested of needless accessories of publicity, etc., can hardly be called barbarous, that is, if the legal taking of human life is not itself a barbarism.

The chief barbarism and torture of modern methods of dealing with capital crime is in the law's delays, the false hopes aroused, the long drawn out preliminaries, more than in the final execution of the offender. The law plays with the criminal like a cat with a mouse and in so doing loses half the salutary terror she should excite against the commission of crime, while it aggravates the mental agony and suspense of the formally convicted. And for all the rest of the world euthanasia is, in all probability, needed more in the precursors of dissolution than in the actual moment of death.

DESTRUCTION OF AN ARMY HOSPITAL BY STORM.

The destruction effected by the storm of October 2 near Fernandina, Fla., has not been noted in the newspapers, as telegraphic and railroad communications were interrupted for so long after the event, but reports recently received by the War Department show that the hospital of the Third Division, Fourth Army Corps, was completely swept away and the military part of Fort Clinch materially damaged. The weather was threatening during the night of October 1, and the storm broke with great fury about 7 o'clock next morning. The barometer stood at 29.02 inches, the wind was estimated at 100 miles per hour and the sea rose to such an extent as to constitute what is usually called a tidal wave. Fernandina suffered severely. Many buildings collapsed before the force of the gale. The water was six to eight feet deep over many of the docks, and tugs and other light vessels were stranded in the streets of the town. The quarantine station was washed from the face of the earth, as also was the hospital of the Third Division of the Fourth—General COPPINGER'S—Army Corps. The hospital was on the beach, about two hundred yards from the surf, but separated from the ordinary high-water line by a range of sand-hills. Fortunately most of the patients had been sent by hospital trains to the general hospital, Fort McPherson, Ga., on September 27, as it was the intention to abandon the site at Fernandina. In a few moments after the onset of the storm the waves broke through the line of sand-hills and submerged the tents used as offices and officers' quarters. An effort was made to save personal effects and the hospital records. The latter were recovered and placed in the pavilion wards, which at the time were believed to be free from danger. But as it soon became apparent that these would be swept away, the prompt removal of the patients was effected by litter. They were carried to the Strathmore Hotel, some four hundred yards distant, but by the time this was accomplished the pavilions were destroyed and the hospital corps barely escaped with their lives in their unsuccessful efforts to recover the books of the establishment. The water advanced on the hotel in which refuge had been sought, and the north end of it collapsed, while the south end remained com-

paratively secure. Meanwhile, about 9 o'clock, an official of the Florida Central and Peninsular Railroad Company, realizing that the sick, the attendants and others at the hospital would be in great danger, took an engine and two freight cars, and calling for volunteers, succeeded in reaching the hospital, although the fire in the engine was nearly extinguished by the high water on the track. He succeeded in carrying them to a high ground on the track, where they were safe, and whence, late in the evening, some managed with difficulty to reach Fernandina while others remained on the cars during the succeeding night. Major W. F. CARTER, surgeon U. S. Army, chief surgeon of the hospital, reports that his men behaved with the utmost coolness and made strenuous efforts to save property and lives. They were up to the armpits in water in the work of rescuing women and children.

Fort Clinch, an old artillery post, garrisoned for the first time in many years when war was declared, was greatly damaged by the storm of October 2. As at most of these old posts which have been recently brought into active service, the buildings were decayed and unfit for occupancy except under conditions of war. The water rose to five feet in the quarters. The medical officer, Dr. FRANCIS LIEBER, was sick with typhoid fever at the time and was awaiting the arrival of Dr. SHATTUCK from Hilton Head to relieve him. After the storm Surgeon CARTER, of the division hospital at Fernandina, sent one of his assistants, Dr. CHMELICEK, to bring Dr. LIEBER and his sick men to the city, about seven miles distant. Dr. LIEBER died on October 11. He was the son of Gen. NORMAN G. LIEBER, judge advocate-general of the army. There is no doubt that the excitement occasioned by the storm had a harmful influence on the progress of the sickness.

RED CROSS AID AT SIBONEY.

The story of the work of the Red Cross at Siboney, when the Spanish troops interfered with the march of the Rough Riders and the Colored Cavalry to Santiago, was told very extensively at the time, and the refusal of the Army Medical Department to accept proffered assistance met with severe comment in many quarters. To refer to it at this late date looks like being behind the times, but the fact is we have only now heard from the other party concerned. The accounts already published came directly, or indirectly through the interviewer, from Red Cross sources, but now Colonel VALERY HAVARD, who was chief surgeon of WHEELER'S Cavalry Division, considers it proper for him in the interests of truth and justice to make to the Surgeon-General a statement of the facts as known to him, the officer most concerned. His tale is interesting, otherwise, as presenting a graphic and unvarnished picture of the difficulties of the

medico-military situation and the pitiable condition of our wounded or sun-stricken soldiers. He says:

The first division of our troops landed at Baiquiri and advanced swiftly to Siboney, which it occupied without resistance. On the 24th, the transport *Alleghany*, upon which I was, with other members of General Wheeler's staff, steamed down to Siboney, but it was only on the morning of the 25th that I was able to make a landing. This landing was accelerated by the news, brought by a newspaper man, of the fight which had taken place the day before in the jungle of Guacima. Fortunately we had kept on the upper deck, in an accessible place, three medical and surgical chests, quite a lot of additional articles, a small bale of blankets and a few litters. All these we quickly transferred to a row-boat and successfully landed, so that there was no suffering, at any time, among my patients due to any want of medical attendance, medicines or dressings. We also had an abundance of rations, which were cooked and served without counting.

A large store-room, much dilapidated but with plenty of doors and windows, seemed to be the best place for our provisional hospital; I already found a few patients there and hastened with one assistant surgeon, two acting stewards and four hospital corps men, to make the place as clean as possible. The wounded, some forty in number, were brought in during the whole day of the 25th, on all kinds of improvised litters, about five miles over a very muddy trail, in the heat of a tropical jungle, but all arrived safely. This transport by hand of the wounded by their devoted comrades struck me as hardly less heroic than the battle itself.

We laid the patients in two rows upon the hard wooden floor, with hardly room enough to pass between. We were almost entirely destitute of cots and blankets, the few litters we had brought from the ship being used as bunks for the worst cases. With and after the wounded, came in a steady stream of cases of heatstroke, remittent fever and dysentery. Soon the floor space in the main room was crowded, the patients lying side by side. Other adjoining rooms were utilized, light and ventilation being obtained by knocking down the partitions; but before long the whole building was overflowed and patients had to be placed upon a narrow rickety porch, more or less exposed to rain and sun. To make matters worse, cases of measles came and had to be provided for. This we did in a nearly contiguous rum-shop, exceedingly filthy but with one front room susceptible of some degree of cleansing. In this we crowded twenty-six patients, several sleeping on the large counter.

Our kitchen arrangements were a comparative success. We had an active and intelligent cook who knew how to hustle in an emergency. He got together the necessary utensils, and enough of substantial food was provided from the first. An unexpected and much prized discovery in the village, was a half dozen casks of excellent and wholesome Spanish wine, which was turned over to the hospital and probably saved several patients' lives.

However, our position was pitiful; the patients lying on the floor, mostly in their trousers and flannel shirts. With few exceptions they had thrown away blouse, blaukets and ponchos. The blankets we had brought with us did not go far in this great need. The days were very hot but the nights unexpectedly cold and some thick covering was required for comfort. As already stated, we had nothing better to feed these men than the ordinary articles of the soldier's ration, with but few delicacies, which did not last more than a day; but notwithstanding this destitution, I do not recall that a single man brought into that building died there. In two or three days the hospital ship *Olivette* arrived and most of the wounded were carried upon her. On the 29th I transferred the few remaining patients to Dr. LaGarde and rejoined my division at the front.

From the beginning, Miss Clara Barton's ship, the *City of Texas*, lay in the Bay. Realizing the futility of expecting stores from the hold of our own ships, although anchored only a few yards from shore, I rowed to the *City of Texas* and called on Miss Barton the day after I took charge. She received me kindly, listened to my tale of suffering and promised to send some cots, blankets, and whatever food stores for the sick she could spare, the primary object of her charity, as she explained, being the Cuban rather than the American soldier. She was as good as her word. Only a few cots came, but the blankets were nearly sufficient to give one to all patients who were without any.

Next day, some of the members of her staff visited the hospital and, in my absence, asked my assistant what they could do for the comfort of the patients. This assistant took upon himself to decline their kind offer of services, not even notify-

ing me of the occurrence. Here I may remark that I was surprised the gentleman who accompanied the ladies should not have inquired for the officer in charge of the hospital and responsible for it. Probably I was stealing a nap in some corner and could easily have been found. Therefore, I was amazed when, later in the afternoon, an elderly lady and a younger one appeared, both meeting me in the middle of the main ward with marked fridity of manner and addressing me with unmistakable acerbity of tone. Sweeping their arms along the rows of patients, they asked me how I could stand unmoved at such a pitiful sight and scorn assistance when I stood in need of everything. The younger lady was particularly persistent in discharging her injured feelings upon my innocent head, and it required considerable self-control not to betray myself into an expression of impatience. They told me all that they had accomplished at the Cuban hospital, half a mile away; how the floors had been scrubbed, fresh linen put on the beds and every patient made comfortable; that it was a shame they should not be allowed to do the same for the American soldiers. I succeeded, in time, in making them understand that a very unpleasant mistake had occurred, for which I was exceedingly sorry but blameless; that, on the contrary, I had, from the beginning, been hoping for their help and was ready and anxious to receive it at any time, the sooner the better. One of the Red Cross gentlemen joined us at this time and I offered him the same explanation and extended the same request. It was then agreed that the ladies would come the next day. They accordingly appeared in the forenoon and I showed them the uninviting field of their volunteer labor. The inquiry was naturally made, where they could find a room for themselves. I told them that there was absolutely none in the two buildings occupied by the patients, the medical officers taking chances at any unoccupied part of the porch. I took them about four hundred yards to a barn which had a habitable room, or rather a room which could have been made as habitable as could be looked for at that time and place. They consulted among themselves, gave me some evasive answer and went to the Cuban hospital, where they remained. Never afterward did they return to my hospital or offer personal services. In other words, to speak plain truth, an earnest appeal was made to them and they did not respond. Their reasons may have been good and I never questioned them, but I have wondered why in their accounts of those painful days, I am blamed for refusing the services of those ladies when, in fact, they refused to give the services that were asked.

This incident did not, however, alter my high appreciation of the Red Cross. Even at Siboney, if I missed the deft fingers of sympathetic nurses, I received substantial help in other ways. Later, at the field hospital, on the Santiago road, after the dreadful days of July 1 and 2, when I saw Miss Barton, with another lady, arrive on an army wagon over one of the worst roads in the world, and, without any rest, go to work and prepare soup over a camp fire, I realized that a society inspired by such a leader could not help being fruitful of good results. Therefore I obeyed a very natural impulse when, at Santiago, the day before her departure, I called on Miss Barton and, in the name of the Medical Department, expressed to her my grateful acknowledgments for all her society had done for us in our times of need.

CORRESPONDENCE.

For a National Bureau of Health.

DETROIT, October 14, 1898.

To the Editor:—It is now the time of the year that the medical men of the United States should be sounding the candidates for the office of United States Representative as to the position they are going to take upon the question of establishing the National Bureau of Health.

The Wayne County Medical Society of Michigan, the largest medical society in the State, excepting the State Society, passed resolutions last evening, appointing a committee to look after this matter, and also to inquire into the position that the State Representatives will take on this matter when the selection of United States Senators goes before them. Individually, several members of our Society have also taken pains to see various prospective candidates so as to place this matter before them in such a light that they may act intelligently upon the question when presented to them; and if a

candidate refuses to co-operate with us, then it is proposed to "snow him under" at the polls.

I am satisfied that had this National Bureau been formed a year ago much of the terrible deprivations and sufferings that overtook our boys in the field would have been largely reduced; for had President McKinley had at his elbow a man in touch with all the leading health organizations of the States, as he would have, had this Bureau been formed as the Committee of the AMERICAN MEDICAL ASSOCIATION had it mapped out, a better selection for Army camps would also have been made.

While I do not wish to criticize at all the work of Surgeon-General Sternberg—for I consider it magnificent—yet, at the same time, I feel that had he had the aid of some one at headquarters, in the President's Cabinet, who was a careful, conscientious medical man, that the medical record of the army would not have been surpassed in the history of active military campaigns.

With this view, I ask your readers everywhere to put into operation the necessary measures for explaining these matters to the Congressional candidates, and for those of the State Legislature, so that in the coming year our representatives can work more in harmony upon this all-important medical question—the establishment of a National Health Bureau.

Some of the present United States Senators and Representatives are warmly in favor of the bill advanced by the Committee of the AMERICAN MEDICAL ASSOCIATION, introduced by Senator Spooner, and we are satisfied that many of the other members of both the House and Senate would be as warmly committed to its provisions if they only knew its far-reaching beneficial results.

Yours truly,

C. HENRI LEONARD, M.D.

Another Cataractous Family.

WHEELING, W. VA., Oct. 15, 1898.

To the Editor:—About two years ago, in the *New York Medical Journal*, I reported "A Cataractous Family," in which the mother, three daughters, and possibly two sons, have had cataracts at about the age of 40.

I operated today on a mature cataract in the right eye of a man named Reason Goddard, farmer, aged 67. It had first begun to dim his sight sixteen years ago. One in the left eye is about half formed.

His father had cataracts in both eyes, well-matured, when he died at the age of 68.

An older sister of the patient was blind from cataract and was operated on at about the age of 50.

Another sister, aged about 60, has a mature cataract in the right eye.

Two male cousins, sons of his father's brother, had cataracts in both eyes when about 60 years of age.

JOHN L. DICKEY, A.M., M.D.

SOCIETY NEWS.

Postponed.—The Southern Surgical and Gynecological Association has postponed its Memphis (Tenn.) meeting until Dec. 13, 14 and 15, 1898, on account of the prevalence of yellow fever.

American Microscopical Society.—This society at its recent annual session, elected the following officers for the ensuing year: President, Dr. William C. Krauss, Buffalo; first vice-president, Prof. A. M. Bleile, Columbus, O.; second vice-president, Dr. G. C. Huber, Ann Arbor, Mich.; secretary, Prof. Henry D. Ward, Lincoln, Neb.; treasurer, Magnus Pflaum, Pittsburg; executive committee, Prof. S. H. Gage, Ithaca, Dr. A. Clifford Mercer, Syracuse, and Dr. V. A. Moore, Ithaca.

American Electro-Therapeutic Association.—This association, at

its eighth annual meeting in Buffalo, N. Y., held September 13, 14 and 15, elected for president, Francis B. Bishop, Washington, D. C.; vice-presidents, Ernest Wende, Buffalo, N. Y.; William P. White, Boston, Mass.; secretary, John Guerin, Auburn, N. Y.; treasurer, Richard J. Nunn, Savannah, Ga.

Wayne County Medical Society.—At the regular meeting, held October 13, in Detroit, Dr. K. Gunsolus read a paper on "Cranial Abscess." He said that, in the early '70s, when he first began to practice medicine, he passed through an epidemic of cerebrospinal meningitis, in Monroe County, Mich. The epidemic began in the spring of the year and continued with more or less severity for about a year. Great numbers had been attacked and the mortality was high, many of the deaths being due, no doubt, to the formation of pus in the cranial cavity. No attempt at relief by surgical interference had been done, for brain surgery was then in its infancy. While there is an increasing field for the general surgeon in this branch of science, there is more work and more attainments to be accomplished by the ear specialist in this direction than any other, for it is conceded, and statistics show, that more than one-half of the cases of cranial abscess arise from a suppurative process in the middle ear. As to the other causes of cerebral abscess, we have first, traumatism, more frequent than severe, though it may follow a slight injury and a long while after the injury has been received. In these cases the abscess is always found at the seat of injury. Another cause of cerebral abscess is caries or suppurative processes in the orbital cavity, the antrum of Highmore, or the nasal cavity. Boettcher reported a case where a cerebral abscess was secondary to an abscess of the lungs. Lastly, there are the so-called idiopathic cases, which some so stoutly deny having any existence. The doctor then entered into the symptoms, including the localizing symptoms by which it is possible to tell more or less accurately the location of the abscess, enumerated the diseases from which cranial abscess should be differentiated, and gave the treatment, which is the evacuation of the pus with good drainage, as in abscesses elsewhere. Drugs of any description amount to nothing.

NECROLOGY.

H. A. GILMAN, M.D., for many years superintendent of the Hospital for the Insane at Mount Pleasant, Iowa, died October 9. Dr. Gilman was a man of rare executive ability, and came to Iowa from the institution of like nature at Jacksonville, Ill., where he had been assistant physician fifteen years. The hospital at Mount Pleasant stands as a monument to his general capabilities as a manager. He was graduated from Dartmouth Medical College in 1867. He was 53 years old.

NATHAN SMITH LINCOLN, M.D., University of Maryland, 1852, a well-known physician of Washington, D. C., died there October 3, aged 70 years. He was an emeritus professor of surgery to the Columbian University at the time of his death and was also a member of many medical societies, and of late years in high esteem as a consultant. He will be recalled by most of the profession as an attendant of President Garfield during the last months of his life.

FRANCIS LIEBER, M.D., an acting assistant-surgeon U. S. A., Judge Advocate-General Lieber's oldest son, died of typhoid fever at Fernandina, Fla., October 10.

HENRY CLAY BAKER, M.D., Malvern, Ark., October 9.—C. M. Holmes, M.D., first assistant physician at the Northampton Hospital for the Insane, Northampton, Mass., October 7, aged 49 years.—Charles L. Fox, M.D., Lowell, Mass., aged 28 years.—Calvin Morgan, M.D., Dugansville, Ky., October 3.—William Pratt Read, M.D., Philadelphia, October 8, aged 51 years.—John G. Stuart, M.D., Fortville, Ind., October 7, aged 73 years.

PUBLIC HEALTH.

Health in Michigan.—Reports to the State Board of Health for September give the five most prevalent diseases as: Diarrhea, rheumatism, neuralgia, bronchitis and tonsillitis. Compared with August (vide JOURNAL, p. 803), typhoid fever, influenza, remittent fever and tonsillitis increased in area of prevalence.

The Bacillus Icterodes.—The report on Sanarelli's work in regard to yellow fever, presented recently to the Rio Jansiro Academy of Medicine, by A. Ramos, confirmed all his statements concerning the etiology and agent of the disease, but failed to confirm his therapeutic and prophylactic serum treatment, which is "still an aspiration."—*O Brazil Médico*, August 1.

Solid Diphtheria Serum.—This appears as a yellowish or whitish powder or yellow transparent leaves, which dissolve in ten parts water to a fluid resembling fluid serum in color and aspect. The standard established by the German authorities is 5000 immunity units to 1 gram, and the price not above two marks for 200 units or eight marks for 1000 units.—*Klin. Therap. Woch.*, September 11.

Prophylaxis of Measles.—Widowitz has been studying several extensive epidemics of measles, and he now announces that epidemics could be prevented by the simple measures of closing the schoolroom in which the first case was noted, from the ninth to the fourteenth day after the first indications were observed, and the parents of all the children in this room ordered to keep their children away from other children during these distinctly specified five days. Children from the same house could then return to school if provided with a physician's certificate that they have previously had the measles.—*Vienna Klin. Woch.*, No. 36.

The Water-Supply of Northeast London.—The citizens of London are unable to cope with their water-supply companies, among which there seems to be not much reciprocity. The East London Waterworks Company does not keep faith with its customers, and a correspondent writes that an *émeute* of the population is to be dreaded. The Royal Commission, which leans somewhat to the management by the companies themselves of their own affairs, may recommend "the amalgamation of all the companies into one central scheme under the control of a public body, perhaps the London County Council." The water companies were repeatedly urged during the last twelve months to connect their systems and be prepared to help one another in an emergency, but nothing was done. For a truth small communities have the greatest bliss, since with them dividends and stockholders are not widely known.

Yellow Fever.—After our report of last week was prepared, Jackson, Miss., reported 9 new cases, on October 10, with 14 new cases at Harriston, 1 more at Canton, 15 at Madison, 1 at Oxford, 1 at Meridian, 1 at Taylor's Station, 6 with 1 death at Orwood and 8 at Hattiesburg. On the same date Louisiana reported: New Orleans, 4 new cases and 1 death; Wilson, 8 new cases; Houma, 10; Franklin, 14 and 1 death; Clinton, 3; Lake Charles, 1; Crystal Springs, 4; Ridgeland, 1. October 11 reports gave: Jackson, Miss., 11 new cases; Poplarville, 7; Madison, 3; Harriston, 13 and 1 death; Hermanville, 1; New Orleans, 2; Franklin, 16; Wilson, 10; Houma, 1 and 1 death; Alexandria, 7 and 1 death. On October 12: Oxford reported 10 new cases; Edwards, 6 and Waveland, 6; New Orleans, 2 and 2 deaths; Franklin, 2; Wilson, 17 and 1 death; Baton Rouge, 10. On October 13, Jackson's record was 14 new cases and 1 death; Natchez, 6; Madison, 5; Starkville, 1; Oxford, 1 death; Hattiesburg, 6 new cases; Harriston, 16; New Orleans, 2; Wilson, 8; Alexandria, 6 and 1 death; Houma, 11; Amits City, 1 and 1 death; St. Clair 11 and 1 death. October 14, Jackson, 10 new cases;

Taylor's Station, 1; Poplarville, 12; Madison, 6; Waveland, 2; Hattiesburg, 3 and 1 death; Natchez, 4; Harriston, 3; Oxford, 1; New Orleans, 1; Franklin, 13 and 1 death. October 16, Jackson, 8 new cases; Yazoo City, 6; throughout the State, 19 other new cases and 3 deaths; Franklin, La., 22 new cases. As we go to press, the report for October 17 gives 15 new cases at Jackson, and 23 with 2 deaths at other points in Mississippi.

Proclamation of the Florida State Board of Health.

OFFICE OF AGENT OF
STATE BOARD OF HEALTH OF FLORIDA,
KEY WEST, FLA., Aug. 18, 1898.

To the Public:—On Tuesday afternoon, the 16th inst., a telegram was received at Port Tampa from the agent of the State Board of Health at Key West, stating that three cases of yellow fever were reported at the U. S. Marine Barracks, corner of Whitehead and Eaton Streets, Key West, but that he did not diagnose them as yellow fever. Leaving Port Tampa the same night on the *Mascotte*, Key West was reached at 4 p. m. the following day. As soon as practicable the cases reported to be yellow fever were seen, together with several cases of other sickness, which were all in the same ward and building. In a careful examination and study of their histories then, and a subsequent examination this morning, I am unable to confirm the diagnosis of yellow fever.

In making this statement the State health officer would do justice to the members of the medical profession here, as well as to those of the Army and Navy and Marine-Hospital Service who have seen the cases, and from whom he differs in diagnostic points of symptomatology, and that he is alone in his opinion and decision, but he is quite willing that any medical man elsewhere shall visit this place and investigate for himself; in fact, he invites the closest scrutiny and probing of these and any other cases of sickness which have occurred at Key West this summer.

The logical sequence of events must demonstrate the correctness or incorrectness of the opinion of the State health officer. At the same time, being aware that no one is infallible in judgment, and that a great responsibility rests upon the State Board of Health of Florida in protecting the citizens of the State and United States against contagious and infectious disorders, and as United States Government officials have reported to Washington the existence of yellow fever before notifying the local health authorities, as required by the laws of the State of Florida and of the United States of America, the State health officer, before examining the cases reported to be yellow fever, realizing that publicity had created concern among the people of the country, desired to guard against any possible danger by giving every guarantee, therefore as a measure of extraordinary precaution, prescribes the usual regulations as if yellow fever prevailed at Key West. Immunes may pass through the State, their personal effects subject to disinfection. Non-immunes will be subject to at least five days detention at U. S. Camp at Egmont Key. Key West will remain under observation, with a view to preserving the public health, and modifications of quarantine deemed necessary will be made from time to time.

JOSEPH Y. PORTER, M. D.,
State Health Officer.

KEY WEST, FLA., Sept. 4, 1898.

To the Public:—On the 18th of August a statement was made that the State health officer had not seen a case of yellow fever in Key West among the U. S. Marines, who were then reported as sick of that disease, although he was only one of many of his professional brethren of both civil and military life who entertained a contrary opinion. Since that time he has seen cases of similar sickness to that of the marines in civilians, and he has information of many cases like in character among the native population. He does not now believe the prevailing fever to be yellow fever, because of: the time of attack, in the day while at work, and not at night in bed, which latter is the invariable rule in yellow fever; the albumin in the urine of all cases examined, except in one case out of sixty, and then coming too early and disappearing too soon; the trivial gastro intestinal irritation and persisting vomiting nor gagging; a return to health with little or no medication or attention, some continuing to work with considerable fever; and the lack of fatality. These are salient points, all in their absence adverse to a yellow fever diagnosis.

The State health officer can not positively declare the prevailing fever to be *dengue*, although he so believes, because of the absence of a rash, which is generally present even in a limited number of cases, and thus is characteristically diagno-

sis. This febrile disturbance now existing here, is evidently transmissible, from the "falling down" of many persons in different parts of the city, and it is because of this, and of a doubt as to the true nature of the disease, which is entertained and expressed by Dr. R. D. Murray of the U. S. Marine-Hospital Service, a medical expert of the U. S. Government, who came here at the request of the State health officer, and because further, when this doubt is known, should the quarantine against Key West from the mainland of Florida be raised, the neighboring States and the U. S. Government would immediately place a restrictive embargo against the whole state of Florida, that it is deemed both wise and prudent to continue the restrictions on travel from Key West for a few days longer, in the hope that the type of the disease, whatever it is, shall become so pronounced that there may be no mistaking its identity. It must not be forgotten that a terrible responsibility rests upon the State and U. S. health authorities—on the one hand to protect the health of the people, and on the other not to needlessly interfere with their commercial life—and that an error of judgment in the character of any transmissible disease may entail suffering, grief and great commercial disaster elsewhere in the country.

The experience gained at Ocean Springs, Miss., and at Flomaton, Ala., last year when a great number of cases of "fever" developed within six weeks before a death occurred or the disease was suspicioned, "must give us pause," and the sensitively critical of our people on the subject of quarantine must not overlook the fact that there has been a division of sentiment and opinion among the medical men of the locality, as well as among the Government medical officers, which will have its impress and influence outside of Key West.

For these reasons, which are considered sufficiently potent to warrant soliciting consideration, the State health officer asks that the citizens of Key West will with their usual patience bear with the health authorities of the State in this dilemma, and assist in the effort to conserve the interests of the commonwealth and of other States.

JOSEPH Y. PORTER,
State Health Officer of Florida.

R. D. MURRAY,

Surgeon U. S. Marine-Hospital Service.

EXECUTIVE OFFICE,
STATE BOARD OF HEALTH OF FLORIDA,
KEY WEST, FLA., Sept. 8, 1898.

To the Public:—When on the 16th and 17th of August yellow fever was officially reported to Washington by navy, army and other physicians, as existing at the U. S. Marine Barracks in Key West, the diagnosis was disputed on the 16th (next day) by the State health officer of Florida: who had been summoned from Port Tampa to investigate the case; but as he stood alone in his opinion, he then stated that "the logical sequence of events must demonstrate the correctness or incorrectness of the opinions expressed."

On September 4 he again stated that the "prevailing fever" in Key West was not yellow fever, but dengue. However, as U. S. Medical Expert, Dr. R. D. Murray, of the U. S. Marine-Hospital Service, who came here at the request and urgent invitation of the State health officer (because of the contention of himself with other medical men, both civil and military), was not yet satisfied as to the true nature of the "fever" the indulgence of the citizens of Key West and the public in general was asked for a further delay of a few days to satisfy this doubt, before removing the restrictions on travel from Key West, which had been in force since the 18th of last month.

The "logical sequence" has resulted in positively affirming the position taken at the beginning by the State health officer and by Surgeon A. H. Glennan, Marine-Hospital Service, after his arrival here. The characteristic rash of dengue has been seen in several cases on the island, and P. A. Surgeon H. D. Geddings, U. S. Marine Hospital Service, at the U. S. Marine-Hospital Camp of detention at Egmont Key, wires that a passenger from Key West, August 22, developed at his camp, a typical case of dengue, with chill, fever, joint pains, fine rash, but no albumin. He was sick four days, and afterward was discharged from the camp well.

Again P. A. Surgeon L. L. Williams U. S. Marine-Hospital Service, wires that he has seven cases of fever at Tortugas, three of whom have the rash of dengue.

If any further confirmatory evidence is required to the observations already made here, the case at Egmont Key Camp and the case at Tortugas add a strong convincing link in the chain of substantial proof.

In addition to the foregoing, Surgeon Murray states that he is convinced that the "prevailing fever" is dengue and not yellow fever.

Therefore the quarantine restrictions on travel from Key West are removed.

It is due however to the public to state, that dengue, which is now prevailing here, is an infectious disease, causing generally several days of discomfort, but is not fatal.

JOSEPH Y. PORTER, State Health Officer.

DENGUE FEVER.

JACKSONVILLE, FLA., Sept. 16, 1898.

Dear Doctor:—I have already notified you that dengue fever existed at Key West, and the necessity for not confounding it with mild yellow fever, i. e., in my circular letter of the 10th instant. So little has been written of late years upon this subject, however, that I have decided to take the liberty of calling your attention to characteristic symptoms which can not fail to be of help in the differential diagnosis. I would not do so—for I presuppose that you are fully acquainted with dengue in all its peculiarities—but for the apprehension which would follow a false diagnosis in either case.

As you know, it is an infectious disease, but not fatal, and *not quarantinable*. It usually attacks or seizes one during the day time, and not, like the yellow fever, in the wee small hours—1 to 5 or 6 A. M. There is slight gastro-intestinal disturbance. No tendency to hemorrhage. But a very small percentage of cases show albumin. A rash appears on the decline of the fever, seen frequently in the mouth when absent on the body. Remissions of fever, looked upon as relapses, because recurring after the first or initial fever has been absent a day or two. The tongue of dengue is generally that of a malarial disorder—a broad, flabby and tooth-marked tongue, with whitish coat. Pepper's Text-Book of Medicine (1893), Vol. i, contains quite an interesting and accurate article on dengue by Dr. Pepper himself.

Very truly yours,

JOSEPH Y. PORTER, M.D.,
State Health Officer.

BOOK NOTICES.

Transactions of the Rock Island Medical Society. Vol. v. Part iv. 1897. Paper. Pp. 135. Illustrated. Providence: Snow & Farnham. 1898.

This pamphlet contains the proceedings of the quarterly meetings, held March 4, September 2 and December 2, and the annual meeting held June 3, 1897, also obituaries of Drs. H. E. Turner, Charles O'Leary, A. A. Saunders, W. E. Anthony, A. H. Nickerson, D. H. Sullivan and W. E. Coyle; and the following papers: "Specialism, the Laboratory and Practical Medicine"; "The Therapeutic Value of Nebulized Fluids"; "Pelvic Suppuration, Treatment by Vaginal Drainage"; "Serum Diagnosis of Typhoid Fever"; "A Case of Laminectomy for Spinal Injury"; "Two Cases of Laminectomy"; "Laminectomy in Spinal Injuries"; "A Case of Tetanus, with Recovery"; "Case of Asthenic Bulbar Paralysis"; "The Physician upon the Witness Stand"; "A Case of Cerebral Cyst."

Transactions of the Texas State Medical Association.—Cloth. Pp. 310. Austin: Eugene Van Boeckman Pub. Co. 1898.

One of the most attractively gotten-up volumes of transactions, this one is a decided addition to the physician's library. The paper and presswork are excellent and the contents, comprising the usual topics found in society transactions, well arranged. The volume covers the proceedings of the thirtieth annual session, held at Houston, Texas, April 26-29, 1898. The papers, as presented at the meeting, are grouped under the headings: General Medicine, Obstetrics and Diseases of Children, Surgery, Gynecology, Ophthalmology and Otology, and number thirty-four, many with discussion appended.

Proceedings of the Connecticut Medical Society. Pp. 445. Published by the Society. 1898.

This volume contains the usual data found in "proceedings," and the following papers read at the one hundred and sixth annual meeting, held at New Haven, May 25 and 26, 1898: "Report on the Progress of Medicine"; "Angioneurotic Edema of the Tongue"; "Diseases of the Tonsils"; "Acoumeters and Their Diagnostic Value in Ear Diseases"; "Therapeutic Effects of Electricity of High Tension"; "The New Widal Reaction for Typhoid Fever"; "Use of Diphtheria Antitoxin"; "Intubation of the Larynx, Report of Fifty

Casse"; "Mushrooms and Mushroom Poisoning"; "The Relation of Muscular Co-ordination and Trauma"; "A Case of Pachymeningitis Interna Hemorrhagica"; "A Case of Double Homicide"; "Some Remediable Forms of Sterility"; "Puerperal Eclampsia"; "Ophthalmic Science in Its Application to School Hygiene"; "Physician Heal Thyself"; "Progress of Surgery"; "Progress in Gynecologic and Genito-Urinary Surgery"; "A Complicated Case of Intussusception"; "Surgical Puerperal Septicemia." There is also a report of a committee on matters of professional interest in the State, covering "Malaria in Children," "A Certified Milk Farm" and "Interesting Cases in Practice."

Minutes of the Mayville Meeting of the Kentucky State Medical Society. Paper. Pp. 36. Louisville: John P. Morton & Co. 1898.

These minutes are for the meeting held May 11-13, 1898, the Committee on Publication deeming it best to issue only the minutes of this session of the Society, and not the papers presented. An alphabetically arranged roster of members is included. The paper and presswork are excellent.

MISCELLANY.

Quadracentennial of the Discovery of Brazil.—To commemorate this anniversary in 1900, for which great preparations are being made, the physicians of Brazil have undertaken to publish a work on "Intertropical Pathology," and the pharmacists a "Brazilian Pharmacopeia."

A Long-lived Couple.—Madam Henriette Simonet recently died at the Salpêtrière, aged 105 years and 6 months. In 1810 she married her only husband who died Nov. 18, 1890, aged 100 less 3 days. Their daughter, now 78 years old, is still an inmate of the institution.

Hypnotic Suggestion in the Treatment of Epilepsy is recommended by Bérillon, who has witnessed a remarkable modification of the character of epileptics to whom it was suggested to resist their impulses and neutralize their automatic habits. The number of the attacks also decreased. This treatment is not applicable to the insane or imbecile.—*Revue Méd.*, September 28.

Thirteenth International Medical Congress.—Brouardel is chairman of the committee of organization, with Bouchard and Marsy, vice-presidents, and Chauffard general secretary. Lannelongue is chairman of the executive committee, which includes the general secretary and Bouchard, Bouilly, Brouardel, Dieu, Gariel, Le Dentu, Malassez, Nocard, Reymond, Rendu and Roux. The Congress will open August 2.

Chloroform and Gas-Light Intoxication.—Famulari describes the products of the combination of chloroform and gas light as free chlorine, volatile hydrochloric acid, carbonic acid, etc. (*Policlínico*, June 15). Lorentz of Bochum reports in the *Zeitschrift f. Med. Beamt.* No. 3, a severe intoxication following a three hours' narcosis. The patient died in six hours, the attendant nurse in twenty-eight and the operator was at the point of death for several days but finally recovered. All had experienced a spasmodic cough during the operation.—*Munich Med. Woch.*

Oblique Heredity.—Beugnies remarks that the "newcomer who fecundates a widow-mother or a girl-mother, accomplishes a three-sided fecundation," and mentions the following instance: a girl bears a child to a tuberculous man and both man and child soon die of tuberculosis. The girl returns to her native town and marries another man, but the first three children born to this couple, who are both perfect specimens of health, die of tuberculous meningitis in early childhood, and the other child growing up apparently healthy, and marrying an apparently healthy man, bears children all affected with tuber-

culous ganglions.—*Journ. de Méd. et de Chir. Prat.*, September, 10.

The Abatement of the Invective Nuisance seems at hand. The "agin-the-government" people having had their benefit of reiterations and charges of incompetency, seem to be preparing winter quarters. A short war on the whole satisfies the multitude, more particularly since the popular officers of the army have spoken freely of arrangements that were beyond criticism. The medical department is now in course of vindication by "the sober second thought."

Agglutination of the Blood Corpuscles.—Elfstrand announces that the poisonous albuminoids—ricin, abrin and crotin—derived from the croton seed, produce a marked agglutination of the red corpuscles. Ricin and abrin produce it in nearly every kind of blood, while crotin only affects certain kinds. Two drops of blood from two different animals, impossible to distinguish by macroscopic or chemic tests, can thus be readily differentiated with crotin; human blood and pig blood, for instance, which may prove important from a medico-legal point of view.—*Klin.-therap. Woch.*, September 11.

Muscular Rheumatism.—Erben has been investigating 200 cases of lumbago and finds that the trouble is not muscular as supposed, but proceeds from an affection of the lumbar vertebrae with sensitiveness to pressure over them (119 cases) or else from neuralgia of the cutaneous nerves, proceeding from the third posterior lumbar branch, with the painful region on the buttocks instead of over the spine. A third group was a combination of these two affections. In the other twenty-four cases it was impossible to find a diagnosis in nine; in the rest the lumbago could be traced to alcoholism, to incipient tabes or osteomalacia. He also attributes to the cervical vertebrae and the nerves emerging from them the etiology of wry neck, twelve cases. The muscular contraction follows secondarily, as the head is twisted to prevent pain.—*Cbl. f. Chir.*, September 10.

"Heart Epilepsy."—H. Beer does not consider epilepsy a disease, but only a symptom resulting from cumulative irritation of the cortex. This irritation may be hematogenic, reflex or traumatic, and the various neuroses correspond to varying grades of the same condition affecting different persons differently. A few rare cases of "reflex" heart epilepsy have been recorded, due to arteriosclerosis or valvular insufficiency, and Beer now reports a case of epileptic attacks occurring in a woman of 50 years with hypertrophy of the right ventricle for seven years consecutive to emphysema of both lungs, causing dyspnea and palpitation at the least exertion. No attacks have occurred since the five in the first three months during which he administered 2 grams bromin (Sandow's effervescent) with inhalations of oxygen and 5 gram nitroglycerin tablets twice a day.—*Klin. Therap. Woch.*, September 11.

Statistics in Regard to the Sexual Life.—A prominent Russian physician, whose name is withheld, writes to *Wratsch*, suggesting that some medical journal undertake the task of collecting and tabulating statistics in regard to the sexual life, to be sent in anonymously by physicians who realize the inconveniences and even dangers of the present lack of definite standards on this delicate subject, and would be willing for the benefit of science to note the particulars of their personal sexual life. He suggests the following points: 1. Sex. 2. Age. 3. Family relations, married, free love, etc. 4. Masturbation. 5. Age at first sexual intercourse. 6. Largest number of cohabitations in twenty-four hours; at what age? 7. Impotentia cœundi; at what age? 8. Ever any symptoms of any abnormal sexual impulse; at what age? 9. Ever affected with syphilis, ulc. mul. or gonorrhœa? 10. Were there ever any abnormalities in the sexual function? He sets the example by extracts from his own note-book in which for twenty-five years he has recorded his experiences on the above points, influence of seasons, etc.—*Dermatol. Cbl.*, September.

Internal Endodiascopy.—L. Bouchacourt, in his thesis, Paris, 1898, confirms his announcement of the value and harmlessness of fluoroscopy and radiography by the introduction of a long narrow Crookes' tube into the natural cavities of the body, especially the vagina (*vide* JOURNAL, page 933). He states that the static machine is the only safe one to use. The sacrum and symphysis can thus be inspected to the moment of fetal engagement. The shadows cast by the bones in the neighborhood are much more distinct than by the usual methods, as there are no superposed planes, and there is less substance for the ray to penetrate, while the screen or plate can be applied geometrically close to the organ to be inspected. —*Presse Méd.*, August 24.

Cure Worse than the Disease, the Latter Is Expelled.—The physics of the sense of smell has been brought up for study and discussion, in a prominent fashion, by Professor Ayrton's address before the British Association meeting at Bristol. The following paragraph in the *New York Sun* gives intimation that there is a phyc through the olfactory sense: "It is said that in Australia there is a hotel where rheumatic patients congregate. Whenever a whale has been taken the patients are rowed over to the works in which the animal is cut up, the whalers dig a narrow grave in the body, and in this the patient lies for two hours, the decomposing blubber of the whole whale closing around his body and acting as a huge poultice. This is known as the whale cure for rheumatism."

The German Congress of Railway Physicians met at Cologne in September, where the arrangements for night lodgings and day waiting-rooms for the employes were recommended as models. The necessity of annual vacations, lasting several weeks and longer, in proportion as the service is exacting and the employes older, was emphasized. Brähler asserted that the years of service of a locomotive engineer should be calculated double, as few ever attain the twenty-five-year pension limit. The dissemination of trachoma by the cushions in cars was reported from the eastern provinces. The inexpensive, disinfectant soap—Dr. Graf's byrolin—was recommended for railroad purposes, indorsed by the higher authorities. The duties of the railroad physician include, it was asserted, the hygienic supervision of employes' waiting-rooms and dwellings, of their clothing and of their leisure hours, as the safety of the traveling public demands a healthy mind and body in every one connected with the running of a railroad.—*Munich Med. Woch.*, September 20.

Electric Treatment of Catarrhal Affections of the Adnexa.—The *Bulletin d'Electrotherapie* for August, is entirely devoted to a description of the cure of sixteen cases of chronic endometritis and metritis and complicating salpingitis, with or without ovaritis. In one case there was also an inflammatory tumor of the right adnexa as large as an orange; in another the cervix was ulcerated. All were completely cured without surgical intervention, with anatomic regression of the lesions, by Apostoli's method of electric treatment, in fifteen to twenty five-minute sances. Nine have borne children since. All have been seen from one to several years afterward and the permanency of the cure established. Negative, the continuous current (galvanic) acts as a resolvent; positive, weak, as a sedative and decongestive; strong, as a sterilizer, microbicide and modifier of the uterine mucosa. The tubes contract, evacuate their contents, and the entire commotion gradually subsides.

Artificial Cornea for Leucoma.—T. v. Schröder presented a patient at the meeting of the St. Petersburg Medical Society, April 28, whom he had cured of leucoma totale corneæ by the introduction of an artificial cornea made of rock crystal and platinum, with several small hooks at the rear of the platinum setting, which bore into the leucoma tissue and hold the prothesis quite firm. Salzer of Munich found that rabbits bore a similar contrivance a year without inflammation (1895).

Schröder's patient was blind from lime corrosion in the other eye, and the leucoma had developed after smallpox in childhood. The crystal cornea showed a tendency at first to work its way forward, but a narrow band of tissue soon formed around the edges and held it in place. There was no pain, no inflammation at any time and the tension was always normal. He counts fingers at 2.25 meters and recognized colors. The eye does not water except with very bright light; with an ordinary shield it bears the daylight without trouble. An extremely delicate gray membrane formed over the back of the crystal, soon after its introduction, but it has not increased in thickness during the thirteen months since, and the results are considered satisfactory enough to warrant the application of the method on a larger scale. A similar membrane formed rapidly and so thick in Salzer's one case that the vision was only slightly improved by the operation. He attributed this to the profuse hemorrhage during the trephining. The simple technique is described in the *St. P. Med. Woch.* of September 11.

Annual Report of the Craig Colony.—The annual meeting of the Board of Managers of this Institution was held at the Colony on the 11th instant, and the following officers of the Board were re-elected: Frederick Peterson, M.D., president; H. E. Brown, secretary; John F. Connor, treasurer. The annual report of the Medical Superintendent, Dr. William P. Sprattling, was presented and read. The most gratifying feature of the report was the discharge of seven patients during the year as recovered. It was also reported that marked improvement had taken place in a vast majority of all cases admitted to the institution. The industrial showing for the year was exceedingly gratifying, the value of all articles grown on and manufactured by the Colony during the year amounting to \$36,889.03. Eighty-six per cent. of all male patients and 83 per cent. of all female patients were reported as engaged in labor designed to reduce the cost of maintenance. The Medical Superintendent called attention to the fact that he had on file, on the first day of October, applications for the admission of over 600 patients that he could not receive on account of lack of room, and in view of the great pressure that is becoming greater each day for the admission of patients, the Managers decided to ask the coming Legislature for a large sum for dormitory construction. It is sincerely to be hoped that in view of the value of this institution and its benefit to mankind, which benefit has already been amply demonstrated, the New York Legislature will see fit to grant any reasonable request that the managers of the institution may make.

Fat Embolism in the Lungs from a Medico-legal View.—Carrara found 27 cases of fat embolism in the lungs in 102 cadavers at the Vienna Medico-legal Institute. It was especially noticeable in 13 out of 17 cases of fractures; the negative cases included 3 of fractured ribs and 1 of fractured ribs, sternum and radius. It was found even in cases in which death had followed the injury at once. There is nothing characteristic about the symptoms to distinguish it from shock and concussion of the brain. The discovery of abundant and diffuse fat embolism is of great importance in deciding the cause of death. The findings were positive in 7 out of 28 cases of affection of the heart, vessels and kidneys, but, of course, the fat may be derived from fatty degeneration of these organs and the not infrequently agonal injury may participate in the formation of the embolism. It was also noted in the case of a boy of 12 years, whose knee had been crushed and ileum ruptured; the rapid peritoneal absorption of the fat escaping from the intestine seemed to have co-operated in the production of the embolism. It was noted once in 5 cases of fetal phosphorus intoxication, but in 13 cases of burns it was found 6 times. He considers fat embolism an important factor in the fatal termination of extensive burns, as the liberation of the fat and its entrance into the circulation is favored by the

simultaneous injury to the blood and lymphatic vessels, and also by the even momentary liquefaction of the fat by the heat.—*Munich Med. Woch.* from *Friedreich's Blatter*, No. 4.

Female Medical Inspector at Bombay.—The Bombayans, or some of them, have entered a complaint to the officials reflecting upon the action of a female physician and asking redress, by means of a considerable outlay of British gold, for an alleged desecration of one of their temples by her. It would appear, says the *Missionary Review*, that this physician, acting under a governmental appointment, had entered the temple in search of cases of plague. That the sensibilities of this people are very acute will be seen from the following quotation from their petition, which says: "This lady, against our most serious remonstrances, entered into the temple and desecrated the same and rendered it unfit for worship and for other religious purposes for which the same was established. By the aforesaid unlawful conduct of the said lady, your petitioners and their coreligionists have suffered considerable mental affliction, and their religious sensibility has been rudely and unnecessarily disturbed. Your petitioners further state that the efficacy of the said temple as a place of worship and religion having been destroyed by the desecration aforesaid, it will cost a considerable sum of money to celebrate the ceremonies and perform the religious rites necessary to purge the said temple from its desecration aforesaid, and to make it available again as a place of worship and religion, although not in their pristine state."

Professional Liberty and Practical Puericulture were the subjects treated at the recent Italian State Medical Congress at Venice. The absurdity and dangers of placing hospitals and asylums in the hands of non-medical political campaign workers were discussed and the constant restrictions of the professional liberty of the physicians in charge, and physicians in general, described and denounced. A committee was appointed to investigate the subject and suggest means to remedy the existing conditions, which in many cases tend to defeat the objects for which the institution was founded. Massalongo described the way in which infants are sacrificed to inherited traditions and prejudices by the ignorant agricultural class; kept in a dirty bed in a smoky corner of the kitchen, all the light and air entering by a single door, the floor, the damp, trodden earth, covered with the excrements of domestic animals. The infant remains there a large part of the day, if not all the time, fed with extreme irregularity, the door shut "to keep out the cold in winter, the heat in summer." "The modern bacteriologist could not imagine a better culture for infective germs of all kinds. "Dirt seems to be one of the conditions of the existence of the contadini; a bath, sponging off with cold water, is in their opinion the cause of every ill." Even the better classes are ignorant of infant hygiene. He urged a rigorous propaganda on the part of physicians, citing what has been accomplished in France where the Roussel law, vigilant inspection and supervision of nursing children, assistance of mothers during pregnancy and confinement and penalties for desertion and maltreatment, are already accomplishing remarkable results in diminishing infant mortality and raising the physical standard. He recommended the establishment in each province of a committee for the protection of nursing children with a sanitary inspector and assistants who would instruct the people in the principles of practical puericulture, and also suitable legislation.—*Gazz. d. Osp. e d. Clin.*, September 18.

Superintendent Can Contract.—In the case of the Mt. Wilson Gold & Silver Mining Company vs. Burbidge, brought by the latter party against the former, there was evidence that when a certain miner in the employ of the company was hurt, the general superintendent had him taken from the mine to the mill, and ordered him taken from there to town. No witness stated that the superintendent ordered him taken to the plain-

tiff's (Burbidge's) hospital, but it was in evidence that the superintendent was at the hospital the next day, and told the plaintiff to take good care of the man and it would be all right. This evidence, the court of appeals of Colorado thinks, was sufficient to justify a finding that the services of the plaintiff were rendered at the request of the superintendent. After further stating that this miner, while in this mining company's employ, was injured by machinery which the latter's superintendent was engaged in operating for it, and that his injury required attention, the court says that it does not think that his removal to the hospital and his nursing while there, were so disconnected from the mining company's business as to be outside of the presumptive authority of the superintendent. As to the company's order that no more bills of that kind should be paid, after paying some of the bills occasioned by the injury, among which was the carriage bill, the court says that the fair inference from this is that before the order was made the superintendent had authority to contract such bills, and that the order was intended as a revocation of that authority; that, as the order was issued after the carriage bill and the other bills to which it had reference were contracted, it was to be presumed, nothing appearing to the contrary, that it was issued after the services of the plaintiff were engaged; and that, the plaintiff having been suffered to nurse and care for the injured man until he was cured, without being notified of the order and relying on the responsibility of the company, its failure even to make an attempt to rebut the presumption of its superintendent's authority, inasmuch as the facts were in its possession amounted, under the circumstances, to an admission that he was possessed of the necessary power.

Cervantes as Patient and Physician.—A recent medical thesis, accepted by the University of Paris, had for its theme the medical aspects of the life of the immortal Spanish author, from which the *British Medical Journal* has culled not a few interesting facts, among which is the tradition that Cervantes both studied and practiced the healing art. He was born in October, 1547, passed a life full of ill-health, suffering and misfortunes of every kind, and died on April 23, 1616. He contracted malaria during a visit to Rome early in life, and on the very morning of the famous battle of Lepanto, Sept. 7, 1571, he was so ill with ague, that the captain of the vessel on which he served tried to induce him to remain below. He insisted on fighting, however, and received three arquebus wounds, two in the chest and one on the left hand, which was permanently disabled. He was six months in hospital at Messina, and his wounds were yet incompletely healed when four years later he was made prisoner by Algerian corsairs on the high seas, Sept. 26, 1575. For five years he was held captive by the Moors, suffering much ill-usage at their hands, but at last forcing them, out of fear of the influence which his indomitable spirit gave him among his fellow-prisoners, to set him free. He died of dropsy, probably of cardiac origin, but there is really no evidence on the point. There is a tradition that Cervantes studied medicine, and there are in his works many passages which show that he had a considerable acquaintance with the art of healing as it was understood in his day. During his Algerian captivity he ministered to the needs of his fellow-prisoners in sickness with a skill which bespeaks, if not special training, a considerable experience in dealing with disease. How close and accurate an observer he was is shown by the wonderful picture of delusional insanity which he gives to "Don Quixote." The writer of the thesis points out that he anticipated Pinel in the rational treatment of insanity. The books of chivalry which disordered the brain of the Knight of the Sorrowful Countenance are destroyed, and every effort is made to create a new environment for him, his very delusions being skilfully taken advantage of to this end. It is somewhat strange that the writer

should have made no reference to Sancho Panza's famous physician, who, in his strict view as to diet, may perhaps be looked upon as the scientific forerunner of Sir Andrew Clark. He quotes, however, an apothegm that the "stomach is the laboratory in which health is manufactured," which shows that Cervantes had very sound views as to the important relations of the digestive to the other functions of the body.

Amber in Medicine.—The ancients employed amber as a medicine, and it is still prescribed by physicians in France, Germany and Italy. Several chemists in Paris keep it constantly in stock. It has been worn by ladies and children from time immemorial as an amulet, sometimes carved into "amphoræ," and has been pronounced of service either taken internally or worn around the neck. Callistatus gave the name of Chryseletron to amber of a clear golden color, which, worn round the neck, cured ague; ground up with honey and rose oil, it was a specific for deafness, and with Attic honey, for dimness of sight. But to come to more recent times, Pereira says in the third edition of his "Materia Medica," published in 1853, that amber was not even then employed as a medicine in this country, but that "it was formerly used in chronic catarrhs, amenorrhœa, hysteria, etc., and was given either in the form of a powder, in doses of ten grains to a drachm, or in that of a tincture, a formula for both which is contained in some of the European formularies. An old book by the chief pharmacist of Louis XIV of France has this paragraph: "What I say may perhaps seem strange to those who do not know the great use there is of amber in China and among the savages, as well as in Europe; but the greatest consumption of it is in Austria, Germany and Poland, and in the neighborhood of Venice, and the Venetians were the first that brought it into such a vogue and fashion thereabout, there being few people in Lombardy, or along the Po, but wear amber necklaces, believing they keep them from quinzies and other ill effects of the neck and throat to which they are very subject by reason of the bad waters they are forced to drink in those parts. Besides the great use of yellow amber for trinkets, it is of some use, too, in medicine, in the form of troches made from the powder, and which are given to restrain the spitting of blood and to stop dysenteries and the like. Dose from ten to thirty-six grains in an appropriate vehicle; also from powder of amber with spirit of wine, is drawn a yellow tincture endowed with a great many good qualities, especially in apoplectic and epileptic fits and paralytic cases, taken from ten drops to a dram in any agreeable liquor."—*Chemist and Druggist*, January 29.

Denver.

Dr. F. E. WAXHAM has removed to Chicago. The Denver and Arapahoe Medical Society has unanimously elected Dr. Waxham an honorary member.

Dr. HOBART E. WARREN was appointed to the chair of Anatomy in the Denver University, vice Dr. C. D. Spivak, resigned.

DIVIDENDS.—The Denver committee of arrangements of the A. M. A. has not only accomplished its work in a most satisfactory manner, but its finishing touches startled all the contributors to the fund, when they received dividends amounting to one-third of their contributions. After having distributed the dividends, Dr. J. T. Eskridge, the treasurer, found himself encumbered by a residue of \$264.54, which sum was donated to the Colorado Medical Library Association.

Detroit.

BUREAU OF PUBLIC HEALTH.—At the last meeting of Wayne County Society the question of the bureau of public health came up for consideration. Dr. C. Henri Leonard stated that as Mr. Corlies, the representative from Michigan, had practically killed the bill for the establishment of a bureau of public health, which had been presented at Washington, and which had been endorsed by every medical society of importance in the United States, including the AMERICAN MEDICAL ASSOCIA-

TION, he would move that a committee of three be appointed by the president, whose duty it would be to sound the candidates for the House of Representatives and inform the medical profession in Michigan which of the candidates favored the proposed bill. This man should receive the support of the entire profession, irrespective of party. The motion was seconded and carried, and a committee will be appointed by the president in accordance with the wish of the society.

HEALTH REPORT for week ending October 15: Deaths 79, under 5 years 28; births 61, male 29, female 32; diphtheria 7, new cases 11, 6 recovered, 2 died, 10 remaining sick; scarlet fever 8, new cases 5, 1 recovered, 1 died, 11 remaining sick; smallpox 4, 4 remaining sick.

THE proposition to amalgamate the Wayne County Medical Society and the Detroit Medical and Library Association has fallen through. The committees from the two societies for the purpose of considering this subject, came to the conclusion that, as both societies were incorporated under the laws of Michigan, it would be impossible to vote themselves out of existence without the unanimous consent of the members of both societies. This, of course, was out of the question, so the executive officers of both societies concluded to drop the subject.

Philadelphia.

CANNON FIRED BY STUDENTS.—On the night of October 7, some students of the University of Pennsylvania hauled a cannon into the doorway of Houston Hall and fired a heavy load which awaked the neighbors for miles around besides arousing the patients in the University Hospital to a high state of excitement and breaking nearly every window in the front part of that building. A "Student Committee," composed of the presidents of the classes, has decided to make a thorough investigation and are now making requests for all those who participated to come forward and pay for the damage to the buildings. Those who confess and pay up will not be censured, but any offender who may subsequently be found will be turned over to the faculty to be dealt with in a summary manner.

THE BLOOD OF TYPHOID PATIENTS.—Since Woodward first originated the term "typho-malarial fever," the profession has been much interested in finding out the percentage of cases of typhoid fever which may be complicated with malaria. Abundant opportunity has recently been furnished from the fact that so many soldier patients have been brought to this city from infected areas of the south. While report of the work done at the Pepper Laboratory has not been made public, it is stated that enough is known to justify the assertion that the two diseases may exist concurrently. Several months may elapse before this work will be entirely completed.

MORTALITY.—The number of deaths for the week ending October 15 was 331, a decrease of 77 over the previous week and of 53 over the corresponding period of last year. The principal causes of death were: Alcoholism, 2; apoplexy, 13; nephritis, 17; cancer, 11; cholera infantum, 6; tuberculosis, 58; croup, 6; diabetes, 4; heart disease, 24; inanition, 12; pneumonia, 13; appendicitis, 4; marasmus, 18; old age, 15; suicide, 3; tetanus, 1; uremia, 4; whooping-cough, 7.

INFECTIOUS DISEASES.—This week: Diphtheria, 115 cases, 21 deaths; scarlet fever, 18 cases, 1 death; typhoid fever, 200 cases, 11 deaths. Last week: Diphtheria, 107 cases, 22 deaths; scarlet fever, 25 cases; typhoid fever, 162 cases, 14 deaths.

DR. WHITE RESIGNS.—Dr. J. William White, Professor of Clinical Surgery in the University of Pennsylvania, has severed his connection with the surgical staff of the Philadelphia (Blockley) Hospital, to which he was elected in 1892. It no doubt is a source of much regret to Dr. White to sever his relations with this time-honored institution, yet the new duties devolved upon him at the University made such action compulsory. Owing to the continued illness of Dr. John Ashhurst, Dr. White will have entire supervision over the clinical

material during the coming term. The unsurpassed clinical material afforded by the Blockley Hospital makes the membership on the staff a coveted one both on the part of the recipient and also on the part of the University of Pennsylvania, which has all the privileges and advantages offered by this hospital. Dr. Charles Frazer, a nephew of Provost Charles Harrison, will doubtless succeed Dr. White on the surgical staff of Blockley, but no definite action will be taken in the matter until the next meeting of the Board of Charities, to be held next month.

PENNSYLVANIA HOSPITAL CLAIMS PRIORITY.—Since the war is now over and the soldiers are being cared for in well-equipped hospitals all over the land, the question has arisen as to the first one to volunteer its services after the call to arms. While the Medico-Chirurgical and University Hospitals have been most active in bringing the sick soldiers to this city, another hospital here produces proof of its priority in this matter. A letter of Dr. Thomas G. Morton to Surgeon-General Sternberg dated April 21, has been printed in one of the daily papers here, and serves to justify this claim.

COMPULSORY VACCINATION.—The Board of Health, after making investigation of the manner in which vaccination is being avoided by the children in the public schools of the city, have recently sent out a printed circular to all of the authorities of the different schools, calling attention to the following Act of the Assembly approved in 1895, as follows: "All principals or other persons in charge of any public, private, parochial, Sunday, or other schools are hereby required to refuse admission of any child to the schools under their charge or supervision except upon a certificate signed by a physician, setting forth that such child has been successfully vaccinated or that it has previously had smallpox." Violations of this law will be summarily punished by the Board of Health.

MEMORIAL GATEWAY.—A committee has been appointed for the erection of a suitable memorial to all soldiers of the University of Pennsylvania who participated in the late war. It will be remembered that one graduate lost his life early in the struggle, and the name of Osgood still lingers in the memory of all the alumni, while the unfortunate death of Surgeon Gibbs, soon after the first landing was made on Cuban soil, makes this memorial all the more appropriate. To this end a large number of the Alumni Association of the University will be appointed to raise sufficient money for the erection of a memorial gateway at the entrance of the college campus at Thirty-Fourth Street and Woodland Avenue.

A SAILOR DEAD.—The United States officials at the quarantine station on Reedy Island, near here, were recently apprised of the death of a sailor which occurred on the steamship *Banan* while in transit from Port Antonio to this city. Subsequent examination proved that the cause of death was due to yellow fever. The steamship had on board 15,000 bunches of bananas, which will doubtless be destroyed. As the authorities have recently established a quarantine station for the purpose of guarding against the introduction of this disease, all of the necessary precautions will be taken against this vessel and members of the crew. In order to prevent the possibility of the spread of the disease from this case the vessel was ordered out to sea to bury the body of the unfortunate sailor.

NEW CHILDREN'S HOSPITAL.—At a meeting held recently in Germantown, the public-spirited citizens of that place organized for the purpose of erecting a children's hospital in that district of Philadelphia. Dr. Thomas Brockbank was elected president and Dr. H. Van Buren secretary. It is proposed to model the hospital after the St. Christopher Children's Hospital.

CHARITY BEQUESTS.—The will of Henry Pfander, which was admitted to probate recently, makes the following bequests to charity: To the Jewish Hospital Association, \$2000; Jewish Foster Home and Orphan Asylum, \$2000; Jewish Ma-

ternity Association, \$1000; Society of the United Hebrew Charities, \$1000. Several other charitable bequests are made.

WITHOUT A LICENSE.—According to one of the papers here, a man by the name of H. P. Gorman of Philadelphia, was arrested at Carlisle, Pa., on October 3, for practising medicine without a license, and failing to give bond, was committed to prison, where he will remain until the November term of court.

LECTURES IN SURGERY.—Owing to the continued illness of Dr. John Ashhurst, professor of surgery at the University of Pennsylvania, Dr. H. R. Wharton will give the didactic lectures this year to the graduating class, under the supervision of Dr. Ashhurst. Dr. Wharton has been assistant to Dr. Ashhurst, for several years, and is author of a work on minor surgery.

ENSIGN POWELSON.—Ensign Powelson, while on board the *St. Paul*, was recently injured by the breaking of an elevator, and was taken to the Episcopal Hospital, where he will remain for several weeks, after which he will return to his home in New Jersey.

VERDICT OF \$3500.—At Morristown, adjacent to Philadelphia, a blacksmith by the name of William Force was recently awarded damages in the sum of \$3500 against his attending physician, Dr. Harvey F. Scholl, for improper treatment rendered to a fractured leg.

Washington.

HEALTH OFFICER WOODWARD SUSTAINED.—The health officer recently found it imperative to inform the Commissioners of the District, that the Freedman's Hospital authorities were violating the contagious disease regulations, that they had recently turned away a case of diphtheria from the institution and had not notified the Health Department, as required by law, of the existence of such a case. The Commissioners referred the matter to the Secretary of the Interior who, in reply, transmitted a copy of the report submitted to him by the Board of Visitors to the Hospital, in which the Hospital authorities claimed to have erred in the matter through misconception. The Secretary added: "The attention of the Surgeon in charge of the Hospital has been called to the dereliction of duty complained of and, in the future, he will strictly comply in every respect with the requirements of the law."

SURGEON-GENERAL STERNBERG'S REPLY.—The following reply was sent by Surgeon-General Sternberg to the Commission investigating the conduct of the war: "The number of medical officers allowed by law is inadequate in times of peace. The total number allowed is 192. There are at present 13 vacancies. The administration of the surgeon-general's office and Army Medical Museum requires 6. Eleven are on duty at medical supply depots and as chief surgeons of military departments. One is at the Soldier's Home, 56 are at general hospitals, on hospital ships and at garrisoned posts. Four have been disabled since the commencement of the war by sickness. Five are on duty as chief surgeons of army corps. This leaves 97 medical officers available for duty with troops in the field. Of these 35 have been appointed brigade surgeons of volunteers and are distributed among the various army corps. Since the declaration of war, the loss by death has been 2, and 23 are now absent from duty on sick leave. This deficiency in regular medical officers has made it necessary to employ more than 650 contract surgeons. Most of these doctors from civil life are doing good service, and many of them are thoroughly well-equipped physicians and surgeons, with ample hospital experience; but it has been impossible to make a careful selection owing to the great pressure of business in the Surgeon-General's office, and the urgency has been so great that it has not been practicable to have examining boards pass upon their qualifications. I have endeavored, so far as possible, to obtain satisfactory professional indorsement before making a contract with an applicant. The number of applicants have been so great and the personal visits of applicants and their friends so num-

erous, as to constitute a serious embarrassment in conducting the business of my office. In addition to this, there have been appointed by the President eight corps surgeons, with the rank of lieutenant-colonel; 24 division surgeons, with the rank of major, and 86 brigade surgeons; also 3 medical officers for each of the regiments of the United States infantry, cavalry and engineers. All voluntary regiments have 3 medical officers appointed by governors of States. Referring to the alleged deficiency of medical officers with the Fifth Army Corps at Santiago, I would say, that this Corps, upon leaving Tama, had with it 36 regular medical officers and 20 contract doctors, a total of 71, or over 4 per 1000 of the strength of the command, which, I was informed, was about 16,000. Additional medical assistance was sent by the hospital ship *Relief* which arrived at Siboney July 7 with 20 doctors aboard. There was also some volunteer assistance by Dr. Lesser of the Red Cross Society, Dr. Rudberg of the Swedish Navy and several surgeons of the navy from ships in the vicinity. It has not been the expectation of the medical department that every wounded man would immediately receive the attention of a surgeon. No modern army makes provision for so large a number of medical officers as this would require. But attached to our army there is a corps of non-combatants, known as the hospital corps, which is the organized and authorized Red Cross of the army. At the outbreak of the war we had 1800 hospital corps men in service. At present there are more than 6000. These men wear a brassard upon the left arm, bearing the red cross of the Geneva Convention. We have done our best in instructing them to give first aid to the wounded, and in the majority of cases a first-aid dressing properly applied by one of these men is all that is required. All of the surgeons who have come from the front have testified to the remarkable results obtained from the prompt application of aseptic dressings by our hospital corps men and by the soldiers themselves, or their comrades. The proper application of the dressings contained in the first-aid packet, which is carried by every soldier, is, under existing regulations, a matter in which every enlisted man has special instructions. For some time past this instruction has been given, first by our medical officers to the company officers, and by them to the enlisted men."

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward for the week ended October 8, shows the total number of deaths to have been 111, of which number 63 were white and 48 colored. There were 155 births reported, 102 white and 53 colored. At the close of the week there were 115 cases of diphtheria and 79 cases of scarlet fever under treatment.

MEDICAL SOCIETY.—At the meeting of the Medical Society held on the 10th inst., Dr. Lamb presented the specimens and gave the history of: *a*, valvular disease of the heart; *b*, a specimen from the brain showing old and recent hemorrhage and *c*, fracture of spasmodic origin of the sesamoid bone of a horse. Dr. Armstrong Hopkins addressed the Society on medical and surgical work in India. She described her personal experiences while connected with the British hospitals, and as a missionary physician from the United States, and gave an account of the habits, religion, customs and racial peculiarities of the people of India, closing with an amusing account of a professional visit to one of the harems of a local King, where she met in consultation with six local practitioners. Dr. A. F. A. King delivered an eulogistic address on Dr. George Byrd Harrison, a deceased member of the Society. Dr. Freaderick reported resolutions on the death of Dr. Drawbaugh.

NURSES' GUILD.—The organization of nurses, known as the Guild of St. Barnabas for Nurses, has just completed a three days' convention in this city. Their special object is to secure a home for nurses in Washington and they have opened a temporary register for nurses at the Central Dispensary and Emergency Hospital. The following physicians were elected to honorary membership: Drs. Shands, Mundell, Tompkins,

Morse, Burnette, Hawkes, Carr, H. L. E. Johnson, J. T. Johnston, Hickling, Portman, Hiberger, Rixey (U. S. A.), T. R. Stone, Fox, Dufour, Robin, French, A. A. Snyder, Maddox and V. B. Jackson.

Societies.

The following recent meetings are noted:

Connecticut.—Semi-annual of the Hartford County Medical Association, October 19.

Illinois.—Chicago Medical Society, October 12; Fulton County Medical Society, Canton, October 1; McDonough County Medical Association, Macomb, October 4; McLean County Medical Society, Bloomington, October 6.

Kansas.—Golden Belt Medical Society, Solomon, October 7.

Kentucky.—Clark County Medical Society, New Albany, October 4.

Massachusetts.—Hampden District Medical Society, October 18.

Michigan.—Grand Rapids Academy of Medicine, October 3; Wayne County Medical Society, Detroit, October 6.

Minnesota.—Crow River Valley Medical Association, Litchfield, October 6.

Missouri.—St. Joseph Medical Society, October 11; St. Louis Medical Society of Missouri, October 15.

New York.—Albany County Medical Society, Albany, October 10; Associated Physicians of Long Island, Patchogue, L. I., October 8; Monroe County Medical Society, Rochester, October 6.

Ohio.—Muskingum County Medical Society, Zanesville, October 13.

Pennsylvania.—Luzerne County Medical Society, Wilkesbarre, October 5; Susquehanna County Medical Society, New Milford, October 4.

Utah.—State Medical Society, Salt Lake City, October 7.

Wisconsin.—Rock County Medical Society, Janesville, October 7.

THE PUBLIC SERVICE.

Sanitary Measures Against the Spread of Typhoid Infection in Camps.

—Surgeon-General Sternberg has sent a communication to the chief surgeons of the troops in the field, commending it to their careful consideration and as of value to them in their efforts to limit the spread of typhoid fever in their commands. In his letter transmitting this communication, he says that where the conditions are not entirely satisfactory for digging sinks of the proper depth, the recommendations of the Board should be adopted, and water-tight troughs, as suggested, be used. He invites special attention to the recommendation of the Board that "every opportunity should be taken to expose blankets and bedding to the sunlight," and states that infected tents, clothing and bedding should be disinfected by steam, by boiling water or by a 5 per cent. solution of carbolic acid.

The communication and its endorsements read as follows: The Board of Medical Officers convened per S. O. 194, par. 40, c. s., A. G. O., Washington, D. C., Aug. 18, 1898, to inquire into the causation and spread of fever in the camps in the United States, beg to make the following provisional report:

Although we are not as yet ready to come to a definite conclusion concerning the causation and means of spread of this disease, we feel quite thoroughly convinced that the fly has been an important factor in its dissemination. We are also convinced that so long as the present method of disposing of fecal matter in the camps is continued it will be quite impossible to eradicate this disease. We believe that the bacilli are now being daily disseminated by flies, and that the tentage, bedding and clothing of the soldiers have become more or less infected with the germs of typhoid fever and we think that radical steps should be taken to destroy this infection. Until this is done we are convinced that changes of camp sites will be of little or no avail. We therefore feel called upon at present to make the following recommendations pertaining to this matter:

1. We recommend that the sink be universally and wholly replaced by the following contrivances: Each regiment should be furnished with three wooden boxes, lined with galvanized iron and made perfectly water-tight. Each of these boxes is designed to serve as a battalion sink; the dimensions of each box should be as follows—length fourteen feet, width two feet, depth eighteen inches. This box should be set at a slight incline, so that one end will be two to four inches lower than

the other end. If possible, there should be placed over the upper end of each box a water-tap, this can only be done when water is piped into the camps. When this is not feasible, water will have to be poured into the trough. The lower end of this trough should have a three-inch opening with a conductor leading outside the house and opening over a pit or well. The box end of this opening should be guarded by a tube of the same diameter and about fourteen inches high, with a curved handle at top, by means of which it can be lifted. For use each of these troughs should be filled to a depth of six inches with a 5 per cent. solution of carbolic acid or, to be more definite, there should be placed in each box one hundred gallons of water and five gallons of crude carbolic acid. This mixture should be thoroughly stirred. The feces and urine of all the men should be received into the trough; the box being provided with a suitable cover having twelve openings. A metallic trough of proper height, leading into this larger trough, may be constructed at each end for urine. Once or twice a day, as may be necessary, the contents of this box should be allowed to run into the sink or well and the material should then be immediately covered freely with earth.

Where lime has already been supplied to the camps as a disinfectant, milk of lime may be used in these boxes instead of the 5 per cent. solution of carbolic acid, and when this is done one-quarter of a barrel of lime should be mixed with the one hundred gallons of water and thoroughly stirred. A similar privy of less capacity should be prepared for the officers and cared for in the same way.

The care of these privies should be made a duty of the medical officer of the regiment, and he should be held responsible for their proper condition.

We are convinced that typhoid fever will not be eradicated until the stools and urine of every man are thoroughly disinfected. Proper utensils with sufficient soap and water should be provided at each battalion sink, such as we have described, and every man should be required, in the presence of a sentinel, placed there for that purpose, to thoroughly wash his hands on leaving the sink.

2. We believe, as already stated, that the tentage, the floors of the tents and personal clothing of the soldiers, are infected and should be thoroughly disinfected. The tents may be boiled. It would be preferable to establish at each of the large camps a steam plant where the tentage and all clothing should be thoroughly disinfected. The flooring of the tents should be scrubbed with a 5 per cent. solution of carbolic acid and exposed to the direct rays of the sun for at least twelve hours. We have found many soldiers sleeping on old, dirty mattresses; these should be burned. Many infected regiments have been mustered out and their tentage and blankets turned in. Before these are issued they should be thoroughly disinfected.

Every opportunity should be taken to expose blankets and bedding to the sunlight; our inspection of various camps has convinced us that sufficient attention is not paid to this.

In the opinion of the Board, no time should be lost in the inauguration and rigid enforcement of these measures. Otherwise we are firmly convinced that typhoid fever will continue to prevail until late fall at least. Moreover, even after the fly is paralyzed by the cold weather, the infected bedding and tentage will cause a continuance of the disease.

Very respectfully,

[Signed] WALTER REED,
Major and Surgeon, U. S. A.

[Signed] VICTOR C. VAUGHAN,
Major and Division Surgeon U. S. V.
FIRST ENDORSEMENT.

WAR DEPARTMENT—SURGEON-GENERAL'S OFFICE,
Sept. 30, 1898.

Respectfully referred to Lieut.-Col. Charles Smart, Deputy Surgeon-General, U. S. Army, for remark.

[Signed] GEO. M. STERNBERG,
Surgeon-General, U. S. Army.

SECOND ENDORSEMENT.

WAR DEPARTMENT—SURGEON-GENERAL'S OFFICE,
Oct. 1, 1898.

Respectfully returned to the Surgeon-General of the Army. The experience of the Second Army Corps during the past two months does not sustain the Board in its assertion that until radical steps have been taken to destroy infection, changes of camp site will be of little or no avail. Troops, in removing from an infected site to new ground, carry with them only the infection in men in the incubatory stage. Tents, clothing, blankets, etc., are disinfected by exposure to sun and air on the new ground. Cases developed in infected men can be removed to hospital, and in ten days or two weeks the command will be

practically free from the disease, and when camped on fresh ground will remain free from all except sporadic cases if the camp has proper sanitary government. This includes supervision of the food, water-supply, clothing, personal cleanliness and cleanliness of the quarters of the men, with a sufficient area in quarters, and with a flooring high enough to give free circulation of air in the sub-floor space.

If the sinks are 150 yards from the quarters of the men, each company sink 14 feet long and of proper depth, and the deposits regularly treated with lime and dry earth, disinfection of the excreta will be effected as satisfactorily as if previously mixed with the disinfectant material in a trough as specified.

The medical officer should not, in my opinion, be held responsible for the proper condition of the privies. This is the duty of the police officer—the officer of the day. The duty of the medical officer is to bring insanitary conditions to the notice of the commanding officer and to make suggestions for their remedy.

If change of camp site is not effected, all efforts at disinfection of clothing, blankets, tents, etc., will be unavailing; if the change is effected, disinfection other than by free exposure to sun and air will be unnecessary except in special instances of known soiling by typhoid discharges.

[Signed]

CHARLES SMART,
Deputy Surgeon-General, U. S. A.

CHANGE OF ADDRESS.

Adams, J. E., from 288 Huntington St. to 58 Cedar Ave., Cleveland, Ohio.
Church, W. F., from 1942 Polk St., Chicago, to 5608 South Blvd., Austin, Ill.

Cox, J. E., from Bridgeport, Cal., to Carson City, Nevada.
Craig, D. H., from Provincetown to 86 Charles St., Boston, Mass.
Frank, C. P., from 167 High St. to Melbourne and John, Detroit, Mich.
Fausett, R. C., from North Jackson to Olmstead Falls, Ohio.
Holman, C. J. Johnson, from 708 to 626 South St., Chicago.
Hilliard, W. L., from Asheville to Greensboro, N. C.
Hosford, S. D., from 2913 W. 28th Ave. to 3411 W. 32d, Denver, Colo.
Johnson, W. H., from Robertsdale to Dudley, Pa.
Lamon, G. T., from Philadelphia to New Kensington, Pa.
Lerche, W., from Ferryville to Soldiers' Grove, Wis.
Lupinski, H., from 215 Crescent Ave. to 176 Ransom St., Grand Rapids, Mich.

McCarthy, W. W., from 512 to 422 Walnut, Des Moines, Iowa.
Mason, L. D., from Greenwich, Conn., to Brooklyn, N. Y.
McClanahan, Z. H., from Oneida, Ill., to Colorado Springs, Colo.
Page, J. F., from New York City to Eureka, Ill.
Rowley, W. S., from 750 63d Pl. to 1005 South State, Indianapolis, Ind.
Rowe, J., from Chickamauga, Ga., to Ft. Sheridan, Ill.
Scherrer, E. A., from Denver, Colo., to San Carlos, Arizona.
Small, J. W., from Yonkers, N. Y., to Boston, Mass.
Smith, Gould, from Bourbon to Fairland, Ill.
Stevens, F. W., from Bloomington to 1309 3d Ave., Seattle, Wash.
Spencer, H. D., from Sexton to Oakland, Iowa.
Sloan, J. F., from Peoria, Ill., to 656 W. Adams, Chicago.
Sites, J. McKee, from Upper Tract to 309 W. Burke, Martinsburg, W. Va.
Thorp, C. W., from Denver, Colo., to Marcellus, Mich.
Van Tuyl, H. L., from Ypsilanti, Mich., to 5133 Indiana Ave., Chicago.
Walker, J. W., from Kankakee, Ill., to 153 E. 53d St., Chicago.

LETTERS RECEIVED.

Anderson, C. L., Washington, D. C.
Blakely, G. W., Washington C. H., Ohio; Burch, F. E., Glencoe, Minn.;
Battle & Co., St. Louis, Mo.; Brink, C. A., Ord, Neb.
Chahut, D'Orville, Pittsburg, Pa.; Cole, C. B., Grand Rapids, Ohio;
Chicago Clinical School, Chicago.
Drummond, P. K., Chillicothe, Ohio; Donohue, M. I., Clintonville, Wis.; Duyre, D., Burbank, Cal.; Dresel, A. F., Atchison, Kan.
Fougera & Co. E., New York City; Felts, R. L., Baltimore, Md.;
Fahrenfabriken of Elberfeld Co., New York City; Ferguson, E. D., Troy, N. Y.; Fuller, Charles H., Adv. Agency, Chicago.
Good Health Pub. Co., Battle Creek, Mich.; Guley & Crawford Adv. Agency, Chicago; Gardner, G. E., Doylestown, Ohio; Gihon, A. L., New York City.
Harris, J. J., St. Louis, Mo.; Harrison, B. H., Houston, Texas; Hummel Adv. Agency, A. L. (3), New York City; Hale, J. A., Alto Pass, Ill.; Hamilton, B. F., Shawnee, O. T.; Highsmith, G. I., Carrolton, Mo.
Ingals, E., Fletcher, Chicago.
Jackson, J. H., Dansville, N. Y.
Kiernan, J. G., Chicago; Kempson, J. F., New York City; Keller, W. L., Baltimore, Md.; King, P., Washington, D. C.; Kelley, J. W. & Co., Chicago.
Lehn & Fink, New York City; Lersee, W., Soldiers' Grove, Wis.
Moon, W. B., Bellmont, Ill.; Murphy, John A., Cincinnati, Ohio; Manitou Mineral Water Co., Manitou, Colo.; Madden, John, Milwaukee, Wis.; Marchand, Charles, New York City; McCarver, J. W., Coryell City, Texas.
Parsons, A. W., City of Mexico, Mexico; Paquin Laboratories, Paul, St. Louis, Mo.
Reed, R. Harvey, Rock Springs, Wyo.; Reed, W. W., Fowler, Colo.; Reed, B., Philadelphia, Pa.; Richter, R. G., Milwaukee, Wis.
Sheldon, C. S., Madison, Wis.; Simmons, George H., Lincoln, Neb.; St. Louis Medical Gazette, St. Louis, Mo.; Stoney, Emily, Chicago; Saunders, W. B. (2), Philadelphia, Pa.; Sherer, J. W., Kansas City, Mo.
Trey, J. S., Washington, D. C.; Tucker's Adv. Agency, F. E. S., Battle Creek, Mich.; Tuley, H. E., Nashville, Tenn.
Vance, A. S., Harrison, Ark.; Vinsonhaler, F., Little Rock, Ark.
Walker, F. E., Bigelow, Minn.; Wainwright, J. W., New York City; West, H. A., Galveston, Texas; Weis, E. W., Ottawa, Ill.; Whitford, Wm., Chicago.
Yemans, C. C., Ypsilanti, Mich.; Yucca Mfg. Co., Jackson, Mich.
Zenner, Philip, Cincinnati, Ohio.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, OCTOBER 29, 1898.

No. 18.

ORIGINAL ARTICLES.

INFANTILE TUBERCULOSIS.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY LOUIS FISCHER, M.D.

Professor of Diseases in New York School of Clinical Medicine; Physician to Messiah Home for Children; Attending Physician to Children's Department of German Poliklinik and to Children's Department of the West Side German Dispensary; Consulting Physician, Diseases of Children to the United Hebrew Charities, etc.
NEW YORK CITY.

A very large number of tuberculous children seen in the course of the last ten years is my excuse for attempting to bring this subject before your honorable body for discussion. This subject is handled in a masterly manner in the text-book of Professor Baginsky, and I shall therefore follow his classification.

There is certainly a decided relationship existing between scrofulosis and tuberculosis, and thus most distinguished pediatricists believe the two diseases to be identical with one another. In fact, in studying the large number of cases of scrofulosis seen by me, it is more and more apparent that this disease is the stepping-stone to tuberculosis, and that one is the result of the other. In former years the text-books speak of the scrofulosis diathesis, and this latter condition we today recognize as the pre-tuberculous condition. The infant at birth that is put on an improper food is certainly a good subject for the development of rachitis and scrofulosis. In other words, the predisposing cause is certainly, in my opinion, greatly due to faulty nutrition, bad, foul-smelling, poorly ventilated apartments, and add to them all other factors which are combined in the words, "poor hygiene," then it is very easy to understand why a simply acute bronchitis and an otherwise mild form of whooping-cough will persist for months and ultimately develop tuberculosis. The two diseases which are most easily followed by tuberculosis are whooping-cough and chronic summer diarrhoea.

There are very few today that deny that tuberculosis is caused by a specific bacillus, discovered by Robert Koch. The infectious character of this bacillus has so often been demonstrated, especially in adults, that we can also assume that this disease can be transmitted directly from parents to their children; the mode of transmission being usually by means of the sputum coughed up and allowed to dry in the apartments where children sleep. These live microorganisms can, by being inhaled, cause direct infection through the air-tubes. We, therefore, regard this disease as an acute specific infectious disease, infection brought about by the introduction of the tubercle bacillus into a usually weakened or subnormal body

with little resisting power, and hence the tubercle bacillus finds its proper soil, develops and infects and spreads until we have from a small focus in the beginning, a very largely distributed disease. The method or the way in which a patient contracts tuberculosis is so simple that it merely requires a word; recognizing, as we do, the infectious nature of tuberculosis, it requires but the dried sputum in the house of a tuberculous patient to transmit the bacilli through the air, which will lodge in the pharynx, possibly the larynx, and may even be carried lower down into the bronchi or alveoli, and in this manner enter and infect the lung.

The interesting studies of Cornet in regard to the transmission of tuberculosis are worth noting. How seriously this should be considered can be learned when we study the case reported by Wassermann (*Virchow Archiv.*), quoted by Professor Baginsky, in which a child six weeks old was infected with tuberculosis by coming in contact, in the same room, with a tuberculous man for only eight days. Lehman (*Berlin Klin. Woch.*, 1894, Nos. 26 and 28) details a series of six children that had been accidentally infected by intra-uterine inoculation. This must, however, be carefully considered before accepting isolated cases as definite results. Baginsky quotes a child from his experience, in which a tubercle nodule was transmitted by infection on the eyelid followed by suppuration. This was accidentally transmitted to the child from a tuberculous person. Demme, in the *Jahresbericht* of the Jenner Children's Hospital in Berne, 1889, and Deneke, in the *Deutsche Med. Woch.*, 1890, p. 13, discusses a series of children wherein tuberculosis was accidentally transmitted by means of bandages applied by tuberculous people.

That tuberculosis can be transmitted by the agency of raw milk from tuberculous cows is certainly not questioned, still it is surprising to note that even Koch does not always believe this to be the case. Boiling the milk suffices to destroy all means of infection. Demme reports an instructive instance in which a trained nurse suffering from lupus, transmitted and infected tuberculosis in children by means of handling their nourishment. When tuberculosis spreads, it attacks every part of the body, so that none can be considered safe from its invasion. Many authors, among them Doutrelpoint, Lustig, Meisles, and Stricker, have found the bacillus in the blood and in the walls of the blood-vessels. It can also be found in the skin, where it forms irregular ulcerations or lupus. Demme has found the bacillus in the pus from an otitis. He also found the bacillus in the discharge exuding from eczema. Tuberculosis frequently attacks primarily the thymus, the heart, the pharynx and the peritoneum. Enteritis with tuberculous ulcerations opening spontaneously have been frequently reported by Baginsky. The numerous tuberculous joint affections with the suppurations of the bones are usually of a tubercu-

lous nature. Weigert believed, in a report made to the *Gesellschaft für Kinderheilkunde*, that the liver was a sort of receptaculum for this tuberculous virus. The acute form of general miliary tuberculosis is described by the French authors, Empis, Landougy, Aviragnet (*Thèse de Paris, 1892, de la tuberculose chez les enfants, chapter 6, typho-tuberculosis*). This is a masterly contribution to the subject of tuberculosis and will repay reading it. The so-called mixed infections are very hard to diagnose, unless we form a true clinical picture by these interesting observations.

Diagnosis.—The diagnosis of these diseases in infancy and childhood is by no means simple. In fact, it is extremely difficult, and can frequently be made by a process of exclusion. It resembles mostly typhoid fever, from which it can easily be differentiated by the absence of the diazo-reaction. Baginsky states that we must not rely upon the ophthalmoscopic examination, for the absence of tuberculosis in the choroid does not speak positively against depression of miliary tuberculosis. He furthermore states that knowing the dangers of tuberculin injections in children, he warns against using the same for arriving at a positive diagnosis. The prognosis of localized tuberculosis is certainly good, especially so if radical surgical measures are instituted. It has also been proven, and postmortem examinations have fortified this clinical fact, that cheesy infiltrations in the lungs have been cured. Diffuse tuberculosis is, however, certainly fatal.

Cases of meningitis have frequently been reported as cured by Fleischman and others. This fact is doubted by equally prominent observers. Professor Baginsky declares that he has never seen a child recover from tuberculous meningitis. In my experience one child has certainly been greatly improved, although I do not believe that the disease is completely arrested. I firmly believe that under the influence of treatment, many symptoms otherwise prominent are now latent, and the child's improved condition depends on the same. It will take years of careful, close scrutiny to thoroughly test a single child with this terrible cerebral form of meningitis, before deciding whether it is really cured or otherwise.

Less than three years ago I published a paper on the treatment of pulmonary tuberculosis, based on a series of cases which I attended in the children's department of the New York Post-Graduate Medical School and Hospital (*New York Medical Journal* for Aug. 17, 1895). One of the children herein reported was 2 years old at that time. This case was reported by me at that time at the Post-Graduate Clinical Society, during a discussion of Dr. Crooks' paper on the value of creosote treatment in tuberculosis. It was really instructive to have this case report every Monday at my clinic, and to be able to demonstrate on a patient (what we have always wished for) theoretically.

Pulmonary tuberculosis frequently manifests itself without a cough, and if a cough be present without any expectoration, then we have a very different clinical picture in a child from that in an adult suffering with the same disease. We may have moist râles at times, a little harsh breathing and slight elevation of the temperature. Frequently there are small areas of dulness in the lung, caused by either consolidation or from enlarged and swollen bronchial glands. Then, again, I have seen cases of tuberculosis in which there have been no pulmonary symptoms on either

percussion or auscultation, and where the clinical history was absolutely negative. In a case of this kind which I recall, the diagnosis of tuberculosis was made when the child suffered from a prolonged attack of diarrhea. An accidental examination of the micro-purulent discharge from the bowels showed almost a pure culture of tubercle bacilli, and thus the diagnosis was established.

The symptoms upon which we have relied chiefly in making a diagnosis have been loss of weight, disturbances with digestion, a slight attack of febrile malaria, besides constant irritability. Such children will frequently show very slight, if any, pulmonary symptoms, so that the diagnosis must be made by a process of exclusion. Such distinct diagnostic features as the presence of cough, expectoration and tubercle bacilli, dulness on percussion, with moist râles and night sweats, as we find them in the adult, are out of the question. How often do we have children brought to us with a distinct history of intermittent fever, lasting several months, and it is only when we can trace such a case back to a former infection of measles, pertussis or pneumonia, or to an infection of influenza, that our attention is directed to the possibility of there being a case of tuberculosis before us. Dulness on percussion over the thorax is so frequently due to enlarged bronchial glands that it must be borne in mind when suspecting consolidation; especially is this true in those forms of so-called scrofular enlargement. It is, therefore, to my mind not such an easy matter to diagnose a case of tuberculosis, and it is a safe advice to follow, "to observe a suspected case of tuberculosis for several weeks, and sometimes months before giving a positive opinion relative to either the diagnosis or more particularly to the prognosis in a given case." While speaking of the prognosis, it may be proper for me to say that it is always a wise plan not to commit yourself positively as to the outcome of any given case of tuberculosis, for frequently do we find a sudden hemorrhage appearing, which may end fatally in a short time, while our patient was apparently improving and giving us hope. On the other hand, let us not lose sight of the fact that a great many cases of tuberculosis (with cavities) have been cured. This has been proven by postmortem examinations many times. This I mention in order to demonstrate the necessity for extreme care in passing judgment upon a given case. My plan is never to call a case hopeless until I am positive that all means used for relief were hopeless.

Dietetic treatment.—The treatment consisted of supporting diet—giving a highly concentrated form of food in as small a quantity as possible. Thus, eggs and milk and expressed meat juice, and the farinaceæ are chiefly used. When children care for it, I frequently advise buttermilk and all forms of fermented milk; white meat, chicken, fish and shellfish, or broth made from the above at frequent intervals. So much for the dietetic treatment.

Medical treatment.—No drug that has ever been used has been found as efficacious as cod liver oil and creosote. The former I usually give in a 25 per cent. emulsion, and if the stomach tolerates it, I then increase gradually, giving a 50 per cent. emulsion, and if I find this well borne then I try the pure cod liver oil, giving a teaspoonful to a child under 5 years three times a day. If, however, the stomach will not tolerate cod liver oil, then I use it in the form of the bath, i. e., by inunction. My plan is to have the

child's body sponged with soap and water, then dry the skin thoroughly with a coarse turkish towel and rub the child's body, chiefly the chest and abdomen, for about five or ten minutes every morning. In this manner we can frequently have one ounce of oil absorbed into the circulation.

Creosote is certainly par excellence, the only drug to be used in this disease. While formerly we were restricted to the use of the ordinary beechwood creosote, within the last few years chemistry has given us the creosote carbonate. To Dr. Holscher of the Dreikönigenhospital in Mulheim on the Rhine, belongs the credit of having discovered the value of this drug. In a letter recently received by me from the Doctor, he reiterates his former good results, and states that Chaumier and others have given as much as 30 grams per day. He also refers to the fact that Professor von Leyden reports giving from 5 to 25 drops of this drug three times per day.

My own experience with creosote carbonate has been limited to between forty and fifty cases. I usually give children of 1 year one drop, children of 5 years five drops three times per day. In other words, one drop for each year, until ten drops three times per day are given. There is usually a marked increase in the appetite noticeable, and a decided improvement in the cough, if any is present. Symptomatic treatment is not contraindicated, and urgent symptoms of whatever nature should be properly looked into.

Alcoholic stimulation requires but one word, namely, that if necessary alcohol should be used, but cautiously.

Hygienic treatment.—This, I consider to be the foundation for an ultimate cure if properly carried out. No medicine can equal fresh air and sunshine and cleanliness. The bulk of our cases seen in both dispensary and private practice occur in children living in tenement houses where just the conditions above mentioned are lacking. In a paper recently read before the Society for Medical Progress, of our city, Dr. W. Freudenthal dwells especially on the importance of sunshine and ventilation, if we attempt to cure a given case of tuberculosis.

I feel that I owe you a word of apology for attempting to speak on tuberculosis, especially in a region surrounded by climatologists and men whose lives have been spent in the treatment of tuberculosis. But I feel that infantile tuberculosis, as we frequently see it in cases which are diagnosed as marasmus and allied troubles, are cases of tuberculosis.

187 Second Avenue.

DISCUSSION.

Dr. SLAGLE of Minneapolis—I was pleased to find the Doctor in opening his paper stated the relation of scrofula to tuberculosis: that it is considered the tubercular diathesis. Two years ago, just the day before I was going to deliver a lecture on scrofula before the class, I received Dr. Rotch's work, and I was surprised to find that the terms struma and scrofula were not in his work at all and no explanation anywhere. I wrote to him in regard to it and he responded very kindly and courteously that in dropping those unscientific terms, scrofula, struma, colic, diathesis, etc., he was but following the suggestion of the American Pediatric Society. It was a question with me whether it was prudent to drop those terms and whether it could be done by any one man—they have been used so long. At any rate, it seems now that it is but a tubercular diathesis. Yet I have a paradox to state, which makes me suspect that its nature is not thoroughly understood. I have a large clientèle among the poor Russian Jews. Their children early are

prone to those local manifestations which we have been accustomed to call scrofula or struma. Yet I have to state that it is a remarkable fact that they are comparatively immune from tuberculosis later on. Something has been said about that by some foreign writers and there has been an attempt to explain it. If we admit that the scrofula or strumous manifestations in early life make them immune later to tuberculosis, then we would have to deny what seems to be an established fact, that struma is but the tubercular diathesis. In regard to Dr. Fischer's treatment of tuberculosis in children, there is nothing to gain. Undoubtedly it is a disease of malnutrition, and undoubtedly good hygiene and good nutrition are of very great value. Undoubtedly the few remedies he mentioned: creosote, nux vomica, cod-liver oil and alcohol, are good remedies in well chosen cases. In regard to cod-liver oil, we find so many young children that do not digest cod-liver oil that I have come to prescribe the maltine with cod liver oil, rather than the emulsions of cod-liver oil, preferably the extract of malt with cod-liver oil and hyposulphites.

Dr. H. D. JEROWITZ, Kansas City—In reference to tuberculosis in children the fact is that very frequently a chronic pneumonia and a case of tuberculosis are easily confounded. A great many so-called cases of tuberculosis in children which recover are nothing more nor less than cases of chronic pneumonia or pneumonia in the third stage with pus or a pneumonia complicated with an empyema. A number of these cases, as we see, are caused by measles or pertussis, by malaria or typhoid fever, and owing to the decreased vitality, the pneumonia, instead of passing on to the resolution, proceeds to the chronic stage, and during this time the case presents the usual appearance of a case of tuberculosis, lasting all the way from several weeks to as long as five or six months. As a rule we think it is a case of tuberculosis that is beyond recovery, but the case gets well. The only way I know of differentiation is with the microscope and that is not always practicable with young children. We can not always get the sputum, and therefore in a great many cases it is often only a question of opinion as to whether it is a case of tuberculosis or pneumonia. So it seems to me a great many cases of supposed cure in tuberculosis are only cases of cure of chronic pneumonia. None of the remedies suggested are new. One of the chief remedial agents, I consider, is fresh air. The majority of these cases live in unhygienic and un sanitary surroundings.

Dr. ROSA ENGELMAN, Chicago—It is a question to me whether the Doctor has thought of the ante-fetal origin of tuberculosis, either through the sperm or an ovarian genetic origin. Another factor to which I wish to call attention, is the possible origin through what I have been pleased to call a scrofulous vaginitis. A great many patients come to me with what I believe to be a scrofulous vaginitis. By "scrofulous" I mean, as one of the gentlemen has recently said, a predisposition. Such children usually have chronic glandular enlargements and all the train of symptoms which cause us to make the diagnosis of scrofula.

Dr. HENRY E. TULEY, Louisville—I think the Doctor lays too much stress upon the presence of injury. I recall distinctly one case that presented itself at my clinic. There was no history of any heredity or injury. The patient was decidedly anemic, very much emaciated, and had a considerable accumulation of ascitic fluid. The mere suggestion of an operation caused the mother to withdraw the child from our observation. About five months later the patient returned again to the clinic and was entirely changed in character. During that time it developed that nothing had been done. There was no trace whatever of any ascitic accumulation nor anything that would lead one to believe there had been a tubercular peritonitis. But he presented himself to the surgical side for a tubercular arthritis of the knee-joint. This was of such a nature that an amputation was done at once, the

family consenting to this. The boy improved wonderfully in the next two months and has grown stout and strong. About four months later, a year and a half from the first observation, he returned with a cough and emaciation and there is now involvement of the apices of both lungs and microscopic evidence of tuberculosis. These cases present such peculiarities that it seems to me the importance of the variety of symptoms should be impressed upon us. Another thing the Doctor mentioned in passing is the presence of a subnormal temperature in tuberculosis. I would disagree with him in regard to that, having made observations in several cases, one especially, which I reported with a forty days' record of the temperature, with a high temperature each day, never reaching normal for several weeks before the signs were present in the chest, the child finally dying of a tubercular pneumonia, the autopsy proving the diagnosis. I think more often these cases have high temperatures than they have subnormal or low ones.

Dr. McCONNEL, of Kansas—With children, especially, it is very difficult to continue for any length of time the internal administration of any preparation of cod-liver oil, in emulsion or any other form. Inunction I have found a very useful method of using cod-liver oil. It can be applied twice daily over the abdomen and chest of the child, and the child will tolerate it better that way often than in any other way. Dr. Lawrence mentioned rarely finding the condition in males and also rarely finding it idiopathic. I wish to mention a case of a young man with tubercular peritonitis, the origin of which was traced to an injury received from a fall off a bicycle. That is the only instance I have encountered in which it came in that way. About ten weeks previous to this case applying for medical aid, the boy gave a history of having fallen from a wheel and struck on the right handle of the bicycle in the right iliac region. The pain was so violent that he said he fainted and was unable to stand or walk for several minutes. From that time his health began to decline, his appetite failed and he became emaciated, thin and anemic. His parents became solicitous for his welfare and consulted several surgeons. There was considerable diversity of opinion in regard to his ailment. Some considered it peritonitis. Until an operation was performed, the character of the case was not cleared up. There had been a general peritonitis of the abdominal cavity, but the appendix was not involved. The adhesions were many, both of the mesentery and the intestines. A laparotomy was performed and drainage used, which greatly improved the child's condition. That has been three months since; he is not well to-day, but he has improved.

Dr. H. B. WHITNEY, Denver—In regard to Dr. Lawrence's paper, I agree with him, especially as to diagnosis. I think he has laid stress where it should be laid, especially on the pain where there is much emaciation, the slow development of ascites, and together with that it seems to me is very common the presence of masses of induration or irregular tumor masses here and there scattered over the abdomen. These things have seemed to me to be of great importance in the diagnosis of tubercular peritonitis. I would also like in this assembly to lay special stress on what seems to me to be an unquestionable fact, and that is the comparative immunity of children of tubercular parents here in Colorado. I merely wish to suggest to you very earnestly whether it should not be more carefully considered as to the sending of children here to Colorado, who are strongly predisposed to the development of tuberculosis. We do here see a certain number of affected joints and some cases of peritonitis, but in the main children here grow up with a decidedly less predisposition to tuberculosis than elsewhere. Where the parents of the children have not developed tuberculosis to such an extent as to compel them to go to Colorado, it seems to me we should consider very carefully whether it would not be wise to send them to Colorado for the sake of the children.

Dr. EDWIN ROSENTHAL, Philadelphia—In the institution with which I am connected, little children picked up on the streets, died in a few days and on postmortem I found nothing at all but tubercular peritonitis. Further dissection revealed only an enlarged lobe in the lungs. These were little infants that probably perished from exposure and neglect. In this home we receive all sorts of children found on doorsteps and so on. This brought me to think that the condition of tubercular peritonitis is found in infants perhaps more often than we give credit for. The so-called inflammations of the bowels are often of tubercular character. Tubercular peritonitis follows measles as well as whooping cough, and when we have cases of whooping cough or measles that have recovered, we must not discharge the patients too soon, for they are never thoroughly well until months afterwards. In fact, we should keep them under observation for at least six months afterward. In the case of simple whooping cough, which the Doctor said, if it had any hereditary history, might turn out to be a case of tubercular gland disease, and would end in tubercular disease; if it were a case that had a tuberculosis for an inheritance, it would easily turn into tuberculosis of the knee or hip-joint, and the proper etiologic factor would be such diseases as whooping cough or measles.

Dr. LOUIS FISCHER, New York City, in closing.—In reference to the remarks of the gentleman who found so many cases among the Russian Jews, I believe that is true because they adhere so closely to the Biblical teachings. It seems they have a certain form of inspection which is a sanitary measure. They inspect the bronchi and lungs of all animals slaughtered, and if they find nodules and disease, or if they can not inflate the lungs, the animal is rejected. Unfortunately, those of us who have strayed from that practice are as prone to that disease as anybody else. I purposely went into the matter to find why people with external manifestations of the disease did not develop tuberculosis, and I believe it is simply because the vital factor is not introduced, namely the tubercle bacillus. The gentleman stated that where cod liver oil was not tolerated he gave malt. I am heartily in favor of giving malt, but the same objection open to cod liver oil is open also to malt, that where the stomach will not tolerate cod liver oil it will not tolerate the action of malt. For that reason I have discarded the use of malt. When I was associated with Dr. Chapin of New York, I noted the weight of children taken before and after inunction. Nothing was given but cod liver oil externally, and we were surprised to find how much good could be done in that way. Dr. Jerowitz of Kansas City mentioned the fact that it is difficult to get the sputum of children in order to make a diagnosis. I remember one case at the Post-graduate, in which we were baffled in making a diagnosis. The child had a slight elevation of temperature. It was one of the cases in which we suspected the possibility of intermittent fever. We examined the blood and found no plasmodia. On examination of the lungs no evidence of tuberculosis was found, yet examination of a little mucus discharged from the bowel showed the tubercle bacillus. The guaiacol treatment is one I use also. Fresh air was mentioned and I mentioned the value of sunshine. In fact I was very anxious to hear Dr. Whitney's views of the value of the climatic treatment, for which my paper was purposely intended. The Doctor stated that he found a certain immunity among children in this climate. I believe we could secure the same immunity if we had continuous sunshine and fresh air and the value of pulmonary gymnastics. I believe where we have little girls from 6 to 10 years old in the East, by making them inspire and expire in the parks, we do more good than by any other means. I do not believe the drug treatment of tuberculosis is the real treatment; but sunshine, fresh air, massage, anything plus oil, plus nutrition, are the vital factors in the treatment of tuberculosis.

Dr. F. F. LAWRENCE Columbus, Ohio, in closing.—I believe

I stated that where we had ascites in the absence of heart, kidney or other visceral lesion, which would give rise to ascites, that is presumptive evidence that the peritonitis is tubercular. I agree with my friend from Louisville that there are a great many cases not of tubercular character. In regard to aspirating, I do not use the aspirator at all about the abdomen. I do not like to think that I may plunge the aspirator needle into a loop of intestines and have to make an operation to close the opening. Like a great many things (Kentucky whiskey, for instance) it is all right in its place. In regard to the remarks of my friend, Dr. Tuley, who said, I believe, that I laid too much stress on injury, I said that in cases in which there is a tubercular affection in some other part of the body there may be no injury. I still say and believe that it will almost if not quite universally be found that there is some mechanical injury to the abdomen some time before. As to when we should commence treatment, the time to begin active treatment in tubercular peritonitis, that is when to operate, is just as soon as we are satisfied that we have a chronic peritonitis, whether tubercular or not. We are not justified in taking the chances of the effusion becoming absorbed and the patient recovering, when an incision and drainage is practically without danger. The whole subject of tuberculosis is unsatisfactory so far as its curative treatment is concerned. Tubercular peritonitis in children is much more likely to be severe and is likely to follow upon some tubercular condition in some other part of the body.

SOME DISEASES COMMON TO THE FEEBLE-MINDED.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY MARTIN W. BARR, M.D.,

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I count not the least valuable to myself of my former collaborations with the late Dr. Isaac N. Kerlin a study that we made together—with intent of reducing to tabulated form—of those diseases most common to the feeble-minded. This study involved the examination of medical records of 1400 cases, covering a period of twenty-five years, and I have since extended it so as to include some 3000 cases. Sifted out, we find the diseases, some eighty in number, distributed equally among the sexes, and in varying proportion in the different grades. Broadly considered, there are three conditions or classes which the feeble-minded present to the eye of the medical observer, with modifications of course in different grades, causing the individual, therefore, to rebel or to succumb to disease each in a different way. We have, first, a physical development according to age, susceptibilities to pain or pleasure being almost normal, and the mental development fair, but limit reached in early youth; what we would call mentally feebly gifted but physically normal, meeting disease much as do normal people under similar environment and with average longevity. Second, are those undeveloped in mind and body, as the cretins, for instance, predisposed from birth to certain forms of disease and an easy prey to any.

In marked contrast are those who exhibit almost entire habitude to pain, able even to endure amputation without flinching and rather enjoying anything that gratifies the egotistic sense or that brings the individual into notice. He is ignorant of pleasurable sensations, absolutely devoid of sympathy with his

kind, and being absorbed in self, his thoughts are constantly inverted. It is from this class that many of our criminals are drawn. For them the gallows has but few terrors and they suffer the extremes of heat or cold, and even the pangs of hunger, without the consequences common to those of ordinary type.

Lastly, those physiologically old, who either wear out in childhood of "old age," or else, as old people too feeble to resist sudden attack, die in youth or early childhood. Included in this class are those who seem made of such poor material—whose tissues necropsy reveals as absolutely worthless—that they are unable to resist disease or any nerve storm, and simply go to pieces. Reviewing these peculiar types the physician ceases to wonder at various apparent anomalies one constantly encounters in our hospital wards. Here one falls and passes away from slight cause that would hardly affect a normal babe, another, at the very gate of the grave, with hardly a pulsation or a breath, will suddenly revive and recuperate as a normal person could hardly do.

The major nervous diseases, such as Friedreich's ataxia, syringomyelia and hydromyelia, which one would naturally think allied to brain diseases, are practically unknown. Anterior poliomyelitis is occasionally found, but the most common nervous diseases are the cerebral palsies of childhood. Meningitis is also common and confined almost exclusively to boys of the high and middle grades. Hysteria is peculiar to these grades, but occurs most frequently among the girls, as do the various neuralgias. True chorea is rare and found not at all among the lower grades, and only in about 5 per cent. among the higher, although choreiform movements are fairly common. Epilepsy claims about 20 per cent. of the feeble-minded, chiefly of the imbecile and idio-imbecile class, and is seldom seen in the idiot, either apathetic or excitable.

There is much hereditary predisposition to lung troubles which, coupled with lack of resisting power, renders such complications as phthisis and pneumonia inevitably fatal. Asthma, bronchitis and pleurisy are not frequent, nor is laryngitis, while tonsillitis, pharyngitis and rheumatism are common among all classes, the latter among the boys of the higher grades. Ephemeral fever occurs with the temperature running so alarmingly high that fatal results seem inevitable, and then as suddenly subsides in response to the simplest remedies.

Cutaneous affections are rare among the high and middle grade imbeciles, though frequently met with in the low grade and idio-imbeciles, due doubtless to inertia and the sluggish and unclean habits that characterize these classes. Eczema is common, lingering and persistently returning in spite of most careful treatment. *Rupia escharotica*, tinea, acne, alopecia, impetigo, herpes, erythema nodosum and urticaria are among the list of cutaneous diseases. Acne sebaceum or "butterfly disease," of which but twenty cases, including three of my own, are reported, seems to be confined exclusively to the lower grades of mental defectives. Ulcers are frequent, especially on the upper and lower extremities, and are obstinate in responding to treatment.

The sluggish habits of these children find the usual results in constipation, dysentery, diarrhea, dyspepsia and gastritis. Gastric ulcers are found occasionally among the boys, with the girls never. Enuresis is common among all grades and is often incurable. Hemorrhoids are rare among the lower grades, but

are common among the higher grades of both sexes, as are also hernia and prolapse of rectum. Deficient circulation is almost exclusively confined to imbeciles of the lower grades; thus cyanosed hands and legs and blue lips are characteristics of the idio-imbeciles, as also of the grades of the Mongolian type, who often develop scrofula. Syphilis is rarer among the feeble-minded than is generally supposed.

Defective vision due to errors of refraction is found among 90 per cent. of the high and middle grades, and among the low grades there is much conjunctivitis, iritis, corneal ulcer and blepharitis. Tests and also class work in the schools reveal a fair possession of color sense, and color blindness is the exception rather than the rule.

Absolute deafness is equally uncommon even among the members of the idio-imbecile and idiot class, although partial deafness is occasionally met with. Both sexes are subject to otorrhea, and especially to otitis media. Hematoma auris is met with in 25 per cent. of boys, and is confined almost exclusively to the left ear. I know of but one case double. Adenoid growths are a fruitful cause of the speech defects found in the high and middle grades, and their early removal greatly facilitates that training in articulation which holds an important place in all schools for defectives.

This rapid résumé of a subject of which the limits of this paper will not permit more than a glance may, I trust, be the means of eliciting notes of similar experience from others engaged in work among the mental defectives. These collected may in time form a sound basis of theory such as may aid materially in the practical work of the future in our hospitals.

ARTIFICIAL FEEDING OF INFANTS, ESPECIALLY IN GASTRIC DISTURBANCES.

[ABSTRACT.]

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., July 7-10, 1898.

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Gastric disturbances of infants are due mainly to improper food. The food may be at fault in quality or quantity. Rarely cases of congenital malformation or deficiency are met in which the usual food preparations do not agree. If the disturbance is caused by the food and is not due to some deficiency in the baby's stomach, the first inquiry regards the source of the food. If the food is mother's milk, the health and temperament as well as the disposition of the mother must be observed. If the mother's milk is acid the administration of a little lime water to the baby after each nursing may remove the difficulty. Mother's milk may contain too great a relative proportion of proteids and constant functional disturbance in the baby's stomach arise. In this and other cases mother's milk may have to be abandoned and some form of artificial food prescribed. If the disturbance has continued until organic injury of the stomach has supervened (as chronic gastritis) additional modifications of food may be required. The food may require complete or partial predigestion or peptonization. Under such circumstances it is often a long and

tedious task to find a preparation of food which will entirely remove the condition and relieve the symptoms.

Next to mother's milk, cow's milk is the proper food for infants. This must be modified so as to correspond to mother's milk. Each case requires special investigation. If there is constipation and a poorly nourished condition of the patient, cream should be given in larger proportion than in cases of well nourished infants, with a tendency to diarrhea. Bearing in mind the fact that normal human milk is alkaline while cow's milk is neutral or acid, a necessity will be recognized for using a little lime water with the cow's milk. Sterile milk should be used. If proper precautions have been taken in milking the cow and the milk is passed *at once* into sterilized bottles, a healthy cow's milk is *sterile* and needs no heating except to raise it to proper temperature for feeding the baby, about 98 or 100 degrees F. The milk must be analyzed, and then by comparing with normal human milk a formula can be given and the milk prepared as needed.

Human milk contains water 88.4 per cent., fat 4 per cent., lactose 6.5 per cent., proteids 1.8 per cent. If a cow's milk is found to contain water 87.3, fat 4, lactose 5.69, proteid 2.80, a simple calculation shows that to reduce the cow's milk to the equivalent of mother's milk it is necessary to add 57.1 per cent. of water. To prepare 500 c.c. of this modified cow's milk from the specimen here given will require 312 c.c. of milk and 178 c.c. of water (174 water and 4 lime water). To this must be added 9 c.c. of cream and 10 gm. of lactose.

When it is not convenient to analyze the milk, a good average food may be thus prepared: Skimmed milk 300 c.c., water 166 c.c., cream 30 c.c., lactose 8 gm., lime water 4 c.c. If constipation occurs, increase the proportion of cream; if diarrhea, reduce the amount of cream or increase the proportion of lime water. Sometimes colic and even diarrhea may be caused by the proteids in cow's milk and it is found necessary to reduce the quantity of milk and increase the proportion of cream.

It occasionally occurs that summer heat, or some condition of the stomach, may cause such digestive disturbance that cow's milk must be totally discarded. When such is the case, evaporated milk, malted milk, malted meat, milk food, and similar commercial preparations may be tried, selecting with a view to the conditions prevailing in individual cases.

SOME PERSONAL EXPERIENCES IN INFANT FEEDING.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WILLIAM H. WELLS, M.D.

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There is no question in pediatric medicine which at the present time is exciting more interest, and justly, too, than the subject of artificial feeding of infants. Where the mother has well developed breasts, containing a plentiful supply of good milk, the question of infant feeding is an easy one, and it

is not the object of this paper to discuss the question of breast feeding, or even to touch upon the manner by which, as far as our knowledge at present reaches, the lacteal secretion in the breast can be modified by food and general hygiene. It is our intention to dwell in a brief manner only on the subject of the feeding of infants by artificial means, first, by foods derived from the milk of the cow or other animal; second, by foods made more or less directly from the grains. In the study of this question we have made our observations chiefly in the infant's clinic of the Polyclinic Hospital of Philadelphia, as district physician among the poor in one of the most populous parts of that city, and also among our private patients.

The indications for the withdrawal of breast milk and the adoption of artificial feeding are that whenever the mother or child is suffering from a continuance of breast feeding, the child should be weaned. As special indications we would mention syphilis, either in the mother or child, tuberculosis or other wasting disease, and any of the exanthemata in the mother. Pregnancy and menstruation frequently so alter the composition of the milk as to require weaning. Hard work, poor food, and general bad hygienic surroundings may render the mother's milk unwholesome for the child. Whenever the milk is below par in quality, this being evidenced by less than the normal gain in weight from week to week on the part of child, or where the breast milk for some unaccountable reason disagrees with the child and can not, after a reasonable attempt, be so modified as to suit the digestive organs of the infant, the latter should be weaned. Women with uncontrollable nervous systems make, as a rule, poor nursing mothers, so that this alone may be a cause for the substitution of artificial feeding. Occasionally we find infants whose digestive systems are too weak to assimilate their mother's milk; these children generally thrive better on modified cow's milk than from the milk in their mother's breast. With our increased and more accurate knowledge of infant feeding, especially by the use of modified milk, the scope of what is generally known as artificial feeding is so widened that we often find an infant will thrive much better when fed by this means than from breast milk. In discussing the subject of infant feeding we will briefly consider: 1, feeding by the modified milk of animals, particularly the cow; a, cow's milk modified at home; b, cow's milk modified in laboratories; 2, Gaertner's so-called fatty, or mother's milk; 3, condensed milk; 4, proprietary foods.

Modified milk.—The milks of many animals, notwithstanding quite marked differences in the proportion of their chemical constituents, may be so modified as to closely resemble the milk of the human female. It must, however, at the same time be borne in mind that the digestibility of the mixture does not entirely depend upon the fact that the proportion of the various elements (fat, sugar and proteid) may be so arranged as to closely resemble human milk, but the character of these elements must be as near as possible to the latter. Thus, as everyone knows, the proteid of cow's milk is far less finely divided and is tougher and less flocculent, when precipitated by hydrochloric acid or rennet, than is the proteid of the milk of the goat or of the human female. The proteids of different breeds of cows also vary; thus the Devons, Durhams, Ayrshires and Holsteins, give milks the

proteids of which are more finely divided, not only as regards their division in the emulsion of the milk, but also in the precipitated proteids, than the same elements in many other breeds of cattle, notably the Jerseys. The fat of milk must also be in nearly as fine a degree of subdivisiyn as is found in human milk, and in this the milk of animals differs much; even among various breeds of cows there is found a wide difference; the Holsteins, for instance, giving a much finer emulsioned milk than probably any other breed. As a rule a breed of cow noted for giving the best milk for buttermaking is not the best for infant feeding, because the milk which makes the best butter is, one with large fat globules, i. e., a coarse emulsioned milk, while as we before stated, a milk for infant feeding must be in a state of fine subdivision, in other words a fine emulsioned milk. As in by far the largest number of cases we are compelled to depend upon the cow to act as a foster mother for the human infant, we will only take the time to merely touch upon the question of the milks of other animals.

Goat's milk is often of great service in infant feeding; the animal is easily obtained, is not expensive, and is not hard to keep. Its milk is well taken and assimilated by infants. It is also capable of considerable modification. An analysis of goat's milk which the author had made shows the following proportions of its constituents:

Goat's milk.—Fat 5.85; proteids 4.49; sugar (lactose) 5.11; mineral matter 0.88; water 83.67.

This is to be compared with the relative proportions of fat, proteids and sugar in cow's and human milk.

Cow's milk.—The Walker-Gordon Laboratory Analysis.—Fat 4; proteids 1; lactose 4.50.

Or human milk, same analysis: Fat 3; proteids 1; lactose 6.

It has been the author's experience, however, that in goat's milk the toughness of the proteid elements and their divisibility, vary more with the diet of the animal than do the proteids in cow's milk. Ass's milk is said to prove satisfactory, but we have had no experience whatever with it. Various preparations of milk, such as Koumys, Kephir, etc., we have used but seldom. These undoubtedly have some use for the nourishment of infants with feeble digestion, but their long continuance can not be recommended. In view of these facts we return to the consideration of cow's milk.

The composition of cow's milk differs considerably from that of the human female. In the former the proportion of proteids is considerably higher than in human milk; and the character of the casein is tougher. The proportion of fat is nearly the same in both; possibly somewhat larger in cow's than in human milk. There is, however, such an enormous difference in the analyses of cow's milk made by various observers that it is extremely difficult to get a standard test upon which to base our calculations. The proportion of sugar is decidedly higher in human than in the cow's milk, and the degree of alkalinity is slightly greater in the milk of the human female. The object in modifying cow's milk is to bring the proportions of the various elements as nearly as possible to those of human milk. Thus we add water in order to dilute and thereby decrease the considerable excess of proteids, but as in so doing this the sugar and fat are reduced below the proportions

found in human milk, we must add these elements in the form of cream and sugar of milk or cane sugar. This is the fundamental principle for modifying milk. Milk in some form is undoubtedly the food for infants, as during the early months of life the starch digesting functions of the digestive organs, while perhaps not absolutely undeveloped, are incapable of continued action. Allowing then that milk is the best food for infants, and that cow's milk can be so universally obtained, we consider that modified milk is the simplest and cheapest food that can be used, and in our experience its results are far superior to any patented infant food. It is also capable of an almost endless variety of changes in the proportions of its principal constituents, and on this account it can be adapted to the digestive organs of almost every infant, if only a little care in the study of the case is exercised. The next question is, how milk should be modified. The proportions of the various elements must be arranged to suit the digestion of the individual child that we are treating, and frequently many changes must be made in the modifications before the desired result is obtained. We have arrived at the desired point when a child previously illy nourished gains as does the average breast-fed baby, of the same age and in good health. As a pioneer in this branch of medicine the profession owes a large debt to Professor Rotch of Boston, and it is upon his most carefully computed tables that most of the scientific knowledge of the use of modified milk for infant feeding is at present based throughout the world.

Home Modification.—In treating the subject of home modification the author intends giving more of his own clinical experience than to the consideration of the subject as found in accurately compounded tables based on calculations involving a deep knowledge of high mathematics. We have not infrequently seen these demonstrated at society meetings, and in journal articles as being "short and easy methods of calculating the proportion of the various elements of milk." In many cases these short methods occupy one or two blackboards, or two or three pages of a journal article in the working out. The knowledge of the average mother does not extend this far, neither has the general practitioner time to spend all of one set of office hours in working out these problems. However, a thorough knowledge of the method of computing these formulæ should be well understood by all those who are special students of pediatric medicine. In our own experience it seems to be most important to get some formula as a basis, and to vary the proportion of the elements therein until a modification is obtained, which will suit the digestion of the particular case we are treating. We can make few general rules in infant feeding; each patient must be studied from its own standpoint. In our hospital work we are in the habit of taking as a basis a prescription such as the following, this being one of Rotch's formulæ: Proteids, 1.00; fat, 2.50; sugar, 6.00; lime water, 5.00.

This can be made as follows: allowing that the cream furnished the average household does not contain over 10 per cent. fat, and this generally happens: Cream, 5 oz.; milk, none; lime water 1 oz.; water, 14 oz.; milk sugar, 8½ teaspoonfuls. In this formula we purposely kept the proportion of fat and proteids rather low, to allow for the greater toughness of the cow proteids. This milk mixture we are in the habit of giving Pasteurized, that is, heated to about 170 de-

grees F. The quantity for a child of three to five months is usually from four to six ounces, and the interval of feeding every three hours during the day (from 5 A.M. to 10 P.M.) and once during the night. It is of the utmost importance that a baby be fed at regular intervals, and if the child is asleep when the feeding time comes it should be awakened. If the above formula agrees it should be continued as long as a suitable gain in weight occurs, and the digestion remains in good condition. As a rule we are in the habit of increasing the proteid and fat and decreasing the sugar as the child grows older. Should any symptoms of indigestion arise the proportions must be changed. A little study of the subject will quickly tell us which one of the elements is at fault. It is only necessary to call your attention to the fact that where the proportion of proteids, for example, is too high the child will have colic, irregular attacks of diarrhea and constipation, the vomiting of curds and curds in the stools, or where the proportion of sugar is too high there will generally be frothy stools, acid in reaction, frequently producing considerable irritation of the parts around the anus, etc.

For home modification among our out-patient infants in the Polyclinic Hospital we generally use the following method. As soon as we have determined to wean the child, and have satisfied ourselves that the digestive organs are in a healthy condition, we place the patient on some such formula as the one before given, the prescription being filled in on a printed form, such as the following:

Feeding.—Milk mixture of . . . ounces. Fresh milk . . . teaspoonful or . . . ounces. Boiled water . . . teaspoonfuls or . . . ounces. Fresh cream . . . teaspoonfuls or . . . ounces. Sugar of milk . . . teaspoonfuls or . . . ounces. Peptogenic milk powder . . . measures. Lime water . . .

After mixing the above in a nursing bottle, place the bottle in boiling water for ten minutes, but do not allow the mixture to boil. Let it cool sufficiently before giving it to the baby. Feed the baby every . . . hours and once during the night.

Keep the baby in the arms while feeding and hold the bottle for it.

Do not allow it to lie down and nurse itself.

Have two bottles and two nipples, and alternate in using them.

If the child does not take all of the milk *throw the balance away*. Do not keep it.

After using it scald the bottle and nipple with boiling water; then fill the bottle with water containing some bread soda or borax.

Put the nipples in a cup or glass and cover them with some soda or borax water. Keep them there when not in use.

Before using again rinse both the bottle and nipple with boiling water. Never use tubes.

Drink.—A baby needs water. Give it from one to four teaspoonfuls several times a day. Boil a bottle full in the morning, and cork it up and keep it in the refrigerator for use during the day. Use only water that has been boiled.

Bathing.—Wash the baby once or twice every day in warm water with castile soap. Sometimes a little rock salt added will be good.

Clothing.—Have the bandages of wool, and not too tight. Tight bands keep the baby from breathing freely. The rest of the clothes should be cool. Have clean clothes every day if possible.

Change the diapers as soon as soiled, and wash the parts while doing so. Never use a diaper that has not been washed thoroughly in boiling water.

Fresh air.—Take the baby out in the morning and evening in hot weather, and keep in a cool place during the day.

NOTE.—Follow the doctor's directions implicitly, and never give the baby any medicines that have not been prescribed by him.

If for any cause we have reason to change the formula, we pick out from our milk tables one which is adapted to the needs of a child in the condition of the patient. Each formula of our tables has on one

side the percentages of fats, proteids and sugar with the degree of alkalinity, and on the other side the amounts of cream, milk and sugar in drams and ounces. These latter we change to teaspoonful and tablespoonful, so as to be more easily read by mother or nurse. We always have the patient return at least every other day and its symptoms are carefully noted. Should any element of the milk formula seem to be disagreeing, this is changed to suit the indications of the case, and should the mother or nurse not understand the methods for the preparation of the milk, we always send one of our clinical assistants to show her. By this very simple method we have saved the lives of some hundreds of infants, and we are happy to say that we have very seldom found even the most ignorant mothers who could not follow these simple rules. Sometimes when we are in doubt as to the mother's preparation of the milk mixture we have the mother bring a bottle to us for testing. In a future edition of these slips we intend having the rules printed in several languages, as our clinical patients are of all nationalities. Among private patients it is often possible to go a step farther, and to use the methods for the home modification of milk which are described by Rotch and revised by Cautley. The articles required are as follows: A wide-mouthed glass jar holding one quart, a syphon of glass tubing, one quarter to one-half an inch in diameter and bent so that the end out of which the milk is to flow is six inches longer than that inserted into the jar. One quart of fresh milk from a herd of cows is thoroughly strained and put into the jar, which is kept open for fifteen minutes in order to allow it to cool. The jar is then sealed tightly and placed in a vessel containing ice-water and salt in the proportion of a teaspoonful of salt to a quart of water. This is set in a cool place for six hours. At the end of this time syphon out from the bottom of the jar three-fourths of the milk into a clean vessel. The mouth must not be used to start the flow of milk through the syphon, but the latter must be filled with clean boiled water, the lower end closed with the finger and the syphon inverted, the shorter end being placed in the milk. When the finger is withdrawn the water, followed by the milk, will run out of the longer division. The materials necessary for preparing the milk mixture are as follows: First, the milk which has been syphoned from the jar; second, the milk which remains in the jar and which contains 10 per cent. of fat; third, milk sugar. This may be purchased by the pound and divided by the druggist into packages, each containing $3\frac{3}{4}$ drams or 200 grains. Fourth, some lime water; fifth, some well boiled and filtered drinking water. The milk sugar is first to be dissolved in the water and the other ingredients added in the necessary proportions.

Holt's most excellent formula, as given in his textbook, while simple and practical to those who have had considerable experience in the use of modified milk, we have found too complicated for home use. We must repeat that we consider the most important point in favor of the use of modified milk is the ease with which the proportions of a certain formula may be changed to suit the peculiarities in the digestion of the individual child we are treating. It is not always necessary to adhere to intricate calculations if we have only one basic formula to work on. A study of the symptoms produced by an excess or scarcity of any one element will speedily enable us to tell whether the milk is agreeing or not.

MILK LABORATORIES.

Of late years reliable milk laboratories have been established in different parts of the country. In 1891 Mr. G. E. Gordon established in Boston what was known as the Walker-Gordon Milk Laboratory. Since then branches of this house have been opened in New York, Philadelphia, Baltimore, Montreal and Chicago. These laboratories furnish milk, which is modified upon a physician's prescription, in exactly the same manner as an apothecary dispenses drugs. Briefly, the principal points of superiority of this method are as follows: 1. The primal milk supply is under the supervision of the laboratories and the cows are selected, cared for and fed with but a single purpose in view, namely, the production of a milk suitable for infants' use. 2. The freshness of the milk is not impaired by the process of preparation. In these laboratories the milk is modified exactly and scientifically. Every infant has milk freshly prepared, the formula being made to suit the particular digestion, the fats, sugars and proteids being prescribed with this object in view. 3. The milk is modified and sold upon the physician's prescription, so that over-anxious mothers and nurses can make no mistakes as to the quantity and quality of the milk preparation. The greatest advantages in this method are the accuracy of the prepared food and its careful sterilization or Pasteurization before its delivery. The principal disadvantages are that it is somewhat expensive, and at the present time such milk is hard to obtain within more than one hundred miles of any of our cities. In compounding and modifying milk, the directors of the laboratory consider the milk only in the light of its component parts. In the modification the following articles are used: 1. Cream which contains 16 per cent. of fat (centrifugal cream). 2. Separator milk from which the fat has been removed by a centrifugal machine. 3. A standard solution of sugar of a strength of 20 per cent. It is possible by varying these elements in different proportions to produce almost any degree of modification. In writing a prescription for a modified milk, the physician fills out a regular prescription form furnished by the laboratory, using any percentage of fat, sugar or proteids that may be desired, giving the quantity desired for each feeding and the number of feedings in the twenty-four hours. The laboratory furnishes a daily supply in the bottles from which the child is to be fed.

Among the most recent methods of modification is that of Dufour (*Rev. mens. des Mal. de l'Enfance* September, 1896, quoted from the American Yearbook of Medicine and Surgery.)

Dufour gives the following method for humanizing cow's milk: Put the quantity suitable for one day at the child's age into a large graduate with a corked spout at the bottom. Set aside tightly covered and and at a proper temperature for four hours to allow the cream to rise. Draw off one-third the lower milk and add the same amount of water. Add 35 grams milk-sugar and 1 gram of salt per liter. Shake and pour into sterilized bottles. If the child's gain in weight is unsatisfactory, add a teaspoonful or two of cream to the whole amount of milk. (The replacement of one-third of the bulk of milk by an equal quantity of water reduces the proteids and salts of the milk, but does not reach the proteids of the cream.) More definite results are obtained in the wholesale manipulation advised by Dufour, in which

the milk is diluted with one-third of water and to each liter of the mixture are added 15 to 20 grams of milk-sugar and 1 gram sodium chlorid. The amount of cream here added produced 4 per cent. or more of fat. This preparation is used in all cases, the amount at a feeding alone varying with the age of the child.

Hesse describes in detail in the *Berlin Klin. Woch.*, July 27, 1896 (quoted from Yearbook of Medicine and Surgery, 1897), an improvement on the so-called Dresden modification, a description of which, from an English observer, Worcester, was given in the Yearbook for 1897. Using Lehmann's analyses of human milk and cow's milk, Hesse demonstrates that if to 1 liter of 9.5 per cent. cream, $1\frac{1}{2}$ liters of water are added, and to this 105 gm. of milk-sugar and fresh egg-albumin (enough to represent 9.5 gm. dried albumin) a mixture is produced yielding 1.2 per cent. casein, 0.5 per cent. albumin, 3.8 per cent. fat, 6 per cent. sugar and 0.4 per cent. ash. To insure sterilization, however, he found that better results could be obtained by drying and pulverizing the paste of albumin and sugar; and the similarity to human milk was more closely approached by adding to this in process of manufacture a certain amount of lacto-saccharate of iron. The resulting sterile powder is readily soluble in water, and when added to the diluted cream produced a mixture very closely resembling mother's milk in all its ingredients. In practice it was found that a reduction of the fat percentage to 3, and of the sugar percentage to 4.5 gave a more readily digested mixture. In a series of cases fed from birth to 1 to 5 months the average monthly gain was 13 oz. (not a very encouraging showing under conditions most satisfactory for testing a new process of feeding).

Gaertner's fatty or mother's milk.—Gaertner, in his *fettmilch*, or mother's milk, aims to reduce the excess of casein in cow's milk by the use of the following method: A separator, known as the Pfanhauser centrifuge, making 4800 revolutions a minute, is employed. The machine is filled with equal parts of fresh cow's milk and sterilized water. The speed of the centrifuge is regulated, so as to separate the mixture into 1, creamy fatty milk; 2, skimmed milk. The two portions are led off by as many openings. An analysis of each of these portions shows that the creamy milk contains the same quantity of fat as found in human milk. About 2 per cent. of the casein is contained in the skim milk, and the balance, 1.7 per cent., remains in the creamy milk. In order to bring up the proportion of sugar to that found in human milk about three or four gms. of milk-sugar are added to every 100 c.c. of the fat milk. It is claimed that the fat milk has the advantage over diluted milk of having a higher percentage of fat, while the curd is rendered more digestible. This method of infant feeding has been quite extensively tried by Dr. Louis Fischer of New York, who claims to have had excellent results. Our own experience with it has been somewhat limited, and while the results have been fair, we do not think that they have been equal to those obtained from the use of modified milk. We are, however, still using it, and hope to be able to make a further report at some future time.

Condensed milk.—Condensed milk is largely used by the poorer classes as an article of food for infants. Being sealed in air-tight cans or jars and containing a large quantity of sugar, it is easily preserved for a considerable time. It is also cheap and prepared with comparatively little trouble—both qualities which

recommend it to the poor mother with the care of a large family. All that is necessary for its preparation is to mix with a certain quantity of water and pour into a nursing bottle. The proportion of lactose and cane sugar in condensed milk is in excess of that found in the human or cow's milk, yet the amount of fat and proteid, as well as the alkaline mineral matters, is considerably less. It is true that the large amount of sugar present tends to prevent constipation, but the other elements being disproportionately small makes condensed milk, as an article of food, deficient in general nutritive properties.

Children fed on condensed milk soon become fat, and for some time the digestion really seems to be improved; this is more frequently the case if the child is changed to a diet of this substance from one of farinaceous foods. After a continued diet of condensed milk, however, a child generally becomes flabby, restless or sleepy, suffers from impaired digestion with considerable fermentation, and is apt sooner or later, to drift into a condition of marasmus. Some of the worst cases of simple atrophy that we have seen have been infants who have been fed for a long time on this form of diet. In these children the period of dentition comes later, is irregular and prolonged, and a strong tendency to rickets or a chronic state of malnutrition is manifest. It has also been noticed that if children fed on this diet fall into a subacute diarrhea, it is almost impossible to save their lives.

Proprietary foods.—Many of these foods seem to be quite carefully prepared, and, having the advantage of convenience and cheapness, may be introduced with good results by the end of the first year. It has been taught by some authorities that finely-divided starch or dextrin introduced into milk acts in two different ways: First, by its nutrient powers and secondly by its mechanical action. By mechanical action was meant that it was supposed the particles of the starch or dextrin so diffused themselves among the globules of fat and casein of the milk, that the former were prevented from separating from the emulsion and the latter could not form a tough curd in the digestive tract of the child. This theory has of late years been disputed, and experiments seem to prove that the action of these substances as attenuants, so-called, is of little consequence. As far as their nutritious properties are concerned, the starchy or dextrined foods are far inferior to milk, for two reasons: First, the proportion of tissue-building to the heat-producing elements is much below that of milk. In the second place, the starch, which is a heat-producing principle, must be converted into sugar before it can be absorbed. This change is accomplished by the action of the pancreatic juice and saliva, neither of which are to any extent established before the fourth month of life. The undigested starch, therefore, remains in the gastro-intestinal canal and is extremely likely to cause fermentation. In order to make up in some degree for lack of nutritive properties, all farinaceous foods should be prepared with milk, and it really becomes a question whether in infants under 8 or 10 months of age, the nutritious principles are not dependent much more on the milk than on the food itself. In regard to proprietary foods it may be said that their best quality is that they form an easy and convenient way of introducing starch or partially dextrined starch into some modification of milk.

Dextrined foods.—Many preparations are sold in

which, by previous heating or by digestion with diastase, wheat or barley flour is so modified as to be more easily digested than simple starch. By the action of a temperature of 300 or 400 degrees F. the principal substance, starch, forms dextrin, a body differing from starch in the fact that it is soluble, and has the characteristics of a gum. Quoting from the investigations of Professor Leeds, we find that the flour selected for such treatment should be rich in albuminous substances and made from wheat grown at certain seasons and of a certain grade, and should be made by the roller process.

Liebig's foods.—Under this head may be classed a number of proprietary foods, the essential construction of which is as follows: The flour is prepared by means of diastase, equal parts of wheat flour and barley being used, and a certain amount of wheat bran added. The latter substance is used because of the adherent phosphates and nitrogenous matter. To these 1 per cent. of bicarbonate of potassium is added, with water sufficient to make a thin paste. This mixture is allowed to stand for several hours at the ordinary temperature, after which the latter is raised to 150 degrees F., and this is continued until all the starch is converted into maltose and dextrin. The mixture is then strained and the residue pressed and exhausted with warm water, after which the extract is evaporated into vacuum jars at a moderate degree of heat. The process is completed by drying at a higher temperature, the mixture being stirred thoroughly.

Dextrined foods intended to be used without milk.—This class of proprietary foods are prepared with the intention of using without the addition of milk, water only being necessary to prepare them for the feeding. In the majority of these the starch, which has been partially or completely converted into dextrin, has been evaporated with milk during their manufacture. An outline of their preparation is somewhat as follows: The flour is first made into dough and baked, after which it is finely ground and mixed with condensed milk, and then dried by a slow heat of moderate degree. In the resulting mixture the starch has been wholly or partially converted into maltose or dextrose. The albuminoids of the flour have undergone about the same changes as take place in other farinaceous foods. The milk-sugar has undergone coagulation and the casein has become dried into a fine powder. An example of this class of foods is the one sold under the name of Nestlé's Food. Somewhat recently a food known as Eskay's Albuminized Food has been introduced. The manufacturers of this food have endeavored to combine egg-albumin with the other constituents.

In regard to the value of these foods, we must say that there is no one of them that can be referred to as being the best upon which to feed a large number of children or a single child during a long period of time. That they have a certain amount of usefulness can not be doubted, but our experience has taught us that for a diet for children under 10 months of age they are far inferior to modified milk.

333 Pine Street.

Glycerin in Chronic Rhinitis.—Molteni considers this treatment the most effective for this affection. The glycerin is best applied introduced into a pig gut or fish bladder previously inserted in the nose, through which it exerts its effect on the congested vessels.—*Gazetta degli Osp. e delle Clin.*, September 8.

PROMPT ATTENTION TO EARACHES IN INFANCY AND EARLY CHILDHOOD.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Children are not only more sensitive to abnormal impressions from without, but are more responsive to curative influences within, whether natural or artificial. As a general rule, it may be considered that they are more quickly affected by disease and influenced by treatment, inversely as their age. In adults the power of resistance is great, but when the limit of normal poise is once overcome, disease lasts a comparatively long time and convalescence is slow, whereas in children, we know how suddenly an illness reaches the danger point, and after a comparatively short run, is better. This rapid recuperative power of the child is not always an unmitigated blessing, as it is often presumed upon, and from too great a reliance on nature, diseased conditions are overlooked, and the convalescent disposition is undermined and sometimes physical structures taxed beyond power of restoration.

The result of this sort of unintentional neglect, is seen nowhere more clearly than in the consideration of ear pain in infants and children. Pains in the ear are often such a common story in a household where there are several children, that little or no remedial attention is paid to them, and this lack of attention is by no means confined to the poor and ill-informed, but is observed frequently among the educated and well-to-do.

We are constantly informed as to a child's having had or having earache for days or weeks, sometimes that it is subject to recurring attacks, and yet the parents have done nothing to relieve the pain or inflammation, relying on the apparent results of preceding attacks, that the child has not become markedly worse therefrom. They do not even ask ordinary advice, asserting sometimes in a half-questioning manner, that the attack of pain will gradually disappear, or will mention some family tradition to the effect that children outgrow them. Some, indeed, carefully shield the child from cold, or employ laxatives and confine it to a mild diet. Again, some will have used hot sweet oil or glycerin, or laudanum with glycerin or sweet oil, to relieve the pain, but only a small proportion will have used any rational measures to allay the pain, and those who, in addition, have used measures to overcome the cause, are very few indeed.

Unfortunately, this complacent view is sometimes shared by the family physician. Too often he advises no treatment. Sometimes the treatment instituted is irrational and not directed to a prompt dissolution of the trouble. That they do require immediate attention is evident when we observe the after-history of these cases of neglected ear pains.

It is a matter of common knowledge, that more than three-quarters of all cases of ear affections originate in diseases of the throat and nose, and extend to the ear. Those arising from primary inflammation of the ear structures, are rare. There are a few cases arising from toxic or specific blood conditions, as well as a very limited number due to some primary influence on the nervous structures.

Whenever ear pain is present, exploration of the nose and throat should invariably be made. If the

condition of these parts were not known before, the examination may shed considerable light on the special structures examined, as well as on the condition of the general health. We will almost always find some throat disease present, either obstructive or inflammatory in character. Enlarged and inflamed tonsils are the most common, but pharyngitis, edema, ulcerations, abscesses, elongated uvulæ, as well as nasal catarrh, polyps and pharyngeal adenoids are by no means uncommon. To the light shed on the pain from these sources, we must add that obtained from an examination of the general condition of the child's circulatory, nervous and muscular systems.

It is not uncommon to find the throat and ear condition secondary to malnutrition from indigestion and even comparatively mild forms of acid dyspepsia. In fact, many of the supposedly rheumatic cases of throat, nose and ear diseases in children, attended by soft hypertrophic nasal swellings, with profuse discharges, or by soft spongy tonsillar enlargements with attacks of ear pains occurring usually two or three times a year, are undoubtedly, in their origin, cases of acid fermentation, and by strict attention to diet in their onset, would often be avoidable.

This question of diet is a most important one, and by strict attention to measures based on a recognition of its importance, physicians have of late years been able to prevent much suffering and to save thousands of lives, but what is a greater gain to the race, are enabling men and women to become healthier physically and therefore mentally, than any that have gone before. Children's habits especially, vary so much that each child must be carefully studied so as to observe to what extent his ways invite colds or nervous exhaustion with the development of reflex and inflammatory conditions.

Many times, the attacks are caused by a general or local chilling of the surface of the body from improper or insufficient clothing, or from moistened clothing about the buttocks or chest. All skin clothing, that is the first layer from the neck to the toe, from January to December inclusive, should invariably be of wool. It absorbs more water from the skin than any texture of equal weight and retains within its fibers more air and greatly lessens the liability to chills and colds. This hygienic law applies equally to adults. Some mothers, believing in the hardening process, or because of fashion, dress children with insufficient clothing—legs and arms bare, neck and upper chest exposed. Among the poor, such exposure occurs often from necessity.

Again, harm is done by the prevalent doctrine that the night, clothing should not be as heavy or warm as during the day. This view is certainly absurd. At night, the coverings should be usually a little more and warmer than in the day, because, during the day, while the body is in motion, it adds, by combustion, more heat than when the body is quiet. To keep the same temperature of the body at night, would require the covering of the body with a greater amount of heat non-conductors. It is a fact that the night-sleeping body, not usually exhaling as much moisture as the day-working body, requires less heat to protect it from chilling, yet during the day, the extra heat needed, is supplied by the combustion of muscular tissue elements, whereas this is entirely withdrawn while asleep. The clothing during sleep, should be a skin covering of wool with as much covering beside, as will equal or exceed that worn during the day.

Some neglected earaches may get well without treatment, but as a rule, the child's physical condition, as well as his ear, is to some extent affected by every inflammation of this organ. Continuous pains of the boring, pressing, bulging kind exert an influence on the nervous system, which is often somewhat relieved by violent sobbing, restlessness and great irritability, but the nervous system is weakened, loses its energy, and is sapped at times to such an extent as to produce convulsions and even cause death from reflex phenomena.

Inflammation of the middle ear cavity, which is almost without exception present whenever there is ear pain, if unrelieved by nature or art, extends and gradually involves the surrounding parts and later on affects the bony structures, giving us mastoid disease with sometimes a mastoid opening; or, again, extending through the tympanic plate, causing meningitis and at times cerebritis. Sometimes it involves the sinuses, causing phlebitis, resulting often in death. In children pus formation is so much more common and rapid than in adults, that we usually have pus formed early and quickly, infiltrating the surrounding tissues. Rarely do we have mucus or epithelial excretions. It is because of this peculiarity of rapid pus formation that sometimes serious results occur in these cases, before any provision has been made anticipating the involvement of the fatal spot.

I recall having been sent for some years ago, to see a case of ear disease, occurring in a child four years of age. In his letter to me, the doctor, after describing the onset of the symptoms and the progress of the case, mentioned that though he preferred me to see the case the day the message was received, if I found it inconvenient, the next day would do, mentioning that he scarcely deemed it essential that the case should be seen by a specialist, yet, to satisfy the family, he thought it best to do so. This message was received shortly before noon, and as I was preparing to go to see the child about 4 o'clock the same day, a messenger came from the family, announcing that the child had died of the ear trouble. It appears that it had been a case of earache occurring in a child rather subject thereto, and in which few if any measures had been taken in the past to arrest or cure the trouble. This attack proving more severe than usual, they called upon their family physician some two or three days after the onset. He, believing the case needed a little tonic and sedative treatment, prescribed accordingly. On being sent for again the same day, he advised the use of warm oil and laudanum. The next morning, the child having suffered violently with pain and having been unable to sleep, he was again sent for and used several doses of morphia, and ordered the bowels to be freely opened with mild chlorid of mercury. Upon returning to his office, he sent me the note above referred to. The child died the same day in a state of collapse, the severe pain persisting, until unconsciousness appeared. No postmortem examination was made, but it was undoubtedly a case of cerebral involvement, following upon the erosion of the tympanic plate. These cases are numerous; far more so than is usually supposed. Undoubtedly many a case which is thought to be a specific variety of meningitis, is but a concealed case of ear disease. Many a case of supposed stomach and internal disorder with malnutrition, has died from ear disease. I, personally know of three such cases, and have heard rumors and have indefinite knowledge of others.

Some of the children supposed to have died as the result of a blow or a fall, would never have died therefrom, had there not been present concealed ear diseases, affecting the mastoid or other parts of the temporal bone. In two such cases, I have been compelled to testify before the coroner, to exonerate from the charge of murder, those who had inflicted such blows. In both cases, the mastoid was riddled and honey-combed with old disease, and in both was the cerebral surface of the temporal bone eroded, making direct connection between the brain cavity and the tympanum. In one, there was, in addition, a cerebral abscess directly connected with the diseased ear.

The symptoms in another case, interesting in this connection, were those of a young lady, who was sent to me from the upper end of Bucks County, and who died in our city while her case was being studied by several of our physicians. She was sent to me on account of her sight, there being entire loss thereof. The condition was that of total atrophy of the optic nerve, but there was in addition, the history of epileptiform attacks. From the history of the case and the physical examination, there seemed to be sufficient evidence of increased cerebral pressure, supposed to be occasioned by a brain tumor, to justify the consideration of an operation. After several weeks of hospital observance, by one of our most distinguished surgeons, he declined to perform it, believing it not to be justified. Her general health was very good. She was in the best physical and mental condition, when one night she retired early, as usual, and was found in a normal sleeping attitude, dead in the morning. The postmortem revealed a large cerebral abscess, directly connected with a perforated internal plate in the temporal region, the temporal bone, being in great part destroyed. During her life, her hearing had not been markedly deficient in either ear and her drum heads were intact but thickened. After death, it was learned that as a child she had had violent, frequent attacks of ear pain with frequent pus discharges, but for some six years before her death there was no history of ear disease or ear pains of any kind.

The symptoms in the two preceding cases had been—as in the last case—attacks of pain lasting for days, at times mild and again almost beyond endurance, exaggerated at night, sometimes attended with and sometimes without pus discharges, yet the family in not one of these cases, seems to have realized the danger of these symptoms or the importance of prompt treatment.

Of late years, accurate examination of the bony ear structures has been far more common at postmortem than formerly, and the frequency with which extensive disease in this location had been found, has much surprised the pathologist and the coroner, the decision in numerous cases being that death has been caused by ear disease where the diagnosis made during life had been far otherwise. Very many cases of deaths from unrecognized ear disease, especially in children, have occurred in the past, and even now occur yearly by the score in all of our large cities and throughout the country.

The story of ear pains, and therefore of ear inflammation, is one which should be displayed prominently in every nursery and school. Ear pains are dangerous; they are not fleeting, evanescent nothings, but indicate a condition of inflammation of the middle ear, which is necessarily followed by more or less damage to the parts and impairment of the general health.

Among the minor points to be considered are, the tendency to recurrence and the consequent nervous and physical exhaustion engendered and the impairment of hearing more or less great and more or less permanent, the necessity of throat and nose examination and treatment, and attention to the general condition and mode of life.

Among the more serious aspects to be considered are: 1, the possibility of the attacks causing total or considerable loss of hearing, and the consequent lack of proper mental development; 2, the serious inflammatory complications terminating in idiocy or epileptiform convulsions; 3, weakening of the bony structures about the ear, predisposing to their serious involvement from slight accidents and to attacks of cerebral disease.

The citing of perhaps a few aphorisms in regard to their avoidance and cure is more important than a recounting of their danger. Whenever a severe catarrh of the nose in a child occurs, call in the physician. If the attack be a mild one, use protectors, preferably of petroleum ointments, without and about the nose. If the throat is diseased, have it treated. If the nostrils are obstructed they should be cleared. If the tonsils are enlarged, they should be reduced or removed. Any general derangements present should be recognized and attended to at once.

All cases of ear pain should be referred to a physician, and pending his arrival, sweet oil can be rubbed into the neck and about the ear, or tincture of iodine be painted over the mastoid, or if the pain is severe, even a cantharides plaster can be applied. If the pain continues or is excruciating, syringe the ear gently with hot water or apply a hot water bag or hot wet cloths or even hot flaxseed poultices frequently renewed, keeping head high above level of rest of body. Occasionally, ice gives the most relief. If severe pain persists, use hot bags at feet or a hot foot-bath followed by dry heat; sometimes a mustard poultice on the stomach, is required in addition. Use cathartics, especially calomel, liberally and keep the child on a mild diet. Examine the ear carefully, whenever ear pain is present, and determine at once the nature of the trouble and act in accordance with the conclusions reached.

If the ear pains and the subsequent progress of the disease present in cases of acute fevers, were but promptly and properly attended to, there would soon be a marked decrease in the number of the deaf in our midst. The neglect of these cases often necessarily follows from the engrossment of the doctor's energies in the primary disease, and is in some cases undoubtedly unavoidable, but whenever possible, prompt attention should be bestowed on that organ which, from a utilitarian as well as artistic aspect, is of such great importance.

1723 Walnut St.

FRACTURE OF THE CLAVICLE IN CHILDREN.

A STUDY OF TWO HUNDRED CASES TREATED BY SAYRE'S METHOD.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY A. E. GALLANT, M.D.

NEW YORK CITY.

Of all fractures in children that of the clavicle is

most common and presents the greatest difficulty in securing union without deformity.

In a surgical service including 18,042 children of 10 years and under, there occurred 343 fractures, of which 172, or 50 per cent., were fractures of the clavicle. Of this number, 12 were under twelve months; 112, 1 to 5 years and 48, 6 to 10 years old. The youngest was but six weeks old. Three cases between 1 and 5 years came to us with faulty union. The fracture was located at the outer portion of the middle third, and in most cases there was distinct separation, and knuckling upward of the fragments. All were single, simple fractures, with little evidence of laceration of adjacent tissues. The line of fracture was more or less oblique, with upward and inward displacement of the acromial fragment. Falling on the outstretched hand was given as the cause of the injury.

Up to the time when Lewis A. Sayre described "A Simple Dressing for Fracture of the Clavicle" (Bellevue and Charity Hospital Reports, 1890), no satisfactory plan which would meet the anatomic conditions had been proposed. Since then it has almost superseded all others.

Deformity.—In reference to the deformity, Sayre says that "all authors agree that the deformity which occurs in the fracture of clavicle is, that the shoulder falls downward, forward and inward, and that the outer end of the sternal or inner fragment always rides over the inner end of the outer or acromial portion of the clavicle." Such a displacement of the fragments has not been met with in the series of cases here reported. The point of fracture has been at the outer portion of the middle third, with the shoulder dropping downward, inward and forward, thus dragging on the acromial fragment so as to make an angle or knuckle at the seat of fracture, but the inner fragment has not been found displaced above the outer fragment as described by Sayre and Gray.

DISCUSSION.

Dr. A. C. COTTON, Chicago—In using plaster for the correction of this tendency to deformity, or for any surgical purpose whatever, my experience has been that not infrequently you meet a case whose skin won't stand plaster, the continued use of a plaster for even two days bringing out a very troublesome eruption. The Doctor did not state, but I suppose a dressing put on for curing this deformity must stay on ten days to two weeks.

Dr. GALLANT—The dressing is left two weeks.

Dr. COTTON—Many cases will not stand plaster for two weeks. At a certain time of the year you can dress only a few cases in this way. Even when the temperature is most comfortable, some cases will not stand plaster. Where I can not use plaster I have been in the habit of using a stocking, introducing the hand into the stocking to the very toe of it and carrying the stocking around and attaching a bandage to the upper part of it. First having made a collar, by rolling up some muslin, perhaps with some cotton, to encircle the shoulder, I sew the stocking to this collar. A "figure eight" bandage brings both shoulders backward, another bandage holding the arm firm. I believe that accomplishes all that is claimed by the dressing just presented. This dressing is the simplest, I believe, that has ever been devised, but some will not bear it.

Dr. R. B. GILBERT, Louisville, Ky.—In a case of fracture of the clavicle last summer I found the difficulty the Doctor refers to, in a child with a slightly eczematous skin. In that case I perforated the mole-skin bandage, which is the best bandage to use in such cases. In that way you can obviate to a large extent the irritation of the skin, but it does not entirely

obviate it. It is much better than a pad in the shoulder, which not only causes irritation but presses on the vessels and nerves in the axillary space and often causes swelling and pain so it has to be removed. The over-shoulder strap is certainly of very great advantage, and it would, it seems to me, obviate deformity. The adjustment of these plasters I think should be done under chloroform. Otherwise the constant motion prevents proper adjustment of the bandage. The anesthesia need be but partial.

Dr. A. ERNEST GALLANT, New York City, in closing—In reference to the irritation, if you use a baby powder and use absorbent cotton in the fold of the arm, which you can tuck in after the arm is put up, the irritation to the outer arm does not amount to much. If, as the Doctor says, you wish to use the perforated plaster, you may do so. One point in reference to the plan suggested by Dr. Cotton is that when you put a child up in a bandage you have got to put it up to stay. Last year I showed you how to put up the femur of a child so the child could do anything it pleased. The old way was to strap the child down, but in the way I suggested the child can play or do anything it likes. I have no doubt the plaster itches, but that we can not avoid. I appreciate the difficulty of this plaster, because I have had to use considerable plaster on my own hands and fingers in dressing infective wounds on myself. But in any other way the child's arm moves more or less and there is great difficulty in the healing of the fracture. I never use chloroform but I use laughing gas for the short operation. Perhaps I am not quite so careful as to causing a little pain in children.

After I had examined the child and found the fracture of the clavicle, I remembered having measured the child and found the shoulders three inches more in circumference than the head. It was a dry labor and I have no doubt I broke the clavicle when I brought the child into the world. I did not put any dressing upon it, nor shall I attempt to break it.

NEURO-DEFORMITIES IN CHILDREN FROM AN ORTHOPEDIC STANDPOINT.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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DES MOINES, IOWA.

It is generally conceded that nearly all deformities, especially in children, not traumatic or hereditary, are due directly or indirectly to some abnormal condition of the nervous system. This branch, like all other branches in medicine and surgery, bows with obedience to its alma mater, because we can not understand the anatomy, pathology and histology of the nervous system, the cerebro-spinal or any other specialized nerve-cell, unless we understand general medicine and the laws of cell-birth, life and growth.

My experience, as a general practitioner, prompts me to admit that nothing is more important than the nervous system and its disorders, and yet there is nothing in medicine in which our knowledge is so deficient. In the investigation of even so simple an ailment as headache, the field of medicine must be well examined to know whether the real cause of the pain is vicious heredity, nephritis, lack of exercise, anemia, puberty, menopause, menstruation, masturbation, occupation, or one or more of a myriad of other influences and diseases, all of which it is necessary to know to cure a simple headache. How much more, then, is it necessary for him who would suc-

cessfully treat the nervous system, especially to that extent to obviate deformities produced by or through the nervous system, to know thoroughly, not only the nervous system, but the entire human system, and everything that would hinder or augment its normal development. Unless we have such knowledge, we will still find ourselves treating apparent poliomyelitis for scorbutis, rachitis for paralysis, torticollis for cervical adenitis, trismus for an erupting wisdom tooth, and the "knee jerk" for morbus coxarius, these being deformities produced by abnormal changes in the nervous system. However, there are some "made to order" ovarian deformities, if I may be pardoned for mentioning the fact, which do not come under the scope of this paper, or any other, in many instances, and would not occur if a better knowledge of the nervous system and its influence over each component part of the human system existed. In many instances poliomyelitis or infantile paralysis in its various forms could be obviated if the functions and disorders of the nervous system were better understood. The remark once made by Prof. Jenner that more mistakes are made by "not seeing than by not knowing," is not without a lesson, and helps to confirm the fact that more mistakes are made in diagnosing than in treatment.

Next to the deformities produced by poliomyelitis or infantile paralysis, are those produced by hysteria, which the consensus of opinion of modern writers on the subject has placed among the diseases of the nervous system, which by no means is the most easily handled. I believe, the nervous system being well understood, that a line of general treatment may be used that will lessen the chances for such deformities and militate against existing ones. For this, the constitutional treatment must be looked after first, and the disease will always indicate same, after which the special treatment can be prosecuted and the drugs used indicated by the specialization of the disease. All kinds of talipes, or club foot, wrist drop, rotary lateral curvature of the spine, and, in fact, nearly all the muscular deformities known to orthopedic surgery may be produced by some nerve disease, and to undertake to correct the deformity with surgical means without first endeavoring to ascertain the real cause which produced the deformity, and treating the same medicinally, would not be in keeping with the modern medical and surgical science of the day. To more fully illustrate how easily we may be mistaken in the cause and results of deformities produced by diseases of localized nerves, or the nervous system, I will report the following case which has recently come under my observation:

December 7, 1897, Mr. B. brought his little three-year-old girl to me for examination, stating that she had a crooked back, which the doctor said was caused by the rickets. Upon a careful examination, I found that the child had a decidedly neuropathic family history, and a typic spasmodic rotary lateral curvature, which had been diagnosed and treated for rachitic curvature, and as the diagnosis was incorrect, the treatment must have been, because there had been no change for the better, but rather for the worse, after about six months' trial. The further history of the case showed that any kind of excitement or fatigue would increase the deformity, and when in a state of repose or sleep, the spasm of the muscles seemed to lessen. This convinced me that it was a case for medicinal treatment. I gave her a good general tonic,

strychnin internally, and locally used inunction and massage, and put on a crinoline jacket to support the spine and lessen the fatigue caused by the effort of the child to stand erect. Six weeks later I put her on three-drop doses of fluid extract of conium, increasing gradually to thirty drops, and hypodermic injections of atropin. These two drugs have always given good satisfaction in such cases. One month after this treatment began, a marked improvement was noticed, which continued, and soon the amount of medication was gradually diminished, and time for same increased, until a little over three months from the time treatment first began, the jacket was removed and treatment stopped, as the spasm of the muscles was a thing of the past, and she could walk erect without support.

WHAT INFLUENCE DO STIMULANTS AND NARCOTICS EXERT ON THE DEVELOPMENT OF THE CHILD?

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY E. STUVER, M.Sc., M.D., Ph.D.

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RAWLINS, WYOMING.

Since the earliest dawn of history, there has been inherent in the human organism a longing or craving for something to blunt the keen edge of anguish and sorrow, as well as to curb the intellect and inhibit the will, thereby giving full reign to the sentiments and passions during times of conviviality and enjoyment.

Glancing down through the ages into the dim twilight of the past we behold the Chinese using wine from grapes and beer from rice, somewhat like the present saki of Japan; the Hindus sura made from rice, barley, honey and other ingredients by the common people and soma made from the juice of certain plants, and after fermentation offered as a libation to their favorite Gods, Indra, Vishnu and others by the priesthood and rulers. "The ancient Persian writings, the Zend Avesta, dating back to the period of Zoroaster possibly 4000 to 6000 years B.C., contain, like the Rig Veda, many references to a sacred drink, homa, and a popular drink, hura."¹

The Bible contains numerous references to the use of wine, which was frequently carried beyond the point of moderation. And so down through the ages we find all peoples from the lowest savagery to the highest civilization resorting to some form of intoxication. Here on the one hand we behold the highly cultured lady imbibing her strong tea, the orator or statesman trying to conjure up the shade of Demosthenes or Cicero or the poet to arouse his slumbering muse by liberal potations of wine, brandy or whisky, while on the other hand we see the Guatemala Indians fuddling themselves with hemlock sap, the Peruvians with coca, the Tartars with fermented mare's milk and the Algerians with hasheesh.²

To the scientist and the philosopher, whose function it is to study the phenomena of nature, search out their causes, trace their effects, and co-ordinate all into a harmonious and symmetric whole, and especially to the physician, who should be a strong combination of both scientist and philosopher, this question appeals with peculiar force. What subtle but resistless power has impelled races, nations and indi-

viduals to give themselves up to an indulgence and debauchery that have inevitably led to their ruin or extinction? What caused the Persians under the temperate Cyrus, who by their hardihood easily conquered the effeminate Medes, to fall victims to luxury and degenerate so that Xerxes, the descendant of Cyrus, the monarch of Asia Minor, with his mighty army, was ignominiously defeated by the hardy and temperate Greek? What, except gross intemperance and its twin sister, licentiousness, so degraded the stern, noble Roman character, reduced his physical power and dissipated his ambition, until from being the ruler of the world, he became an easy prey to the barbarian hordes of the north? What, in short, throughout all time and among all nations, has been the result of the use of narcotic and stimulating poisons, save effeminacy, degeneration and extinction? With these indisputable facts of history before us, does it not become our duty as physicians, whose function it is not only to cure disease but to act as the conservators of physical, mental and moral integrity, to investigate carefully the exact physiologic effects exerted by these agents on developed and developing living organisms, and to trace the results of their moderate and excessive use both on the present and future generations?

We shall first consider the most widely used and probably least injurious of these substances, viz., *tobacco*. The deleterious substances in tobacco smoke are: *carbon*, which acts mechanically as an irritant, and discolors the secretions of the bronchial tubes, *carbonic acid gas*, which tends to produce sleepiness, headache and lassitude, *carbonic oxide*, "a very active, poisonous agent producing drowsiness, unsteady movements of the muscles and vomiting,"³ and crude nicotine, which consists of nicotine proper, and a volatile empyreumatic substance containing ammonia, and a dark, bitter, resinous extract.³ The ammonia bites the tongue, makes the mouth dry and induces thirst, thereby causing the smoker to drink frequently and exciting a free salivary secretion; it also exerts a solvent influence upon the blood.³ Nicotine proper, produces tremor, palpitation of the heart and paralysis, while the volatile empyreumatic substance causes a sense of oppression, and gives an unpleasant odor to the breath.

Concerning the physiologic action of tobacco, Wood (Ther. and Materia Med., 6th Ed., p. 396) writes as follows: "Upon persons who are not habituated to its use, tobacco acts as a very powerful depressant, producing horrible nausea and vomiting, with giddiness and a feeling of intense wretchedness and weakness. If the amount taken has been large, to these symptoms are added burning pain in the stomach, purging, free urination, extreme giddiness, passing into delirium, a rapid, running and finally imperceptible pulse, cramps in the limbs, absolute loss of muscular strength, a cold, clammy skin, and finally, complete collapse, terminating in death." Nicotine is an exceedingly virulent poison; very small quantities, even 1/30 gr. have caused poisonous symptoms in the body (J. W. Sevier, M.D.), and large doses almost instant death.

Tobacco increases the fluidity of the blood, interferes with the development of and causes disintegration of the red blood corpuscles, diminishes the power of the blood to take up oxygen and give off the carbonic acid,⁴ and thereby retards the progressive cell changes upon which the development of the body depends; it produces debility and irregular action of

the heart⁵ and lowers the tone of the whole circulatory system; it weakens digestion and assimilation, and not only prevents the burning up of waste materials but retards their elimination.

On the nervous system, tobacco acts as a depressomotor, producing "languor, feebleness, relaxation of the muscles, trembling of the limbs, great anxiety, and a tendency to faint."⁶ It also acts as a cerebral irritant, and interferes with the vasomotor centers of the brain to such an extent that the vessels are unable to adjust themselves to the condition required for healthy and untroubled sleep.⁷ The power of fine co-ordination is likewise decidedly lowered by the drug.

Tobacco frequently causes disturbances of the special senses. Owing to the irritation of the nasal mucous membrane the olfactory sensibility is impaired, and probably owing to the irritation and congestion set up in the nose and throat, together with central nerve disturbance, the hearing is sometimes lowered; but of all the special senses the sight is most seriously affected, and tobacco amaurosis or amblyopia is a not infrequent result of the excessive use of the drug.

While it is fortunately true that these effects, which are almost entirely functional, rapidly disappear when its use is discontinued by those who have reached manhood, it is very different with adolescents, in whom the habit of smoking causes impairment of growth, premature manhood, and physical prostration.⁸ The question as to the effects of tobacco on the growing boy or youth has fortunately been removed from the sphere of sentiment and speculation, and is now settled by careful scientific investigations. "From measurements of 187 men of the class of 1891, Yale, Dr. J. W. Seaver found that the non-users of tobacco gained in weight during the college course, 10.4 per cent. more than the regular users, and 6.6 per cent. more than the occasional users of tobacco. In height the non-users increased 24 per cent. more than the regular users, and 12 per cent. more than the occasional users. In increase of chest girth the non-users had an advantage of 26.7 per cent. and 22 per cent., and an increase of lung capacity of 77.5 per cent. and 49.5 per cent. respectively. These facts in regard to the dwarfing effects of tobacco are corroborated by observations on the class of 1891, Amherst, made by Dr. Edward Hitchcock. He found that in weight non-smokers increased during their course 24 per cent. more than the smokers; in increase in height they surpassed them 37 per cent.; in gain of chest 42 per cent., and in gain of lung capacity 75 per cent. It is probable that alcohol and other poisons have similar effects."⁸

The deleterious effect of tobacco on the muscular system, and in diminishing the powers of endurance is strongly emphasized by the fact that "stop smoking" is one of the first injunctions given a young man on engaging in training for a race or game of any kind requiring strength and endurance; because every experienced trainer knows that smoking lowers the working power of the human muscle by a large percentage,⁹ and that to smoke merely invites defeat. If tobacco so seriously injures the young athlete during a short period of training, how much greater must the injury be in the preparation for the arduous duties of our exacting modern civilization. How seriously handicapped is the boy who enters the race of life with every cell and tissue of his body poisoned by nicotine.

According to the evidence of teachers and educators all over the civilized world, tobacco exerts a very pernicious effect on the student. He becomes dull, lazy and unreliable, and retrogrades in his work. Indeed, so marked were these effects that "in France the difference between the students in the polytechnic schools who smoked cigarettes and those who did not, in scholarship, as shown by their respective class standings, was so great that the Government prohibited absolutely the use of tobacco in all government schools."¹⁰ "Out of thirty principals and teachers interviewed by the *Chicago Record*, all were agreed that a low standard of scholarship characterized the boy who habitually used cigarettes."¹¹ The extended investigations of Dr. Seaver, of Yale College Physical Department, and Dr. McDonald's studies of school children at Washington, D. C., conclusively show that cigarette smokers are more feeble physically and mentally than other students.¹² This, together with the fact that a very large percentage of the prize-winners, and men who stand highest in their classes do not use tobacco, ought to convince every unprejudiced person that tobacco is at least injurious to the mind of the developing child and youth. We make this statement boldly, notwithstanding the recent symposium of St. Louis physicians, and the specious arguments and special pleading of lawyer Garrison in his paper, "A Brief for the Cigarette," read before the New York Medico-Legal Society, in which he tries to create the impression that because a large number of cigarettes examined were made of pure tobacco, and did not contain opium or other adulterants, therefore they were harmless. What sophistry! Just as though pure tobacco, which contains a substance far more poisonous than strychnin or morphin, is not in itself sufficiently dangerous! Such attempts as these which try to overthrow clearly demonstrated facts and encourage boys and young men in the formation of a habit which can do them absolutely no good, but may be the source of much injury, both to themselves and their friends, besides being a nuisance to every one not saturated with the vile poison with whom they come in contact, are certainly not based on correct ethical principles, and leave a strong impression that they are stimulated by a *quid pro quo* from the tobacco trust.

EFFECT ON THE MORAL NATURE.

The use of tobacco has a peculiarly demoralizing effect on the moral nature of the young. In addition to making boys tired, stupid and lazy, it makes them irritable, perverse and careless of the rights and feelings of others, besides, in many instances, leading to lying and even stealing. This tendency to moral degradation is exceedingly prevalent among habitués of all kinds of narcotic poisons, and especially so among those addicted to the use of opium. I have seen quite a large number of so-called "*fiends*," and have yet to find the first one on whose word I could rely in a business transaction. There may be honest ones, but if so I have never met them.

For many years I have been firmly convinced in my own mind that much of the pallor, anemia, malnutrition, and the many evidences of retarded growth and development so frequently seen—especially among the poorer classes of our people, are largely due to the tobacco-laden, poisoned atmosphere which these children are obliged to breathe. Many a time have I gone into small, poorly ventilated rooms, where at best it

was difficult to get sufficient pure air, and found a child suffering from pneumonia or some other severe disease, so enveloped in the foul fumes of stale tobacco smoke that it could scarcely breathe, and every breath it did take was a poisoned one, and have seen the father, who apparently was very solicitous about his child's welfare, puffing away complacently at an old pipe whose horrible odor ought easily to win for it the place of honor in a tannery or a white lead factory, and while doing more harm than all the science and skill of the medical profession, armed by the whole materia medica, could counteract, would probably be finding fault with his physician and blaming him for the child's slow recovery. Nor is this the most discouraging part of the matter, because in quite a number of instances when their attention was called to the evil effects of the tobacco smoke the fathers became angry and refused to believe that it had any such effect. Such cases as these show the moral obtuseness that may follow and the utter selfishness that may be engendered by the use of tobacco better than any lengthy theoretical disquisition could possibly do. Neither, according to competent authority, is the evil limited to the users themselves, but lingers to curse their descendants. "No evils are so manifestly visited upon the third and fourth generations as the evils which spring from the use of tobacco."¹³ says Sir Benj. Brodie.

Let us now consider the effects of alcohol on the human organism. Sir Benjamin Ward Richardson tells us that "from the stomach alcohol passes directly into the circulation, so in a few minutes it is swept through the entire system. If it be present in sufficient amount and strength, its eager desire for water will lead it to absorb moisture from the red-blood corpuscles causing them to shrink, change their form, harden and lose some of their ability to carry oxygen. It may even make them adhere in masses and so hinder their passage through the tiny capillaries." (Diseases of Modern Life.)

This attraction of alcohol for water, together with the fact that it coagulates albumen and forms a thin white film on the mucous membranes by acting on the albuminous elements of the secretions, and the peculiar ease with which it penetrates protoplasm (this substance can defend itself against most other poisons), suspends or destroys the action of all the primary organic elements.¹⁴ In short, it affects every cell and tissue of the body and as Dr. Lionel S. Beale tells us, "alcohol does not act as a food; it cuts short the life of rapidly growing cells or causes them to grow more slowly,"¹⁵ thereby preventing their proper development and exerting a particularly injurious effect upon the young, retarding their growth—both mental and physical.

EFFECTS ON DIGESTIVE AND ASSIMILATIVE ORGANS.

There is a wide divergence of opinion as to the effects of alcohol on the digestive organs. Formerly it was almost universally believed by physicians that alcohol in moderate amounts aids digestion, but the careful, accurate and painstaking investigations of recent years have demonstrated the fallacy of that opinion, and at the present time the majority of physicians who have made a careful study of this subject are convinced that alcoholic beverages not only do no good, but are positively injurious to digestion. "One tablespoonful of whiskey reduces digestive activity more than 75 per cent." say Drs. Chittenden and

Mendel.¹⁶ "Nothing more effectually hinders digestion than alcohol,"³ says Dr. Richardson. "If much alcohol is taken into the system the gastric juice is so changed by its direct action that digestion is arrested,"¹⁷ asserts Dr. Bunge. "The idea of alcohol in any form being an aid to digestion is altogether fallacious and has brought disease and ruin to innumerable multitudes,"¹⁸ is the verdict of Dr. C. H. Shepard. Dr. T. D. Crothers says, "I have never seen a case where spirits used in any form, for any length of time, did not produce derangement and disease of digestion;"⁷ and Dr. J. H. Kellogg writes as follows: "Nothing could be farther from the truth than the popular notion that alcohol, at least in the form of certain wines, is helpful to digestion." Roberts showed years ago that alcohol, even in small doses, diminishes the activity of the stomach in the digestion of proteids. Gluzinski showed ten years ago that alcohol causes an arrest in the secretion of pepsin and also its action upon food. Wolf showed that the habitual use of alcohol produces disorder of the stomach to such a degree as to render it incapable of responding to the normal excitation of food. Hugounencq found that all wines, without exception, prevent the action of pepsin on proteids; the most harmful are those which contain large quantities of alcohol, cream of tartar and coloring matter. Wines often contain coloring matters which at once completely arrest digestion, such as methylin blue and fuchsin."¹⁹ Many similar expressions from the most celebrated physicians in the world might be cited, but the above are enough to show that alcohol even when exhibited as a therapeutic agent, should be used with as much care as strychnin, opium, or any other poison, and not in the careless, indiscriminate manner in which it has been used in the past.

From impaired digestion there naturally results a deficient supply of healthy pabulum for enriching the blood and building up the tissues. All the cells and tissues of the body are surrounded by membranes, on the integrity of which the silent work of building up the body depends. "If they are rendered too porous and let out the colloidal fluids of the blood—the albumin for example—the body dies, dies as if it were slowly bled to death. If, on the contrary, they become condensed or thickened or loaded with foreign material, then they fail to allow the natural fluids to pass through them. They fail to dialyse and the result is either the accumulation of the fluid in a closed cavity, a contraction of the substances inclosed within the membrane, or a dryness of the membrane in surfaces that ought to be freely lubricated and kept apart. . . . Upon all these membranous structures alcohol exerts a direct perverting power of action. It produces in them a thickening, a shrinking and an inactivity that reduces their functional power. That they may work up rapidly and equally, the membranes require to be at all times properly charged with water. If in contact with them any agent is brought that deprives them of water then is their work interfered with; they cease to separate the saline constituents correctly and if the evil that is thus started be allowed to continue, they contract upon the contained matter, in whatever organ it may be situated, and condense it." "By its effect on these membranous envelopes and coverings, alcohol becomes one of the most extreme causes of the modification of animal function and one of the greatest sources of structural degeneration."³ "The long-

continued presence of alcohol in contact with the membranes destroys their dialysing property and produces in the end organic changes."³

This effect of alcohol on the membranous structures exerts a most pernicious influence on the health and development of the body. While, as previously shown, its action on the digestive organs impairs the quality and reduces the quantity of the pabulum formed for the nourishment of the tissues, this last action not only interferes with the selective activity of the cells and tissues and the free passage of the nutritive material through their enveloping membranes but at the same time retards that retrograde metamorphosis which is always conjoined with healthy activity, and by clogging the membranes, prevents the free elimination of those retrograde products or toxins which are being constantly formed in the body. Nor is this all, for by lessening the oxygen-carrying power of the blood it prevents the burning up of these waste materials and toxins, and thereby interferes with functional activity, besides poisoning the system.

Viewed in the light of these facts, the so-called conservation of the tissues produced by alcohol, instead of being an advantage, as so generally taught, is, I believe, a matter of very serious import to many a patient. With the assimilation of the life-giving material impeded, and the elimination of death-dealing poisons retarded, the only explanation I can find for the widespread belief in the beneficial effects of alcohol is the tendency of the medical profession to conservatism. It is so easy to float with the current; it is so pleasant to advocate those doctrines transmitted by generations of ancestors and which have become so strongly ingrained in our natures as to be a part of our mental being; it is so hard to stem adverse currents and fight against the opinions and dicta of the many; it is so unpleasant to strive against inherited cravings and boldly to determine to make truth our guiding star, that the wonder is that any progress has ever been made. But while this is true, and all human progress and advancement are conditioned on the overcoming of these difficulties, the Creator of the universe has implanted in the minds of some rare spirits such a longing for the truth, such a desire to penetrate the arcana of nature, that they boldly face all difficulties, overcome all obstacles and never give up the fight until the banner of truth proudly floats over the innermost stronghold of error. I am happy to say that in the solution of this great problem our own ASSOCIATION has taken an active and commanding part, and among the gallant standard-bearers none occupies a higher position than the Nestor of our profession, the revered and beloved N. S. Davis.

EFFECT ON THE MUSCULAR SYSTEM.

For ages the almost universal impression has been that alcohol gives muscular force; that it enables man to do more work, to undergo greater hardships, to withstand greater cold and heat than he could without it. Accurate scientific investigations with the dynamometer and other instruments of precision have, however, positively demonstrated the fallacy of this impression. As Dr. Bunge has very cogently stated, "thousands of experiments upon large bodies of men have been made and have led to the result that in peace or in war, in heat, cold or rain, soldiers are better able to endure the fatigues of the most exhausting marches when they are not allowed any

alcohol. A similar result is observed in the navies and on the thousands of commercial vessels belonging to England and America, which put to sea without a drop of alcohol. Most whalers are manned by total abstainers."²⁰ Arctic explorers endure the severe cold much better when they abstain from alcohol than when they use it even in moderation. The great business interests of the country are beginning to appreciate the fact that alcohol unfits men for doing the best work. So convinced are they of this that many railroads and large manufacturing and mercantile establishments will neither employ nor retain in their employment persons addicted to the use of alcoholic beverages.

That alcohol lowers muscular force is very conclusively shown by the fact that those who engage in athletic sports must stop drinking if they expect to excel. No prize fighter, ball player, oarsman or any kind of athlete can keep up drinking habits without so injuring himself in a few years that he is relegated to the rear as "a back number." This is understood by all trainers and has impressed itself so strongly, that, even in beer-drinking Germany, the favorite national beverage is being discredited by athletes. "It is stated that three clubs of Leipsic students have abandoned the 'morning drinking bout,' and that several additional university clubs are about to take the same step. The desire to excel in all athletic sports is said to be the impelling cause of this action on their part." This practical acknowledgement that beer drinking is inimical to the best physical condition and to the highest degree of athletic success would be significant in any country, but is especially so in Germany, the great beer-drinking country of the world. Careful experiments made on a number of persons by Dr. Kellogg several years ago showed that muscular strength is diminished more than 30 per cent. by the use of alcohol, and the same author declares that nothing could be more absurd than the administration of mixtures containing alcohol when tonic effects are desired.¹⁹

The careful and elaborate experiments made on dogs by Prof. C. F. Hodge (*Pop. Science Monthly*, April, 1897) showed not only a marked diminution in muscular activity, but a greatly lessened power of endurance on the part of the dogs that received alcohol.

EFFECT ON THE SPECIAL SENSES.

Careful experimental investigations as well as everyday practical experience have demonstrated the fact that alcohol reduces the power and functional activity of the special senses, besides so perverting the action of the nerve centers and interfering with transmission to and from the periphery, that correct impressions of objective phenomena can not be obtained. The acuity of vision is lowered, the power of hearing reduced, the sense of smell blunted and the taste so obtunded that fiery and even caustic liquids can be swallowed without wincing. When carried to the stage of complete narcotism the functions of the special senses are for the time being lost and those "gateways of the soul" which are given us for protection are closed, and the man—deprived of sensation, motion and the power to see, hear, taste, smell or feel—lies before us, a mere vegetating mass, with barely enough respiration and circulation to sustain life, and if the narcotism is carried too far these stop too and he dies.

EFFECT ON THE NERVOUS SYSTEM.

But while alcohol retards digestion, impedes assimilation and excretion, reduces the oxygen-carrying power of the blood, and inhibits the nutrition of the cells and tissues of the whole body, still it is on the nervous system that its most far-reaching and malign influences are exerted. According to Dr. George Harley,²² it acts on nervous tissue in three distinctively different ways: "Firstly, through its chemico action on the blood; second, by disordering the liver's functions and causing the bile to accumulate in the circulation, thereby poisoning the brain and nerves, and thirdly, by its accelerating the heart's action and thus sending an increased supply of blood to the brain."

Dr. Norman Kerr²³ writes as follows: "Alcohol paralyzes the vasomotor nerves, and thereby relaxes control over the vessels so that these dilate and allow more arterial blood to pass to the brain. With this superabundant supply of blood there is great activity of function. This is the stage of exhilaration, excitement, brilliancy, sometimes frenzy and delirium. Owing to the loss of the contractile power of the vessels the increased blood-supply can not be returned to the veins from the brain with sufficient rapidity, and thus there is a block, causing impediment of the circulation, which ought to be free and unimpeded to allow of duly aerated, fresh arterial supplies; this is the stage of depression—of depression and collapse, when the brilliancy dies away; memory fades, speech is thickened, voluntary movement ceases, sensation is dulled and consciousness fails. This process, frequently repeated, sets up permanent tissue changes. The covering envelope is thickened and otherwise so injured that proper nutriment can not be conveyed to the brain, and thus that organ is badly nourished. The shape of the brain-cells is altered, and the physical degradation of the cerebral substances sadly impairs the intellectual and moral faculties."

Dr. B. W. Richardson says: "It has four distinct effects on the nervous system: 1, simple exhilaration or excitement, caused by paralysis of nerves controlling the supply of blood; 2, muscular weakness or lack of control of one's movements; 3, mental debility, involving the weakening of the will, judgment and reason; 4, unconsciousness, with entire prostration of the body, stupor and delirium tremens;" and Dr. N. S. Davis states that "alcohol diminishes nerve force, sensibility and the action of the nerve centers in direct proportion to the amount entering into the blood."

"The excitement of all natural stimulants is not necessarily followed by a corresponding depression, but it is the inevitable result of alcohol and all other narcotic stimulants, that they are followed by depression more than equal to the excitement produced, so that a person using narcotic stimulants is more depressed than ever, and, therefore, is more inclined to repeat and increase the dose."²⁴ And I desire to add that this tendency of alcoholic beverages and other narcotics to create a craving which only *their use* in increasingly larger doses can satisfy, is one of the great dangers connected with their use. Time will not permit me even to allude to the many pathologic changes or diseases that result from the excessive or long-continued use of alcohol in any of its many forms. Enough has been said, however, to show that it seriously interferes with the nutritive and assimi-

lative functions, even in the adult, and how much more serious must its effects be on the growing child or youth, whose normal development is conditioned on the possession of pure, rich, properly oxygenated blood, active assimilation and unimpeded elimination? If it reduces muscular power and activity in the adult, how much more serious must its effects be on the rapidly developing muscular system of the youth! If it reduces the power of the special senses and so perverts sensation and interferes with the ability of the mind correctly to interpret the actual condition of the physical and mental powers in the adult, how great must be the injury it inflicts on the immature muscular system, and how terrible its effects on the nervous system of the growing boy!

EFFECTS ON THE MIND.

In view of the foregoing effects on the physical organization, the question naturally arises, How does alcohol affect the mind? What influence does it exert on the immortal part of man? If human experience and observation have ever incontrovertibly established any truth, I believe they have proved that alcohol dulls and perverts the perceptive powers, deranges the emotions, beclouds the intellect and inhibits and paralyzes the will. "The will is always lessened in force and activity. The ability to determine between two or more alternatives, to resolve to act when action is necessary, no longer exists in full power, and the individual becomes vacillating, uncertain, the prey to various passions and to the influence of vicious counsels."²⁵ "The more purely intellectual faculties of the mind rarely escape being involved in the general disturbance caused by alcohol. The power of application, of appreciating the bearing of facts, of drawing distinctions, of exercising judgment aright and even of comprehension, are all, more or less, impaired. The sense of right or justice, which the individual may have had, is so weakened or destroyed that he will lie or steal or commit murder or other outrages, even where there is no provocation." "The memory is among the first faculties to suffer,"²⁶ writes Dr. Wm. A. Hammond; and Dr. August Forel of Zürich, says: "The poisoning of the brain by alcohol is all pervasive. We need not descend to the drunkard. In looking at the moderate drinker we see that his sensibilities are less fine, he cares less for the strict truth, he is more negligent of the proprieties and less active mentally."²⁷ Nor is this all, for "under alcoholic influence the brain begins to think awry. It can not think straight,"²⁸ and its influence on the psychical processes is curious, for while it renders them much slower, the individual under its influence believes them to be much quicker than usual."²⁹ Indeed, experiments made in Heidelberg University show that the consumption of alcohol, whether in large or small doses, produces a tendency to paralysis of the mental faculties.³⁰ And still, many would excuse free indulgence in alcohol on the ground that it is necessary to arouse the mind, to cause thought to flow freely, to stir latent genius into brilliant activity, or awaken the slumbering muse and snatch undying fame from Parnassian heights. Stuff and nonsense! The genius that will not illuminate without alcohol, had better be left to "innocuous desuetude," to take its place with the "mute inglorious Miltons" of the past, and the muse whose celestial fire can only be stirred into an active flame by means of whisky, brandy or even champagne, is at best but a sorry jade,

and had better be allowed to slumber peacefully on. If the experience and investigations of the most eminent physiologists and thinkers are of any value, more long-continued, arduous and severe mental work can be accomplished without alcohol than when it is taken, even in small amounts. On this subject Prof. C. F. Hodge writes as follows: "Helmholtz has said in describing his methods of work that slight indulgence in alcoholic drinks dispelled instantly his best ideas." Prof. Gaule once told the writer as an experiment during the strain of his "Staats-examen" that he suddenly stopped his wine and beer and was surprised to find how much better he could work. An eminent professor of Leipsic once said that the German students could do twice the amount of work ("Konnten zwei mal so viel leisten") if they would let their beer alone. Dr. August Smith has found that "moderate, non-intoxicant doses of alcohol (forty to eighty c.c. daily) lowered psychic ability to memorize as much as 70 per cent."³¹

EFFECT ON THE MORAL NATURE.

As pointed out in the foregoing quotations, alcohol blunts the finer sensibilities and dulls the moral perceptions so that the regard for truth, justice and the rights of others is greatly lessened. Indeed, it is a matter of common observation that old habitués are entirely unreliable, and in many cases their most sacred pledges are utterly worthless. So thoroughly are they in the power of an insatiable appetite, and so absolutely are they enslaved by it, that they would violate their most solemn promises, yea, even, if such a thing were possible, would barter their immortal souls for a glass of whiskey. This, together with the fact that a large percentage of the crimes committed are directly or indirectly due to indulgence in alcoholic liquors, should lead to the most stringent measures to protect the children and youth of our land against their blighting influences. These protecting influences, stimulated by a thorough physiologic knowledge and an aroused conscience, should originate in the home, be continued and strengthened in the schools, and strongly reinforced by the legislatures and courts of our land, and finally should receive the unqualified and earnest support of every physician. When we consider the strong inherent craving for alcoholic beverages in the human race and the powerful inherited tendency (latent though it be) in such a large percentage of persons, I do not believe any physician is justified in using alcohol in the treatment of any case of disease, unless, after a careful investigation, he is convinced that no other remedy will answer just as well. If such a course were conscientiously pursued, I predict that alcohol would soon be reduced to a very limited sphere, because I believe that nearly every disease in which it is now so extensively used could be treated better without it, and the medical profession be spared the odium of producing so many drunkards. The same is true of opium and other narcotic poisons which are now so extensively, indiscriminately and unfortunately—I think needlessly,—used. If we would devote more time to securing a clear conception of the great laws regulating physiologic activity; to ascertaining the causes of diseases and trying to remove them, or assist nature in overcoming their effects, instead of merely administering a narcotic dose to cover up the painful symptoms, we would do a great deal more permanent good and not lay our-

selves open to the imputation of having done much harm.

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DISCUSSION.

Dr. SLAGLE of Minneapolis—In regard to tobacco, the bad effects of it, of course, can hardly be exaggerated. The subject brought to my mind an experience I had when I started out in the practice of medicine, about 1861. Among my first cases I had a baby that was very ill. On my first visit it had turned suddenly worse. The symptoms were all bad: sweating, almost pulseless, and I at once made an unfavorable positive prognosis that the child was dying. I did not observe that a lot of old ladies had gathered in and had been smoking. The house was full of tobacco fumes. I gave the case up and was going to visit a relative some miles away. I returned in the morning and my patient was better, and recovered. Then I searched for the cause and found it was the fumes of tobacco with which the room was filled which depressed the child and came near killing it, and caused me to make the blunder in prognosis.

In regard to the use of alcoholic stimulants, I do not like to hear Dr. B. W. Richardson quoted, eminent as he was; I think that he went to extremes. The more I practice medicine the more I give alcoholic stimulants in certain diseases, and I am sure with good effect. Of course, no one can exaggerate the baneful effect of the excessive use of alcoholic stimulants. But in the practice of medicine, especially with children, I am sure it is a good therapeutic agent. I believe it is, when properly used in properly selected cases, a valuable agent. As to its injuring digestion, that is a mooted question; there are good authorities on both sides. I am sure it does not always injure digestion. I hoped the essayist would speak of opium. The more I practice medicine, and my department is diseases of children almost entirely, the more cautious I am of using opiates in any form in diseases of young children. Indeed, I use opium very little. I may state that in the earlier days of my professional experience I saw great harm from it. I am even willing to admit that I believe I killed some with it. It is a very dangerous agent to use in diseases of children, and I find we can get along without it. Those of the rising generation are less excusable, perhaps, for its use than we of forty years ago. We have now many remedies that were unknown then, that take its place.

Dr. LOUIS J. LAUTENBACH, Philadelphia—Up to the present

time the youngest age of any one who has been found the subject of tobacco blindness has been 19 years of age. This afternoon I expect to report a case I saw 13 years of age, and since then I have found a number of cases of about that age and from there on, and I find, from the influence of tobacco on the system, that these cases are very common indeed. I for one am very much in favor of the enactment of certain laws in regard to the use of tobacco. If we face honestly the two questions of alcoholism and tobacco, we will find that tobacco exerts the greater harm. It is not easy to think so, for we have been taught differently. We can use alcohol in reason and it will do good, but upon the young I have never seen any case where the use of tobacco has done any good, but I have seen numberless cases in which it has done harm. You go through the streets of our larger cities and notice the young boys smoking and you will see certain characteristics caused by the use of tobacco. I think before long we will have laws prohibiting the use of tobacco by minors. In the case I mentioned, the vision was about 1/5; the patient was a boy about 13 years of age, rather tall, and he had been following the habit about a year. His heart's action was very irregular. When the tobacco was stopped, the vision became 6/9, showing the influence of the tobacco on the vision. I do believe tobacco has not been talked about more because it is one of our pet vices. I find it far more difficult to get patients to stop the use of tobacco than to stop the use of alcohol.

Dr. JOHN RIDLON, Chicago—I simply wish to say a word in protest against the universal application of the conclusions in the paper read. Of course, the conclusions of the essayist are correct in a measure, but they are incorrect in their general application. Now, as to tobacco, I don't know what I would have been had I not commenced smoking at 13. As far as the effect of alcohol on digestion is concerned, it is true alcohol delays digestion, but it is not necessary to conclude therefrom that it is harmful to the individual. Delayed digestion often makes more perfect digestion. The patient may suffer difficulty from the digestion being completed before the digestive process has ceased. There can be no question that alcohol often is an advantage and help in digestion, not because it hastens digestion but because it delays digestion.

Dr. R. B. GILBERT, Louisville—I heartily agree with every word that has been said here about tobacco. I come from a State that boasts of its tobacco and whisky, and Kentucky probably would not thank me for saying a word against tobacco; but I have written against it, and I have not missed an opportunity to speak against it. It gave me dyspepsia and everything else until I quit it. It reduced my weight to 120 pounds. The point the gentleman makes in his paper is one we should pay considerable attention to. We should educate the public mind on the evil effect of the tobacco habit on the infants and children of our nation. I believe today, sir, that the degenerated condition of the country that is at war with us, is due as much, if not more, to their use of tobacco than to any other one vice they have. We should go back to the ancestry to find the cause of the ill effect on the children. I have found one or two children of such a family have a nervous temperament, even sometimes to such an extent that they could not follow the ordinary course of the common schools, many of them becoming epileptic. That is not all; it has a degenerating effect upon the moral character. The average tobacco user defends himself by saying it is a luxury and a pleasure. I know old farmers in my country, apparently hearty and hale, although they use whisky, but they are the exceptions. I want to say a word about the use of tobacco among doctors, especially those who practice obstetrics. I know a case in which I believe the doctor killed the child by blowing his breath into its face to resuscitate it. The doctor's breath was reeking with tobacco, and he blew his breath into the child's face to inflate the child's lungs. The child died, and on autopsy we could find nothing

to account for the death. No obstetrician knows what moment he may have to use artificial respiration.

Dr. E. STUVER, Rawlins, Wyo., in closing—I fully understand the fact that tobacco may have its proper usage; I believe, however, that the proper use of tobacco is in the exceptional case, and not in the general rule for mankind. Tobacco should not be used by the young. Of course, my discussion took up the general physiologic effects of tobacco. But the special application is that in the growing boy, tobacco retards growth not only of the muscular system and the nervous system, it not only interferes with digestion and impedes the elimination of toxic products from the system but it interferes with the whole development of the child in every particular, morally and intellectually as well as physically. If I had the time to complete my discussion of the alcoholic question, some of the reasons would have been seen for my objections to alcohol, especially for the young. We see many of the effects of alcohol in the young not due to its direct use, but due to the use of alcohol by the ancestors. While I am glad to know one of the gentlemen claims to get good results from alcohol, yet the more I practice the more I find I can get good results without alcohol. I can get better results from strychnia than from alcohol, in a case of pneumonia or any other condition of lowered vitality.

GASTRO-INTESTINAL CHOLERIFORM CATARRH.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Of the various titles, as cholera infantum, infectious diarrhea, choleric diarrhea, summer diarrhea, summer complaint, acute mycotic diarrhea, by which this disease is known, none are as expressive as gastro-intestinal choleric catarrh, for none designate as much at the outset, of the extent and character of its manifestations or variety of its action; summer complaint and summer diarrhea especially should not be used, they being indefinite and meaningless. The tendency of giving a number of names to a single disease should be overcome; be simple and comprehensive so no misunderstanding will be possible; avoid a variety of synonyms; they are confusing to physicians in general, who have not this knowledge at their command—knowledge which is tedious and unnecessary, and often leading to serious mistakes.

Gastro-intestinal choleric catarrh, while not of common occurrence compared to other diarrheal disorders, is relatively frequent in children under 2 years of age; is of short duration and frightful severity. Occurring as it does in children of such a tender age, weak and easily overcome, it is incumbent on us to know it thoroughly, recognize it early, that we may treat it vigorously and properly. It is now generally accepted that the exciting cause of this disorder is bacteria, the exact nature of which is undetermined; whether introduced into the system with impure food or residing in intestines, and made capable of exerting their destructive processes by being transformed into pathogenic germs or forming ptomaines is a question to solve, on which our energies should be directed. Accepting that bacteria is the cause, we are certain that their action is limited to certain periods of the year, not exerting their influence during very cold

months—of twenty-six cases none occurred during December, January nor February—on the other hand, the prevalence of the disease during June, July and August would tend to the belief that during a high temperature, the bacteria are especially numerous or active, or changes in the body are such as to especially invite their inroads. Dr. L. Emmett Holt, in his splendid work, "Diarrheal Diseases," draws the inference that "it is not the bacteria directly which produce the lesions, but their ptomaines, and, further, that the action of the latter is principally on the blood-vessels." Assuming Holt's inference to be correct, as from our present knowledge it appears to be, what are the causes predisposing to the formation of the ptomaines?

Knowing that bacteria exist in the intestinal canal in health, without detriment to normal conditions, anything which changes the healthy tissue or otherwise forms a medium for their development or action would be a predisposing cause.

That there is a distinct connection between occurrence of this disease and condition of temperature can not be questioned; occurring only during warm periods and absent during very cold establishes beyond doubt such a relation; whether it is the life of the germ, the normal resistance of the child, or that food undergoes putrefaction to a much greater degree, or that increase of unhealthy surroundings favor the micro-organism, is yet to be decided. My observation of twenty-six cases were as follows:

April 1, May 1, June 5, July 10, August 6, September 2, October 1.

According to the age the cases occurred as follows: First six months; 2; second six months, 7; third six months, 9; fourth six months, 5; between 2 and 3 years, 3.

There are several reasons for frequency in infancy, one which is seldom emphasized being the natural tendency—from weakness of a child of such a tender age—to succumb to the inroads of any irritant or its inability to resist an irritant. But standing above all other causes excepting bacteria, is that old enemy of the infant, which seems to wax stronger as time goes on—improper feeding; it is worthy of note in this connection that the child so fortunate as to be nourished at the breast escapes this dread disorder, with rare exceptions. Reasoning from this fact, what is more probable than that food is the vehicle by which bacteria are introduced, a nidus for their development, or causes changes in the mucous membrane favorable to their action? For instance, in over-feeding, the organs of digestion are overtaxed by the increased work and their power gradually diminished; there remains in the intestines a quantity of undigested food which undergoes decomposition, irritating and causing a change in the normal state of the intestines, and a culture in which the bacteria may produce their evils. There is scarcely an infant which is bottle fed that escapes diarrhea during the first two years of its existence. Improper food of any kind, over-feeding, unhealthy source of obtaining milk, are self-evident reasons for this; meats, vegetable, fruits, are common causes and should be prohibited, because the infant is unable to digest such food. We should carefully guard against all irritating ingesta, animal or vegetable, and more so, if not strictly fresh; the ptomaines may be introduced in the food and not formed in the intestines, though the latter appears to be in general the modus operandi. In conjunction with other results of high

temperature the difficulty of obtaining pure milk, rapid decomposition of food, and the desire for more liquids on the part of the child resulting from excessive heat, should be borne in mind.

One other fact in this connection of feeding, one which was first called attention to by Dr. R. B. Gilbert: the sexual act causes colostrum to be present in milk; this is irritating, difficult to digest, and has a laxative effect; in two cases I could trace cause to no source except this. Pregnancy and menstruation in mother nursing child may cause diarrhea; indiscretion in eating or medicines to mother; the latter may also be the cause in the child; a laxative to overcome constipation continued too long is more commonly a cause than generally credited.

Unhealthy surroundings predispose by increasing the liability of contamination of food and drink, or rendering child less capable of resisting by the impoverished air impairing the blood to a greater or less degree, and to the fact of the freer contamination increasing number of bacteria or forming ptomaines. Dentition is an exploded cause, excluded by the occurrence of this disease mostly in warm weather and seldom in cold, while if it was causative the disorder would be met with at all times without regard to season or temperature. Sudden exposure to cold would only act by lowering the standard of resistance; in itself it would be no detriment as far as this trouble is concerned.

Any disease present may predispose to this diarrheal affection in like manner to surroundings, by placing the system in a more receptive condition to accept the contagion. This form of diarrhea often follows other and slighter intestinal disorders, the reason for which is apparent, the local irritating effect of the milder form being prone to render the mucous membrane of intestines more or less unhealthy and particularly affected by the action of the bacteria.

It is unfortunate that there is so little definite knowledge of the anatomic changes occurring; for a disease is best studied in relation with its pathology; there are but few cases that are reported and these only partly satisfactory. This lack of facts is due chiefly to the rapid course of the disease with but slight changes compared to intensity of symptoms, the disability to obtain consent for postmortems before cadaveric changes occur, or to different modes of beginning of the disease. There would necessarily be a different state of the gastro-intestinal tract in a case following a previous diarrhea to that in which this disease is independent of any other form of trouble. According to Rilliet and Barthez the following is a summary of the anatomico-pathologic changes divided in four states, *a* "either the stomach is softened without any lesion of digestive tube; *b*, or the stomach is softened at the same time that the mucous membrane of the intestines, and especially the follicular apparatus is diseased; *c*, or, the stomach is healthy, while the follicular apparatus or the mucous membrane is diseased; *d*, or, finally, the gastro-intestinal tube is not the seat of any lesion appreciable to our senses in the present state of our knowledge, or it presents lesions so insignificant that they are not sufficient to explain the gravity of the symptoms. "So far, the disease resembles all the catarrhs, but what is special is the abundance of serous secretion and the disturbance of the great sympathetic nerve." The salivary glands are especially affected, becoming enlarged; and micro-organisms are found, which however, indicate but little, as bacteria abound in the in-

testines in health. If the disease lasts longer than usual there are more decided changes; proliferation of cells in the glands which open on the surface and also from the ductless glands; the degeneration of the epithelium resulting in erosions which expose the basement membrane, or if the disease is protracted, loss of substance is still greater, forming follicular ulcers; if it has lasted a long time a hyperplasia of the connective tissue with thickening of the mucous membrane or formation of mucous polypi. May have cysts formed by an agglutination at the orifice of a follicle. Of the changes in other organs nothing has been noted save in blood; there is decided lessening in the quantity of the blood and in its solid ingredients, resulting in the terrible anemia which occurs so speedily; also may have evidence of hypostatic congestion.

However, the changes in a typical case of gastro-intestinal choleric form catarrh, to our definite knowledge, are those of an acute catarrhal inflammation. Generally a child has a diarrhea and little attention is given it, perhaps four or five actions in the day, when, without warning, it is seized with vomiting or the stools are greatly increased in number, and the character changed to that peculiar sort which typifies this disease. Or, less frequently, the characteristic diarrhea begins suddenly—at first the stools having a little fecal matter in them, but soon they change to the rice-water discharges similar to those occurring in Asiatic cholera; these are colorless, generally odorless, serous in character and of large amount, occurring twenty to thirty times or even more in a day. If the stomach is chiefly involved, vomiting precedes the diarrhea, but generally the intestinal symptoms occur first. The vomit consists first of the contents of the stomach, or any food taken, then is slimy, containing mucus and serum, and finally, from retching, biliary matters are regurgitated and vomited.

In all my cases these two symptoms occurred, the intestinal one generally coming first, at times the two together, exceptionally the vomiting first. Intense thirst from drain on blood-vessels; colicky pains; tenderness and retraction of abdomen; often rumbling in bowels. Child restless, depressed, irritable, refuses everything save cold drinks, which are almost immediately vomited; pains in muscles, especially of neck. Voice weak and hoarse; tongue at first coated, following diarrhea is very dry; rapid and great emaciation, sunken eyes with lids partly open; face pale; skin loose, with prominence of the bony points of the body, extremities cold and moist. Pulse is extremely rapid, from 140 to 175 per minute, weak and irregular, may be impossible to count; finally may become so small as to be imperceptible. Respiration is increased in frequency, labored and irregular. Temperature varies from 103 to 107 degrees in typical cases.

If the case terminates fatally, child has convulsions; urine scanty or suppressed; marked stupor, pays no attention to surroundings; face cyanotic; cold, clammy skin; fontanelles sunken; pulse imperceptible; respiration accelerated and shallow; hyperpyrexia generally, but may be subnormal temperature; state of coma. In favorable cases there is a gradual abatement of the symptoms, may become an ordinary diarrhea or merge into a decidedly inflammatory one; first vomiting ceases, then change of stools, becoming more fecal in character. There is seldom recovery after the more severe, especially cerebral, symptoms occur.

The prognosis is decidedly unfavorable, depending on age, surroundings, previous health, whether bottle-

fed or by breast, and especially on severity of attack. Of the twenty-six cases which I reported seventeen died, or about 65 per cent. The duration is generally from twenty-four to forty-eight hours. As to diagnosis there can be no doubt. There is no disease which presents this marked group of symptoms in the brief time that this does; other diarrheal affections which simulate this run a much longer course; Asiatic cholera is differentiated by its longer course and presence of comma bacillus.

Treatment.—If possible, a child not breast-fed should be taken to the country during the summer months, or daily to the parks which are to be found in every city of any pretensions. The room should be large, well aired, of an even temperature, in which the child is kept; no foul-smelling articles of any description should be left near the child, all vomit and discharges destroyed, preferably by burning. The diet should be carefully chosen and carefully given, a suitable amount at regular intervals; above all, avoid over-feeding and restrict to a milk diet, previously boiled if possible; in those in which milk disagrees, barley is an excellent substitute, boiled, strained, and with a pinch of salt added, but as little food as possible should be given during the acme of the disease. Any derangement of stomach or bowels, however slight, should be promptly and vigorously treated, bearing in mind that in the generality of cases gastro-intestinal choleric form catarrh follows a milder form of diarrhea. In children nursed at breast the mother must be forbidden to nurse the child within three or four hours after coition, as colostrum is likely to excite a diarrhea.

From violence of symptoms, rapidity of course and unfavorable prognosis, the indication is decided treatment from the onset; the child should be seen every hour, or better, if possible, for the physician to remain at its bedside during the height of the disease, or for as long a time as his other duties will permit; often immediate attention turns the tide to a favorable course and he may be able to save the little sufferer; it is my custom, whenever applicable, to remain with the patient the entire night and as much of the day as time will allow. For the vomiting paregoric, creosote, iced champagne or brandy by mouth, or if vomited, by rectum; if this is unsuccessful a hypodermic of morphin may be tried—but is contraindicated after the symptoms of collapse begin. In addition to vomiting opium is good for the diarrhea, restlessness, pain and tenesmus, but should be stopped if drowsiness comes on. For the diarrhea, bismuth has given by far the best results; it is an antiseptic and an astringent—two qualities which serve our need especially; opium by lessening peristalsis; lime-water or some other alkaline to neutralize the acidity; pepsin to aid digestion and prevent decomposition of food and formation of gases and acids.

The only method I ever adopt of reducing temperature is by cold baths or applications—place child in a bath a few degrees below that of the temperature of the body, and then by addition of ice the water is cooled a few degrees, being satisfied with moderate improvement in this regard. This is the best and safest plan; fever is reduced thus only a short time, and the baths should be repeated as often as indicated by a hyperpyrexia.

For the pain and tenesmus the application of counter-irritation is valuable, as it lessens amount of medicine necessary to be given internally; a piece of flannel folded four times and large enough to cover abdomen

is dipped in hot sweet oil or lard, to which about a half a teaspoonful of turpentine has been added, and applied, covered with oiled silk and a cloth, is an excellent method. A remedy which has proved of great value to me in these cases is creosote, it is carminative, antiseptic, astringent, is sedative to mucous membrane of the stomach (acting on terminal nerve filaments probably), indications which it is necessary to meet; I give it in one drop doses every two hours combined with bismuth, pepsin and paregoric. For nervous irritation or cerebral congestion bromid of potassium is good, but must be used cautiously lest it excite more violent vomiting, it being decidedly irritant in some cases. For threatened collapse nothing equals whisky or brandy, ten to twenty drops per hour; in addition to this hot baths with addition of mustard, injections of camphor and atropia, the latter especially if the collapse is threatened from the heart.

It is best to give whisky or brandy throughout the disease frequently; if not tolerated by stomach give by hypodermic method; I have used alkaline solutions and, I believe, with benefit, hypodermatically, a 1 per cent. solution; or per rectum, 3 or 4 per cent. solution. We can not be too careful during convalescence. A slow, gradual increase in the amount of food, given either predigested; or better, with a digestant and an antiseptic. The following formula has been of the greatest benefit during the acute stage of this trouble, before stupor comes on or collapse is threatened:

R	Creasoti	m xii	070
	Tr. opii camph	3 ss	15 50
	Bismuthi subnit.	5 iii	11 66
	Pepsini scale.	5 i	3 88
	Syr. Aurantii cort.	3 ss	15 50
	Aquæ menth. pip., qs., ad.	3 iii	93 30

Mix. Sig. Teaspoonful every two hours to a child one year of age, vary with age and severity of symptoms.

In conclusion, I wish to emphasize several points: Move child to country during warm months whenever possible, especially if under three years of age. Do not think it necessary that food be given during height of disease; it is better to give no nourishment for twenty-four hours than to risk aggravating symptoms. Be in almost constant attendance on patient. Give stimulants from the beginning, but no opium if least sign of stupor present, especially not hypodermatically. The strictest hygiene must be observed.

IS THE USE OF THE TERM "TYPHOID PNEUMONIA" JUSTIFIABLE? A CASE IN POINT.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. D. TULEY, M.D.
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The title of this paper was suggested by the following case, the postmortem findings of which made the original diagnosis recorded incorrect:

The child was a robust girl, 13 years of age; seen first on Jan. 30, 1898, she having had a chill on the two previous days, with a maximum temperature on the first day of 101½ degrees and on the second day 103½. From this time to the eleventh day, all of the symptoms were those of typhoid fever, and the diagnosis was so recorded. There had been a general malaise for several days before the first chill; the headache was quite severe, gradually improving as the second week approached; the tongue was heavily coated a brownish yellow, with red edges and tip, but was moist; slight abdominal tenderness at first low down and a little to the left of the median line, right sided tenderness with gurgling soon developing; dry skin; epistaxis; cough quite severe and annoying at times; moderate

temperature, from 101 to 102, pulse 120 to 125; rose-colored spots appeared about ninth day, typic diarrhea during second week.

On the tenth day the temperature rose one degree, the pulse to 140 and the respiration to 50, but the chest still negative. Frequent examinations carefully made had up to this time failed to reveal anything abnormal. On the twelfth day signs of consolidation were found in the right base near the angle of the scapula, this gradually extending until the most of both lungs were involved. Despite free stimulation, administration of strychnia and nitroglycerin, and free administration of oxygen, her condition gradually became worse and she died in the state of severe cyanosis on the nineteenth day of her illness.

For four days before her death there was a severe diarrhea, which rather tended to strengthen the original diagnosis of typhoid fever, complicated by a pneumonia.

Autopsy three hours after death. Lungs almost completely consolidated, save a small area along the anterior borders of both. A small area of pleuritic adhesions was found at the left apex posteriorly. Spleen was normal, liver also. Intestines pale, with some distention of the upper ileum, the lower portion being collapsed and empty. The small gut was entirely normal, save a very slight evidence of congestion about the lower one-third. Enlargement of the mesenteric glands of the lower ileum, none however larger than a pea. Colon normal. Bacteriologic examination of the lungs showed presence of diplococcus pneumonia, with no other organisms present.

In the recent literature on the subject of typhoid fever, by several authors, notably Osler, a great deal of stress is being laid on the occurrence of typhoid fever without intestinal lesions. In the case just related many of the symptoms pointed to a typhoid fever, enough certainly, unconfirmed by the Widal test or diazo-reaction, which were thought unnecessary in view of the symptoms present, yet no lesions save slight mesenteric gland enlargement were to be found in the abdomen.

As to the pneumonia. The child was seriously sick for ten days before any signs were apparent in the chest, and no symptoms save the cough that would lead one to think of pneumonia, an annoying symptom which is frequently present, in the writer's experience, in typhoid fever occurring in children. The question to be settled, and which I trust will be brought out in the discussion is, was this a case of typhoid fever—*sine* intestinal lesions—complicated with pneumonia; was it a case of continued fever with a coincident pneumonia; was it a central pneumonia from the beginning with manifestations in the chest delayed until the eleventh day, or shall we class it as a typhoid pneumonia?

Osler states that "the term typhoid pneumonia is commonly used to designate cases with adynamic symptoms and it is to be distinguished from those cases in which typhoid fever begins with a definite pneumonia, the so-called *pneumo-typhus* of foreign writers." Tyson refers to typhoid pneumonia in the following: "The term typhoid pneumonia is one in common use by many who have no definite notion of its meaning, and, like the term typho-malarial, has occasioned confusion. In the first place the case may begin as a lobar pneumonia, the intestinal symptoms appearing at the end of the first week or later, at which time also the spots may appear, establishing the diagnosis, while the usual crisis of pneumonia fails to make its appearance. Again, a pneumonia may supervene in the second or third week of typhoid fever as a complication in which the true relation is less difficult to determine. Finally there may be a true pneumonia, to which stupor, a dry tongue, and generally adynamia may be added, without the distinctive lesions of typhoid fever. This is true typhoid pneumonia, which it may not always be possible to separate from the typhoid fever beginning with a

pneumonia. Both of the forms of pneumonia may be caused by the typhoid bacillus or the pneumococcus."

Many interesting points are suggested by the history of this case, which would perhaps enlarge the scope of the discussion, as the use of oxygen in pneumonia, hydrotherapy, etc., but these points have been purposely omitted by the writer that this one may be the more fully discussed. Is the use of the term "typhoid pneumonia" justifiable?

It occurs to the writer that its use in the case related, in light of the symptoms and postmortem findings is justifiable, and should be limited to such cases, but without a postmortem the term should be used with caution and extreme discretion.

DISCUSSION.

Dr. SLAGLE of Minneapolis—My experience has confirmed my first teaching in the University of Louisville, that we have typhoid pneumonia, properly so-called, and that we have typhoid fever with pneumonia. I have no doubt from the very good history Dr. Tuley gave of that case, that it was originally a case of typhoid fever, *sine* lesions of the intestines, which can occur, the pneumonia supervening later on; that it was not a case of typho-pneumonia, although I believe that is a proper term. I have seen made cases of typhoid fever, with pneumonia supervening. In regard to the diagnosis of typhoid fever in young children: My experience is that it is one of the most difficult problems in diagnosis to at all times correctly diagnose typhoid fever in young children. There are a number of very good physicians who dispute that very young children ever have typhoid fever. I am sure I have seen at least two cases of typhoid fever in infants, one about a year old and the other about eighteen months. They both occurred during an epidemic of typhoid fever in our city, Minneapolis. We had between four and five hundred cases of genuine typhoid fever in Minneapolis. The remarkable part of it was that it was an epidemic of typhoid fever during what is supposed to be the healthy season of the year, the only instance of an epidemic of typhoid fever that I have seen in the winter time. We did not succeed in finding the cause of the epidemic. Some attributed it to the water, but that was not proven to be the cause; at least many of us were skeptical about that. There were some cases of typhoid fever in quite young children. One case I was called to see, which others had seen, and the point hinged on the diagnosis. I am satisfied from the symptoms present and the way the case ran that it was a case of genuine typhoid fever in a child twelve months old, whose mother had just recovered from typhoid fever and had been nursing it. I have found it one of the most difficult things in all the field of diagnosis to make a definite diagnosis of typhoid fever, at least anything like early, in young children, and to differentiate it from meningitis or from influenza or from certain bowel troubles.

Dr. J. P. CROZER GRIFFITH, Philadelphia—Some of you who have been reading the papers know that Philadelphia has the great honor of having about four or five times as much typhoid fever as any other city in the United States. During the past year we have had a shocking epidemic of it. I am quite thoroughly convinced that typhoid fever is much more common in young children, even in infants, than it is ordinarily supposed to be. The New York physicians, at least many of them, have taken the ground that it is very rare. Northrup has never seen the lesions of typhoid fever in children. Recently, I had the pleasure of carrying the war into the enemy's camp, when I lectured to Dr. Northrup's students in the hospital on this subject, and narrated many cases I have seen. I have seen typhoid fever in a child three months old, which is the youngest I have known. The youngest case heretofore reported was recorded by Gerhardt a number of years ago in a child three months old. The child was in the same room

with its mother, who had typhoid fever, but who did not nurse it all, and it had the usual symptoms of typhoid fever. I have seen typhoid fever at twelve months, twice at nineteen months, and several times under two years. Many of these cases were corroborated by the spots and spleen, and others by the blood examinations repeatedly made. I saw a child last winter, of two years, with the slight lesions of child's typhoid. Two physicians of Montreal have recently written an interesting article in the *Montreal Journal*, recording nine cases which they could recognize as undoubted cases of typhoid, yet there were no lesions of typhoid fever. A curious thing is that in fetal typhoid fever there are no intestinal lesions. There were about ten cases of fetal typhoid fever reported before the recognition of the Eberth bacillus became general, that is, before you could differentiate it well from the colon bacillus. You know many mistakes at first originated in the differentiation between the Eberth bacillus and the colon bacillus. Up to the time of the possibility of the clear differentiation between these organisms, there were only about ten cases, and since then there have been about nine cases of undoubted fetal typhoid fever, the children born from typhoid mothers, all dying before or after birth, and in all cases the Eberth bacillus was differentiated. In every one of the nine cases there was a total absence of lesions in the intestine. The mesenteric glands, of course, were enlarged. I am very skeptical about the diagnosis of the case reported by Dr. Tuley as typhoid, simply because the symptoms were so developed. I have watched closely these cases of slowly developing symptoms of pneumonia a number of times until the crisis occurred.

Dr. A. C. CORTON, Chicago—I do not see any objection to the term typhoid-pneumonia as expressing a complication of typhoid fever. I don't see what objection there would be to typhoid-bronchitis. I remember looking the matter up very carefully a number of years ago in the preparation of a paper read before the Chicago society. I took a hundred cases of typhoid fever, selected only on account of the complete nature of the histories. Two-thirds of them were from hospital records, the remainder from private practice, and 68 per cent. of those cases showed positive pulmonary lesions, from mild bronchitis to pneumonia. I do not know what harm there is in saying typhoid-bronchitis as indicating a bronchitis complicating typhoid fever. I do not know that we should attach any significance pathologically to the co-existence of typhoid fever and lobar pneumonia, but I think that is a convenient way of designating the complication. If it be indisputably a case of pneumonia, the presence of pneumococcus being demonstrated at the start, and the development of unquestionable typhoid fever following, it would seem better to call it pneumo-typhoid.

Dr. H. M. McCLANAHAN, Omaha—I think if we gave more attention to the matter we would find more cases of typhoid fever in children. When we recognize that much of the typhoid fever comes from milk, there is no reason why the child should not be exposed more than the adult. There is no reason why its intestinal tract should not be more susceptible. My experience is that typhoid fever in children is comparatively mild in the majority of cases. Perhaps, first and most frequently, it is mistaken for malaria. In this day, with the aid of the microscope, that is hardly necessary. It has been said that a case of malarial fever that did not yield to quinin in a week was not malarial fever. Another fact I have observed is that the rose-colored spots do not remain as long in typhoid fever in children as they do in adults, and sometimes we overlook them. They are not as numerous and prominent, and are more evanescent in character. Constipation, rather than diarrhea, is the rule in typhoid fever of children. So less importance can be attached to diarrhea in making the diagnosis than is true in the adult. I saw a child in which a diagnosis of meningitis was made, and I think it may be stated

that the symptoms of meningitis, with high fever, closely simulate those of typhoid fever. Meningitis, I think, is rather rare in children, except where it is secondary to ear trouble or something of that kind. In most cases, we may expect the cerebral symptoms to be very prominent before we can make a positive diagnosis. I think there is no doubt typhoid fever is more common in children than the older practitioners have been led to believe. I know many doctors prescribe for a child without having it undressed to examine it.

Dr. EDWIN ROSENTHAL, Philadelphia—The question was: "Is the use of the term 'Typhoid-Pneumonia' justifiable?" I take the stand that "typhoid-pneumonia" is wrong, wrong in every respect. I can not conceive that there should be two diseases under one name. The cases of typhoid fever I see are, perhaps, the worst that can be seen in the city. During the last epidemic I saw some cases in which the temperature was subnormal, the temperature falling to 96 degrees, and one case remained for one week at that degree and then rose and took its usual course. If a case of typhoid fever becomes complicated with pneumonia, the pneumonia is only an addition to it. If a man tells me he has a case of typhoid-pneumonia, I do not know whether he means that he has a typhoid fever complicated with pneumonia or a case of pneumonia that has fallen into a typhoid state.

Dr. HENRY E. TULEY, Louisville, in closing—At first we were puzzled to make the diagnosis, the rose-colored spots appearing, then pneumonia following, and the fact that on postmortem we found no lesion in the intestine was interesting. I think it is clearly understood that the prefix "typhoid" in the term "typhoid-pneumonia" refers only to the typhoid state and not to a typhoid fever. I think we should use it very carefully, and preferably, not at all. I appreciate what the chairman said about diagnosing late pneumonias, where the signs are difficult to find although a careful examination of the chest is made. I think we should only use the term "typhoid-pneumonia" when we mean the typhoid state which has developed in a case of pneumonia.

AUTO-INFECTION VERSUS TYPHOID FEVER AS SEEN IN YOUNG CHILDREN.

Presented to the Section on the Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY W. C. HOLLOPETER, M.D.

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An irregular type of fever incident to auto-infection is frequently found in artificially reared children. It is also encountered in young adolescence, and may be found in breast-fed children of irregular habits. When associated with a depressed system or unhygienic surroundings the fever is most likely to assume a more protracted and intermittent type. When found in breast-fed children, the fever is suddenly ushered in at a high grade (103 to 104 degrees), very frequently sustaining this elevation of temperature for several days, when it may break into an intermittent form. The fever associated with intestinal toxemia has many times led to the diagnosis of typhoid fever, from which it can only be discriminated in young children by a careful analysis of the various symptoms, conditions and surroundings, diet and exposure, and all the many complications incident to artificial management.

The clinical picture of a child suffering from auto-infection so closely resembles those many reported cases of typhoid fever that I will attempt to discriminate between the symptoms of these two forms of fever.

In early life, the period prior to six months, excessive or improper food is usually rejected by vomiting; and consequently we do not, as a rule, find many cases suffering from acute milk poisoning, except from atmospheric causes, but shortly after this age, when the food enters the intestinal tube more freely, irregular and improper feeding finds its primary manifestations in a mild degree of irregular fever. The more intense expressions of auto-intoxication may even culminate in a severe form of nerve paralysis, as illustrated in mid-summer diarrheas. It is in the milder classes of cases, however—not in those of severe acute milk infection, as seen frequently during hot weather, nor in the wasted infant approaching general atrophy—that we meet our most troublesome problem in differential diagnosis.

The true clinical picture of auto-intoxication is most frequently found in young children suffering from a prior existing chronic intestinal catarrh. Children who have recently passed through any of the exanthemata are more prone to inherit intestinal indigestion from these eruptive disorders, and hence are more likely to contribute common examples of acute auto-infection. At the end of the first dentition, if this has been accomplished under dietetic difficulties and unfavorable environments, it will offer the period of greatest frequency. The general physiognomy of a child to assume this type of fever is suggestive of the many internal pangs through which it has passed; the child bears the marks of disturbed nutrition, the circulation is usually poor, hence the surface will be found cool, especially the hands and feet; the skin is dull, perhaps harsh and dry, probably earthy or yellowish. The child is more likely to be languid than irritable. The discoloration under the eyes is quite marked, pink in young children, darker in older. To this general physiognomy of a young child suffering from this predisposition, we often have superimposed, sudden, acute exacerbations due to some recent dietetic errors, or probably some emotional or climatic disturbances, according to the temperament of the individual, as illustrated in the following cases:

Case 1.—Harold, aged 6. An unusually healthy child of healthy parentage. Normal labor. Had for some days looked pale; appeared languid and constantly irritable; gastric irritation pronounced, associated with heavily furred tongue. One morning he ate a breakfast of heavy food very rapidly; at noon complained of headache, and during the evening was feverish, having a temperature of 102½ degrees. Following morning he seemed better, was cheerful and lively, attended school until noon. Toward evening, however, fever returned with temperature 102½ degrees again. The next morning temperature fell to 100. Complained of headache greater part of the day, though sponged two or three times. Fourth day, temperature 100 degrees, much more comfortable, no headache; temperature in the evening 102 degrees. Fifth day, severe headache early in the morning. Evening, temperature 100 degrees. Injection of glycerin and warm water, followed by a large bowel movement. Thorough irrigation with warm water and bicarbonate of soda removed a number of hard cheesy masses. Succeeding this the temperature was 99 degrees; much more comfortable. Evening temperature reached 102½ degrees. At this period he commenced to vomit. Seventh day temperature was normal; evening temperature was 101½ degrees. Eighth day the morning temperature was 99 degrees; evening temperature 102 degrees. Ninth day, morning temperature 99 degrees; noon temperature 102 degrees.

NURSE'S REPORT.

Nov. 30, 12 m. Temp. 105; pulse 130; resp. 24. 3 p.m. Temp. 105; pulse 128; resp. 24. 5 p.m. Temp. 104.3; pulse 124; resp. 24. 9 p.m. Temp. 104.3; pulse 120; resp. 24. 12 p.m. Temp. 103.3; pulse 124; sponge bath.

Dec. 1, 2 a.m. Temp. 104.3; pulse 124; resp. 26; sponge bath. 5 a.m. Temp. 103; pulse 112; resp. 24; slept about six hours;

complained of headache. 7 a.m. Temp. 103.1; pulse 112; resp. 22. 8 a.m. Sponge bath; two bowel movements. 9 a.m. Temp. 103.3; pulse 118; resp. 22. 12 m. Temp. 104; pulse 120. 2 p.m. Temp. 105; pulse 126; resp. 28. 4 p.m. Temp. 104.3; pulse 120; resp. 24. 7 p.m. Temp. 105; pulse 124; sponge bath. 10 p.m. Temp. 105; pulse 124; resp. 24; sponge bath. 12 p.m. Temp. 104.3; pulse 120; resp. 24; sponge bath.

Dec. 2, 2 a.m. Temp. 103.3; pulse 126; resp. 24; sponge bath. 4 a.m. Temp. 104.3; pulse 124; resp. 24; sponge bath. 6 a.m. Temp. 104; pulse 124; resp. 26; sponge bath. 8 a.m. Temp. 104; pulse 124; resp. 26; sponge bath. 10 a.m. Temp. 104; pulse 116; resp. 24; sponge bath. Record of fifth day in bed: Complaint of headache, vomited twice, tongue heavily coated, three bowel movements, eleven sponge baths, patient sleepy and stupid most of the time. 12 m. Temp. 103; pulse 120; resp. 20; sponge bath. 4 p.m. Temp. 104.3; pulse 120; resp. 24; sponge bath. 6 p.m. Temp. 105; pulse 120; resp. 24. A general pack reduced temperature to 101. 8 p.m. Temp. 103; pulse 120; resp. 24. 10 p.m. Temp. 103; pulse 124; resp. 26. 12 p.m. Temp. 105; pulse 124; resp. 26; pack.

Dec. 3, 2 a.m. Temp. 102; pulse 112; resp. 28. 4 a.m. Temp. 104; pulse 122; resp. 30. 6 a.m. Temp. 102; pulse 122; resp. 30. 8 a.m. Temp. 103.3; pulse 124; resp. 30. Record of sixth day of patient in bed: In 24 hours, six sponge baths, two general packs, with continued abdominal pack; bowels distended; tongue heavily coated; bowel movements mixed with mucus; patient sleepy and stupid most of the time. 10 a.m. Temp. 102; pulse 112; resp. 20. 12 m. Temp. 104.3; pulse 116; resp. 20; pack. 2 p.m. Temp. 104; pulse 120; resp. 24. 4 p.m. Temp. 103.3; pulse 118; resp. 24. 6 p.m. Temp. 104.3; pulse 118; resp. 24; pack. 8 p.m. Temp. 102; pulse 114; resp. 24; 10 p.m. Temp. 103.3; pulse 114; resp. 20. 11 p.m. Temp. 103.3; pulse 118; resp. 20. 12 p.m. Temp. 104; pulse 124; resp. 24.

Dec. 4, 2 a.m. Temp. 104; pulse 120; resp. 28. 4 a.m. Temp. 103.2; pulse 118; resp. 28. 6 a.m. Temp. 103.2; pulse 118; resp. 26. 8 a.m. Temp. 103; pulse 116; resp. 24. Record of seventh day: In twenty-four hours four general packs, with abdominal pack; patient twitched all night and very stupid when aroused; bowels distended; tongue heavily coated, with red margin. 10 a.m. Temp. 103.3; pulse 118; resp. 28; 12 m. Temp. 103.2; pulse 118; resp. 28. 2 p.m. Temp. 104; pulse 120. resp. 28. 4 p.m. Temp. 105; pulse 120; resp. 28. 5 p.m. Temp. 102; pulse 120; resp. 28. 7 p.m. Temp. 104; pulse 120; resp. 28. 9 p.m. Temp. 103.1; pulse 120; resp. 24. 11 p.m. Temp. 103.4; pulse 120; resp. 28. 12 p.m. Temp. 105; pulse 124; resp. 28.

Dec. 5, 1 a.m. Temp. 103; pulse 120; resp. 26. 3 a.m. Temp. 104; pulse 120; resp. 24. 5 a.m. Temp. 103.3; pulse 120; resp. 24. 7 a.m. Temp. 103; pulse 118; resp. 22. 9 a.m. Temp. 104; pulse 114; resp. 20. Record of eighth day: Three movements of bowels; voided urine every four to six hours; abdominal pack; three general packs; still very stupid and twitched all night; bowels distended; heavy brown coated tongue, with red tip. 10 a.m. Temp. 103; pulse 112; resp. 20. 12 m. Temp. 103.1; pulse 120; resp. 20. 2 p.m. Temp. 103.1; pulse 124; resp. 20. 4 p.m. Temp. 104; pulse 124; resp. 20. 5 p.m. Temp. 101; pulse 126; resp. 24. 7 p.m. Temp. 103; pulse 124; resp. 24. 9 p.m. Temp. 103.2; pulse 120; resp. 24. 10 p.m. Temp. 103; pulse 108; resp. 20. 12 p.m. Temp. 103; pulse 108; resp. 24.

Dec. 6, 2 a.m. Temp. 102.3, pulse 110, resp. 20. 4 a.m. Temp. 103, pulse 114, resp. 24. 6 a.m. Temp. 103.3, pulse 118, resp. 24. 8 p.m. Temp. 103.1, pulse 116, resp. 24. Record of ninth day: Three bowel movements; voided urine; two general packs; abdominal packs renewed every two hours; twitched all night; slept well until 2 a.m.; very restless from 2 to 5; bowels distended; brown coated tongue with red tip. 10 a.m. Temp. 102.3, pulse 112, resp. 24. 12 m. Temp. 103, pulse 110, resp. 26. 2 p.m. Temp. 103.3; pulse 118; resp. 24. 4 p.m. Temp. 103.4; pulse 118; resp. 28. 6 p.m. Temp. 102.3; pulse 118; resp. 28. 10 p.m. Temp. 102.3; pulse 118; resp. 28. 12 p.m. Temp. 102.3; pulse 118; resp. 28.

Dec. 7, 2 a.m. Temp. 102, pulse 118, resp. 26. 4 a.m. Temp. 102.1, pulse 116, resp. 28. 6 a.m. Temp. 102.3, pulse 116, resp. 28. 8 a.m. Temp. 102.3, pulse 114, resp. 28. Record of tenth day: Two bowel movements; voids urine about every three hours; one general pack, with abdominal pack; still very stupid and sleepy and twitched all night; bowels less distended; tongue little better. 10 a.m. Temp. 101.3, pulse 108, resp. 24. 12 m. Temp. 101.2, pulse 108, resp. 26. 2 p.m. Temp. 101.3, pulse 110, resp. 24. 4 p.m. Temp. 101.4, pulse 108, resp. 24. 6 p.m. Temp. 101.4, pulse 108, resp. 24. 8 p.m. Temp. 101.4, pulse 108, resp. 28. 10 p.m. Temp. 101.2, pulse 110, resp. 28. 12 p.m. Temp. 101.1, pulse 108, resp. 26.

Dec. 8, 2 a.m. Temp. 101, pulse 108, resp. 28. 4 a.m. Temp. 101, pulse 108, resp. 26. 6 a.m. Temp. 101, pulse 106, resp. 26. 8 a.m. Temp. 100.2, pulse 100, resp. 26. 19 a.m. Temp.

99.3, pulse 90, resp. 24. 12 m. Temp. 99, pulse 90, resp. 24. Record of eleventh day of patient in bed: One bowel movement; discontinued abdominal pack; slept well; more rational when aroused; still twitches considerably; bowels less distended; tongue better, still red tip. 2 p.m. Temp. 99.3, pulse 90, resp. 24. 4 p.m. Temp. 99.3, pulse 90, resp. 24. 6 p.m. Temp. 101.1, pulse 86, resp. 26. 8 p.m. Temp. 100.2, pulse 90, resp. 24. 10 p.m. Temp. 100, pulse 84, resp. 54. 12 p.m. Temp. 100, pulse 84, resp. 24.

Dec. 9, 2 a.m. Temp. 99.3, pulse 84, resp. 29. 4 a.m. Temp. 99, pulse 86, resp. 29. 6 a.m. Temp. 98.3, pulse 84, resp. 29. 8 a.m. Temp. 99, pulse 90, resp. 29. Record of twelfth day: Bright and rational when aroused; ceased twitching about 1 a.m.; pulse drops beat every three or four beats; tongue still red tip; strychnin renewed, $\frac{1}{60}$ every fourth hour.

8 a.m. Temp. 99 $\frac{1}{2}$, pulse 98, resp. 29. 12 m. Temp. 99 $\frac{1}{2}$, pulse 98, resp. 29. 8 p.m. Temp. 99 $\frac{1}{2}$, pulse 76, resp. 20. Record of day: Nourishment in twenty-four hours $\bar{x}xx$; brandy $\bar{z}iii$; pulse drops beat every three or four beats; patient very weak; quiet, rational; slept thirteen hours.

Dec. 10, 8 a.m. Temp. 99 $\frac{1}{2}$, pulse 80, resp. 18. 12 m. Temp. 99, pulse 80, resp. 18. 8 p.m. Temp. 99 $\frac{1}{2}$, pulse 76, resp. 18. Record of fourteenth day: Nourishment $\bar{x}xxii$; brandy $\bar{z}iii$; slept about fifteen hours; patient very weak; pulse drops three beats.

Dec. 11, 2 a.m. Temp. 76, pulse 99, resp. 18. 9 a.m. Temp. 76, pulse 99 $\frac{1}{2}$, resp. 18. 12 m. Temp. 76, pulse 99, resp. 18. 8 p.m. Temp. 79, pulse 98, resp. 18. Record of fifteenth day: Nourishment $\bar{x}xxii$; brandy $\bar{z}iiss$; pulse drops every eight or nine beats; very restless part of night; slept fourteen hours.

Dec. 12, 1 a.m. Temp. 98 $\frac{3}{4}$, pulse 78, resp. 20. 7 a.m. Temp. 98 $\frac{3}{4}$, pulse 78, resp. 18. 1 p.m. Temp. 98 $\frac{3}{4}$, pulse 70, resp. 18. 8 p.m. Temp. 98 $\frac{3}{4}$, pulse 74, resp. 18. Record of sixteenth day: Nourishment $\bar{x}xxv$; brandy $\bar{z}iiss$; bowels constipated; urine $\bar{x}xl$; slept fourteen hours; pulse drops every third beat; patient still very weak.

Dec. 13, 8 a.m. Temp. 98 $\frac{3}{4}$, pulse 80, resp. 18. 1 p.m. Temp. 98 $\frac{3}{4}$, pulse 84, resp. 18. 8 p.m. Temp. 98 $\frac{3}{4}$, pulse 84, resp. 18. Record of seventeenth day: Nourishment $\bar{x}xxviii$; brandy $\bar{z}iiss$; bowels constipated; urine $\bar{x}l$; pulse drops every ten beats; slept fourteen hours.

Dec. 14, 8 a.m. Temp. 98 $\frac{3}{4}$, pulse 84, resp. 18. 12 m. Temp. 98 $\frac{3}{4}$, pulse 84, resp. 18. 8 p.m. Temp. 98 $\frac{3}{4}$, pulse 84, resp. 18. Nourishment in twenty-four hours $\bar{x}xxviii$; brandy $\bar{z}iiss$; one bowel movement; constipated; urine $\bar{x}xxviii$; slept fourteen hours out of twenty-four; was very restless part of night.

Dec. 15, 1 a.m. Temp. 98 $\frac{3}{4}$, pulse 84, resp. 18. 8 a.m. Temp. 98, pulse 80, resp. 18. 1 p.m. Temp. 98 $\frac{3}{4}$, pulse 84, resp. 18. Nourishment $\bar{x}xxviii$; brandy $\bar{z}iiss$; one bowel movement by enema; urine $\bar{x}xl$; slept fourteen hours out of twenty-four; pulse drops every ten or eleven beats.

Dec. 16, 12 mid. Temp. 98, pulse 80, resp. 18. 8 a.m. Temp. 98, pulse 78, resp. 18. 12 m. Temp. 98.2, pulse 78, resp. 18. 8 p.m. Temp. 98.3, pulse 74, resp. 18. Slept fourteen hours.

Dec. 17, 1 a.m. Temp. 98, pulse 68, resp. 18. 8 a.m. Temp. 97, pulse 70, resp. 18. 12 m. Temp. 98.2, pulse 74, resp. 18. 8 p.m. Temp. 98.3, pulse 80, resp. 16. Slept fourteen hours; pulse drops every three to five beats.

Dec. 18, 8 a.m. Temp. 98, pulse 68, resp. 16. 12 m. Temp. 98.2, pulse 74. 8 p.m. Temp. 98.2, pulse 74. Slept thirteen hours; one bowel movement by enema.

Dec. 19, 8 a.m. Temp. 98, pulse 78, resp. 18. 12 m. Temp. 98.2, pulse 78, resp. 18. 8 p.m. Temp. 98.3, pulse 78, resp. 16. Slept fourteen hours.

Dec. 20, 8 a.m. Temp. 98.2, pulse 68, resp. 16. 12 m. Temp. 98.2, pulse 74, resp. 18. 8 p.m. Temp. 98.2, pulse 74, resp. 16. Slept thirteen hours.

Dec. 21, 8 a.m. Temp. 98.2, pulse 80, resp. 16. 12 m. Temp. 98.2, pulse 74, resp. 18. 8 p.m. Temp. 98.2, pulse 60, resp. 18. Slept about fourteen hours.

Dec. 22, 9 a.m. Temp. 98.2, pulse 68, resp. 16. 12 m. Temp. 98.3, pulse 70, resp. 16. 4 p.m. Temp. 99.2, pulse 80, resp. 16. 8 p.m. Temp. 99.3, pulse 80, resp. 16. Patient moved to another room which caused a rise in temperature.

Dec. 23, 8 a.m. Temp. 100, pulse 80, resp. 16. 1 p.m. Temp. 101.4, pulse 100, resp. 16. 8 p.m. Temp. 102.3, pulse 108, resp. 16. 12 p.m. Temp. 100, pulse 104, resp. 16. Slept sixteen hours.

Dec. 24, 8 a.m. Temp. 99.3, pulse 90, resp. 16. 12 m. Temp. 99.3, pulse 82, resp. 16. 8 p.m. Temp. 99.3, pulse 82, resp. 16. Slept sixteen hours.

Dec. 25, 8 a.m. Temp. 98, pulse 74, resp. 16. 1 p.m. Temp. 98, pulse 78, resp. 16. 8 p.m. Temp. 99, pulse 80, resp. 16. Slept fourteen hours.

Dec. 26, 8 a.m. Temp. 98, pulse 68, resp. 16. 1 p.m. Temp. 98.2, pulse 70, resp. 16. 8 p.m. Temp. 98.3, pulse 70, resp. 16. Slept fifteen hours.

Dec. 27, 8 a.m. Temp. 98, pulse 78, resp. 16. 1 p.m. Temp. 98, pulse 78, resp. 16. 8 p.m. Temp. 98.1, pulse 78, resp. 16. Slept thirteen hours.

Dec. 28, 8 a.m. Temp. 98, pulse 78, resp. 16. 1 p.m. Temp. 98.3, pulse 80, resp. 16. 8 p.m. Temp. 98.2, pulse 78, resp. 16. Slept thirteen hours.

Dec. 29, 8 a.m. Temp. 99, pulse 82, resp. 16. 1 p.m. Temp. 99, pulse 82, resp. 16. 8 p.m. Temp. 90, pulse 80, resp. 14.

Dec. 30, 8 a.m. Temp. 98.2, pulse 80, resp. 14. 12 m. Temp. 98.2, pulse 80, resp. 14. 8 p.m. Temp. 98.5, pulse 80, resp. 14.

Dec. 31, 8 a.m. Temp. 98.2, pulse 78, resp. 14. 8 p.m. Temp. 98.1, pulse 78, resp. 14.

The case thus outlined ran forty-nine days of elevated temperature, associated with delirium, alternating with profound stupor; unconscious bowel movements; irregular heart action. The boy had nose-bleed, rose-colored spots, and assumed most strikingly the general physiognomy of typhoid fever. I believe that the prior-existing intestinal catarrh was provocative of an acute intestinal infection, producing a decided impression on the system, benumbing the reflexes and locally exciting an inflammation of the small bowel. He gave negative response to Widal's test.

In striking contrast to the above history of a prolonged auto-infection fever, permit me to briefly outline what I believe to be a case of typhoid fever in a child of one year.

Case 2.—A. B., 1 year old, breast-fed; an unusually well developed child, weighing at the time of the commencement of his illness about twenty pounds, having had none of the eruptive fevers, and but slight disturbance incident to the cutting of the six incisors. The general regimen of the child was up to this time unusually favorable. The family had recently moved into an old house where the plumbing was not up to the highest sanitary model. The child was apparently well up to the day of seizure. He was ill but a few hours. I found him with a temperature of 105 degrees; loose bowels; moderately distended abdomen; slow, irregular pulse; respiration quickened; general disinclination to be disturbed; photophobia. The fever sustained this height, varying from 104 degrees to 105 $\frac{1}{2}$ for ten days, when it quickly, within twenty-four hours, reached the normal without any subsequent recurrence. The child, at the end of the second week, or four days after normal temperature had been reached, seemed perfectly well and happy. The blood gave a positive Widal test for typhoid. In this case we had vomiting, loose bowels, five to six per day, not necessarily offensive; evidence of imperfect digestion was present, but no masses were voided. We failed to find the rose-colored spots; the abdomen was soft and slightly painful; the spleen was undoubtedly enlarged; the tongue dry; no nose-bleeding. The case seemed to be more of the cerebral type, as the sphincters lost their control, yet we had no subsultus, and the case closely resembled a meningitis.

The diagnosis of the case rests on the continued fever, tympanitis, enlarged spleen, and last, and probably the most certain, the positive response of the Widal test. I admit the overwhelming difficulty surrounding a positive diagnosis of typhoid fever in so young a subject from malarial, influenzial fever, ileocolitis, meningitis, or possible acute tuberculous, or auto-infective fever. From malarial fever we make the diagnosis by the absence of *plasmodium malarii*, and by the fact that I gave five grains of quinin per rectum for five days without any response in the temperature. The temperature curve was too uniform for malarial infection. From ileo-colitis the diagnosis was easy, as the child was supported on mother's milk drawn from the breast and administered by a spoon. While the case assumed a cerebral type, it was most evidently not one of meningitis. No irregular respirations. No constipation. The pulse was not in keeping with the respiration. No local paralysis. No retracted abdomen. The temperature was too high for meningitis. The unequal and irregular class of symptoms which go to make up a severe case of influenza in the very young afford the most probable pic-

ture to which we may refer this assemblage of symptoms; yet the Widal test should incline us to regard it as a true, uncomplicated case of typhoid fever. The urine in this case, while greatly reduced in quantity and containing an excess of urates and some oxalates, was free from indicanuria—a more positive evidence of auto-infection.

I have selected the two cases of fever in young children, because they both stand on debatable ground, yet both possessing strong evidence of correct diagnosis. The older child, with slow onset and general malaise, irregular type of fever followed by a most unusual form, gave strength to the assemblage of symptoms suggestive of true typhoid; yet, on closer scrutiny, they would negative this opinion, especially with a more conclusive test of Widal's reaction, ruling it out of this category.

The second case, the young child of one year, with an assemblage of symptoms wholly unlike the unusual symptoms of typhoid, was undoubtedly a genuine one, not only by reason of exposure, but by the positive reaction test and the absence of indicanuria.

The whole subject of auto-intoxication, as found in young subjects, is exceedingly fascinating as possessing such a kaleidoscope of passing, changing symptoms as to bewilder the investigator. It has passed through many changes of meaning since its recognition. Auto-intoxication through the intestinal canal consists of retention of the usual abnormal material in the bowels. The result of this retention is decomposition, putrefaction and fermentation of the waste part of the food, giving us formic, buteric and lactic acid, and a generous amount of offensive gases pressing on the intestinal filaments of the pneumogastric and other nerves, giving rise to many local and general symptoms. The decomposition of albuminous products gives rise to the formation of phenol, indol, skatal and tyrosin. With knowledge of these many products of imperfect assimilation in the intestinal tube, a varied train of symptoms must necessarily arise, suggesting directly a disorder of the bowels themselves and reflexly of the respiratory system as seen in reflex bronchitis, nervous cough, local and general convulsions. The circulation is positively disturbed, oftentimes profoundly influenced, producing tachycardia, cold hands and feet, livid lips, blue eyelids, erythema fugax, and perspiring head and limbs. The kidney may assume an effort to dislodge the intruder, as found in lithemic urine, excessive uric acid and indicanuria. This long line of symptoms may be greatly enlarged, according to the personal equation of the investigator and the child's environments. We possess one positive proof that they are actually associated with the poison retained in the intestinal tube, because the symptoms disappear when the fermenting masses are removed.

That form of auto-intoxication found in adults, characterized by depressed spirits, disgust for all exertion, retiring disposition bordering on melancholia—the pessimistic individual—has its parallel in the young child in feverishness, fretfulness, destructiveness, nameless crying, aversion, and unusual perversion of the childish state.

Indicanuria I have found nearly always suggestive of auto-intoxication in young children and precedes the more serious symptoms by many days. This condition of the urine has not received the careful study it merits. Constipation is not always associated with auto-intoxication, as we might first imagine.

Oftimes the more fluid the intestinal movements are the more rapid may be the absorption of the poisonous material. In these cases the urine is highly noxious, and a good example of this diarrheal form of auto-intoxication is seen in cholera. However, in cholera the absorption of toxins seems to be continuous, while we may have frequent colliquative evacuations. The convulsions in young children suffering from gastro-intestinal disturbances may be explained better in terms of auto-intoxication than by the usual reflex theory or the undeveloped cortex.

SUBNORMAL TEMPERATURE IN TYPHOID FEVER.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. H. FREUND, M.D.

PHILADELPHIA.

The vagaries of the temperature history of typhoid fever are familiar to us all. While the mass of recorded temperature shows a certain regularity extending over a period of nearly three weeks, in historic or average cases; yet our experience brings to our knowledge a series of cases at variance with the classic course. These differences exist in cases gathered when happening in either childhood or adult life. While in adult life we can with certainty prognose the febrile history in an average case, in childhood this is more difficult, as the vagaries of temperature are so elusive that many days may elapse before the true condition can be determined. The degree of temperature is of different significance in childhood and adult life—what would be considered a dangerously high temperature in the adult would not carry the same import in the child. Why this should be so, would seem to me to be due to the greater resistance of the adult against febrile disturbances due to septic influences.

Why do our cases often present subnormal temperatures? is the subject upon which I would want the gentlemen to throw some light. I have seen several instances of this phenomenon, but none in which this symptom was so marked and in which it persisted so long as in the case of a young boy whose history I will relate.

The patient was 9 years old, healthy, well-proportioned, and had complained for several weeks before medical advice was sought. When first seen, he had probably advanced well on to the second week of typhoid, with roseola well marked. At the beginning of the third week, the temperature dropped as low as 96.4 degrees, axillary and *per orem*. For eight days the temperature persistently remained about this degree. During this time the patient was otherwise doing well; skin cool and dry; intellect good; urination good; bowels opened each day, presenting nothing unusual; no evidences of internal hemorrhage. Patient felt well, did not complain of any unusual aberrations; finally, on the eighth day, we were enabled to record a natural temperature. This long-continuance was a source of great anxiety to all concerned, yet despite all our efforts to restore the normal condition, no means seem to have been of the least avail.

An Encouragement.—In the United States 70,000,000 gallons less of alcohol were consumed in 1896 than in 1888.

OBSERVATIONS IN DIPHTHERIA.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. D. JEROWITZ, M.D.

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It is not the purpose of this paper to lecture upon diphtheria and its treatment before this assembly of eminent physicians nor to enter into any detailed bacteriologic study which would perhaps be only an incomplete reiteration of principles thoroughly known, discovered and taught by some of the other members present; but merely to base my remarks upon conclusions drawn from an impartial observation covering an experience of seven years, which, as has been my good fortune, has been much larger than one would naturally expect for that short space of time. As to conclusions, it must be remembered that experiences vary with different observers; depending 1, upon the virulence of the epidemic, and 2, upon the mode of treatment. A third item may also be mentioned, as it plays an important rôle in deductions made in this article, and that is the susceptibility and resisting powers of certain classes or sects of people.

From this it is evident that unless the observation includes all the different sects and all kinds of epidemics, statistics would not be reliable. Such an extensive experience, however, could not be expected from a general practitioner in a town of 150,000 inhabitants, having no children's hospital or any other opportunity of studying the cases, except as they occur in private practice. The observations include several hundred cases of "exudative" or "membranous" angina, having the diphtheria bacillus. The majority of these cases were comparatively mild and some could not be distinguished from an ordinary sore throat with either a punctate or a coalescent exudation. A certain number (about 8 per cent.) were followed by paralysis and some had laryngeal involvement (about 4 per cent.). For a long time I was reluctant to call these cases diphtheria, as they did not appear serious enough.

It seems that the ancient diphtheria described in text-books and the modern diphtheria, having as its principal diagnostic point the presence of the Klebs-Loeffler bacillus without regard for the clinical appearance, are two different things. The books describe diphtheria as a severe sickness with profound septic poisoning, a depressed heart and a rapid tendency to cardiac failure, the latter being the chief cause of death, and occurring often inside of twenty-four hours. The patient is said to present an anemic appearance and the fever is not high. The membrane upon which they dwell a good deal is said to be gray and *within* the mucous membrane, not a superficial exudation. It is not detachable, as it is really the mucous membrane itself, whose only possible way of removal is sloughing off, leaving a raw ulcerated surface which has to heal. The glands of the neck are enlarged, which is also considered a constant symptom. The mortality is given all the way from 50 to 100 per cent., and some physicians even today believe that when a case recovers it was not diphtheria.

The modern diphtheria of today is any sore throat, even without exudation, which will give a culture of the Klebs-Loeffler bacillus. The child may apparently be well and play; there need be no cervical enlargement, no dirty membrane which is undetachable; the principal thing is the germ. In some of

these cases there is a decomposition going on in the throat with septic infection and usually a fatal result. It is evidently the fact that formerly only these septic cases were considered diphtheria; hence, the great rate of mortality. But now, when the diagnosis is made so much oftener, I find that diphtheria is not such a dreadful disease as generally supposed, and whose danger is, like in measles, scarlet fever, etc., principally from the complications.

The most important of these are involvement of the deeper respiratory passages, nephritis with uremic poisoning, septic infection, and sudden cardiac paralysis. The clinical picture is about as follows: Sudden onset with high fever, chilliness, and general malaise; sometimes vomiting and occasionally convulsions. Very often the throat is not complained of and a diagnosis can easily be overlooked, until the condition becomes serious. Such cases as these, if resulting fatally, unnecessarily increase the mortality rate; hence it should be the rule of every physician who has been called in to see a sick child to examine the throat, even though he be positive of its uselessness. On examining the fauces we find a white or yellowish patch on one or both tonsils, extending sometimes to the posterior wall of the pharynx and uvula, and even further. This exudation can in a great many cases be removed, but it will soon reappear. If left alone it will disappear in from ten to fourteen days—sometimes longer. It does not slough off, in some cases it simply loosens and is spit up, while in cases where it is more adherent it seems to become absorbed, getting thinner and thinner until it finally disappears, leaving a healthy mucous surface, which in some cases may appear slightly congested, but not raw.

When the lower air passages become involved, unless the trouble begins there, the attack is usually sudden and entirely distinct from the pharynx. It does not extend from the latter to the larynx, but is a *separate process*. It is recognized by the hoarse and croupy cough, and the stridulous respiration.

Uremic symptoms occurred in about 5 per cent. of the cases, and these would invariably have paralysis. Albumin was rarely found, being absent in many cases having uremic symptoms. The paralysis involved principally the muscles of the throat. In three cases it affected the ciliary muscle of the eye, having the same effect as if a mydriatic had been employed. In one case it involved the left arm; in one both lower extremities; in two the muscles of the back and the back of the neck, which resulted in a drooping of the head; in one beginning with the muscles of the throat, extending to the extremities, then to the muscles of the chest and finally the heart; and in still another, now under observation, the paralysis involves the sphincters of the bladder and anus and the muscles of the left hip and leg. With the exception of the one fatal case and the one now under observation, the paralysis disappeared, varying in its course from one week to three months.

The number of deaths was seven. This is about $1\frac{3}{4}$ per cent. A brief description of each would perhaps be of interest.

Case 1.—Female child, age $3\frac{1}{2}$ years. Had been sick for a week before medical aid was received. Pharynx, larynx and trachea involved. Tracheotomy was advised but refused until the patient was almost exhausted. It was then performed, but patient died next day from exhaustion. No antitoxin used.

Case 2.—Male child, age $3\frac{1}{2}$ years. Began slightly on tonsils, but child played on the street right along, and soon

became croupy, and was so for three days before I was called. Finding just a small speck of exudation on one tonsil, and having treated the other children of the family that week for a mild diphtheria, I warned the mother of the seriousness of the case; but she said the child always was croupy whenever he took cold, and disregarded the advice. The next morning the condition became worse, the breathing very stridulous and difficult and the lips cyanotic. After an unsuccessful attempt at intubation, tracheotomy was performed and the child at once improved. The membrane involved the wound and twelve days afterward the child died at night from neglect by allowing the tube to get plugged up. No antitoxin was used.

Case 3.—Female child $3\frac{1}{2}$ years old. Took suddenly sick with laryngitis one day, and the next day the obstruction was so complete that the child was apparently dead, when intubation was attempted, but as it was not considered safe with this, tracheotomy was resorted to. Then with artificial respiration and application of heat to the body, the child rallied after about five hours and was able to sit up and drink. The following morning the child died of neglect, the inner tube having been laid on a table by the attendant and forgotten to be replaced, so that when the child was beginning to suffocate, the attendant in trying to remove the inner tube (which was not there) lost so much time by thinking it was caught in some way, that the child succumbed. In this case no membrane was visible and no antitoxin was used.

Cases 4 and 5.—These two cases were one male and one female, age $3\frac{1}{2}$ years, who had septic infection and laryngeal involvement. Antitoxin was used too late and shortly before death tracheotomy was performed, which relieved the dyspnea for an hour, when they succumbed to cardiac weakness dependent on the septicemia.

Case 6.—Female child $3\frac{1}{2}$ years old. Had, together with the other children of the family, tonsillar diphtheria, which disappeared in about three or four days in all of them. But in this one about three days afterward, fever developed, and a slight patch reappeared on the tonsils. When the child cried there seemed to be a stridulous or sawing noise which led to an examination of the lungs. There were subcrepitan rales showing that the lungs must have been involved. There was no cough nor hoarseness. The child was apparently well, and when asleep there was not the slightest noise with the respirations. Only when the child cried could this peculiar sound be heard. This child lived another week after this, dying from slow carbonic acid poisoning, as was noticed by the gradually increasing cyanotic appearance. No antitoxin was used.

Case 7.—This case was a tonsillar diphtheria of one side. The membrane disappeared in five days by gradual absorption; then came uremia and paralysis. The urine was full of albumin, dropsy developed, and the paralysis increased until it involved almost the entire body. Soon the albumin and dropsy disappeared, the paralysis became somewhat better, the child sat up, and in reaching for something, sudden death occurred. This was about six weeks from the beginning of the illness. No antitoxin had been used.

In summing up these cases, No. 1 might have been saved with antitoxin, if used early enough. No. 2 died of neglect, but antitoxin would have prevented the operation. No. 3 had no visible membrane, and died of neglect. Nos. 4 and 5 could not have been saved. No. 6 could have been saved with antitoxin if it had been used in the first attack. No. 7 might have been saved by antitoxin, but as the exudation was of short duration, and the general symptoms mild, it is a question.

Thus, out of the seven fatal cases, only three could be really attributed to the disease. This would make a mortality of three-fourths per cent.

TREATMENT.

As to the treatment, I only wish to mention a few points. It is useless to detach the membrane, for two reasons: First, it quickly reappears, thus giving it new activity and prolonging the disease. Second, by forcibly detaching, the surface is abraded, and septic infection easily follows. I dare say that if you leave the membrane alone in all cases, you will have less septicemia and less deaths. Gargles or sprays should be mild, antiseptic, and often. When not practicable, antiseptics such as listerin, hydrogen peroxid, etc.,

can be administered internally. Whisky for stimulation. Plenty of water in all cases, and calomel when indicated, especially in uremia. Iron I never employ, as by its astringent and cauterizing properties it can only interfere with natural drainage and healthy excretion. With this treatment, the disease can not be cut short, nor does it prevent its extension. For this we must employ antitoxin.

ANTITOXIN.

As to the use of this agent, I can give you my observations from an impartial standpoint. The first thing noticed after using antitoxin is a reaction, an immediate effect, something that we do not observe after other remedies unless we give full doses. It is therefore evident that the antitoxin is a powerful agent, and certainly produces some change in the system.

The second thing noticed is that in every case where I administered antitoxin in the proper dose, the membrane disappeared inside of three days. Without its use, while I have seen cases get well in the same length of time, yet the majority of cases lasted from ten to fourteen days. Third, in all cases where I employed antitoxin in the beginning the larynx did not become involved, and uremia did not occur, while in cases treated without antitoxin the larynx became involved frequently, and uremia also followed. Fourth, in cases where the membrane involves the larynx, trachea, and even the bronchial tubes, recovery followed when treated with antitoxin while the same class of cases before the use of antitoxin always died. Fifth, neglected cases, complicated with septicemia and laryngeal involvement, do not recover with any treatment. Sixth, in severe cases of dyspnea, with occasional cyanosis, the use of antitoxin and emetics has obviated the necessity for tracheotomy. Seventh, measles as a complication is no bar to the use of antitoxin. Eighth, in laryngeal cases complicated with uremia or nephritis antitoxin was followed by favorable results, thus proving that uremia and nephritis are not necessarily contra-indications to the use of antitoxin. Ninth, as paralysis was seen to follow only the cases of long duration, those in which antitoxin was administered early were not followed by paralysis. Of those in which it was given on the second or third day it followed in about 8 per cent. of the cases. From this it follows that antitoxin does not prevent paralysis except indirectly by cutting short the disease. Tenth, place of injection, behind scapula. No abscess or other bad result followed.

INTUBATION.

This has been resorted to in extreme cases. Some cases were rendered worse, and were at once followed by tracheotomy. Some were only slightly improved, and in these the tube was removed and the patient carefully watched, so that tracheotomy could be performed immediately upon indication therefor, but the severe attacks of suffocation were only transient, and surgical intervention became unnecessary.

TRACHEOTOMY.

This was performed five times, all proving fatal. Two of them died of neglect, two of them had profound septicemia at time of operation, and were only temporarily improved so far as respiration was concerned, and one was already exhausted from suffocation, owing to procrastination on the part of the parents. The operation was always done without an anesthetic. There were a great many other cases that

seemed to indicate tracheotomy and looked as if they could not live more than an hour or two, yet they recovered without the operation. Therefore I think that cases recovering from an early tracheotomy would have done so without it. In cases dying from slow carbon dioxid poisoning from membranous bronchitis or membranous pneumonia, I did not perform tracheotomy, as it seemed to me useless.

Let us summarize a few points:

1. The majority of cases are mild, and affect only the tonsils and pharynx.
2. The exudation lasts from one to two weeks. There are exceptions to this.
3. Removal of the membrane is useless, as by denuding the surface septic infection is promoted, and besides, the membrane soon reappears and remains longer than if it had not been meddled with.
4. The involvement of the larynx is always sudden and comes as a new attack, and not by extension of the diphtheritic process.
5. The larynx becomes involved in about 4 per cent. of the cases.
6. Every case complicated with uremia had post-diphtheritic paralysis.
7. Laryngeal involvement is to be most dreaded between the ages of 3 and 5.
8. Intubation and tracheotomy will become less and less necessary as the value of antitoxin is being recognized.
9. Conclusions as to antitoxin have been given above.

INDICATIONS FOR INTUBATION.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. M. McCLANAHAN, M.D.
OMAHA, NEB.

The conclusions deduced from a study of the symptoms of laryngeal diphtheria, as stated in this paper, are the result of personal observations at the bedside. My sole object in presenting them to the distinguished members of this Section is to elicit their candid criticisms, that, profiting by their large experience, I may be the better qualified to decide when to act, when to defer and when to desist.

When called into the presence of a little patient suffering from laryngeal diphtheria, the decision of the question whether to intubate or not is a very grave one, and we can only rightly measure our responsibility when we realize that a human life may be sacrificed by an erroneous decision. Aside from the symptoms, our decision will be modified by two circumstances, namely: the previous treatment and the environment of the patient. Before the discovery of antitoxin, the majority of cases of laryngeal diphtheria became urgent enough to demand intubation for their relief. Under the influence of this remedy 60 per cent. recover without mechanical aid. It will be apparent then that in a given case our decision will be modified by the fact whether antitoxin has been previously administered. We may defer operation in a case already under the influence of this remedy, whereas in another case presenting identical symptoms we would feel warranted in intubating at once, because twelve to twenty-four hours must elapse before amelioration of symptoms can be expected. In hospital practice, with a resident physician constantly

at hand and competent to operate, surgical interference may be deferred for immediate urgent symptoms, knowing that the relief of the stenosis can be procured in a few moments. In private practice, where a delay of hours might easily occur before the physician could return to the patient, greater caution is necessary. My conclusions are deduced from cases in family practice, and it is from that standpoint that I wish to discuss the subject.

Let us briefly note the symptoms that indicate the necessity for intubation:

The character of the respiration.—Labored inspiration is a constant symptom in all varieties and degrees of laryngeal stenosis. The importance of this symptom depends upon the amount of muscular effort expended in pumping air into the lungs. There is no way of measuring this expenditure of vital force more certainly and accurately than by observing the extent of the epigastric recession with each inspiration. Where there is noticed a deep depression, we may be certain that the patient is in a critical condition, and we have no assurance as to how long he may be able to continue this effort. Intubation here meets two important indications: More oxygen is received into the lungs, and violent muscular effort is suspended, increasing the vitality and saving the strength of the patient. Labored expiration is an important symptom; to my mind, the most important evidence of a pseudo membrane in the larynx. While this is usually associated with labored inspiration and other symptoms, the two are not always in proportion; for example, in one case each expiratory effort was prolonged and labored, with a pause at the end of the inspiratory act, but inspiration was comparatively easy, with but slight epigastric recession, yet this patient was both cyanotic and extremely restless. Intubation restored the rhythm of the respiratory act with prompt relief of the cyanosis.

The number of respirations per minute.—This is important, as indicating the extent of involvement of the respiratory tract. In laryngeal diphtheria my observation has been that the respirations are not greatly accelerated, whereas if there be involvement of the lesser tubes and air vesicles, we find both labored and rapid respirations. This class of cases present the most unfavorable prognosis, not so much on account of the laryngeal stenosis as of the septic pneumonia complicating the case. While in these cases intubation will relieve the labored respiratory act, it does not lessen the frequency of the respirations. I believe, however, the operation is indicated, not only to relieve the stenosis, but to enable the child to cough more vigorously, and more effectually to clear out the lesser bronchial tubes. In two cases where the symptoms were not extremely urgent there were attacks of dyspnea, due to spasm of the muscles of the larynx, presenting a typical picture of spasmodic croup. Both became markedly cyanotic during the attack. There was no evidence that this was due to particles of loosened membrane, and I am satisfied from the study of the cases that it was a spasmodic condition complicating the true croup. This complication adds greatly to the suffering of the patient and the anxiety of the friends. The history of such attacks, coming on at irregular intervals, in a case where the other symptoms are not extremely urgent in the interim, in my experience, demands intubation. In the two cases of this type—while I do not affirm that they would have terminated fatally—I do

say that, as the result of intubation, they recovered more comfortably.

Extreme restlessness.—This is an important symptom. When a child is continually changing its position and tossing about from side to side, we may feel certain that it is in a dangerous condition. While this symptom is usually associated with the other symptoms, especially that of epigastric recession, I have seen cases where this was by far the most prominent feature. Indeed, in two cases, but for the restlessness, the patient would not have been thought in immediate danger. I am satisfied this restlessness is due to a lack of oxygen, and is dangerous not only for this reason, but also because the patient rapidly wears itself out by its exertions. When, therefore, extreme restlessness is a marked symptom, even if the other symptoms do not appear urgent, it demands intubation for its relief. The relief given in these cases is usually very prompt.

Cyanosis.—When not due to a spasmodic condition or loosened membrane cyanosis is usually a late symptom, and a very serious one. We sometimes notice this symptom where the others are not prominent, but as far as I have observed, it has been preceded by the other symptoms mentioned. I am satisfied that many cases of this type are not cyanotic so much on account of the laryngeal stenosis as because of obstruction in the deeper portions of the respiratory tract, and I think this explains why it is that intubation often fails to give complete relief. The operation is indicated, however, to relieve the stenosis and to enable the child to cough and more effectually clear out the deeper portions.

From this brief study I will draw the following conclusions: The majority of cases recognized early are amenable to treatment by antitoxin. A certain number, however, fail to respond to the remedy. In these cases, if at the end of twenty-four hours a study of the symptoms leads us to the conclusion that the patient is not better, then intubation should be done. In all cases presenting any one of the following symptoms prominently, namely: deep epigastric recession with each inspiration, labored and prolonged expiration, extreme restlessness, spasmodic attacks coming on at intervals, or persistent cyanosis, then intubation should be performed. I am satisfied that in our enthusiastic confidence in antitoxin, we often expect too much from the remedy, and that in cases seen late it would be wise to intubate and administer this remedy rather than give the remedy and wait for its effect. Antitoxin and intubation are in no way antagonistic. Intubation is the complement of antitoxin, to be used only where indicated, and when indicated it is generally a life-saving operation.

INTUBATIONS FOR DIPHTHERITIC CROUP.

A REPORT OF THIRTY-EIGHT CONSECUTIVE CASES WITH THIRTY-SIX RECOVERIES. ALL TREATED WITH ANTITOXIN.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY F. E. WAXHAM, M.D.

Professor of Clinical Laryngology and Rhinology, College of Physicians and Surgeons; Professor of Diseases of the Chest, and Laryngology, Clinical School.

CHICAGO, ILL.

Desiring to add my testimony to that of many others regarding the value of one of the greatest remedies of the century, I beg leave to place the following

cases on record. These cases were no less severe nor less dangerous than those operated upon before the days of antitoxin, and the great reduction in mortality can not be attributed to a milder type of the disease.

June 30, 1895, through the courtesy of Dr. L. T. Durbin, I was called to operate upon a boy of 3 years. The tube was worn six days, being coughed out once, but returning dyspnea required its reintroduction. Antitoxin used; bacteriologic examination positive; recovery slow, but complete.

Sept. 2, 1895. Dr. Wm. P. Munn called upon me to intubate a child 2½ years old. The patient was nearly dead from asphyxiation. Antitoxin given; tube ejected several times from exfoliation of membrane below the tube; bacteriologic examination positive; uneventful recovery.

Oct. 6, 1895, I was called by Dr. A. M. Bucknum. The patient was 2½ years old. Antitoxin given; child greatly exhausted from difficult breathing; examination positive; good recovery; tube was worn five days.

Oct. 16, 1895. Dr. J. W. Hawk called me to operate upon a boy 3 years old. Patient greatly exhausted; removed tube on third day, but it became necessary to reintroduce it. The tube was permanently removed on the ninth day; examination positive; antitoxin used; good recovery.

Oct. 23, 1895. Courtesy of Dr. David Thompson. Patient 2 years old; very unfavorable case; nasal cavities, pharynx and larynx involved and the child nearly dead from asphyxia. Antitoxin given and intubation performed; examination positive; tube worn five days; perfect recovery.

Oct. 23, 1895. Courtesy of Dr. C. B. Richmond. Patient 3 years old; pharyngeal and laryngeal diphtheria. Antitoxin given; intubation performed; examination positive; tube worn five days; recovery.

Aug. 6, 1896. Courtesy of Dr. Hugo Mager. Examination positive; antitoxin; recovery; tube worn four days; age 6 years.

Sept. 13, 1896. Courtesy of Dr. P. V. Carlin. Examination positive; antitoxin; recovery; tube worn four days; age 16 months.

Nov. 8, 1896. Courtesy of Dr. Charles Jaeger. Examination positive; antitoxin; recovery; tube worn five days; age 4 years.

Dec. 2, 1896. Courtesy of Dr. Catherine Hayden. Examination positive; antitoxin; recovery; tube worn five days; age 2½ years.

Dec. 31, 1896. Courtesy of Dr. George Packard. Antitoxin; recovery; wore tube four days; age 3 years.

Jan. 12, 1897. Courtesy of Dr. L. E. Lemen. The patient had been sick with croup for three days before the doctor was called; membrane had already invaded the bronchi. Intubation done at once and antitoxin given; examination positive. Tracheotomy became necessary twenty-four hours after intubation on account of membrane in lower trachea and larger bronchi. Death occurred within twelve hours, from bronchial obstruction. Age 4 years. In the light of our present knowledge we should have given antitoxin in double the strength and repeated it more frequently.

Jan. 22, 1897. Courtesy of Dr. Herrick. Examination positive; antitoxin; recovery; tube worn two days; age 3 years.

April 7, 1897. Courtesy of Dr. P. V. Carlin. Positive; antitoxin; recovery; age 2½ years; tube worn four days.

Aug. 14, 1897. Courtesy of Dr. F. E. Warren. Positive; antitoxin; recovery; age 4 years; tube worn five days.

Sept. 30, 1897. Courtesy of Dr. H. L. Taylor. Positive; antitoxin; recovery; age 4 years; tube worn five days.

Oct. 16, 1897. Courtesy of Dr. D. R. Lucy. Positive; antitoxin; recovery; age 2 years; wore tube six days.

Oct. 31, 1897. Courtesy of Dr. P. V. Carlin. Positive; antitoxin; death occurred from broncho-pneumonia thirty-six hours after the operation. Age 16 months; surrounding very unfavorable, people living in a shack of two rooms.

Oct. 31, 1897. Courtesy of Dr. Von der Smith. Positive; antitoxin; recovery; expelled tube on the third day; age 4 years.

Nov. 7, 1897. Courtesy of Dr. Leavitt. Positive; antitoxin; recovery; wore tube five days; age 3 years.

Nov. 23, 1897. Courtesy of Drs. H. B. Whitney and H. C. Snitcher. Positive; antitoxin; recovery; wore tube five days; age 5 years.

Nov. 26, 1897. Courtesy of Dr. David Thompson. Positive; antitoxin; recovery; tube worn five and a half days; age 4 years.

Nov. 30, 1897. Courtesy of Drs. Worthington and Munn.

Positive; antitoxin; recovery; wore tube seven days; age 5 years.

Dec. 13, 1897. Courtesy of Dr. A. K. Worthington. Positive; antitoxin; recovery; age 2½ years; wore tube six days.

Dec. 14, 1897. Courtesy of Dr. H. C. Snitcher. Positive; antitoxin; recovery; age 13 months; wore tube nine days. This was the fourth case of diphtheria in the family, and the second one operated upon.

Dec. 21, 1897. Courtesy of Dr. Frank Dulin. Positive; antitoxin; recovery; age 6 years; wore tube five days.

Dec. 30, 1897. Courtesy of Dr. C. P. Perry. Positive; antitoxin; recovery; age 2 years; expelled tube on fifth day.

Jan. 1, 1898. Courtesy of Drs. McLaughlin and Weaver. Positive; antitoxin; recovery; expelled tube on fourth day; age 6 years.

Jan. 15, 1898. Courtesy of Dr. J. S. Neva. Positive; antitoxin; recovery; age 6 years; tube worn five days.

Jan. 31, 1898. Courtesy of Dr. P. V. Carlin. Positive; antitoxin; recovery; age 2½ years. Tube removed on fifth day.

Feb. 3, 1898. Courtesy of Dr. P. V. Carlin. Positive; antitoxin; recovery; age 6 years; removed tube on fourth day.

Feb. 15, 1898. Courtesy of Dr. P. V. Carlin. Positive; antitoxin; recovery; age 8 years; removed tube on fourth day.

Feb. 20, 1898. Courtesy of Dr. D. R. Lucy. Positive; antitoxin; recovery; age 2 years; removed tube on sixth day.

Mar. 3, 1898. Courtesy of Dr. I. B. Perkins. Age 17 months; positive; antitoxin, five doses, each 1000 units; recovery; removed tube on fifth day.

Apr. 27, 1898. Courtesy of Dr. T. J. Carlin. Positive; antitoxin; recovery; removed tube on fifth day; age 2 years.

May 11, 1898. Courtesy of Drs. Ellsner and Gorsuch. Positive; antitoxin; recovery; removed tube on fifth day; age 6 years.

May 12, 1898. Courtesies of Drs. Warren and Worthington. Positive; recovery; removed tube on sixth day; age 2 years.

May 24, 1898. Courtesy of Dr. P. V. Carlin. Positive; antitoxin; recovery; tube ejected two days after introduction; age 20 months.

In this connection I would allude to an adult, 40 years of age, with diphtheritic croup, to whom I was called in consultation with Dr. W. E. Shotwell. The patient expelled a membranous cast of the trachea and recovered under repeated doses of antitoxin without an operation. Recovery was formerly so very rare in the adult, that I believe this case is worth recording. I should also call attention to a case to which I was called by Dr. P. V. Carlin, March 1, 1898, and which has been excluded from this report, as the patient was moribund and died during the operation, and could not be resuscitated, although tracheotomy was also performed. This is the only case that has been excluded.

To recapitulate: of the thirty-eight cases operated upon, five were under 2 years of age with four recoveries, or 80 per cent.; eleven were 2 years old, with eleven recoveries, or 100 per cent.; six were 3 years old, with six recoveries, or 100 per cent.; seven were 4 years old, with six recoveries, or 85.7 per cent.; two were 5 years old, with two recoveries, or 100 per cent.; six were 6 years old, with six recoveries, or 100 per cent., and one 8 years old, with one recovery, or 100 per cent.; total, thirty-eight cases, with thirty-six recoveries, or 94.7 per cent.—a mortality of only 5.3 per cent. in a class of cases that formerly was dreaded above all others.

A few years since it was my experience, out of several hundreds of operations to have saved 35 per cent. Why this great reduction in mortality from 65 per cent. to 5.3 per cent.? There is but one answer. It has been due to the use of antitoxin. If my experience stood alone the conclusion might well be doubted, but inasmuch as the great reduction in mortality has been noted by all operators, it must be conceded to be correct. In former years patients died, in the great majority of cases, after intubation or tracheotomy, from the extension of the diphtheritic exudate into the bronchi. At present this rarely occurs. I am fully

convinced that when antitoxin is properly and energetically employed in full doses and repeated, the disease is at once cut short and no further progress occurs. I am also convinced that if a patient dies after intubation from bronchial obstruction due to the presence of diphtheritic exudation, the remedy has either been used late, the extension having taken place before its administration, or it has been used with a hesitating hand and in insufficient dosage, or the preparation has been of uncertain strength. When a child is taken ill with diphtheritic or membranous croup—which I consider identical—the danger is so great that hesitation in the heroic use of antitoxin is almost criminal. I certainly should advise a full dose of 2000 units even for a child, and half the strength for infants, repeating the dose in twelve or sixteen hours. In one of the cases reported, four doses of 1000 units were given an infant 13 months old, and in another 17 months old, five doses of 1000 units without any injurious effect.

Even at this late day we occasionally meet with those who still cling to former methods of treatment, hoping to carry their patients through without subjecting them to the dangers (?) of antitoxin, and who are apparently afraid of the remedy and hesitate about repeating the dosage. I would again and again repeat and emphasize the fact that antitoxin *must* be given early. It *must* be given in full doses and repeated once, twice or thrice, if necessary. My confidence in antitoxin is so great that I sincerely believe that with intubation, aided by the proper and free use of this remedy, death from diphtheritic croup should rarely occur.

DIPHTHERIA AS VIEWED BY THE GENERAL PRACTITIONER DURING THE LAST YEAR.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ALEX. McALISTER, M.D.

CAMDEN, N. J.,

It is not my aim to present a learned dissertation either on the pathology or scientific treatment of diphtheria. These subjects have been before the profession so constantly during the last three years that such a paper would prove only an intrusion upon your valuable time. What I wish to do is simply to make a few practical observations that must be patent to every general practitioner. Until recently diphtheria ranked as the gravest of the anginas, and the most dreaded of the acute febrile affections. This applies with especial emphasis to the laryngeal types, formerly largely regarded as a distinct disease, but now generally recognized as identical with diphtheria of the larynx and properly treated with heroic doses of antitoxin. Yet the nasal and naso-pharyngeal types with their preponderance of constitutional manifestations and former frightful mortality were scarcely less dreaded both by the physician and parent.

Recent advances in diagnosis and treatment, it seems to me, have left scarlet fever at the head of the anginas and typhoid at the head of the acute fevers in point of morbid possibilities. Even the progress which has been made in diagnosis is to be credited to antitoxin, it being due to the new impulses contributed by serum therapy. In the American Pediatric Society's report on the collective investigations of the

antitoxin treatment of laryngeal diphtheria in private practice, this advance is admirably noted in the following words: "In the early days of intubation it was customary to speak of the percentage of recoveries, and 24 to 27 per cent. were considered good result. In the last report the recoveries had crept up so high in the one hundred cases that it seemed more natural to speak of the percentage of mortality"; and again, in speaking of O'Dwyer's personal experience prior to the introduction of antitoxin, in nearly five hundred operative cases of laryngeal diphtheria in which the mortality rate was 72.44 per cent.: "When he had reached the seventieth case on the fifth hundred something occurred which carried the phraseology up over the divide. At this point in history, antitoxin arrived and interrupted forever the old series. In his next fifty-nine cases the mortality was 23.7 per cent."

Recognizing that the past year was doubtless exceptional in many a section of our country for the small number of cases of diphtheria which appeared, it may nevertheless be observed that, incidentally with the more general introduction of serum therapy, we have a decrease in the number of cases as well as in the severity and popular dread of the disease and the rate of mortality. This wholesome change is due to an ever broadening and deepening conception of both diphtheria and its *biologic antidote*, antitoxin.

The resort to immunizing injections to prevent the spread of diphtheria to other members of the family where a case or two has appeared, is not so largely practiced as the value of the measure demands, but is rapidly gaining in popular favor. But aside from any resort to this measure, it is evident that serum therapy has exerted a most potent influence in restricting the number of cases. While it is always within the range of possibility for the most malignant case to follow the mildest case, yet the proneness to spread the infection is always greater in severe cases. Admitting this, it is clear that whatever checks malignancy also controls the tendency to spread and materially restricts the number of cases that would otherwise occur. This beneficent influence can never be adequately estimated, although it is very considerable. One of the most encouraging experiences of many a general practitioner who has adopted the serum treatment of diphtheria, is that he now only occasionally meets more than the initial case or cases in a family. Many of the latter class even assert that they never even meet the exceptional new infection.

In view of all these facts, it would seem that the attitude of the general practitioner toward the serum treatment is a more reasonable subject for discussion than the merits of antitoxin. In the investion of this most interesting subject the initiative was doubtless taken by Dr. George L. Cole of Los Angeles, Cal., who made a study of the question in his own State and reported, recently, in an admirable paper entitled "Sero-therapy," before his State Medical Society. In reponse to a circular letter addressed to about three hundred physicians he received replies from 156. Of this number, only four expressed themselves as antagonistic to serum treatment, but none of these had personally tried the remedy nor had a desire to do so. With the opportunity to compare the clinical notes of hundreds of physicians who have each treated many cases in private and hospital practice, of thousands of others who have less numbers, and with the unequivocal results of great collective investigations con-

ducted both at home and abroad, it would seem that even the most obscure general practitioner is no longer justifiable in refusing to give his diphtheria patients the full benefit of the more humane and successful serum treatment. According to my personal observations, this effect is rapidly being attained. Physicians who were once loud in their opposition are now warm advocates, or in preference to the humiliation of a public retraction, have become secret users of antitoxin.

Speaking of the product, as now freely available to every physician, it is to be observed that marvelous progress has been achieved. I was one of the first in the East outside of our large cities to employ the remedy. That was before antitoxin was prepared in Philadelphia for commercial or other purposes. The article was then difficult to procure and very expensive. The quantity of serum necessary to inject in order to secure what was then regarded a full curative dose was inordinate, being upward of one fluid ounce. The syringe which I then employed has long since been laid aside as suggestive rather of minor rectal surgery. The improvements which made it possible to inject much larger doses in very much smaller quantities of serum, that is to say, which gave us concentrated serums, are without parallel elsewhere in the pharmaceutical sciences.

One year ago the most concentrated product in the market contained 500 immunizing units to each cubic centimeter of serum, but at present serums are available of 1000 and even 2000 units per cubic centimeter. The latter, it seems to me, have reached a degree of concentration which is no longer advantageous or even practical. A serum which contains nearly 150 immunizing units to each minim of the serum, or even half this strength, is relatively difficult to handle, owing to the small bulk and the unavoidable source of loss, while it remains a question whether such high concentrations possess any special therapeutic advantages at all. It seems to me, and in this I voice the sentiment of the general practitioners with whom it is my pleasure to exchange views from time to time, that a product permitting the administration of 1000 units of antitoxin in from 2 to 4 centimeters, i. e., from one-half to one fluid dram of serum, if well ripened and conveniently bottled, is the ideal antitoxin from every point of view. It is conceded that the more concentrated the product is the more readily deterioration takes place, so that the higher strengths are relatively unreliable after one to four months. This in itself is a considerable disadvantage to the general practitioner, who, more often than any other class of physicians, finds it indispensable to keep an available quantity of a strictly reliable product constantly upon his shelves. To him there are a score of elements that enter into a particular antitoxic serum of vastly more importance than higher degrees of concentration, per se, however commendable as an achievement in its preparation the latter may be. Chief among these elements I would name a high unit value, seasoning of the serum, a definite system of standardizing, convenient and sufficiently strong bottles and uniform potency.

DISCUSSION OF DIPHTHERIA.

Dr. LOUIS FISCHER, New York City—In the paper of Dr. Engleman this morning I was interested in hearing that her results with the mixture of the antitoxin with anti-streptococcus serum were good. I was very much interested recently to hear from some gentlemen discussing the subject, that they

endorsed the view I maintained, namely, that antistreptococcus serum today can not be classed as a remedy to be used. My experience dates back but two years, when I had the pleasure of seeing a series of cases under Dr. Baginsky of Berlin. We did not find it of value. In one case, in which the antistreptococcus serum was used, the bad effects were due to its use. Today we have not a streptococcus antitoxin, but only an antistreptococcus serum, which is not equally of value in all cases. While doing good in erysipelas, it does not do good in cases of scarlet fever, although we have proven that the streptococcus is the etiologic factor in scarlet fever. Therefore, I wish to reiterate what I said in New York, that I believe the time has not come when we may say that we are permitted to use the antistreptococcus serum in the same sense that we use the antitoxin in diphtheria. I would be pleased to hear if the various authors who have read today will state whether they have used this with the antitoxin, and their success.

Dr. Engleman stated that she fully believed the etiology to be still in a confused state. Mr. Chairman, I can only tell you of a very interesting case of a child who had an affection of the throat and showed the Klebs-Löffler bacillus. A child brought into the hospital for the relief of a phimosis, was operated upon and some of the smegma inoculated in a test tube. When placed under the microscope beside a culture obtained from a case of diphtheria, a friend of mine, who is a bacteriologist, was absolutely unable to differentiate them. When in Berlin I saw the streptococcus and staphylococcus in a great many cases. While the accepted theory is that the Klebs-Löffler bacillus is the sole cause of diphtheria, and that it can produce diphtheria, I think there is still room for improvement in the study of the etiology of diphtheria. I learned from another bacteriologist, who said he knew of the bacillus of smegma, that is similar to the diphtheria bacillus. I need only say a word of the pseudo-diphtheria bacillus, which is frequently present under normal conditions.

Passing to Dr. Jerowitz' paper, the gentleman referred to the fact that he does not use iron. I was rather surprised to hear that statement, because I regard iron as one of the most important drugs in the treatment of diphtheria. While the accepted conclusions in regard to antitoxin are so positive, I believe iron still holds its own as a remedy in diphtheria. The treatment of diphtheria was in such a condition of chaos four or five years ago, in regard to this antitoxin question, that I believe we are to be congratulated on the progress made in this line, and I believe it is due largely to some men who have gone throughout the country and advocated the use of antitoxin. Largely it is due to such work as that of Dr. Rosenthal. I will state, however, that I do not use antitoxin in every case. It was only about two months ago that Dr. Garrigues telephoned me to bring enough antitoxin for four cases. But I found only some little spots, which by a little gargling got well. I know another case in which by using a little wash the child recovered. I do not use the antitoxin unless there is no improvement in twelve hours. However, if I am called to a case in which a whole tonsil or the palate is involved or when there is stenosis, I would regard it as criminal not to use antitoxin. I never give under two thousand units of antitoxin in any case.

The paper of Dr. Waxham is a valuable contribution. The statistics are such that it would be a crime not to use antitoxin where there is laryngeal involvement. The Doctor has shown the old tubes of O'Dwyer. We have had the rubber tubes introduced; I believe I showed some of the tubes last year at the meeting of this Section in Philadelphia, and we have been using them since. The lime salts do not deposit on them, which is of value especially in the cases where we must use the tubes for a long time. In the case of a child I intubated on February 20, I am confident if I had used a metal tube I would have had to use a series of tubes by this time, but the rubber does not permit the deposit of lime salts on

the surface. Dr. O'Dwyer's new sets have also these new tubes and they are made according to his own directions. The tubes I use are made corrugated, because I find them so slippery that they are coughed out if we do not have them corrugated. The gag of Dr. Waxham I have used and I believe it is an excellent gag. I should like to ask Dr. Waxham how he treats his prolonged cases of stenosis. Some cases were reported by Dr. O'Dwyer at the last meeting of the Pediatric Society. I refer to the class of cases where you have intubated and left the tube in for a week or ten days, removed the tube and have stenosis, and must they have prolonged intubation? I have mentioned a case where the child has worn the tube over three months. I have tried tracheotomy in several of those cases and I have found that each and every one of them has died.

Dr. ROSS ENGLEMAN, Chicago, in closing.—I have nothing to say, except to emphasize the subject of polymorphism of the Löffler bacillus. As the Doctor says, I think the subject is still in an experimental state. I do not think we can say certain symptoms refer to the staphylococcus or streptococcus or Löffler bacillus infection, because of this polymorphism, and we often do not get anything except a mixed infection. In my series of cases I did not use the antistreptococcus serum in sufficient doses, so I would not express an opinion as to its use in these cases. As to the question of the prolonged intubation, I am very glad to hear from Dr. Fisher of the use of the rubber tubes. I have had a few cases that were very troublesome and shortly after I had those cases I read O'Dwyer's article, I think in the July number of the *Archives of Pediatrics*, in which he referred to the use of alum and paraffin, which seemed very ingenious and with which he said he cured his ulcers in a short time where the tube had been worn three months or longer.

Dr. JACQUES, Chicago.—I had charge of the South Side Dispensary in Chicago at the time Dr. Waxham was beginning his career as an intubator and I have called him out, in the most bitter and disagreeable weather, and he never has failed to respond to perform intubation. In nine out of ten of those cases death followed. When I recall the experience he went through I am glad no such experience will be possible for the next generation. We should have in mind always the fact that it takes two things to make a case of diphtheria: First, the predisposition to the disease; second, the presence of the germs. I have frequently obtained cultures of the Klebs-Löffler bacillus from my mouth, although I have never had diphtheria in my life. In any individual not susceptible to diphtheria, there is, through the action of the cells, an antitoxin produced which protects the individual from the action of the germs. When the individual loses this condition of resistance or it falls below a certain standard and the Klebs-Löffler bacillus is introduced on the membrane, Klebs-Löffler diphtheria will follow and will progress according to the susceptibility of the individual. Unless you have the clinical symptoms following the finding of the germ, you do not have diphtheria. Dr. Waxham, in his paper, stated that he always gave at least two thousand units to a child and more to an adult. If you will pardon me for a moment, I wish to illustrate the stand I have taken, that the younger the child the larger the dose of antitoxin should be, not in the amount of serum but in units. We understand that the growth of the bacilli produces the ptomaines. In the experiments we estimate the amount of toxin which kills the animal by the size of the animal, and the smaller the animal the smaller the amount of toxin required to produce the animal's death. The growth of bacilli here is as large in the infant as in the adult, and therefore a larger amount of antitoxin is required. I use three or four thousand units in infants. I want you to beware of the concentrated antitoxin. A drop will stay in the syringe, a drop will be lost, probably, in seeing that you do not inject

any air. I prefer the antitoxin of average concentration, say 5 cc. to three or four thousand units. One of the gentlemen who read a paper said he did not think antitoxin is a preventive of paralysis. I do think the gentleman has carefully considered that statement. You might as well say that water does not prevent the spread of fire. Antitoxin does prevent paralysis. The toxin produced by the Klebs-Löffler bacillus causes necrosis, and when that ptomain accumulates to a sufficient amount to produce destruction of the corpuscles of the blood, the kidney tubules and the destruction of the vital centers, the patient will die. So if you give your antitoxin it must be given before this destruction occurs and then you will prevent paralysis.

Question.—I would like to know how long they quarantine patients to prevent the spread of the disease.

Dr. JAKUES—In the Health Department of Chicago we do not placard any house unless the Klebs-Löffler bacillus is found in the case and the diagnosis is made by one of the inspectors in the health department. We have not followed the quarantine very carefully for the reason we work there in harmony with the physicians. We are simply the assistants of the physician. We say to the doctor, you go to your patient, take with you a little culture material, give it to us after inoculation and it will be returned to you as your private property. The patients do not know in one-fifth of the cases that the health department had anything to do with the case. The physician is responsible for the spread of the infection, and he looks after it then very much better than the health department could do. As a result our diphtheria statistics, as perhaps you know, have been remarkably low, being in the charity cases only 6.7, when formerly they were nearly 40.

Question.—How long do you keep the house placarded?

Dr. JAKUES—We leave that to the discretion of the Doctor. Often it does not stay on the house over an hour and often it remains on the house for a long time. The patient is at once isolated, and if the patient is isolated and put in the care of a trained nurse, the individuals in the house are in no more danger than an individual in an ordinary street car. If the physician desires to take the responsibility of the case, the placard need not go on the house at all. Every doctor knows that when he calls on the health department he will not be interfered with in any way. If the patient is so poor that antitoxin can not be bought, it will be furnished them by the health department without cost.

Question.—I would like to ask the physician from Chicago, if when he found the Klebs-Löffler bacillus in his throat, and thought he was not subject to diphtheria, did he not think he was a menace to other persons, who were debilitated?

Dr. JAKUES—I think the only time I would be a menace would be when kissing, and I am not subject to that habit. When I found this bacillus in my throat, I was very careful to take means, by gargling, to keep my throat from being a subject of infection. I have gone from a case of intubation to a case of confinement and performed version and do not know that I ever transmitted diphtheria. There is a great mistake in the belief among the general public as to the contractibility of the disease and the danger of physicians. If they are clean, there is very little danger of contagion. Contagion is spread only by contact and not at all through the air.

Question.—Do you ever fumigate the premises after a case of diphtheria?

Dr. JAKUES—We have spent several thousand dollars in the last year in the practical methods of fumigation, and we have found formaldehyde gas one of the most practical methods. It is clean, leaves no odor and is one of the simplest and best methods. We simply take formalin, or the 40 per cent. solution of formaldehyde gas, add four parts of water, stop up the cracks in the room, extend a sheet across the room and throw the solution on the sheet. We then get out of the room as

quickly as possible. The disinfection is perfect. We place tubes, wrapped in flannel, in various places in the room and if any of them grow, the disinfection is repeated. This does away with the use of sulphur and we find it by far the best method of disinfection.

Dr. AGNEY, Philadelphia—I think Chicago does better than Philadelphia. In the first place, we have a hard and fast law that all cases have to be placarded. When the culture is made the house is placarded and the placard is removed when disinfection is attended to. I believe one of the causes of spread of the disease is the non-report of cases of diphtheria, due to the fact that the placard interferes with people's business. I think, myself, there ought to be discrimination and where the physician in charge is willing to assume the responsibility of isolation, the placard should not be on. But the act of 1895 states that a placard shall be put on, and the Board of Health of Philadelphia, who have the discretion in this, have insisted on this placard being put on every house. One of our most distinguished physicians in Philadelphia unfortunately had a case in his house, that I am satisfied everything was done to isolate, but in that case the placard was put on his house. I believe cases of diphtheria can be so taken care of that the risk to other people will be reduced to the minimum, probably reduced to nothing. It would be interesting to know whether in Chicago they use force to remove patients, where the doctor does not assume control of the case. We have to deal with a population in my city where no isolation is used and we are allowed to send a force in and take the patient out. You will all admit that under such conditions a case taken to our municipal hospital removes the center of contagion. There is no question, when such a case is removed, that a benefit is conferred upon the city. I know, myself, of a case which was not reported, that was visited by children invited from a kindergarten and several lives were lost and several children were sick for a long time. I believe at least a hundred cases were kept out from the epidemic traced to this case. The case was not reported and the doctor was brought into court and fined \$5 for I don't know how many lives and how many cases of diphtheria.

Dr. W. H. SEIBERT, Pennsylvania—We have had the pathology, symptomatology, treatment, preventive measures, and even down to the police regulations, but one point has not been mentioned. I refer to diphtheria occurring in regions not accessible to view, as in the alimentary canal or possibly in the posterior nares, where, however, it might be seen by proper instruments, and in other regions. The Doctor has stated that he has gone from intubation cases to obstetric cases without danger. Recently, I had some experience where a consultant, who had been treating malignant cases of diphtheria, was called to help in a case. I asked him to examine the case, which he did. He did not speak of his diphtheria case until the after-course of our case of obstetrics. There were peculiar symptoms appeared. In fact, there were the general symptoms of diphtheria, but there were no symptoms of diphtheria about the throat. The main symptom was complete anorexia, absolute repugnance of food. That has not been referred to but is usually understood. On examining everywhere, carefully, I could find nothing to indicate diphtheria until with the speculum I examined the vagina. On the fifth or sixth day we found a diphtheritic patch inside of the vagina, which was nearly an inch in diameter. The case occurred before the introduction of antitoxin, and the patient went on and died from diphtheria. A few years ago, J. Lewis Smith reported a case which died from what he had treated for some time for typhoid fever, but before death the patient passed a complete cast of the intestine, which proved to be diphtheritic on examination.

Dr. WELCH of Philadelphia—It seems I find myself in the enemy's camp. That is to say, I stand alone in this matter. I

have seen diphtheria, having had charge of a hospital where infectious diseases are constantly treated, for the past twenty-eight years, and during the past six or eight years we have been receiving large numbers of cases of diphtheria, along with scarlet fever and some few of the other infectious diseases. The death-rate in our hospital before the days of antitoxin was never anything like as high as has been stated here by some of the speakers today. Our death-rate before antitoxin was from 28 per cent. to 30 per cent., or along there somewhere as near as I can recollect now. And, gentlemen, it remains there today. We have not reduced the death-rate whatever. It is true in 1894 the death-rate was higher than ever; it was high all over the world. That is known by all who followed the literature of the period. The death-rate in our hospital was about 30 or 33 per cent. It was about the same in the Willard Parker Hospital of New York, and in the Metropolitan Hospital. However, in some of the hospitals the death-rate has been very high, as high as stated here today. After antitoxin came to our notice in 1894, we did our best to procure this agent, that our patients might have the benefit of it. We succeeded in the fall of that year and were able to give it to only sixteen cases, I think, in the latter part of 1894. We watched those cases with a great deal of interest. Their temperatures were taken every hour or two, notes made every little while, and we had complete histories reported of the first five cases. They were pretty nearly the first cases in which antitoxin was used in Philadelphia. Dr. Fischer, who is present, knows something of those five cases; two of them died.

We continued, and that year used antitoxin in about sixteen cases, but it was not lower than the usual death rate. In 1895 it was not so difficult to procure antitoxin. The preparation of the antitoxin we used then was Behring's number two. It was not, of course, as easily and readily obtained in as large quantities as at present; it was high, and we economized its use as much as possible. I attempted to select the cases which I thought most favorable to the action of the antitoxin. Everybody who had written on the subject said antitoxin was useful only when used in the early stages of diphtheria. I selected those that were from the first to the fourth day of the disease, well-marked clinical cases, some of them very severe and others not so severe, but every one of them well-marked and in every one of them the Löffler bacillus was present on culture. Those which did not receive antitoxin were, first, exceedingly mild cases, which I believed would recover without any remedy; second, cases advanced beyond the fourth day, and third, malignant or moribund cases. It was thought they would serve no fair test of the remedy. At the end of the year in counting up the cases there were about three hundred received antitoxin and over five hundred did not receive it. The cases were not analogous and could not be compared. But the death-rate among those from the first to the fourth day who received antitoxin was about 28.14 per cent., while among the other class it was 25 per cent. and a fraction, I think very nearly 26 per cent. Now, I do not say that these series of cases should be compared, for they are entirely different, as I have told you. I was surprised that the death-rate should be so high. In closely watching these cases after the administration of antitoxin, particularly my early cases, no one can well imagine my disappointment. I really expected antitoxin to do all they claimed for it. It did not. Now, I have no prejudice; I wish antitoxin would do what they have said it would. I thought I would get out of writing so many death certificates, but the patients have died just the same. In watching the cases I could not see such a beneficial effect from it. Sometimes we thought we did see the change in the exudate, that it assumed a more fat-like appearance and peeled off more readily. But right along the side of them you could pick out the same number that did not receive the antitoxin but behaved in the same way. I can not say that I have observed that the exudate dis-

appears more quickly after the use of antitoxin. If there is any difference it is not striking. There are some cases where it peels off quickly, there are other cases where it remains for a long time, there are cases where it disappears and re-appears, and there are cases where it travels even down into the larynx. A good deal was said about the temperature. Temperature in diphtheria counts for very little; except in the worst cases it is usually low. In the vast majority of cases the temperature is high at first, but in a short time it sinks to normal, or nearly so, and in bad cases to below normal. In the hospital you will see very few cases with high temperature, except in cases of broncho-pneumonia. This is very common and many of the intubated laryngeal cases die from it. Many of them die late; some die two or three weeks after they have been admitted into the hospital. A week or two after the tube has been removed bronchial pneumonia develops and they die. We all know the theory by which antitoxin acts, the theory of immunity, that in a person who has suffered from some one of the infectious diseases there is an antitoxin produced in the blood and that this antitoxin protects them against future attacks. This is a beautiful theory, but it seems to me it is not proved. No one has ever discovered antitoxin, described it or told us anything about it. Now, what does nature show us? What do we find in practice in our daily observations? Take, for instance, a woman who is rendered immune to smallpox, which is a common disease and one of the most contagious and infectious diseases we have. Take a person immune to smallpox, either by reason of vaccination or previous attack, say the individual is a female and there is an antitoxin developed in her blood which protects her. That woman becomes pregnant and gives birth to a child. That child, it seems to me, should receive immunity from its mother. Yet that child, from the time of its birth, is susceptible to the disease. The woman may not be affected by a disease to which she is immune, but the fetus in utero may be susceptible. If it will protect her, why will it not protect the fetus in utero?

Dr. R. B. GILBERT, Louisville.—My experience has been so much in common with that of Dr. Fischer that I regret the last speaker. I have treated cases without the serum and have had a mortality of 65 or 70 per cent., and with the antitoxin I have had a mortality of from 7 to 10 per cent. The cases were in the same epidemic with the same environment and proper attention. I believe antitoxin should be used early and in the quantities stated by Dr. Fischer. In a case of laryngeal diphtheria in a child under two years of age it is scarcely worth while to use the serum late. But if we see such a case early we might have quite a success with it. My experience has been only in general practice through a number of epidemics and not in hospital practice. I have succeeded in saving a large number of cases, which I know would have died had I not used the serum.

Dr. SIMMONS of Nebraska.—I am sure antitoxin is as nearly a specific for diphtheria as any medicine we have for any other disease. I do not believe quinin is as much a specific for malaria as antitoxin is for diphtheria. In the early years of my practice I ran into a lot of diphtheria, in which all the physicians lost nearly all of their cases. Nothing could save them. Twice in my medical experience since then, once about eight years ago and once about six years ago, I had the same class of cases. During the intervening periods we had a class of cases that were mild. I have been anxiously waiting with a good deal of fear for a chance to try antitoxin in the old type of diphtheria. About two months ago I had such a chance. Until then I was ready to say that I thought what I had read was all right, for I had used it for some years, but during the last two months I have had such experience that I do not care what statistics are brought up nor what anybody else may say, I know I have saved cases with antitoxin. I will just relate two instances in two families. One was a family of nine chil-

dren. They were poor people and did not send for me or any physician until one of them was practically dead. Another case was in bed when I got there. The glands of the neck were all swollen. The mouth and the fauces as far as I could see were covered with membrane. In a bed in the same room were two other girls, and from a room above there were two boys coming down. In one of the cases there was evidence that it was going to be a very severe case. I did not use any antitoxin in the worst case because it was too far gone. To the others I gave antitoxin and I saw an immediate good effect. At the first sign of the membrane in the children not yet affected I gave immunizing doses of 500 units and they all got well. If you could have seen the cases with me, you would have believed as I do that those cases were saved by antitoxin. Across the street there was a brother-in-law who called a physician who is a bitter opponent of antitoxin. He did not use it and he succeeded in saving one of the four children. In one family the Christian Scientists created quite a rumpus but nothing was done to them. In that epidemic there was not a case died in which antitoxin was used and nearly all the other cases died. Therefore I feel like saying what I said two or three weeks ago in our local society, that I believe today a man is criminally negligent of his duty who fails to give antitoxin in diphtheria.

Dr. JOHN A. LOCKARD—From my experience as interne in the New York Hospital, I wish to emphasize what has been said about the mortality. In six months' experience there I have failed to see the membrane melt away any quicker with the antitoxin than without it. I have failed to see the so-called "black" diphtheria get well under the antitoxin treatment. In one class of cases I saw a good result, and that was in the cases intubated. In its effect on postdiphtheritic paralysis I have seen no results you could call good. I have seen cases of heart failure with regurgitation just as marked and frequent. As to the antistreptococcus serum, we found that most of the incubated cases died from subsequent pneumonias. We took the cases with no physical signs of bronchitis on admission and injected the antistreptococcus serum, 2 c.c. every day. Out of the six cases we lost five. We found the rashes most confusing. The rashes of this and scarlet fever were so much alike that barring the throat symptoms they would be very confusing. I think, however, the statistics from the hospital are likely to lead us astray, especially in certain directions. Usually the cases sent in are old cases. The children have parents who are not particularly careful in observing the children and they do not recognize the disease until it is pretty well advanced. Another way in which the statistics may err is that we admit many cases as diphtheria which upon bacteriologic examination would be called a mere tonsillitis. In the children we do not have an opportunity to observe the melting of the membrane as well as in the adults, because we were required to give antitoxin to all the children. But in adults it was optional, and we occasionally advised them not to take the antitoxin that we might observe the cases. Side by side, cases as near alike clinically as we could possibly get them, I have seen the membrane melt away without the antitoxin and others who had antitoxin remained in the hospital weeks longer. Another peculiar and significant fact, it seems to me, is that when our nurses become affected with diphtheria they do not use the antitoxin, and the same was true when my predecessor and successor had diphtheria.

Dr. H. D. JEROWITZ, Kansas City, in closing—In respect to intubation, I might have had a great many more cases in my practice if I had been permitted to perform intubation when I wanted to, but as the majority of the cases were among ignorant people, they were very much afraid of mechanical treatment. Many of these cases presented cyanosis, upon whom I wanted to intubate, and the majority got well just the same. The difficult breathing seemed to be only transient. It shows

the fact that a great many cases that seem to require intubation or tracheotomy at the moment you see them, may have the spell pass off in a few moments and the case for the time being will be better. Very often when these cases present urgent symptoms, the cyanosis and dyspnea are due not to the membrane, but more to the mucus, which may not be brought up a certain moment, and if an emetic is administered, or the child has a severe spell of coughing or crying, the urgent symptoms pass off and the necessity of intubation or tracheotomy is obviated. As to the use of iron, we all have our own opinions, which are based upon our own experience. I used iron in the early part of my practice, but I never could see the rationality of it, nor could I see why it cures these cases. Besides, my experience is that the cases that can be benefited by iron, can just as well get well with other treatment. I can not see what such an irritating remedy as the perchlorid of iron can accomplish in such a disease as diphtheria. It seems to be a very irritating drug, not only constricting the membrane of the throat, but of the stomach and bowels as well, thereby interfering with assimilation. I think the value of it is more from the chlorin, and for that reason I often use hydrochloric acid internally, expecting also an effect from it as it passes the throat. As to the antitoxin, the dose must be large. Two thousand units may be employed three times a day in laryngeal diphtheria. One gentleman referred to the fact the statement was made that antitoxin does not prevent paralysis. My paper did not say so. I said paralysis occurred in those cases that were either severe cases or cases of long duration. Those cases in which there was extension of the membrane or which lasted ten or fourteen days, were as a rule followed by paralysis. Then I further stated that in all cases where the antitoxin is used early, the membrane disappears in two or three days and it shortens the sickness, and from this fact it prevents paralysis. I stated that if the antitoxin was used early, no paralysis is found. Now, as to the spread of diphtheria and the placarding, it is very evident that there are a number of mild cases that do not go to bed and are not recognized, and children having a very mild form of diphtheria, that are hardly sick except possibly a slight headache, may go to school and spread the infection to others.

Dr. F. E. WANHAM, Denver, in closing—In regard to the paper presented by Dr. McClanahan, I would agree entirely with his conclusions, so briefly and explicitly set forth. In regard to the paper presented by the first essayist, I would say that on account of my confidence in antitoxin I have discarded all gargles, sprays, iron, and other remedies. I simply give a large dose of antitoxin, repeat it in ten or twelve hours, and give a third or fourth dose, if necessary. Antitoxin has been compared to vaccination. I think that is not proper at all. The vaccine disease is another disease; it is a disease, smallpox, modified by passing through the system of a cow. There is simply no comparison between antitoxin and vaccination. In regard to the health department, I was very much interested in the methods employed in Chicago. They are quite different from the methods employed here. Here the physician inoculates a test tube and takes it to the health department; if it is found to be diphtheria, the health department takes entire charge of the case. They isolate the case, and make repeated examinations of the patient's throat. As long as the case shows any bacilli in the throat, the case is isolated and the house placarded. If Dr. Jaques lived in Denver, he would not have the temerity to have the secretions of his throat examined. I am much surprised that any one, at this day, can oppose the use of antitoxin. I can not understand how any one, after reading the conclusions of the Pediatric Society, can fail to be convinced of the utility of antitoxin. After my experience in the treatment of diphtheria, I would feel that I was not doing my duty as a physician, not doing my duty to my profession, unless I advocated the use of

antitoxin as the greatest remedy that has been presented to the medical profession during this century. I can not but believe there must be something wrong in the methods employed by those who have found so little benefit from its use. They either have not used the remedy early, or have not used the remedy in sufficient doses, or have not repeated it when necessary. I suspect the cases that have come under Dr. Welch's care are late cases, for frequently we know cases are sick three or four days before they are taken to a hospital. Then, if a bacteriologic examination is made before treatment is begun, another twenty-four hours is lost. I feel like agreeing with one of the speakers when he says that he would feel guilty of criminal negligence if a case died under his care and he did not use antitoxin.

Dr. H. M. McCLANAHAN, Omaha—I only wish to bear testimony that I believe most thoroughly in the use of antitoxin. I believe, however, we must not expect everything from this remedy. I believe the statement by Dr. Welch, that antitoxin can not undo the harm diphtheria has done, is true. I think the cases crowded together in the hospital will not do as well. But I think his line of argument should not give us reason to not use the remedy in private practice. In the cases mentioned by Dr. Welch, I have no doubt he found mixed infection, over which antitoxin has no influence. I think we should get a clear idea of what this remedy should be expected to do, and what it should not be expected to do. I became thoroughly disheartened and discouraged with antitoxin. The patients would be relieved a few hours, and then the patch would extend on down. After the use of antitoxin in the past year I have intubated only twelve cases, and eleven of them have recovered. I can go back five years, when the patients under tracheotomy or any other treatment that we had, gave a mortality of 50 or 75 per cent. It would be a retrograde step if we were to allow ourselves to lose our faith in the use of antitoxin. But we should not expect it to do everything. When your examination shows that you are dealing with a mixed infection, then let us not stop with the use of antitoxin. Then I believe nascent oxygen is of benefit. Even some of those cases can be saved by the use of nascent oxygen with antitoxin. In one case I saved a child in this way when the lips were blue. It leads me to believe I will never give up a case of diphtheria until the case is cold and stiff and dead. I have the most profound belief in the value of antitoxin in neutralizing the toxins of diphtheria.

THE EARLY DIAGNOSIS OF DIPHTHERIA.

Read before the Mississippi Valley Medical Association, Oct. 13, 1898.

BY WILLIAM K. JAKES, MD.

DIRECTOR ANTITOXIN STAFF HEALTH DEPARTMENT CITY OF CHICAGO.

Outside of laryngeal complications, the mortality in diphtheria is due to the toxin produced by the Klebs-Loeffler bacilli. No physician can successfully treat diphtheria unless he understands the nature of this toxin, how it is produced, and how the cells may be fortified against its destructive action. He must understand that the Klebs-Loeffler bacillus is a distinct living entity or vegetable organism; that one of the products of its existence is diphtheria toxin, just as the result of the life of the yeast plant in alcohol.

Other germs in anginas will cause inflammation, pain, temperature and membrane, but only the Klebs-Loeffler bacilli produce the deadly toxin which begins with their invasion and progresses to a fatal amount as swiftly as conditions permit.

To appreciate the danger of his patient, a physician must understand the rapidity with which these bacilli multiply under favorable conditions. The clinical symptoms manifesting their residence may

give no indication as to the rapidity with which the fatal amount of toxin is being produced. The best means of comprehending this fact is to use the microscope and follow the multiplication of the Klebs-Loeffler bacilli in their cultural life. Inoculate a box of culture-medium with infected mucus and place in an incubator at body temperature. At the end of three hours, a cover-glass pressed upon the surface, properly stained and mounted, will show sufficient bacilli, if they are present, to give an idea of the number and arrangement of germs upon the surface of the medium. Incubate the same culture eight hours, and an examination will show that the germs have multiplied many times. Eighteen hours will reveal a large and complete colonization, from which an idea can be gained of the way in which the Klebs-Loeffler bacilli multiply under favorable conditions. Understanding, as we do, that toxin is a product of these germs, their multiplication means an increased amount of toxin, which soon reaches the fatal point unless checked by the use of antitoxin. This demonstrates the importance of a physician knowing at the earliest possible moment what germs are present in an angina. It may be said that in the majority of cases there are two things he does not know: the extent of the infected area, and the resisting power of the patient.

The diagnosis of diphtheria in the early stage of the disease must be made from both clinical and bacterial evidence. From his patient the physician finds clinical manifestations of an invasion of the mucous membrane of the respiratory tract. When his microscope reveals the germs that are causing this invasion, he can then say whether or not the disease is diphtheria. Delay in ascertaining this information can only be done at great risk to the patient's life and the doctor's reputation.

In order to ascertain the value of direct diagnosis,—by which we mean the examination of material taken directly from the infected area without waiting for incubation—the Chicago Health Department has introduced the following culture outfit for the use of physicians; a sterilized swab is placed in a glass tube; a slide carefully wrapped in paper is placed with this in an envelope together with a culture box and directions for using same. Physicians are requested to inoculate the swab from the inflamed site, spread a little of the mucus upon the slide and allow it to dry. The culture medium is inoculated from the same swab and it is returned to the glass tube. The whole outfit is then to be sent to the nearest incubator station or laboratory.

As this method has been in use but a short time, its value has as yet to be demonstrated conclusively. From my own experience I have received very valuable information. In one case I did not find any Klebs-Loeffler bacilli in the culture medium but found that a large colony of the bacilli had incubated upon the mucus which was still left upon the swab. In a number of cases I have been able to make a direct diagnosis by staining and examining the slides as soon as they come to the laboratory. When no antiseptic treatment has been administered before the culture is taken, and the disease manifests malignancy, by stupor, hoarseness or swelling of the cervical glands, it has been possible in about 50 per cent. of the cases to find sufficient bacilli to warrant a diagnosis of diphtheria, sometimes before any trace of membrane is visible. When it has been possible to get a small

portion of membrane to spread on the slide, there has been no difficulty whatever in about 75 per cent. of the cases in making a direct diagnosis.

Cases in which the Klebs-Loeffler bacilli can not be found by direct examination will lose very little by waiting for incubation of the culture.

A bacteriologist can not be sure that his examination reveals the true condition of a case unless he knows the material was correctly obtained. In a laryngeal case, mucus from the mouth may not have become infected sufficiently to show the bacilli present. This may also be true with an invasion of the cervical glands; but if a piece of membrane is obtained from the tonsils and found not to contain the Klebs-Loeffler bacilli, the probabilities are that it is not diphtheria.

In large cities, where examinations are made by the bacteriologists of health departments, a physician may perhaps be pardoned for not acquainting himself with the technique of examinations. At the same time, the more a physician knows about the bacteriology of diphtheria, the more accurate will be the results from the perfectly taken cultures which he sends to the laboratory. One of the greatest disadvantages we have to labor under is the faulty manner of making cultures by physicians who know nothing of bacteriology. Even if the culture is recognized as imperfect before incubation, it means at least a few hours' delay in securing another.

Because of the contagious nature of diphtheria, the health departments of large cities have been making bacterial examinations for physicians, and the success of the work in controlling and limiting the disease, as well as its statistical value, has justified the expense. As long as there was no specific for diphtheria, the diagnosis was not of such vital importance. Physicians could prescribe local treatment and await developments. Now that we have a remedy which, when properly used, may truly be called a specific, and when the life of the patient depends upon an accurate diagnosis, the responsibility of the attending physician is very great.

In the malignant form of diphtheria nearly 50 per cent. of the cases die unless proper treatment is administered. Any physician who neglects to make a correct diagnosis during the time when the remedy is efficacious—that is during the first two or three days—is responsible for the result. He is responsible because it is within his means to obtain the knowledge which will make him competent to treat the disease intelligently, and therefore successfully. He is also further responsible in permitting the continuance of infection to endanger the safety of the community. The technique of the bacterial diagnosis is simple. The entire outfit for this work may be obtained for less than one hundred dollars. The essentials may be acquired at home by any physician who is willing to devote no more than his leisure moments to it.

The users of antitoxin everywhere emphasize the importance of its early administration. In a paper by Dr. Edwin Rosenthal of Philadelphia, read at the meeting of the AMERICAN MEDICAL ASSOCIATION in Denver, he gave a statistical record of sixty cases in which he administered antitoxin, with nine deaths. The recoveries are not more instructive than the deaths, in all of which the record shows antitoxin to have been administered from the third to the ninth day. The child who received the antitoxin on the third day died of bronchial pneumonia. The other

cases, all being in an advanced stage, illustrate in a forcible manner that antitoxin had not been given until after the destructive action of the toxin, against which no remedy is proof.

To demonstrate the protective value of antitoxin, the following experiment has been conducted: On October 10, in the presence of Dr. F. W. Reilly, assistant health commissioner of Chicago; Dr. Wynekoop, assistant bacteriologist, and myself, Dr. Adolph Gehrmann, city bacteriologist of Chicago, injected nine guinea pigs with four-times-fatal doses of diphtheria toxin. The first three were immunized two days previously by the injection of .1 c.c. each of Parke, Davis & Co.'s antitoxin. The next three received .2 c.c. of the same antitoxin each, following the injection of toxin. The third three have had no treatment whatever since the injection of the toxin. The pigs are here, and are correctly labeled as to condition, which presents decided effects on this, the fourth day. All pigs that received antitoxin are alive and apparently well. Of the three not protected, two are dead. The third, being still alive, would indicate the possession of natural immunity against the toxin.

From my connection with the Chicago Health Department, four years ago, to the present time, our efforts have been directed toward obtaining an early diagnosis in all anginas, and supplying a reliable grade of antitoxin. The best methods of work have been studied and established, with a view to assisting physicians by furnishing such facilities for the diagnosis and care of contagious diseases as they might not have themselves. As a result, our department corps of inspectors are doing harmonious work and our success in controlling diphtheria is demonstrated by the decrease in mortality from 38 per cent., not including laryngeal cases, to 6.7 per cent., including all forms of the disease. During the month of September, the department treated 108 charity cases, 66 of which were bacterially verified as true diphtheria, with three deaths. Two of these cases were in the last stages of toxin poisoning when the inspector was called. It has become possible by improved methods to give a physician a diagnosis within an hour from the time he makes his first call, if a direct examination can be made; if not, he receives his answer in from six to ten hours from the time the specimen is received.

It is fair to assume that our remarkable success in controlling and limiting diphtheria is due to the methods employed, the most important rule of which is, *first and always, secure an early diagnosis, then lose no time in applying the remedy.*

SOCIETY PROCEEDINGS.

Mississippi Valley Medical Association.

Twenty-fourth Annual Meeting, held at Nashville, Tenn., Oct. 11-16, 1898.

FIRST DAY—MORNING SESSION.

The association met in the hall of the House of Representatives at the State Capitol, and was called to order by Dr. DUNCAN EVE, chairman of the committee of arrangements. Prayer was offered by Rev. JAMES I. VANCE, D.D. Addresses of welcome were delivered by Hon. J. M. HEAD, on behalf of the city and State, and Dr. C. S. BRIGGS, on behalf of the profession of Nashville.

Dr. JOHN YOUNG BROWN of St. Louis delivered the President's Address, after the reports of the secretary and the treasurer had been read and accepted. He selected for his subject, "The Mississippi Valley Medical Association," and dealt with

the history of the association, saying that it was organized twenty-four years ago. Its rapid growth is due to the loyalty of its members and to the fact that from its inception it has been a distinctively working body; it has never been a mutual admiration society. He gave suggestions for its improvement, and said that inasmuch as the association contemplated the publication of an annual volume of Transactions, he would suggest that the dues be raised from \$3 to \$5.

Dr. CHARLES T. McCLINTOCK of Detroit, Mich., read the first paper, which was entitled

IMMUNITY.

Of late years a large part of the laboratory work in medicine has had to do with immunity. Many facts have been discovered; in a few instances these have been of immediate practical value in the treatment or prevention of disease. But for the most part these facts are uncorroborated, often contradictory, their meaning not clear. Hypotheses have been advanced, but as yet we have no theory that will even approximately explain the facts of immunity. The future of work in this line is full of promise. For the infectious disease at least, immunity and cure are one and the same. A diphtheria patient will be cured only when his tissues are immunized against the attack of the diphtheria poison. There are several kinds and various degrees of immunity. We have a natural and an artificial or acquired immunity; apparently these are entirely different in kind, dependent on different functions of the body, effected by different substances. There is racial immunity. Again, we have an immunity correlated with age. Variations in susceptibility are noted in different varieties of the same species and even in different families. Again, there is an individual immunity. Still again, one part of the body, even one portion of the same tissue, may be immune, while the rest is very susceptible. These facts are not to be explained by general resistance, good health, etc. The most vigorous man may acquire smallpox or influenza. The healthiest cow is likely to take pleuropneumonia.

Metschnikoff's theory—phagocytic—is the best explanation we have for natural immunity. Nuclein seems to be the germicidal agent elaborated by the white corpuscle. If natural immunity is due to one or to several chemic agents, it follows that it is limited. Chemic action is always greater than life.

After recovery from an attack of certain of the infectious diseases, there is more or less of immunity to that disease. In some instances, as in scarlet fever or syphilis, this acquired immunity generally lasts for life. The immunity following recovery from disease is not proportional to the intensity of the disease process. The ability of an organism to resist the attack of disease germs or their products can be increased, trained, educated, if you will. Thus, in producing diphtheria antitoxin, we often get our horses to bear without apparent harm several times the fatal dose for an untreated horse. It may happen that diphtheria or measles may, after generations or centuries, disappear, owing to the fact that the race becomes immune.

To what extent an acquired immunity can be inherited is both an interesting and important question. This sort of immunity is usually lost, at least so far as our tests show, before the animal reaches the adult stage. This inherited immunity is not the same as the immunity of the suckling. This is due to the fact that the immunizing bodies pass into the milk. The child receives from its mother not only food, but disease-resisting power. We have active and passive forms of acquired immunity. The horse producing antitoxin is actively immune; his tissues are producing antitoxin. The child receiving a dose of antitoxin is passively immune. It has borrowed the strength of the horse. There is an immunity to poisons. The wolf thrives on putrid flesh. Some animals are immune to snake poison. The insusceptibility of the morphin user may be something more than mere tolerance. The drug may be, in part, destroyed, and this anti-power may have to do with the craving for the drug.

There is no satisfactory explanation for the facts of acquired immunity. The various theories as to the nature of antitoxin and its mode of action were given, with the conclusion that antitoxin, in some way as yet unknown, stimulates some portion of the body, and this in turn destroys the poison. There is no antitoxin, but in short, an immunizing body. Immunity and cure are the same thing.

Dr. GEORGE W. JOHNSON of Dunning, Ill., has had some experience with nucleic acid in the treatment of pulmonary tuberculosis in cases of mixed infection, and has noticed a diminution in the number of pyogenic bacteria, and asks whether the phagocyte attacks the tubercle bacillus the same as it does pyogenic bacteria.

Dr. McCLINTOCK replied that he knows of no reliable investigations that have been made with reference to that point.

Dr. ERNEST B. SANGREE of Nashville said it is believed by many investigators that the phagocytes eat live tubercle bacilli, and that cases in which tubercle bacilli are included in the phagocytes have a better chance to get well than those which do not contain them.

Dr. DUDLEY S. REYNOLDS of Louisville is afraid that experimental observers have failed to note the necessary equilibrium between the circulating blood-current and the lymph-stream. He elaborated the theory of phagocytosis, and showed how phagocytosis can never be successful if obstructions exist in the lymph-channels.

Dr. C. L. MINOR of Asheville, N. C., presented a paper entitled

HYGIENE VS. DRUGS IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

Under hygienic and dietetic treatment the author embraces all such non-medicinal measures as are directed toward an increase in the vitality of the organism and of its resistance to disease, and remarks that climato-therapy is but a branch of hygienic treatment, although he does not embrace it in his remarks, which are confined to the proper application to individual cases of exercise, gymnastics, massage, hydrotherapy, rest, sleep, diet, amusements, clothing and quarters. A partial and unsatisfactory use of such measures is more or less general, but unless directions be definite and specific, they will fail of their purpose. The difficulty of getting a patient to yield implicit obedience to the doctor was dwelt on; the indefiniteness of the orders given being in part to blame. If he is to recover, the patient and doctor must both work hard, no half-hearted seekers for pulmonary health being likely to recover. The necessity of carefully and fully writing out exact orders for every detail of the patient's life, to be followed religiously by him, was urged, such a prescription in phthisis being of more value than the more common one for drugs. All such measures were, for convenience, classed under three heads: Those affecting the patient's surroundings, those affecting his life and those affecting his exercise. The very common abuse of exercise was deplored, and the invariable rules were stated: "Exercise short of the point of fatigue," and "no exercise with a temperature over 100.4 degrees." Following these no mistake can be made.

A very gradual accustoming of the patient to longer and longer walks, beginning with only fifty or a hundred yards in many cases, and increasing until finally from two to ten miles can often be easily tolerated, and a judicious use later on of walks on increasing incline, till steep hills are easily surmounted, is warmly recommended. Pulmonary gymnastics was most especially dwelt upon for use in non-active cases, and among several methods for chest development and the increase of vital capacity, that form of Indian club swinging called the "double figure of eight" was chiefly recommended.

Finally, any intencion to advocate nihilism in medicine was denied. In carefully selected cases certain drugs have undoubted value as adjuvants, never as the chief resource. The short life of most drugs in phthisis therapy was noted, and ascribed to the fact that no man can treat this disease long and not realize that nothing that in the least degree upsets the stomach can be anything but a curse to the patient. The only valuable results are those based on a vitalizing of the whole system, a stimulation of metabolism on a strengthening of the cells to oppose the invader. The thing to be attacked is not so much the lesion in the lung directly as the lowered vitality of the body, the diminished capacity of the lungs, and the deficiency of appetite, and drugs directed to a conquering of the bacillus *in situ*, are not to be compared with measures which enable the organism itself to acquire the strength to overcome disease. These things can be brought about best by an improvement in nutrition, which must after all come from the stomach, and an increase of the amount of oxygen taken into the lungs. Air and food are the drugs to which we can always trust; they will never deceive us. If a patient can be taught to get both in good amounts, wherever food can be assimilated and enjoyed and air breathed deeply, there is hope of cure. Throw away two-thirds of our medicine bottles and use the other third less often, carry out a hygienic plan of life, stimulate the appetite by nature's appetizers—air and exercise—which are alone permanent in their results, and which are as superior to gentian or quassia as sunlight is to darkness.

Dr. S. C. BALDWIN of Salt Lake City contributed a paper on

CONGENITAL SCOLIOSIS.

Scoliosis is the most common of all deformities; it is most often found in children under ten, rarely beginning after eighteen; it is found more often in girls, in the ratio of five to one; the etiology is in a large number of cases very uncertain. Congenital scoliosis is very rare. Tubley, of London, in the

latest English work on deformities, says that he has been able only to verify four cases.

The case reported by the essayist was first diagnosed as scoliosis when the child was twenty-one months old, but the father had noticed the "lump" ever since the child was first washed. The interesting features of the case are that the curvature is in the lower cervical and upper dorsal region. There is some pressure on the cord, as shown by the more or less deficient development of the right side. The convexity of the curve in this case is to the left. There is partial paralysis of the forefinger of the right hand. There is sweating and flushing of the left side with none on the right.

The cause of the scoliosis in this case is thought to be the lack of amniotic fluid while in utero, probably allowing the muscular walls of the uterus to press on the fetus and hold it in a faulty position, and in this way cause a wedge-shaped development of the bodies of the vertebrae. This theory has been advanced by Weissenberg, Hirsch, and Schanz in the last year. In this case the mother was very small, and passed at the time of confinement so little water that she did not know there was any, and felt no motion comparatively during pregnancy.

Dr. SAMUEL E. MILLIKEN of Dallas, Texas, has seen one case of scoliosis in a child under one year of age, but he is not prepared to say whether it is congenital or not.

FIRST DAY—AFTERNOON SESSION.

Dr. WILLIAM L. BAUM of Chicago read a paper on

THE THERAPEUTIC VALUE OF MARMOREK'S SERUM.

He dealt with the literature of the subject in an exhaustive manner. Twenty-two cases have come under his observation in which the serum was used. Of these, nineteen were cases of erysipelas; one of erysipelas plus tubercular nuchal glands; one of facial erysipelas during childhood without septicemia, and one of erysipelas with puerperal septicemia and double labial abscess. The last was the only fatal case.

The deductions he draws from an analysis of the literature and his own experience are: 1, in pure streptococcal infections the serum undoubtedly exercises a favorable influence on the course of the disease; 2, in the mixed infections the influence of the serum is noticeably demonstrable, but it merits further trial as an adjunct to other treatment; 3, considering the grave character of the complications of a nonstreptococcal nature reported, ordinary rules of therapeutics demand that in such cases, as with the diphtheria antitoxin, all indicated therapeutic procedures must be employed as well as the serum; 4, in view of the fact that erysipelas streptococci and phagocytes have been found to exist side by side in the lymph-channels, it is fair to assume that the influence of the serum is directly exerted bacteriologically on the streptococci and not entirely through a stimulation of phagocytic action; 5, the initial dose in all cases should be 20 c.c., to be followed by 10 or 15 c.c., according to the indications, every twenty-four hours.

Dr. CHARLES L. MINOR said his experience is practically confined to secondary infections in tuberculosis. He had used the serum of Parke, Davis & Co., with considerable satisfaction, in preference to Marmorek's.

Dr. SAMUEL E. MILLIKEN has used antistreptococcal serum in two cases, both of which terminated fatally. One was a case of abscess of the liver, the other a suppurative appendicitis.

Dr. WILLIAM K. JAKES of Chicago, called attention to infections in the pulmonary tract that he has found to be purely streptococcal, and in such cases he has advised injections of antistreptococcal serum with good results.

Dr. BAUM, in closing, emphasized the importance of diagnosing the kind of infection present.

Dr. ALBERT BERNHEIM of Paducah, Ky., presented a paper and reported three cases of syphilis, in which he administered blue ointment with satisfactory results by the mouth. He urges a thorough trial of this method, believing it will please the patient as well as the physician. The method of administering blue ointment by inunction is disliked by the patient on account of its nastiness and inconvenience, hence if another method of using the ointment can be substituted with the same good and quick results, why not do so?

Dr. JAMES T. WHITTAKER of Cincinnati, delivered the Address on Medicine, selecting for his subject "Diabetes Mellitus."

Dr. ANDREW TIMBERMAN of Columbus, Ohio, followed with a paper entitled

MASTOIDITIS: WHEN TO OPERATE AND HOW.

The causes and symptoms of this affection were described. To know when to operate one must be able to exclude the diseases which are often accompanied by inflammatory conditions over the mastoid, without actual involvement of the bone, and which quickly recede when the primary disease is properly

combated. Every physician in his experience sees cases of simple furunculosis, and diffuse external otitis presenting as marked symptoms, painful and swollen mastoids. The tissues are boggy and the edematous condition is determined by palpation and pain on pressure. Such disease, as well as syphilis, must always be excluded as a *sine qua non* before the operating.

He divides cases of mastoiditis into two classes, the first comprising those complicating acute aural disease; the second class, those complicating chronic aural affections. This division ignores primary mastoiditis, which is very infrequent.

The conclusions arrived at were: Operative measures should be instituted 1, to preserve the function of hearing as well as to prevent a fatal issue; 2, earlier in mastoiditis due to scarlet fever, diphtheria, and the worst cases of influenza than when due to colds, measles, typhoid fever, etc.; 3, in the acute cases of mild infection, when subsidence does not occur within at most eight days (Schwartz), but the shorter period is safer in a virulent infection; 4, recurrent mastoiditis due to any cause; 5, in mastoiditis complicating a chronic suppurative otitis; 6, in acute cases when there is a drooping of the lining membrane of the superior posterior wall of the external auditory canal, carrying with it the membrane Shrapnell; in chronic cases when at the same place a crater-like opening leads to the recessus epitympanicus and aditus ad antrum, even though in neither case symptoms immediately menacing life be present.

The author favors the typic or original Schwartz method of opening the mastoid antrum. Its success in given conditions justifies its application; its failure in given conditions has resulted in a more perfect procedure styled the Schwartz-Stacke, or radical operation.

Dr. J. HOMER COULTER of Chicago maintains that the general practitioner should not treat cases of mastoiditis in which the symptoms are well defined, and no one who has not had considerable surgical experience should attempt the Schwartz operation.

Dr. J. A. STUCKY of Lexington said that in many cases of necrosis of the malleus he has made a free incision along the posterior superior wall of the canal, curetted the diseased bone away, tamponed the canal lightly with iodoform gauze, and patients have done well without undergoing the radical operation.

Dr. DUDLEY S. REYNOLDS laid stress on the importance of instituting constitutional medication in the stage of invasion in cases of mastoiditis, saying that an ounce of prevention at this time is most preciously bestowed.

Dr. L. B. GRADY of Nashville called attention to a point not mentioned in the paper—the differential diagnosis between mastoiditis and mastoid periostitis. If cases are carefully observed there is as much difference between the two conditions as there is between a periostitis of the tibia and an epiphysitis. This differentiation is of permanent importance in the treatment, whether it be medical or surgical.

Dr. J. HOMER COULTER of Chicago read a paper on

PROPHYLAXIS IN NOSE AND THROAT DISEASES.

He said that there are many preventable pathologic conditions in the nose and throat, and that many of the ordinary diseases of this portion of the anatomy have evolved into more serious and distinctly different affections, will be admitted without question. He omits any reference to such conditions as syphilis, tuberculosis, diphtheria, influenza, or the exanthemata, inasmuch as the possible prophylaxis in each affection is a matter of general knowledge. He also omitted reference to any technic details which are at best mooted points with authorities.

Surgery does not cure all conditions, nor does it even prove always a prophylactic blessing. So also do local applications and constitutional treatment prove unavailing if universally depended upon. This is due, in a measure, to the lack of carefully exacting and eliminative diagnoses. With the development of our knowledge of the physiology of the nose and throat, have come, also, new ideas of the connection between many diseases of those organs and of their relative etiologic importance. The impairment to ventilation and drainage is a most important factor, and one usually amenable to surgical treatment. "Taking cold" is not only a most frequent condition, but one the most susceptible to prophylactic measures. Clothing of the entire body is a factor of paramount importance in prophylaxis. Too much clothing about the head and neck is just as disastrous as insufficient protection. Adenoids, polypi, epure, exostoses, deviations, deflections, and sensitive areas, are each amenable to surgical treatment, and demand such interference as soon as recognized. On the other hand, too much surgery is quite as disastrous as too much conservatism. The tonsils are the cause of other and reflex pathologic conditions as frequently as are adenoids. Mouth-breathing

should be recognized as a most significant danger signal. Anything which produces an alteration in the normal physiologic metabolism of the mucous membrane of the nose and throat; any alteration in the nutrition of the parts; any abnormal variation in functional activity; any considerable change in the histologic anatomy, are each and all remedial surgically or otherwise, and are, therefore, amenable to prophylactic efforts.

Dr. J. A. STUCKY of Lexington followed with a paper entitled

PERITONSILLITIS OR QUINSY: CAUSE AND TREATMENT.

Of ten authors consulted, seven, after citing hereditary predisposition, exposure, etc., mention rheumatism and gout as the most prolific causes of this malady. Close observation and careful testing in selected cases, convince him that the rheumatic, or more probably the uric acid diathesis, has more to do with the causation of this disease than any other factor.

Coming to the treatment, he believes, if the majority of cases of quincy are seen within forty-eight hours after the first onset of the disease, they can be aborted to such an extent that suppuration will not take place. In cases that progress to suppuration, he strongly advocates early and free puncture, just as soon as there is marked distention, in order to relieve pain and stop the destructive suppurative process. For this purpose he uses a modification of an ear spoon, first described by Spier, and not a knife.

(To be continued.)

The Chicago Society of Internal Medicine.

Second Regular Meeting, Sept. 21, 1898.

(Continued from page 984.)

Dr. DANIEL R. BROWER read a paper before the meeting entitled

ACUTE CEREBRAL MENINGITIS: OBSERVATIONS ON ETIOLOGY, DIAGNOSIS AND TREATMENT.

Cerebral meningitis is, in all the large cities, a formidable cause of death. In some years it is surpassed by but few causes of death. The following table shows this, as well as emphasizes the fact that the ordinary therapeutic measures are of no avail:

DEATHS FROM MENINGITIS IN CHICAGO.

1860.	1	1891.	1,311
1865.	21	1892.	1,125
1870.	172	1893.	1,452
1875.	255	1894.	1,220
1880.	408	1895.	764
1885.	528	1896.	606
1890.	817		

These figures are much the same as those of other large cities, and show the necessity of a more careful study of the cause, prevention and treatment of this class of diseases. The cerebral membranes are favorably placed for the development of bacteria. At least nine micro-organisms have been found present, doubtless as causative factors in cerebral meningitis, as follows: Pneumococcus lanceolatus, diplococcus intercellularis, streptococcus pyogenes, staphylococcus pyogenes aureus, bacillus tuberculosis, bacillus of Eberth, bacillus coli communis, streptococcus seiferti and the gonococcus.

The classification of meningitis to be scientific should be based upon its causative, and it is therefore necessary to determine in each case the micro-organisms that may have produced it, and herein the difficulty lies. Lumbar puncture, and the chemic and bacteriologic examination of the cerebro spinal fluid obtained will enable, in some cases, a differential diagnosis to be easily made. This lumbar puncture is a trifling operation. It consists in passing a needle into the subarachnoid space between the third and fourth lumbar vertebrae in adults, or between the fourth and fifth lumbar vertebrae in children, about 5 mm. to one side of the median line. For young children the ordinary hypodermic needle is sufficient, for adults a larger and longer needle is necessary. The fluid obtained should be tested first for albumin, but in acute inflammatory conditions the amount is considerably increased; it may be 1 or 2 per cent. Then the examination should be made for pathogenic organisms, and when found the diagnosis is complete. The Skeer sign, if present, will enable a diagnosis of tubercular meningitis to be made very early. This sign was described by me in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Jan. 7, 1888, and observed by the late Dr. I. D. Skeer of Chicago twenty years before. It is due to the deposition of the tubercle around the pupillary margin of the iris. It shows itself first as a distinct wreath of white clouds about

a millimeter from the margin (see Fig. 1). This sign occurs before any change has taken place in the pupillary orifice. After three or four days these minute, cloud-like masses disappear and a yellowish, round circle takes their place (see Fig. 2), becoming more attenuated as the pupil dilates. These secondary changes are doubtless due to degeneration of blood-vessels and tissues from the tubercular deposits. Unfortunately, this sign is frequently absent, but when present is pathognomonic of tubercular meningitis.

Treatment.—A dark, well-ventilated, quiet room should be found. The patient's should be shaved and surrounded by ice-bags; leeches should be applied over the temples, the pain should be mitigated by morphin or antipyrin hypodermatically, the temperature should be reduced by cold sponging, the bowels should be freely moved by calomel, and there should be applied freely to the scalp every day a 10 per cent. solution of iodoform. The difficulty of medicating these cases by the mouth, led me to adopt the treatment by inunction about fifteen years ago, first with mercury without any success, and then with iodoform with some success. Absorption usually takes place promptly, so much so that I have been able to detect the iodine in the urine and saliva one hour after inunction. The amount absorbed can not be very great, inasmuch as I have never seen the untoward effects that sometimes follow the use of iodine in open wounds, and I have used in the treatment of a case as much as ten grams of iodoform. I have suggested this treatment in consultations in at least a hundred cases, but have been able to get the results in the following cases only:

	No. of cases.	Recoveries.	Deaths.
Dr. J. S. Hunt (deceased)	8	6	2
Dr. J. W. Fitzmaurice	6	4	2
Dr. P. H. Conley	2	2	0
Dr. M. Leevenson	2	1	1
Dr. W. D. Neal	10	6	4
Dr. David O'Shea	7	6	1
Dr. William Martin	2	1	1
Dr. G. W. Reynolds	3	3	0
Dr. J. C. Craig	1	1	0
Dr. D. R. Brower	6	3	2
Total	46	33	13

In one of the cases that died in the practice of J. S. Hunt, and of the cases I have reported as terminating fatally, the Skeer sign was present, making the cases tubercular meningitis. In the other fatal case I have reported, lumbar puncture determined the bacillus tuberculosis to be present. The diagnosis in these cases was made by the attending physician and myself, and any one of those whose names appear in the list are perfectly competent to make a diagnosis. Indeed, there are none more so. Many years of practice and excellent scientific attainments are qualifications of them all. Some of these cases were exceedingly unfavorable, notably the case of Dr. Craig, that did not seem to offer the slightest hope of recovery.

I trust that this communication will result in a more general use of this plan of treatment in this perplexing class of cases, and that it may aid in diminishing the great mortality from meningitis found in our city health reports.

Dr. W. D. NEAL—It is a matter of surprise to me that Dr. Brower brings this question up this evening. I have not given the subject any thought for quite a while. These cases were given over the telephone, and I am not sure there was a correct understanding as to the remedies employed in all of them. If I remember correctly, two of these cases recovered where I did not use the inunctions. It was before I began their use. It may be possible that in one of these cases the diagnosis was not clearly made out. The percentage of recoveries given here looks high, and the same ratio might not have been maintained if carried farther. There were other elements brought to bear in some of these cases which I thought cut quite an important figure; at least, I put a good deal of stress upon the minute doses of calomel, particularly in younger children. It might have been the inunctions, but I have a good deal of confidence in minute doses of calomel often repeated. I do not know how it acts, but I am sure I have had good results from the use of the inunction and calomel combined. I have not kept any data of my cases since talking to Dr. Brower, and I am inclined to think that the percentage of recoveries has not run so high, but I have come to the belief that the disease is not necessarily fatal, and that the mortality can be greatly reduced by this method of treatment.

Dr. M. L. GOODKIND—I should like to ask if there are not a great many cases simulating meningitis that occur in infectious diseases, particularly in children, such as pneumonia, and intestinal toxemia, which get well spontaneously with the subsi-

dence of the malady producing the meningeal symptoms; cases of opisthotonos with convulsions and general rigidity, with contracted or dilated pupils—cases that can not be called meningitis, although they closely resemble it. Possibly that may be an explanation of some of the cases recovering under calomel and iodoform inunctions.

Dr. SANGER BROWN—I would like to briefly call attention to one aspect of this subject, and that is regarding the differentiation between pseudo meningitis and acute meningitis. I think this is a point which frequently perplexes the practitioner, and one on which we would like some light. It often happens to those of us who do some consultation work to find that between the time the practitioner decides to call a consultant and the time at which the consultant arrives the symptoms will have sufficiently declared themselves in one way or another so that then it is comparatively easy to make a diagnosis.

It must be admitted that in a great many conditions, especially in children, it is impossible to determine, often for many hours, whether we have to deal with a case of pseudo meningitis or a case that will afterward become an undoubted acute meningitis. I think we are warranted in the assumption, now that it has been discovered and pretty well demonstrated that so many different kinds of bacilli are competent to act upon the meninges and produce meningitis, that the symptoms that we get in many of the infections are probably due to the action of a bacillus or bacilli upon the meninges, and that, as the process advances, there is a concentration of the bacilli to some place or organ for which they have a greater affinity, and the meningitis aborts, so to speak. I think this is a more rational view to take of the subject than to assume that the pseudo meningitic symptoms are due always to the action of a morbid influence in some remote part or organ, that is, to reflex action.

I was struck forcibly with this recently in consultation where there were at first marked symptoms of pseudo-meningitis, which disappeared in the course of a few days, and pronounced symptoms of acute anterior poliomyelitis declared themselves. The attending physician, who was a very competent man, and had of course seen a great many cases of actual meningitis in his practice, felt sure that he had to deal with a case of this disease. There was well-marked opisthotonos, vomiting, and constipation lasting for a day or two, when the mother, who was herself the daughter of a physician, noticed that the child was not using the lower extremities and one arm as much as she thought it ought to. In the course of a day or two all the pseudo-meningitic symptoms entirely disappeared, and when I saw the case, ten days later, it was one of well-marked acute anterior poliomyelitis. Now, we have every reason to believe that acute anterior poliomyelitis is due to infection, and we know that acute meningitis is so caused. I think this hypothesis is well worthy of our consideration, and it derives further support from the fact that as a general rule, in cases of patients dying from actual, well-marked attacks of acute meningitis, in quite a large proportion we find very much less evidence of disease macroscopically in the meninges and cortex than we should have been led to expect, and yet we can have no doubt that the action of these microbes upon the membranes and cortex produced the meningitic symptoms. I repeat, then, that it is not a difficult matter, at least according to the view I take of it, to infer that many of the symptoms in so-called pseudo meningitis are actually due to the action of bacilli upon the meninges and cortex, and that they rapidly subside, either by destruction of the microbes that caused them, or that these abandon the meninges and concentrate in some other part of the economy, giving rise to this or that type of infectious disease.

That shock, however, caused by intestinal irritation or extensive superficial burns, for instance, may excite convulsions in children, must be freely admitted.

Dr. R. B. PREBLE—The thing which impresses me most in this report is the wide difference between it and the mortality which we are led, both by our reading and experience, to believe prevails in meningitis. If we take from the table the 4 cases which are admitted to be tubercular, we have 42 cases with 33 recoveries; that is, a mortality of 25 per cent. for a disease which all authors agree is almost invariably fatal, with the exception of meningitis which is classified as epidemic, and even in this form the mortality ranges anywhere from 80 to 20 per cent., the cases toward the end of the epidemic being milder, and averages about 57 per cent. We must, therefore, be strongly impressed by a report in which the mortality is about 25 per cent., especially when we consider the fact that the therapy has undergone no radical change; we have here nearly the same therapeutic measures which have been employed for years and which have been, not given up, but regarded by most authorities as having little more than a palliative effect.

There are a great many conditions which simulate meningitis, nephritis for one, it being not uncommon for uremia to simulate meningitis, and the differentiation can be made only by an examination of the urine or a postmortem, in which the brain will be found in a normal condition or showing but little hyperemia or edema. Another condition, which frequently gives rise to such meningeal symptoms, such as isolated paralysis of the ocular muscles, can occur from sepsis, just as it can occur from nephritis. Personally I have seen a number of cases which clinically closely simulated meningitis, the simulation going far enough to pick out separate eye muscles, separate cerebral nerves for paralysis, but postmortem showed the cases were not meningitis. I have seen other cases which I believed were meningitis that recovered, and I could only say that I was not certain. I have only seen one case where I was sure that it was meningitis. That case I saw recently in Dr. Butler's ward at the County Hospital. The man gave the usual initial history of meningitis, facial paralysis, choking of both discs, pure culture of the meningo-coccus from the fluid gained by lumbar puncture, and yet he recovered. I feel reasonably sure that in this one case I saw meningitis recover. There are a few cases of tubercular meningitis in which recovery has taken place. Eiham records one case of recovery after lumbar puncture with demonstration of tubercle bacillus. Eichhorst has one case. Luebe had one case, and Koliako of Vienna had a case.

In view of the wide difference between Dr. Brower's results and the general opinion of the mortality of meningitis, we must demand more accurate details of the individual cases, before we can accept this table and before we can adopt the use of the iodoform inunction with any confidence.

Dr. H. M. LYMAN—More than thirty years ago I had from the late Dr. Bevan an interesting pointer in regard to meningitis. I had a little patient whom the year before I had rescued from death by furnishing a wet nurse when he was starving, under the care of a homeopathic physician who did not believe in wet nurses, consequently I felt a good deal of interest in the case. After recovering from the perils of lactation and early dentition, he was finally attacked with symptoms which I attributed to tubercular meningitis. The classical symptoms were all present and I had no doubt of the result. I called in Dr. Bevan, who suggested that it might be pseudo-meningitis and was probably due to some disturbance of the digestive organs. He advised the use of small doses of calomel with tincture of belladonna, and in a few hours the photophobia, the irritability and other evidences of meningitis subsided and in a few days the patient made an excellent recovery. Since then I have seen a number of such cases, and I think it would be well for us to recall to mind the fact that the onset of very many diseases, especially with children, is apt to be exceedingly severe and that many cerebral symptoms are prominent which would lead us to believe that they are really due to congestion of the meninges, and yet it will all clear up in a short space of time, with or without treatment. So in analyzing a table of this kind, for the city record, especially, I think it would be desirable to have an accurate statement and description of the characteristics of the cases before we decide as to the results of any form of treatment.

With regard to the symptoms involving the iris, I used to see some of these cases with Dr. Skeer. It was his belief that they were due to local tubercular deposit but I was never able to discover anything of the kind, the appearance depicted in the iris appeared to me to be due to effusion of an inflammatory character. When tuberculosis involves the eye, tubercle is usually deposited in the choroid and does not manifest itself in the iris. I am not able to find any description of tubercle upon the iris, but this peculiar formation in the iris is not so very uncommon, and is a very interesting symptom when present, though by no means as diagnostic as Dr. Skeer was led to believe. In those days the matter had not received attention and been described in the books as it now is, but now it is a well-known symptom. So far as the treatment is concerned in tubercular meningitis, you must remember that recoveries occasionally occur, but it has long been noted that patients who are supposed to recover from tubercular meningitis are liable to returns of the disease. Certain foci of tuberculosis in a distant part of the body perhaps, would disseminate tubercular germs and there would be a temporary inflammatory condition lasting for a time, the patient apparently recovering from that, then there would be another scattering of seed upon susceptible soil and another attack, which usually proves fatal. So where there is reason to believe that there is tubercular meningitis temporary improvement or apparent recovery should not lead us to flatter ourselves that recovery has actually taken place, any more than in tuberculosis of the lungs where a tubercular focus having formed giving rise to symptoms which

have subsided, should lead us to suppose there is a final recovery; it is simply a stage in the disease. Tubercular meningitis is almost invariably fatal in the first or second attack. So far as the disease Dr. Brown has alluded to as pseudo-meningitis, is concerned, connected with spinal disease, it is a well-recognized fact and I have seen a number of cases of the kind, that the onset of true poliomyelitis is attended with a violent reaction of a similar character, the disease frequently in its onset resembles clinically the ordinary form of spinal meningitis. I have not seen a case resembling tubercular meningitis, but I have seen cases resembling epidemic spinal meningitis in the early stage, then points of differentiation appear so that finally the diagnosis is cleared. So far as lumbar puncture is concerned, that is advisable as a means of investigation in asylums and hospitals where you can treat your patients as so many blocks of wood, but in private practice it is almost out of the question, and I think it would be advisable to reserve that method of investigation for selected cases. I should not recommend it to be employed in general practice, for with such treatment you would lose a great many patients. The result is uncertain, as has already been intimated, and you may make a puncture and get one kind of microbe, while another form that is producing fatal results will pass undetected. So with regard to the treatment of the disease this much may be said: that in the worst forms of tubercular and epidemic cerebro-spinal meningitis there is no remedy that is of much value. You can palliate, but you will rarely succeed in curing. In the milder forms of the disease there is more hope. The patient dies from the poisonous toxins that circulate through the fluids of the body, therefore, if the kidneys are active, if the liver is efficient; there will be a better chance of recovery. Calomel is a positive diuretic, it does stimulate the action of the kidneys, it stimulates somewhat the action of the excretory functions of the biliary organs, and furthermore it intensifies the activity of other remedies. As for iodoform, a patient with a shaven head daubed with ointment produces a very imposing effect upon the bystanders, but so far as its absolute potency in curing the patient is concerned it is very doubtful. Its use has been pretty generally abandoned in the European hospitals where it has been tried.

Dr. H. T. PATRICK—Ever since I was an interne in the Infants' Hospital in New York, some fourteen years ago, I have been slow in making a diagnosis of meningitis. We had a lot of babies, and unfortunately a lot of deaths, as I remember—about a thousand a year. Most of these were posted, and it was startling to see the almost uniform absence of meningitis on the postmortem table, as contrasted with the apparent frequency of meningitis in the wards. It is a fact that is always recognized, but seems to be never quite comprehended that there is hardly a disease children have that will not produce the symptoms of meningitis. I have seen all the principal signs of meningitis in acute follicular tonsillitis, in pneumonia and gastric trouble, and there is a whole group of cases of pseudo-meningitis without apparent cause—a group, the French call meningism. In other words, I would say that pseudo-meningitis is enormously more frequent than true meningitis. Every little while I see a case of cerebral paralysis, for instance, in which a diagnosis of meningitis was made by the attending physician at the time of the attack, and held to for a considerable time subsequently. Like Dr. Brown and Dr. Lyman, I not infrequently see cases of poliomyelitis that at the inception were very much like meningitis, and were so diagnosticated. I do not mean, for a moment, to cast a shadow of doubt upon the diagnostic ability or medical acumen of the gentlemen quoted here this evening, but I would like to emphasize a caution that it is almost too easy to make a diagnosis of meningitis. In the little consultation work that comes to me in this direction, I much more frequently have to say, "No, I think it is not meningitis," than to say, "I think it is." The symptoms of general toxemia arising from any sort of infectious disease in children are so prone to manifest themselves by cerebral symptoms, and if we have two or three or four striking cerebral symptoms and the patient is very low, it is so easy to say meningitis, when really there is no adequate foundation for such a diagnosis.

Dr. DAVID O'SHEA—Taking it for granted that Dr. Brower's treatment for meningitis is now recognized as the most valuable treatment within our knowledge, there can be no doubt in my mind that Brower's treatment possesses very many advantages which are not possessed by others. Lumbar puncture and Sker's sign, with a good deal of experience, is a condition that will make a clear diagnosis of meningitis. This method will certainly exclude pseudo-meningitis diagnosis.

Treatment is simple yet very effective, administered as follows: Locally, after shaving the scalp, the following combination is applied: Lanolin et iodoform, 10 per cent., three

times, daily; ice continually in cap; dark room; plenty of fresh air; free bathing; diet: milk, soups, icewater and fish. General treatment: potass. iodid and ammo. bro. Local treatment as previously stated.

The following cases consulted with Dr. Brower:

Case 1, in 1894, female aged 3 years, sick six weeks, recovery perfect.

Case 2, in 1894, aged 3 years 6 months, sick nine weeks, perfect recovery.

Case 3, in 1894, aged 4 years, sick seven weeks, fully recovered.

Case 4, in 1894, male, 2 years of age, sick eight weeks, recovery perfect.

Case 5, March and April, 1898, 1½ years of age, female, sick nine weeks, recovery perfect.

Case 6, 1898, male, 3 years, sick seven weeks, recovery perfect.

Case 7, 1898, female, 5½ years, sick seventy-one days. Hereditary tuberculosis. This case broke my record. I had all hopes of her recovery until the tuberculosis condition exhibited itself in miliary tuberculosis, complicated with acute nephritis. Previous to Dr. Brower's treatment my success was limited.

Compared in percentage to the recoveries: Brower's treatment, recoveries, 86% per cent. Previous treatment: digitalis and belladonna was my anchor sheet, but failed in percentage of recoveries. In eight previous cases, 56 per cent. of recoveries.

To find the good effects of Brower's treatment, you will find iodid in the urine three hours after application. I hope Dr. Brower's success will continue.

Dr. D. T. NELSON—This discussion comes very close home to me, as I have had three cases in my family of what I called cerebro spinal meningitis. Two died and one recovered. The worst case got well. The little girl was 1½ years old at the time of the attack; the whole duration of the disease was perhaps six weeks. The baby was born nine days before the great Chicago fire. She was seen by our best physicians. I am not sure that Dr. Lyman saw her, but the elder Davis and the elder Byford and Roler did, and like myself, they supposed she could not recover because it was tubercular meningitis. To give an idea of the severity of the case, the child was ten days without winking, and as she recovered scales fell from her eyes. I do not know whether it was simply dried mucus or whether they were portions of the cornea. I supposed she would never see, but she sees as well today as any one. She likewise hears as well as any one, and has had no nervous disturbance since except chorea at the age of 10 or 12 years. She recovered completely from the chorea; she was loaded with strychnin until she fell down stairs, but whether the fall was due to the strychnin or the chorea I do not know. Strychnin was pushed till there was rigidity of the muscles of the face and jaws. Her mother said she should not take any more strychnin, and she did not, but she had considerable chronic symptoms afterward. I am not familiar with the iodoform treatment; that has come up since I have had much to do with these cases. There was one remedy, a sheet-anchor in my day, in the treatment of these cases, and that was repeated blisters; as one healed it was repeated, and it did more to save lives than anything else in my belief, provided the patient could take nourishment. I believe that was what saved this patient; she would take beef tea and milk, all that was given to her, and that was in large quantities. The trouble was with respiration and the heart's action. There was no trouble fortunately with deglutition. The respiration was slow; it would stop entirely sometimes for minutes. Once I went to the drug store to get a supply of medicine and they sent word that I need not bother about it as the child was dead; she had stopped breathing, they supposed, so long that she must be dead, and with reason, except she did not become pale. The child had received enormous doses, for her age, of digitalis and belladonna, and if any internal therapeutic agents saved the child it was these. For external applications she had blisters.

By the advice of William H. Byford I once placed a blister on the forehead. We believed the case to be tubercular meningitis, and therefore expected a girl of 12 to 14 years would die. Our patient did die. We should give as little morphia as possible. I am a great believer in calomel. I remember at that time I was consulting everybody, and one physician said, give diuretics; let your sheet anchor be diuretics, as potassium acetate; that is, if there is sufficient vitality in the nervous system to aid your remedies in producing their usual effect; if the system is not completely paralyzed by the disease, excretion is the desirable thing. But the cases vary. I remember in one of the early epidemics a leading dentist

here died with what was believed to be cerebro spinal meningitis after an illness of thirty-six hours. I think we will always find that in the early cases of an epidemic the mortality is much greater than later, but it may vary from 100 per cent. to almost nothing.

One symptom has not been spoken of tonight, although it is recorded in the older books, namely, the spotted character of the skin, which was well marked in my severer cases.

The first case I ever saw was in the army, soon after the surrender of General Lee, in the U. S. Post Hospital of Richmond, Va. The disease was quite prevalent in the army at that time, and was called spotted fever. The spots were well marked, as large as the finger-nail and as small as a split pea, due doubtless to paralysis of the cutaneous vessels.

To return to the blister, it seems to me from a study of physiology in former years, that if one hand be put in ice water and a reduction of temperature be shown in the other, there is something of reflex action, though I see it decried now by many neurologists. It seems to me a blister can and does have some effect. Bromids and ergot were then used freely in the early stages of the disease, and later, when the evidences of effusion and paralysis appeared. Iodid of potassium and diuretics were substituted, but blisters were continued until complete recovery took place.

My little baby boy, who died at the age of four months, June, 1874, of cerebro-spinal meningitis, in the stage of effusion, was the first case that I ever saw or heard of where the lateral ventricles were tapped by the Dieulafoy aspirator, which was then beginning to be used. It was done by Dr. H. A. Johnson at my earnest request, as he feared the child would die during the operation. It was done through the anterior fontanelle, and about an ounce of serum removed, and while the baby rallied for a time, it died in some twenty-four hours from the reaccumulation of the fluid. Although electricity was freely used, the child died from failure of respiration and of the heart's action.

Dr. ARCHIBALD CHURCH—I am glad to be made familiar with the ocular sign in meningitis, and in the same connection I would like to call attention to the sign mentioned by nearly all writers on the subject, but which is rarely sought for in practice—the sign of Kernig. It is due to the tendency to rigidity, and is elicited by straightening the leg upon the thigh flexed to a right angle with the trunk, as in the sitting posture. In the great majority of cases a certain amount of contracture will be demonstrated in the flexors of the knee before nuchal retraction appears. I have found this so constantly present that I look upon it as of extreme value.

In a recent very comprehensive article by Councilman, published by the State Board of Health of Massachusetts, and based upon the examination of a large number of cases occurring in Boston during the past two years, the statement is positively made that in all of the epidemic forms of cerebro-spinal meningitis the meningococcus of Weicheelbaum was found. He asserts that it is the essential organism in the epidemic form, and also suggests that a test of the nasal mucus in cases of epidemic meningitis will often lead to the detection of the meningococcus, thereby serving to establish the diagnosis. A recent contribution in German literature, however, would give the negative to the assertion as far as the nasal secretion is concerned, because in a large number of cases where no meningitis was present, the meningococcus was found in the nasal secretions. This, however, gives us an idea how infection occurs when the nasal vault or the internal ear is ruptured by fracture. When Councilman presented his topic before the Johns Hopkins Hospital Medical Society, Welch, who had a large experience in the epidemic form from the material presented by Barker and Flexner, took the ground that very likely the meningococcus of Weicheelbaum was one stage of the pneumococcus, which he had found invariably in the epidemic at Lanaconing. He was not willing to assert this, but thought it might be the case.

The relation of meningitis to pneumonia is one of great intimacy, as has been emphatically pointed out before this society by Dr. Wells, and this table presents the same fact. You will notice meningitis appeared to attain its greatest frequency in 1891 to 1894 and 1895, years when grippe was prevalent, and grippe, pneumonia and meningitis are almost interchangeable terms, as we know from clinical experience. Pneumococcus meningitis is almost invariably fatal, while the meningococcus form presents 15 to 50 per cent. of recoveries. If we can detect the micro-organism we have a prognostic help. Lumbar puncture, if giving positive findings, is of some value. In a case under my care some years ago at St. Luke's Hospital, lumbar puncture carefully performed several times was negative, at the same time the head was markedly distended. It was an infant and the fontanelles were still open and bulging. I sub-

sequently punctured the lateral ventricle through the lateral angle of the fontanelle, and secured a large quantity of fluid which presented the pneumococcus in large numbers. The child died, and a section made by Dr. Eisendrath, showed that there was in addition a tubercular meningitis—a rather rare mixed infection. I think lumbar puncture should be carried out as a routine measure, and as a diagnostic measure has value, but as a therapeutic measure it is of slight importance. Jacoby of New York has suggested making an opening into the ventricles through the skull and dura, in conjunction with lumbar puncture, for the purpose of washing out the intradural spaces. By making such openings the entire field could be irrigated. He also advises that iodoform be used in making the flushings. I have used iodoform inunctions as recommended originally in Germany, in a number of cases, and like Dr. Neal, have associated small doses of calomel: I am indisposed to give up the calomel, feeling that it may act as a germicide, perhaps, or counteract in some way the toxic effects of the germ activity, besides increasing elimination through bowel and kidney.

Dr. D. R. BROWER, in closing the discussion, said: I am very pleased that this communication of mine should have produced such an interesting discussion. I am very much obliged to you for the attention you have given it and I am very grateful that there is some disposition to investigate it and to induce further investigation. I would not have dared to come to this Society and tell you that I knew of 46 cases of meningitis with 33 recoveries; I would have been annihilated if I had done so, but I brought with me the names of medical men who ought to know, if they do not, how to diagnose and investigate some of these cases. I saw most of these cases but I will not father them all. These observations began some ten or fifteen years ago. I do not believe these cases were pseudo-meningitis—I do not believe they were intestinal reflex irritation, I believe they were meningitis. Dr. Neal is sure his cases were meningitis and not pseudo-meningitis. The value of the therapeutic measure is the persistent use of 10 per cent. inunctions of iodoform with lanolin to the shaved scalp, thoroughly applied, and in an hour we can find the iodoform in the urine or in the saliva. The system is saturated with iodine and I believe that iodine is a germicide. Calomel was given to most of these cases one time or another; constipation characterized the majority of them; they vomited castor oil, and calomel had to be given as the agent that would produce a laxative and a diuretic effect.

As to the Skeer sign, Dr. Skeer, some fifteen years ago, first called my attention to this. The first case he observed was a member of his own family who died of tubercular meningitis, and in another case occurring in his own family, the same sign was present and was verified postmortem. He called my attention to this sign in a case I saw with him in consultation. In that case the result was verified postmortem, and in two other cases in which this sign was present the result was verified in the same manner. So I know of four cases in which this sign has been verified postmortem. Of course that is not very many. It is not present in all cases of tubercular meningitis. If it is present in any other disease I have never seen it. It is the first stage only of this sign that is easily diagnosed. The reason I seldom see it in consultation is that I am never sent for until it is pretty nearly extinguished. When the case is about to die the consultant is sent for in order that the case may go *secundum artem*. I would suggest, as Dr. Moyer has suggested, that there might be some positive investigations along this line and I hope the members of the Society will attempt to cure this disease by iodoform inunctions. Use calomel all you please, and properly selected means of reducing temperature locally and generally, but give iodoform inunctions a trial and let us, a year hence, give this subject further consideration. I would be glad to have the members of the Society communicate their investigations. I believe the Skeer sign is pathognomic of meningitis. I do believe that some cases of acute meningitis are modified in their course, possibly aided to recovery by inunctions of iodoform and lanolin.

San Francisco County Medical Society.

Dr. HARRY M. SHERMAN presented a paper entitled
FAULTY UNION IN A FRACTURE OF THE FEMUR; RESECTION, AND UNION IN GOOD POSITION.

The history of the case reported was as follows: The patient, a young woman of 18 years and 10 months, had fallen when a child of 8 and struck on her hip, since which time, or for over ten years, she has had a limp, rendering locomotion almost impossible, and has suffered considerable pain. The fall occurred during an epileptic seizure. At that time she was confined to the bed for a week only, the trouble not being consid-

cred grave at first; it subsequently became worse. She had not been able to stand on the right leg, the one affected by the fall, for ten years. A few months ago she fell again, striking her knee; there resulted some soreness of the knee, but no trouble with the hip. The patient, at the time she presented herself at the University of California clinic, was exceedingly fat, so much so as to prevent her from walking almost entirely, for she could only with great difficulty and for a short time use crutches. On examination she exhibited 20 degrees of adduction, and the greater trochanter was 5.25 cm. above Nelaton's line; owing to the excessive fat the diagnosis could not be exactly made out, but seemed to be a posterior dislocation of the head of the femur. The possibility of an intracapsular fracture was discussed, but was not held to be very probable. There had been no epileptic seizure for some years. The right leg was flexed 40 degrees, and had the characteristic appearance of a posterior dislocation. The girl was sent to the Children's Hospital, where it was decided to operate for the reduction of the dislocation. An incision after the method of Lorenz was made, the proper muscles divided, and then, when the finger was introduced, the head of the femur was found to be in the acetabulum. Forcible traction was made, resulting in a prompt fracture of the neck of the femur, at the site of the old fracture. A gauze drain was introduced, the limb bandaged and fixed with some considerable abduction. The operation was made August 14, and the patient was up October 20. Shortly after first getting up she had an epileptic attack and was placed upon bromid as an article of diet. She was discharged from the hospital with instructions to use for two weeks, two crutches; for two weeks, two crutches in the street, and one in the house; for two weeks one crutch in the house and a crutch and a cane in the street; for two weeks a crutch in the street and a cane in the house; for two weeks a cane in the street and nothing in the house, and after another two weeks to use no artificial support either in the house or out of doors. At the end of three months the patient was again seen, and at that time she had a slight amount of adduction, but walked well without any assistance. She was seen still later, and the result was very satisfactory. There was considerable fibrous ankylosis, but little motion at the hip joint, yet she could walk well and had no pain. Dr. Sherman urged that operative interference be more often resorted to in those cases of intracapsular fracture of the neck of the femur which were not impacted; where there was impaction, interference was not needed, but he urged that many cases of this fracture in old people might be very markedly improved by operation somewhat after the method he had employed. Dr. Sherman also exhibited Grattan's osteoclast, recently devised for the more satisfactory refraction of bones. He illustrated its manner of easy adaptation to almost any bone or region, and dwelt upon the fact that with this instrument it was possible to fracture the bone by means of what was practically a blow and not merely a crushing; consequently it gave a much cleaner fracture than could be obtained by other devices, and the fracture was always at a known point, opposite the descending jaw, or "jack," of the instrument. He had that day used the instrument on two legs with eminently satisfactory result. He also exhibited some photographs and skiagraphs of a case of arthritis deformans of both knee-joints, which was remarkable for the amount of deformity, and the fact that apparently the man ought not to be able to walk with the amount and extent of deformity present. The knees, especially the right, were so much disturbed in their relations that the inner tuberosity of the tibia was exactly over the external condyle of the femur. Yet the man could walk easily and had very little limit to the proper motions of the joint. He had applied to the University of California clinic for a brace to relieve the tendency of the leg to spring outward in walking, due to the improper location of the strain caused by the deformity.

Dr. KENYON said that he recalled a case he had operated upon many years ago, for relief from the deformity resulting from a fracture of the femur. He had operated by sawing through the femur between the greater and lesser trochanters, and the result had been excellent, the patient being some years afterward killed while she was riding horseback, thus showing that she had improved sufficiently to take such exercise.

Dr. SHERMAN said, in reply, that his case was one of intracapsular fracture, and that the operation had been an intracapsular fracture, and not a subtrochanteric osteotomy, as was the case with the patient reported by Dr. Kenyon. He urged that these cases of non-impacted fracture be operated upon, being strongly of the opinion that the results would be very much better than at present if this was done.

Dr. WHITNEY said that he had recently seen two cases of intracapsular fracture of the neck of the femur, in both of which there had been crepitus and every evidence of non-

impaction, and yet both of the patients had refused to remain in bed, and had gotten up almost immediately after the accident. Both were doing well and walking around with very little discomfort. One was a woman 82, and the other a woman 85 years of age. Certainly there would have been nothing gained in these cases by operating. He asked what explanation Dr. Sherman would make of the fact that these women were so soon walking about, apparently with a perfectly healed fracture of the neck of the femur, where there had been no impaction and no operation.

Dr. SHERMAN answered that he thought the patients mentioned were probably walking on the capsule, and that there had not been bony union of the fracture. He did not believe that bony union ever occurred in cases of intracapsular fracture of the neck of the femur in old people. It was a question entirely of the nourishment of the upper fragment, and the nourishment was so trifling, without impaction, that he did not believe it possible for true bony union to occur. For that reason he was extremely careful in examining all cases of suspected fracture of this region, not to use any force; he never made the examination under chloroform, and never manipulated the leg at all forcibly. If he could not easily determine the condition he much preferred to await developments rather than to use force and run the chance of breaking up an impacted fracture.

Dr. NUSBAUM presented a report of a case of

CONGENITAL DEFORMITY.

He had hoped to be able to present the case to the society, but, unfortunately, it had some days previously developed bronchitis which proved fatal very suddenly. At birth the case presented the following appearance: The right radius was absent; the hand was clubbed; the thumb, which was perfectly developed, hung by a mere thread from the hand, the right ear was bent forward, and in front of it was a tit of skin, sharply pointed; near the umbilicus were two herniae; there was right facial paralysis. The child had been born on Jan. 17, 1898. It was the fifteenth child of the parents; the father was a confirmed drunkard; the mother was apparently healthy; six of the fifteen children are living and all were normal at birth. The birth of the present one was normal and no forceps were used. The mother stated that she had fallen four times while carrying the child, and it was probable the husband had abused her during the period of gestation. The husband had applied to the doctor during the pregnancy for some ergot, expressing his desire to produce an abortion; it was not supplied by Dr. Nusbaum, but the man may have obtained it from some other source. The Doctor then cited a number of authors on the subject of multiple deformities, and stated several theories.

Dr. HUNKIN said he did not think that external violence could have produced the deformities described; he was rather inclined to believe that the condition of the thumb and the absence of the radius might be explained by assuming an incomplete intra-uterine amputation, from the cord having encircled the arm. Dr. Kerr asked if there were any rudiments of the radius and it was stated that there were no rudiments; that the radius was totally absent.

Dr. KERR then said that he thought no pressure or external violence could have produced the trouble, nor yet that it could have been caused by uterine amputation, for in either of these cases there would have been some trace of the missing bones. He mentioned some statements which he had seen in a medical journal, the writer of which he could not recall, which were to the effect that in a number of cases where these multiple deformities had occurred, alcoholism could be directly traced as the probable cause. One case in particular was mentioned in which the conception had commenced when the father was quite intoxicated; other children by the same parents, but which had been conceived when the father was sober, did not show any deformities at all.

Dr. HUNKIN mentioned several cases which he had seen, but in which the radius was missing from both arms, and not only from one, as in this case; he felt that alcoholism could be eliminated from the cases he mentioned.

Dr. SHERMAN stated that he thought the condition of the thumb was the result of an incomplete intra-uterine amputation, as has been suggested, no matter what the cause of the other abnormalities might have been. As to the statement that the radius was totally absent, that he thought could not have been made with absolute certainty unless the case had been skiagraphed, which had not been done in this case. He did not believe it possible to be absolutely sure of the absence of any bone, without the aid of the X-rays. He mentioned several cases which he had had the good fortune to see, one of which was the child of apparently, perfectly healthy parents.

Two children had been born, both of them normal and healthy; the parents were abstemious, the father not drinking at all, and he thought not even smoking. Yet there had been many deformities in the third child. It had been brought to him to see what could be done. He refused to make any statements or attempts at treatment until the child had doubled in weight. It was then again brought to him, and a careful examination revealed double club-foot, double club-hand, rachitic deformities, and a peculiar condition of the knees. Both knees were much deformed; the tibia on both sides was riding upon the femur, and there was absence of patellæ, with hyper-extension. He applied constant traction, till the tibia was drawn down to a point where it just rested on the femur; no amount of strain would, however, cause it to descend into place. The child had sickened somewhat in the hospital, and he had sent it away to the country, but would later on make further effort to improve the very unfortunate condition of affairs.

Dr. NUSBAUM said, in closing, that he was quite sure that there was no radius in the case he had reported; several physicians saw the case, and they were all of the same opinion.

Cincinnati Academy of Medicine.

Regular Meeting, October 17, 1898.

Dr. RICKETTS made a supplementary report to a case of "Ununited Fracture of the Middle Third of the Left Humerus," which he had first reported to the Academy in February, 1898. This fracture had been but one of numerous injuries, there being sustained at the same time both maxillary and Potts' fractures. The case had been operated on when it was found that union was not taking place. A long external incision was made, the ends of the bone freshened and brought in apposition with a single piece of silver wire. Unfortunately, erysipelas set in and involved not only the wound of incision, but spread over the arm, shoulder, chest and back, neck and face, and downward involving the buttocks. Two months afterward his fracture was still not united. The arm was not put in any kind of casing. Whether the effect of erysipelas causing great irritation about the non-united pieces, or what not, at any rate when he began to recover from the debilitating effects of his erysipelas, the ends of the bone began to knit, and now he has almost perfect use of the arm with but a minimum of shortening. The Doctor, in investigating the source of the erysipelous attack, found that the patient himself had had the disease but a few months previously. It is interesting to note that previous to the operation the patient had but little or no use of his forearm and fingers. It was found during the operation that the median nerve had been caught between the fragments and more or less lacerated. Release of the nerve was eventually followed by perfect use of the muscles supplied by it. The man is 58 years of age.

The second case reported by Dr. Ricketts was one of epithelioma of the nose, almost centrally situated. He had burned away the diseased portions with a caustic paste, and had performed a plastic operation, pushing the flaps from the cheeks and using the septum nasi as a sort of beam for their support. This was three years ago, and while during that period he had been compelled several times to remove recurring nodules, the present result may be looked upon almost as a cure.

Dr. ROBERT SATTLER reported two cases of myopia of high degree. In one, a young woman, the exact degree could not be exactly determined, owing, probably, to dioptric as well as axial astigmatism. The best vision obtainable was $\frac{2}{10}$. Treating each eye separately, he first established a traumatic cataract, removed the lens, and by a number of dissections established a clear pupil. Fourteen operations were made in all. Now with slightly plus glasses she is able to read the finest print. In the other case, a young man, the myopia of each eye amounted to sixteen diopters. Only one eye has as yet been touched, and a traumatic cataract is very evident. The Doctor expects by removal of the lenses to take away from nine to twelve diopters from the myopia, so that the boy with a concave glass of from seven to four diopters may have fairly good vision.

Dr. SATTLER then read the regular paper of the evening, entitled "Recent Advances in Ophthalmology of Interest to the General Practitioner." He first called attention to the modern hope of restoring comparatively good sight in patients afflicted with high-grade myopia, not rapidly progressive, nor connected with serious damage to important structures, as liquefaction of the vitreous and detachment of the retina. The case he exhibited was but one of a large number, both in his own and in the experience of others. The method was first the formation of an artificial cataract by means of carefully guarded traumatism; the removal of the cataract thus formed, followed by dissections in sufficient number to estab-

lish a useful pupil; or the removal of the non-cataractous lens—an operation attended with slightly increased danger.

He then took up the subject of senile cataract, and the actions of the numerous charlatans who advertise its removal without the use of the knife, their method consisting in instilling into the eye a collyrium of any mild combination, usually with boracic acid, and following this up with massage, which massage could only be administered by the advertiser himself. The relief—never cure—occasionally obtained, the speaker ascribed either to the imagination of the patient, or to the lenticular myopia sometimes occurring in old age, presenting the well-known phenomena of second sight. Complete relief from any lenticular opacity could not be brought about without operative procedures.

The third point to which he called attention was the care of the new-born infant's eyes as a prophylactic to blenor-rhea neonatorum. He recommended that in all hospitals and public institutions, among the lower classes of society, and in all infants in whom a possible infection was even suspected, there should be immediate disinfection of the conjunctival sac according to the method of Credé: the careful and proper use of a 2 per cent. solution of nitrate of silver, not dropped into the eyes, but with the child's head between the obstetrician's knees, with proper cleanliness especially of the hands, with the lids everted; a thorough brushing to be made, followed by the washing away of the excess of silver solution with sterilized water. If the silver solution were merely dropped into the eye, a severe traumatism of the cornea might result, which might be followed by the direst consequences. He also stated that while specific gonorrhœal infections were undoubtedly the most virulent, any purulent ophthalmia at this very early period of life would probably result seriously as far as ultimate vision was concerned.

Discussion was by Drs. Christian, Caldwell, Johnston, Jones, H. M. Brown, J. Louis Brown, Judkins and the essayist.

PRACTICAL NOTES.

Ichthyol in Variola.—A writer in the *St. Petersburg Med. Woch.* of August 20, extols his remarkable success in variola with 20 per cent. ichthyolized collodium, which he had found very effective in herpes zoster.

Mentholised Iodol.—The addition of 1 per cent. menthol to iodol disguises the odor while enhancing the therapeutic effect in nasal and laryngeal troubles.—*Klin. Therap. Woch.*, September 25.

Helmerich's Salve: New Formula.—Triturated sulphur 10 gm., potassium-carbonate, 5 gm., aq. dest., 5 gm., vaselin 40 gm. Dissolve the salt in the water, heated, add the sulphur and vaselin and stir in a warm mortar until cold.—*Jour. de Méd. de Paris*, September 18.

Dry Bismuth for Burns.—This is recommended by Lassar as the most effective of all dressings. Bardeleben prepares "bismuth burn badges" which insure a painless and reactionless healing in nearly every case.—*Dermatol. Ztschft.*, iv, 4, in *N. Y. Med. Monatsheft*.

White of Egg for Inflammations.—Lewith asserts that fresh white of egg applied with the finger soon dries into a protecting and contracting membranous shield under which itching subsides and inflammations heal.—*N. Y. Med. Monatsheft*, August.

Amyl Nitrate in Post-Hemorrhagic Anæmia.—Bompiani of Rome has obtained remarkable results with inhalations of amyl nitrite in cases of acute anemia consecutive to extensive hemorrhage, and recommends it as superior to the subcutaneous injection of ether in reviving persons in danger of death from hemorrhage.—*Journ. de Méd. de Paris*, September 18.

The Sources of Hematuria.—Dr. David Stuart (*London Lancet*, July 2, 1898) classifies renal diseases with reference to hematuria, as follows: 1, traumatismal, *a*, injury, *b*, calculus; 2, passive hyperemia, *a*, pressure on renal veins, *b*, torsion of the same, *c*, reflex spasm of arterioles; 3, inflammatory hyperemia, *a*, nephritis, acute and chronic, *b*, tuberculous disease, *c*, cystic degeneration and hydatids; 4, tumors of the kidneys.

Curare in Epilepsy.—Inject, every five days, one-third of the following solution: curare 50 cm., aq. dest. 5 gm., hydrochloric acid 1 drop. Let it stand twenty-four hours and filter. The injection is not painful, does not produce any reflex symptoms and has never caused the slightest indication of intoxication.—*Jour. de Méd. de Paris*, September 18.

Absorbing Power of Potassium Iodid.—In cataract operations large doses, 3, 5 to 10 gm. a day, must be administered, and the remains of the lens will be rapidly absorbed, rendering a second operation unnecessary. In operations for myopia a small dissection opening is all that is necessary with the potassium iodid, thus preventing irritation of the uveal tract by masses of lens substance.—*Klin. Therap. Woch.*, September 25.

Orthoform in Intramuscular Injections.—Loeb adds 5 to 10 per cent. orthoform to his injections of 10 per cent. hydrarg. salicylicum and paraffin, and finds that it prevents the local pain from the injections for eight to ten hours. He first tested the intramuscular injections of 10 per cent. orthoform with paraffin on himself, and established its efficacy and harmlessness. The medicinal injections were absorbed as readily as without the orthoform.—*Klin. Therap. Woch.*, September 11.

Hot Water in Hemorrhage.—Hot water injections have been found effective not only in gastric hemorrhage, but hemorrhages from the nose and lungs. Two or three injections a day with water at 45 to 50 degrees C., have arrested cases that had resisted all other treatment. One is described in the *Klin. Therap. Woch.* of September 18, a woman with commencing tuberculosis, whose severe hemoptysis had persisted for days, but yielded in one day to the injections.

Menthol in Anthrax.—Braun has found 2 per cent. alcohol solutions of menthol very effective in anthrax, curing it in much less time than usual. He applies it on a gauze strip, with which he packs the main cavity, after it has been cleaned out with cotton, and covers with an air-tight covering and compressing bandage, left for twenty-four to forty-eight hours. The application is slightly painful at first.—*Klin. Therap. Woch.*, September 18.

Aseptic Tamponade of the Uterus.—A large funnel-shaped speculum is introduced into the vagina, and the anterior cervical lip is seized with a pair of ball forceps, provided with a hook on each side, and drawn down until one hook rests on the edge of the speculum. The posterior lip is seized in the same way and hooked on the other blade of the speculum. The tamponade then proceeds as usual; the operator has both hands free, and the gauze does not come in contact with the external genitals, while he can visually inspect the whole process.—From Wyder's clinic, Zurich, *Munich Med. Woch.*, September 20.

For Subconjunctival Injections.—Take metallic iodine 1 to 2 cgm., potassium iodid 1 gm., boiled distilled water 30 gm. Inject 4 or 5 drops of this solution under the bulbar conjunctiva every two or three days, increasing progressively to 10 or 15 drops. These injections are comparatively very slightly painful, but cause a light transient chemosis. The favorable effect of the treatment becomes evident in the course of two or three weeks, as the size of the floating bodies diminishes and the scotoma improves, as does also the central visual acuity, even in cases of macular choroiditis.—*Semaine Méd.*, September 28.

Raising Paralyzed Eyelid.—J. Hirschberg (*Deutsche Med. Woch.*, September 28) describes his success with the Birnbacher operation in five cases of pistol-shot in the temporal region, causing paralysis of the eyelid on that side, although the sight was retained in some cases. No narcosis is required; the upper edge of the superior tarsal is exposed by a perpendicular incision, and three double strong silk threads are passed through it and then under the skin to above the eyebrow, where they are tied tight over drain-tubes. The free edges of the lids are temporarily sutured together lightly to prevent irritation of

the cornea by the lashes. In three or four days the eyelid can be raised and closed at will, as the muscular power of the non-paralyzed muscles is transmitted to the paralyzed lid.

Tests for the Hearing.—Ostino asserts that a deficient perception of the spoken letter "S," in comparison with our consonants, indicates otitis of the internal ear, the more decidedly as the formula for the distance of perception of the other letters is inverted. If in addition "C" and "G" are also deficient, it indicates that the disturbance is not limited to the scale "do, do," but affects also the middle scale. Diminished perception of consonants spoken in a bass tone indicates alterations in the apparatus for the transmission of sounds. In affections of the internal ear there are islands of deficient perception limited to one consonant, but in affections of the middle ear, the deficient perception extends contemporaneously to several consonants of varying height and tonality, but all comprised in the lower limits of the tone scale. A deficient perception of the letter "F" is an almost constant indication of acute otitis of the middle ear, simple or with effusion, with or without perforation. Beyond the maximum limit for the perception of a consonant, it is confounded with another consonant, usually one of the same tone height as the first.—*Gazzetta degli Osp. e delle Clin.*, September 18.

Treatment of Pulmonary Gangrene.—This treatment is founded on antiseptics (editorial in *Journal de Méd. de Paris*, September 18). The patient should be placed in a large room and the air disinfected with phenicated spray. To disinfect the lungs, give one of the following potions in teaspoonfuls during the twenty-four hours: No. 1, alcoholatum eucalypti 2 gms, julep with syrup of poppies (julep diacodé) 120 gms. Or No. 2, Labarraque's solution 4 gms., sodium hyposulphite 4 gms., julep 120 gms. Antiseptic inhalations are also useful: phenic acid 50 gms., water 950 gms. Put in a bottle and inhale the vapors. Trousseau recommends essence of turpentin. Pour a few teaspoonfuls of the spirits in hot water and inhale. Jaccoud recommends for internal antiseptics: 50 cgms. salicylic acid during the day. Tonics of all kinds should be used *largamano*, with digitalis and caffeine when collapse threatens. If there are several foci, medical treatment is all that is possible, but if the gangrene is circumscribed and this treatment is ineffectual, pneumotomy and drainage are indicated. The part of the lung involved has been resected in some cases with satisfactory results.

Sattler's Operation for Myopia.—This operation has been performed on thirty patients to date, and has proved more than satisfactory; the operative astigmatism is very slight as a rule; the eye heals much more rapidly than with other methods and without the least inflammation, in nearly every case; and only two interventions are required. He first makes an incision 5 to 7 mm. in length, perpendicular to the vertical meridian and about 1.5 mm. from the edges of the cornea, with a Weber hollow lancet. The anterior capsule is then seized with a sharp hook and the lens substance loosened at the equator and from the posterior capsule. A Daviel spoon is then pushed a little way into the front chamber, slightly pressing down the upper lip of the wound, while another Daviel spoon is applied to the region of the lower edge of the cornea in a horizontal position with a moderate pressure backward. By this maneuver the entire nucleus is evacuated and the process is repeated a second or third time, as long as it brings lens substance without difficulty. The iris is then replaced and one drop of atropin instilled. The amount of the lens substance thus evacuated amounts to two-thirds or even three-fourths of the entire lens. In some cases this intervention is sufficient, but usually dissection of the posterior capsule is required later. He has recently applied this same operation to nine cases of lamellar cataract with perfect success.—*Klin. Therap. Woch.*, September 18.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2 00
Single Copies	10 Cents

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No. 61 Market Street (Occidental Bldg.), Chicago, Illinois.

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SATURDAY, OCTOBER 29, 1898.

AGAIN THE BICYCLE.

At more or less regular intervals the medical journals discuss the use and abuse of the bicycle. That the latter is a valuable aid as a promoter and restorer to health the active partisanship of the bicycle world will testify, regardless of any and every attack made by physicians. Like every other therapeutic resource, it should not be applied indiscriminately to all cases; such a course would soon establish an abuse. No one would advise a patient afflicted with organic heart disease to become a professional "scorcher," or to exercise to the extent of a fifty- or a hundred-mile run, any more than he would countenance a hundred-yard dash as a daily exercise, yet we can easily see how an easy ride of five or ten miles or a walk of the same distance would be of great advantage to such a patient. Every individual is a law unto himself. Where one would look upon a century run as but a pleasant bit of exercise, another, in apparently equal physical health and with the same training, would be incapacitated for several days by such an effort.

A number of years ago, before cycling attained its present popularity, medical writers warmly discussed the terrible results this sport would have upon the female pelvis, especially as regards child-bearing. The manufacturers quickly took advantage of this state of affairs, and reaped the rewards of their industry in the sale of various patterns of sanitary saddles, so-called. We are not aware that the obstetricians are having any greater difficulty in delivery than formerly; possibly it is due to these very saddles, possibly not. The heart was the next to claim the attention

of the bicycle enemy. We read the dogmatic statements of a medical brother that no one with organic heart disease should ride a wheel; we were impressed with his reasoning and nodded sympathetically as we perused his doughty arguments; and we turned contentedly the pages of the JOURNAL and were soon absorbed in Professor A.'s article on "The Use of the Bicycle in Organic Heart Disease"; and perhaps as we glanced out of the window we observed that infatuated Dr. B., with his aortic incompetency, wheel smilingly by as he makes his rounds, happily unconscious of his deadly peril. And now it is the kidney, and it must be confessed that there is evidence of a more tangible character here. MUELLER (*Munchener med. Woch.*, 48, 1896) reports his observations on the urine of twelve cyclists, eight of whom were in training and the remaining four not. Their rides were from one and a half to three hours at an average rate of speed. Examination before the ride showed the urine free from albumin in all instances save one—a professional. Seven of the eight in training showed a marked albuminuria after the ride; six of the eight, including the one whose urine contained no albumin, showed large numbers of casts, for the most part of the hyaline variety, and a few white-blood corpuscles. Of the four untrained cyclists, two developed albuminuria and a third the presence of cylindroids after their ride. In all these cases these rather alarming symptoms disappeared in a few days, leaving no trace. "Leaving no trace;" and if there is one thing that pathologists have endeavored to impress upon the profession, it is that a chronic irritation will eventually result in the evolution of new-formed connective tissue, and again that new-formed connective tissue, in whatever part of the body it may be found, will in time undergo cicatricial contraction; in the kidney this would mean a condition of chronic interstitial nephritis. The above cases were taken at random, and probably correctly reflect the urinary phenomena of a large majority of cyclists. Your enthusiastic wheelman rides every day that he has a possible excuse for so doing; in other words, he produces a condition of chronic congestion in his kidneys that is practically constant, for, as MUELLER says, several days elapse before the alarming urinary symptoms entirely disappear. Is this condition any less dangerous than that chronic congestion produced by the ingestion of alcohol? Surely the decryer of the bicycle would have enough to rave against were he to leave the heart alone and turn his attention solely to the kidneys. Nevertheless, the bicycle will survive.

THE DOCTOR IN THE SCHOOLROOM.

In these doleful days of overcrowding and hospitalism it ought to be welcome news that a new field is opening up for our professional activity. To the prophetic vision of the Cassandras of both sexes in our ranks—and they are many—the direful prospect

has already presented itself of the day when disease having become extinct through the noble but suicidal efforts of the doctor and sanitarian, our occupation, like Othello's, will be gone. Any new outlet for our energies will help to either postpone that *dies iræ* or to mitigate its horrors when it does arrive. And we wish to seriously call the attention of the profession to the fact that there is opening up before us today in the schoolroom an almost entirely new field of usefulness, one which could profitably absorb the entire energies of one-third of our present membership and whose possible extent and usefulness to the community are alike well-nigh unlimited.

Within the past fifteen or twenty years there has come a change in educational ideals and methods which amounts almost to a revelation. Up to that time the wheels of the educational machine had been placidly revolving in the comfortable ancient rut of the belief that education was solely a matter of the mind, of the intellect, regardless of the body. That this intellect aforesaid could be trained and increased in power and grasp simply by putting it through a divinely-ordained course of stereotyped mental gymnastics. The chief problem was how to make the young idea acquire a certain standard number of mind tricks by a certain age. All that was required of the body was that it should not interfere with the progress of the course, by breaking down or going to sleep. To avoid these undesirable contingencies it had to be considered and even humored a little occasionally, but officially recognized, never. It was by nature opposed on principle to the entire process and must be rigidly disciplined with an iron hand to submit to it. True, the course of necessity extended over some ten or fifteen years of the child's life, and during that period the body grew and developed in a most remarkable way, but that was a mere coincidence, the mental growth was all due to the scholastic drill. Time spent on training the body was simply time wasted, the mind alone was worthy of attention.

Now all this is wonderfully changed, although the old error dies hard and still holds much of the field. It is becoming recognized that the mind has an inevitable natural tendency to grow and to follow certain laws of development just like the body; that the extent of this development can not be altered or added to by "taking thought" much more than the "stature;" that this growth proceeds on absolutely parallel lines with that of the body and for the most part *pari passu* with it; that whatever hinders the healthy development of the body hinders or impairs the growth of the mind; whatever promotes the one favors the other.

A new science has been added to the teacher's "requirements"—Child-Study. The idea has at last dawned that education was made for man and not man for education: that the system should be made to fit the child, not the child the system, as hitherto.

Hence the burning question of the day is, "What is the child?" "What is the natural history of the young human animal?" And the only man in the community at all competent to answer that question is the family physician. And even he needs much training before he can safely be accepted as an authority upon the subject. He has a good fundamental training, and his knowledge of the subject, both scientific and personal (practical), is fairly extensive, but it needs classifying, systematizing and testing by abundant actual experiment in the schoolroom. The relations between the teacher and the doctor have not been at all as intimate as they should be nor the feeling as cordial. Both have exhibited too much of that clerical spirit which HUXLEY describes so pithily as "that frame of mind engendered by much speaking without fear of reply." The doctor has been too ready to denounce what he can see to be the hurtful absurdities of the teacher's Chinese worship of ancient method without a proper appreciation of the practical difficulties of the problem of the teacher's position. He is between the devil of the doctor and the deep sea of the proud and *exigeant* parent, who raises a "yellow roar" if his young hopeful does not know his seven times seven at eight and his capitals of Europe at nine precisely.

Hence we must not be surprised if the teacher resents our criticisms, however well meant, and is inclined to regard us as a sort of perpetual opposition, only too anxious to advise the anxious mother to take her delicate child out of school, when the real cause of the "break down" has been parties and pie.

The child is little, physically, but it takes at least four people to understand him, the doctor, the teacher and *both* parents. And the time has now fully come when the doctor's contribution to this science should be prepared and made available for use in the great new educational advance. The parent has full confidence in us, and the teacher is beginning to lean toward us, though slowly and half reluctantly, and if we but respond as we should, there is opening out before us one of the noblest fields of usefulness to the race that we can conceive of. What, then, are the questions upon the solution of which our assistance is beginning to be demanded? They are many and hard and will increase in number and difficulty, but they fall into three great groups. The first group concerns the hygiene of study and of the school, the school-room and building itself, the playground, the hours of study, of meals, of recreation. The second group concerns the physical fitness of the child for study, his eye-sight, hearing, muscle-balance, digestion, sleep, powers of resisting fatigue at different ages, periods and sexes. The third relate to the most fundamental and fruitful question of all: What is the child; what are his interests, his needs at successive ages; what course does he naturally follow in his development? We are beginning to trust

instinct and nature even in the school-room. In response to the first group of questions we can return fairly positive answers, for enough careful work upon the problems of school-sanitation has already been done by certain members of our craft to render the principles of the science and art fairly clear and definite. But to reduce them to practice in a given building is a problem worthy of our best ingenuity. And it is amazing how many of them are utterly disregarded even in our modern buildings. Sufficient desk-space for a given number of children in rooms that look fairly light is secured, and then the vital questions of the plumbing, ventilating and heating are solved by letting them to "any reliable" firm making the lowest bid or having the most plausible or persistent representative. Perhaps a land-surveyor known as the "city engineer" may be consulted or a busy doctor asked for an off-hand opinion, but usually the united ignorance of the school-board regards itself as fully competent to decide. A committee appointed to investigate the public-school buildings of one of our most progressive large cities reported over half of them defective and a fourth of them disgraceful. There ought to be a physician on every school board and in every town of more than two thousand inhabitants, as school physician, with salary enough to enable him to devote a substantial share of his time to the study and remedy of these conditions. Nor is this merely one of the "ought to bes" of the Utopian future. In Boston there are already four physicians who, we believe, devote their entire time to this invaluable work and our most prominent educators are declaring that school-hygiene is to be the burning question of the coming quarter century. The matter is being taken up in teachers' conventions, "normals" and summer-schools all over the country. The conviction has been brought home to teachers by practical experience that to get the best work out of a class of children you must place them under the most favorable hygienic conditions possible. They are taught that unless the air be fresh and the room cool, little can be expected of the pupil in the way of either attention or industry. The better class of teachers everywhere are, as a rule, keenly alive to the defects of their rooms and eagerly anxious for competent advice and assistance to remedy them. A daily visit from and consultation with a medical inspector would be welcomed by them. A proper adjustment of window-space to floor, of cubic air-space to each child, of the desks to the direction of the light, of the height, slope and "hang" of the ventilation and heat-supply, would make a wonderful difference in the effectiveness of any building as an educational appliance. Then would come the consideration of the play-ground. This has grown up hitherto as a sort of accidental adjunct to the school-building and in many cases seems to be regarded as a necessary evil, which may be reduced to its lowest

possible terms with impunity. All that seems to be considered essential now is enough open space about the building to give it sufficient light, so that its shape and size are those of a narrow "halo" for the former. The school-house monopolizes two-thirds of the spaces leaving only a tiny plat in front, a narrow strip at the sides and a larger plat behind. The lot is bought to fit the building, and whatever ground happens to be left over is turned into a play-ground. Now, this is all wrong, for the play-ground is as necessary and important a part of a good school as the building. The educational and hygienic value of a play-space is enormous. For ourselves, if we were compelled to choose between a school-house without any play-ground and a play-ground without any school-house, we would prefer the latter. A certain area per child ought to be provided just as much as a certain cubic air-space of house room. At least a fourth, if not a third, of the building fund ought to be spent upon the grounds. A liberal space ought to be roofed with glass so as to be available in wet or stormy weather. But what recognition of its importance do we find? Little or none. Not content with reducing it to a mere border around the building and fag end of the lot, we choose the best part of the ground to put the building on. We have seen a building containing four hundred children and its only play-ground the rear half of the lot, which sloped so abruptly down into a ravine that neither gravel nor sand would lie on its surface. Worse yet, with a positive refinement of idiocy, if the remnant of the lot happens to lie in front of the house it is delicately laid down in turf, planted with ornamental shrubs and decorated with signs, "Keep off the Grass"! which ought to be supplemented by placards, "Go Play in the Gutter"! Grass and geraniums are evidently "of more value than many children."

THE DEPOPULATION OF ONTARIO.

The question that has been troubling the French sociologists for the past few years—the low and decreasing birth-rate in their country—is now also becoming a living one with our neighbors over our northern borders; and it would appear with even greater show of reason. If a birth-rate of only 22 to the 1000 should give concern to the French statesmen and physicians, the still lower one of only 20.7 in the Province of Ontario ought, it would seem, to excite still livelier apprehensions for the future of a country that is thus failing in the very source of power, the production of an active and aggressive population. The problem is made the more serious by the reverse condition existing in the adjoining Province of Quebec, where a very high birth-rate has long existed in what some would claim is in many respects an alien and inferior race. The result is that, as in some parts of New England, the French Canadian is crowding out the Anglo-Saxon in certain regions, and fear is expressed that unless

some reversal of present tendencies occurs, all of Eastern Canada will become thus transformed. The matter has been the subject of extensive discussion by the Canadian press, has been seriously considered in at least one convention of a prominent religious body, and will, it seems probable, give still more disquiet to the minds of Canadian publicists and patriots before any final satisfactory facts or conclusions are developed.

As we have said before in this JOURNAL, the question is more a sociologic than a medical one, and yet it has its medical side, and there are many points of view from which it may be of interest to us as physicians. In Ontario the people are, as in France, moderately prosperous, thrifty and forehanded, and in addition to this they annually lose, as in New England, a considerable proportion of their most virile and energetic element by emigration. These are exactly the conditions that might be supposed to tend to a restriction of the birth-rate; the conditions favoring the existence of an aggressive proletariat are lacking. In Quebec, on the other hand, the latter are directly favored by the influence of the Government and the church, as well as by the racial character and social state of the population, which has not been modified as in France, by military and political changes during the past hundred years. In this province we have still the Frenchman of the seventeenth or eighteenth centuries, but living under vastly more favorable conditions; not the French peasant or citizen of today with his burdens of militarism and his non-prolific tendencies.

It has been often charged, especially by some social alarmists among the clergy and elsewhere, who support themselves by the statements of a few medical writers, that amongst the Protestant population of the eastern border of our continent certain very reprehensible practices are commonly resorted to to check the increase of families, such as actual criminal abortion and other illegitimate methods. That any wholesale charges of this kind are likely to be unjust ought not to require argument. A population losing permanently its more vigorous male population by emigration is likely to have its birth-rate reduced. When the late marriages, and the enforced spinsterhood of an undue proportion of the female population are also considered, the case is rendered still clearer. The French Canadians, on the other hand, emigrate to return or take their women with them, their ideals of living are not so high and they marry early, and are probably not specially influenced by considerations of prudence in such matters, while, as already said, they have the direct encouragement of the provincial government, which, it is stated, offers a bounty for large families, and the active sanction of the church. If other proof were wanting of the more direct dependence of the birth-rate upon social and political conditions than upon racial or physiologic peculiarities, the comparison in this regard between

the Gallic race in Canada and in its native France at the present time would alone be sufficient. There is, it is true, a physiologic side to the question; it is well known that high feeding diminishes reproductive capacity in animals, and it is more than merely probable that the same law applies to the human species. The more luxurious, or even the more comfortable we make a people in their living or diet, the less their fecundity.

There is still another feature of the problem that is worthy of attention in a medical point of view. A high birth-rate generally implies also an augmented death-rate, especially in the earlier periods of life. This is seen in the slums of our cities, and everywhere by the general practitioner, who finds the greatest infant mortality in the class that is most productive in this respect. Were this not the case, the question of population would be a more serious one than it is at present, but the fact implies a great waste of human life. It has been calculated that if only one woman in six should do what she was well able to in the way of producing children, the population of the earth could be easily maintained. The rest is a simple arithmetical problem—if four, five or six women out of the six are to do likewise, nature must interfere with some provision to keep down population, and this is generally effected to a large extent by increased infant mortality. At the present time France, with the lowest birth-rate in Europe, has also the smallest death-rate while in some parts of Russia exactly the reverse conditions prevail.

The low Ontario birth-rate, however we may view it, is nevertheless a misfortune to Canada, the greater since, unlike the somewhat similar state of affairs in some of the New England States, the country as a whole does not profit by her emigrants. They come over the border very largely, to add to the wealth and population of the United States, and Canada is the loser. In any way it can be considered, it is a matter worthy of the close attention of Canadian statesmen and patriots.

CEREBRAL TETANUS.

Tetanus has always been regarded as a nervous disease, but it is only since the discovery of the tetanus toxin that one could say precisely that the disease is due to a poisoning of certain nervous cells. The affinity between nervous cells and tetanic toxin is shown very well in the following experiment of KNORR, inspired by WASSERMANN and TAKAKI.¹ The cerebral substance of a guinea-pig is emulsified and mixed with tetanus toxin, and this mixture is then centrifugalized. Two layers form: at the bottom, the nervous matter; above this an opaque fluid. In well-made mixtures it will be found that the fluid thus separated does not contain any poison, which has been fixed to the nervous tissue after the manner

¹ München. med. Wochenschrift, 1898, No. 12.

of a coloring matter. This tangible reaction which occurs in the test-tube also occurs in the organism. The tetanus toxin injected subcutaneously in an extremity of a guinea-pig becomes fixed by the cells of the spinal cord after a certain time, when characteristic contractions appear, part of the poison reaching the cord by way of the nerves, another part by way of the circulating blood.

This specific affinity of nervous elements for the toxin is also shown when one injects the toxin into the brain of a rabbit. In this way is produced a characteristic disease, namely, cerebral tetanus, which has recently been studied by ROUX and BORREL.² This fact alone overthrows the opinion of WASSERMANN,³ that there exists an antitoxin in the normal brain. The poison adheres so strongly to the nervous material with which it is mechanically mixed, that when introduced into the subcutaneous tissue of animals it is not diffused, but is taken up and digested by phagocytes.

The immediate fixation of tetanus toxin by nerve-cells renders it possible to limit the action of the toxin to certain groups of cells. Thus when toxin is injected into the brain of the rabbit or the guinea-pig, there develops as shown by ROUX and BORREL, a disease characterized by intermittent convulsions, motor paralysis and polyuria, together with characteristic psychic disturbances. The injection of five times as much sterilized water or physiologic salt solution in the same manner as a small amount of toxin does not produce any symptoms, hence the results can not be ascribed to mechanic injury.

Eight to twelve hours after the injection the animal becomes restless, turns its head from side to side, runs around in the cage. Abundant urine is secreted; epileptiform convulsions come on, either simultaneously or on slight excitation. The animal grinds its teeth and the wires of the cage; at the same time the hind legs may become paretic. Intermissions in these symptoms often occur. One-tenth c.c. may kill the animal in from twelve to twenty hours; smaller doses give rise to an affection lasting from three to eight or more days; still smaller doses of toxin cause a tetanic affection, with emaciation, from which recovery may take place. It is possible to inject the toxin into various parts of the brain with marked differences in the symptoms produced, and thus there is furnished a novel method of studying the functions of the various regions of the brain that may be of interest from a physiologic standpoint.

The rabbit is much more resistant to tetanus toxin when it is introduced under the skin into the blood than when it is introduced into the brain. The guinea-pig resists the intracerebral injection somewhat better than the rabbit, but the cerebral tetanus of the guinea-pig is as characteristic as that of the

rabbit. In the rat the symptoms of cerebral tetanus are markedly psychic. The animal appears to be subjected to sudden attacks of great fear, and frequently it acts as though it were under the influence of certain delusions or hallucinations.

An animal which receives antitetanic serum acquires a so-called passive immunity and withstands many times the fatal dose of tetanus. ROUX and BORREL made the following experiments: They injected large doses of antitetanic serum subcutaneously into rabbits. Twenty-four hours afterward .1 c.c. of tetanic toxin was injected into the brain, and all the animals died with typical cerebral symptoms in from forty-eight hours to six days later. And yet the blood of these animals contained antitoxins. One drop of the blood of an immunized rabbit mixed with the tetanus poison rendered the mixture inoffensive, when introduced into the brain of a new rabbit. The extravasation of a small amount of blood during the intracerebral injections of immunized animals may neutralize the toxin and prevent the appearance of cerebral tetanus. In guinea-pigs, therefore, similar experiments often failed to produce the desired result, because their brain is more vascular than that of the rabbit and less susceptible to the tetanus toxin.

All these facts can also be demonstrated to be true as to the diphtheria toxin, which is more rapidly fatal when inserted into the brain than under the skin. Immunized animals resisting enormous doses of toxin given subcutaneously perish when a small quantity is introduced into the brain. The symptoms are more exclusively nervous, and at the autopsy one does not find any of the characteristic lesions of diphtheria intoxication, as for instance, congestion of the suprarenal capsules, because all the other organs have been protected by the antitoxin except the nerve-cells. Hence it is very evident that the nerve-cells have not the same affinity by any means for the antitoxin as for the toxin. This is probably the reason why, in the prevention of tetanus, antitoxin serum so often fails, because when the antitoxin is used a part of the toxin has already become fixed to the nerve-cells. The antitoxin may neutralize the poison which is still circulating, but does not reach that which is fixed by the cells of the brain or spinal cord.

Further experiments by ROUX and BORREL show that a few drops of antitetanic serum injected into the brain have a much better effect in tetanus of animals than large quantities of antitoxin introduced into the blood or under the skin. Intracerebral injection does not save all the tetanized animals. It must be injected before a certain length of time has elapsed after the poisoning. Before recommending this method of administering antitoxin in human tetanus ROUX and BORREL insist that it will be necessary to extend the experiments to various species of animals, because it may be that in the horse and sheep, for instance, as well as in man, the results

² Annales de l'Institut Pasteur, 1898, No. 4.

³ Berlin klin. Wochenschrift, 1898, No. 1.

would be different from those observed in guinea-pigs and rabbits.

As already stated, rabbits and guinea-pigs passively immunized suffer from cerebral tetanus when the toxin is injected into the brain. The question arises: Is this also the case in animals whose immunity is active? This question is very pertinent, because many observers have advanced the opinion that antitoxin is elaborated by the cells which are susceptible to the toxin; that each symptom which is influenced by the toxin responds by producing antitoxin. Two rabbits immunized against tetanus, and possessing an antitoxic serum, were found to be insusceptible to subcutaneous injection of 12 c.c. of tetanus toxin, which was fatal in a dose of 2 c.c. in the case of a susceptible rabbit. One-tenth c.c. of toxin was introduced into the brain of the immune rabbits at the same time as into a normal control animal. On the following day all the rabbits presented signs of cerebral tetanus. The control animal died during the course of the day; the immunized animals died with typic symptoms, one after seventeen days, the other after twenty days. These experiments demonstrate that the nerve-cells of an actively immune rabbit are sensitive to the toxin and that it becomes very difficult to understand how these nerve-cells could prepare an antitoxin. It would appear, on the other hand, as if during the course of the immunization the nerve-cells had never come into contact with the toxin.

Certain animals are naturally immune to various microbic toxins. The rat, for instance, does not suffer from a dose of diphtheria poison which is sufficient to kill several rabbits. One-tenth c.c. of diphtheria toxin was injected into the brain substance of a rat, and death followed on the third day, hence the brain of the rat is also sensitive to the poison, and as it does not die when large quantities of toxin are injected subcutaneously, it follows that the poison does not then reach the brain but is arrested in some part of the body. The natural immunity of the rat does not depend upon the resistance of the nerve-cells against diphtheria, but upon some other property of the body. ROUX and BORREL showed that similar facts obtained with regard to the rabbit as to morphin, toward which this animal is looked upon as being insusceptible. In other words, the nerve-cells of the rabbit are not insensitive to morphin.

All the facts go to show that in acquired as well as in natural immunity against certain poisons, the immunity does not depend upon insusceptibility of the nerve-cells, at least not of those of the brain. The poisons are retained by other cells, which exercise a protective rôle and probably manufacture antitoxins. ROUX and BORREL ask: Where are those cells? and answer that perhaps phagocytic cells are capable of also destroying the poisons produced by microbes. They are not ready to insist upon this, but it would seem to them that the questions of immunity against the microbes and of immunity against the toxins will ultimately receive similar solutions.

CREOSOTE NOT A SPECIFIC.

The drug, creosote, has become so inseparably connected in history, in clinical experience, and in present day teachings, with the disease of pulmonary tuberculosis, that its acceptance as a specific becomes a natural consequence. Such empiricism, however, is fatal to the scientific treatment of tuberculosis even though creosote does seem to be indicated in every case. Creosote probably exercises its curative action in the lung because of its physiologic property of stimulating the bronchial mucosa, where it is eliminated, and its action as an expectorant; not as a specific for the disease of tuberculosis.

The healthy human body is not susceptible to infection by the germs of tuberculosis because a vital resistance of the tissues prevents the development of any bacteria that may gain entrance, and those bacteria that develop in a lung to cause a miliary tuberculosis, do so because—from malnutrition, lack of exercise, the inhalation of sewer gas or dust particles, an ordinary cold or a previous attack of pneumonia—the lung tissues possess a diminished resistance and afford a suitable soil for their development. A diminished resistance is probably present in the bronchial mucosa, of which there is a vast expanse in the lung, and when an infection is once established at a given point it is clear that the adjacent mucosa will afford slight hindrance to an extension of the tubercular process. The object of our treatment should be to raise the vital resistance of these adjacent cells of the bronchial mucosa, in order that they may resist an extension of the disease and thus limit the tubercular inflammation to a single spot, which should mean an eradication of the disease. Creosote *does* improve the resisting power of each cell, because it stimulates it to a more perfect metabolism, and if to this favorable condition there are added an abundance of good food to supply these cells with nourishment, and plenty of fresh air to supply the blood with good red oxyhemoglobin that may further assist their metabolic processes, the patient is placed under the best conditions for recovery. The creosote, it will be observed, does not exercise an antibacillary action, nor does it even diminish the virulence of the tubercle bacillus, but as a treatment for tuberculosis it is the most satisfactory agent that we know, since it succeeds in establishing a condition of health in the mucosa that will help nature to overcome the disease.

CORRESPONDENCE.

The Jugglery of Statistics. A Reply to an Absurd Editorial.

WASHINGTON, D. C., Oct. 22, 1898.

To the Editor:—I desire to invite attention to the editorial comment in the *Philadelphia Medical Journal* of Oct. 15, 1898, under the caption: "The One Fact the Whitewashing Committee Must Explain." I would not have troubled you with this communication but that I have regarded the said

journal as a paper of value and of increasing importance whose editorial utterances should have weight. The article to which I take exception as unworthy of the columns in which it appeared, presents to its readers the large ratio of deaths from disease in the Spanish War, as the one fact to be explained, "the crux of the entire discussion," and manifestly elated with his discovery, the editorial writer exclaims in a burst of triumph: "Explain us that right thoroughly and without equivocation, Honorable Sirs," etc. This exuberance of diction from the editorial pen manifests that the writer sent his manuscript to the printer while dazzled by the brilliance of his discovery and without giving it that careful consideration which is needful for the reputation of the editorial columns. I am constrained to look upon this as the explanation of the article. Doctors are generally credited with being weak on figures, and my experience shows that they are not strong in questions of ratios, making honorable exception in this regard of the health officers who deal systematically with medical statistics. I must charitably suppose that the writer in question participates in the general professional failing because I am unwilling to believe that he knowingly presented figures which did not sustain his conclusions, trusting that the latter would be accepted by readers who were unfamiliar with his arithmetical premises. These premises are that: There were killed in the War of the Rebellion 46,874, died of wounds 39,715, died of disease 172,907; and in the recent war: killed 289, died of wounds 65 and died of disease 2565. These figures are official, and I have no exception to take to them. But he continues: "If we reduce these figures to percentages based on the best estimates of the numbers of soldiers participating, and place figures side by side we find:

"Causes of Deaths.	Civil War.	Spanish War.
Killed	18.1%	9.6%
Died of Wounds	15.3%	2.3%
Died of Disease	66.6%	88.1%."

Now in the calculation of these ratios no consideration is given, as claimed by the editorial, to "the best estimates of soldiers participating" nor, I may add, to the relative duration of the two wars. They express merely the relative proportion of deaths from battle casualties and disease in the constitution of the total mortality. Yet from these data the editorial writer, knowingly or unknowingly, concludes that the 88.1 per cent. of deaths from disease in the Spanish War, as compared with the 66.6 per cent. in the Civil War is a point of the highest importance. "There can be no possible question" he says "that the general mortality from disease has been greatly and indubitably lessened in the last thirty-three years. If so, of course the percentage mortality from disease in the Spanish War should be decidedly lower than in the war of the Rebellion. Instead of this it has been decidedly higher," and the members of the Presidential Investigating Commission are called upon to take note that the medical profession regards the cause of this as the main thing that is before them for explanation.

The absurdity of this may be well illustrated by adding to the statistics and ratios given above those derived from the reports of the engagement of Admiral Dewey's fleet on May 1, 1898, at Manila. Dewey's fight lasted only one day. The figures given for the Spanish War covered a period of five months and those for the Civil War a period of five years and two months; but as the element of time does not enter into the calculations of the ratios criticised this element need not be considered in the engagement at Manila. Here we find that no man was killed, no man died of wounds received, but that one man, an engineer officer, succumbed to heat exhaustion or insolation. Stating these figures as percentages of the total mortality we find: killed 0 per cent. died of wounds 0 per cent, died of disease 100 per cent, as compared with 88.1 per cent. in the Spanish War and with 66.6 per cent. in the War of the

Rebellion. If it is needful for the Honorable Sirs to give such high consideration to the greater death-rate from disease as compared with the deaths from wounds and deaths on the battle-field in the Spanish War considered as a whole, how serious is the consideration they ought to give to this frightful rate of mortality from disease as compared with that from battle casualties in the Bay of Manila.

It was my intention in beginning this letter to state the conclusions that are really admissible from the figures and ratios presented by the *Philadelphia Medical Journal*, but the pressure of current work at this time is very great, and I conceive that I have effected my purpose by directing attention to the unsubstantial basis on which the argument of the editorial writer was constructed.

Respectfully yours,
CHAS. SMART,
Deputy Surgeon-General, U. S. Army.

Twins with Complications.

LAUREL, IOWA, Oct. 18, 1898.

To the Editor:—October 2 I was called to attend Mrs. R. in confinement and found myself confronted with a number of unpleasant conditions, not the least of which was a morbid fear on my patient's part that she would not be able to give birth to her child, or children as proved to be the case, she having been told at her previous confinement, about a year ago, when she gave birth to triplets, all still-born, that she would not live through another confinement. She was a German woman, large and strongly built, about 40 years of age and had given birth to five children, the oldest 14 years of age. She said she had suffered a great deal at all her previous confinements and that they had been slow, lasting from twenty-four to forty-eight hours. She complained of being "deathly sick" and felt as if she was going to vomit.

From the size and shape of the abdomen, I concluded I had a case of multiple pregnancy, but the sound of but one fetal heart could be heard on auscultation. Digital examination revealed an irregularly contracted vagina, due, no doubt, to the healing of her previous lacerations. The os, however, was fully dilated, and I found a foot protruding, which as a strong pain now came on, I grasped, making slight traction and with some manipulation succeeded in bringing down the other foot. During the next pain the body was born and the head, with chin to the front, was engaged in the superior strait. Now, when good pains were most needed, the patient "gave up" and wished me to leave her to die, as she had been told that she must. Finally, after a delay (which proved fatal to the child) she was delivered of a large girl weighing eight pounds. Another child could be outlined high up in the fundus uteri, and digital examination showed a "cone-shaped" bag of water through the os. The fetal parts could not be made out. The patient gave up entirely, and I let her rest an hour and a half, when, as the pains did not come on, I gave her 15 m. fl. ext. ergot and in a short time they again became quite strong and regular. Another digital examination showed that the child was not presenting, hindered, I think by the low attachment of the placenta. But by making slight downward pressure from above during a pain, I finally succeeded in getting the parts to engage. The sac, which was very dense, had to be ruptured, when an unusually large amount of the liquor amnii came away and I found a foot protruding almost exactly as did the first one. The child, a boy, also weighed eight pounds and was alive, but minus the penis. Where the penis should have been there was a slight elevation about one-eighth of an inch above the surface, with an opening at the apex, through which the child urinates. The placenta, which was delivered in about thirty minutes, also seemed to share in the general anomalous condition. It consisted of two distinct placentæ, seemingly enveloped in a common sac. They were connected at their sides by a strong fibrous band and each had

a circulation of its own, there being no anastomosis of blood-vessels between them. I report this case because of its many bad features and of its comparatively happy ending, as at this writing the mother and baby are doing well. I hope it may be of interest to at least some of the readers of the JOURNAL, who, like myself, have not practiced long enough to become familiar with this class of cases and patients.

Respectfully

L. W. PENCE, M.D.

ASSOCIATION NEWS.

To Commemorate Joseph O'Dwyer's Name—At the meeting of the Section on Diseases of Children of the AMERICAN MEDICAL ASSOCIATION held at Denver, Colo., June 7-10, 1898, it was moved and carried unanimously that a Memorial Committee be appointed to commemorate the late Joseph O'Dwyer, with suitable powers, etc., to collect such moneys and to act with other bodies for the same purpose. The committee is composed of the following: Dr. Louis Fischer, New York, chairman; Dr. J. P. Crozer Griffith, Philadelphia, and Dr. F. E. Waxham, Chicago.

SOCIETY NEWS.

Tri-State Medical Association.—The Tri-State Medical Association of Mississippi, Arkansas and Tennessee, meets in Memphis, Dec. 20-22, 1898. Physicians attending this meeting are promised a pleasant and profitable time in the "Queen City of the Mississippi Valley." Titles of papers should be sent to Dr. Richmond McKinney, secretary, Continental Building, Memphis, Tenn.

Utah State Medical Society.—At the recent meeting of this Society the following were chosen officers for the ensuing year: President, C. M. Wilson of Park City; vice-president, Ira A. E. Lyons of Salt Lake; second vice-president, J. W. Aird of Heber City; secretary, R. W. Fisher of Salt Lake; treasurer, E. S. Wright of Salt Lake; board of censors, G. M. Perkins of Ogden, W. W. Betts of Salt Lake, G. L. Smart of Springville, H. J. Powers of Ogden, A. J. Hosmer of Salt Lake.

Cumberland County (N. J.) Medical Society.—This society held its semi annual meeting at Hotel Cumberland, October 11, with the president, Dr. A. Judson of Newport, in the chair. A paper on "Peritonitis" was read by Dr. Hummel of Deerfield. Dr. Charles P. Noble of Philadelphia read a very interesting and instructive paper on "Conservatism in Gynecology." The society unanimously voted to celebrate its eightieth anniversary on Dec. 8, 1898.

Mississippi Valley Medical Association.—The following officers were elected at the recent meeting: President, Duncan Eve, Nashville, Tenn.; first vice-president, A. J. Ochsner, Chicago; second vice-president, J. C. Morfit, St. Louis; secretary, Henry E. Tuley, Louisville, Ky. (111 W. Ky. St.); treasurer, Dudley S. Reynolds, Louisville; chairman of committee of arrangements, Harold N. Moyer, Chicago. Chicago was selected as the next place of meeting, in October, 1899, the date to be determined by the executive officers and the chairman of the committee of arrangements.

Washington, D. C., Medical Society.—At the meeting of the 19th inst. Dr. Sterling Ruffin presented the specimen and gave the history of a very interesting case of aneurysm of the aorta, which involved the entire arch, but did not give the symptoms of pulsation during life; the other usual symptoms, however, were well marked, the patient eventually dying of inanition. The subject was discussed by Dr. Claytor, who referred to the latest points of diagnosis, calling especial attention to the frequent mistake of considering the presystolic murmur associated with that form of aneurysm as being of valvular heart

origin, and the subsequent injudicious treatment with digitalis. He referred to similar cases occurring in his own practice. Dr. Storch read an essay entitled "Function of the Appendix Vermiformis." The principal function which he assigned for this organ was that of a lubricant to the caput coli. He considered constipation, and not obstruction by intestinal contents, the cause of appendicitis; he considered the appendix a necessary organ and its function an important one. Dr. D. S. Lamb did not agree with Dr. Storch, but believed the appendix had no physiologic function. He regarded the organ as a degeneration of a formerly existing diverticulum from the intestines, and being a degeneration was prone to disease. He considered the only function the organ possessed was that of inducing disease and death. He went into the morphology of the appendix, calling attention to its existence in certain animals and absence in others, and explained the evolution, anatomically, which appeared to explain its origin. The discussion was continued in a very interesting and instructive way by Drs. A. F. A. King, Stone and J. Ford Thompson.

Detroit Academy of Medicine.—The annual meeting of the Detroit Academy of Medicine was held October 13, and the following officers elected for the current year: President, F. W. Robbins; vice-president, Geo. Duffield; secretary and treasurer, H. D. Jenks; trustee, J. E. Emerson. Reports from retiring officials showed the society to be in a flourishing condition. The annual address was given by the retiring president, Dr. David Inglis, on "Social Factors of Today and the Future of the Medical Profession." He said that for weal or woe the steady trend of modern life is toward socialism. Socialism as distinguished from individualism has already affected the medical profession in the matter of the license to practice being restricted to qualified practitioners. There can be no doubt that all thoughtful medical men favor State examining and licensing boards. Michigan is an unfortunate example of pure individualism in this matter. Socialism, as exemplified in the change from competition to combination, is at the bottom of the steady extension of hospitals, dispensaries, railway and other contract surgeons and physicians. Like the trust and department store, these phases of combination are probably permanent. Socialism as exemplified in the concentration of wealth seriously affects medical incomes. If, as the *Iron Age* puts it, "Prosperity has returned, but it is prosperity based on a permanently lowered rate of wages," medical incomes must also be permanently lowered. Finally, as it seems likely that the way out of combination of capital for private gain will be found in the combination of capital for the public weal, the full establishment of a commonwealth, so medical men will find under the socialism so evolved an opportunity to pursue scientific medicine unhampered by the present overpowering commercialism. After the regular meeting Dr. and Mrs. Inglis entertained the members and their wives.

NEW INSTRUMENTS.

A SCIENTIFIC OZONE INHALER.

BY CYRUS EDSON, M.D.

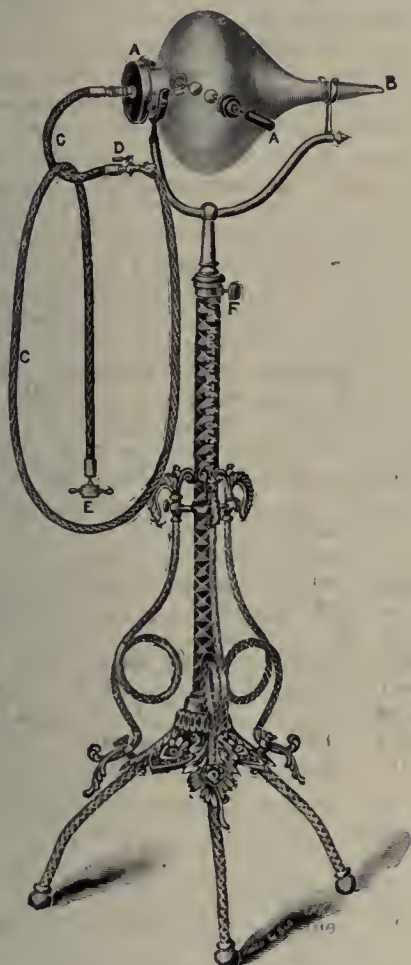
NEW YORK CITY.

In describing this new instrument, which I have devised for the purpose set forth in the foregoing title, the adjective "scientific" has been used in order to distinguish the apparatus from the numerous so-called "ozone inhalers" with which physicians and the laity are confronted in advertising columns and on every hand—nostrums which develop so little ozone that chemists have never been able to detect it. In point of fact, the word "ozone" has been so abused by misuse in connection with inhalers that it has come to mean something physicians view askance. This ozone inhaler was suggested to me by a conversation with a medical friend who told me of a

series of cases of phthisis pulmonalis treated by him that were greatly benefited by inhalations of ozonized air. These patients had been made to inhale the air acted on by the discharge between the poles of a static machine.

The familiarity of physicians with the properties of ozone makes it quite unnecessary for me to enter upon a dissertation respecting the antiseptic and disinfectant qualities of ozone. It may be well, however, to point out the fact that the beneficial effect of climatic change to regions abounding in pine forests in cases of respiratory diseases due to germ infection, is generally ascribed to the presence of ozone in the air of such localities in greater amount than elsewhere.

The ozone inhaler is well shown in the accompanying cut. Two terminals or poles (A A) are passed into a glass receiver, about a foot wide in its greatest diameter, through holes bored in the glass for this purpose. These poles are so constructed



as to be separated or approximated at the will of the operator and are connected with the poles of a static machine by means of insulated wire, just as the Crooke's tube for X-ray work is connected. One wire carries the current from the positive and the other from the negative pole of the machine. An apparatus capable of throwing at least a six-inch spark is best adapted for the purpose. The glass receiver has two large openings, one of which is terminated in a mouthpiece (B), while the other is connected by means of rubber tubing (C) with an air-tank containing air under pressure. The rubber tubing is furnished with a stopcock (D) for the purpose of regulating the supply of air. The inhaler may, however, be used without this air-supply. When used with it, the stream of air enters the apparatus in such a way as to pass directly between the poles or terminals inside the receiver, and thence on through the mouthpiece, to be breathed by the patient. When in operation,

the current is seen passing through the space between the two terminals in the form of a silent discharge spray or a stream of sparks, depending on the separation or approximation of the poles. The amount of ozone developed is directly under control of the operator. The silent discharge when the poles are widely separated effects the development of the maximum amount of ozone, while the amount lessens as the poles are approximated. The ozone admixture may be further controlled by regulating the air supply from the air-tank to the receiver. The amount taken by the patient may be still further graduated by having him inhale the stream of ozonized air as it issues from the mouthpiece, his face being at a greater or less distance from it, or by having him apply his lips to the mouthpiece, thereby drawing the admixture of air and ozone directly into the respiratory tract.

In using ozone as a remedial means in the great quantity capable of being furnished by this apparatus, we must bear in mind that it is an exceedingly powerful and active agent, having stronger affinities than oxygen, rapidly destroying all forms of bacterial life. In comparatively weak admixture with air, it is very irritating, and should be inhaled with caution. The strength of the ozonized air should be carefully regulated to suit each case or violent coughing and strangling will follow its respiration. With a little care, however, commencing with a very weak admixture and increasing its strength gradually until very slight irritation is apparent, then decreasing a little to the point of tolerance, it can be safely administered. Its beneficial effects are almost immediate. Cough and expectoration are rapidly diminished and a marked general improvement follows.

I have noted also that the appetite of persons in health to whom the inhalations were given for experimental purposes, was increased; the action of the heart became stronger; the face flushed, and the effects noted after administration of oxygen were apparent. It is too early yet to report cases upon which this treatment has thus far been tried. Suffice it to say that I have used it both alone and as an adjuvant to other treatment, in a number of cases of phthisis and of bronchial catarrh, and am more than pleased with the results. I hasten to give the ozone-inhaler to the profession, well knowing that it will appreciate the device to be valuable, since its operation and application are founded upon sound principles.

Before closing, I would add that I have modified the apparatus so as to apply a similar device to the purpose of furnishing quantities of ozonized air to hospital wards, dwellings, theaters, etc. The object of this is to revivify the atmosphere of such places. I believe it of importance that the air in wards of contagious-disease hospitals be kept fresh by this means. Benefit to the patients suffering from diphtheria and other contagious-diseases must necessarily follow, if not directly from remedial effect of ozone operating as a bactericide, at least as a result of improvement of the air-supply furnished for breathing.

As in the case of the inhaler, the ozone admixture can be regulated and supplied in any effective strength, while the cost of application in this electric age will be inconsiderable after the apparatus has been once introduced.

Messrs. Van Houten & Ten Broeck of 300 Fourth Avenue, New York City, have constructed the inhaling apparatus after my designs, and caused the cut shown here to be made.

20 West Forty-eighth Street.

RAMAUGE'S NEW INTESTINAL COUPLER.

A. Ramauge of Buenos Ayres again presents a device for an improved button (*Semana Medica*, September 1). A cylindrical tube 2 c.m. long by 1 wide, is finished at each end with a circular rim projecting 1 cm., thus making the total diameter of the button 3 cm. The edge of these rims toward the centre of the tube slopes from the outside in so that the

outer edges of the rims are much nearer together than the part close to the tube, thus forming a couple of partly enclosed canals encircling the tube, while the surface of the tube is left exposed between them. This exposed space is studded with small holes. These partly enclosed canals are packed with compressed sponge forming a couple of sponge rings around the tube held in place by the overarching rim at each end. Some water is then introduced into the two ends of the intestines and a draw-thread run around each edge. The button is then inserted and the threads drawn tight, thus fastening the intestine around the free space in the center of the tube. The water is then made to flow down to the spot and as it finds its way through the small holes the sponge begins to swell and gradually compresses the two ends of the intestine together, above the threads, until they become consolidated in the peripheral line of the serous surfaces in contact, while the central part will slough away and release the button. No actual tests of the button had been made at the time of his communication.

NECROLOGY.

C. S. Arthur, M.D., Portland, Ind., October 17.—John H. Benedict, M.D., Danbury, Conn.—William Bigham, M.D., Seville, Ohio, October 13.—N. T. Bornar, M.D., Gainesville, Texas, October 9.—Henry M. Boyers, M.D., Grafton, W. Va., October 14, aged 27 years.—Samuel Creadrick, M.D., Philadelphia, October 19, aged 57 years.—D. H. Dickinson, M.D., Topoka, Kan., October 18.—Richard Dingee, M.D., Newportville, Pa., Jefferson Medical College, 1860, aged 70 years.—John B. Fares, M.D., Romeo, Mich., Rush Medical College, 1884, October 14, aged 69 years.—Henry Geiger, M.D., University of Heidelberg, 1861, October 15.—Hezekiah Gilbert Leigh, M.D., Petersburg, Va., October 17, aged 65 years.—Charles McCulloch, M.D., Albany, N. Y., 1877, October 15, at Gloversville, N. Y., aged 50 years.—G. W. Mills, M.D., Sedalia, Mo., October 16, aged 46 years.—W. N. Plank, M.D., Deer Creek, Ind., October 11, aged 45 years.—Peter A. Rivard, M.D., Rochester, N. Y., October 19, aged 46 years.—John Garson Stuart, M.D., Fortville, Ind., October 11, aged 73 years.—W. E. Swanston, M.D., Devil's Lake, N. D., October 14.—R. M. Wigginton, M.D., Waukesha, Wis., October 16, aged 60 years.

DEATHS ABROAD.—Max Wiener, professor of obstetrics at Breslau.—Karl von Mettenheimer of Schwerin.

DONALD A. TAYLOR, M.D., acting assistant-surgeon at Fort McPherson, died of peritonitis, October 15, aged 25 years. The Doctor was a graduate of the University of Virginia. At a meeting of the medical staff of the United States General Hospital at Fort McPherson, Ga., held on Oct. 16, 1898, the following resolutions were adopted:

WHEREAS, It has been our sorrow to lose from our midst our friend and colleague, Dr. Donald A. Taylor, Acting Assistant-Surgeon, U. S. A., and,

WHEREAS, His premature death has been in consequence of disease contracted in the faithful performance of his duties,

Resolved, That we, the members of the medical staff of the United States General Hospital, Fort McPherson, Ga., do hereby express our esteem of our late friend and colleague, and our regret for his sudden loss.

Resolved, That a copy of these resolutions be sent to the family of our deceased colleague, in expression of our heartfelt sympathy with them in their bereavement; and further be it

Resolved, That copies of these resolutions be furnished to the following journals for publication: *The Army and Navy Register*, *The Army and Navy Journal*, *The JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, *The Atlanta Constitution*. [Signed] For the staff:

WALLACE NEFF,
Major and Brigade Surgeon, U. S. V.
CHARLES E. B. FLAGG,
Captain and Assistant-Surgeon, U. S. A.
J. C. GARLINGTON,
Acting Assistant-Surgeon, U. S. A.

PUBLIC HEALTH.

Toxicity of Woman's Milk with Diphtheria.—The *Arch. Clin. de Bordeaux* for August reports a case of severe diphtheria not treated with serum, in which tests of the milk even late into convalescence proved that it was toxic for guinea-pigs, hence would have proved toxic for her infant had she been allowed to nurse it.

Governmental Research on Malaria.—The London *Lancet* announces that a commission for investigating the various questions associated with malaria, which has been appointed by the Colonial Office and the Royal Society, consists of the following members: Dr. C. W. Daniels of British Guiana; Dr. S. R. Christophers of University College, Liverpool; and Dr. J. W. W. Stephens, John Lucas Walker student in Pathology in the University of Cambridge. Drs. Christophers and Stephens will proceed almost immediately to Pavia to work in the laboratory of Professor Golgi and thence to Rome to work in Professor Cetti's laboratory. The Commission will eventually proceed to Africa, when its first work will in all probability be to determine the clinical varieties of malarial fevers occurring there.

Sodium Sulphocarbonate in Scarlet Fever.—J. J. Gonzales describes (*Cronica Médica Mexicana*, October 1), his success in preventing contagion of the other children in a family when one child was infected with scarlet fever during a recent severe epidemic. The isolation was very incomplete, if attempted at all. His dose was 30 cgm. a day for children under 3 years of age; 50 cgm. for children from 3 to 10 and from this to 1 gm. for older persons, administering it for more than a month and thus entirely preventing contagion in seventeen families and a hospital, protecting 139 other children exposed. Two cases of contagion occurred, one showing evidences of the disease a few hours after commencing the sulphocarbonate, and the other having refused to take it at all. It was tolerated perfectly in every case with no after-effects of any kind.

Yellow Fever.—The dispatches since our last report (vide *JOURNAL*, p. 998), are as follows: October 18, New Orleans, 2 new cases and 1 death; Wilson, 4 new cases; Franklin, 1; Jackson, Miss., 4 and 1 death; Yazoo City, 4; Waveland, 1; Madison, 2; Hattiesburg, 2 and 1 death; Poplarville, 6 new cases; Starkville, 1; Edwards, 5; Natchez, 3; Orwood, 4; Harriston, 2. Frost throughout the fever belt gave promise of a decrease in the fever, but October 19 Jackson reported 6 new cases; Natchez, 4; Madison, 5; Canton, two suspicious cases; Hattiesburg, 2 new cases and 1 death; Oxford, 4 new cases. Quarantine restrictions in Northern Alabama were removed on this date. On October 20, but 1 new case was reported at Jackson, Miss.; 3 and 1 death at Yazoo City; 2 and 1 death at Hattiesburg; 1 at Harriston; 1 death at Warren, Ohio; 3 new cases and 3 deaths at New Orleans. October 22 dispatches reported frosts through the infected districts generally, while quarantine in Mississippi was removed. All traffic restrictions being removed in Louisiana trains began running regularly October 24.

Sero-diagnosis of Leprosy.—Professor Spronck of Utrecht announces that Hansen's bacillus can be cultivated on glycerinated and neutralized potato (10 days, 38 degrees C.) and continues to flourish transferred to Loeffler's gelatinized horse serum or, even better, simple fish bouillon (cod or turbot). Artificial culture produces a modified form of the lepra bacillus, resembling more the diphtheria and pseudo-diphtheria acilli than the Koch bacillus. It is not pathogenic for animals. It is very seldom that the serum of a non-leprous person will cause agglutination even at 1 in 30 to 1 in 40, but in every one of the twelve cases of leprosy he examined, agglutination was produced with 1 in 60 to 1 in 1000, except in three cases of anesthetic leprosy dating from fifteen to thirty-two

years, which required 1 in 20 to 1 in 40. The leprous serum will retain its agglutinating power six weeks if 1 per cent. phenicated bouillon is added and air and light kept out. Dried, it retains the agglutinating power a month at least. Living recent cultures must be used for the sero-diagnosis.—*Semaine Méd.*, September 28.

Malt Soup for Infants.—The Breslau University children's clinic has long been investigating to discover a food adapted to cases with gastro-intestinal disease, and reports in the *Deutsche Med. Woch.* of September 28 the extremely satisfactory results attained with a food made of 50 grams wheat flour stirred in one-third of a liter of cow's milk, and worked through a sieve. In another bowl 100 grams malt extract are dissolved in two-thirds of a liter water at 50 degrees C., and to this is added 10 c.c. of an 11 per cent. solution of potassium carbonate. The malt extract mixture is then stirred into the flour-milk and the whole cooked together. A table of the gain in weight in 28 cases is appended (all less than six months old), which averages very high under the circumstances, 43 grams a day in one case, fed on the malt soup 31 days. None of the children had severe rachitis afterward. The article concludes with an appeal for more children's hospitals, as the benefits to infants of scientific treatment and diet far outweigh the burden of the extra responsibility they would entail.

The Plague in Vienna.—The press dispatches of the 23d announce that the plague situation in Vienna continues extremely critical, the death of Dr. Mueller, on this date, adding to the already great alarm that the city will not escape the plague. Dr. Mueller attended Herr Barisch, the surgical assistant at Professor Nothnagle's bacteriologic establishment, who died on Tuesday. Great precautions have been taken to prevent infection from the dead and sick. Dr. Mueller recently returned from Bombay, where he studied the plague and brought with him some of the bacilli. He cultivated the bacilli and Professor Nothnagle and he have been experimenting with them on lower animals with a view to obtaining a serum with which to inoculate against the plague. The man Barisch was a servant in the laboratory, which he kept clean. He also fed the dogs, cats, rabbits, and guinea-pigs on which Professor Nothnagle experimented with the plague bacilli. When Barisch was taken ill he was removed to the Vienna General Hospital, where the physicians, learning his last and dangerous occupation, isolated him. Dr. Mueller then attended Barisch. When Barisch died a bacteriologic examination proved him a victim to the dread disease.

Prevention of Epilepsy.—Children react with convulsions to so many slight causes, gastro-intestinal disorders, fright, etc., that they are always standing on an inclined plane as far as these reflex phenomena are concerned, and each attack progressively increases the danger of epilepsy by lowering the "threshold of the neuron." Max Breitung of Cologne asserts that epilepsy should never be allowed to develop, and that the physician of the future will devote much energy to switching off to another track any child that shows the slightest hereditary or acquired tendency to convulsive attacks. This can be accomplished by wise supervision, dietetic and physical measures and moral training at home and in school, avoiding any disturbance of the nervous system, keeping up the reserve of nerve strength and toning up the neurons so that they will subside rapidly into repose after an excitation. As "dietetics of stimulations," he mentions mild electric baths, massage, tepid douches, etc., and muscular exertion, gardening, carpentering, drawing, book-binding, etc. He refers to the bicycle as a wholesome exercise when rationally used "but who uses it rationally? certainly not the bicyclanthropos curvatus of the present day!" He adds that this "Bahnungshygiene," as he calls it, is a seed for the future. "It requires time, but the Eden of Humanity, in which, as

gardeners we work, extends timeless before us. Every progress in our science and our art hastens the day when the physician will be the freely chosen guide of mankind."

Not Part of State Quarantine System.—Many complaints are being made concerning the quarantine detention camp at Egmont Key, and almost invariably it is thought that this camp is a part of the Florida quarantine system. This is a mistake, as that camp is a creation of the United States Marine-Hospital Service, is run entirely by the United States Government and is managed and controlled by the Federal authorities. Neither Dr. Porter nor the State Board of Health has anything whatsoever to do with the management of that station. A gross injustice is, therefore, done the State quarantine system and the health officer when the two are confounded. Governor Bloxham has recently been petitioned in respect to the brutal, immoral and indecent environment of that camp, showing that those presenting charges believe it to be a part of the State's health protective system. It is therefore necessary that the attention of the public should be invited to the great distinction between that quarantine camp and the various quarantine stations of our State Board of Health. The Tampa Bay quarantine station, on Mullet Key, is, and has been for eight years, built, operated and controlled by the State Board. The quarantine detention camps at Egmont Key (Tampa Bay) and those near Key West are part of the United States quarantine system, and are entirely separate and distinct from and in no way connected with the State stations.—*Jacksonville Times-Union and Citizen*, October 1.

Sanitary Surgery.—The following appeared as an editorial in the *New York Evening Post* of March 4, 1898:

SANITARY SURGERY.

Attention has recently been called in these columns to the importance of the establishment in the United States of a National health organization, which should be so broad in scope and so wise in detail as to render speedily and practically available to the citizens of the whole country those new measures for the prevention of diseases which science has within the past few years made known. We have deprecated the notion, still prevalent in many minds as a heritage of an earlier day, that quarantine is the be-all and the end-all of national health organizations.

That this suggestion was not premature is attested by the fact now become widely known that the committee of the Senate at Washington, having the matter in charge, has reported favorably, not a bill to create a National health bureau, with all its wide and beneficent possibilities, but a bill to increase the quarantine powers of the Marine-Hospital Service. This bill, known as the Caffery bill or Wyman's bill, gives almost dictatorial powers to the Supervising Surgeon-General of the Marine-Hospital Service in all parts of the country, and, in its recent modifications, sanctions the establishment of a system of annoying espionage upon the State quarantines, largely ignoring the important ends for which a National health bureau is urgently demanded by the medical profession.

This Wyman-Caffery bill seems to have been framed largely from the point of view which dominated the New York quarantine under the redoubtable Jenkins, a few years since, and which was a source of much keen mortification to the medical profession of the country. Apart from the implication which this bill carries, that quarantine is one of the most important functions of a National health organization, its provisions, if legalized, would place grave commercial as well as sanitary interests in the hands of a single individual, who, not inconceivably, might be more a politician than a sanitarian, more concerned in strengthening his service and his following than in fostering conditions of public and private sanitation, which, the world over among civilized people, are tending to reduce quarantine to an entirely subsidiary function.

We do not, of course, in suggesting such a sinister possibility, allude to the present organization of the Marine-Hospital Service. The medical profession is the best judge of the eminence, as a sanitarian, of the present supervising Surgeon-General. They can best judge whether or not his administration has been signalized by absolute devotion to science to the exclusion of all political involvement of the great bureau which he directs. But legislation like this must not be made for a day, but should have in mind all possible personal vicissitudes of administration.

The so-called Spooner bill, now before Congress, providing

for a national health bureau of the wide scope which we have indicated, guards against the abuse of power in quarantine as in other matters of administration, by the creation of an advisory council representing the various parts of the country, which would share with the head of the bureau or commission the responsibilities of critical situations, and secure attention to the often diverse interests of various parts of the land.

It will interest the student of the civilization which this country is evolving, sometimes it seems in very jerky fashion, to see whether the United States, through their representatives at Washington, are to practically ignore the great advance which sanitary science has made within the last two decades, and the high possibilities for the prevention of disease which are close at hand, and revert to such a blind and ignorant reliance as marked the era of sanitary savagery.

MISCELLANY.

An Enormous Brain.—While the average weight of the European brain is 1380 grams, Bismarck's weighed 1867, Cuvier's 1830, Byron's 1807, Kant's 1650, Schiller's 1630 and Dante's 1420. But is weight synonymous with power?

Hernia of the Lung.—There are forty cases on record and Potain adds another, the first observed in the suprasternal region. Tuffier reduced a pneumocele lower down by suturing the pleura in stages, curing the hernia completely, but this would have been impossible in this case, and fortunately the intratracheal tension held it in check.—*Semaine Méd.*, September 28.

Oidomycosis.—The *Vienna klin. Woch.*, of September 29, describes the case of a woman of 64 years with symptoms of acute cystitis and pneumaturia. The urine was found full of thrush flakes, forming a two-inch sediment in a pint glass and quantities still floating. The bladder was washed out twice with a thousandth solution of arg. nitr., which cured the trouble so that the patient did not return. The bacteriologic investigation showed that though the oidomycosis was so pronounced, yet the pneumaturia was due to the presence of the bacillus coli.

Generalised Scleroderma.—The necropsy of a very severe case of this affection showed the nervous system intact, and the arterio-sclerosis noted entirely out of proportion to the severity of the cutaneous lesions. The dermatosclerosis was, therefore, a specific lesion, the direct effect of the cause of the disease, which must be some toxic substance affecting the connective tissue, as the toxins of tuberculosis are supposed to produce the "cutaneous tuberculides," according to a current theory. In fact preceding infective diseases have been noted in scleroderma: rheumatism, typhoid fever, erysipelas, diphtheria, etc., and in the above case, syphilis.—*Semaine Méd.*, September 28.

Stimulation before Operation.—Before a major operation, Hanks of New York (*Am. Gyn. and Obstet. Jour.*, September) uses the following method of "moderate and judicious stimulation" in all cases: Commencing six hours before the operation, he administers from one to three teaspoonfuls of good whisky in one ounce of hot water every hour until the time for operation, and two hours before the operation he passes into the rectum, "high above the brim, if possible, from one to two ounces of good whisky in four ounces of warm, normal saline solution, adding, when it may be wise, a little tincture of opium." He believes the patients, so prepared, recover more quickly from the ether narcosis, and generally return to complete consciousness in less than one hour.

Artificial Anus in the Symphysis.—Roux of Lausanne cuts out a U shaped piece of bone in the upper edge of the symphysis without disturbing the rectus muscle, and brings a loop of the intestine through the hole in such a way that the vertical proximal intestine fills the upper four-fifths of the U, while the distal intestine is compressed flat in the lower fifth. The loop is then sutured to the bone below and the rectus muscle above. If a

neoplasm has to be removed, it is inspected at this time, but not removed until later, after the artificial anus is working perfectly. The bony setting for the anus possesses great advantages. The feces are easily discharged, bending forward, the bandages keep their place better and the subject can conceal his condition much more satisfactorily.—*Cbl. f. Chir.*, from *Revue Méd. de la Suisse Romande*, 1898, No. 1.

To Close Defects in the Skull.—Prof. A. Barth recently announced that a successful bony regeneration of a defect was only to be obtained by supplying calcareous salts for a foundation, which is best accomplished by filling the space with a spongy calcined bone, easily prepared and sterilized. He proved his assertions on animals and—in one case of pseudoarthrosis of the tibia—on man. J. Grekoff reports (*Cbl. f. Chir.*, October 1) his success in two children, both extensive defects, one quite ancient. The calcined bone (shoulder-blade of a calf) has healed firmly in place (five to seven months) and percussion elicits the normal sound. He recommends the method in high terms to others, advising filling the defect as smoothly as possible, freshening the edges, absolute asepsis and young subjects. No test has yet been made on an adult.

Laryngeal Diphtheria.—In the *Am. Gyn. and Obstet. Journal* for September, Rosa Engelmann presents an analysis of 100 cases of laryngeal diphtheria. She found that sex played an unimportant rôle, although the 100 cases showed a preponderance of males. Age, she considers a decided factor, and the day on which the antitoxin was given had a more appreciable effect on the cases not intubated than on those intubated. In the former, even as late as the fifth and thirteenth days, "surprisingly good results were obtained."

Heliotherapy Founded by Diogenes.—Sir Samuel Wilkes, in the *Practitioner*, announces himself as a follower of the cynic philosopher, Diogenes. He says: "The remedy for consumption is not medicine, but fresh air. In various parts of the globe this may be obtained. Seeing that all the places best fitted for consumptives are blessed with sunshine, it is quite possible that the latter may be one of the conditions favoring recovery; it may be directly destructive to bacilli, as the warmth and the beauties of the landscape brought out by it indirectly excite the interest of the patient and revivify his nervous system. Air and sunshine are the needs of the consumptive; without them no other remedies will succeed. When reading at school of Diogenes in his tub, and the visit of Alexander the Great to him, I thought he was a man of very bad manners in telling the monarch to get out of his sunshine, and it was not until late years that I took a different estimate of the philosopher. After an attack of influenza I went to Worthing to convalesce, requiring air and sunshine. Everything else was put aside for these; they were my only wants. When, therefore, as I sat looking on the sea and basking in the sun, a friend stopped in front of me to talk, he was stripping me of my only shred of comfort, and I exclaimed, 'Get out of my sunshine.' I then discovered the greatness of Diogenes, who evidently knew that the sun was the source of all power."

Serum Treatment with Serum from Convalescents.—Walger reports four cases of abdominal typhus treated with typhus serum, and with such favorable results that he recommends the method to others. He injected 10 c.c., repeating the injection in one case of relapse. Weisbecker has been very successful in cases of measles, scarlet fever, typhus and pneumonia, with serum from a convalescent, and he now reports equally favorable results in thirty cases of diphtheria. One injection is sufficient—from 4 to 6 or from 8 to 10 c.c., according to the age of the child. The serum must be obtained exclusively from diphtheria patients whose disease healed spontaneously, that is, without any injections. The epidemic of diphtheria was exceptionally severe, but with these single injections the mortality was only 12 to 13 per cent. The gen-

eral health improves at once after the injections, the croupy cough is transformed at once into an ordinary catarrhal cough, and a copious perspiration occurs in nearly every case, followed by a falling temperature.—*Munich Med. Woch.*, September 27.

Optic Neuritis and Brain Tumors.—Krauss (*Phila. Med. Jour.*, October 1), in a study on brain anatomy and brain tumors, concludes that optic neuritis is present in about 90 per cent. of all brain tumors, more often in cerebral than in cerebellar, the location of the tumor exerting little influence over the appearance of the papillitis. Over the production of the papillitis the size and nature of the tumor also has little influence, while slow-growing tumors are less likely than the more rapid to be accompanied with optic neuritis. He believes it "probable that unilateral choked disc is indicative of disease in the hemisphere corresponding to the eye involved," and considers it doubtful whether increased intra-corneal pressure is solely and alone responsible for the production of an optic neuritis in cases of brain tumors.

Stone in the Bladder.—With the belief of many, that recurrence of stone is especially liable to occur after litholapaxy, Cabot (*Boston Med. and Surg. Jour.*, September 29) does not agree. In his experiences, cases of recurrence after litholapaxy have, with one or two exceptions, been due to a general diathesis or local conditions. Recurrence follows the suprapubic operation also, and he concludes from his cases that the constant reappearance of a phosphatic stone in the bladder usually indicates the resistance of some local cause which should be sought and removed." He believes the suprapubic affords the best opportunity for inspection and operative treatment of the condition found. For removal of stone he thinks litholapaxy the safest operation, and usually competent to work a complete cure.

Electricity in Gynecology.—In considering the limited but fairly well-defined field in which electricity may be used, not only with safety but also with advantage, Ford (*Medical News*, October 1) includes the following conditions: amenorrhea in young women, not dependent on their anemia, "but rather in connection with plethora, in which there is an undersized or undeveloped uterus due to perimetrial inflammations, which have resulted in slight bands of adhesions about the broad ligaments, cutting off the blood-supply"; amenorrhea following long, exhausting nervous affections, with or without anemia; simple metritis, where ovaries and tubes are not infected; dysmenorrhea dependent on neuralgic tendency or on slight bands of constriction about the Fallopian tubes, without pus formation; hydrosalpinx; subinvolution dependent on infection after childbirth, when there are no pus collections about the tubes or ovaries, and small fibroids in the uterine wall.

New Electric Lighting Filament.—One of the chief difficulties in electric lighting is to find a filament which will emit the light without being itself consumed. A scientific journal reports the discovery of a new substance which appears to have the qualities desired in greater proportion than any yet used. This is called osmium, the densest and most refractory of all metals, being infusible except at the highest attainable temperature. Osmium is found native as an alloy in certain ores of platinum and iridium. It is a hard, bluish gray metal with an extraordinary atomic weight and enormous specific gravity. It is said to be the heaviest substance known. The properties that suggested its use for incandescent lamps are its practical infusibility, and its known resistance to temperatures in which platinum and iridium volatilize and disappear. It is well known that the intensity of light emitted by an incandescent substance increases rapidly with its absolute temperature. By heating osmium in a vacuum with an electric current strong enough to volatilize platinum, it is said to attain a luminosity hitherto unknown, emitting a white light of an agreeable color, but of great intensity.—*Scientific American*.

Spirilla in Pleuritic Exudation.—In a case of pleurisy treated in the military hospital of Munich, Dr. Welke detected very peculiar micro organisms, which he has described in the *Munich Med. Woch.* A soldier presented symptoms of pleurisy and pneumonia; he suffered from rigors, high fever, pains in the chest, etc.; on percussion there was dulness in the left side; auscultation showed bronchial respiration with rhonchi, and an exploratory puncture gave evidence of highly fetid purulent exudation. Before an operation could be performed a large quantity of this fluid was suddenly discharged through the bronchi, the fever decreased, and the patient recovered, although very slowly. During convalescence, pleurisy of the other side appeared, but passed off in a few days. In the fluid obtained by the puncture, Dr. Welke discovered, in addition to leucocytes and streptococci, a great number of filiform micro-organisms which were extremely motile, displacing the leucocytes in the course of their movements. Some of them had a fusiform process at each end, and their length was from 100 to 140 μ ($\frac{1}{250}$ to $\frac{1}{180}$ in). By and by, their motility became less and stopped altogether in from twenty five to thirty minutes, when the pus had become cold. The fluid discharged through the bronchi could not be examined until after the lapse of two hours, by which time the organisms were, of course, dead. It was not found possible to classify the organisms; their great strength proved that they did not belong to the bacilli, and Professor Hertwig, to whom they were shown, believed them to be either spirilla or protozoa. How they had come into the pleuritic exudation could not be ascertained; probably they had made their way into the pulmonary abscess during the act of inspiration, and finding this medium favorable to their development they had increased very rapidly.—*London Lancet*, September 24.

Rape by Boy Between 7 and 14 Years of Age.—If it be conceded, says the court of appeals of Kentucky, in *Davidson vs. Commonwealth*, Sept. 11, 1898, that the testimony showed that the accused was not 14 years of age, yet clearly showed that he was much more than 7 years old, and that the jury were authorized by the evidence to believe beyond a reasonable doubt that he was physically capable of committing the crime of rape, and that he was mentally capable of understanding that it was wrong to do so, a verdict of the jury finding him guilty of the offense as in this case is sustained by sufficient evidence.

Sufficiently "Visible Mark."—An accident insurance policy contained a provision that it should not cover "any injury, fatal or otherwise, of which there is no visible mark upon the body." The shoulder of the policy holder of the plaintiff in the case of *Thayer vs. the Standard Life & Accident Insurance Company*, was injured by a fall, causing pain, and depriving him of the use of the arm, but the only visible mark of the injury was a discoloration of the arm and shoulder. A point was sought to be made of this. But, in overruling exceptions to a judgment for the plaintiff, the supreme court of New Hampshire holds that the "visible mark upon the body" required by the policy need not be a bruise, contusion, laceration, or broken limb, but may be any visible evidence of an internal strain which may appear within a reasonable time after the injury is received.

Special Physical Examination Indispensable.—Where a civil service regulation requires an application for appointment to a position of a certain class to be accompanied by a certificate of a practising physician of good repute that he has examined the applicant, and found him free from any physical defect, etc., and a further regulation requires that, "whenever physical qualifications are of prime importance to the proper discharge of the duties in any position, applicants must pass an additional examination as to their physical condition and capacity," the second appellate division of the supreme court of New York hold, in *People vs. Gleason*, July 23, 1898, that the examina-

tion required by this second regulation must be had under the direction of the civil service commissioners, and that no other method of examination is a compliance with the rules, and it is immaterial that any other physician's certificate may have been accepted by the board as final, such acceptance being a clear disregard of the civil service regulations.

Why a French Physician was Fined.—A physician in France was recently fined, although not very heavily, for refusing to testify in a matrimonial action to the circumstances of an altercation which he had witnessed between the husband and wife on the occasion of a visit which he made to the family in his professional capacity. The quarrel occurred immediately upon his arrival at the house, and he went away without either prescribing or giving any medical advice whatever. For this reason the divorce court held that he was absolved from all obligations of professional secrecy, and was bound to disclose what he saw, just as any non-professional witness would be. He contended, on the other hand, that inasmuch as he had been summoned solely as a medical adviser, his presence at the scene was wholly due to his professional character, and that if he had not been there as a doctor he would not have been there at all, in which event he would have nothing to tell. The smallness of the fine imposed, which was only 10 francs, indicates that the court did not deem his refusal to testify a very heinous offense, and before he was compelled to give the desired evidence the case was settled.—*New York Sun*.

"Deferred Annuities" for Medical Men.—Annuities, so popular among the professions in Great Britain and the Continent of Europe, do not find much favor on this side of the water. In addition to this being the case as to regular annuities, whereby a certain sum is paid down in cash for an annuity to commence its year at once, "deferred annuities" are rarely if ever heard of in America, although they have been adopted to a great extent in Europe and are readily obtainable from life companies here. A "deferred annuity" is one under the condition of which the yearly payment commences early in life, and the annuity does not go into effect until, say, ten, twenty or thirty years have elapsed. The American companies, however, make very little mention of them in their circulars and manuals, and therefore even a well-informed agent connected with one of our life companies may be excused for not being informed on the subject.

The "Camp Ghost" at Camp Wilkoff.—The following sketch of the physical human wrecks that were so numerous at the Montauk recuperation camp appeared in a *New York Journal*: "The most pitiable sight that is to be seen at camp, outside of the hospitals, is the 'ghost' type. The 'camp ghost' is the man who is not ill enough to be admitted to the hospital, but is too weak to do duty. He has nothing to do but wander, and he really lacks the strength for this, but he always essays it, with the result that he drops by the wayside and lies until a jolting army wagon or hospital conveyance picks him up. Or, feeling his energy waning, he essays a short cut over the succession of ground swells that exist here. There was one of the Twenty-Second Regulars whose knees gave out when he was in the hollow between the hillocks one morning. On his hands and knees he crawled through a marsh to the summit of the neighboring hillock and there fainted. Swirling banks of fog were chasing each other over the land, limiting the range of vision to a few yards all the morning, and it was not until noon that two volunteers found him and carried him to the roadway. 'Such cases,' says one of the surgeons here, 'are just about beyond treatment. I have not yet been able to comprehend the condition of mind and body which produces the 'camp ghost.' The cause is the hardships of the Cuban campaign, repeated attacks of fever, and lack of nourishing food at the time when it was most needed. Yet these ghosts are not ill in the ordinary meaning of the term. There is no specific ailment. They

are simply devitalized. It is useless to take them into the hospitals. Their best chance is in plenty of fresh air and cheering companionship, although there is little enough of the latter. If we could surround these fellows with the people they love and who love them, we could guarantee 99 per cent. of cures. It would revive their interest in life. As it is, their sad faces are a contagion. They droop a little more each day, until one day they droop into the hospital. The next day they are more than likely to be dead. On the records we put it down as exhaustion, and I guess that is pretty near it; exhaustion of all the vitalizing instincts that bind a man to this earth'."

Temple of Esculapian.—The German archeologists working in Greece have excavated the celebrated Temple of Esculapian on the Island of Paros, described by several Greek authors. It measures 41.25 by 19.5 meters, and is in an excellent state of preservation, though pillaged of all its treasures.

Personal.—Dr. F. E. Waxham of Denver, Colo., has returned to Chicago, with office in the Columbus Memorial building and residence at 3633 Grand Boulevard.

New Publication.—The *Texas Clinic*, Vol. i, No. 1, October, 1898, comes to our exchange table. It is to be published monthly at \$1.00 a year, and is edited by J. B. Shelmire, M.D., Dallas, Texas.

Societies.

The following recent meetings are noted:

Illinois.—Esculapian Society of the Wabash Valley, Paris, October 27; Brainard District Medical Society, Petersburg, October 27; Chicago Gynecological Society, October 21; Military Tract Medical Association, Canton, October 20; Scandinavian Medical Society, Chicago, October 21; Stephenson County Medical Society, Freeport, October 13; Will County Medical Society, Peoria, October 25.

Maryland.—Johns Hopkins Medical Society, Baltimore, October 17.

Michigan.—Saginaw County Medical Society, Saginaw, October 14.

Missouri.—Medical Society of City Hospital Alumni, St. Louis, October 20; St. Louis Medical Society of Missouri, October 22.

New Hampshire.—N. H. Surgical Club and Center District Medical Society, joint session, Concord, October 11.

New Jersey.—Camden District Medical Society, October 11.

New York.—Central New York Medical Association, Auburn, October 18; Jefferson County Medical Society, Syracuse, October 11; Oneida County Medical Society, Rome, October 11; Washington County Medical Society, Whitehall, October 6.

Pennsylvania.—Franklin County Medical Society, Chambersburg, October 18; Lycoming County Medical Society, Williamsport, October 14.

Vermont.—State Medical Society, Brattleboro, October 13 and 14; Vermont Sanitary Association, Montpelier, October 25.

Wisconsin.—Kenosha County Medical Society, October 13; Northwestern Wisconsin Medical Association and Fox River Valley Medical Society, joint session, Oshkosh, October 25.

Cincinnati.

APPOINTMENT.—Dr. Louis Molony has been appointed acting assistant-surgeon in the volunteer army to be stationed in Santiago with Brigade-Surgeon Lawrence Carr of this city.

DR. WALLACE NEFF, Brigade-Surgeon U. S. V., has been visited with a severe attack of appendicitis, at his station near Atlanta, Ga. He was attended by Dr. C. A. L. Reed of this city.

OHIO VOLUNTEERS.—The surgeons of the First Ohio Volunteers are busy examining the members of the regiment previous to their mustering out. The soldier makes a written statement of his condition which he signs, answering as to whether he has any physical disabilities, and if so, when, where and how he received them. This is followed, if the man declares that he has any such disability, by the certificate of the company's commander. The man is then examined and the surgeon makes his written report as to the man's condition. Major Hendley is in charge of the examining.

SOCIETY FOR ORIGINAL RESEARCH.—At the regular meeting, October 13, Dr. J. E. Greive presented specimens of the various forms of syphilis of the brain and spinal cord.

Baltimore.

MEDICAL SCHOOLS.—The winter sessions of the schools are now in full swing. The University of Maryland and College of Physicians and Surgeons are recovering from the effects of the adoption of the four-year course in 1895, and have increased classes, especially the former. The University is much advanced by the splendid new hospital and its successful school for nurses. Professor Tiffany, who, owing to some disagreement with his colleagues of the faculty, had withdrawn from didactic teaching, has resumed full charge of the chair of surgery. Prof. Hammeter has one of the finest clinical laboratories in the country, and gastric physiology, pathology and therapeutics are demonstrated there in all the fullness of their modern development. There was no formal opening at the University. Prof. Bevan opened the course at the College of Physicians and Surgeons, Prof. Street at the Baltimore Medical, and Prof. Batchelor at the Woman's Medical. I understand the class at the Baltimore Medical is smaller than usual, owing to the four-year rule coming into operation there for the first time with the class of 1896. What is to be the status of our new college, "The Maryland Medical," is only a matter of conjecture. It opened in September with twenty five to thirty students. It has a three-year course, but the sessions are of eight months. The Baltimore University has a supplementary session each year in the spring months. Really the number of schools has multiplied so here that the question of a name is becoming a difficulty, almost all the available terms being already appropriated. We have now here seven "regular" schools, including one for women, one homeopathic school, three dental schools and one college of pharmacy.

OPENING ADDRESS.—The medical event of the week has been the address of Prof. T. Clifford Albutt, of Cambridge University, at the opening of the Johns Hopkins. Prof. A. is returning home from the Pacific Coast, where he has been delivering a series of lectures. The address was largely technical. There were many non-medicals in the audience, including ladies. The Johns Hopkins opened with 207 students, a larger number than ever before. This is the seventh session. There were no graduates until the fifth session, no students being admitted to advanced standing. There are now thirty-five women in attendance, nine being new students. The first year class numbers sixty-six. The new buildings of the medical school are approaching completion and will be occupied during the present session. The hospital occupies four squares, but the college buildings occupy another entire square. Prof. Osler has been quite ill since his return from Scotland, where he went to receive the degree of LL.D. He has been suffering from influenza which led to pneumonia. He has, however, recovered sufficiently to leave the city and is now recuperating in the mountains of Pennsylvania. He expects to return and assume the duties of his chair and deanship on November 1.

CENTENNIAL.—We are looking forward to a great occasion next year when we will celebrate the centennial of our Medical and Chirurgical Faculty. One hundred years ago the society was chartered by the Legislature of the State and given control of professional interests in Maryland. One hundred and one physicians, representing all the counties of the State, were named as incorporators in the charter. Organization was effected at Annapolis, June 2, 1799, the first president being Dr. Upton Scott of Annapolis, an Irish physician who came over with Governor Sharpe in 1753. Prof. Samuel C. Chew holds the office this year, having been selected as above all others in the State fitted to fill the chair during the centennial year by reason of his high standing, his ripe scholarship and his dignity. The semi annual meeting of the faculty will be held next month in Frederick City, Md. Through the generosity of the Messrs. Frick the medical library has made great strides the past two years and now has a really fine collection of books available. It is especially rich in those departments in which Prof. Charles Frick was interested—fevers, renal, nervous and intestinal diseases.

Washington.

ST. ELIZABETH'S HOSPITAL.—The report of Dr. W. W. Godding, the surgeon-in-chief of the Government Hospital for the Insane, for the year ended June 30, 1898, shows there were 1767 patients at the close of the last fiscal year; 437 were admitted during the present year, making a total of 2204 patients treated; of this number 351 were discharged, 93 recovered, 49

improved, 3 were not insane, and 197 died. The general summary shows that 32.28 recovered, 16.26 improved, 2.39 were unimproved, and 31.87 died. Since the opening in 1855, 10,772 cases have been treated, of which number 3478 recovered, 1749 improved, 3433 died, and 2726 were unimproved. The daily average of inmates during the present year was 1798, an increase of 88 over the preceding year. He asks for additional space and an increase of appropriation to care for the large number of patients, which have come to the hospital as a result of the Spanish-American war, and recommends a change in the existing laws governing the commitment of the insane patients. As a result of an increase of 20 per cent of patients during the past year, he asks for deficiency appropriation of \$12,000 in order to settle last year's accounts.

MICROSCOPIC SOCIETY.—At a recent meeting the following officers were elected: President, Dr. H. H. Robbins; vice-president, Prof. Hall Bartsch; corresponding secretary, H. H. Doubleday; recording secretary, L. M. Morers; treasurer, Dr. Robert Reyburn; curator, W. H. Seaman. A committee was appointed to draft suitable resolutions on the death of Dr. Edwin A. Gibbs, a member of the Society.

CLINIC PATHOLOGICAL SOCIETY.—At the meeting of the society, on the 18th inst., the following officers were elected: President, Dr. John Van Rensselaer; vice-presidents, Drs. John R. Wellington and Sterling Ruffin; recording secretary R. T. Holden; corresponding secretary, J. T. Kelly; treasurer Frank Leach.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward for the week ended October 15, shows the total number of deaths to have been 100, of which number 60 were white and 40 colored. At the close of the week there were 131 cases of diphtheria and 90 of scarlet fever under treatment. The annual death-rate for the whites was 16.29, and for the colored 23.43. There were 5 fatal cases of typhoid fever, 6 of diphtheria and 1 of scarlet fever. There were 125 births, of which 99 were white and 26 colored. Dr. A. Barnes Hope has been appointed a physician to the poor, to act during the illness of Dr. William G. Morgan.

EPISCOPAL HOSPITAL.—At the recent quarterly meeting of the Eye, Ear and Throat Hospital, it was announced that Bishop Satterlee had set aside the last Sunday in October as hospital Sunday, and that all collections on that day, in the local churches would be donated to the hospital fund; the Directors are endeavoring to secure an endowment of \$50,000. The total number of patients treated during the past nine months, ended September 30, was 1027, 553 white and 474 colored. One hundred and thirty-six patients have been received into the Hospital; 173 operations have been performed; \$998 has been received for pay patients.

UNLICENSED DENTISTS FINED.—A Dr. Crosby, who was tried and convicted on the charge of violating the law regulating the practice of dentistry, by engaging in practice without a license, was fined \$50 by the judge of the police court. The local dentists are highly gratified by the enforcement of the law. So far, they have been much more successful in enforcing their Act than the doctors have in enforcing their regulation.

Philadelphia.

CONTRIBUTIONS FROM THE PUBLIC SCHOOLS.—Although members of the medical profession are constantly doing little acts of charity for which there is seemingly no recompense, the good seed sown must surely bring forth its just reward. An example of what this means in dollars and cents, is seen in the penny contributions of school children for the benefit of sick soldiers in the different hospitals of this city and to be distributed as follows: Medico-Chirurgical \$584.80, St. Agnes \$408, University \$248.90, Presbyterian \$152.35, St. Joseph's \$145.55, German \$163.20, Episcopal \$115.60, St. Mary's \$58.50, Jefferson \$138.75, Hahnemann \$81.60, Polyclinic \$40.80, St.

Timothy \$8.18, Samaritan \$8.18, Women's Homeopathic \$54.40, Methodist \$36.75, other hospitals \$76.20. Total \$2,338.11.

SICK SOLDIERS.—There have been treated in all the hospitals of this city a total of about 2500 sick soldiers. Since September 12, Maj. D. C. Peyton, a brigade surgeon, has had full charge of the work here and has a corps of eight assistant surgeons to transact the business necessarily entailed upon that department. The following is the method of caring for the convalescents, according to the *Ledger*: "Men discharged from the hospital report first to the office with their hospital certificate, stating that they are convalescent. They are then given sick furlough and sent to the quartermaster, who furnishes transportation and commutation of rations at the rate of \$1.50 a day for the time necessarily taken in traveling to their homes. If a soldier is weak and has some distance to go, the quartermaster, on certificate from the surgeon's office, furnishes sleeping-car accommodations. If in need of clothing, he is furnished what is needed from the quartermaster's department on request of a surgeon. When hospitals notify the surgeon's office that certain soldiers are ready to be discharged, clothing is procured for them through the quartermaster's office and this is in many cases sent direct to the hospital, so that it is ready when discharge from the hospital is given.

MEMORIAL TO DR. JOSEPH LEIDY.—At a recent meeting of the Academy of Natural Sciences of Philadelphia, Dr. Edward J. Nolan presented a memorial of the late Dr. Joseph Leidy. The gift consisted of five volumes containing drawings and writings by that author. Dr. Leidy at one time practiced medicine in this city and for several years was professor of anatomy of the University of Pennsylvania, where he was much esteemed by the faculty and students. He is probably best known for his studies in the lower forms of animal life, comparative anatomy, and for his able and painstaking work of estimating the ages of stalactites and stalagmites of the Luray Cave, Virginia. Dr. Leidy was a thorough scientist, investigator and teacher, and his fame extends throughout the world.

LECTURE BY DR. ALBUTT.—Dr. Thomas Clifford Albutt, who has been traveling quite extensively in America and who occupies the chair of the theory and practice of medicine at Cambridge University, recently lectured to the graduating class of the University of Pennsylvania. The speaker was introduced by Dr. James Tyson, who lectured upon "Diseases of the Arteries in Association with Apoplexy." Dr. Albutt recently arrived from Baltimore, where he was the guest of Professor Osler of the Johns Hopkins University.

HOMEOPATHS WANT INSANE HOSPITAL.—At a meeting of the Homeopathic Medical Society of this city, at which time it is stated 100 delegates were in attendance, mention was made of the overcrowded condition of the insane asylums of the State of Pennsylvania. As matters now stand, these unfortunate are being cared for by the regular profession to the disadvantage of those who practice according to the tenets first promulgated (but not now practiced) by Hahnemann. In order to correct this discrimination a committee was appointed and instructed to use urgent means to have the subject brought before the proper legislative bodies. We await results.

TESTIMONIAL PERFORMANCE.—Arrangements are being made by members of the Ladies' Aid Society of the Medico-Chirurgical Hospital for a testimonial performance for the benefit of the sick soldiers in that institution. The Medico-Chirurgical has shown great enthusiasm in bringing the sick soldiers to the city through the medium of hospital trains, and deserves great credit for the manner in which it has increased its facilities on so short notice. This action, therefore, demonstrates the enterprise and capabilities of the men who comprise its managers and teaching faculty.

WANT OF CO-OPERATION.—Some time ago citizens of Germantown held a meeting, at which time a committee was appointed to devise ways and means for the erection of a children's hospital. It is stated, however, in the lay press that letters have been received from residents and business men who were appointed, declining to act as members of the board of directors. It is stated that contribution boxes have

been placed in different stores and offices for the benefit of the hospital fund, and committees have been appointed to draft rules and by-laws and to procure a charter. Invitations have been addressed to fraternal orders in Germantown asking financial aid for the institution.

EVADING VACCINATION LAW.—The fact has reached the board of health of this city that the compulsory vaccination law regarding school children is being evaded by the wholesale. A resolution has been passed by the board of education asking that the board of health be notified of the "large percentage of non-vaccinated children attending the schools, the children having been admitted upon certificates signed without proper evidence." It is further stated that the board of education has passed a resolution that the board of health be requested to disinfect the schools of this district or to provide the means for doing so. The disinfectant which was recommended was chlorid of lime and it was thought best to instruct the janitor in the proper use of this.

ADDITION TO SAMARITAN HOSPITAL.—Owing to the increased amount of work by this institution, the managers have decided to buy the dwelling house adjacent to the property and convert it into a department of the hospital. The entire property has a frontage of fifty feet and extends eastward a distance of 230 feet.

NEW MEDICAL LABORATORY.—Among the many other improvements going on at the University of Pennsylvania, another laboratory is to be built. To stimulate a spirit of friendly rivalry, Provost Harrison submitted the matter to the junior members of the architectural department for a proper design, but the jury of award has so far been unable to decide on whom the honor will be conferred.

VERDICT AGAINST TELEPHONE COMPANY.—Dr. John Marshall, dean of the Medical Department of the University of Pennsylvania, was recently awarded \$737 against the American Telephone Company for injuries sustained to shade trees at his summer home. In the construction of a line for the company along the estate some sixty or seventy ailanthus and locust shade trees were destroyed, thus injuring the property.

REPORT OF THE NATIONAL RELIEF COMMISSION.—The National Relief Commission, which has so liberally provided for the sick soldiers in the field and in the hospitals of the different cities, has reported contributions of money and supplies aggregating thousands of dollars. The last report, made public by Mr. George C. Thomas, treasurer, at the banking house of Drexel & Co., is: Cash, etc., \$76,631.57; value of supplies to date, \$40,325.

MORTALITY STATISTICS.—For the week ending October 22, there were reported to the Bureau of Health a total of 389 deaths, of which 122 occurred in children under the age of 5 years. The total number of deaths is an increase of 58 over that of last week and an increase of 13 over the corresponding period of last year.

SOLDIER PATIENTS.—The government recently transferred twenty five sick soldiers from Camp Meade to this city, where they are being treated at the Woman's Hospital.

SOCIETY FOR FIRST AID TO INJURED.—A society has recently been formed here for the purpose of giving instruction in "home nursing" and to render "first aid to the injured." Lectures will be given at stated times in suitable rooms, both in this city and throughout the State of Pennsylvania.

RECEPTION.—Members of the Philadelphia Medical Club recently tendered a reception to Dr. W. L. Rodman, professor of surgery in the Medico-Chirurgical College. A representative body of physicians attended.

RED CROSS HOSPITAL.—Members of the Red Cross Society of this city have secured a site for a hospital at the corner of Twentieth and Cherry Streets, and are rapidly putting in equipments necessary for the care of patients soon to be admitted. A committee has been appointed, consisting of several physicians and lay members, who will act as the board of managers.

Louisville.

GARVIN.—Dr. Samuel H. Garvin has just been re-elected jail physician for the ensuing four years. The place is awarded by vote of the justices of the peace of Jefferson County. Dr. Garvin is a native of Louisville, and has spent the best part of his life in this city. He has served as jail physician nearly twenty-two years, under both republican and democratic administrations. There was but one opposing candidate.

MORGAN.—Dr. L. C. Morgan of Dugansville was the victim of a dastardly attempt at robbery on the 4th inst. While on

his way home from a neighboring town, about 10 P. M., he was decoyed into a house by three negro men, who told him a colored woman was very ill and in need of a physician's services. When the Doctor entered the house the negroes set upon him for the purpose of robbery. The Doctor drew a pistol, but one of his assailants shot him with both barrels of a shotgun before he could make any resistance. He remained conscious long enough to give a description of his assailants, and they are now under arrest and close guard, as there is great talk of lynching.

KOEHLER.—Dr. Henry H. Koehler has announced that his practice will be limited to genito-urinary and skin diseases from this time, with an office at 1001 Fourth Avenue.

JOHNSTON.—Dr. Geo. Ben Johnston of Richmond, Va., en route to the Mississippi Valley Medical Association, where he delivered the address in surgery, was the guest of Dr. L. S. McMurtry at a dinner on the evening of the 10th.

MEDICO-CHIRURGICAL SOCIETY.—This society's membership has been depleted by the death of Dr. John A. Larrabee, and the resignation on account of removal from the city of Drs. Wm. L. Rodman and Jno. L. Howard. Dr. P. L. Butler and Dr. T. C. Evans have been elected for two of the vacancies, and Dr. H. H. Grant is in nomination for the third.

MARVIN.—Dr. J. B. Marvin and family have returned from a three-months' sojourn in Europe.

PHARMACY.—The regular meeting of the State Board of Pharmacy was held in Frankfort, last week, for the purpose of examining applicants for license.

QUARANTINE.—Upon the advice of the State Board of Health, the Commercial Club, one of the principal organizations of business men in the city, has issued a proclamation, inviting yellow fever refugees from the South to Louisville, as was done last year. As a result there has been a great number of the Southern residents in the city during the past three weeks.

CATTLE.—Drs. F. T. Eisenman and J. G. Gashin, respectively State veterinarian and State bacteriologist, have returned from the meeting of the Interstate Association of Live Stock Sanitary Boards, and are preparing their report for submission to the governor, in regard to "ticky" cattle. One of the chief points developed at this meeting was the fact that cattle dipped in dynamo oil and sulphur can be safely mixed with northern cattle, and when inspected by either State or Federal authorities, can be shipped north at any time of the year. It was decided that the open season should extend from November 1 to January 1, when cattle can be shipped north for immediate slaughter. It was determined to ask the Secretary of Agriculture to so change the quarantine laws of Oklahoma, Kansas, Missouri, Tennessee and Texas that cattle from all points below the quarantine line may not be shipped to points above the quarantine line, unless intended for immediate slaughter. The only way cattle may be admitted above the quarantine line is by inspection by Federal and State authorities after being dipped. A resolution in line with the above was sent the Secretary of Agriculture by the Louisville Live Stock Association endorsed by the State Board of Health.

STATE BOARD OF HEALTH.—The State Board of Health held its annual session at the Galt House on the 20th inst., with the following members present: J. M. Mathews, president; J. N. McCormack, secretary, of Bowling Green; J. H. Letcher of Henderson; J. H. Samuel of Maysville and Wm. Bailey of Louisville. The report of Secretary McCormack was a review of the Board and detailed much important work done, characterized by the Secretary as the most active and anxious in the history of the Board. This anxiety was caused by the yellow fever epidemic in the South and the number of refugees passing through the State; the prevalence of smallpox which was so widely epidemic in the State and in separated districts. The inspection service of the Board and disinfection on board trains was reviewed by the report, and the obstacles thrown in the way of the Board by one railroad was mentioned. Attention was called to the fact that the epidemic of smallpox necessarily made a heavy drain on the appropriation of the Board, and that it is practically without funds at present. It was stated that the General Assembly is adding new work to the Board every year, but is making no increase in the appropriation. The increasing prevalence of scarlet fever, diphtheria and typhoid fever was mentioned, and the alarming death rate from these causes, causing more deaths than yellow fever and cholera have in the history of the State. Dr. McCormack commended the work of the State veterinarian in cases of Texas fever, anthrax and glanders which have appeared among the cattle and horses in the State. It was stated that owing

to the increase of the routine work of the executive officer of the Board it would become necessary shortly for him to devote his whole time to it. The amount expended by the Board was \$3,544.20. Action was taken at this session on the cases of several who have been guilty of unprofessional conduct or quackery in the State. Dr. Adaline Bell of Paris, who appeared before the Board to stand the required examination for candidates to practice osteopathy, had failed to come up to the standard in the subjects upon which she was examined, and she was refused a license. Dr. G. N. Murphy of Bowling Green, who claims to cure what physicians generally recognize as incurable, and guilty of other unprofessional conduct, was represented by an attorney and his case set for hearing on November 7. Mr. Aaron Kohn, attorney for the Board, presented the report as an answer to Harry Nelson, who has been practicing osteopathy. The answer says for the Board that osteopathy is simply a perfected system of quackery and empiricism, and denies that it requires any learning or ability to "become versed in the pretended doctrines" of the system. The reply says that Nelson has never applied to the Board for a license to practice and has refused to submit himself or his qualifications to the provisions of the statute enacted by the legislature. The reply concludes that to allow Nelson to practice would be to sacrifice the lives, health and limbs of the citizens of Kentucky. Notice was prepared to be served on P. H. Woodhull of Bowling Green, also an osteopath, to appear before the Board on November 8, and answer charge of unprofessional conduct. The Board adjourned to meet again on November 7.

CHLOROFORM.—A death from chloroform occurred at St. Joseph's Infirmary on the 20th inst. The patient was a policeman who was to have a toe amputated, and was found in good condition to take an anesthetic, which was administered by the interne of the hospital. There was a prolonged stage of excitement and much struggling and the patient died in this state before the operation had been begun.

DRUGGISTS.—Several of Louisville's retail druggists have just returned from St. Louis, where they attended a meeting at which the National Retail Druggists' Association was organized. The Louisville druggists represented the Louisville Botanical Association and the Kentucky Pharmaceutical Association. One of the representatives, in an interview, stated that much was done at the meeting which would aid the druggists of this city in getting away from the cut-rate business, which has demoralized the retail drug trade in the past two years. Resolutions were adopted calling upon manufacturers to cease selling to department stores, to rabid cut-rate druggists and to retailers in large quantities. They also requested the assistance of all retailers and jobbers and manufacturers in having the medicine tax remitted, or if that be not possible, to have the Government remit the tax on such simple remedies as druggists may put up themselves according to public formulae. This meeting was held at the time the Wholesale Druggists' Association and National Proprietary Medicine Manufacturers were in session, yet the roll call showed twenty-one States represented and about 150 in attendance.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—The following named officers have been ordered to duty in connection with the mustering out of volunteer commands: Major Ezra Woodruff, surgeon U. S. A., Ft. Trumbull, Conn., for Rhode Island Vols.; Major Augustus A. De Loffre, surgeon U. S. A., Austin, Texas, for Texas Vols.; Major Charles K. Winne, surgeon U. S. A., Ft. Crook, Neb., for Nebraska Vols.; Major W. F. de Niedeman, brigade surgeon U. S. V., to Jefferson Bks., Mo., for the 1st Missouri Inf.; Major Timothy E. Willecox, surgeon U. S. A., to New York City, for New York Vols.; Major Louis W. Crampton, surgeon U. S. A., Ft. McHenry, Md., for the 5th Maryland Inf.; Major Geo. W. Crile, brigade surgeon U. S. V., from Cleveland, Ohio, to Ft. Sheridan, Ill., for the 1st Illinois Cav.; Major Elmer E. Heg, brigade surgeon U. S. V., from the general hospital, Ft. Myer, Va., to Omaha, Neb., for the 2d Neb. Inf.; Major John P. Dodge, brigade surgeon U. S. V., from Camp Wikoif, Montauk Point, L. I., to Columbus, Ohio, for Ohio Vols.; Major Eugene L. Swift, brigade surgeon U. S. V., from Camp Wikoif to Concord, N. H., for New Hampshire Vols.; Capt. Chas. Willecox, asst.-surgeon U. S. A., to Columbia, S. C., for South Carolina Vols.; Capt. Chas. Lynch, asst.-surgeon U. S. A., from Camp Frank Ardmore, Ind. Ter., to Little Rock, Ark., for the 1st Arkansas Inf.; Capt. Henry D. Snyder, asst.-surgeon U. S. A., from Ft. Ethan Allen, Vt., to Burlington, Vt., for Vermont Vols.; First Lieut. Weston P. Chamberlain, asst.-surgeon U. S. A., from the general hospital, Ft. Monroe, Va., to Richmond, Va., for the 3d Virginia Inf.; and Acting Asst.-Surgeon Alexander McE. McMasters, his orders to Cuba being revoked, to Philadelphia, Pa., for Pennsylvania Volunteers. Capt. Francis A. Winter, asst.-surgeon U. S. A., and Acting Asst.-

Surgeon S. M. Long from Camp Wikoff, Montauk Point, L. I., to New Haven, Conn., for Connecticut Vols.; Capt. Wm. F. Lewis, asst.-surgeon U. S. A., from Huntsville to Montgomery, Ala.; Capt. C. E. B. Flagg, asst.-surgeon U. S. A., from Ft. McPherson, Ga., to Montgomery, Ala., and Acting Asst.-Surgeon Robt. N. Pitts, now at Montgomery, Ala., for Alabama Vols.; Major Jas. M. Jenne, chief surgeon of volunteers, from St. Albans, Vt., and Capt. Geo. J. Newgarden from Ft. Adams, R. I., to Boston, Mass., for Massachusetts Vols.; Major Chas. R. Parke, brigade surgeon volunteers, from Camp Meade, Middletown, Pa., to Augusta, Me., and Capt. H. R. Stiles, asst.-surgeon U. S. A., to Ft. Preble, Me., for the 1st Maine Inf.; Major Robert Burns, brigade surgeon volunteers, to Concord, N. H., for New Hampshire Vols. Lieut. Samuel M. Waterhouse, asst.-surgeon U. S. A., to Ft. Logan H. Roots, Ark., for the 1st Arkansas Inf. Acting Asst.-Surgeon Arlington Pond from Ft. Myer, Va., to Richmond, Va., for the 3d Virginia Inf.

Relieved from duty with field commands and ordered to posts: Lieut.-Col. Benjamin F. Pope, chief surgeon U. S. V., to Columbus Barracks, Ohio; Major Chas. L. Heizmann, surgeon U. S. A., from Camp Wikoff, N. Y., to Fort Adams, R. I.; Major Henry S. Kilbourne, surgeon U. S. A., to Madison Bks., N. Y.; Major Marshall W. Wood, surgeon U. S. A., to Fort Douglas, Utah; Major Rudolph G. Ebert, surgeon U. S. A., to Vancouver Barracks, Wash.; Major W. C. Burden, brigade surgeon U. S. V., to Washington Barracks, D. C.; Major Walter D. McCaw, brigade surgeon U. S. V., to Fort Porter, N. Y.; Major Francis J. Ives, brigade surgeon U. S. V., to Willets Point, N. Y.; Major Guy L. Edie, brigade surgeon U. S. V., from the 1st Army Corps at Lexington, Ky., to the Presidio, San Francisco, Cal.; Major Chas. B. Ewing, brigade surgeon U. S. V., to Fort Brady, Mich.; Majors Aaron H. Appel and Paul Shillock, surgeons U. S. A., to Fort Grant, Arizona; Major Eugene L. Swift, brigade surgeon U. S. V., from mustering-out duty in New Hampshire to Fort Slocum, N. Y.; Major Louis S. Tesson, U. S. A., to Fort Ethan Allen, Vt.; Capt. Henry R. Stiles, asst.-surgeon U. S. A., to Fort Adams, Vt.; Capt. Geo. J. Newgarden, asst.-surgeon U. S. A., to Fort Adams, Vt., and the following acting asst.-surgeons: Joseph M. Heller from Camp Wikoff, N. Y., to Fort Ethan Allen, Vt.; O. C. Heise and Milton D. Norris from the Sternberg Hospital, Chickamauga Park, Ga., to Jefferson Barracks, Mo.; and James T. Arwine to Fort Ringold, Tex.

To Camp Meade, Middletown, Pa.: Major Junius L. Powell, surgeon U. S. A., from Camp Wikoff, N. Y., and acting assistant-surgeons Wm. Alden from Portland, Me., and Dwight B. Taylor from Camp Poland, Knoxville, Tenn.

To the 7th Army Corps, Gen. Fitzhugh Lee, Jacksonville, Fla.: Major W. Fitzhugh Carter, surgeon U. S. A., from the 4th Corps at Fernandina, Fla., and the following acting assistant-surgeons: Geo. G. Chaims and William S. Terribery from Washington, D. C.; John D. Thomas from Charleston, S. C.; Frederick R. Dolson from Fort St. Philip, La.; John Lyng from Kensington, Minn.; Thomas R. Marshall from Camp Wikoff, N. Y.; Thomas Y. Aby from Fort Lawrence, Kas., and William E. de Salazar from New York City.

To Camp Poland, Knoxville, Tenn.: Major Adrian S. Polhemus, surgeon U. S. A., and acting asst.-surgeons John B. Alcorn and Hyman Finklestone from Washington, D. C.; William P. Lawrence from Nashville, Tenn., and John B. Hallwood from New York City.

To duty with troops at Camp Hamilton, Ky.: Major John M. G. Woodbury, chief surgeon U. S. V.; Acting Asst.-Surgeon James W. Madara from the Fort Thomas General Hospital, Ky.

To the General Hospital, Fort McPherson, Ga.: Acting Asst.-Surgeons Ernest W. Fowler, Robert C. Rind and Victor E. Watkins from the Sternberg Hospital, Chickamauga, Ga.

To the General Hospital, Fort Thomas, Ky.: Acting Asst.-Surgeon Arthur E. Smith from Ravenna, Ohio.

To duty with troops at Huntsville, Ala.: Major R. J. Gibson, surgeon U. S. A., from Fort Meade, S. D., to the 8th U. S. Cav.; Lieut. Guy C. M. Godfrey, asst.-surgeon U. S. A., to the 10th U. S. Cav.; Lieut. Albert E. Truby, asst.-surgeon U. S. A., to the 8th U. S. Inf.; Lieut. James M. Kennedy, asst.-surgeon U. S. A., to report to the commanding general; Acting Asst.-Surgeon Wm. B. Winn from Fort Niagara, N. Y., to the 8th U. S. Cav., and the following acting asst.-surgeons to report to the commanding general: A. H. Simonton from Camp Wikoff, N. Y., and Chauncey T. Scudder and G. J. de Quesada from Washington, D. C.; T. H. Landor from the Sternberg Hospital, Chickamauga Park, Ga., and W. C. Douglas from Camp Wikoff, Montauk Point, L. I.

To the Josiah Simpson General Hospital, Fort Monroe, Va.: Capt. Benjamin Munday, asst.-surgeon U. S. A., from Jacksonville, Fla.; Lieut. Powell C. Fauntleroy, asst.-surgeon U. S. A., and Acting Asst.-Surgeons W. H. Prescott and Raphael A. Edmondston from Camp Wikoff, Montauk Point, L. I.

To duty with troops at Anniston, Ala.: Lieuts. and asst.-surgeons U. S. A., Henry A. Webber to the 1st U. S. Inf. and Edward T. Schreiner from the General Hospital, Fort McPherson, Ga., to the 2d U. S. Inf. Acting Asst.-Surgeon Peter Beckman to duty with the 2d U. S. Inf., and the following acting asst.-surgeons to report to the commanding general: Frank G. Jones and Charles J. Woolford from Washington, D. C.; Rufus D. Boss from Camp Wikoff, N. Y., and Pemberton Lundy from Buffalo, N. Y.

To the 7th Army Corps at Jacksonville, Fla.: Major Ezequiel de la Calle, brigade surgeon, U. S. V. from New York City, N. Y., and Acting Asst.-Surgeons Vernon J. Hopper, Henry B. Stotter and Benjamin A. Kittrell from Washington, D. C.

To Santiago, Cuba, via New York City: Louis A. Moloney, acting asst.-surgeon from Cincinnati, Ohio, and Acting Asst.-Surgeon Edward R. Bragg from Camp Wikoff, N. Y.

To Ponce, Porto Rico: Major Louis Brechemin, surgeon U. S. A., and Acting Asst.-Surgeons Charles S. Stern from Camp Geo. H. Thomas, Chickamauga, Ga. Capt. Frederick P. Reynolds, asst.-surgeon U. S. A., and Acting Asst.-Surgeon John W. Wright from Fort Monroe, Va., his previous orders to Santiago having been countermanded.

To Havana, Cuba: Lieut.-Col. R. M. O. Reilly, chief surgeon U. S. V., as a member of a board under orders from the Secretary of War, and Acting Asst.-Surgeon Joaquin L. Duenas from Philadelphia, Pa., to duty with the board to select camp sites.

On sick leave: Major Philip G. Wales, brigade surgeon U. S. V. from Camp Wikoff, N. Y.; Major Peter D. McNaughton, brigade surgeon U. S. V.; Major Charles B. Ewing, brigade surgeon U. S. A. from Camp Geo. H. Thomas, Ga.; Capt. Geo. M. Wells, asst.-surgeon U. S. A.; Capt. Chas. F. Kieffer, asst.-surgeon U. S. A. from Camp Wikoff, N. Y.; Capt. George H. Wucher, asst.-surgeon 8th Ohio Inf.; Capt. O. B. Weed, asst.-surgeon 32d Mich. Inf.; Lieut. Thos. S. Kirkpatrick, asst.-surgeon U. S. A. from Santiago, Cuba; and the following acting asst.-surgeons: Peter M. Beckman, Geo. I. McLeod, Wm. E. Stemen and James S. Kennedy from Camp Wikoff, N. Y.; Major Marshall W. Wood, surgeon U. S. A.; Majors and Brigade Surgeons U. S. V. William B. Bannister, Guy L. Edie and Frank Brusco; Major W. C. Gorgas, surgeon U. S. A.; Major E. D. Bain, surgeon 2d Ohio Inf.; Lieut. Cassius C. Hogg, asst.-surgeon 1st West Va. Inf., and Acting Asst.-Surgeon John E. Bacon.

To be examined for promotion: Wm. W. Quinton, Thomas S. Bratton Deane C. Howard, Wm. H. Wilson, James M. Kennedy and Guy C. M. Godfrey, asst.-surgeons U. S. A.

Resigned: Capt. A. J. Pedlar, asst.-surgeon 1st Batt. Cal. Heavy Art.; Lieut. Rowland B. Robinson, asst.-surgeon 1st R. I. Inf., and Lieut. Stephen J. Keefe, asst.-surgeon 3d N. J. Inf.; Major Charles C. Foster, surgeon 5th Mass. Inf.; Capt. B. H. Kitrell, asst.-surgeon 1st Miss. Inf.; Capt. Ira B. Ladd, asst.-surgeon 7th Cal. Inf.; Capt. Seth S. Ulrich, asst.-surgeon 1st Md. Inf.; Lieut. James R. McCausland, asst.-surgeon 1st Del. Inf.; Lieut. C. William Newton, asst.-surgeon 10th Ohio Inf.; J. Wilson Poucher, asst.-surgeon 201st N. Y. Inf., and James N. McLean, asst.-surgeon 2d Ala. Inf.

Honorably discharged: Lieut.-Col. Benj. F. Pope (Major and surgeon U. S. A.) as chief surgeon volunteers only; Lieut.-Col. Rush Huidekoper, chief surgeon volunteers; Major Jabez N. Jackson, brigade surgeon volunteers; Majors Thos. Earle Ewins and Lewis Schooler, chief surgeons volunteers; Major Wm. Arthur (Captain and asst.-surgeon U. S. A.) as chief surgeon volunteers only; Major Robert Burns, surgeon 1st New Hampshire Inf., to accept commission as brigade surgeon volunteers, and Lieut. John H. Gibbons, asst.-surgeon 3d U. S. V. engineers; Major Leonard B. Almy, chief surgeon volunteers, and Majors Milo B. Ward and Calvin H. English, brigade surgeons of volunteers.

CHANGE OF ADDRESS.

Brandenburger, L. A., from 2348 Hickory to 2900 Eads Avenue, St. Louis, Mo.

Bartlett, J., from 462 E. Division to 281 Oak Street, Chicago, Ill.

Caldwell, W. S., from Sioux Falls, S. D., to Freeport, Ill.

Caven, W. A., from South Side Hospt. to 212 Fifth Ave., Pittsburg, Pa.

Cargen, W., from Newman Grove, Neb., to La Crosse, Wis.

Dulin, F., from 1234 So. 14th to 1682 Broadway, Denver, Colo.

Fisher, G. C., from 291 So. Lincoln to 343 Ogden Ave., Chicago, Ill.

Felty, J. W., from 910 W. Main to 340 Winden Ave., Hartford, Conn.

Gordon, H. S., from Los Angeles to Westminster, Cal.

Greiger, H., from Cheesman Blk., to Station A, Box 353, Denver, Colo.

Hyrup-Pedersen, P., from Denver, Colo., to Laramie, Wyo.

Harnly, L. B., from Salida to 1349 California Street, Denver, Colo.

Holmes, H. M. T., from 718 1/2 Adams to 583 Polk Street, Chicago, Ill.

Holmes, E. W., from 1525 Mt. Vernon Ave., to 1930 Chestnut Street, Philadelphia, Pa.

Kramer, S. P., from 111 E. 9th Street to Rockdale Avenue, Cincinnati, Ohio.

Klebs, A. C., from 4419 Indiana Ave., to 600 North State, Chicago, Ill.

Kimmons, S. H., from Fort Smith, Ark., to Tulsa, Ind. Ter.

Loeb, L., Claremont Bldg., to 6329 Woodlawn Ave., Chicago, Ill.

Lentz, A., from Rock Rapids to Larchwood, Ia.

Moody, H. A., from Baily Springs to 706 Government Street, Mobile, Ala.

Malster, R. M., from Omaha to Stromsburg, Neb.

Olsen, O. B., from Battle Creek, Mich., to 1926 Wabash Ave., Chicago, Ill.

Phillips, E., from Scranton to New Haven, Pa.

Piper, E. V., from Chicago to Austin, Ill.

Rietz, P. C., from Policlinc Hospt. to 905 W. 21st Street, Chicago, Ill.

Riley, C. M., from 510 Spruce to Barnes Medical College, St. Louis, Mo.

Searle, C. H., from Chicago to Sabula, Ia.

Schmidt, T., from 116 E. 9th Street to Court & Walnut, Cincinnati, Ohio.

Sandow, B. F., from Helena, Mont., to Honolulu, H. I.

Seton, W. H., from Baltimore, Md., to 27 West 84th Street, New York, N. Y.

Thomas, A. E., from 3148 to 3200 Indiana Ave., Chicago, Ill.

Wilson, G. H., from 176 Euclid to 15 Cedar Avenue, Cleveland, Ohio.

Wisman, L. J., from Ainger to 211 1/2 Ave., Peoria, Ill.

Waxham, F. E., from Denver, Colo., to 3533 Grand Boul., Chicago, Ill.

Yemans, C. C., from 529 Woodward Ave., to Ypsilanti Sanitarium, Mich.

LETTERS RECEIVED.

Allen & Hamburgs, Ltd., New York, N. Y.; Applegate, J. C., Bridgeton, N. J.; Amos, W. F., Portland, Ore.; Ammon Chemical Co., New York, N. Y.; Anderson, W. H., Medical Lake, Wash.

Bromine-Iodine Chemical Co., Binghamton, N. Y.; Beck, H. I., New York, N. Y.; Broughton, R., Dwight, Ill.; Brandon, S. W., Clarksville, Tenn.

Conn, Geo. P., Concord, N. H.; Cassidy, W. W., Chicago, Ill.; Center, C. D., Quincy, Ill.; Chandler, W. J., S. Orange, N. J.; Cockerton, G. E., Danville, Ill.

Davis, B. B., Omaha, Neb.; Dorsey, F. B., Keokuk, Iowa; Dryden, Mary V., Battle Creek, Mich.; Deming, N. L., Ft. Wayne, Ind.; Donohue, M. J., Clintonville, Wis.

Elliott, H. G., New York, N. Y.; Eagleson, J. B., Seattle, Wash.; Egbert, J. Hobart, Holyoke, Mass.; Elliott, A. R., New York, N. Y.

Fuller's, Chas. H., Adv. Agency, Chicago, Ill.; Finlayson, D. W., Des Moines, Ia.; Fisher, Lewis, New York, N. Y.; Fassett, C. W., St. Joseph, Mo.; Fougera, E. & Co., New York, N. Y.

Gahn, Dr., Ellisville, Ill.; Garrett, G. H., Millers Grove, Texas; Greene, Chas. Lyman, St. Paul, Minn.

Hammond, A. D., Brockton, Mass.; Hill, W. H., Gentryville, Mo.; Humiston, Wm. H., Cleveland, Ohio; Hektoen, L., Chicago, Ill.; Hummel, A. L., Adv. Agency, New York, N. Y.; Hughes, C. H., St. Louis, Mo.; Hutchinson, Woods, London, Eng.

Inglis, David, Detroit, Mich. Jackson, Jas. J., Dansville, N. Y.; Jenks, H. D., Detroit, Mich.

Karger, S., Berlin, Germany; King, G. W., Penileton, Ore.; Kelley, J. S., Syracuse, N. Y.

Lownes, L. M., Norristown, Pa.; Leedy, C. E., Pierceton, Ind.; Loomis, J. F., Independence, Ky.; Lehn & Fink, New York, N. Y.

Murphy, J. B., Chicago, Ill.; Murnan, J. R., Covington, Ky.; McReynolds, J. D., Dallas, Texas; Matthews, F. B., Jacksonville, Fla.; Morrison, E. E., Great Bend, Kan.; McKinney, R., Memphis, Tenn.; Marchand, Chas., New York, N. Y.; McBride, M. A., Sidney, Texas; Myers, I. A., Shelby, Ohio; Mastoin, E., Bruxelles, Belgium; McLean, T. N., Elizabeth, N. J.

Potts, Mrs. R. D., San Francisco, Cal. Reed, C. A. L., Cincinnati, Ohio; Rio Chemical Co., St. Louis, Mo.; Reed, R. Harvey, Rock Springs, Wyo.; Rittenhouse, H. H., Chicago, Ill.; Rosenthal, Edwin, Philadelphia, Pa.; Robertson, John, Cincinnati, Ohio.

Stark, H. H., Sullivan, Ind.; Stevens, C. L., Athens, Pa.; Solomon, L. L., Louisville, Ky.; Stallman & Fulton, New York, N. Y.; Seibert, W. H., Steelton, Pa.

Tobias, A. W., Elwood, Ind. Van Houghton & Ten Broeck, New York, N. Y.; Vinsonhaler, F., Little Rock, Ark.

Woody, S. E., Louisville, Ky.; Work, J. A., Elkhart, Ind.; Walker, H. T., W. Dubuque, Ia.; Woldert, E. A., Philadelphia, Pa.; Williams, C. H., Boston, Mass.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, NOVEMBER 5, 1898.

No. 19.

ADDRESS.

PROGRESS IN NEUROLOGY.

[ABSTRACT].

Chairman's Address before the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. H. HUGHES, M.D.
ST. LOUIS.

Since last we met Neurology continues its onward march, both in special discovery and in new and better precepts and principles to guide the practice of our art.

During the past year the neurologic view of heart disturbance finds further confirmation from physiologic sources in the following recent editorial reference to the subject in the *Duetsche Wochenschrift*:

"A series of experiments at Buda Pest, producing artificial valvular insufficiency and dividing the vagi, seems to demonstrate that alterations in the nervous system play an important part in preventing compensation in cases of valvular insufficiency."

Numerous clinical symptoms confirm this assumption; arrhythmia, etc., and Ott's statement that he found the nerve-cells degenerated in cases of "incompensation."

The direct neural and reflex nervous disorders of the heart constitute our chief concern in clinical medicine, and damage to the vagus and upper abdominal viscera constitute the chief concern in the management of most cardiac affections, as the neurologist, the alienist, and even the general practitioner, encounter them in practice.

The past year has witnessed more attention to psychiatry on the part of neurologists and more attention to pathologic work, as instance in illustration, the wide range of subjects treated in the State Hospitals Bulletin of New York, a publication which bids fair to become as famous for record of good work as the well-known and unsurpassed West Riding Asylum Reports of Great Britain.

A committee of the American Neurologic Association has since our last meeting taken up and reported to that body on the subject of the after-care of the insane.

In this connection, I note that Dr. Putman of Boston, in the Transactions of the Association of American Physicians and in the *American Journal of Medical Sciences*, offers new views of thyroïdal diseases and Graves' disease, and Dr. J. T. Eskridge of Denver also on some new uses of the thyroid extract. Our colleague of this city, who never rests from his labors, will soon be heard from in the *American System of Practical Medicine*, Vol. iv., now in press, and has reported in the September *Medical News*, an interesting case of intradural spinal tumor, extending through the foramen magnum, compressing the extreme upper

portion of the cord and almost completely destroying it at the third cervical segment.

Up to 1884, Drs. Goodell, Pallen and other gynecologists advised the removal of the ovaries in all cases of insanity.

That same year, Dr. T. G. Thomas reported three cases of insanity following the operation and Dr. Putzel, of the New York City Lunatic Asylum, reported one hundred postmortems on insane women dying in that institution without a trace of disease of the ovaries.

Since our protest in 1882 (vide *Alienist and Neurologist*, January of that year) against the too reckless surgical disposition then in vogue to "obliterate the neuropathic constitution by excising the ovaries" and the later protests of our neurologic colleagues, a sensible conservatism has supplanted reckless radicalism concerning this operation which Spencer Wells, Matthews, Duncan and Martin of Berlin early discountenanced.

The entire editorial under the caption of "Unjustifiable Pelvic Operations" is a further evidence of the invasion of neurologic thought into the domain of general clinical medicine and surgery especially during the past year, and confirms our long ago expressed conviction (vide *Alienist and Neurologist*, 1830) that "Neurology is destined to reign paramount in medical thought and practice."

Playfair, a professor of obstetric medicine in Kings College, contributes a chapter to Allbutt's English and American Gynecology, and Howard Kelly, our own countryman, in a late number of the *American Journal of Medical Sciences* opposes needless vaginal examinations and repeated local treatments of virgins from a psychical standpoint, as any neurologist might.

The year since last we met therefore closes with the prevalent and advanced professional conviction, no longer confined to neurologists alone, that the neuropathic diathesis is not removable by the knife.

The influence of magnetic stress on physiologic action as a part of neurotherapy is worthy of note here, and on this subject our colleague, Prof. W. J. Herdman, in the *Bulletin of the Electro-Therapeutical Laboratory of the University of Michigan*, in his capacity as director thereof, called attention to this subject, October, 1887, showing a 10 per cent. daily increase of eliminated urea on the days when subjects were in the magnetic field and upon animals, 20 per cent. of increase of nutrition for eight weeks while in the magnetic field, with a gradual decline after the twelfth week, showing tolerance. These results correspond with d'Arsonval's.

The surgical treatment of exophthalmic goiter was the subject of discussion at the French Surgical Congress, Paris, October, 1897. M. Faure of Paris reported having excised the cervical sympathetic in three cases. In the first of these, the superior cervi-

cal ganglion, along with five or six centimeters of the descending cord, was excised on both sides; after four months the exophthalmus had diminished, the goiter was less in size, the tachycardia and the general health had much improved. In the second, the entire sympathetic was resected on the right side (superior and inferior ganglion included), the superior ganglion and part of the cord only on the left side (because of the onset of alarming syncope); this patient improved still more markedly than the first. The third case died on the table after the entire sympathetic cord had been removed from the right side and the dissection on the left side was about to begin.

I introduce this record of so-called progress in surgical neurotherapy only to enter my protest against M. Faure's procedure. The improvement resulting in the first two recorded cases was not greater than would have come to the victims of his knife under the enforced rest and expectancy of the operation, and the spinal sympathetic system is not so useless in the human economy as to justify such radical destruction. This, the death on the table of the third case operated upon confirms.

I oppose this surgical procedure also because it is not only too destructive, but because it is not necessary, since exophthalmic goiter is almost invariably curable without the knife, at least it has been so in my hands under arseniated and phosphorated bromid and blood reconstructive treatment, with adequate nerve and brain rest and changed mental environment for the patient.

Something has been added to the therapy of neuropathy during the past year. The suspension treatment of tabes modified by recumbent knee-abdomen process and stretching of the sciatic nerve in sciatica, have passed from a great therapeutic expectation to their normal remedial limitations, and the much-heralded massage cure for tabetics is now on the tapis to find the sphere of legitimate limitation during the coming year, just as is the fate of all therapeutic fads.

Spermin (Poehl's *Deutsche Medicinische Wochenschrift*, Oct. 7, 1897) has been used with benefit by Wesbitzky of Professor Payoff's clinic in St. Petersburg. One of his cases, a soldier of sixty years of age, after ten injections, improved markedly in gait, posture, pains and perception (tactile and electric), etc. A second case not so typical, improved, but not so markedly.

Many new cures for epilepsy have been emblazoned on the therapeutic horizon during the past year, but none have yet eclipsed the Brown-Sequard formula.

Among the latest additions abroad to the therapy of this disease is an old remedy long used in this country before the advent of bromids, viz., adonis vernalis.¹

The Johns Hopkins Hospital Reports, *The Journal of Psychology and Comparative Physiology* and the *Ophthalmologic Review* have contributed much during the past year to neurologic progress, and thyroid-therapy has been much extended in its usefulness in neurology, but my twenty minutes' limit will not permit me to dwell more at length on this subject.

The after-care of the insane, separate provision for epileptics, sequestration in hospital colonies, the increased attention given to the subject of asexualization for incurable and propagable and criminal neuro-

pathic disorders, mark neurologic progress during the past year and give hope of the staying of that neuropathic plague which, like a silent pestilence, has followed and damaged civilization in its march since its emergence from barbarism.

The literature of psychiatry in this country has been enriched also by a book by Dr. Kellogg on, "Mental Diseases," Dr. Chapin's "Compendium of Insanity," John C. Shaw's "Compendium of the Essentials of Nervous Diseases and Insanity," and S. V. Clevenger's treatise.

The advancing popular professional interest in psychiatry is further shown by the advent of Burr's "Primer of Psychiatry for Medical Men and Students and Trained Nurses," and the frequent contributions to the psychiatric aspects of the practice of medicine and surgery from sources of clinical experience where until lately these subjects were persistently ignored.

Physiologic and neurologic medicine during the past year has elicited unusual interest in the general medical societies of the country. Chas. E. Beavor, H. K. Lewis, Mills and Dana, of this country, have since last we met, brought out new books on the diseases of the nervous system.

The normal histology and pathology of the neuroglia (so-called) in relation especially to mental diseases has been much elucidated during the past year by Dr. W. F. Robertson's report from the laboratory of the Scottish asylums in addition to the contributions of other American and European asylums, especially the Italian.

The neuron is a proved unit in physiologic and pathologic processes and Lewellys F. Barker has done more than any other American during the past year to prove it.

Foster and Sherington have embodied the discovery of Raymon Y. Cajal, and the later amplifications of this new light on the nerve-centers, in a new edition of Foster's text-book of physiology. Dercum has offered some captivating conceptions thereon which do not yet appear as misconceptions, and Van Geison continues his researches to the glory of American neurology.

I think it was Weidersheim who, in 1890, saw or thought he saw movement under the lens in an esophageal ganglion of a living animal. The mobility of the neuron was suggested by Rabe-Ruckard and Lapine and Duval.

Pierce Bailey's book, just from the press of D. Appleton & Co., on accident and injury in their relation to the nervous system, is the beginning of that surgical *rapprochement* between surgery and neurology which needs only to be supplemented by the forthcoming book from the neurologic side on the relationship of the nervous system to accidents and injuries, especially in its pathologic states, to make the union complete.

Neurology in its neuro-physiologic and neuropathologic aspect is destined to again unite all the specialties to that general medicine from which they have been prone to become too much dis severed. We have progressed already to the point that binds neurology more or less closely to all clinico-medical and clinico-surgical problems. The labors of neurology in the medical advance of the nineteenth century have not been in vain.

¹ Tekutiew, in *Neurologisches Centralblatt*, February, 1898.

ORIGINAL ARTICLES.

HEREDITARY SYPHILIS.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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This topic is one of great practical interest. Fournier has wisely remarked that "nothing is so dangerous to its surroundings as a syphilitic infant,"¹ and it can not be without interest and value to discuss a subject so vitally connected with the welfare of many of those whom we are called upon to treat. The subject of hereditary syphilis is such a vast one that it is difficult to determine just what points to present; and each aspect is capable of development far beyond the proper limits of these introductory remarks.

First, it may be said that our consideration will be confined to *hereditary* syphilis, as distinguished from the broader subject of *infantile* syphilis; for the latter properly includes that acquired after birth in innumerable ways, such as in nursing, feeding, vaccination, circumcision, and many others, and even a primary sore acquired while passing through the mother's parts.

It may be here remarked that Fournier² has made the distinction between syphilis received with conception—that is, when one or both parents were diseased before procreation—and syphilis acquired by the fetus during intra-uterine life, from a subsequent infection of the mother. To the former alone he would apply the term "hereditary" syphilis. He claims that clinically there is a difference to be observed between the ante-conceptional syphilis and that acquired during intra-uterine life; the former is much more fatal to the fetus. In our study we shall not make this discrimination, but for practical purposes consider hereditary as synonymous with congenital syphilis.

Confining our attention then, to hereditary syphilis, or that existing at birth, there are many very interesting points which meet us at the threshold of our study and are not without practical bearing; some of these are still "moot points," and can not be absolutely determined; some lead us so far away from the center point—the syphilitic infant—that they need not be included. We will consider a few of those most vitally related to the subject.

The first question that arises is: How and when does transmission of the disease take place? When the mother is profoundly syphilitic in the early contagious period of the disease, it is not difficult to understand that her offspring should partake of the same. But what are the limitations of time or condition as to the date of the mother's infection? This is a hard question to answer absolutely. Many cases are on record when the mother has acquired the disease one, two, three, five, seven and even eight months after conception, with the result of either abortion or a syphilitic child; I am not aware of any reported cases where infection in the ninth month resulted in a diseased child, and generally it will escape an eighth month infection. Naturally, syphilis acquired before conception will be more likely to cause early abortion; that received later results in a diseased child.

The more difficult question as the direct effect of only paternal transmission of syphilis can not be so easily and certainly dismissed. Many have doubted if the disease could be given by the father alone, without the intermediate infection of the mother, for certain reported experiments have seemed to indicate that the syphilitic virus is not communicated by means of the normal secretions—milk, saliva and semen. On the other hand, clinical evidence is accumulating that many children with syphilitic fathers are born with the disease, while the mothers are free from it—or appear to be free from it, on careful and prolonged medical observation. Some writers have attempted to explain away these cases by the well-known irregularities of syphilis, whereby, especially in women, its course may be peculiar, with prolonged absence of active symptoms. But still other clinical facts are being presented which go far to support the paternal transmission of the disease. Such are the occasional exceptions to Colles' law, in which the mother has been infected by her own child, and also instances of her acquiring a chancre otherwise (after having given birth to the syphilitic baby); both of these show that she has not the disease at the time, and so the infant's infection must have come from the father. Instances are also on record where a woman has borne syphilitic children to syphilitic men, and healthy children to healthy men. The paternal transmission of syphilis must, therefore, be accepted as a fact.

Syphilis is a powerful poison, producing various degrees of vital injury, even to death. It is not necessary to discuss here the nature of the virus, about which very little is positively known; most observers agree that it must be due to a toxin dependent on a micro-organism, which, however, has not as yet been isolated with certainty. The first effect of a full dose of the poison is inhibitive to the powers of procreation, and sterility is the fortunate result. With a slightly less intensity of the virus a non-viability of the product of conception results, and the fetus is thrown off early, even before the third month. With diminished virulence of the poison, or greater vitality of the parents, the life in the uterus will be prolonged, and abortion of a fully-formed and diseased child may take place at any period up to full term; but by far the larger number of miscarriages take place by or before the seventh month. With still less of the poison or greater vital resistance, the child may be born at full term, with or without external manifestations of the disease.

Even if brought into the world alive, the product of syphilitic conception has a relatively weak hold on life. This is instanced in the well-known statistics of the Moscow Hospital, where of 2000 syphilitic children born in eleven years, over 70 per cent. died. Fournier makes the mortality 28 per cent. from exclusive paternal heredity, 60 per cent. from maternal heredity, and 68.5 per cent. from a mixed heredity. Some figures are even more appalling. In Sigmund's wards in Vienna, out of 61 children born syphilitic, 59 died, 13% of them being still-births; of 47 living children only 4 survived more than three months. These figures, however, relate to hospital cases, and were taken some years ago, and it is believed that, with better knowledge of the disease and prophylactic treatment, a very much better showing could now be made; the results are also much better in private practice. But the facts stated serve to show the terrible virulence of the poi-

¹ Fournier: Syphilis et Mariage, p. 211. Paris, 1880.

² Fournier: L'Herédité Syphilitique, Paris, 1891.

son when operating under adverse circumstances, or unchecked, and forcibly point to the necessity of the most extreme care in many directions in connection with syphilis and married life. As such may be enumerated: complete treatment before procreation is attempted; very thorough treatment up to the very hour of confinement, where syphilis exists; the very early recognition and vigorous treatment of the disease in the child; and, moreover, a very guarded prognosis in every direction, whenever there is any syphilitic element in connection with the case.

When the syphilitic child is born alive it may appear profoundly affected by the disease or may have almost or quite the appearance of a healthy child; when born diseased it scarcely survives even many days, death resulting from cachexia and gastro-intestinal trouble, largely dependent on visceral lesions. In the child dying thus early from inherited syphilis very great changes are found in the internal organs, which we have hardly time to mention here. The liver is enlarged and hard, due to fibro-plastic matter, whereby the capillaries are often obliterated, with compression of the cells of the acini and consequent cessation of the secretion of bile. Or there may be other alterations which need not detain us here. The spleen is found to be enormously enlarged, more than double in size, and hard, also with syphilitic endarteritis. The lungs are affected by much the same process, that is, with new formation of connective tissue surrounding the bronchioles and also the capillaries, interfering with circulation and expiration. By this means nodules form in the plugged and distended alveoli, which break down, forming fatty or caseous masses that may involve much of the lung. Almost all of the internal organs, and even the bones, have been found to be affected by more or less similar processes, so that the child born dead with syphilis, or dying soon after, is literally infected throughout with the poison, of which the skin symptoms, which may or may not be prominent, are only a single feature, and that not the most important, except for diagnostic purposes.

If now, the poison is not in excess, or if the vitality is very great, the infant may be born in an apparently healthy condition, and often there may seem to be reason for hope that it will escape the dreaded disease. The period at which syphilitic symptoms manifest themselves varies more or less in different cases, from a few hours or days to several months, the exact distal limit being as yet a "moot question." Most writers believe that one year is the outside possible limit at which the first symptoms may appear, while good observers also claim that it has only developed several years after birth. It is more than likely that in these cases there were earlier manifestations which were overlooked, even as is observed in acquired syphilis.

In the vast majority of instances the disease asserts itself soon after birth. Thus of 249 cases collected by Roger (*Union Méd.*, 1865) in 217 syphilis appeared before the end of the third month, and in only 32 did it appear later. In another series of 105 cases, 10 were attacked by the eighth day, 14 more by the fifteenth day, and 21 more by the thirtieth day, a total of 45 within the first month. Other analyses of cases show about the same result, so that in a large proportion of the cases the disease asserts itself between the third and sixth week after birth—in over three-quarters of the cases within the first three months of life. Beyond six months the proportion is exceedingly small, and

yet it is never safe to give an absolutely favorable prognosis as to escape of the child even until after one year old. When the child is born apparently healthy, there is absolutely no means by which it can be determined whether it will or will not exhibit the disease later, and judgment must be suspended, but the case most carefully watched. Sometimes the skin lesions will be the first evidence of the disease, but more commonly symptoms referring to the nutrition or respiration will be the first to show themselves. The child is found to fail in appetite and strength, not to gain in weight, to be restless at night, and to be peevish and irritable. Soon the child's cry is noticed to be harsh and breathing difficult, and the well-known "snuffles" are noticed, with discharge from the nose; the nostrils become obstructed and it is hard for the child to breathe while nursing. The mouth soon becomes sore, the digestion begins to suffer and the child is really sick. With all this the body loses in weight, the skin becomes sallow and wrinkled, the features are drawn, and there is what is known as the "old man" expression. By this time there is usually more or less of an eruption, generally appearing first about the anus or nates, or about the mouth, and also on the palms and soles, which may become very general, and the syphilis is in its full bloom.

It must be stated, however, that the picture here detailed represents the fullest development of the disease, found in aggravated cases, in poor surroundings and unchecked by treatment, and certain points may be wanting in many cases. Under the best circumstances and with intelligent and proper care, all the symptoms may be very much modified, and the syphilitic child saved much of the injury which the poison is capable of inflicting, even as acquired syphilis in the child or adult may exhibit vastly different phases and degrees of danger.

The skin symptoms observed in hereditary syphilis are essentially similar to those seen in the acquired disease, and need not detain us long. Owing, however, to the delicate structure of the infant skin and its high vascularization, they exhibit some peculiarities. The erythematous eruption, or so-called syphilitic roseola, is that most commonly met with, in the form of oval or round pinkish macules, somewhat resembling measles, which may run together, forming reddened areas of considerable size; when they have lasted a while they more or less darken, giving rise to the so-called "coppery hue," but practically this feature is of much less significance than is popularly supposed. About the mouth this form of eruption sometimes lingers as brownish, scaly patches, and the palms and soles may desquamate.

This early erythematous stage may be rather indefinite and brief, and if the disease is unchecked it may pass into or be followed by another eruption of more solid form; this exhibits soft flat papules, large and small, of a dull red color tending to become coppery, and at first smooth on the surface; later there is more or less tendency to scaling, especially on the palms and soles. There is generally no special arrangement of these papules, although at a later period they may form in more or less circular or crescentic patches. Associated with this form of eruption there occur in parts which are moist what are known as condylomata lata or mucous papules. These are seen most characteristically about the anal and genital region, also about the mouth, and even between the fingers.

Owing to moisture and heat, the papules enlarge and become prominent, the surface softens, and may give off a glairy secretion which is exceedingly contagious. It is from this that many of the cases of innocent infection arise. When these papules occur in quantity about the corners of the mouth they give rise to a destruction of tissue which on healing leaves linear, radiating scars which often prove afterward to be a very valuable diagnostic sign. Within the mouth these mucous patches give off a free secretion which is the source of the greatest danger to those associated with the child.

Vesicular and pustular syphilides are comparatively rare in hereditary syphilis, but bullous eruptions are not very uncommon in severe cases. Bullæ are far more apt to appear on the hands and feet, but may be generalized, and may occur very early or at quite a late date in the disease. They always indicate a serious vital impairment, and when present at birth or developing very early, the case almost always ends fatally. Tubercular lesions are rare in the early history of hereditary syphilis, though they have been observed even in the sixth month. Generally they, together with gummatous lesions, belong to a much later cropping-out of the disease—even many years after birth. This brings us to consider briefly some of the late phenomena of hereditary syphilis.

Remembering what has been stated in regard to the very thorough and complete saturation of the system with the poison *in utero*, as evidenced by the many changes found in all the organs, it is not surprising that the hereditarily syphilitic child, if it escapes the lethal perils of early life, should exhibit changes in its various structures due to the action of the poison, and such is unquestionably the case. It is doubtful if one who has suffered much from the early symptoms of the disease, as indicating a severe infection, is ever so completely cured that there are not somewhere effects of the poison in the system. As the papular lesions about the mouth have left scars which remain for life, so infiltrations and alterations in other structures, when they disappear under treatment or spontaneously, leave marks or alterations of structure other than occur in the child whose development has been normal and not interfered with by such a malign poison. Prominent among these signs of past syphilis stand the changes in the second teeth, to which the name of Mr. Hutchinson of London has been so indissolubly attached. This change in the teeth does not always occur, but when found is certainly a valuable diagnostic aid. It is to be remembered that really only the upper central incisors present truly pathognomonic signs. When characteristically altered, more or less pegged, thickened, and with the curved, horizontal erosion at the end, they are not to be mistaken.

Associated with this change in the teeth there is a tendency to disease in the cornea which Hutchinson has also emphasized as peculiar to hereditary syphilis. This, usually occurring between the ages of three and twenty, results from a more or less diffuse keratitis, which gives rise to a peculiar hazy, ground-glass appearance of the cornea. Happily this condition seems to be getting more rare, owing to good treatment, so that personally I have not met with it for some time, although some years ago I saw it frequently. Ear disease, leading to deafness, also occurs from hereditary syphilis.

Changes in the bones are among the most common

sequelæ of hereditary syphilis, and the flattened forehead with prominence at the sides will often be seen in these cases, in connection with the alterations in the teeth and eyes referred to. The long bones are also very frequently attacked, both in their extremities and shaft. The former, due to an osteochondritis, belongs to the earlier phases of the disease, and by interfering with the nutrition of the bone may produce serious lesions of its structure. Periostitis is commonly of later date, and may cause great deformity and pain; nodes from this cause may often be seen even many years after birth. Dactylitis syphilitica may occur in very young children, or even in early youth; in this there is a general thickening and enlargement of one or more of the phalanges, commonly the proximal, which runs a very slow course, and if injured may break down and ulcerate.

Cutaneous lesions may occur as late manifestations of hereditary syphilis and are mainly tubercular or gummatous. I have seen in a girl 23 years old, exhibiting characteristically pegged and notched teeth and with a well-marked history of hereditary syphilis, ulcerative gummatous disease on the arm, which had always been regarded as lupus, but which yielded rapidly and perfectly to proper specific treatment. Time and space do not permit us to go further into the late manifestations of the disease, such as affections of the nervous system, sexual system, heart, thymus, etc., but it is believed that as research continues it will be found that every portion of the economy is more or less impressed and affected by the profound alterations in nutrition which take place during the active period of the operation of the poison in hereditary syphilis.

We come now to the point of the further transmission of this disease to a succeeding generation. This is a subject which has been hotly discussed, and many have denied its possibility. It would be impossible here to present any of the arguments, but it may be stated that instances are multiplying by reliable observers where such a transmission to a third generation has taken place, and the writer believes that the weight of evidence is now such that it must be accepted as a fact, although such an occurrence is exceedingly rare.

Having now traced the progress of syphilis and its effects from the act of generation to the third generation of transmission, let us very briefly return to the child acutely affected with hereditary syphilis, and consider for a moment its relations to the world.

The already quoted saying of Fournier that "nothing is so dangerous to its surroundings as a syphilitic child," should always be borne in mind in connection with every case of hereditary syphilis. Hundreds and thousands of cases of *innocent syphilis* have had their origin in innocent babes, and too great care can hardly be exercised. Before the danger was fully recognized large epidemics of syphilis have swept through country towns in Europe, while in Russia many villages are said to be almost completely syphilitized, entirely by "family syphilis." I have myself seen most lamentable instances, and not very recently had a grandmother with chancre within the nostril, followed by most severe syphilis with prolonged brain symptoms, who had received the infection from a syphilitic grandchild, which died of the disease.

It is questionable if a child of parents with recent syphilis should ever be wet-nursed. Even if the child exhibit no syphilitic phenomena, there is no certainty

that at some time mucous patches may not develop in the mouth which may infect the nurse. Danger could be avoided only by securing a nurse who was probably immunized by having had syphilis. There would be no danger of adding to the child's syphilis, for it has been pretty conclusively shown that syphilis can not be conveyed by the milk alone.

But even in the artificial feeding and ordinary family care of a syphilitic infant there is danger to those who have not had the disease. Multitudes of cases are on record where the disease has been thus communicated to those around by means of the feeding bottle, from tasting it. I have seen one case where this was believed to be the mode of infection. Time and space forbid our entering further this most interesting field of thought; sufficient to say, the most scrupulous care should be exercised in connection with the hereditarily syphilitic child, that in no way secretions from its lesions should affect others by mediate or immediate contact.

The subject of treatment in connection with hereditary syphilis has several divisions. First we may speak of prophylactic treatment.

The prophylactic treatment relates first, to guarding the prospective child against the dangers threatening from syphilis existing in one or both parents; and, second, to guarding others from the perils incident to the very contagious secretions given forth by the syphilitic child.

Time and space forbid discussion here of the very broad subject of marital syphilis, but it is one which should be very seriously considered by every medical man. The best observers all agree that procreation should not be allowed until after at least two years of active treatment for recent syphilis, and until at least six months have elapsed without treatment and without any manifestation of the disease. When the mother already has active syphilis and has become pregnant, her treatment should be pushed in the most vigorous manner possible. My preference in early syphilis, is for the treatment recommended by Hutchinson, of one-grain tablets of mercury and chalk, given every two hours, to the utmost tolerance of the drug. Eight to ten tablets may be taken daily, and in some cases it is often necessary to double some of the doses, and if necessary to administer opium to prevent purgation. Salivation should not be caused, and to prevent this great care to the mouth may be necessary, with the constant use of chlorate of potash or antiseptic solutions. If there should be intolerance of the stomach, mercurial inunctions should be used, or hypodermic injections of mercury. In somewhat later syphilis, the iodid of potash may also be needed, especially if placental disease is strongly suspected. This very active treatment should be pushed even up to the day of confinement, and as soon thereafter as possible.

Coming now to the prophylactic treatment of the offspring, it may be stated that the hereditarily syphilitic child should be regarded from the first as a dangerous element, even if in apparent good health, for it is never certain how soon syphilitic manifestations may exhibit themselves. It is to be remembered that the coryza may, and usually does, occur before the appearance of skin symptoms, and this secretion from the nasal passages and mouth is intensely virulent, and under proper conditions can give rise to a chancre when least expected. If at all possible, the syphilitic child should be nursed, and by its own mother, as

this affords it the best hope of life and health, as compared with artificial feeding. It should, of course, never be given to a healthy wet-nurse, for, however healthy at the time, mucous lesions may develop at a later period in the mouth, with the almost certain result of a chancre of the breast in the nurse. History is full of records of thousands of instances where this has occurred, and many where veritable epidemics occurred, passing through many individuals by direct or indirect transmission.

If the baby is fed artificially, great care must be exercised that the nursing-bottle and articles connected with feeding, are kept scrupulously clean and away from the possible infection of others. The instances and methods by which brephotrophic syphilis has been communicated would greatly surprise one who has not become familiar with the subject. These can not even be enumerated here, but the list³ amounts to between forty and fifty different categories, relating to almost every possible article of use or means of communication between the syphilitic child and those surrounding it.

The direct constitutional treatment of the hereditarily syphilitic child can be dismissed with few words. When there is strong reason to suspect that the child will develop the disease, a more or less mild treatment should be begun at birth, even before active symptoms manifest themselves, and be continued with judgment until the time of the feared explosion of the disease has passed. With any development of active symptoms the anti-syphilitic treatment should be pushed to all proper bounds.

For the active treatment of the disease no treatment has been devised which is better than inunction, as I believe is universally practiced. The blue ointment, diluted one-half with cold cream, is rubbed over the abdomen and loins, and smeared on a flannel band and worn constantly, fresh ointment being applied once or twice daily, according to the necessities of the case. Grey powder, given every few hours, is also a desirable plan in certain cases, and if there is evidence of intestinal disturbance, the bichlorid of mercury, half a grain to a grain to the pint of water, of which a teaspoonful may be given every few hours. Iodid of potassium is seldom wanted in the early stages.

The greatest care must also be given to the nutrition and general health, and every measure and remedy adopted which will heighten the vitality of the child. Iron is often called for in connection with the mercury, even in very young subjects. Later in the disease, and for the various sequelæ, the treatment is that indicated for acquired syphilis, and need not be detailed here. I may, however, mention that the syrup of the iodid of iron, even pushed in large doses, often yields brilliant results in rebellious cases.

The subject which we have tried to briefly cover is a very large one, and I feel that it has been but imperfectly presented. But if I shall have succeeded in calling attention to any features which may have been forgotten by some, and if a good discussion of the subject shall result, I will be more than satisfied.

4 East Thirty-Seventh Street.

³ L. Duncan Bulkley: Syphilis in the Innocent, p. 19. New York, 1894.

Diagnosis of Siaus Thrombosis.—Voss calls attention to the fact that absence of vein sounds on the diseased side is an aid to the diagnosis, only noted in children to date.—*St. P. Med. Woch.*, October 8.

THE MEDICINAL TREATMENT OF CON- GENITAL INFANTILE SYPHILIS.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CHARLES S. SHAW, M.D.

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Syphilis is one of that small but happily increasing number of diseases in which special medication can be confidently expected to be followed by certain benefit; its prompt and intelligent treatment, therefore, is of more positive value than is the case in diseases in which the therapy is indefinite, and where remedial agents, especially drugs, are of uncertain action. For clinical purposes the classic division of the disease into three stages is most convenient, though it seems to me the belief of Hutchinson, that syphilis is a true exanthem, running a definite and limited course, is the proper conception of the disease. Under this hypothesis the interval between the initial sore and the appearance of the constitutional symptoms is the period of incubation, the secondary stage is the time of active manifestation of the disease, and the third or tertiary stage is in truth the appearance of sequelæ, and is no more syphilis than nephritis is scarlet fever, or cardiac insufficiency is acute rheumatism. There are many clinical facts corroborating this opinion, which though interesting, are foreign to my subject, and need not be mentioned.

In the treatment of syphilis, the secondary stage, the period of activity of the disease, is the time in which the best results are to be expected. Treatment during the primary stage, even early and complete excision of the initial lesion, has proven unsatisfactory, and, though gratifying results often follow proper medication in the tertiary stage, disappointment is by no means unusual. In the infant we have, as a rule, the secondary stage to treat; the initial lesion never; the tertiary stage rarely, because the child, owing to its slight resisting powers, usually dies of malnutrition before that stage is reached. It is this lack of resistance in the child that makes the treatment of infantile syphilis less uniformly successful than it is in the adult.

In making a prognosis in any case of infantile syphilis my experience has led me to consider as the most important factor, aside from the question of visceral lesions, the nutrition of the child, or rather its capacity to assimilate nourishment. We have all seen children with extensive mucous, cutaneous, and even osseous lesions, who, nursing well and digesting well, will steadily improve, while others, in whom the disease to all appearance is much less virulent, but in whom nutrition is defective, will die. From these observed facts the deduction as to the best method of treatment is obvious—that method which will least disturb nutrition.

The value of mercury in adult syphilis does not admit of question; but in infantile syphilis it is unique, it is the only drug. The iodids, arsenic and iron, so valuable in the treatment of the sequelæ in the adult, have little place with infants, because this stage is seldom reached. While it is true the child may need a tonic, it is a general need and not a specific one. Mercury in some form is a *sine qua non*. It is a question, therefore, of method of administration and choice of preparation.

Four ways of giving mercury are in vogue: by the

mouth, by hypodermic injection, by vaporization, and by cutaneous inunction. The advantages of giving by the mouth are convenience, exactness of dose and control of effects, the disadvantages are slowness of action and the likelihood of digestive disturbances. The advantages of hypodermic injection are rapidity of action, certainty of action and exactness of dose; the disadvantages are pain, which is often severe, and the possibility of abscess. The advantages of the vapor bath are rapidity and certainty of action; the disadvantages are inconvenience, the need of special appliances, and inability to always control its action, severe mercurial ptyalism occasionally occurring. The advantages of inunction are certainty and rapidity of action and control of effect; the disadvantages are, uncleanliness, inconvenience and the possibility of cutaneous irritation.

The first and usual method—by the mouth—is contraindicated in infants by the digestive disturbances that so frequently follow the internal use of mercury in them. In adults this is not usually a serious matter, but in view of the supreme importance of preserving and increasing the nutrition of the syphilitic babe, and the danger of digestive derangements, this disadvantage amounts in many cases to an interdiction. The hypodermic method in infants is objectionable because of the pain and of the possible abscess that attend its use; if by any other method we can secure its virtues, certainty of action and control, we may dismiss it as inapplicable. The troublesomeness of the vapor bath is greater in infants than it is in adults, and the danger of mercurial poisoning is certainly not less; it may therefore be considered as of doubtful utility. There remains the fourth method—that of cutaneous inunction. The advantages—certainty and rapidity of action and control—are at least as evident in infants as in older patients, and the disadvantages of uncleanliness and inconvenience disappear altogether in infancy. The question of cleanliness is an individual one, and as the infant has no sense of personal cleanliness, the objection, so forcible with the adult, does not obtain. The question of convenience is also an individual one; the method is certainly troublesome to the adult, but it is not so to the infant nor its attendants. The liability to cutaneous irritation can be completely removed by a little care. In my opinion the evidence is clearly in favor of inunction.

The eligible preparations are the unguentum hydrargyrum of the pharmacopeia and the official 10 per cent. oleate of mercury. These should be diluted with an equal quantity of lanolin, lard or vaselin and they will rarely irritate the skin. The method of administration is very simple; spread about one dram of the ointment on a small piece of cotton or flannel cloth and lay it on the child's abdomen, covering it with the binder; or, more simple still, spread it on that edge of the binder that is first applied to the child's body; every second day bathe the child and reapply the ointment. The warmth of the child's body, the gentle friction produced by its movements, and the activity of its cutaneous circulation all contribute to the speedy absorption of the medicament. Under certain urgent conditions, when it is necessary to quickly and powerfully impress the system, it may be advisable to have temporary recourse to one of the other methods to aid the inunction, but the systematic, persistent treatment may be reduced to this aphorism: There are two ways of treating infantile

sypphilis, a right way and a wrong way; the right way is by mercurial inunction, the wrong way is any other way.

THE DEBILITY OF ADOLESCENCE.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY LOUIS FAUGÈRES BISHOP, M.D.
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It has always been a puzzle to me to know just when the specialist on diseases of children gave up his case to the specialist on older people, and just when the specialist on older people gave up his patients to the specialist on old age. This suggests the existence of transition periods. There might well be study devoted to the period during which the child is passing from childhood to maturity. Of course, the child grows steadily from birth to manhood, but there is a period during the latter part of this time to which the name of adolescence is given, a period during which the youth is subject to particular departures from health.

During this period, when the active forces of early development have begun to wane and the solidification of maturity has not yet taken place, the organs are especially susceptible to damage from whatever causes may be active. Thus in early youth the poison of tobacco is badly borne, and functional derangement of the heart is a frequent result from doses of nicotine that at maturity have no such effect. In the same way the acute infectious diseases have a greater liability to involve the kidneys. The tendency to defective action of the blood-forming organs is the cause of the extreme frequency of simple anemia between the ages of 16 and 25. During this period also acute gastric attacks are frequent. Temporary nervous affections, such as hysteria and melancholia are met with in individuals, who during the rest of their life are free from these disorders. Headaches of a persistent and troublesome type, not traceable to any other cause than debility, constitute a troublesome condition. The importance of special attention to these symptoms at this period of life is that their true bearing shall be understood so that a just prognosis may lead to patient management and the final development of the youth into a sound adult. It frequently happens that the debility of adolescence is most marked about the time the boy or the girl would pass from school to college. In some instances this breakdown of the vital forces is so marked that it is advisable to allow an interval in the educational course of, perhaps, a year, devoted to travel or an out-door occupation. Too frequently the boy goes to college and his health falls a victim to irregular hours and mild dissipations that his stronger classmates are easily able to bear. This condition, to which we have given a name, is more difficult to manage on account of its indefiniteness. If we can convict a patient of nephritis, or gastritis, or incipient tuberculosis, it is easy to obtain a hearing for our counsel, but to call it debility is not always enough for the layman.

Then there are certain cases, the care of which is incumbent upon physicians, that are not so easy to define as are particular diseases. One of these conditions is a certain laxness of fiber of the body as a whole, but which manifests itself more especially in certain directions. It is specially common in young persons who have grown rapidly in height and

in bulk but whose organs have apparently not increased in power in a ratio proportionate to the size of the body. These young persons are prone to suffer from anemia, cardiac insufficiency, gastric disturbances and a mild neurasthenia. On account of their size and muscle they are tempted to take part in athletic contests, much to the injury of the poorly developed heart. They acquire by exercise enormous appetites, that when gratified overtax the powers of the stomach and cause dyspepsia. The bad heart action, the disturbed digestion, create a vicious combination when combined with anemia, and may give rise to disturbance of other organs. There may be albuminuria and even edema. This may or may not indicate a real nephritis. So we have the picture of a man, or rather a boy the size of a man, who has outspread in his physical growth the capacity of his organs, and suffers from a deficiency of the blood-making, the blood-circulating, and the food-digesting organs with an accompanying neurasthenia. The question of the management of these cases is a difficult one. Should such a constitution be hardened and developed through work, or should the organs simply be allowed a chance to increase in power by rest? Should the mind be taken out of itself by the forced application of school and college, or should it be diverted by travel or amusement? Then the question of the administration of drugs arises. It would seem that no specific rules are possible. Each case must be managed on its merits. The important beginning is to recognize the condition, and not to write the boy down as a dyspeptic, a case of cardiac disease proper, a case of nephritis, or even a neurasthenic, though any or all of these conditions may exist in their incipency and be possible under bad management. In the average case it is better not to take radical measures, such as removal from college, but rather to protect the weak organs by preventing over-exertion in athletic contests, over-study and depressing surroundings. The tendency to hypochondriasis is great, so that it is important that the boy should be treated as little as possible as an invalid.

The albuminuria of adolescence has recently attracted my attention, especially because of its observation in a particularly interesting case. This has led to the consideration of this organic debility, observed quite frequently in boys and girls just previous to the period when they reach maturity. Thus, often, a boy who during his entire early life has been well nourished and strong, during the period of rapid growth, becomes anemic and emaciated. With this, there is an inability of the digestive organs to properly carry on their work. There is apt to be trouble with the eyes, headache, feebleness of the circulation, morbid nervous manifestations, and a general condition of debility. We can not say these cases are of dyspepsia, neurasthenia or anemia, because they are all three, and yet they are none of these. It would seem that rapid growth, under unfavorable conditions, had for the time being exhausted the organs and produced debility. When this debility has been removed the suspicions of organic disease are likewise dissipated. Like acne, showing the inability of the sebaceous follicles to properly empty themselves, it will last until the tone of the whole system recovers from the strain of adolescence.

In the management of adolescence are to be considered the counter-claims of a system of hardening by exposure and hardship and a system of coddling

to conserve bodily forces. It is indeed an important question. The Spartan régime that develops only what can be developed under a rigorous education, and destroys what can not be perfectly developed, is out of tune with modern civilization.

On the other hand, there can be no doubt of the quality of the fiber that is developed in youth by a severe system of training. In educational institutions classification is the safeguard. The pupils should be distributed in small groups so that the ambition of each should be stimulated by a proper rivalry, but not annihilated by oppression. Here the physician should insist that any who suffer from the debility of adolescence should be protected from the injury of an injudicious system of education. Let the mental training, if possible, be deferred for a time while the child or youth is allowed to relapse more into a state of nature. Happy is it for such a patient if country life and country pursuits are available. The administration of drugs will consist only of the quite persistent use of cod liver oil and iron and the occasional stimulation of the functions of the alimentary canal. The conditions of life are to be readjusted so that a normal and healthy manhood may finally be reached by the youth whose adolescence has been characterized by this peculiar lack of vitality.

During this period of life young persons often suffer from what almost amounts to cruelty on the part of their superiors, who do not appreciate that there is a real underlying debility, not only of actual physical endurance, but of nervous power. I have no doubt that many of the robust older people, who tell us that when they were young they were threatened with consumption, and were sent away for a year, were in the hands of some wise old practitioner, who appreciating their condition, used a little justifiable exaggeration to obtain obedience to his advice.

A great danger is that a boy of this character may aggravate his condition by the use of tobacco, to which he would be unusually susceptible on account of the already feeble heart action. Can such a boy lead a pleasant outdoor existence with moderate interesting occupation, removed from the worry and burden of school life, in course of a few years the heart, stomach, kidneys and nerves will acquire development and efficiency equal to the bulk and demands of the system at large, so that the patient may in every respect be a normal individual. These conditions are worth careful consideration because the danger of supposing wrongly that we have to deal with chronic organic disease is great. On the other hand, we must not confound the symptoms of this condition with very similar manifestations due to, for instance, a real nephritis following the exanthemata.

So it is important to recognize the general physical conditions incident to the several periods of life. Each has its special features. It is convenient and advantageous to separate medical work into divisions for study. It is the privilege of the general practitioner to meet now with one group of students and now with another. All workers in diseases of children must of necessity be general practitioners in the broadest sense, so that in this section a study of the transition period will not be out of place.

30 West Thirty-Sixth Street.

DISCUSSION.

Dr. SLAGLE of Minneapolis—We all see cases of those growing too fast and those frequently who are pushed too fast, those whose muscular system has grown too fast for the inter-

nal organs. The essayist confined it, I noticed, entirely to the masculine sex but it is perhaps as applicable to girls in many instances. Chlorosis is very frequent in this class of patients in our part of the country. The caution the essayist gives about pushing those children or branding them as indolent is very good.

Dr. R. B. GILBERT, Louisville—The patent nostrums we see advertised, which in many instances are composed of alcohol or opium in disguise, are frequently used. These cases are often treated too lightly by the family physician. The symptoms are too indefinite, so that the hasty answers he gets from the doctors he applies to, are unsatisfactory. Then it is he falls a victim to the patent medicines, to his great injury. It is a subject we should consider carefully and we should pay more attention to that class of adolescents, take them out of school, take them off cigarettes and tobacco, of course, and send them to the country. I remember a young man who began the study of medicine, against my advice, at 18 years of age. After a year he got into such a condition that he abandoned the practice of medicine and went to Colorado and hired himself out as a herder of sheep. He came back to our country a healthy and ruddy individual. Possibly the celebrated climate here had something to do with it, but I think it was more the rough and tumble life he led and the rough food he had to eat. At home he had been fed on all the delicacies the markets could afford. Give the boy encouragement, let him know he has the elements of health in him and put him out where he can get a move on him. It is not often the case that they get into the army, but in the volunteer service I remember several such individuals. One, a cousin of mine, was just that sort of an individual, and camp life, his mother thought, would be the death of him in a month. She sought his release but the officers would not relieve him. After six months he was rosy and fat on hard tack and bacon.

Dr. McCONNEL—In my experience in all these cases there is a cause, and in my experience the cause has been in the stomach. These young men have not a so-called dyspepsia, but they have mal- or non-assimilation. While they have no appetite, they are fed on all the delicacies of the season, their appetite is pampered and as a consequence they eat more than they can digest. If their appetite is carefully cared for and if they are impressed that stuffing is not nourishing, they soon will get an appetite and assimilate the food. When a boy gets in this condition the first thing the physician tells the parents is to take the child out of school. Nothing flatters the parents more than to tell them that their children are studying too hard. Oh, they love to hear that! Nine times out of ten they are not studying at all. I tell you, gentlemen, it is not over-study: it is under-play. It is wrong and a great injury to these cases to take them out of school.

Dr. H. W. SCAIFE, Chicago—The last speaker but one gave us an instance of a boy who was over-growing and was sent out west and followed the occupation of a cowboy. That coincided with what I said, that they should have pure air and pure eating and should change their diet to a different line. He mentioned an instance where a youth grows too fast, the muscles outweighing the conditions of the brain. We know there are some people who keep on growing until the time that they die. Some plants we know will grow forever. The oak tree will grow a thousand years. The reason is that they have that in them which is trying to balance the formative power or the building up of the organism, and life is in no hurry to leave them. I believe that what has been said in the way of remarks on the second paper would apply very well to mine.

Dr. EDWIN ROSENTHAL, Philadelphia—The question of adolescence has been brought forcibly to my mind in the cases of young ladies suffering from chlorosis or rheumatism or chorea, and the only way we can cure them is to take them away entirely from their usual work and place them among the sav-

ages, and in that way you can build up the nervous system so you can cure them of the nervous diseases. If you take the half-grown boys who have ear-aches and who pay attention to their faces to press out the little comedones and imagine they are ill, it is just as important that they should be treated as if they were affected with typhoid fever. You will find each of these boys has a specific. They have a book in their pocket which tells all about the hundred and one things they have. It is true the stomach is the cause of a great deal of this disease, for if they get a little wind in the colon, away they go into hysteria. The only way you can cure them is to bring them down to nature, send them out to farms or out here or to the army. But with medicines the patients grow up to be invalids, the kinds the books in the drug-stores tell us about.

Dr. LOUIS FAUGÈRES BISHOP, New York City—I think the object of the paper has been fulfilled. I drew attention to this condition. I did not mean to neglect these girls by using "he" but I meant that to cover the whole race.

TETANY IN INFANCY; WITH A REPORT OF SIX CASES.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Very great differences of opinion exist with regard to what constitutes tetany, as well as to the frequency of its occurrence and its etiology and pathology.

It is generally accepted that the most characteristic symptom of tetany is muscular rigidity, this rigidity occurring as intermittent paroxysmal contractures. The duration and intensity of the contractures vary, in some cases being long and remittent, in others fleeting and occurring at long intervals. The extent of the contractures also varies within wide limits, the seat par excellence, however, being in the muscles of the arms, especially of the fore-arms. The positions assumed by the hands and feet during these contractures are very characteristic. The fingers are flexed at the metacarpo-phalangeal joints, while the phalanges are extended. The thumb is strongly adducted in the extended position. The wrist is acutely flexed and the hand turned to the ulnar side. The elbow- and shoulder-joints are not involved in the milder cases. The feet are strongly extended, sometimes in the position of pure equinus, but more often in that of equino-varus. The first phalanges of the toes are strongly flexed, the others extended. The knee- and hip-joints are usually free. Opisthotonos is not very uncommon in the severe cases. Associated with the contractures are other symptoms, some or all of which are present in every case. These are: Increased electric excitability of both nerve and muscle to faradism and galvanism, with changes in the qualitative reaction to galvanism. This is often known as Erb's symptom and is probably the most constant. Increased mechanical excitability of both nerve and muscle. Special examples of this are the occurrence of characteristic contractures as the result of pressure on the large nerve trunks and arteries, "Trousseau's symptom," and spasm of the facial muscles when the skin over the trunk of the facial nerve is irritated or the nerve is struck a sharp blow, "Chvostek's symptom" or the "facialis phenomenon." Laryngospasm. Convulsions. Sensory disturbances, including pain on

motion and during spasms, as well as many others impossible to determine in infants. Vasomotor and trophic disturbances, the most characteristic being edema of the wrists and ankles. Fever, which is inconstant and intermittent. The intelligence is always unimpaired, even during the paroxysmal contractures.

All agree that the presence of the peculiar paroxysmal contractures justifies the diagnosis of tetany. There is great difference of opinion, however, as to whether the presence of one or more of the other symptoms without contractures justifies the diagnosis. It is to this condition that the term "latent tetany" is applied. Even here, however, there is no consensus of opinion, some apparently limiting the term to the condition in which irritation of the muscle or nerve brings on contractures which are otherwise absent, while others consider the presence of even one symptom as pathognomonic and sufficient for the diagnosis. As a rule, those who recognize the existence of latent tetany consider it the same as tetany, differing from the latter only in degree. If these symptoms are to be considered as pathognomonic and sufficient for the diagnosis of tetany, whether the characteristic contractures are present or not, they should be always present where there are contractures and should never occur in other conditions. Trousseau's symptom and the facial phenomenon are sometimes absent, and often only temporarily present when there are typical contractures. Moreover, Trousseau's symptom is often met with in hysteria, while the facial phenomenon is found in many other conditions, as epilepsy, hysteria, phthisis and neurasthenia. Laryngospasm is frequent in tetany, but not constant, and is often seen in children who have no other symptoms of tetany. Convulsions and disturbances of sensation, as well as vasomotor and trophic disturbances, occur in many other diseases. It is evident, therefore, that these three symptoms—laryngospasm, Trousseau's symptom and the facial phenomenon—are not constant in cases which show the typical contractures of tetany, and that they occur in many conditions in which there is no question of tetany. Hence they can not be considered as pathognomonic of tetany, and do not, either singly or in combination, afford sufficient ground for the diagnosis either of tetany or latent tetany. They must be regarded merely as particular instances of increased mechanical or reflex excitability which may be the result of a very great variety of causes and pathologic conditions. The only pathognomonic symptom of tetany, therefore, is spontaneous, intermittent, paroxysmal muscular contracture. The term "tetany" should be applied only to those cases in which this symptom is present, and no cases of increased reflex excitability in which this symptom does not occur should be regarded as examples of the disease. The term "latent tetany," is therefore a misnomer and should be dropped.

ETIOLOGY.

Numerous theories as to the etiology of tetany have been advanced, and have found vigorous defenders and opponents. The question is still unsettled, however, probably partly on account of the differences of opinion as to what constitutes tetany, and partly on account of the inherent difficulties of the subject. The theory of the older authors that it is of rheumatic origin has long been given up. The position that it is merely a manifestation of hysteria must also be regarded as untenable. The theory that it is cerebral in origin was founded on an erroneous conception

of the disease, and is no longer accepted. The theory that it is a variety of acute anterior poliomyelitis can not easily be set aside, however, as certain quite definite lesions have been found in the anterior horns. As the cases of tetany which do not die of some intercurrent disease nearly always recover, these lesions must, as a rule, be transitory. They may very probably be frequently due to the action of toxic substances in the circulation, the result of diseased conditions elsewhere.

The most ardent and extreme advocate of the rachitic theory is undoubtedly Kassowitz. His line of argument is somewhat as follows: Craniotabes is a lesion of rickets. Craniotabes may be represented only by meningeal hyperemia, and hence be incapable of demonstration. Laryngospasm is due to craniotabes. Laryngospasm is a symptom of rickets. Other symptoms of increased neuro-muscular excitability are seen in rickets. They are of the same nature as laryngospasm and hence due to the same cause. Laryngospasm and other nervous manifestations are symptoms of tetany; in fact, they are tetany. Hence tetany is a symptom of rickets.

There are many obvious objections to this reasoning. It is not proven that craniotabes is the cause of laryngospasm, or that meningeal hyperemia produces the same results as craniotabes. Moreover, laryngospasm occurs in tetany when there is no evidence of rickets, in rickets when there are no other evidences of tetany, and alone when there are no evidences of either tetany or rickets.

Although not agreeing with the extreme views of Kassowitz, most of the German and Austrian authorities have accepted the rachitic theory in a more or less modified form. Some of the arguments in favor of this view are, that almost all cases of tetany show evidences of rickets, that they are both more frequent in winter, and that they occur in children of the same age. Some of the arguments against it are, that very many cases of other diseases than tetany show evidences of rickets, that the symptoms of increased neuro-muscular excitability, with the exception of laryngospasm, are rare among rachitica, and that tetany is more likely to occur in mild than in severe cases of rickets. The fact that rickets is common all the year round, although much more so in the winter, while tetany very rarely occurs in the summer, would seem to point to some common cause for both conditions which is active only in the winter. This cause is most probably the indoor life of the winter, with its lack of sunlight and oxygen and its exposure to noxious vapors. These furnish the opportunity for the formation of respiratory toxins which may produce changes in the circulation that lead to malnutrition of various tissues with subsequent symptoms.

Several theories locating the origin of tetany in the gastro-intestinal canal have been advanced. These have received their main support from the French authorities. The dehydration and reflex theories need be mentioned only to be set aside. That of auto-intoxication, however, is worthy of careful consideration. The friends of this theory say that tetany is almost always associated with diarrhea or other digestive disturbances. They say that the reason that all children suffering from indigestion do not have tetany is that some peculiar chemic combination is necessary, or because their nervous system is insusceptible. When tetany occurs in infants who present no symptoms of indigestion, they assume that the nervous

system is easily affected, or that this peculiar chemic combination may be produced without causing other symptoms. They also state that when the digestive disturbances are relieved the tetany ceases. They attribute the frequency of tetany in rachitis to the gastro-enteric disturbances of this disease. The opponents of this theory say that gastro-enteric disorders are very common and tetany very rare; that digestive disturbances are more common in summer and tetany in winter; and that the only basis for the assumption of peculiar susceptibility or special chemic combinations is in the imaginations of the originators.

The most recent, and perhaps the most plausible, theory assumes that there is no single pathologic cause for tetany, but that, like epilepsy, it may arise from many causes. Like epilepsy, too, it must be regarded merely as a nosologic entity, and not as a definite disease. In improper hygienic surroundings, in rickets, in gastro-intestinal disorders, in acute disease, and in various intoxications are present conditions capable of causing the formation of various toxic substances. The action of all these poisonous substances may show itself by a special modification, rather functional than organic, of the central or peripheral nervous system. The various lesions of the nervous system found in tetany are not inconsistent with this conception.

MORBID ANATOMY.

The lesions which have been found in the nervous system in tetany are very variable. Tonnellé, Blondeau, Grisolle, Trousseau and Bouchut have found hyperemia of various portions of the brain and cord and their meninges; Weiss, Bonome, Cervesato and Sarbo various degrees of poliomyelitis of the cervical enlargement; Stasse, Niemayer and Schultze peripheral neuritis; and Loos, Berger and others no lesions. The most characteristic lesions, however, are probably those in the cells of the anterior horns in the cervical enlargement. These vary in degree from hyperemia and swelling to atrophy and sclerosis, the severity of the process probably depending on the duration and intensity of the disease. It is probable that certain lesions in this region are present in all cases, but that in recent ones they are too superficial to be recognized. Whether they are primary here or secondary to an ascending neuritis is at present entirely undetermined. As they have not been found constantly, however, further verification is necessary before they can be accepted as the essential lesions of the disease. Nevertheless, they do correspond more closely to the symptoms of the disease than any other lesions which have been described, and seem at any rate to afford a fairly satisfactory explanation for them.

FREQUENCY.

The frequency of tetany must naturally depend on the definition of the disease which is accepted. If the presence of symptoms of increased neuro-muscular excitability is considered as evidence of latent tetany, and latent tetany is classed as tetany, the disease will be frequently encountered. If, however, only those cases in which the typic paroxysmal contractures are present are regarded as tetany it will be seen much less often. This difference in classification undoubtedly explains to a great extent the much greater frequency of the disease in Germany and Austria than in France and Italy. It does not

entirely account for the discrepancy, however, and there is probably but little doubt that tetany, even in the strict interpretation of the term, is much more common in the first-named countries. It is still less common in this country, being, indeed, something of a rarity. Griffith, in addition to five cases of his own, was able to find but seventy-two cases reported in American literature up to 1894, although he included in his list a number of cases of muscular spasm, which, strictly speaking can not be accepted as cases of tetany. In a careful review of American medical literature from Jan. 1, 1894, to Jan. 1, 1898, I am able to find but thirteen additional cases. They are, in brief, as follows:

1. Lewi: Nine months. Constant, typic spasm in hands. Arms and legs painful. One convulsion. Spasm became remittent, then ceased. Duration, three weeks. Neurotic family history. Rachitic. No craniotabes. No gastro-intestinal disturbances.

2. Lewi: Eight months. Typic, intermittent spasms in hands and feet, lasting hours or days. Hands and feet tender and painful. Increased electric reaction. Duration, six weeks. Recurrent attack two months later with death in convulsion. An older child had had disease. Rachitic. No craniotabes. Gastro-intestinal disturbance always. Constipation during attack.

3. Lewi: Eight months. Typic, continuous spasm in hands and feet. Hands and feet swollen, tender and painful. Increased electric reaction. Duration, two weeks. Rachitic. No craniotabes. Vomiting. Constipation.

4. Lewi: Thirteen months. Remittent spasm in hands and feet, most in hands. Hands and feet swollen, tender and painful. Laryngismus stridulus. Duration, two weeks. An older child had had disease. Markedly rachitic. No craniotabes. Vomiting. Constipation.

5. Crandall: Six months. Began with peculiar attacks of staring. In a month well-marked and typic paroxysms, involving neck and all extremities, lasting one and a half to two hours. Five to eight attacks in twenty-four hours. No laryngismus stridulus. Duration, eight weeks. Moderately rachitic. No craniotabes. Poor breast-feeding. Diarrhea, later constipation. Phimosis. Correction of phimosis had no effect. Complete recovery in eleven days after correction of diet and relief of constipation.

6. Crandall: Eleven months. Twelve to twenty-four attacks of laryngismus stridulus and convulsions in twenty-four hours. Duration, two minutes. Spasms fairly typic. Duration, three weeks. Markedly rachitic. No craniotabes. Breast and general diet. Vomiting. Alternate diarrhea and constipation. Recovery in two days after correction of diet and cathartic.

7. Preston: Three and a half years. Typic spasms in arms, less so in legs, lasting a few minutes; intervals of months or ten to fifteen in twenty-four hours. No pain. Trousseau's symptom present. Began at one year. Duration unknown.

8. Krause: Six months. Typic paroxysms; continuous for two weeks at height of attack. Much pain. Swelling of face and extremities. Trousseau's symptom present. Duration, five weeks. No note as to rickets. Artificial food. Constipation, then diarrhea. Dentition.

9. Krause: Eighteen months. Mild attacks, lasting a few minutes, at intervals of half an hour to two hours. Duration, one week. No note as to rachitis. Vomiting. Diarrhea. Bronchitis.

10. Krause: Thirteen months. Mild attacks, lasting five to ten minutes, several times, daily. Duration, sixteen days. No note as to rachitis. Gastro-intestinal disturbance. Bronchitis.

11. Krause: Nine months. Paroxysms, involving hands and legs. Duration, three weeks. No note as to rachitis. Bronchitis.

12. Krause: Eleven months. Remittent paroxysms; most severe in arms. Duration, two weeks. No note as to rachitis. Severe gastro-intestinal disturbance. Dentition. Bronchitis.

13. Carpenter: Eleven months. Tonic spasms. Laryngismus stridulus. Recovery, slow. Mild recurrence for several years. No note as to rachitis. Followed purulent effusion in shoulder-joint after scarlet fever.

A case reported by Miles as tetany, and another by Carpenter, are probably cases of tetanus. In another, reported by Carpenter, the diagnosis was based entirely on laryngismus stridulus, and, therefore, can not be accepted.

The disease is certainly a very unusual one in Boston, as is shown by the following statistics from the Medical Out-Patient Department of the Infants' Hospital, during the last two years. The great majority of the patients treated there are infants under two years of age, belonging to the poorest classes. Both their age and hygienic surroundings would seem likely, therefore, to render them especially favorable subjects for the development of both rickets and tetany. Seventy-one hundred and fourteen cases of disease were treated during the years 1896 and 1897, and among them was one case of tetany. One hundred and ninety-six were classified as rickets. This number, however, comprises only those cases in which rachitis was the condition demanding treatment, and does not include the far greater number of cases in which rickets was present as a complication. The one case of tetany, which is reported in full below, showed but few evidences of rickets. It would seem from these figures, therefore, that rachitis is not a factor of great importance in the etiology of tetany. I have, during the last five years, seen six cases of tetany in infants. Three were mild and three severe. The histories of these are as follows:

Case 1.—Annie P., four months old; was seen at the Massachusetts Charitable Eye and Ear Infirmary on account of a suspicious eruption. The mastoid disease, for which an operation had been performed some days before, was progressing favorably. Nothing was known as to her history, and the contractures had not been noted. There was slight diarrhea and the temperature was moderately elevated. Handling was somewhat painful. There were frequent, short, typic paroxysmal contractures of the hands and arms. No laryngospasm; facial phenomena absent; Trousseau's symptom easily elicited; knee-jerks exaggerated. There were no evidences of rickets. She unfortunately soon passed out of observation, and nothing is known as to the further progress of the case.

Case 2.—Gladys R., colored, four months old, was brought to the Infants' Hospital chiefly because she did not gain weight. She had always been feeble, and was said to weigh less than at birth. She had been fed on a varied collection of patent "foods," the mixture at the time being one of Mellin's Food and boiled milk. She had all of this mixture which she would take at any time. There was no vomiting, some abdominal pain, and a moderate diarrhea. She had "spasms" frequently, in which she "wriggled and clenched her hands." No laryngospasm. She was poorly developed, but fairly nourished. There was no evidence of rickets. During the examination there were frequent short, intermittent, typic contractures in the arms and hands. There was apparently no pain, either on handling or during the paroxysms. The facial phenomenon could not be obtained, but Trousseau's symptom was easily elicited. She was given a carefully modified milk, but no drugs. When seen, eight days later, she had gained ten ounces, and the gastro-intestinal symptoms had diminished greatly. There had been no spasms for some days. Trousseau's symptom, however, was easily developed. She was then lost sight of, and nothing is known as to the final outcome of the case.

Case 3.—Rebecca B., ten months old, was brought to the Infants' Hospital, May 6. Since the first of January she had had one or more "spasms" a day, lasting from a few seconds to five minutes. They also sometimes occurred during sleep. In these "spasms" the upper part of the body stiffened, the arms were flexed at the elbows, the thumb contracted into the palm, and she "got black in the face." For the same length of time she had had frequent attacks of noisy breathing. An older child had had a similar trouble, lasting a month at one time. She was fed on breast milk and on a mixture of cow's milk and water. She seldom vomited, and the dejections were normal, except for an occasional curd. Her surroundings were very good for a child of the poorer classes. She was well developed and nourished. Color good. Skin normal. Anterior fontanelle, six c.c. by eight c.c. No craniotabes. Two teeth. Spine normal. Heart and lungs normal. A considerable rosary. Flaring of lower chest. Abdomen large. Spleen palpable. Epiphyses at wrists enlarged. During the examination she had a typic contracture, involving the arms only, lasting about half a minute. She also had several attacks of laryngospasm. The facial phenomenon was easily elicited, but Trousseau's

symptom could not be produced. The reflexes were normal. She was put on a carefully modified milk in addition to the breast, and given small doses of bromid. The spasms ceased on the 10th and the laryngismus on the 23d. The facial phenomenon was present on the 10th, but had disappeared on the 13th. No new symptoms developed.

Case 4.—James C., six months old, was seen in consultation with Dr. J. L. Ames, Jan. 25, 1898. He was a large, strong baby at birth, but was completely upset by improper feeding during the first six weeks. From that time on his digestion was feeble, although he was carefully and correctly fed. He did not gain normally, and vomited from time to time. The stools, however, were normal. His care and surroundings were irreproachable. On the 19th day he began to vomit again, but his dejections remained normal. He cried much, and seemed to be in pain. His temperature ranged in the neighborhood of 100 degrees. Slight "clenching of the hands,"—first noted on the 20th—gradually increased. He had a mild "spasm" on the 23d. He was cutting several incisor teeth. The urine was diminished in amount. He was fairly developed and nourished. Skin in good condition; rather pale. Fontanelle level—not tense. One tooth; gum distended by another. Slight stomatitis. No rosary. Heart, lungs and abdomen normal. Moderate umbilical hernia. Phimosis. No rigidity of neck, but tendency to hold head backward. Remittent contractures of hands and feet, apparently not attended by pain. Extended thumbs strongly adducted into palms. Little and ring fingers flexed at metacarpo-phalangeal joint, extended at phalangeal; other fingers firmly flexed. Slight flexion at wrists. Elbow and shoulder joints free. Feet in perfectly typical position. Toes sharply flexed at metatarso-phalangeal joint, extended at phalangeal. Foot much arched and extended. Knees and hips flexed. Reduction of spasm not painful. Facial phenomenon doubtful. Trousseau's symptom easily elicited. Knee-jerks lively.

He was given a different modification of milk, calomel, salol and bromid. The further treatment was on these same lines. He had numerous spasms during the next few days and the paroxysmal contractures increased in severity. Under careful feeding all the symptoms of indigestion disappeared during the next month, but there was no gain in weight. After the first week the contractures diminished rapidly in frequency and severity and were entirely gone in a month.

Case 5.—John W., four months old, was brought to the City Hospital, Oct. 21, 1897. There was no specific history, and the other children were in every way normal. He was born at full term, after a rapid, normal, vertex labor. Convulsions are said to have begun on the day of his birth, and to have continued until some time in July. The mother also states that she noticed contraction of the fingers after the first convulsion, and that it has persisted since. I saw him at the Infants' Hospital in July, however, but noticed no contractures. I sent him to the Summer Hospital at Rainsford Island, with the diagnosis of "starvation." He remained there for some weeks, but no contractures were noted.

He was fed on condensed milk previous to his admission to Rainsford, and on modified milk during his stay there. He was then given Melline's Food, which he was taking when seen. He had been vomiting for some weeks. The bowels moved two or three times a day, the dejections being large, yellowish-white and undigested. He slept but little and cried constantly. "The whole body was constantly rigid, the spasm not even relaxing in sleep." Motion was painful.

Poorly developed and emaciated; skin dry; fontanelle level; snuffles; no teeth; mouth normal; tendency to laryngo-spasm when crying; unable to hold up head when sitting; when lying, head held backward stiffly, but spasm can be overcome; facial phenomenon not obtained; heart and lungs normal; no rosary; abdomen large and tense; slight umbilical hernia; no enlargement of liver or spleen; phimosis; no glandular enlargement; arms held rigidly flexed at the elbow; shoulders also somewhat rigid; wrists slightly flexed, hands in pronation; extended thumbs very strongly adducted across the palms; fingers flexed at metacarpo-phalangeal and first phalangeal joints, extended at the second. This spasm varied in intensity, but was never voluntarily relaxed. It could be almost entirely overcome, but only with the causation of considerable pain. Trousseau's symptom was not determined because of the constant spasm. There was a tendency to hold the legs crossed, and at times the knees were flexed and the feet extended. The spasm was always very slight, however, and was easily overcome; knee-jerks exaggerated; electric reactions and sensation not determined.

Warm baths and light rubbing were advised. He was put on a properly modified milk and given small doses of bromid of potassium. Improvement in the digestive symptoms was

almost immediate and was soon followed by improvement in the nervous symptoms. By November 7 the spasms were intermittent, occurring only at intervals, and the arms and legs were used a little voluntarily. Trousseau's symptom was easily elicited. By November 27 the spasms were very infrequent and of slight intensity and all motions were free. All trace of spasm disappeared some weeks later and Trousseau's symptom could not be elicited. There has been no recurrence of the symptoms.



JOHN W.

Case 6.—Sherry M., 10½ months old, was seen at the Infants' Hospital June 1, 1897.

Family history: No tuberculosis nor syphilis; father and mother each 29 years of age and well.

First child—Instrumental; nursed; always well.

Second child—Instrumental; nursed; always well.

Third child—Instrumental; nursed only; well up to 11 months, when had an attack of vomiting and diarrhea and began to stiffen. Vomiting, constipation and wasting continued and stiffness increased and continued up to death at 18 months. Had no food but breast and beef-juice.

Fourth child—Instrumental; nursed only; well up to 7 months, when had a cough and cold followed by vomiting, constipation, wasting and gradually increasing stiffness ending in death at 11 months. Food was breast, cream and orange juice.

Fifth child—The patient. Normal vertex labor; was well up to 7 months, when it was noted that she was not as active as she had been. Vomiting began and increased, also constipation, which grew steadily worse, the bowels moving only with drugs. At 9½ months she began to hold her head backward, and for the last three was in much the same condition as when first seen. She had the breast only until her sickness began, but after that was given in addition oatmeal gruel, milk and beef-juice and during the last few days a modified milk. She slept but little, and cried almost constantly. All motion seemed to cause pain and increased and brought on spasm. The spasm was never entirely relaxed even during sleep. Fairly developed and nourished. Skin smooth and soft. Color fair; fontanelle normal size; heart, lungs and abdomen normal; no rosary; no glandular enlargement; the arms and legs were in a state of almost constant contracture, which never entirely relaxed. Any motion or excitement caused an increase of the spasm with crying. During the more intense spasms the head was much retracted and the back in the position of moderate opisthotonos. Respiratory spasm was marked, the chest being fixed in the position of full inspiration. The arms

were rigid, their position, however, varying in different attacks. The thumbs were always strongly adducted in full extension. The fingers were flexed at the metacarpophalangeal and first phalangeal joints and extended at the second; sometimes extended at the first phalangeal joint also. The legs were held rigidly, the thighs being crossed, the knees extended, the feet slightly extended and the toes flexed. The facial phenomenon was not elicited; Trouessau's symptom was marked; the knee-jerks were normal. The electric reactions and sensation were not examined.



As the history of the other children suggested some trouble with the breast milk, and as this child did better on a mixture of modified milk and breast-milk than on breast-milk alone, the nursing was stopped and she was given modified milk only. She was also given small doses of bromid of potassium. There was no improvement in the spasm, vomiting and constipation. There was also a progressive loss of weight and a continuous temperature, ranging from 99 to 100 degrees. She was therefore sent to the Summer Hospital at Raiceford Island on June 14 and remained there for more than a month. While there she vomited constantly and lost weight steadily. The dejections, however, were normal. Her temperature ranged from 99 to 101 degrees. The contractures continued undiminished. During the next three weeks she improved in every way. She cried less, slept all night and had spasms only when disturbed. The symptoms increased again, however, and she was lost sight of until November 22. During this time she was kept on a modified milk of very low percentages, ordered when she was last seen. She had emaciated to a skeleton, and was very weak. She was vomiting a little. The bowels were constipated but the dejections were normal in character. She slept well and relaxed entirely during sleep. She was quiet when awake but had more or less spasm most of the time. As she was then sixteen months old she was given starchy foods in addition to milk. Passive motion and light rubbing were also advised. Improvement from this time on was slow but progressive. The vomiting ceased but the bowels remained somewhat costive. Gain in weight and strength was steady. The spasm diminished slowly, remaining longest in the hands. It left them about March 1, 1898.

TREATMENT.

It is evident from the obscurity which still exists with regard to the origin and nature of tetany that there can be no specific treatment. As what evidence there is, however, all seems to show that the disease is due to toxic poisoning of some sort, treatment may be directed to the prevention of the formation of toxic substances, and to their elimination, if already formed. It is probable that many of these toxins are absorbed from the alimentary tract and some from the respiratory tract. Others may be produced as the result of abnormal metabolism. The production of alimentary toxins can be best prevented by a suitable diet. Regulation of the diet is probably, therefore, the most important method of preventive treatment. Intestinal antiseptics may also be of use, and are, at any rate, worthy of a trial. The formation and absorption of respiratory toxins can be best prevented by a liberal supply of fresh air and sunlight. Anything which tends to improve the hygienic surroundings is of use. Elimination must naturally take place largely through the intestinal tract, and to a less extent through the kidneys and skin. Emetics, purgatives and lavage of the stomach and colon tend, not only to favor elimination, but also to prevent the absorption

of toxic substances already formed. The kidneys must be kept active by a liberal supply of water and possibly by mild diuretics. The skin may be stimulated by proper hygienic measures.

Symptomatic treatment is also important and consists largely in the avoidance of excitants of spasm and in the employment of antispasmodics. Excitants to be avoided are cold, handling, noise and excitement. Antispasmodic treatment may be local, by the use of such measures as warmth, warm baths, inunctions of oil and light massage, or general, by drugs. The bromids and chloral are the most useful, but opium, belladonna, valerian and musk may be tried. During convulsions chloroform or ether may be administered by inhalation.

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NEURALGIA AND NERVE CRIES.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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From time immemorial certain phases or symptoms of disease which have been uncertain in their pathology or whose pathology has been unknown, have been classified under general terms, vague and uncertain; and these terms have varied with the ages. Time was when the humors of the body accounted for all manifestations of disease which could not be accounted for or classified by the scalpel, inspection, or inductive reasoning from the most simple and elementary medical facts. Humors have passed, and we now classify such disturbance as manifestations of a diathesis, or of chronic rheumatism or gout, of the presence in the blood of nerve irritants, as uric acid, toxalbumins, auto-infections, etc., or as due to the cries of sensitive nerves for pabulum which an impoverished circulatory medium no longer furnishes them, and call them neuralgia.

The longer I study the matter, the more am I inclined to believe that a healthy nerve in a healthy perineurilemma does not ache, or if it does so, the case is rare. Furthermore, the term "neuralgia" should

be excluded from our vocabulary as an entity, and confined to the very few and rare instances where nerves ache for no, as yet, apparent cause. The term itself is a good one but is not so definite and limited as the word "cough," and should not be used except to define a symptom.

With such prelude, I take up the study of certain forms of pain not directly associated with a definite cause. The sources of pain are many. Under the title of my paper, I wish to include only such nerve cries as are not directly and immediately traceable to some evident physical cause. For purposes of classification, the source of such pain may lie within the nerve itself or its environment, or may be found in irritants carried to the nerve in question through the medium of the circulatory fluids or in defects in said fluids. In the first class may be grouped the following:

- 1, chronic inflammatory processes not recognized as neuritis; 2, old adhesions the result of inflammatory products, present after all active inflammatory process has ceased; 3, changes in the perineurilemma from chronic rheumatism and arthritis deformans; 4, pressure from cicatrices and new growths. Particularly is this true in syphilis where gummata or periosteal nodes or inflammatory changes about canals, cause pressure upon nerve trunks; 5, reflex, or rather referred pain, particularly common about the fifth nerve; 6, fatigue pains common in the back and about the loins and head; 7, hyperesthesia of certain sets of nerves, and under this head I would include neurasthenia and hysteria.

In a second class may be arranged the diathetic causes as follows: 1, the accumulation of the gouty acids in perineurilemma and sheath; 2, anemia, collemia, malaria, auto-toxins and poisons, as lead, copper and mercury, diabetes, syphilis.

A third class might be made of causes for pain following and consequent upon nerve conditions as outlined in the preceding two classes and be tabulated as follows: 1, change in blood-pressure; 2, in atmospheric pressure; 3, change in lymph-pressure and in lymph constituents.

The above classification makes no mention of the crises of ataxia, of eye strain, of the various nerve cries connected directly with the eye, ear, nose, throat, nor with any source of pain usually clearly defined and referable to definite and recognized local disease, and I make no effort in the present paper to cover the whole field which my title might include, but do desire to call attention to certain points which are either overlooked or to which little or no attention is given, and yet which play an important part in the causation of pain.

Gray defines neuralgia as a "functional disease of the sensory fibers of the peripheral nerves, and manifests itself by pain." Such definition covers the meaning of the term as ordinarily used, but a closer study of all cases of pain, not related to an organ or definitely diseased part, limits the neuralgia, *per se*, to narrower and narrower fields, and almost all cases of pain, when full investigation has been made, are better classified under other heads than that of neuralgia.

The subjects which have been prominently before me in my studies are: 1, the effect produced by inflammatory adhesions and by the products of, and exudates remaining after inflammations, modifying or restricting the functioning of nerves so hampered; 2, lymph stasis; 3, the auto nerve poisons.

Coming to the consideration of my first cause of pain, namely, nerve cries arising from the local condition of a nerve which has undergone inflammation and whose function is more or less affected and hampered, as the result, there is room for much conjecturing. Nevertheless, certain clinical facts point so evidently that their pointings must be true. It has been my observation that a patient who has once gone through an attack of neuritis is a most delicate barometer and hydrometer, and the reason is not far to find. After a nerve has passed through its history of inflammation, resolution rarely takes place perfectly. Three conditions follow in the wake: First, a development of connective tissue in the bed of the nerve, tying it down more or less; second, a development of connective tissue in neurilemma and perineurilemma, making the whole envelope of the nerve thicker and less pliable; third, and perhaps more important than all, a partial vasomotor palsy and stasis in the intimate vessels of the nerve, due to the general inelasticity. As a result, a nerve thus thickened and with poorer circulation will less readily accommodate itself to the varying swing of atmospheric pressure and moisture. Making an average, we say that with the ordinary barometric pressure of our latitude a man of 150 pounds is under a pressure of 30,000 pounds, or 15 pounds to the square inch. Now let the pressure be quickly changed, especially in the way of taking off pressure, and a healthy vasomotor center responds at once, increases its grip upon blood-vessel structure and the lung speedily unloads the excess of gas held in the fluids under a pressure of one atmosphere and now somewhat reduced. Such is not the case with the hampered nerve. Owing to its inelasticity and poor vasomotor control, the nerve is under pressure—pressure of blood and pressure of gas—and the owner of that nerve is suffering torment long before the storm has broken. Mills, in his recent work upon the nervous system and its diseases, quotes from Mitchell and Catlin, and shows a diagram clearly establishing a close relation between pain and barometric pressure and the temperature. He says at the center of the vast area of every moving storm is a moving space of the greatest barometric depression, known as the storm center, which the rain usually precedes by 550 or 600 miles and around which is a forerunning area of neuralgia.

A similar explanation to that given above will account for the neuralgia coincident in our climate with east wind and consequent upon the amount of moisture or rather, dampness, in the air and its conductivity of both animal heat and electricity.

The subject of lymph stasis and the daily fluctuations in size of the brain and body are matters of only passing moment to healthy nerve fibers; but, to nerve trunks bound down by the products of old inflammations and with imperfect vasomotor control, such swaying in the peri-vascular spaces and in the lymph-channels may be of great moment. The diurnal ebb and flow of lymph, besides the thrice daily ebb and flow, causes a daily change in size of the parts of the body, which change is physiologic. It is fairly well established as a fact that the circumference of a limb varies materially in the twenty-four hours, being smallest in the morning, at the time of lowest temperature, and largest in the late afternoon and evening, when the daily temperature swing has reached its highest point. This fact offers a ready explanation of the difficulty which rheumatic and gouty patients, whose vaso-constrictors are more feeble and

whose lymph-channels are especially prone to fill in the evening, have in wearing articles of clothing in the evening which were comfortable in the morning. The same character of reasoning will explain the evening ache of dentals when the nerve is no longer actively inflamed but is surrounded by an area of infiltration, of lowered resistance. The curious and intense ache present in Morton's metatarsalgia, coming on after sundown and particularly noticeable after a full meal, was somewhat difficult of explanation until the lymph-tide was recognized as a possible cause for the disturbance. It has been a common observation that the extremities swell, or rather increase physiologically, in size toward the close of the day, and the development of pain has been rightly ascribed to such increase in size, but why such increase took place remained a mystery, excepting as the increase in size of peripheral blood-vessels might account for it.

Physiologists, such as Starling and Heidenhain, are busy thrashing out the truth of lymph excretion, of lymphagogues, and lymph secretion, and the war goes on right merrily. From the facts thus far established it would seem that the endothelial cells of blood-vessels do not actively excrete lymph, but as in the case of the kidney, exert a selective action upon the plasma so that certain substances are strained or sieved through. Lymph is not of the same specific gravity as the plasma of the blood. It may contain an excess of proteids, also of tissue waste, as urates and uric acid. L. B. Mendel in the *Journal of Physiology*, Vol. xix, declares it is never of the same specific gravity as the blood, and contains a larger proportion of sodium chlorid and of sugar than is found in the blood.

Heidenhain has called attention to the existence of two classes of bodies which, when injected into the circulation have the power of largely increasing the flow of lymph. The *first class*, which includes peptones, extract of crayfish, mussels, etc., and at times, egg albumin, acts particularly by greatly increasing the exudate from the blood, making both blood and lymph over-concentrated. The *second class*, such as sugars and neutral salts, acts on the tissues, robbing them of water, making both lymph and blood more watery.

The above facts may eventually assist in solving the curious nerve and circulatory disturbances which we see after the ingestion of certain articles of food, and particularly when there are individual idiosyncrasies. It would also help to explain the phenomena of angio-neurotic edema. Owing to the readiness with which uric acid is thrown out of the general circulation and the lessened resistance of certain nerves in the gouty and lithemic, and the fact that the lymph-channels make ready bayous for gouty salts, we have added means for comprehending gout neuralgia.

The part played in the production of pain by my third division of causes for pain, namely, the various substances in the body produced by imperfect tissue metabolism or turned into the circulation by resorption from the intestinal tract, is engaging our attention more daily, as studies are being pushed deeper into the unknown domain of digestion and assimilation in the circle outside the intestinal tract. That the presence in the blood of certain substances which are inimical to healthy nerve life does cause pain is beyond question. The gouty and lithemic are particularly prone to neuralgia, so are the syphilitic and

alcoholics, and those who suffer from intestinal fermentation; all which disorders are recognized as potent in causing dyscrasia of the blood. Diabetes is an exciting cause for polyneuritis, but is also causative of nerve cries which can not be ascribed to neuritis. Von Noorden states that the earliest sensory disturbances to be found in diabetes are paresthesia, anesthesia and hyperesthesia of varying degree and location, and pain and cramps. These neuritic symptoms appear very early, and may be among the first symptoms of which complaint is made, and the painful areas are located more usually in the third branch of the trigeminal and in the crural nerves.

Haig, in his last edition of "Uric Acid in Causation of Disease," makes casual mention only of uric acid as causing neuritis. He states it as the cause of everything from gout to anemia, chlorosis to melancholia, but as a grave cause of neuritis or of nerve pain, only hints. Marshall, years ago, recognized the fact that odontalgia was not caused by dental caries alone, but that many a gouty patient would have an intense odontalgia after a heavy meat and champagne dinner without any cause to be found in the teeth per se, and that such pain did not yield to the ordinary dental measures, but to attention directed to the body condition at large. Pope justly calls a combination of alcohol, tobacco and a late supper, "a powerful trinity in the causation of neuralgia."

Whether uric acid or the biurates be the cause of gout, certain it is that the gouty are especially prone to most obstinate and severe forms of neuralgia, and that these attacks are often recurrent and paroxysmal and prone to resemble articular explosions of gout. Lyman states that no part of the body escapes their incidence, and their duration varies from the most transient fulgurant pain to the un-intermitting and persistent agony of chronic inflammation. Gout particularly affects the sciatic nerve, next the trifacial and intercostals. If the statement that "a nerve once inflamed is a point of lessened resistance afterward" be true, it is not hard to understand why gouty nerves should be prone to suffer. The lowering of external temperature causes a rise in acidity in the extremities of the body. Such acidity favors the throwing out of circulation and the precipitation of gouty acids.

In concluding I wish to call attention especially to the influence upon the general nerve structure and particularly upon the higher nerve-centers of the lymph-flow and its constituents. The readiness with which sugar and the lithemic salts pass out of the general blood-circuit into lymph-channels, and the irritating effect of such materials, has helped me to understand many nerve cries obscure in their origin. That delicately balanced condition of body economy which Haig dwells upon as collemia, in which the circulatory fluids of the body are saturated with lithemic products held in solution by the alkalinity of the blood and requiring but the slightest change in alkalinescence to deposit or throw down such salts, explains beautifully the rapidity with which sudden neuralgia may take place from apparently slight perturbing causes. It is wise in all cases of obscure nerve pain to hunt farther for its cause than is to be found in the self-satisfying term "neuralgia."

Orthoform.—In prurigo and herpes zoster orthoform has been found extremely effective by Horn. He uses it as a dry powder or in a 10 per cent. salve.—*Die Arztl. Praxis*, 13.

A FURTHER CONTRIBUTION TO THE STUDY OF THE DIFFICULTIES OF DEFECACTION IN INFANTS.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY THOS. CHAS. MARTIN, M.D.

LECTURER ON DISEASES OF THE RECTUM IN THE COLLEGE OF PHYSICIANS AND SURGEONS, CLEVELAND, OHIO.

At last year's meeting of this Section I offered for inspection a score of dried specimens of the infant's lower intestine as evidence that the infant strains at stool because of the imperfect development of the anatomic features concerned in the mechanism of defecation. Examination of those specimens revealed the fact that the wall of the infant rectum and sigmoid flexure is thin, compared to that of the adult. It was impossible to distinguish the longitudinal muscular bands which are so apparent in the gut of the adult. It was observed that in the fresh state the mu-

the beginning of the middle third of the rectum the mesentery rapidly shortens, but apparently completely invests the upper third of the rectum. (See Figs. 13 and 14.) The middle and lower thirds of the abdominal rectum are not so completely invested with peritoneum, and present upon their posterior parts a vertical lane bare of peritoneum, from the borders of which the peritoneum is reflected in lateral directions. This uncovered part of the gut is not applied directly to the sacrum and coccyx, and there is a space between, which is occupied by loose connective tissue. The distance from the dorsal parietes to the gut is variable here, being from one-half to one-fourth of an inch—1.27 to .63 cm. At the beginning of the middle third there is usually a gradual decrease in the length of the peritoneal band as it descends, till it is one-eighth or possibly one-sixteenth of an inch—.32 or .16 cm.—in length at the last bone of the coccyx; it rapidly shortens from this point to its termination. The parietal peritoneum descends over the ischial tuberosities and approaches nearly to the ental



FIG. 13.—Side view of specimen shown in Fig. 12. The mesentery from sacrum and coccyx to the rectum is fairly well shown, but is shown shorter than in the fresh state, alcohol immersion, varnishing and drying having shrunken it. Observe also how nearly the peritoneum approaches to the anus.

FIG. 14.—The reverse of the view shown in Fig. 13.

cous membrane constitutes a greater part of the gut-wall of the infant, and that the mucous membrane and muscular coats are more intimately adherent than in the adult. The infant gut being very deficient in muscular elements, the intrinsic power of peristalsis can not be present in that degree necessary to it as a component factor of defecation. It was shown that the relations of the peritoneum to the rectum of the infant also contribute to the difficulties of defecation, as also does the relatively great length of the descending colon and sigmoid flexures.

In the child the mesentery of the sigmoid flexure and rectum is of great length. In young children the length of the sigmoidal mesentery from its attachment to the parietes to its invagination of the lower loop of the sigmoid is often greater than the distance from the promontory of the sacrum to the distal bone of the coccyx. From the sigmoido-rectal juncture to



FIG. 23.—A semilunar valve taken from the specimen shown in Fig. 18, drawn as seen under a glass magnifying fifteen diameters. A, mucous membrane; B, fibrous tissue; C, bundles of circular muscular fibres; D, vein; E, artery; F, vein; G, artery; H, areolar and adipose tissue.

sphincter muscle. In the newly born the peritoneum is situated within one-fourth inch—.63 cm.—of the anal skin. (See Fig. 13.)

The disproportionately great length of descending colon and mesentery of the infant obviously contributes to the possibility of angulation of the gut. The angulations constitute a resistance to the descent of the feces.

The third feature obstructive to defecation in infants is the rectal valve. It is a feature and factor which not only has not been recognized, but is one whose very anatomic existence has been most ingeniously and persistently disputed. In each and every instance of more than three hundred subjects examined by me these valves have been present, though in varying number and position in different subjects. In most cases there are present three valves; in some there are four, and in others there are but two. The infant specimens shown indicate that the valves are particularly well-developed at birth, spanning, as they do, one-half the diameter of the gut.

The microscopic section which was shown was taken from the middle of the lower valve of the adult specimen exhibited. (See Fig. 23.) It was shown magnified fifteen diameters. The thickened state of the mucous membrane over the free border of the valve fortifies that point against the increased friction which that part must necessarily bear. Beneath it is noticeable the heavy layer of fibrous tissue which gradually diminishes till it is lost at the valve base. Bundles of circular muscular fibers are seen in the middle of the valve. At its base are seen arteries and veins for its special nutrition. This structural arrangement makes this organ the typic anatomic valve—evidence of fibrous tissue in the organ is a distinct addition to our knowledge of this subject. It must be readily seen that the presence in the rectum of such a structure as an anatomic valve would be essentially obstructive to the passage of feces.

The bony pelvic outlet in the infant is so contracted that the limits of anal expansion are such as to almost defeat the passage through it of other than fluid feces. The average transverse diameter of the newly-born infant's pelvic outlet is but little more than one-half inch—1.27 cm.—the pubo-coccygeal measurement is even less. The average distensibility of the sigmoid flexure and rectal chambers, in which the feces when firm are formed, is four or five times that of the anal expansibility; thus it is readily perceived that, compared to the adult, the juxtaposition of the ischial tuberosities in the infant supplies a most obstinate obstructive factor in defecation.

Aside from the difficulties of defecation which the undeveloped state of the anatomy of the organs of defecation entail upon the infant, there are two more or less grave accidents which are peculiarly common to infants, namely: prolapse of the entire rectum and inguinal hernia. Prolapse, involving all the coats of the rectum, or complete prolapse as it has been called, is due to the great length of the mesentery with which the rectum of the infant is provided, and to the undeveloped state of the other pelvic organs and contiguous structures, which in a state of more complete development in the adult, contribute support to the rectum.

Inguinal hernia is more likely to be acquired by the infant than the adult, because of the relatively greater length of the mesentery in the infant, and because of the relatively smaller pelvis and protuberant, pot-bellied abdomen of the infant, which latter feature places the abdominal ring in almost as dependent a position in the infant abdominal wall, as the anus itself is placed in the abdomen of the adult.

These studies of the infant, when compared to similar studies of the adult, admit of the conclusion, I believe, that the normally formed infant's escape from these difficulties is ultimately assured by process of development, but the tribulations, the accidents referred to, and the dangers which are recognized as common to the period preceding adolescence make it incumbent upon us that we direct efforts toward their alleviation. Diet, hygroscopic suppositories and fluid injections which may render more fluid the intestinal contents will favor their descent through the convoluted gut, the valvulated rectum and the contracted anus. Massage of the abdomen over the region of the colon aids in 1, the development of the auxiliary abdominal muscles of defecation, and the intrinsic expulsive muscles of the intestinal wall; further, such manipulations 2, directly propel the gut's contents

along the tortuous course of the bowel, and 3, relatively reduce the obstructive features of the valve. If there be an overgrowth of the rectal valve, and if it form an almost impassable barrier to the descent of the feces, it may be in some measure overcome by dilatation, which may be effected through the means of the gently-introduced trained finger. In case the defective valve exists in the form of a diaphragmatic stricture or membranous septum with a central aperture, the valve may be safely cut by a method described by the writer elsewhere.¹

As at birth the pelvic bones are not yet united, and as the ramii of the ischium and pubes are still quite cartilaginous, it is obviously possible that a little energy intelligently directed from without will spread the pelvic outlet, whereas the infant labors ineffectually with his forces applied, as they are, at a disadvantage from within. The nurse, therefore, may be directed to pare away her nail-ends, lubricate her fingers and gently introduce the smallest finger through the anus. Daily gradual dilatation of the infant's pelvic outlet should be practised, graduating from finger to finger until the required degree of dilatation be reached. The introduction of the finger, independent of its dilating uses, incites the mechanism of defecation to action. Rachitic subjects with abnormal contraction of the pelvic outlet demand forcible divulsion of the ischial tuberosities.

That form of complete prolapse which is so common to infants, for the anatomic reasons already specified, is to be managed by the employment of the procedures already proposed, together with proper posture of the little subject at the time of defecation, and after the prolapsed bowel has been returned. That posture which favors the production of prolapse is the one of flexion, which is naturally assumed for defecation. Extension of the limbs is the position which best overcomes the tendency to prolapse, and therefore the subject should be required to take either the erect-extended or the horizontal-extended posture at the time of straining at stool as a preventive measure. The best position of the patient for the reduction of the prolapsed rectum is that known as the knee-chest posture, and the best posture to prevent its immediate recurrence is that of horizontal extension. As an auxiliary means of retention of the rectum the buttocks may be strapped together with an adhesive band.

Acquired inguinal hernia in infants should not be operated on, if its control be possible by means of the truss, for the reason that the natural growth of the infant and consequent expansion of the pelvis converts the mesenteric to parietal peritoneum and shortens the range of movement of the intestine, and such growth also places the abdominal ring in a more protected situation, and removes it from the excessive pressure of the intestine—thus the child outgrows hernia. These observations on hernia have no reference whatever to those forms of congenital hernia which depend upon errors of development of the inguinal canal or of its contents.

¹ See paper by the writer presented in the Surgical Section.

Injection for General Weakness.—In severe gastro-intestinal infections in infancy (F. Fede.), the following is recommended as an injection: bihydrochlorate of quinin, asafetida, tincture of musk, aa 1 gram; boiled water 120 grams; yolk of one egg. For two or three injections during the twenty-four hours.—*Semaine Méd.*, September 28.

WHAT ARE THE SYMPTOMS OF NEPHRITIS?

BY ROBERT T. EDES.

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This question was asked in an editorial of the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* of July 23, 1898, the writer in his comments seeming to intimate that the subject has been complicated rather than simplified by some of the more modern observations, and that it is surrounded by needless mystery.

It is true that the diagnosis is not quite so simple as in the days when "albuminuria" covered almost the whole ground of renal pathology, while prognosis was brief and gloomy, and the clinical history prolix only, because of the great variety and severity of the symptoms which might precede the fatal termination. That, however, was longer ago than the "few years" claimed by the editor. Forty years ago it was known that albumin was to be found in the urine in many cases which were not to be considered Bright's disease, and the number of conditions in which it may occur has been constantly added to until at last a "physiologic albuminuria" has been spoken of.

The significance of the presence of casts has undergone similar changes in estimated importance and for similar reasons, until the writers in the *JOURNAL* (Haines and Skinner, Jan. 29, 1898) claim that by their method of careful search casts may be found in samples of urine even from persons in perfect health. When these facts are brought into connection with another set of (as I believe, exceptional) observations, in which it is shown that the progress of a well-recognized nephritis may be accompanied by neither of these important conditions—once considered almost, if not conclusively, pathognomonic—and when we find also that the person with the high arterial tension shown by the sphygmogram—which has been thought so highly characteristic that Mahomed used to speak of "Bright's disease without nephritis"—may live for years without developing any others, the bewildered student finds himself driven to the conclusion that the only persons who are free from the symptoms of Bright's disease are those who have the disease itself.

Now, whatever we may think, as a matter of taste or gratitude or scientific accuracy, of the propriety of naming diseases and symptom-groups after physicians, it seems clear that if we do so, the name should be applied to the conditions described by the writer, and not to something else more or less frequently associated with it, even if the subsequent author calls his the "true —'s disease" and all others "spurious" or "pseudo-". Certainly Dr. Bright described well-recognized organic gross disease of the kidney, associated during life with the presence in the urine of albumin, detected by heat. He did not describe the hypertrophy of the heart as the disease, although he well knew that it was a frequent accompaniment, nor the high tension of the arteries, nor the casts which he had not seen, nor the traces of albumin which the reagents had not been invented to detect.

It seems that a portion of such obscurity and confusion as still surround the matter—which the editorial in question seems to have exaggerated—is due in part to confusion in nomenclature, in part to a tendency to overestimate the importance of rare exceptions, and to go from one extreme to the other, concluding that so soon as a symptom has been shown not to be pathognomonic it has no longer any value; and in part

to another error which sometimes accompanies the development of greater accuracy in diagnosis and the recognition of earlier stages of diseases or perhaps even of a tendency thereto. I mean the mistake of attributing the clinical history and prognosis based upon the study of well-developed and advanced examples to cases which have been recognized by more refined methods at an earlier stage—so early, in fact, that it may often be doubtful whether they have gone far beyond the bounds of normal activity or structure. Such recognition is of the highest value for prophylaxis and therapeutics, but should be utilized with the utmost caution in prognosis, both for the sake of the patient's peace of mind and the physician's reputation; and this caution is never more necessary than in connection with the very class of diseases under consideration.

The following chain of reasoning—although I admit that it can not be found laid down in the books in exactly this form—does not greatly misrepresent the usual state of feeling among the profession not so many years ago, and not yet wholly extinct among the laity. A single observation of albumin in the urine meant albuminuria; albuminuria meant disease of the kidneys; disease of the kidneys meant, in the great majority of cases, chronic Bright's disease; Bright's disease meant steady progress toward a not remote fatal termination, which might be interrupted at any time by various accidents which would still more accelerate it. Some of the links of this chain are weaker than others, but all of them have, of late years, been subjected to searching examination, and they may be taken up in order.

1. As to transient, physiologic or cyclic albuminuria: Albumin in small quantity has been found either constantly or at frequent short intervals in the urine of many persons supposedly healthy or more frequently among those quite young who are not actually sick but are a little below par in general condition. When the intervals are more or less regular, usually coinciding with the periods of sleeping and waking, or more properly of lying down and getting up, it is called cyclic. In some exceptional cases a condition of constant albuminuria may last over months or years without manifest impairment of the general health.

In the majority of cases transient albuminuria is provoked by exposure of some kind, frequently such as tends to raise the arterial tension and thus bring more pressure to bear on the kidneys. Cold bathing is the typical example. Other conditions, however, figure prominently among the statistics of those who have found large proportions of albuminurics among healthy persons. Such are, for instance, excessive exercise, and vaccination, and the expectation of examination. What the local conditions are which give rise to transitory albuminuria it is difficult to say, as such cases are not likely to be the subject of postmortem examination, but it is not going far to surmise that they involve some real, if slight and transient and easily reparable, change in the epithelium of the glomeruli. But a single observation showing albumin should not be considered of great diagnostic value, unless the quantity is large or there are other symptoms confirmatory of the suspicions attaching to its presence, or unless repeated examinations show that it is more than temporary.

An exceedingly important point in regard both to this question and the next one, is that of the test used.

TABLE I.—ALBUMINURIA AMONG PERSONS SUPPOSEDLY HEALTHY.

Author.	References.	Class of cases.	Number examined.	Albumin found.	Per cent.	Albumin in larger amounts or by ordinary tests.	12-25 cgr. per liter.	Less than 12 traces.	Remarks.
Clarke.	Brit. Med. Jour., Aug. 16, 1887.	Persons expecting examination.	20	3	15				
Leube.	Virchow's Arch., vol. 72.	Healthy soldiers.	119	19	16	Net more than 0.1 per cent.			After exercise. Before exercise, morning urine 4 per cent. albuminous. Cylinders and blood corpuscles not found. Tested by boiling.
Fürbringer.	Ztschr. für klin. Med., 1879-80.	Children.	61	7	11.5				
Munn.	Medical Investigations in Life Insurance.	Applicants for life insurance.	630	59	10.6				
Kleugden.	Arch. für Psych., 1880-81.	Attendants in asylum.	32	14	43.5	8	6		
Grainger Stewart.	Brit. Med. Jour., June 11, 1877.	Soldiers.	205		37.6				
Grainger Stewart.	Brit. Med. Jour., June 11, 1877.	Civilians.	74		10.8				
Grainger Stewart.	Brit. Med. Jour., June 11, 1877.	Children.	40		17.5				
Grainger Stewart.	Brit. Med. Jour., June 11, 1877.	Workhouse inmates aged about 60.	40		67.5				
Van Noorden.	Deutsch. Arch. klin. Med., 1885-86.	Soldiers.	52		8-10.5				Mucous threads.
Capitau.	Inaug. Thèse, Paris, 1883.	Soldiers.	98	44	45				
Capitau.	Inaug. Thèse, Paris, 1883.	Children.	97	86	89				
De la Celle.	Inaug. Thèse, Paris, 1883.	Infantry.	120	92	77				
De la Celle.	Inaug. Thèse, Paris, 1883.	Cuirassiers exercising.	88	70	79.5	1	17		
De la Celle.	Inaug. Thèse, Paris, 1883.	Soldiers returning from review.	111	100	90	4			
De la Celle.	Inaug. Thèse, Paris, 1883.	Cuirassiers just vaccinated.	31	31	100		10		De la Celle. In 701 persons in health, 17 give more than 35 cgr. per liter; 152, 12 to 25 cgr. per liter.
De la Celle.	Inaug. Thèse, Paris, 1883.	Students.	50	46	92		29		
De la Celle.	Inaug. Thèse, Paris, 1883.	Children, 6 to 15.	61	49	80		9		
De la Celle.	Inaug. Thèse, Paris, 1883.	Children, 6 to 15.	81	62	76.5		5		
De la Celle.	Inaug. Thèse, Paris, 1883.	Infantry (cold bath).	53	53	100	10	17		
De la Celle.	Inaug. Thèse, Paris, 1883.	Soldiers after food.	94	74	79		9		
Leroux.	Revue de Méd., Paris, 1883.	Children.	330	19	5				
Roberts.	Urinary and Renal Diseases.	Candidates for life insurance.	31	29		0			No albumin by nitric acid or heat. Acid brine (11), picric acid (14), tungstate (28), mercuric iodid (29). Author suspects mucin.
Fox.	Lancet, Dec. 12, 1891.	Candidates for life insurance.	282	86	30				
Tiemann.	N. Y. Med. Jour., March 17, 1894.	Candidates for life insurance.	2,000		9+				
Brannan.	N. Y. Med. Jour., July 4, 1891.	Candidates for life insurance.	365	54	14.8				
Washburn.	Med. News, April 5, 1890.	Candidates for life insurance.	338	20	5.91				
Shepard (chairman).	Proc. Connecticut Med. Soc., 1888, iv, 203.	Candidates for life insurance; a few soldiers and civilians.	35,421	328	2-				Out of 20 persons with albumin 7 had casts.
Finot.	Comptes Rendu Soc. de Biol., Paris, 1892, 133.	Young persons.	17		82				Examined at various times of the day. Only 3 were never albuminuric. In 795 analyses, albumin 92 times.
Baniè.	N. Y. Med. Rec., 1897, Vol. i, p. 111.	In jail, healthy.	10						
		Age 15 to 25.	10	5	50				Casts, 5.
		Age 25 to 35.	10	5	50				Casts, 5.
		Age 35 to 45.	10	4	40				Casts, 3.
		Age 45 to 55.	10	3	30				Casts, 1.
		Age 55 to 65.	10	2	20				Casts, 2.

¹ Brannan remarks upon the unusually large percentage found among candidates for life insurance, and quotes Rabagliati as accounting for this condition by saying that the well-to-do have more renal disease, because they eat and drink too much. This apparently does not apply to Shepard's figures.

As more delicate reagents have been employed, the proportion of cases in which albumin—or what is claimed as such—has been found increases, until with "Tanret" (iodohydrargyrate of potassium) it is said to occur in the majority of cases of healthy persons; rising to 40 per cent. in "soldiers returning from a review," and 100 among "cuirassiers just vaccinated" and "infantry after a cold bath." (De la Celle. See table.)

It is obvious that such a test as this is worse than useless, for it can give no useful information to the physician, while if results based upon it be communicated to the patient, it will implant in his mind an apprehension which no subsequent explanations can fully remove. There is no clinical value in a test which draws no line, not even an obscure and uncertain one, between danger and safety. The same remark will apply in less degree to some others, which shade in delicacy from the "Tanret" to the ordinary heat and nitric acid tests—not the "heat with nitric acid" test, which should never be used.

Probably these last mark most clearly and conveniently the point at which the line can best be drawn between the presence of albuminuria and "no," i. e., a negligible amount of, albumin; and the physician who adheres to these, carefully used, will make less trouble for himself and his patient than with any other. He may, however, for convenience and to make sure,

sometimes find the acid brine or picric acid useful, and it is within the bounds of possibility that his attention might be called by even more delicate ones, in some exceptional cases, to a renal trouble that might otherwise be overlooked. Any errors of omission of this kind, however, would be as nothing beside those which he would make upon the other side if he adhered to any very excessively delicate test as a criterion of well-developed renal disease. If from 75 to 100 per cent. of healthy persons are known to have albumin in the urine, there is no use in searching for it, for experience tells us that only a much smaller proportion than this are the probable subjects of future renal disease, and neither its presence nor its absence can tell us which are the ones.

Some years ago I collected from various sources a number of tables showing the frequency of the occurrence of albumin, which are reproduced here with some subsequent additions. Among the most noticeable are those of a committee of the Connecticut Medical Society, of which Dr. Shepard of Hartford was chairman, which will be seen to differ very widely from many collected from nearly the same class of persons, which they might be supposed to approximate most nearly. Dr. Shepard says explicitly that he has taken no notice of cases where the albumin was not shown by the heat test. This paper is to be found in the Proceedings of the Connecticut Medical

TABLE II.—ALBUMINURIA OF ADOLESCENTS, CYCLIC AND ACCIDENTAL ALBUMINURIA.

Author.	Reference.	Class of cases.	Number examined.	Casts found.	Remarks.
Moxon. Dukes ²	Guy's Hospital reports, xxiii. British Med. Jour., Nov. 12, 1881.	Young man. Young men and boys . . . . .	. . . . . . . . . .	Very few	Albumin of adolescence; later renal calculus. Some transient; some recover after years, large proportion first stage Bright's disease.
Johnson. Vogel	British Med. Jour., Dec. 6, 1873. Virchow's Handbuch, vi.	Young men . . . . .	. . . . .	None None	After bathing. Cases observed by the year; no symptoms; may be slight organic changes.
Pavy Pavy	Lancet, Oct. 17, 1885 British Med. Jour., i, 271, 1876	Men mostly young Weston (the pedestrian). . . . .	. . . . . . . . . .	None	Cyclic and intermittent; oxalate of lime; no bad health. During walk; in 1888 in active business.
Ultzmann. Edlefsen. Vogel	Wiener med. Presse, Jan. 23, 1870 Mitth. Ver. Sch. Holst. Aertz., 1866 to 1881.	Physicians	8	None	Urine clear, dark, acid, 1025 to 1035; nothing else abnormal; Albumin after exertion; supposes no renal diseases (excludes doubtful opalescence).
Fürbinger	Zeitsch. klin. Med., 1879-80.	Officers, young physicians, blossoming young people.	3	Not mentioned; Small cylinders.	Officers after exertion, urine scanty, saturated, containing uric acid, gravel.
Marcacci	L'Imparziale, May 12, 1878	Young physician (self). . . . .	. . . . .	None	Albumin absent from night urine; present in day; increased by exercise.
Rooke Kinnicut.	British Med. Jour., Oct. 19, 1878. Arch. of Med., 1882.	Young woman, 14 to 16 Young persons . . . . .	. . . . . . . . . .	None None	Intermittent; none in morning; always at night; disappears; some associated with high specific gravity; uric acid, oxalate of lime; arterial tension low.
Simmons	Sacramento Med. Jour., April, 1887.	Young physician . . . . .	. . . . .	None	Cyclic; none in early morning; concentrated, four years' standing; now absent; oxalate of lime, uric acid.
Canfield	Philadelphia Med. News, 1887	Man, aged 32 . . . . .	. . . . .	None	Cyclic; none in early morning; maximum at 8 A.M. and in evening; well.
Klemperer	Deutsch. Arch. f. klin. Med., xii. (as quoted by Canfield.)	Student . . . . .	. . . . .	. . . . .	Cyclic; maxima nearly as above.
Stokes Stokes Ralfe	Lancet, March 10, 1888 Lancet, March 10, 1888 Lancet, ii, 1886 . . . . .	. . . . . Athlete Man . . . . .	. . . . . . . . . . . . . . .	None None None	Four years; lithiasis from beer; when lithiasis abates Albumin twenty years; now prostatic and cystic trouble. Albumin six years; urine pale, abundant; density high, much pigment.
Fergussou Rendall Engel	British Med. Jour., ii, 1878. Thèse de Paris, 1883 New York Med. Rec., Oct. 1882.	Youth of 17 Several young men . . . . .	. . . . . . . . . . . . . . .	Not mentioned. Very rarely None in those which mention'd	Albumin five years; puffiness of eyelids. Albuminuria from digestion (hematogenous). Occasional albuminuria after unusually heavy meal.
Engel Merklen	New York Med. Rec., Oct. 1882. Med. Press and Circular p. 7, 1885.	Two young men Young man, 16 (symptoms acute). . . . .	. . . . . . . . . .	Present None	Later symptoms of renal disease more marked. Rather weakly; albumin from noon to midnight; more in night.
Fischl	Deutsch. Arch. klin. Med., xxix, 217.	Patients mostly with gastric or hepatic colic, jaundice.	10	None	Albumin temporary.
Fischl Bull. Kinnier Coupland	Dent. Arch. klin. Med., xxix, 217. Nordiskt Archiv N. Y. Med. Rec., June 19, 1886 Lancet, July 10, 1886	Metrorrhagia, collapse Physician, aged 27 Young men Girl of 16	4 3	Few None None	Albumin temporary. Continued at least two years. Albumin during middle of day. No albumin in morning; later, irregularly present; no crystals of uric acid or oxalate.
Fox	Lancet, Dec. 12, 1891	Man, aged 31 . . . . .	. . . . .	On second examination.	Albumin constant; re-examined after two years; casts found; health apparently excellent.
Fox Tiemann Brannan	Lancet, Dec. 12, 1891 New York Med. Jour. New York Med. Jour.	Man, aged 60 Males under 21 Man . . . . .	. . . . . 186 . . . . .	. . . . . . . . . . . . . . .	Albumin occasionally for 17 years; casts sometimes. Albumin in fifty-one cases, 27.5 per cent. Albumin without renal disease; used to eat three raw eggs in morning; eggs stopped; albumin disappeared.
Edes	See text	Young woman . . . . .	. . . . .	A few, mostly hyalin.	Albumin first found thirty-one years ago after puerperal convulsions; from time to time ever since a trace of albumin end casts.

²In a later article (Lancet, 1891, Vol. ii, pp. 1327-1382), Dukes remarks that these cases are much influenced by posture. Albuminuria occurs after standing. Also, these persons liable to faint on standing.

Society, N. S., Vol. iv, p. 203, Hartford, 1888, concealed under the highly descriptive title, "Matters of Professional Interest." This covers many thousand cases.

2. The more or less persistent presence of albumin is always of importance enough to call for a minute and careful search for other symptoms, but if these are not found in such a way as to decide the question, there has been a good deal of difference of opinion as to how seriously this one standing alone should be taken. This point is especially to be emphasized in reference to life insurance, that is as to the remoter prognosis.

Most authorities who have had the opportunity to study the subject from that point of view are quite clear that albuminuria constitutes a decided objection to a risk, although their own statistics, as well as the general experience, proves that there are many albuminurics, by the ordinary tests—that is, tests about as delicate as heat—who are in no immediate danger of chronic nephritis of sufficient intensity to give rise to any other symptoms for many years. In the face of the facts that in the vast majority of cases and under normal circumstances, no albumin whatever detectable by heat escapes by the urine, and that when it does so, some slight departure from normality may usually be found, and that when persistent there is in nearly all cases a deterioration of the general health (Munn, Dukes, Brannan), it is safe to say

that albuminuria always means some trouble with the kidneys. Whether in all cases it has a right to the dignity of nephritis, is largely a matter of nomenclature.

We are originally furnished with perhaps twice as much renal tissue as is sufficient to take care of the excreta which normally pass in this direction. There is no disturbance of the balance of health until the secreting power is reduced, either by loss of substance or loss of function, or unless on some special occasion the demands upon it are considerably increased. Thus it is perfectly possible that there may be some portion of the structure sufficiently damaged to let through a small portion of albumin without affecting the rest of the kidney, just as there may be, for instance, a few specially irritable regions in the nasal passages or in the colon which secrete more than their normal amount of mucus without impairing the functions of the remainder.

The observations of Munn (Medical Investigation in Life Insurance) showed that among the albuminuric candidates for life insurance the percentage of mortality was considerably above the normal, and that they all exhibited, after a lapse of time, a falling off in complexion and general appearance. Clement Dukes (*Brit. Med. Jour.*, Nov. 12, 1881, and *Lancet*, Dec. 12, 1891), who has for years given attention to the albuminuria of adolescence, is far from regarding it with indifference and has on at least one occasion

TABLE III.—ALBUMINURIA AMONG THE SICK.

Author.	Reference.	Class of cases.	Number examined.	Albumin found.	Per cent.	Remarks.
Saundby	Brit. Med. Jour., May 10, 1879	Out-patients	145	105	...	
Stewart	Brit. Med. Jour., Oct. 15, 1887	Private patients	150	36	...	
Stewart	Brit. Med. Jour., Oct. 15, 1887	Indoor infirmary	150	74	...	
Stewart	Brit. Med. Jour., Oct. 15, 1887	Outdoor infirmary	100	19	...	
Stewart	Brit. Med. Jour., Oct. 15, 1887	Sick children	50	7	...	
Stewart	Brit. Med. Jour., Oct. 15, 1887	Fever hospital	50	33	...	
Stewart	Brit. Med. Jour., Oct. 15, 1887	Maternity	25	18	...	
Kleugden	Arch. f. Psych., 1880-81	Male epileptics	33	13	...	
Kleugden	Arch. f. Psych., 1880-81	Insane	60	11	...	
Capitan	Inaug. Thèse	Various diseases, mostly acute	7	Large number	...	
Van Noorden	Deutsch. Arch. f. klin. Med.	Surgical and ophthalmic cases	112	...	31.3	
Brannan	N. Y. Med. Jour., July 4, 1891	100 consecutive male patients	100	...	5	
		Female out-patients aged as follows:				
		15 to 20	98	31	31.6	
		20 to 30	418	96	22.8	
		30 to 40	298	66	22.1	
		40 to 50	238	54	22.7	
		50 to 60	141	37	26.2	
		60 to 70	49	13	26.2	
		70+	6	1	16.6	
Stewart	Am. Jour. Med. Sci., Dec. 1893	Nephritis (?)	...	0	...	Casts found.
Stewart	Med. News, April 14, 1894	Nephritis (?)	...	0	...	Casts found.
Edwards ³	Am. Jour. Med. Sci., Oct., 1893	Nephritis (?)	...	0	...	No casts; no decrease nor increase of urinary solids.

³ Refers to many authors who speak of the absence of albumin.

TABLE IV.—OPINIONS.

Author.	Reference.	Remarks.
Gull	Guy's Hospital Reports, xxii (reported by Moxon).	Albuminuria as common as spermatorrhea.
Johnson	Brit. Med. Jour., Dec. 13, 1879	Latent albuminuria means serious trouble.
Teissier	Lyon Méd., 1887	Subjects of cyclic albuminuria; probably all destined to goutiness.
De Havilland Hall	Lancet, Feb. 18, 1888	Albuminurics should not be assured.
Pye-Smith	Guy's Hospital Reports, Vol. xix	No person who has albuminous urine (by usual tests) can be considered eligible for life insurance
Braunan	New York Medical Journal, July 4, 1891	Derangement of function will sooner or later end in structural change in kidney.

TARLE V.

	Accidental.	Neurotic.	Irritative.	Asystolic.	Chronic parenchymatous nephritis.	Chronic interstitial nephritis.	Subacute nephritis.	Cerebral disease.
Daily quantity of urine.	Normal	Increased	Diminished	Diminished	Diminished	Increased	Diminished	Increased
Specific gravity.	Normal	Diminished	Increased	Increased	Normal or increased	Diminished	Increased or little change.	Diminished
Albumin	Varies in different cases; only occasionally present, perhaps.	Small amount.	Small amount.	Varies	Much	Mod'rate, none sometimes.	Moderate	Small amount.
Casts	None or a very few hyaline.	None or a very few hyaline.	Few	Few or many; hyaline and granular.	Many of all kinds.	Hyaline, epithel., granul'r	Hyaline, epithelial, gran.	Very few.
Other sediment.	Not important	Not import'nt.	Uric acid, oxal. of lime, ep. stained with bile pigment blood?	Uric acid	Uric acid, epithelium.	Uric acid? or not important	Epithelium, urinary salts.	Not import'nt.
Arterial tension.	Normal	High	Normal or high	Diminished	Diminished	Increased	Not much changed.	High.
Dropsy.	None	None	None	Lower limbs.	General	Face, feet and shins.	Slight	None or very slight.
Eye ground	Normal	Normal	Normal	Normal or hemorrhages.	Album. retinitis, but less comm'n than in next.	Albuminuric retinitis, hemorrhages.	Sometimes lesions, which disappear.	Optic neuritis.

recognized in a college student, applying to him for more advanced renal disease, one of his former albuminuric boys. He says: "The cases of early albuminuria, so common in the young, constitute the early stage of what may eventually become developed into that chronic disorganization of the kidneys termed Bright's disease."

One of the most striking illustrations of the fact, that while albuminuria may be an exceedingly chronic symptom, it is not to be considered as without significance may be found in the history given by Dickenson of an old family in which this symptom has been known to exist for at least four generations, while the family portraits seemed to him to give strong grounds for the suspicion that it extended back to a time when it was not sought for in the urine, but revealed itself by the complexion and general appearance to the experienced eye of later physicians. Most of the persons affected died at a comparatively early age, and in one case the kidney examined and reported in connection with Dickenson's paper was clearly in a con-

dition of chronic nephritis. (Trans. Path. Soc. London, 1888-89, xi, 144.)

3. The distinction between acute nephritis and the forms of chronic renal degeneration more distinctively known as Bright's disease without any prefix, is too obvious not to have been at once recognized. The relationship between them was also well understood, so that although it was known that the acute might give rise to the chronic form it was by no means necessarily so, any more than it was usual for pneumonia, for instance, to cause consumption, although such a thing might, under specially unfavorable circumstances, occur. But there seem to be cases between the two where the duration is distinctly too long and the intensity of the symptoms too slight to be considered acute, and on the other hand, do not deserve the inevitably fatal prognosis supposed to be connected with the diagnosis of Bright's. When a case of this kind recovers—either absolutely or relatively—it may be claimed on the one hand by the therapeutic optimist as a "cure of Bright's disease,"

or may be, on the other, belittled by the skeptic as only "an acute case which was rather slow in getting well."

4. The knowledge of the extreme chronicity, as well as the insidious origin, of well-marked Bright's disease could only be acquired by the lapse of time, and many instances of so-called mistakes are due to this fact rather than to any error in diagnosis, properly speaking. A very interesting case is reported by Francis Hawkins (Trans. Clinical Society of London, 1892-3, xxvi, 216), of a medical man who had consulted Dr. Bright himself, and had been told by him that he had renal disease, and that death was inevitable within two or three years. He gave up his London practice, but died forty-three years later of cerebral hemorrhage. Stories of this character are apt to be told of many distinguished physicians, who see in their consulting practice a large proportion of cases that are difficult and obscure. They naturally contribute greatly to the comfort and hilarity of the laity. In the present one Dr. Bright may have been perfectly correct in his diagnosis and failed so signally in his prognosis, because he was necessarily unaware of possibilities now familiar to all. The time that has elapsed since the practice of searching for urinary symptoms in cases—other than those where it is absolutely forced upon us—has become a common one, has taught us many things that he could not have known. Such cases show what we are finding out more and more in regard to many diseases, that an experience based on the hospital and deadhouse, which represent almost entirely the last stages of chronic diseases, is not trustworthy as the sole guide in general practice.

A young woman had post-*puerperal* convulsions in September, 1867. Soon after and for a year later albumin was found in the urine. She was confined again in 1870 and in 1871, the children being sickly. Subsequent examinations of which I have notes are as follows, and I have a strong impression that there were others of the same character:

November, 1874. Albumin and casts, medium-sized, granular and one or two small hyaline. April, 1878. Considerable albumin; small hyaline casts. September, 1887. Large trace of albumin; one cast. September, 1898. S. G., 1016; perceptible opalescence on boiling; slight cloudiness with picric acid; no perceptible line on underlying with nitric acid; several small hyaline casts. In 1887 she called to see me, and again in 1898, and is in fair health.

It certainly appears more probable in a case of this kind that some small local lesion has remained the same without extension to surrounding tissues, than that any general deterioration either of blood, of arteries, or of renal structures has withstood the shocks of subsequent pregnancies and the wear of thirty years without impairment of the general health.

On the other side of the albumin question, *i. e.*, with reference to those cases of decided nephritis which have been for many years known to exist, where albumin is temporarily or even for long periods absent from the urine, they only emphasize the importance of inquiring in regard to *all* the symptoms in *every* case. Equal or superior in importance to albuminuria, comes the presence of casts, and then the quantity of urine and its solid constituents, condition of the heart and arteries, edema, nausea and anemia.

Several elaborate articles, based on a careful study, not only of the more obvious symptoms, but of the

chemic constituents of the urine for twenty-four hours, have recently appeared by Stewart (*Am. Jour. Med. Sci.*, December, 1893; *Med. News*, April 14, 1894) and Edwards (*Amer. Jour. Med. Sci.*, October, 1898). The first named of these authors seeks to establish a special form of nephritis on the basis of absence of albuminuria. It seems very much like the "renal inadequacy" of Sir Andrew Clarke. In all of his (Stewart's) cases casts were found, but he seems to lay special stress in his diagnosis on the deficiency of both water and solid constituents in the twenty-four hours' urine. Of this it may be remarked that he has set his normal standard very high (35 gm. of urea) and, what is of perhaps more importance, there is little reason to suppose that such soluble and highly diuretic substances as urea and chlorid of sodium fail to appear in the urine in sufficient quantity on account of any structural difficulty in passing them through.

A comparison of cases of renal atrophy from hydro-nephrosis or renal calculus shows how small a remnant of secreting structure is sufficient to filter through large quantities of water, presumably carrying with it such salts as are very easily soluble therein. This condition of things points much more strongly to a deficient metabolism, which is a pathologic condition, but has no necessary relation to the kidneys in particular, except from the fact that its products happen to come through those organs. It may indicate to the shrewd observer one of the directions in which danger may be anticipated, but it is not nephritis.

If, in such a case as is reported by Edwards, nephritis is suspected when there are "no suggestive cardio-vascular findings, no albumin, no casts, no decrease in total solids, specific gravity or quantity," no edema mentioned, and this possible diagnosis is confirmed by the autopsy, we can only congratulate the physicians on their acuteness and feel that when a diseased organ presents absolutely no symptoms of abnormality in its products, and no evidence—except so very indefinite a one as nausea—of impaired function, nobody but a clairvoyant can be blamed for overlooking it. The "prealbuminuric stage of Bright's disease" of Mahomed and some others should be described rather as "a condition of the system, and in particular of the arteries, of which nephritis is one among several possible results."

The significance of a very small number of casts can not be quite so distinctly defined as that of a quantity of albumin determined by some standard test, because so much depends upon the skill, the luck, and especially the patience of the observer. If the painstaking method of Haines and Skinner (*l. c.*) is followed, we can be reasonably sure that no casts have escaped us. It is possible that after this method has been in use for some time we may find that they are as common as excessively small quantities of albumin, in which case the symptom must cease to have any great value, unless the chief weight is laid upon their character rather than upon their mere presence. If, however, we adopt a less rigid and more convenient standard, that is, the examination with a low power of several drops of sediment from urine that has stood for a number of hours without decomposing, or obtained from the centrifugation of a considerable quantity, we stand on about the same level of accuracy with the heat test for albumin. Most statistics are not very trustworthy as to determining the importance of the finding of casts under these conditions, as there is no guarantee for even the degree of thor-

oughness just described, but there is no doubt that casts are often found in small numbers when they do not greatly add to the gravity of the evidence afforded by small quantities of albumin. So that now opinion is changing in regard to them, somewhat as it has already done in regard to albumin, and there is danger of their significance being overlooked or underestimated.

Two important limitations should be made. The casts, or so-called casts, of irregular outline and longitudinal striation, often tapering off into a tail at one end, and named, probably correctly, "mucous," are of no consequence whatever, or, at the most, if numerous, are significant only of a certain amount of superficial irritation of the kidneys. They may, however, occasionally deceive an inexperienced observer. True casts may be divided into two chief classes: the small and medium hyaline, which are probably formed in the caliber of tubes which retain their epithelium; and the larger sized ones which contain, or are chiefly composed of, epithelium more or less degenerated; and also more homogeneous ones which are apparently formed in tubes from which the epithelium has been shed. The second class can often be found at the autopsy *in situ* in kidney undergoing various forms of degeneration. They signify parenchymatous nephritis and by their number and character, give important information as to the extent and progress of the lesion. They are naturally of much more serious import than the small hyaline ones carrying now and then a cell. The large casts formed by solid masses of degenerated cells molded in a tube previously denuded of its epithelium or of which the lining forms the outer layer of the cast itself, and those solid ones with a sharp outline, frequently bearing the marks of a more or less complete resinous fracture, are of the most unfavorable significance, but are not often met with until the question of diagnosis has long ceased to be the most interesting one.

Shattuck (*Boston Med. and Surg. Jour.*, 1894, cxxx, 613) has had many examinations made for the purpose of determining the frequency of casts, especially in persons of advancing years, and finds them more common as the patients are older, and not to be closely connected with other symptoms of renal disease, nor of special unfavorable import in such persons. This observation, however, is far from proving them of no significance, but shows simply the fact that there is always a reserve of renal structure and that if its destruction goes on slowly it may be years before that reserve is exhausted. The renal atrophy may be merely keeping pace with a diminishing call for activity of function dependent upon a less active metamorphosis of tissue. It corresponds to the post-mortem observation of a narrow zone of atrophy just underneath the capsule, dependent upon a chronic interstitial nephritis, which has not destroyed any large proportion of secreting structure.

Mitchell (*New York Medical Times*, xxiii, No. 7, p. 201, July, 1895) has examined his records of persons whose condition was known for seven years after albumin and casts have been found. He concludes: "Where casts are found, together with albumin"—he used heat test—"the mortality is nearly three times as great (30 per cent.) as in the non-albuminous cases (11 per cent.), and more than twice as great as in those who have albumin without casts (14 per cent.)."

A part of the difference between the non-albuminuric and the simply albuminuric cases was thought

by Mitchell to be attributable to "accidental albuminuria," but in the presence of a microscopic examination that can hardly be of much importance.

It is only in the early stages and in regard to the preliminary questions that the albumin and casts are to be considered separately. In the permanent presence of albumin it is not safe, so far as most observations go, to assume the absence of casts because they are not mentioned, and on the other hand it is certainly not usual to find casts without the presence of a trace of albumin.

It is safe to say that the presence of albumin by the ordinary tests is proof of some disorder in the glomeruli, either as to blood pressure or soundness of epithelium or both, and that casts, according to their structure, either exudative or degenerative, prove disorder of the epithelium lining of the tubes, whether merely irritative or amounting to total disorganization. How extensive or how slowly progressive these changes may be is another step in the diagnosis, but they are never strictly physiologic, except in the sense that normal and natural reactions to abnormal conditions may be called so.

A condition which very frequently accompanies one form of nephritis—so frequently, indeed, that it has placed its stamp thereon and almost withdrawn it from the category of simple local inflammations, making of it a constitutional disease—is the high arterial tension. So early is it that Mahomed used to speak, not only of a "prealbuminuric stage of Bright's disease," but of "Bright's disease without nephritis." But this also fails of pathognomonic significance in the absence of the two symptoms just under discussion.

The sphygmograms of many cases of neurasthenia closely resemble those considered as characteristic of interstitial nephritis, that is, of an arterial pressure continuing high through too long a part of the diastolic interval, and indicating too great resistance to the passage of the blood in the distal portion of the circulation. The absolute pressure in the neurasthenic cases is probably less in the average than in the true arteriosclerotics, but the opposition to the escape of the blood through the arterioles is such in proportion to the force with which it is thrown into them, that a tracing is produced, similar in form, though often lacking in amplitude. This condition, as I have observed in many cases, is in no way a precursor of chronic nephritis. (*Boston Med. and Surg. Journal*, May 19, 1881 and July 18, 1895.)

Many years ago I took some tracings from members of a medical club, among which were two which would, I think, by any one who had given attention to the subject, have been considered highly characteristic of chronic interstitial nephritis. One of these confrères died three years afterward, not of interstitial nephritis, but of interstitial hepatitis. The other, after practicing for many years longer, gave up finally on account of sciatica and the infirmities of age, and died at 85, never having given any signs of nephritis.

On the other hand, although the usual conception of the nephritis and the high arterial tension as two, perhaps equally important, parts of a common morbid condition, is applicable to the great majority of cases, yet it is probable that in some the arterial and cardiac lesions are distinctly the result of a nephritis of purely local origin.

I recall the case of a boy with atrophy of the kidneys, evidently dependent upon obstruction in the

urinary passages, as shown by dilatation of the ureters and trabeculation of the bladder, who had a heart pronounced by competent authority to be hypertrophied, a condition for which there was nothing to account except increased arterial tension, which had not, however, been observed during life. There had been peculiarities of micturition, although after death there was no obstruction to the passage of an instrument through the ureters or urethra in either direction.

It is my belief that the origin of many cases of interstitial nephritis in young persons, where no other sufficient cause is to be found, might be successfully sought for in some difficulty of micturition, often functional, dependent upon irregular and incoordinated muscular and nervous action. (See *Bechterew. Neurologisches Centralblatt*, Sept. 15, 1898.) This may have been so slight as to escape serious notice but yet sufficient to set up a back pressure in the ureters and kidneys which would lead to hydronephrosis and atrophy. (*Medical News*, Aug. 10, 1899.)

The fact, now well known, that a man who has albumin in his urine is not thereby doomed to an early death, and the later statistics of Shattuck and Mitchell confirmed by many isolated observations, showing a similar significance as attached to casts, are likely to lead to false conclusions if they are taken to prove that these positive and distinct conditions are without important meaning. A marked change in either direction in the daily quantity of urine, as determined by actual measurement, is of great value as a symptom, but an excess or especially a diminution in comparison with the average usually stated as normal, should not be too hastily referred to renal derangement. In fact, in the early and doubtful stages, to which this paper chiefly refers, the kidneys are fully able to take care of all the water, urea, and probably all the other soluble salts, brought to them in the blood.

Pollakiuria or frequency of micturition, especially at night, although it should call for a careful examination of the urine, may be entirely unconnected with any disease of the kidneys or even of the bladder, being often of purely neurotic origin.

The amount of urine is influenced by many circumstances beside the condition of the kidneys: the vascular tension, which, as we have seen, is not necessarily connected with nephritis, the activity of the skin and bowels, probably the dryness of the surrounding atmosphere, and in particular the habits of the patient as regards the quantity and diuretic quality of liquids taken. A considerable diminution in the daily amount of urea excreted does not signify that the kidneys are inadequate to cope with it, but that for some other reason the metamorphosis of nitrogenous tissue is diminished. A copious flow of pale urine of a specific gravity below the normal average will for months or years carry off all the urea formed.

How far this applies to other substances less abundant, less diuretic, and less well known; perhaps to some others formed only under pathologic conditions, is not so certain. The presence of autogenetic poisons as the cause of many symptoms in renal disease is one of the interesting questions yet to be answered by the physiologic chemist and clinician together. There are grounds for suspecting the uric acid group and some coloring matters, but the proof against them is not conclusive. The ordinary urates are not so bad as they look.

PRECORDIAL AREA IN CHILDREN.

Presented to the Section on Diseases of Children, at the Forty ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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DENVER, COLO.

At the Pan-American Congress in 1893, I presented a paper on "The Normal Precordia in Infancy and Childhood," and this paper was afterward published in the *Archives of Pediatrics*. Subsequent observation has not changed the views expressed at that time, nor have I anything to add to them. I shall, therefore, merely give you the briefest possible résumé of the original paper, my present purpose being to mark out the precordia in a few children of different ages, and invite criticism of the results obtained.

I have ventured to bring up this subject again because, in the first place, I regard the question of the normal precordial area as of the greatest practical interest and importance; and if my observations have been correct, it seems to me desirable that the facts should be universally accepted. In the percussion of the heart we are dealing with a measurably constant and unvarying quantity; our results ought to be proportionately reliable. I am aware of the great differences of opinion which have always prevailed in regard to the precordial area, and these have been so divergent as to produce in some the conviction that anything like unanimity of opinion is hopeless; that differences of method and skill will always make percussion of the heart a purely individual matter. I can not take this pessimistic view. To me there is nothing in physical diagnosis more definite and more certainly ascertainable than the normal area of precordial dulness. I am, therefore, hopeful that a practical comparison and discussion of methods may at least further an agreement among those who are here present.

Hitherto no text-book in pediatrics has done more than state in a general way that the precordia of infancy and childhood is enlarged. Weil emphasized the fact in 1879, but made no distinction as to age. Other writers since Weil have simply repeated his statements. I will give, in illustration, only a short paragraph from that latest and most admirable book on pediatrics, "Holt's Diseases of Infancy and Childhood:" "The outline of the area of relative cardiac dulness, especially in small children [italics mine], is proportionately larger than in adults. . . . According to Sahli, the limits are as follows," and then limits are given, corresponding precisely to those originally found by Weil, and to those which I shall attempt to demonstrate at certain ages. This persistent reappearance in the text-books of the old and, according to my conviction, incorrect statements, is the second reason why I again call your attention to my former paper.

The gist of my own observations may in a word be stated as follows: 1. Up to the age of 5 years the precordial area is not perceptibly enlarged, but corresponds practically with that of the adult. This statement concerns mainly its right border, which in the adult is a perpendicular line corresponding very nearly with the *left* border of the sternum. 2. From the age of 8 years up to and considerably beyond the age of puberty, the normal precordia differs markedly from that which is found in earlier life. Its right border now extends a half inch or even more beyond the *right* sternal margin; while the upper border is

in the second interspace, and toward the *left* the precordia extends one-fourth to one-half of an inch beyond the mammillary line. 3. During the fifth, sixth and seventh years, conditions are inconstant. The enlarged precordia of childhood may be found even in the fifth year, but is decidedly the exception. In the sixth year it is much more frequent, in the seventh it occurs in the majority of cases, while in the eighth year, as before stated, it becomes a constant and, in my experience, unvarying find.

As to method of percussion: It is presumed that the stroke is light, or at most moderate in force. My results have been always obtained with the fingers alone; I have never used a pleximeter. In percussion of the right heart, I have always laid special emphasis upon the note obtained over the upper and lower halves of the sternum as compared with each other. If the sternum is everywhere equally resonant, I fail to see how any enlargement of the heart toward the right can be affirmed, except in cases where there is some abnormal condition of the upper mediastinum. If, on the other hand, the lower half of the sternum is duller than the upper half, such dullness can be attributed only to the precordia; a view which may always be confirmed by more careful delineation of this dull area toward the right.

With these brief preliminary remarks, I beg leave to show you several presumably healthy children of different ages, in whom I have marked out the precordial area.

DISCUSSION.

Dr. J. N. HALL, Denver—The doctor has asked us to point out any errors which we see in his method of percussion. I am glad that I have little to say in the way of picking to pieces his results. I think, however, the matter demonstrates several things outside of percussing the chest. It shows us there is room for us to learn something about even a matter thought to be so well understood as percussion. I do feel, however, the Doctor makes one point rather too strong, that is, that the question of cardiac area can be established. That is a matter perhaps, upon which the greatest variation exists among physicians, and concerning which our opinions must vary as long as our methods and ears vary. By the man who does his percussion with the whole arm, using the hand as a hammer, such an area will not be marked out. But now many more are using the finger in percussing than formerly. Three times in my experience I have seen chests absolutely full of fluid. In one case a diagnosis of advanced phthisis with impending death was made some years ago, and the man is now working on the railroad. In those cases the physician did not percuss properly. We may judge of what is beneath by the feeling of the finger as well as by the sound. Illustrating this matter further, I will say that some two or three years ago a physician applied to me to ask whether I considered his cardiac area enlarged. I told him I thought it was somewhat enlarged. Another physician examined him and said he believed it was normal. Six gentlemen, some of them of prominence, examined his heart; three said that it was normal and three that it was slightly enlarged. As long as our opinions will vary in that way we can scarcely say that the matter of percussion is one of absolute accuracy. As long as we have the lung causing different shades of sounds, we will certainly have some room for discussion as to the absolute area of dullness in any heart.

Dr. JOHN H. MUSSER, Philadelphia—There is no department of physical diagnosis that is more difficult than that which attempts to determine the size of the heart by percussion. It is one that I have been working at constantly for a long time and I am not yet satisfied as to my ability to positively state the size of the heart. In fact, I do not believe any one can

state the size of the heart. We can state the relative and absolute areas of dullness. However, to me, the matter has been of such extreme difficulty that I am always glad to learn from others their methods. If I understood Dr. Whitney right, in early life the right border of the cardiac dullness extends to the left edge of the sternum.

Dr. WHITNEY—Approximately.

Dr. MUSSER—Then it extends to the right border later on?

Dr. WHITNEY—It increases with the age of the child.

Dr. MUSSER—I am satisfied that in children the area of cardiac dullness is farther out than we have been taught in the text-books. Even half an inch beyond the right edge of the sternum may be considered normal. The varying size of the heart and the changes in respiration are the factors which make it so difficult to indicate by percussion the size. I refer to the varying size of the heart with systole and diastole. Hence one must percuss constantly and under various circumstances, and not with one method but with various methods, if possible, as control investigations, and even then one can not but fail often to satisfy himself as to the size of the heart. I have felt this difficulty so much with the ordinary methods of percussion, in which I rely more upon the pitch than anything else, that I employ also the method of tapping the chest with the finger and rely upon the vibrations. I also use auscultation. But I have found good results from palpatory percussion. I compare that which I get from the various methods with the child in the upright as well as in the recumbent position and also in full inspiration and full expiration. Then I feel that I can come to some conclusion as to the size of the heart. But the very fact that we have to go through so many measures, and the very fact that the heart is so variable from its action and respiratory movements, leads us to believe that our present methods are unsatisfactory. I am quite sure that palpatory percussion is familiar to you all; yet, probably it will not be amiss to say that it is simply using the finger, with which you can feel resistance. In fact, in this case, I would say the line, if anything, is a little above where Dr. Whitney has indicated. We percuss down the mammary line until we get to the liver dullness, and then by percussing we find a line about the fifth rib that turns off to the sixth rib and marks the cardiac dullness. All these various methods of examination should be used, and even then you will come back in half an hour and find that you are an eighth or a quarter of an inch out. I am very glad to have heard Dr. Whitney's method. It is the only way we can expect to get anything—by hammering away. I am satisfied the question will be settled with precision before very long.

Dr. BANCOCK—I do not feel at all qualified to make comment, but would desire only to raise two or three points or queries which have suggested themselves to me: 1. Can the latitude at which the Doctor makes his observation exert any influence upon this matter? 2. Can the history of the child make a difference? We know that pericarditis in children is a much more frequent disease than is recognized, and pericardial adhesions may exist which are never recognized. The question has suggested itself to me whether in any of these children, for instance, there can be a history of some previous disease in the course of which a pericarditis leading to subsequent adhesions might have been present and yet not recognized. We know that when an adherent pericardium exists it may not give rise to any signs, and yet it does materially influence our findings as to the size of the right heart. 3. The query arises as to whether it makes any difference, in the percussion of a child's heart, whether it is done soon after a meal or when the stomach is empty. The heart is a very movable organ and I would like merely to inquire if it is possible that the stomach of a child soon after a meal might, by a pressing upward of the diaphragm, raise the apex of the heart sufficiently to cause the heart to assume more of a horizontal position, and whether

this might not deceive one in his observation on the precordial dulness of the child? In the cases presented here this morning, those from 8 years upward certainly presented a very different note along the sternum, and the Doctor certainly has demonstrated his claim. Whether in the younger ones there is a slight though sufficient difference to determine that the precordial area is larger than the Doctor supposed is a matter perhaps of individual difference.

Dr. A. C. COTTON, Chicago—It seems to me that perhaps the most instructive part of the clinic today is the point that I would like to make in regard to auscultation, namely: the importance of the personal equation in all of these cases. Here we have acknowledged experts, yet I venture to say that if each one were asked to make a diagram of the area of cardiac dulness, we might have as great a variety of diagrams as we have of examiners. Dr. Whitney, himself, in demonstrating the area of dulness, observed that the blue line in one case did not correspond with the area of dulness. Dr. Musser tells us that he sometimes finds the area of dulness has moved a fraction of an inch in a comparatively short time. Every one who has attempted percussion knows that much depends on the pressure of the finger. Condensation of tissue under pressure will easily give a note that is readily demonstrable. A very nice experiment is to have each one in a clinic examine the area of dulness, and cut a pattern, and then compare the patterns. It is very astonishing the different patterns you will get, and not only from novices either. That there is much difference in this respect I think everybody will admit. When Professor Babcock tells us that he finds an enlarged area of dulness, I take it that means to him, and that there might not be an enlargement of the area of dulness to Dr. Whitney or somebody else. So it seems to me this personal equation will always stand between the different examiners.

Dr. ROSA ENGLEMAN, Chicago—Perhaps it would be better if more of our observers gave us observations as to physiologic and anatomic peculiarities in children as compared with the adult. That is a study in which too little is done. It occurred to me also that the individual factor as related to the children might play a part in this matter of percussion; or, as Dr. Babcock has also intimated, perhaps disease. I noticed in one case the chest showed the child was decidedly rachitic, and that might interfere with the normal growth and development of the heart. Enlargement in the area might be due to the development at this age, especially between 7 years and puberty. The difference, is not so appreciable between the ages of 1 and 7 years as between perhaps 7 and 12 or 13. I think these are factors that have to be taken into account in this anatomic and physiologic study of the heart of children.

Dr. HERBERT B. WHITNEY, Denver—In regard to Dr. Fischer's question, my idea was to bring up the question of percussion, which alone is used in determining the size of the heart. It is a question, when there is an increased area, whether we could judge that the heart was enlarged. The precordial area obtained by percussion has very little to do with the size of the heart. I thank Dr. Babcock very much for his suggestion in regard to the distention of the stomach. I think that may have much to do with the fact that I found over the lower part of the sternum at the fifth year a note, which is, it seems to me, as good if not better than over the upper part. The remark about rachitic cases, by Dr. Engleman, is a good one. I have rejected some rachitic cases because the dulness always extends beyond the sternum. In closing, I want to say one word in regard to the question of resonance in the fifth interspace in cases of pericardial infusion. I have been associated with Dr. Rotch in this work, filling the heart with water and percussing it. I have found that I can not feel that the Doctor is correct in that. I have examined a great many cases of pericardial effusion and enlargement of the heart, and I have come to the conclusion that, as far as my experience goes, in

those enormous hearts that extend far over to the right, in which there is some difficulty in distinguishing it from a pericardial effusion, we find dulness everywhere; sometimes absolute flatness extending over to the right of the sternum. How one can make a differentiation between pericardial effusion and enlargement of the heart in that way is beyond me. I have not been able to do so.

A STUDY OF THE HEART AND CIRCULATION IN FEEBLE-MINDED CHILDREN.

[PRELIMINARY REPORT]

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. MADISON TAYLOR, M.D.

AND

F. SAVARY PEARCE, M.D.

PHILADELPHIA.

In the Transactions of the American Academy of Medicine (Vol. ii, pp. 164 to 189) for 1895 the writers considered the "Causes of Mental Impairment in Children," and the "Causes of Imbecility and Idiocy," the "Varieties of Idiocy," and "Pathology of Idiocy," respectively.

Since that time a study more particularly of further somatic changes in the mentally feeble children has been continued, and we have carefully gone over the records of the 532 cases reported in the above communication, with the object in view of tabulating systematically the results obtained as to the "Heart and Circulation in Feeble-Minded Children." In feeble-minded children a large proportion are of defective development in other organs.

A large amount of new material accumulating through our own further studies, and in reports kindly made by physicians in charge of institutions for feeble-minded children, both public and private, have added much to the statistical value of our records, which will be recorded *in toto* and presented in the near future.

It is here intended to make an elementary report to preface the elaboration which will be followed by a fuller compilation.

Heart in feeble-minded children.—Arhythmia is a notable feature in about half the cases, and especially so in proportion to the aberrant forms, as the Mongolian type of idiot. Intermittent heart we noted but seldom, and indeed in our experience it is more associated with functional disturbances than with organic (brain) changes, as though inhibition overflow mechanism was always at work in varying degrees in the mentally feeble. Thus some sort of pulmogastic stimulus always persists; whereas in functional brain or heart disturbances nature seems to be able to afford complete silencing of the myocardium, again to proceed undisturbed. This also seems to be the case with the ill innervated papillary muscles, for transient, shifting, precordial murmurs not transmitted can, we think, not be explained on any other physical basis, and true organic murmurs are not common. Cases illustrating this phenomena will be detailed in the future work.

Tachycardia occurs in 50 per cent. of imbeciles, depending much on the degree of brain capacity and type of case—more marked in idiot savants and in microcephalic idiots.

Brachycardia is not an unusual phenomena, and occurs more in hydrocephalic, slight cerebral pressure cases, and in the sporadic cretin, in which latter the use of thyroid has increased the pulse-rate perma-

nently, along with the bettered mental and physical condition of the child.

Increased area of precordial pulsation exists in about one-third of the cases of imbecility, in one-half of which the hypertrophy is not sufficient to account for, and, we take it, must be due to transmission of unharmonious muscle-action, as implied in the above paragraph.

Transient thrills occur in many cases and more at the apex, perhaps—but this is to be further studied—due to close proximity of the apex at the sixth rib to the chest wall.

Transposition of the heart we have not met with, nor of other organs, although considerable shifting without added acute disease. Reason for the same was noted in a marked number and reminded us much of an adult case of a contortionist athlete with sequent bovine heart, in which the subject was able to shift the apex back and forth by extrinsic muscle effort. At autopsy we found a large, fatty heart and pericardial adhesions that might be causative in the shifting by the mechanism above detailed. This case was seen by one of us as interne in the Presbyterian Hospital of Philadelphia, and has been reported by Dr. R. G. Curtin, in whose clinic it occurred.

Bruits in the neck are few and inconstant. The hybrid between functional and organic murmur, as noted above by irregular valve leaflet action, was the principal lesion noted among the patients so far studied.

Pulse seems to follow less closely the result of the cardiac action, as above detailed, less frequently than is known to exist in persons of normal mentality, ruling out any gross cardio-vascular malady. It is not uncommon to detect rapid heart with synchronous pulse—but only temporarily—and the next fifteen minutes perhaps both fast or both slow, or indeed, vice versa.

There is also apt to be much difference between the two radial or two dorsalis pedis pulses—all in fact out of true co-ordination, as may be suspected on thought by the disturbed, ill-made governor—the brain mass of stunted, deficient micro-chemically weakened central neurons.

Conditions of edema are singularly rare, notwithstanding the disturbed and apparently markedly separately acting vasomotor systems, conditions (and of the blood) which demand wider study, as do skeletal conditions in imbeciles.

DISCUSSION ON GASTRIC DISEASES.

Delivered in the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

Dr. CHARLES V. SPIVAK, Denver—It seems to me there is a certain hastiness on the part of the physician, when he comes to a child and finds it suffering from any gastric disturbance, to at once feel himself obliged to feed the baby and to devise some means how the baby should be fed. When a child is vomiting ten or fifteen times a day, the milk or any other food it is given, I think it is absurd for the physician to prescribe any food at all. I refer now to an extreme case of frequent vomiting or diarrhea, in order to take this simply as my point of departure and then we will take a slighter case. In such cases it is absolutely absurd to give the child food. All these artificial foods, prepared from cream and water in all the different ways, are simply due to the hastiness with which the physician advises the parents to feed the baby. When a baby vomits frequently or has a diarrhea, it should not have any food, but its stomach and intestines should have a rest. The

parents should be told that a day or two, or even three, of fasting for the baby will do it good and the introduction of food will do it harm. If the baby's stomach and intestines are brought into a better condition by simply fasting, or what I would rather call rest of the stomach and intestines, which is recognized as a therapeutic agent in other diseases; if rest is carried out with other devices for keeping the child at rest, and its stomach and intestines are brought into good condition, I think the food the child has had will do well if it is introduced at first in very small quantities. The first principle is not to overburden the system. So many foods are being analyzed and all that, but it seems to me that is all superfluous if we do not give rest to our little babies. If a baby has proper rest after it has assumed its former condition and can perform its natural functions, and the food is introduced in small quantities, I think this whole question of artificial feeding may be considered entirely superfluous.

Dr. WILSON of Pennsylvania—I want to endorse what the gentleman from Colorado has just said, and to go a little further and say that the most important question that usually confronts the physician in the stomachic and intestinal diseases of children is not what he shall feed them, but how he shall keep them off food. I think that is the most difficult question the physician has to consider. An article written by Dr. McFarland, which was copied in the foreign journals, on the use of hot water, impressed me very much. It is difficult to feed children who have been breast fed hot water with a teaspoon. It has been my custom to take an ordinary bottle, make it absolutely clean, put in some hot water, add some salt and put a nipple on the bottle. I do not take the salt out of the salt-cellar. I have a tablet, which is composed of chlorid of sodium and colored red. It is very attractive. I tell the mother to dissolve this in so much water. It has proven a most satisfactory method, keeping the child on this until the craving of the child for food shows it is in condition to receive food. I have had children whom I have had to wean off the hot water to get them to go back to the milk.

Dr. H. M. McCLANAHAN, Omaha—We should resort to artificial food where it is necessary. If we commence the care of the mother sufficiently early, there should, as a rule, be no reason why the mother should not nurse the infant, except in cases of disease. In one case, that of a German woman whose child suffered from colic and indigestion most persistently and constantly about twenty-three out of the twenty-four hours, an analysis of the mother's milk revealed about 4 per cent. of cream and 4 per cent. albuminoids. There, in my judgment, was the trouble. After giving the mother a thorough course of the salines, removing the albuminoids, and putting her on proper food, in about a week there was no trouble nursing the child. In the second place, as to the artificial feeding of babies, I can endorse what the gentlemen have said, but we ought to get so we can artificially feed these babies without producing indigestion. We should teach the mothers to feed them so they would not have these attacks. By changing the formula, I think it is an easy and simple thing to get a food that will meet the requirements of a case. I always give the proportions in ounces so the people can understand it. By changing the proportions there should be no trouble. This we can do without resorting to any of the patent foods. I think we should just as well give an adult patent medicines as give the babies patent foods. There are none of them similar to human milk. First, we should get a food that the child will take and digest without suffering. Next, we must get a food that will properly nourish the child. Condensed-milk babies, many of them, get along very comfortably; they get fat, flabby, and always rickety. I have never seen that fail where they were fed on condensed milk exclusively. So it is a question of getting a food that is digestible and that will properly nourish the child—a food that will not only make it fat, but will

develop its muscular and nervous system as well. We should make a food as nearly as possible identical with the normal human milk when we can not get that. That, I believe, can be done without resorting to patent foods. These societies should condemn the use of patent foods.

Dr. R. B. GILBERT, Louisville—The question of feeding the baby when the mother's milk has failed, is certainly one of the most perplexing, especially to a city population, where the cow's milk has to be obtained second hand to a large measure. I concur freely with the gentleman who has spoken with reference to overfeeding. The nursing-bottles are ordinarily made to hold half a pint for an infant a year old, whose stomach, when considerably distended, will hold only an ounce and a half or two ounces. Consequently overfeeding is one of the causes of much trouble, even if the milk be wholesome. Another matter it is well to look after is artificial feeding when the mother's milk fails. Cow's milk or possibly the goat's milk may be good, and the mare's milk has been used largely in some countries, Russia especially, but the cow is a domestic animal in this country from which we get our milk-supply, and her milk may be modified by the addition of a little water and a slight amount of alkaline matter—because it is always acid, at least shortly after it is drawn—and then secure a specific gravity of about 1032. There is much trouble getting the milk in the city and also often in the country. The milk is likely to become infected. Next to the cow's milk my experience is that condensed milk is the most reliable artificial food; it is certainly the most convenient. It can be obtained in small quantities and quickly prepared. The water should always be sterilized, which can be done readily by boiling. The assertion that rickets always follows the use of condensed milk is not true according to my experience. You can prevent that by giving the lime salts either with it or by a separate prescription.

Dr. WILSON—That is begging the question; a child fed on condensed milk alone for six months will develop rickets.

Dr. GILBERT—In that I agree with the Doctor. If you will feed a baby on any one food, except mother's milk, for six months continuously you are apt to have one or another or perhaps several derangements. One derangement you are likely to have is scorbutus, which is, I believe, likely to occur where you use condensed milk. I have seen it in two cases where the child was fed on Horlick's food. In one case it went on until there was a separation of the epiphysis of one of the bones. We were abstaining from all acid foods from the idea that acid produced scorbutus, but there we went just to the opposite extreme and gave scraped apples and fruit juices and all that and the baby got along all right. We should change the food of the infant frequently, putting him on cow's milk two or three months, then on condensed milk two or three months, and I would not object even to Horlick's food. A little chlorid of sodium should be added to the baby's food. Where I live we have an abundance of blue-grass and blue-grass milk, but the people in the city do not get good milk, because it is modified by adding water and using agents to prevent fermentation, boric acid being used frequently. If you can get good milk and add a little chlorid of sodium, the baby will get along very well. The starvation of a baby that has been overfed has, I think, been carried a little bit farther than the necessities of the case require. If you give the baby hot water six or eight hours and then resume its dietary, it will do all right. I have taken infants in apparent collapse from choleraic disturbance of the bowels and held them off on hot water six or eight hours and then given milk or condensed milk in teaspoonful doses an hour apart. I believe prolonged fasting is objectionable, because the child will reach a point after a while where he will refuse to take anything.

Dr. CHESBRO—The matter of withholding food from the infant is important, but I believe it can be carried to excess.

We not only are in danger of losing the confidence of the mothers but we may weaken the infant. After six or eight hours I believe the albumin of egg stirred up in water can be given with good results. That helps to satisfy the thirst of the child, which is intense, and is well borne by the stomach and it helps to keep up the nutrition of the child. I believe a good many of these attacks of indigestion are due to overfeeding in the first place. Indeed, I think the reason so many mothers, nurses and doctors have trouble with cow's milk and are so anxious to use patent foods is because they do not use it properly. They do not properly dilute it. If they simply dilute the milk properly and add sugar and lime water, the child will do very well. In regard to the use of condensed milk, my own idea is that condensed milk modified so simply as one of the gentlemen who preceded me said, is one of the poorest foods we have. Condensed milk, in order to approximate anything like the composition of human breast milk, can be diluted only about 1:6, but not one child in thirty can take it diluted 1:6. Other ingredients must be added, notably fat. But it is surprising to see how once in a while a child will get along on condensed milk. A child I saw, with a temperature of 103 degrees, consolidation of the left apex, some evidence of bronchitis and a loud systolic murmur, indicating congenital heart disease, I found was fed on condensed milk diluted 1:30 and in addition was having two slices of bread a day. The child had previously been doing well. As the gentlemen said, I do not believe it is possible for a child to be fed on any one food alone for any length of time without the development of rickets. For the first months of life condensed milk makes very good food. It makes fat babies, but as a matter of fact they have little resistance. Almost every child will develop rickets unless in a few months it has a pronounced modification of its diet.

Dr. S. E. WOODY, Louisville—The number of prepared and patent foods shows that they are inefficient. Cow's milk properly prepared certainly gives us something we can feed nearly every child. The use of the different formulæ for preparing it and the addition of sugar of milk, is better than to use such a thing as condensed milk, particularly the Eagle brand, which contains about 50 per cent. of cane sugar to preserve it. Cane sugar is a sugar which is not digestible by the child. I have discarded the use of prepared foods almost altogether. Of course there is no rule which we can lay down by which we can feed all children alike. We have to use beef juice and different preparations of meat in order to get them over some of the disorders of digestion.

Dr. WHITNEY—I think it would be interesting if the Chairman would give us the results of the collective investigation on scurvy.

THE CHAIRMAN—There is a committee of the American Pediatric Society which has been studying the etiology and symptomatology of scurvy. We recently had the report presented at the meeting in Cincinnati. We had collected altogether 379 cases of infantile scurvy. We know that it is a distinct dietetic disease, and represents faults in diet. There are many other disturbances which are produced by faults in diet, but in scurvy it is very interesting to study the relation of the food used to the disease. The committee has been careful not to use any names. They do not say such and such a food produced the disease. We do not want to involve ourselves in any lawsuits, and we only say what food was used when the scurvy developed, and what food was used when the case recovered. Two hundred and eighteen cases had been fed on proprietary foods. Of that number condensed milk had quite a large proportion of cases. We have stated just how many cases were using Mellin's food, just how many were using malted milk, and so on through the list. The report will be published soon.

Question: I would like to ask the Chair whether the long continuance of the one food was considered, because in the scurvy of the adult occurring on shipboard the disease is not

attributed so much to the article of food as to the continued use of one article of food.

THE CHAIRMAN—It was the prolonged use of an improper food. It was not always one food, for sometimes the child had run the gauntlet of the proprietary foods.

MILK-MIXTURES AS FOOD FOR INFANTS.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY EDWIN ROSENTHAL, M.D.

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The ideal nourishment for a child is mother's milk. Nature and nature's laws have wisely ordained that the child, whose digestion is unsuitable to the foods of matured years, should be provided with nourishment which in the nature of things is most simple and bears with it the vital ingredients necessary to the child's growth. When, by certain causes, the natural method of feeding the infant is interfered with, artificial means are at hand to become the substitute for the mother and bring to the child such food as is alike acceptable to its taste and digestion, and which will add to its growth, prevent disease, and assure it a healthy childhood.

As the feeding by the mother or the "wet nurse" is called the "natural" method, so is the other, by reason of its application, entitled the "artificial" method of nourishing, and the sucklings so reared are termed "bottle babies." If we accept as facts the commendations of the various manufacturers of food preparations, nothing could be simpler and easier than to raise a new-born infant artificially. You obtain a food which purports to represent the elements of human milk, and prepare and use it according to directions. These various preparations may be more or less useful as temporary food for older children, but for new-born babes and infants in their first months, according to the unanimous view of all physicians, these foods are not suitable as temporary, much less as sole, nourishment. The only true substitute for mother's milk is to be found in the milk of animals. For this the cow is principally depended upon, and the percentage of the three important ingredients in human milk and cow's milk is shown as follows:

	Fat.	Casein.	Sugar.
Mother's Milk	3.1	1.7	6.2
Cow's Milk	2.5	3.6	4.8

This proves conclusively that cow's milk differs from human milk in the amounts of albumin (casein) and of sugar.

Sugar in milk is not intended simply for sweetening; it also has nourishing qualities, and in the artificial preparation of milk it is essential that it be used in the same proportions; and by reason of its digestibility, milk sugar should be used instead of cane sugar. The greatest difficulty met with in using cow's milk is the proportion of casein—double that of the human milk. It is, therefore, a fixed rule in practice to mix the milk so that the proportions of casein and of sugar be so apportioned that the resemblance to the human milk will be certain, not only in theory, but also in results. For the better understanding of the method of mixing, definite percentages have been presented and certain rules have been adopted which, if adhered to, will be most certain of results, and will

place the method of feeding by this artificial way upon a classic, scientific basis, with the ultimate result of making the method a truly reliable one, receiving the approval of all. I may say that this method of mixing milk is but in its infancy, and that it has not received the attention which it deserves, but I firmly believe it will, by its own worth, be brought to the notice of all, and become the only real and true way of nourishing the infant.

Many names have been bestowed upon food that takes as its basis cow's milk. The one most widely known, which had its birth in our country, and received its title from one of our members, is the so-called "Modified Cow's Milk." Unfortunately, the use of the name as well as the milk is objectionable from an ethical standpoint, being a patented article. This, however, can not change its value, nor its utility, and as methods have been devised for the preparation of such foods at home, it can be used and will continue to be used, the patent notwithstanding.

Different methods have been devised to so mix the milk as to make it as nearly like human milk as possible. Biedert's method of "modified milk" is a mixture of cream, milk and water in varying proportions, according to the age of the child. In our country Rotch was the first to place "modified milk" upon a truly scientific foundation. He has presented to the profession two methods of preparing the milk; one may be termed "the milk laboratory method," and the other the "home method." Certain percentages have been taken as a basis. The elements entering into the food were termed by him, fat, sugar and protein, and the milk laboratories can furnish "modified milk" of any desired proportions upon prescriptions of physicians, exactly as drugs are dispensed by an apothecary. While the expense of feeding an infant by this means is very great, other factors of vital importance are against it. We are, as it were, dependent upon a laboratory for the child's food, and if some accident should happen to prevent the making of the food for one, two or three days, we would be in an unfortunate predicament. The "home modification" would, therefore, appear best, and for this purpose certain instruments, with a certain fair amount of technique, are essential. Rotch, as well as Holt, gives many formulae, suitable to children of various ages, which can be applied in various ways, and which are perfectly satisfactory. Lately I have been using "Fat Milk"—the "modified milk" food as prepared after the method of Dr. Gustav Gaertner, and known commercially as "Gaertner's Mother Milk." This food is prepared in the same manner as by Professor Rotch's method. The centrifuge is used to separate the fat, by so arranging the tube which expels the cream from the centrifuge separator that just one-half of the milk contained therein is expelled and collected. In this way, as the casein, sugar and minerals are not affected by the process of centrifuging, the percentage of the latter is not changed, while that of the fat is doubled. The advantage of this food over the other modified food is that it comes to us already prepared, and simply needs to be heated, and the cans well shaken so that the mixture be thoroughly made before using. If the food be permitted to become cooled, it will separate again, and lose the appearance of pure milk. I have used "Fat Milk" in various diseased conditions, and have had very fair success.

In the preparation of milk foods at the home, I think several points should not be lost sight of: 1, the

milk should be of undoubted character; 2, it should be free of any drugs, as boracic or salicylic acid; 3, the addition of salt to the food, and when sugar is indicated, the use of sugar-of-milk (milk-sugar) instead of cane sugar; 4, the agents used to modify milk.

The first three points can be discarded, as, all things being equal, the best milk will be the one taken, and this will of necessity be entirely free from any adulteration. The fourth point can not be so easily discarded, for upon this depends to a certain extent the well-being of the child. Rotch's formula—which may be altered to suit any case—is: Fat, 4 per cent.; sugar, 7 per cent.; proteids, 1 per cent.

Taking this as a basis to show how such a formula as this can be prepared, Rotch gives the milk laboratory formula in position, and I think no better way of explaining the method of its preparation can be given than to present both formulæ, as Rotch gives it under the name of "Modifying Clerk's Prescription:"

PHYSICIAN'S PRESCRIPTION.		CLERK'S FORMULA.	
	Per cent.		Oz. Dr.
Fat	4	Modifying cream	7 7
Milk sugar	7	Modifying milk	4 7
Proteids	1.5	Sugar solution	8 3
Mineral matter		Lime water	1 5
Lime water		Water	8 6
		Total	31 4
Number of feedings			7
Amount at each feeding			oz 4½
Heated at		degrees F.	167
Time in sterilizer		minutes	20
Remarks:			

This will be correct as long as it is obtained from the milk laboratory, but when it is to be made at home, it will be found rather a difficult subject. For this reason other methods have been used to modify milk in the home, and perhaps the one most used and most favorably known is the "flour-ball" modification. This is made by the addition of a tablespoonful of flour, previously prepared by boiling it for five hours, to a quart of milk mixture. This milk mixture is graded according to age, as within 1 to 3 months, the milk and water are one pint each; after this period the water is reduced one half-ounce every month, the milk being added to keep up to the quantity of two pints. Sugar need not be added to this mixture, or very little. Salt, however, I have always used, and in quantity hardly to be tasted. To give a taste, as well as to sweeten the food, cinnamon bark has been added. This, however, may simply be fanciful, but it is useful, especially in those cases which we term colicky babies. Among the proprietary preparations "Imperial Granum" comes the nearest to the flour-ball mixture, and I frequently prescribe it when such a food is indicated. Used as I have thus directed, it becomes one of the easiest home modifiers. Another food that is used in Philadelphia to quite a large extent is what is known as "Mellin's Food." This is also among the simplest of home modifiers. The method of its use is: milk, water and the food in varying proportions. Analyses of the different mixtures have shown it of equal value to other home methods. We can also make food of low or high proteids, fats, etc.

As the food for the infant depends largely upon the peculiar idiosyncrasy of each child, no fixed rules can be laid down nor followed. It must, however, be the rule in practice to adapt the food to the child's needs, and not the child to the food. The quantity and quality of the food is an insufficient guide. Even while it may be of the best, it may not be the one

adapted for that individual case. We should watch the stools to see if the food be thoroughly digested. If the child suffers from diarrhea, caused by the food, it would be irrational to continue its use. It is, therefore, safe to take as the guide the stools, and if we find digestion complete, the continuation of the food is in order, but if we find that digestion is incomplete—noted by the color, consistency and presence of cheesy masses in the stools—then the rule will be to at once change the food, and to remove that element that gives rise to the difficulty. Milk is the only really honest food to give the infant. Modified to fit its condition, we are on the safe path to perfect health.

DISCUSSION.

Dr. SLAGLE of Minneapolis—The great trouble with us in the West here is the milk-supply. The milk that we are feeding our children in Minneapolis is secured once a day, and the milk they get this morning is not milked this morning but at least part of it was milked yesterday. It will not be long before even in cities of this size they will have milk laboratories. We all admit that cow's milk is the best food, next to mother's milk, and can be modified to do away with the commercial foods, but at the present time we are compelled to use the commercial foods to a large extent in Minneapolis and they do, I believe, throughout the West.

Dr. R. B. GILBERT, Louisville—I was glad to hear that in modifying milk the essayist mentioned the flour ball. He has shown us the necessity of phosphorized elements in the infant's food and shown the minute work of nature in converting the material into food. But that is not new by any means, although the scientific elucidation of it is somewhat recent. In my earliest experience in baby feeding in the country it was the custom of the country women to feed a baby with what they called scorched flour, simply converting the starch into a kind of diastase or malt and retaining the phosphoric element. That was sometimes very happily used in correcting trouble in bottle fed infants. I have frequently recommended the same sort of a plan. I want to make one more point about condensed milk. The condensed milk must be fresh. If a can of condensed milk remains on the shelves of the drugstore or grocery three or four months before it is used, I do not know the changes that take place, but it is not as easily digested. I have in my town a grocer who is raising a pair of his own children, twins, largely on condensed milk. I give in addition to the milk a piece of bread. I have the grocer to bring on a case of fresh condensed milk every week and where I have bottle-fed babies in different parts of the city I send them to that one grocer, because I know then they get the milk fresh from the manufacturer.

Dr. H. M. McCLANAHAN, Omaha—I have entirely abandoned patent food for infants. I have had eighteen children under my care and they have all been well developed. I have resorted to a formula which any ordinary mother can carry out. In the first place, I have them procure the milk from as good a source as possible. When they can, I have them procure it twice a day; when they can not, I have them procure the milk and skim off the cream. Then I have the mother to take three ounces of the cream, two ounces of good milk, one ounce of milk sugar and ten ounces of water. First dissolve the milk in water, sterilized, and then add the milk and cream. This is placed in nursing bottles with cotton stoppers. A sterilizer can be made out of a bucket with a perforated false bottom. Five of the nursing bottles are placed on the false bottom in the bucket and placed on the stove. I direct the mother to leave it until the steam escapes twenty minutes. These are then placed in a bucket of cold water. When she is ready to feed the baby I tell her to place the bottle in a can of hot water as hot as the hand can stand, which is about 115

degrees, and then the temperature of the milk is about 100. Then the cotton is removed and a clean nipple placed on the bottle and the child fed. Another thing I have found by actual investigation is that that is no more expensive than any other method of feeding, not excepting condensed milk itself. Milk sugar in Omaha they can buy at 25 cents a pound. Then with a sterilized bucket, which costs very little, and a graduate which costs 10 cents, we can take good care of these children. From one of the babies I withdrew milk entirely and gave only cream and water. In one case I had to reduce the cream until there was only one-eighth cream and seven-eighths water. Then after a few days I increased the amount of cream until I got to about to the normal proportions.

Dr. McCONNEL—Sometimes we have to exclude all proteids. That is based on the condition of stools. When you have a putrid diarrhea, when you are feeding milk-mixtures, you must exclude the proteids. If you continue any form of milk, you will not nourish the child. Then you must confine it to the farinaceous foods. If this is carefully watched and you stop the cow's milk for a few days if you have putrid diarrhea and confine the child to farinaceous foods and a limited diet, after the bowels become clean you can come back to the ordinary food.

Dr. JOSEPH CLEMENTS, Kansas City—Along this line I want to call attention to a boy I have today in Kansas City, over 2 years of age, ruddy and robust and fat and plump and perfectly healthy, whom I have brought up on various kinds of foods, finally coming down to modified milk. I first saw the boy when he was three months old. The mother was a trained midwife and I supposed she had a proper modification of the milk. The child was a perfect skeleton, but I put him on a modified milk and the baby got along well for a number of months. Perhaps five months afterward I found the baby in the same condition I found him at first. He was a perfect skeleton. Then I put him on Mellin's food and he again became fat and apparently healthy. The parents were Germans and came back later and told me the baby was bad again. Then I changed to condensed milk with the same result as before, that the baby improved and got fat and after a few months became ill again. They had sent for their priest, supposing the child would die, and he said there was no use sending for the doctor as the child was too far gone. I put him on modified cow's milk and he did well and has stayed in a good condition since. He was thirteen months old before the first tooth appeared. He now has a good supply of teeth and is in a good condition.

Dr. J. P. CROZER GRIFFITH, Philadelphia—I have purposely kept in Philadelphia the only out-patient department I still have, the Children's Hospital in May, June and July, because I want to be thrown with the class of people who can not get the usual modified cow's milk. I do not believe the occasion arises, or only very rarely it arises, where we can not perfectly well feed a child modified cow's milk. The difficulty is not great. We as physicians should abandon the habit of saying we will give this child an ounce of milk and an ounce of cream and so much water. We ought to think in percentages, as Dr. Rotch has so long told us, and then we think much more accurately. We do not need milk laboratories. They are useful but not absolutely necessary. It costs only about \$6 for a Babcock centrifuge and you can then test the percentage of cream your little patients are going to take. You can assume that the percentage of proteid will be 4 per cent.; it usually runs about 3.5 per cent., so the error is on the right side. I would like to refer you to an interesting paper in the *New York Medical Journal*, March 12 of this year, in which it shows how to make the proper percentages and how much milk and cream the mother is to use. In Rotch's book you will find a series of tables telling how much milk and cream you are to take. They are all right when you are in your office, but at the bedside you can not remember them. So I

have a table copied in my book. I know this is simple, for I used it on the poor people, where I have no more opportunity to get good milk than you have in any part of the country.

Dr. EDWIN ROSENTHAL, Philadelphia, in closing—Mr. Chairman: The idea I had in presenting this paper is that we can modify our foods at home. My idea is that this should be the food for healthy children, and in knowing how to properly feed your children you prevent them getting sick. If the child has putrid diarrhea, you must not continue the milk, but put it on barley water or whatever you think proper for it. Inasmuch as I have seen some accidents occur from the use of condensed milk I am not so heartily in favor of its use. The milk had some hydrosulphuric acid in it and spoiled. Whereas, in the modification I have suggested, I do not count it up in percentages, I try to make the formula as simple as possible. A point I wish to lay particular stress upon is dentition. I think the gastric disturbances during dentition are due more to the dentition than to the foods. I have a poor class of patients that I do not care to give up, and among them I have seen some remarkable results with Mellin's food and with malted milk, but I can not conscientiously give any recommendation to any food. If you modify the milk, whether in percentages or in ounces, you are on the right road to feed your child properly.

A NEW BREAD FOR DIABETICS.

Presented to the Section of Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY N. S. DAVIS, JR., A.M., M.D.

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CHICAGO, ILL.

I do not propose to present a formal paper to this Section, but to exhibit a flour and samples of bread which have been invented and prepared by a patient of mine, who, himself a diabetic, has for a number of years experienced the need of a substitute for wheat bread.

When treatment is first begun a diabetic should be placed upon a strictly non-saccharine and non-amylaceous diet, in order to determine how far the disease can be controlled by diet. This change should not be made abruptly, but gradually, during a week or ten days' time. If the change is made abruptly, appetite often fails and malaise increases; in some cases untoward symptoms may arise and coma has not infrequently been observed to develop.

A rigid diet can not be long maintained. Nor is it necessary so to do. In the least severe cases a modicum of carbohydrates can be assimilated. Just what this quantity is can only be ascertained by a careful study of each case. Frequently, during exacerbations of the malady, a relaxation of dietetic restrictions proves better than an increase of them. Whenever a strictly diabetic regimen must be adhered to, and whenever one only slightly modified from this must be employed, a substitute for wheat bread is craved. No one article of food is more universally missed, if it must be omitted, than bread. A variety of flours have been invented as substitutes for wheat flour. Gluten flour is more universally used than any other. It is almost impossible to make palatable bread from pure gluten. All the gluten flours upon the market contain starch in considerable percentage. It is better to permit diabetics to eat a given amount of wheat bread instead of unlimited amounts of gluten bread, which contains on the average half as much starch as ordinary bread and is less palatable. Bran cakes, soya biscuits or bread, almond cakes, cocoanut cake

and peanut bread are other substitutes for wheat bread.

Bran flour contains a considerable percentage of starch. The cellulose which it contains makes it indigestible and liable to provoke diarrhea. Soya flour makes bread which is not very palatable. Analyses of the flour vary much, stating that it contains from 3 to 45 per cent. of starch. The most trustworthy analyses accredit it with about 20 per cent. of amylaceous matter. Almond flour contains from 4 to 5 per cent. of sugar, but no starch. It is so rich in oil that it also often produces dyspepsia. Cocoanut flour contains a small quantity of sugar. From it a variety of bread-like or cake-like preparations can be made. Peanut flour contains about 14 per cent. of carbohydrates. It does not make as palatable preparations as either the almond or cocoanut flours.

The flour which I show you is made from one of the many edible pine nuts. It is fine, slightly yellow, and bland in taste. The flour contains no starch and only 7 per cent. of cane sugar. If bread or other articles of food made from it are raised with yeast, this sugar is decomposed so that only a fraction of 1 per cent. can be found in the product. I have prescribed it for a dozen or more diabetics during the last few months. With few exceptions the bread and cake made from it is relished and found to be an agreeable substitute for wheat bread. Two patients at first relished it, ate it with avidity, but at the end of a week or ten days found that it caused indigestion. I urge patients to use it moderately, not *ad libitum*. Certain patients are told to use it at two of the daily meals and are permitted to use a moderate amount of wheat bread at the third meal.

This bread does not produce gases when it ferments. If it does not agree with the patient it produces loss of appetite and disinclination for it. It contains 19.82 per cent. of oil; sweet almonds contain 53 per cent., and cocoanut 70 per cent. It is therefore less likely to produce indigestion than flour products derived from either of the other nuts. It contains 55.65 per cent. of albuminoids; 6.42 per cent. mineral matter, and approximately 4 per cent. of fiber.

It is essential to the treatment of diabetes that nitrogenous waste should be lessened. This can be accomplished in part by prescribing oils and fats instead of starches and sugars. All these substances retard nitrogenous metabolism. The oil in these nut flours is therefore not objectionable, but desirable if a patient's digestion is fairly good.

I believe the best results are obtained, if substitutes for wheat bread must be prescribed for diabetics, when patients are gradually accustomed to their employment and when they are used intermittently rather than constantly. From this flour, which is known as the Chicago Sanitary Flour, a variety of food products can be made—bread, muffins, pancakes, cake, cookies, etc. Some of these must be made with baking powder instead of yeast, and contain a small per cent. of cane sugar. They are not as well adapted as the others are for diabetics, but are useful for those dyspeptics who do not tolerate amylaceous food.

Chronic Buzzing in the Ears.—For this quinin is warmly recommended by Bouchard. It exaggerates at first, but later diminishes very much the noises, not only in dry and sclerous otitis but in Menière's disease. He adds that complete integrity of the ear is rare among the insane, and that the treatment of the ear troubles is an important feature of the cure.—*Rev. de Laryng.*, October 1.

DENTITION.

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY JOSEPH CLEMENTS, M.D.

KANSAS CITY, MO.

Speaking of dentition in the concrete, the importance of the subject looms up considerably when we remember that there are fifty-three dental colleges in the United States, with more than fifteen hundred graduates, interested and employed in the science and art of the care and treatment of the teeth; or in more modern terms, doctors, whose practice is limited to oral surgery. And such proportions is this assuming that ere long we shall have to add to the three learned professions—theology, medicine and law—a fourth; namely, dentistry, and the instructors in our medical colleges will have to enlarge the curriculum more fully, embracing this important branch of medical knowledge, or there will be other Edward Brannigans, D.D.S., besides the one who addressed you last year at Philadelphia, whose words will be somewhat of a reproach on our lack of this necessary knowledge.

I wish here to call your attention to an excellent paper by Dr. J. W. White published in the *American System of Dentistry*, which throws considerable light on what I may term vexed problems in dentition.

I desire to acknowledge courtesies accorded me by D. McMillan, M. D., D.D.S., president of the Western Dental College of my own city, for besides the dissection of subjects in embryo obtained in my own private practice, I was permitted to examine the many skulls and casts, etc., of fetuses and children in the laboratory and museum of the college.

As a general statement I may say that the evolution and development of the teeth are the same and in the same physiologic way as that of the nails and the hair, only the nails and hair are in a more perfect state at birth. These are fully formed and developed at the end of intrauterine life. Indeed in a fetus of not more than the seventh or eighth week, the nails, I have found to be in appearance as perfect, almost, as my own, though I found no budding teeth.

Physiology and anatomy teach that in the seventh week of germ life a groove appears in the jaw, termed by Goodsir, "the primitive dental groove." From this groove and at its base papillæ arise; sacs form enclosing these, which become vascular; basic and other salts accumulate and thus the milk teeth are developed. Small grooves behind these first evolving teeth, and still during fetal life, are observable and in process of time these are converted into cavities, with their vessels and blood-supply, and thus the process is duplicated and repeated in the formation of the second or permanent teeth. Prolongations or extensions backward of and from the original groove, one at a time, and after the growth of the twenty teeth taking the place of the deciduous teeth, constitute nature's provision for the completion of the set. The nucleus of the first teeth is "the primitive dental groove." The same for the permanent teeth is "the secondary dental groove," or rather grooves, these providing for twenty of them. The remainder developing from an extension laterally from the outermost mature tooth, which, when sufficiently advanced continues or extends the groove for the next tooth, the process being again repeated, making three on each jaw, each of which may be said to be singly and

independently developed. During this second dentition the roots of the first teeth are absorbed, as I have often observed when extracting the milk teeth. The crown, neck and fang which make up the tooth are composed of the pulp, the dentine and enamel, and these are different in their histology, the various ingredients of the enamel and dentine being worked up, so to speak, by a process of calcification. As soon as this calcification is sufficiently advanced the irruption of the tooth takes place, and this occurs, beginning with the fifth or sixth month, and continuing on at intervals to the end of the second year.

The evolution of the teeth is without doubt a continuous process, the irruption of the same is at stated periods, in more or less regular order. I believe "Gray's Anatomy" is authority for the statement that as soon as calcification is sufficiently advanced the irruption of the tooth takes place, and I am equally sure Dalton's or Flint's Physiology teaches the same. In the "The American Text-book of Diseases of Children," Dr. Forchheimer says: "The greater part of teething is accomplished before the child is born," and also, "This process of development has taken the whole period of fetal life, so that the child comes into the world with all its teeth fully formed within the jaw." The Doctor has certainly somewhat overstated the facts in the case. I have examined a number of fetuses of the advanced periods, sixth and eighth months, and did not find the teeth in a condition to warrant that statement. In many skulls, embryo and infants, of various degrees of growth, ranging from three months of the former to several years of the latter, I did not find it so. At birth only about three-fourths of the crowns of the central and lateral incisors, and less than half of the crowns of the molars, of the first set, are to be found, the roots being still almost entirely undeveloped. The dentine and enamel of the incisors begin to calcify at the seventeenth week of embryonic life. At birth the roots of the incisors only just begin the process of calcification. Not until three months after birth do the crowns of the cuspids and molars begin to calcify, and the roots of these deciduous teeth are not completely formed and calcified until the twentieth or twenty-second month after birth.

I refer to this particularly, because if the teeth were fully formed at birth and there were nothing needed but a *vis a tergo*, to bring the teeth through the gums, then much of the phenomena observed during teething is not to be accounted for in the way we have usually accounted for it. The aim of this paper is to ascertain what causative relation there exists, if any, between teething and disease in children. I hold that the process of teething includes much more than the mere projection through the gums of previously formed teeth. The generally received view is, that the physiologic process of the development of the teeth, beginning in fetal, is projected on into, and continued in infantile life; so that a considerable part of teeth formation, as well as their irruption, is included in the term dentition. Besides, in regard to the second dentition it is established that while beginning early in embryonic life, much the larger part of it is carried on after birth, and therefore during the first months and years of the infant's existence, we have what I may call the complicated phenomena of the development and perfection of a large part of the first set of teeth, and their irruption, and at the same time a large part of teeth formation of the second set. By the time of

the completion of the irruptive process of the milk teeth, there are also the germs of at least twenty of the permanent ones, in most of which formation is considerably advanced, and calcification already begun.

During the first two years of life a child is building its first teeth, during the first six years it is building its permanent teeth, and attacks of sickness and disease during these first years of childhood can be discovered and affirmed many years afterward by an examination of the teeth, and a near approach to a diagnosis of the nature of the disease and the exact age at the time, can be made. Such complicated phenomena going on after the child has just emerged from its embryonic into its actual life, and continuing during the earliest and tenderest months of its existence, must be a great tax upon the resources of the infantile cosmos. Some one has said: "Woman is an *uterus* with necessary organs and parts associated." With equal aptness, at least, we may define a child as a *mouth, with necessary parts associated*. Dr. White, in the article I have referred to, has shown that the mouth of a child is related and associated by continuity and contiguity to most parts of the entire body. By continuity of its mucous membrane, and especially through its blood and nerve supply it is related to almost the entire organism. The trigeminal, the nerve of the mouth and teeth, which is the largest of the cranial nerves—and whose sensory fibers from its posterior root form the semilunar ganglion—receives filaments from some of the plexuses of the great sympathetic (the carotid and the cavernous plexus, connected also with the third and the sixth, and sometimes the fourth, nerves directly, and indirectly with many others), brings the mouth *en rapport* with many different parts of the body. This fifth nerve is somewhat like the par-vagus or a spinal nerve, in the ramifications of its branches, and in its diffused influence and power. It can readily be seen then, that abnormal conditions here, and during the period of dentition, may reveal themselves in localities and parts far removed from the buccal cavity, just as an irritation in the floor of the fourth ventricle may reveal itself in an attack of pseudo-angina pectoris. The connection between teething and diseases in children is *nervo-vascular*, disturbances of the fifth nerve acting as a producing cause.

The irruption of the teeth, as Dr. White says, is a physiologic and anatomic *crisis*. Or, as Dr. Love of St. Louis puts it, "In teething the child is passing its first *climacteric*." Physiologic dentition, with normal environment, produces little or no disturbance, perhaps, complicated and exacting as its wonderful phenomena may be. Yet this is not the rule in these modern times. It is a fact that infant mortality is largest during the teething period; more than one-third die during the first year, and about one-half of all children born die during the dentition period. Dentition produces or aggravates the causes of disease. Teeth irruption produces nervous phenomena which increase susceptibility to disease and lessen the power of resistance (White). Impaired nervous equilibrium puts the child in the power of disease, so to speak. *Nervo-vascular* activity is increased during teething, producing functional derangements, so that a child without or beyond this condition, would tide over a spell of bad weather, for instance, or an attack of indigestion, with little or no disturbance, but during this disturbed equilibrium of the nervous system, as White puts it, these vicissitudes result in

disease. Dentition is physiologic and natural, to be sure, and so are other functions in the human economy, and yet they are disease-producing or superinducing; witness the disturbances during child-bearing and during menopause. And doubtless they may all be produced by similar causes, the disturbed equilibrium of the nervous system or the nervous vascular excitement playing a large part in the etiology of the affections.

I am aware that medical opinions differ somewhat in regard to the place teething occupies as an etiological factor in the diseases of children. A generation or two ago dentition was allowed to play a prominent and solitary part as a cause of disease; today some would deny it any place whatever as a disease-producing factor. The pendulum swings from one extreme to the other, as Dr. Robinson of New York says: "Whenever there is a reaction from an erroneous theory or faulty method of treatment, the reaction is sure to go to an extreme." The truth lies in the middle ground. That teething may stand as a contributing factor in some considerable disturbances to the health functions, initiating abnormal conditions, which, joined and fostered by other factors, result in disease and death, I certainly believe. Ellis, in "Wood's Library, says: "Diarrhea of teething is natural." Thies attributes dental paralysis to the molar teeth. Smith affirms: "Among the most common pathologic results of difficult dentition are certain affections referable to the cerebro-spinal system, eclampsia being one of the admitted results." Smith also lays down the following rule in diagnosis of the etiology of these infantile disturbances: "When similar symptoms arise at each epoch of teething, and subside with the subsidence of the gingival turgescence, teething must be regarded as the cause." Carmichael says: "The evolution of the teeth is one of a number of developmental processes going on in the body, and organs and tissues are prone to disease in proportion to their normal or physiologic activity," and "The nervous system is at these times always in a state of hyperactivity." Speaking more particularly of the philosophy of the connection between teething and those disturbed conditions, Bouchut says: "Convulsions in teething arise from nervous excitement, from pain and disturbance," and who that has had any experience with children can question the assertion? I must set myself down as an advocate of the use of the gum lancet, in suitable cases. If one has ever seen a child in an eclamptic seizure, muscles rigid, eyes rolling, gums tense and inflamed, and has applied his lance, and in a few moments observed the spasm relax and cease, and the child open its eyes in evident relief and ease, it will require no words of mine to convince him that there is still a place and use for his lance in difficult teething. Barrier affirms: "Diarrhea is caused in adults by sudden emotion of grief or fear," and in answer to the question, How? I believe his answer was: "Reflexly and by central nerve irritation." Diarrhea in teething may doubtless be explained in the same way. An aged clergyman, a chaplain, who had attended many executions of murderers, told me that the bladder always emptied itself and that frequently the bowels were influenced in the same way during the last moments. The one philosophy applies to all the different instances.

Teething is no doubt a cause of disease, a superinducing cause at least. It is not sufficient to say

teething is a normal process and will take care of itself. Possibly it would if parents were normal and habits of life were physiologic and hygienic, but in the conditions of modern society prevailing today, and so many babes "brought up on the bottle," of so many of which it may be said with truth, "There is death in the bottle," the slaughter of the innocents goes on by the thousands every year.

If, as I maintain, the complicated and duplicated process of teeth formation is projected from germ into actual life, and the development of the permanent teeth is taxing the powers and resources of the little cosmos at the same time and while the irruption of the just-completed first teeth is taking place surely this is a time when the aid and skill of the well-informed physician may be needed. Little drug medication will be required, the less the better, usually. But first correcting the condition and the habits of the mother herself; keeping away from them the patent nostrums they are made to swallow by the tons in weight every year, superintending their food supply so far as possible, and rendering timely aid during the periods of disturbance as they arrive, infant mortality may be reduced to a much lower percentage than we now have it.

DISCUSSION.

Dr. SLAGLE, Minneapolis—I remember Professor Bell of the University of Louisville saying something that struck me as good philosophy; he said there is nothing easier than for a man, who is smart and well posted, to build up a nice theory, except the facility with which another equally smart man will explain it all away in another way and show up his mistakes. A man who has been in the practice of pediatrics for over forty years and a teacher of pediatrics for fifteen years, is apt to be dogmatic, but the longer I practice among children the less importance I place on teething as a factor in the causation of disease. The medical profession is divided on this subject considerably and possibly will be for some time, still the general trend of the profession is along the line I have been speaking. I believe it is our duty to teach the laity that the symptoms attributed to teething and worms are due to other things. When I am called to a case of eclampsia I will search for every other cause first and then if I can not find any other cause I will look to the teeth, and I will scarify them if necessary. I formerly scarified twenty times where now I scarify once. I want to emphasize that the longer I practice medicine the less stress I lay upon dentition as a factor in the causation of disease except as a predisponent.

Dr. RICHARD, New York—Personally I must endorse the remarks of the last gentleman, or at least, say that it is the belief I have followed for some years and I have not placed a great amount of stress on dentition. We do have to face this as a very common expression among the laity, that the child is teething. I have followed the authorities cited by Dr. Clements, in which dentition is considered coincident with other changes going on in the life of the infant. At the time of the eruption of the teeth I understand there is simultaneously a change in the mucous membrane and the secretory apparatus of the digestive tract, which causes disturbance of digestion. In some cases the disturbance is trivial, in other cases it is serious. I have often used the following illustration: A manufacturing plant which requires a day gang and a night gang, is thrown into more or less confusion as the day gang goes off work and the night gang comes on. There must be more or less disturbance. I feel as if dentition is coincident with these changes, which are going on in the alimentary tract, which are to be looked upon as necessary disturbances and combated when necessary.

Dr. LOUIS FISCHER, New York—I heard part of the paper

only but I should like to be put on record as believing that dentition is a purely physiologic process. I believe with Jacobi and others that all the pathologic changes noted during the period of dentition can easily be accounted for if we will look to their true etiology. I am confident that especially in summer a great many of the diarrheas we see at the various clinics, which the mothers attribute to teething and state that until the teeth come out the diarrhea will not stop, are due to other causes. In winter when we have pertussis or a cough, it will invariably be laid by the laity on these four little teeth. I would like to ask the essayist whether he believes the convulsions during dentition are due to a reflex action, or whether he looks for another cause of these convulsions.

Dr. JOSEPH CLEMENTS, Kansas City, in closing—The criticisms are just what I wanted to get and tried to call out. I have seen the trend in the other extreme. Teething I believe acts as a predisposing cause. I will now speak of convulsions. The other day I was called to see a case of convulsions. A little girl came to my office from about three blocks off and said the baby had fallen out of a chair and was dead. I found the baby in convulsions. I began to look for the cause, looked at the diet, the passages and the bowels and inquired in all directions. I could learn nothing from the mother that would give any light on the subject. I gave the child an emetic and used an enema of hot water, from both of which I got very little result. I then inquired about the teeth and found four molars just breaking through. The mother told me the child had been perfectly well except for the past week it had been peevish and irritable. They did not know what was the matter with the child and thought it was just a bad temper. It seemed to me the teeth had something to do with it. Possibly the diet played a rôle, but there was very little to substantiate that view. I could get scarcely any response from the emetics and little from the enema. The teething I believe may have produced a reflex action through the nervous system and caused the convulsions, just as an irritation in the fourth ventricle may produce pseudo angina pectoris.

SOCIETY PROCEEDINGS.

The Chicago Society of Internal Medicine.

Regular Meeting, Oct. 19, 1898.

Dr. JOHN A. ROBISON, president, occupied the chair, and after the minutes of the previous meeting were read and approved, Dr. J. M. G. CARTER of Waukegan was elected a member.

Dr. ADOLPH GEHRMANN read a paper entitled

THE RESULTS OF WIDAL'S TEST IN THE DIAGNOSIS OF TYPHOID FEVER FROM DRIED-BLOOD SPECIMENS.

The use of dried blood as a means of collecting and preserving specimens of blood for the diagnosis of typhoid fever, first suggested by Wyatt Johnston in 1896, has been generally used by health authorities as a means of diagnosis since that time. It has been subject to some modifications, but as used in most places it is essentially the same method originally proposed by Dr. Johnston. In Europe dried blood is seldom examined, at least published statements of this use are not to be found. Indeed, Widal's test has been more widely adopted as a public health diagnosis in America and England than it has been on the continent, and in the United States and Canada it has been used to especial advantage. The chief objection to the use of the dried-blood specimen is inability to obtain accurate dilutions, but it may also be said that all the other methods of applying the Widal test require considerable skill for the collection of the serum and the measurement of the dilution, making them, therefore, too complicated for utility in public laboratories.

The most accurate and reliable examinations are those in which, in addition to the other details of technique, some cognizance of the reaction as related to the degree of dilution is taken. In developing the dried blood method various attempts have been made to procure a measured amount of blood at the time of collecting the specimen. The use of the platinum loop, by which drops are collected and deposited separately upon paper or glass and then dried, has been extensively tried.

These dried drops of blood are then units to be followed in making the series of dilutions. We have found that in using the platinum loop in this way there is a possibility of considerable variation in the size of the drop. For instance, the loop may be filled evenly from side to side, or the drop may be almost spherical, bulging out from the loop, and the quantity contained may then be two or three times what it would be if the loop were simply evenly filled. Another method is that in which capillary tubes, as proposed by McFarland, are filled with blood, which is allowed to dry in the tube. The capacity of the tube is known and is as a unit and the dilution is made by crushing the glass in a mortar with a measured quantity of culture or water. In another method the blood is dried and weighed and the dilution calculated from the weight. This method is now used by the Baltimore Health Department. The chief danger in this method is that the serum will separate in drops from the clot that forms and in weighing one may have a greater weight of corpuscles than if the entire mass of blood had dried evenly. When every particle of the dried specimen can be weighed the estimation by this method is very accurate. Considerable blood is also required in order to make weighings. No scheme yet proposed has supplied an easy way of obtaining a definite quantity of the dried blood, at once exact and suitable for the skill of every one. But like many technic examinations, serum diagnosis requires that operators have a thorough acquaintance with the method used. The same result may be obtained by other observers working in another way.

Biberstein has recently deprecated the dried-blood method as impracticable, saying, as the agglutinating substance exists only in the plasma or serum, and as the volume of corpuscles in a given unit of blood, especially in pathologic conditions, varies in a marked degree, it is impossible to procure an accurate unit from which to estimate the dilutions when the corpuscles are present. Further, he holds that the use of attenuated cultures does not facilitate the diagnosis in the dried blood method. The value of the different methods of conducting the diagnosis can only be determined by the results of a large number of examinations. If such examinations can not, in the main, be shown to be correct, we will have to agree with Kühn, who concludes that the serum diagnosis requires an exact laboratory study, in which form it is not suitable for general practice. The deductions from the examinations of Johnston, Bloch, Stewart, Westbrook and Wilson and our own series of 109 previously reported results, do not seem to warrant such a limited application. Stewart found in 1000 tests made in Philadelphia, 969 cases correctly diagnosed. In the 31 failures reported the reaction was present three times in cases that were not diagnosed as typhoid, while in 28 it was absent in cases that subsequently proved to be typhoid. In our own series of 109 examinations in 1896, the test failed in 7 instances, the reaction being observed in 5 cases that were not typhoid and being absent in 2 when typhoid was diagnosed. Two of the five cases mentioned, however, presented undoubted histories of having previously had an attack of typhoid fever. The reports of most observers seem to indicate the possibility of a small percentage of failures in making a positive diagnosis, even among those depending entirely upon the examination of the serum, as Comba, Ziemke, Stern and Courmont. They have made the most careful dilutions in series for the different cases that they have examined. Whatever method is used, the failures are due to the absence of the agglutinating substance during the first days of the disease, and on the other hand, to the presence of an unusually strong, normal agglutinating substance.

In regard to the influence of a previous attack of typhoid upon the test, opinions are now giving it less importance because it has been found, by repeated tests after typhoid, that the real reaction of the disease disappears in adults during the first six months after convalescence, and in children somewhat more quickly. (Courmont.) That the reaction does not occur early will be discussed later.

It is admitted that the careful determination of the limits of the reaction, i. e., the dilution in which the normal agglutinating substance is still active, and the degree of dilution in which the specific substance can be shown to be effective in cases of typhoid, must be differentiated. The experiments of Stern, Sklower and Biberstein have fairly demonstrated that a dilution of serum, 1 to 50, entirely removes the danger of observing a normal or pseudo-reaction. As the specific reaction is marked in dilutions much beyond this, it would seem that all danger of mistakes from this cause could be entirely avoided by sufficiently diluting the blood or serum in applying the test. The observation of the limits of the effectiveness of dilutions in producing agglutination is of value in following the progress of a given case, but for the purposes of diagnosis

it is simply desired to establish either the presence or the absence of the phenomenon.

The methods used in the diagnosis of typhoid in the laboratory of the Department are the same as those described by Wynkoop in the "Biennial Report of 1895-96." The specimens of blood are obtained without any special reference to the quantity, it simply being requested that enough blood be sent. The cultures that are used are bouillon cultures made from stock cultures on agar. These bouillon cultures are grown at room temperature, and are used during a period of twenty-four to fifty hours after being planted. The stock cultures are also grown at room temperature. In this way typhoid bacilli are obtained that are not very actively motile, but still are always evenly distributed in the bouillon and show great uniformity in their motility.

In making the test, the dried blood is dissolved in distilled water, and enough water is used to give what would be considered a dilution of from 1 to 15 or 20. It is, however, an estimate and not an accurate dilution. After allowing the water and blood mixture to stand a few moments, so that particles may settle, a drop is taken, with the platinum loop, from the top and mixed with an equal sized drop of bouillon culture. This is placed upon a cover glass in a hanging-drop preparation for microscopic examination. It has been found that the amount of color in the drop is of considerable value in determining whether sufficient dilution is present, and from our experience this is taken into account. The dilution in the first examination is about 1 to 30 or 40. In cases where the reaction seems to be unusually prompt, the original mixture of blood and water is diluted with a drop of distilled water, one drop of the mixture and one drop of distilled water, and this is again mixed with the culture and examined, thus making a further dilution. In typical cases, dilutions may be carried on in this manner three or four times before the reaction disappears. The time of observation is continued to six hours before it is positively reported that no reaction is present. The specimens remain at room temperature, but most of the cases showing the reaction are decided in two hours. In some special cases the dried blood and mica slip is weighed, the blood scraped upon a watch crystal and the piece of mica again weighed, the difference in weight representing the blood solids or about 20 per cent. of the original weight of blood. Distilled water to replace the blood-water is added, and dilutions are made by adding more water in the proportions desired. It has been found that at least 5 milligrams of dried blood are required. This amount can be obtained from five large-sized drops of blood. A pipette, graduated in hundredths of a cubic centimeter, is used for measuring the water or culture in making these dilutions. Prof. Klebs has suggested that all the examinations be made in this way, but so far this does not appear to be an imperative necessity.

From January 1 last to August 1, there were received at the laboratory of the Health Department 340 specimens from suspected typhoids. After some time a letter was sent to the physicians who had sent in the specimens, requesting that they return their opinions as to the final diagnosis or outcome of the cases from the observation of the subsequent clinical course. Two hundred and eighty-three such replies were received and tabulated, with the original date of the blanks accompanying the specimens, and with the results of the tests made with the specimens.

The general summary of this tabulation shows the following result: 340 cases examined, 263 clinical reports returned, 57 not returned, 166 reports of occurrence of typhoid reaction and 174 reports of absence of typhoid reaction were sent. Of the 166 cases in which typhoid reaction occurred, 135 were diagnosed clinically as typhoid, 19 were not clinically reported, 9 were not diagnosed as typhoid, 3 cases passing from observation. Of the 174 cases in which typhoid reaction was absent 37 were diagnosed clinically as typhoid, 38 were not clinically reported, 98 were diagnosed as other conditions and one case passed from observation. The correct diagnoses numbered 233, with 46 failures in diagnosis. The number of times the results have failed to correspond with the clinical reports is large, and should not be taken as evidence of the actual value of the test.

These results are not the results of the examination of 279 patients, but the simple results of so many tests. From some of the cases reported specimens were sent in several times and, as will be shown, there is reason for the elimination of a number of the failures. The nine cases in which the reaction was present, but which were diagnosed as not typhoid, have the following causes assigned for the sickness: Acute perihepatitis, subacute indigestion, autointoxication from slight uremia, case well three to four days after examination; acute enteric catarrh, influenza, cerebrospinal meningitis, malaria,

enteritis. In none of these was there a record of a previous attack of typhoid. In six of them there was evidence of some intestinal disturbance, as shown by the symptoms enumerated in the blank accompanying the specimen. However, they cannot be explained by offering a doubt as to the diagnosis. We have concluded that they are instances of unusually developed normal agglutinating power. These nine patients were all over 20 years of age, except the last, where the diagnosis of enteritis was returned, a child 6 years of age. The thirty-seven cases where the reaction was absent may be divided into several groups. Fifteen cases seem to be complete failures, as the examinations were made after the first week of sickness, but there were no re-examinations. Nine cases were re-examined and the reaction obtained with the later specimen; in one instance the reaction was absent the sixth but present the eleventh day; another was absent the sixth but present the fifteenth day; another absent the eighth but present the ninth day; and in one of them it was absent the twelfth day but was found on the fourteenth day. There is a possible explanation for two cases in that an interval of five days in one and six in the other occurred between taking the specimen and applying the test. The agglutinating power of dried serum is lost after a time, and the specimens may not have been under favorable conditions to retain this power. In four other cases the blood specimen was too small for a satisfactory test. Among the twenty cases from which the blood specimen was obtained during the first week are two of those in which the blood specimen was small and the two cases in which the examination was delayed; the other two were not in this group. It is possible, then, that twenty-two failures can be explained, but fifteen remained for which there seems to be no explanation. Adding these fifteen to the nine cases of failure in which the reaction was observed, there are twenty-four failures in 279 examinations, or 8.6 per cent. of failures. Further, it is noted that in the group of failures there are three cases of typhoid and pneumonia. The effect upon the reaction in complicated cases of typhoid has not been fully studied. Complications are reported in five cases in the series, that were correctly diagnosed; pneumonia, nephritis and tuberculosis were noted. Ziemke reports cases of pneumonia and tuberculosis where the complicating conditions did not prevent the reaction. It is probable, then, that the failure in these cases is not due to the presence of a complication.

As regards the value of the test in typhoid, it has been shown by numerous published reports of examinations that the results are uniformly positive in well-marked cases of typhoid. If the possible cases of failure, viz., the short duration of the sickness at the time of examination, and the absence of a previous attack of typhoid, can be eliminated, the test becomes an absolute sign. Under general circumstances, however, a single test is simply presumptive evidence. It is clearly not an early sign, no earlier in most cases than the recognized symptoms of typhoid. Frequently, however, the reaction is found early, but in these cases it is sometimes difficult to decide as to the real time of beginning of the sickness, as happens in those patients called walking typhoids. The re-examination is a highly important part of the test and is the only way to increase its reliability. Ziemke reports a case of absence of the reaction on the eighth day but present on the tenth. Biberstein reports the test made on verified typhoid patients: 8 examinations the first week with 2 failures, and 32 examinations the second week with four failures. One case was negative at the first examination, made during the first week, and also negative for the second examination, made the eleventh day, but the reaction was obtained at the third, on the eighteenth day. Another case was negative on the ninth and fourteenth days, but positive on the nineteenth day. These results, which are similar to our own, go to prove the value of re-examinations. In the series of cases showing clinically as typhoid, some had the reaction early; one on the second, eight on the third, four on the fourth, and three on the fifth day.

In the examination of cases that are not typhoid, the absence of the reaction during the first week is only presumptive evidence. Bloch and Bates suggest that those cases in which the test is absent on the tenth day of the sickness should be regarded as not typhoid. Among the failures in obtaining the reaction in our series of examinations, are four tests which were made with blood from cases diagnosed clinically as typhoid; one taken from the tenth day of the sickness two on the twelfth and one on the sixteenth day. One of the cases examined negatively on the twelfth day was positively diagnosed on the fourteenth. Apparently there is no definite time for the appearance of the reaction in typhoid, and the fact that a certain number of days of sickness have passed without the reaction does not necessarily justify the conclusion that the disease is absent.

Dr. GEHRMANN is of the opinion, from the results of the examinations as conducted by the department, and from the expressions of opinions of those practitioners who have availed themselves of it, that it is of considerable value in diagnosis. These facts warrant continuance of the typhoid diagnosis by the department, and for the present at least, the use of dried-blood specimens principally, because of the simplicity of the method. Public health authorities are not obliged to employ the typhoid diagnosis as they are the bacteriologic diagnosis of diphtheria and cholera, because the treatment of typhoid is not conducted by health departments, nor are these patients quarantined. Here in Chicago, however, typhoid has been such an important factor in the health of the city, and has such an influence upon the death records, that every means for the study of the disease should be used and improved. If it can help diagnose the death returns more accurately, and if it can assist in showing changes in mortality from time to time, a better basis is offered for observations as to the effect of sanitary measures introduced to control the disease.

Finally, in view of the 8 per cent. of failures in diagnosis that appear from the department's examinations, these conditions should be considered, which may assist in correcting the results: The directions for obtaining and transmitting specimens must be closely observed, especially as to the drying of the blood. Several examinations of each suspect should be made when the first test does not appear to be conclusive. In the laboratory further dilutions of the blood solution must be made and tested in those cases showing the reaction. In this way normal or pseudo reactions can be eliminated. By closely observing these details, it is highly probable that the test will be more exact and the failures fewer in number.

Dr. J. M. G. CARTER of Waukegan followed with a paper on THE TREATMENT OF TYPHOID FEVER, BASED UPON A STUDY OF SEVENTY CASES.

He drew attention to some thoughts in reference to the treatment, and the resulting conclusions are the outgrowth of his experience. His general experience in the management of typhoid fever was as unsatisfactory as that of many other physicians until he adopted his present line of therapeutics, since which time he has treated seventy cases. His observations before he began the treatment of this series of cases convinced him that the danger in typhoid fever is the pronounced exhaustion present in this disease, which seems to be due to a deterioration or destruction of some of the ultimate cells or tissues of the body, and he believes there is a general consensus of opinion in the profession that this deterioration or destruction is due to the products of the typhoid bacillus. Departures from a scientific line of treatment have been due in the main to a misapprehension of the conditions prevailing in a case of this disease, or in a failure to remember the conditions which should exist in a state of health. The following facts have guided him in an attempt to find a scientific line of treatment: 1. That typhoid fever is a bacterial disease. 2. Typhoid bacilli exist at all times, and in nearly all places, but in varying numbers. 3. Under certain conditions the number or activity of these bacilli, or perhaps both factors, may be increased. 4. The virulence of the disease depends upon the number or activity, or both, of bacilli invading the individual case. A careful consideration of these facts led him to conclude that the treatment of typhoid fever may be reduced to the meeting of three indications, only two of which are always of paramount importance. These are: the maintenance of the patient's strength by proper nutrition; the removal of the cause, and the reduction of temperature.

The determination of what diet is proper in a case of fever is of the utmost importance. He has found very few cases that fare well on beef tea or beef extracts; but usually these foods have produced evil results in his hands. They are heavily charged with uric acid and uric acid compounds, which tend to reduce the alkalinity of the blood (Haig). This may be the cause of the increased obstinacy of the diarrhea in cases fed on beef tea. He condemns the general use of beef tea during the febrile stage of the disease, but it may be given during the defervescence of the fever and in convalescence, with beneficial results in many, if not all, cases. It is his custom to give specific directions as to the amount and kind of food. The food is always prescribed in liquid form and, unless there is some insuperable objection, milk is the universal diet.

The second requirement in the treatment is the removal of the cause. The removal demands first that the introduction of bacilli into the system shall be immediately checked. This is accomplished by sterilizing all food and drink, and by washing the mouth frequently with a solution of boric acid or some other antiseptic. The second requisite toward the removal of the cause is to restore the alimentary canal to its normally aseptic condition.

The third element in this phase of the treatment is to aid the system in its battle with the invading bacteria. The secretions must be assisted, the tissues strengthened and the cells restored. In typhoid fever, even if sufficient nourishment can be given, the enfeebled digestion interferes with its proper preparation and assimilation. Two things can be done: The food may be partially or completely digested, or the native forces of the body may be stimulated and impaired organs strengthened by drugs. Aromatic sulphuric, nitro muriatic or hydrochloric acid may be administered for the purpose of stimulation; and as the heart is the organ most in need of help in this disease, digitalis, strophanthus or caffeine may be given and occasionally, if not generally, small doses of nux vomica or strychnia may act well to ward off great exhaustion. General tonics are especially needed during convalescence. The reduction of temperature does not always require special attention, but some cases must be treated with antipyretics or some means of reducing fever. He has never used the Brand system. He ordinarily reduces the temperature by means of quinin or some coal tar derivative combined with a heart tonic, usually acetanilid and caffeine; or tepid, cool or cold water is used for sponge bathing. Sometimes he combines these two methods. All cases bear the wet sponging, and most are benefited thereby. Since he has adopted this line of treatment he has treated seventy cases of the disease. These have been of all grades of severity and of various duration. The shortest illness was two weeks, two cases; the longest eight weeks, two cases. The others varied from three to seven weeks, with an average of four and a half weeks. All but one had diarrhea. All had tenderness in the right iliac region or near the umbilicus. Four suffered severe hemorrhages; all but three were delirious. The temperature reached 105 in six cases; 105.75 in one, but usually did not exceed 104.5 degrees F. These high temperatures were seldom present more than one day. The lowest observed temperature occurring as the maximum in any case was 102.5 degrees. All his cases recovered. Before he adopted this line of treatment he averaged about 16 per cent. of deaths in his typhoid cases. He said if he were asked to specify what has caused the reduction of the death rate, and what he believes to be the essential feature of his treatment, he should reply, "abundant nourishment in the form of milk; and the tonics, aromatic sulphuric acid and digitalis." He gives aromatic sulphuric acid and tincture of digitalis combined throughout the entire course of the fever. Sometimes he has continued them a week or ten days after the fever has subsided. These are given from the first, to prevent the heart failure and general exhaustion so common after this disease. The dose varies from five to fifteen drops each every three or four hours, according to the age and condition of the patient and should always be given in water. An abundance of fresh air must be furnished typhoid fever patients.

Of the first fifty-five cases here reported, few were given antipyretics and none the coal-tar preparations. He gave no salol, sulphocarbolate of zinc, salicylate of bismuth or other antiseptic in his treatment of the first fifty-five cases with the exception of aromatic sulphuric acid, and some of the severest forms he has treated are included in that group. Other remedies were given only as were required to meet emergencies as they arise.

To recapitulate: The four most important agents are feeding, sponging, some antiseptic, like aromatic sulphuric acid, and tincture of digitalis or caffeine. A happy result of this treatment is a more rapid convalescence than is secured when feeding is not crowded; but the course of the disease is not abridged in many cases.

Mississippi Valley Medical Association.

Twenty-fourth Annual Meeting, held at Nashville, Tenn., Oct. 11-16, 1898.

(Continued from page 1050.)

SECOND DAY—MORNING SESSION.

Dr. THOMAS CHARLES MARTIN of Cleveland, Ohio, read a paper entitled

COMPLETE INSPECTION OF THE RECTUM BY MEANS OF NEWER MECHANICAL CONTRIVANCES.

The newer mechanical means exhibited consisted of a set of proctoscopes which are provided with obturators of peculiar form, of an illumination apparatus susceptible of adjustment to a number of positions, and of an improvement on the Yale chair, which facilitates the placing of the patient in the knee-chest posture without requiring any movement on the part of the patient after he is properly seated on the chair. The improvement consists essentially of an upholstered board attached

to the left arm of the chair, and a mechanism controlled by a crank and lever, which form a part of the running gear. The anoscope exhibited is an inch and a half (1.27 cm.) in length, and is designed for the inspection of that part of the rectum which is surrounded by the pelvic floor. The proctoscope is four inches (10.16 cm.) long, which the essayist claims is of sufficient length to reach into the inflatable rectum, and is not of so great a length as to obstruct a complete view of the rectal chambers, and yet is of sufficient length to reach the promontory of the sacrum when the pelvic floor is displaced upward by the proctologist's manipulations. Both these instruments are seven-eighths of an inch (2.22 cm.) in diameter; this diameter having been determined upon as the result of calibration in many normal ani. The average diameter of the instrument is equal to the degree of painless expansibility of the anus. The obturators have contracted necks, which constitute these instruments ointment applicators. The middle part of the obturator is channeled, which qualifies the instrument as a nozzle for rectal irrigation; because of its contracted neck the obturator may be used as a self-retaining nozzle. The surface of each obturator is fluted in such a manner that it may be used as a two-way irrigator when properly fixed within its tube. The technique of the inspection is as follows: The patient is required to sit on the chair with his legs crossed and his body facing the knee-board, which is attached to the left arm of the chair. The chair-back is changed to the horizontal by a movement which puts the patient into the Sims posture. The fixed rectum is now examined by means of the short anoscope. After this portion of the rectum is inspected, the chair's lever is extended, its crank turned, and the chair tilted to such an extreme degree of the oblique lateral position that the chair-seat is almost perpendicular and the knee piece, which is a part of the left arm of the chair and against which the patient's knees are pressing, is almost horizontal. Now, at a time when the patient is resting easily in a position which is equivalent to the knee-chest posture, the anoscope is introduced, the obturator withdrawn, and the inspection of the ballooned gut completed. The patient is passively returned to his feet by executing in the reverse order the several steps of this procedure.

Dr. JOHN L. JELKS of Memphis presented a paper having for its subject, "The Relation between the Genito-Urinary Tract and Rectum: the Operations Upon the Female Which Should Receive Priority?" The author champions the assertion that the gynecologist should be as well prepared to remove hemorrhoids and treat an ulcerated rectum as to dissect a cicatrix from the cervix or repair a perineum. The rectal surgeon often finds that, although the rectum is involved to such an extent as to be chiefly complained of, the chief source of danger to the patient is a pus-tube or some other disease. In other words, to relieve the patient and restore her to health and happiness, he must also dissect from the cervix uteri a cicatrix and repair a lacerated perineum. In another case he may be required to sever a urethral stricture.

Dr. WILLIAM B. BRUNS of Deckerville, Ark., read a paper entitled "Rectal Fistula in the Causation of Ischio Rectal Abscess," in which he reported a case with two large pus pockets. He opened the abscess, emptied its cavity, and subsequently did an operation for the removal of the fistula.

Dr. GEORGE D. KAHLO of Indianapolis followed with a contribution on

HYDROTHERAPY IN STOMACH DISEASES.

He said that water is essential to the performance of all physiologic functions; yet its importance as a remedial agent is not so generally recognized. While he does not wish to be understood as opposing entirely the use of drugs in diseases of the stomach, he desires to say that he believes water ranks first among therapeutic resources. It may be used internally as a drink, in lavage as a douche, and as a spray, and externally either applied locally or generally. Its effects, when administered internally depend upon the conditions of the stomach in respect both to taking of food and whether or not there is normal digestion, as also upon the amount and temperature of the water ingested. Cold applications of all kinds are antiphlogistic, and when prolonged are sedative. They are indicated in acute gastritis and in the control of vomiting and hematemesis, but to obtain their full effect it is necessary that their local condition produce an active hyperemia of the skin. Hot applications are useful in the treatment of gastralgia, hyperesthesia, gastric ulcer and chronic gastritis. While he does not ignore the beneficial influences of such agents as diet, exercise, massage and electricity, not to speak of a few of the more important drugs which are thus used, and in obstinate cases especially, physicians are not likely to rely wholly upon any one remedy, however valuable. To be successful, hydrotherapy, like all other forms of treatment, has for its govern-

ing factors an exact diagnosis, a thorough knowledge of the patient, a full understanding of the causative influence and a clear conception of the effects of the remedial agent. To this must be added the confidence and co-operation of the patient.

SECOND DAY—AFTERNOON SESSION.

Dr. THOMAS HUNT STUCKY of Louisville read a paper on "Auto-Intoxication of Intestinal Origin." In referring to the clinical aspects of abscess of the liver, he called attention to the essentials in diagnosis, and dwelt upon the history of the disease. He reported three cases. Of these the diagnosis was confirmed in two by postmortem; in the other by aspiration. In all three the abscesses were chronic when they came under his observation. In only one of the cases was there a history of dysentery, although in one case scars of healed ulcers were found in the large intestine. In these cases he finds the enlargement of the liver is upward. Hoover has made a diagnosis of abscess of the liver from a friction sound in the axillary line between the eighth and tenth ribs. The essayist has not heard this sound in any of his cases, but this should be borne in mind when making an examination in this region. Two of the cases reported were mistaken for malaria. This mistake can be avoided by the more general use of blood examinations. The absence of plasmodium would settle this at once.

Dr. J. C. MORFIT of St. Louis read a paper on "The Importance of Early Diagnosis in Surgical Cases." The diagnosis of a disease ought to be the most attractive feature in the practice of medicine or surgery. It is the foundation on which any plan of treatment is applied. The physician should promptly and exhaustively weigh every indication of cause and effect, and apply his therapy accordingly. He has recently seen two cases of pyosalpinx which were cured by surgical interference. Both had been treated by good practitioners, yet neither had made a complete physical examination, and consequently the real trouble was not detected. One was treated for indefinite inflammation of the bowels, the other for malaria. He cites these cases to emphasize the duty of the physician to himself and his patients of utilizing every available means to arrive at an early and positive decision as to what he is treating.

Dr. GEORGE W. JOHNSON of Dunning, Ill., presented an excellent essay on

GONANGIECTOMY AND ORCHIDECTOMY FOR HYPERTROPHIED PROSTATE IN THE AGED.

In this paper he reported five cases, and made a second report on twenty-eight cases previously recorded. After referring at length to the literature of the subject and reporting his cases in detail, Dr. Johnson arrives at the following conclusions:

1. All cases of prostatic hypertrophy should be given at least two weeks of palliative treatment, with rest in bed. This treatment should be regulated according to the conditions.
2. If no relief is had from this line of treatment, a thorough and systematic examination should be made for vesical calculi and polypi, as well as structural and malignant disease of the prostate and bladder. Cystitis, acute prostatitis, and prostatic abscess should always be borne in mind. The urine should be frequently examined. In cases of cystitis the uterus should be catheterized to determine the condition of the kidneys. This can now be easily done by the Harris instrument. If by digital examination per rectum the prostate is found to be enlarged, its approximate dimensions should be noted and urethral measurements taken. The patient should then be as well prepared as possible for operation. Having decided upon operative interference, the operator alone must decide upon what operation he will do. Gonangiectomy or orchidectomy offers less risk to life.
3. Chloroform should be used, as it requires less time and is not so irritating to the kidneys. The operation should consume as little time as possible. Gonangiectomy or orchidectomy can be done quicker and with less shock than any other operation. Strict attention should be given to the after-treatment.
4. The time for relief after operation is irregular. In his experience the relief has not been as clearly defined as to hours and days, nor as immediate as in most cases reported. In but two cases has the catheter been required after operation. Enuresis was constantly present in his cases, for from one to six weeks after operation.
5. More immediate relief is given to cases of orchidectomy, and the prostate grows softer and diminishes more rapidly in such cases than where gonangiectomy is done.
6. The kidneys should be carefully watched and supported after operation. Mental symptoms appeared in three of his cases, two of which were due to renal disease.
7. Long standing and troublesome herniæ can be successfully treated in the aged. He has successfully treated eighty-

four such cases, in none of which has a recurrence taken place up to this time. Of this number, he has encountered the condition of congenital with acquired hernia in six cases. In five of these cases the acquired sac was outside of the congenital one. In one case it was within it.

8. Bassini's operation was resorted to in all but five cases, and in these Fowler's method was used.

9. Cystic degeneration of the testicles was met with in twenty-five cases. These usually had chronic hydrocele also, and were always cases of hernia of long duration.

10. When the intestines occupied the scrotum in large mass, they were returned to the abdominal cavity three or four days before operation. In many cases there were adhesions preventing reduction.

11. Examinations were always made for vesical calculus, but none found.

12. The somatic condition is greatly improved, and when bilateral orchidectomy was done, the patients became obese.

13. A thorough line of palliative treatment of from two to six week's duration, with rest in bed, was given each patient.

14. In cases of herniotomy, the patient was kept in bed from three to five weeks, unless very asthenic, with the hope of getting better organic union and thereby minimizing liability to recurrence.

THIRD DAY—MORNING SESSION.

Dr. GEORGE BEN JOHNSTON of Richmond, Va., delivered the Address on Surgery. His subject was "The Progress of Renal Surgery." Renal surgery is altogether a matter of the past three decades, having had its commencement with the successful nephrectomy performed by Simon in 1869. Dr. Johnston dealt with nephrectomy; floating and movable kidney; renal and ureteral calculi; neoplasms of the kidney; tuberculosis of the kidney, which when not a part of a general miliary tuberculosis, may have its origin in the kidney, or may be an ascending affection from the bladder. Hydronephrosis also received attention. He made no attempt to arrive with anything approaching completeness at the progress or present status of surgery of the kidney. He endeavored merely to point out some of the advances which have been made in this field of surgery, and to indicate the present views of surgeons upon some of the most important points. Especially did he emphasize the conservatism which has developed along that line, and which now marks the attitude of the surgeon, in this as in other branches—a conservatism which realizes that the glory of surgery is not in amputation and in mutilation, but in saving important organs.

Dr. WILLIAM R. PRYOR of New York City presented a paper entitled "Why I Perform Vaginal Ablation in Pelvic Inflammatory Cases." He stated why, when he performs hysterectomy in pus cases, he prefers the vaginal route. He dealt with the subject under the respective heads: incision; separation of adhesions; direction of effort in the enucleation; hemostasis; drainage; hernia; accidents; instruments; narcosis and time; convalescence and results.

Up to October of this year he had performed vaginal hysterectomy for pelvic inflammatory lesions, exclusive of fibroids and cancer, eighty times. Since that time he has made the operation a number of times. No case has died, either from the operation or from complications. He has no fecal fistulae to report, no sinuses, no vesico-vaginal fistulae, and no hernias. There have been no cases of phlebitis and no intestinal obstructions. The vagina has in no case been shortened. For the technique of the operation he refers to the *American Journal of Obstetrics*, Vol. xxxviii, No. 6, 1898.

Dr. SHELBY C. CARSON of Greensboro, Ala., presented "A Consideration of the Limit to Operative Gynecology," the purpose of which was to emphasize the importance of medical gynecology; to show that surgery can not advance a legitimate claim to even the larger portion of this great field. A beautiful tribute is paid to this branch of medicine by applying to it the eloquent eulogy of Daniel Webster upon justice. Surgery as a science is pronounced as practically without limit, but as an art it has probably reached the summit. What constitutes true surgery is then discussed, the author quoting not only from text-books, but from the latest utterances of such men as Wyeth and Annandale, proving that surgery, of all other branches, is based upon principles, and hedged in by fixed laws; that when these are disregarded there is no true surgery. The folly of the ablation of the ovaries and tubes in many cases is made manifest. The nerve element in woman is closely considered, the anatomic connection between the nervous system and the genitalia being defined. As a consequence, neurasthenia is a frequent result, for which surgery affords no relief.

Dr. J. WESLEY BOVEE of Washington, D. C., discussed

THE THERAPEUTIC VALUE OF LEAVING LARGE QUANTITIES OF NORMAL SALT SOLUTION IN THE ABDOMEN.

He reports six cases to illustrate the usefulness of this procedure. In a number of cases the effect was not so marked, and in a few but little benefit was apparent. The first case was one of papillomatous broad ligament cyst; fifteen liters normal salt solution left in abdomen; marked increase in urine. The second case was one of large multiple uterine fibroma, and large ventral hernia; secondary operation; three liters normal salt solution in abdominal cavity and one liter under breast, with marked urinary increase. The third case was one of papillomatous fibro-adenocystoma of right broad ligament; eight liters normal salt solution left in abdomen; considerable urinary increase. The fourth case was one of multilocular ovarian cyst; 5000 c.c. normal salt solution left in abdomen; increased excretion of urine. The fifth case was one of multiple fibromas of the uterus and pelvic adhesions; great shock; two liters of normal salt solution left in abdomen; increased urinary excretion. The sixth was one of multilocular cartilageno-cystoma of left ovary; seven liters normal salt solution left in abdomen; excretion nearly doubled during the following six days.

The marked stimulating effect of the remedy on the kidney is noticeable in all these cases. Penrose has found that the average amount of urine excreted during the first twenty-four hours after operation in 100 cases was 13.4 ounces; for the second, 14.6 ounces, and for the third, 19.8 ounces. He also found that for the first day the maximum amount of urine was 27 ounces. In many of the cases of the essayist this maximum was much more than doubled. While the number of cases in which he has used these large quantities of normal salt solution is small, the effect should encourage a further application of the remedy in proper cases. Not one evil result of the solution was observed in any of the cases.

Dr. F. F. BRYAN of Georgetown, Ky., read a paper entitled "A Plea for Pelvic Cellulitis and Peritonitis." He reported twenty cases, and drew the following conclusions: 1, Cellulitis and peritonitis are important manifestations leading to the greatest amount of suffering that woman is heir to; 2, their recognition and the retention of their nomenclature should keep physicians constantly on the watch for them; 3, their proper treatment in the early stages will obviate these latter evils to a great extent, as cellulitis and peritonitis are easily curable in the early acute stages; 4, that, should opportunity for an early cure not be offered, then the chronic cases should have the medical and minor gynecologic treatment mentioned by him, under which many will be cured, others obtain relief, and a respectable quota will of necessity have to turn to surgery for their cure.

(To be continued.)

Cincinnati Academy of Medicine.

Regular Meeting, October 24.

Dr. HORACE WHITACRE presented a patient with chronic tetanus. There was no history of injury, nor could physical examination find any source of irritation. The principal symptoms were stiffness of the muscles of the neck, especially the sterno-cleido-mastoide; inability to fully open the jaws; and pain involving the jaws. The trouble had lasted about a week. There was no fever. There was no history of taking medicine for any purpose, so that strychnia poisoning could be safely excluded.

Dr. C. R. HOLMES presented a patient from whom he had eight days previously removed a piece of steel that had flown from a hammer, penetrated the cornea of the left eye, the iris, the lens, and lodged in the vitreous in the neighborhood of the optic disc. He had made an incision about a quarter of an inch long, downward and inward, half of the incision in the lowest part of the cornea the other half in the contiguous part of the sclera; the lips of this incision had been retracted, and the ocular electric magnet plunged into the vitreous. The first attempt failed, but on withdrawing the magnet a second time the small piece of iron was found sticking to the magnet. He had made the incision a large one so that the foreign body would run no danger of being brushed off in withdrawing the magnet. Though the incision was necessarily made through the ciliary region, healing had occurred without the least infection. The traumatic cataract formed he intended to remove at some future time. In this connection Dr. Holmes reported two other cases of foreign body in the vitreous. One, in which a piece of copper was the offending body, was removed through a large sclero-corneal incision with a pair of mouse-toothed forceps, the foreign body kept constantly in sight by the

reflected light of the ordinary forehead mirror; the second attempt succeeded in catching the bit of copper and withdrawing it. The traumatic cataract formed was subsequently removed, and now the patient has perfect sight, with proper glass. The third case was a pin that had penetrated the sclera, all underlying structures of the globe, and finally the sclera posteriorly. The head of the pin was seen sticking out from the external wound and was readily withdrawn. There were no sequelæ.

Dr. RICKETTS reported a case of myoma of the left broad ligament, which had been growing rapidly for a number of years. He had used a Langdon rectal tube thrown around the pedicle to stop hemorrhage, and with this as an aid enucleation was comparatively easy and quickly effected. The specimen weighed sixty-five pounds. The primary incision was from the ensiform cartilage to the symphysis. As the woman had only been operated on that day it was too early to say as to the ultimate outcome. The time of operation was fifty-eight minutes.

Dr. HENRY BETTMAN presented a specimen of pachymeningitis hemorrhagica interna; cause unknown. There was also found in this patient profuse hemorrhage in the colon. He also presented a specimen of fibrinous pericarditis, cor villosum, not on account of the rarity of the specimen, but that a diagnosis had been made of fibrinous pericarditis, lobar pneumonia, and pleurisy with effusion all on the left side and just a few hours before death, all of which points were borne out by the findings of the postmortem table.

Dr. JOHN E. GREIWE presented a paper on "The Pathologic Anatomy of Syphilis of the Spinal Cord." Numerous illustrations and microscopic sections added much to the value of the paper.

Denver and Arapahoe Medical Society.

Regular Meeting, Oct. 25, 1898.

Dr. J. N. HALL read a paper on

ACUTE PNEUMONIA

and reported sixty-nine cases of acute lobar pneumonia which he has treated in the non-mountainous regions of Colorado since 1893. He has excluded from this number all cases of broncho-pneumonia, tubercle pneumonia, typhoid and hypostatic pneumonia, and all pneumonias resulting from trauma. He tabulated all his cases as follows: Males, 42; females, 20; babies, 7; involvement of right lung 41; left lung 25; both lungs 2, one was not noted; involvement of the whole of right lung, 2; whole of left, 3; right lower lobe or lower and middle, 31; left upper lobe, 5; left lower, 17; both lower, 1; all of right and lower lobe of left, 1. Fatal results, 15, or 21.7 per cent. Nine died on the sixth or seventh day, five from the third to fifth day; 1 on the ninth day. Direct cause of death: Probably diphtheria, 1; neglect and exposure, 2; delirium tremens, 1, and exhaustion, notably of the heart, in the others. In one case edema of the same lung which set in on the fifth day directly contributed to the fatal termination. Two cases were abortive, one in a man of 70, and the other a boy of 7 years; in both cases the disease was cut short on the third day. In two families, three cases appeared in succession, and one patient nursed a fatal case of pneumonia during the preceding week. The janitor of a school, who complained much of the irritating effect of the dust arising from sweeping, suffered two attacks six months apart. Another case, a boy of 15 years, who swept a schoolhouse, suffered from an attack. In six cases the disease occurred as tubercular patients, but none of them were tubercular pneumonia. In one case resolution was delayed for six weeks. Three cases known to have been addicted to use of alcohol all died, one of which developed delirium tremens. Profuse expectoration of clear blood occurred in one case. Of the 69 cases, 9 occurred during the first five years of life, with one death; 8 during the second five years, with 1 death; 8 during the second decade, all recovering; 14 during the third decade with 4 deaths; 10 in the fourth with 2 deaths; 8 in the fifth with 4 deaths; 5 in the sixth with 2 deaths; 2 in the seventh with 1 death; and 4 in the eighth decade all recovering. The highest temperature recorded was 106.4 degrees, in a fatal case, a boy of 2 years, and 105.9 degrees in a boy of 7 years, who recovered. One case occurred suddenly and with great severity while the patient was at a ranch, far from help. In two cases the sick one was alone, and delirium coming on early, he was unable to feed himself or keep up fire. One of these, emerging from his delirium on the second morning, crawled to the stable and loosened all the horses,

turned on the windmill that they might not suffer for water and crawled back to his hut to await his doom, since it was twenty-three miles to town.

In conclusion: The known frequency of pneumococcus in the sputum rendered the occurrence of three attacks of pneumonia in two sweepers of schoolhouses of great interest, for one can not but suspect that the dust of the schoolroom must generally contain pathogenic germs. The study of these cases offers us reason for thinking that pneumonia is materially different from the disease in any other region between us and the Atlantic.

Dr. WHITNEY, in discussing Dr. Hall's paper, dwelt upon the difficulty of diagnosing cases of lobar pneumonia in the aged and children, in both of whom the pathognomonic signs of initial chill, rusty sputum and crepitant râle are, as a rule, absent. He lays great stress, from a diagnostic standpoint, upon bronchial respiration and dullness occurring in the same lung. He fully agrees with Dr. Hall that pneumonia is not more fatal in Denver than in any other part of the country. He called attention to a statement made by a German physician that he had not lost a single case out of some seventy cases of pneumonia. He gives his patients salicylate of sodium from the start, 10 grams every hour for twelve hours, none for the next twelve hours, and then resumes the treatment. Dr. Whitney expects to apply this treatment in the next favorable case.

Dr. SPIVAK reported a case of typhoid fever, which showed on the fifth day after admission to the hospital, unmistakable signs of pneumonia. He acted upon the suggestion of Dr. Whitney, and all the signs had disappeared on the following day. He gave, however, only 7 grams of salicylate of sodium every three hours. He continued the treatment, 5 grams t.i.d. and the patient made a perfect recovery after a somewhat tedious right plebitis.

Dr. JAYNE said that the somewhat greater mortality in mountainous regions is due to the fact that the patients are either not taken care of, or are subjected to great exposure during transportation to town or hospital.

Dr. C. K. FLEMING read a paper on

THE ABUSE OF THE MECHANICAL TREATMENT OF UTERINE DISEASES.

He said: "A question that is frequently put by the physician to one engaged in practice of gynecology is: 'What is the reason that there seem to be more pelvic diseases in women than formerly?' In reply, I have been obliged to state that I believe that the increase of pelvic diseases is due, in a large measure, to the abuse of the mechanical treatment of uterine diseases." He drew the following conclusions:

1. The vaginal speculum is capable, through lack of asepsis, of carrying infection into the vagina and thence to the uterus.
2. The uterine sound should have no place in the armamentarium of the general practitioner.
3. The results from intra-uterine medication are, to say the least, unsatisfactory, and may be decidedly harmful.
4. The rapid dilatation of the cervical canal is the ideal method, but the operation should be performed in the home of the patient or in the hospital.
5. The uterine curette should never be used in the office.
6. Pessaries are useful only in the treatment of displacements, are only palliative, and should not be used unless radical means are refused.

Dr. JAYNE accorded with the statements of Dr. Fleming, and said that since the gynecologists have become skilful in bimanual manipulations the use of the sound is superfluous. He very seldom uses it, and only in cases where its introduction would be of absolute diagnostic value. When sterilization is impossible, he dips the sound in pure carbolic acid and washes off with bichlorid solution. He has seen many cases where a pessary produced perfect and permanent reposition of the uterus.

Dr. STOVER said that the specialists have so much encroached upon the general practitioner that the tongue depressor will sooner or later be deemed a dangerous instrument except in the hands of an otologist.

Dr. SPIVAK was in perfect accord with the general statements of Dr. Fleming, but thought the introductory remarks of the speaker somewhat misleading, as one would be liable to conclude that the increase of pelvic trouble in the female, if there is an increase, is due to the slovenly ways of the general practitioner. He thinks the general practitioners, especially of the last decade, are fully impressed with the theory of asepsis, and that they practice what they have been taught. He thinks that the syringe nozzle used by women indiscriminately before they ever consult a physician is in many cases a hot-bed of infection.

PRACTICAL NOTES.

Collodium Bandages.—These are recommended by Schliep for hernia of the umbilicus, and other herniæ in which ether spray proves ineffective. A thin pad of cotton three or four inches square, is dipped in the collodium and applied with gentle pressure.—*Munich Med. Woch.*, September 27.

Sodium Salicylate in Facial Paralysis.—Catrin reports a case of severe facial paralysis following an attack of acute articular rheumatism three months previously, which he cured in twenty-three days with 74 grams of sodium salicylate without electricity or massage.—*Semaine Méd.*, October 12.

Edema of the Eyelids.—Dechamp announced at the recent French Congress of Ophthalmology that he had been very successful in curing essential edema of the eyelids with Lannelongue's injection of 1 to 20 zinc chlorid, once a week for six to eight weeks.

Puncture of the Colon in Typhoid Fever.—The *Semaine Méd.* of October 12 reports the favorable result of puncturing the transverse colon in a case of typhoid fever. It was so enormously distended that it had displaced the heart and threatened immediate cardiac collapse. The introduction of a small trocar allowed the escape of the gases, and all the threatening symptoms subsided at once.

New Collateral Route.—The creation of a new collateral route for the blood of the portal vein in cases of cirrhosis of the liver has been successfully accomplished by S. Talma, who sutured the large omentum and gall-bladder to the abdominal wall, and latter the dilated spleen in one case, a boy of 9 years. Two years have since passed, and the normal coloration of feces and urine and the absence of icterus show that the liver is performing its function well, although it is and always will be much indurated. The lad seems perfectly healthy.—*Semaine Méd.*, September 28.

Local Anesthesia from Blood Expulsion.—S. Kofmann writes to the *Cbl. f. Chir.* of October 8 that he was at first much pleased with the success of Oberst's improved local anesthesia (*JOURNAL* xxx, page 736), but discovered later, to his surprise, that the anesthesia was complete without the cocain. Driving out the blood had alone accomplished the result. He describes several operations on the foot and lower arm, including an osteomyelitis of the fibula, during which the patient experienced no pain except from the tightness of the ligature. After the ligature is applied a certain interval must elapse, as with the Oberst method, before the anesthesia becomes complete.

Curettement in Pharyngeal Catarrh.—A. Malherbe describes in the *Rev. de Laryng.* October 1, his complete success in curing seven cases of chronic posterior pharyngeal catarrh by curetting the nasopharynx, in ethyl bromid anesthesia, the patient lying on a table with his shoulders at the edge and the head hanging in forced extension. The infected masses drop into the mouth or nasal passages, whence they are removed with hot boric acid irrigation. Quite an effort is required to dislodge the hard masses sometimes encountered. He applies, a week later, a tampon of cotton moistened with iodine 1 gram, potassium iodid 3 grams, aq. dest. 40 grams. With this exception he abstains from douches, sprays and other local applications. All his cases have been permanently cured (eight to nine months), and the voice has returned to normal.

Treatment of Varices.—Excision of the veins and the ablation of a large cutaneous flap in the leg, has been found very satisfactory in treatment of varices by E. Schwartz, who has performed the operation on fifteen patients, all permanently cured, the wound healing by primary union. The elasticity of the skin is such that it can be sutured together after the removal of the spindle-shaped flap extending the entire length of the inner side of the leg, 5 to 6 cm. wide at the widest part, and

it will stretch to form a natural elastic stocking sure to hold the veins of the leg firmly in place. If there is an ulcer the flap should include it. The patient is kept in bed three weeks, the leg raised on a cushion. His patients have all resumed difficult occupations, as washerwomen, carpenters, etc., and the ultimate results have been perfect.—*Presse Méd.*, September 7.

The Physiologic Dressing.—Augè and Caeteret have been testing sodium bicarbonate, recommended by the Russians, and find it fully as effective as antiseptic in dressing suppurating wounds, and in many cases more so. It promotes epidermization much more rapidly, suppresses pain and inflammation in from twenty-four to forty-eight hours; dries up the suppuration rapidly, favors the secretions by cleansing the pores, while increasing phagocytosis and restoring the alkalinity to the blood. This latter they consider so vital that they assert that the resistance of the organism to infections is proportionate to the alkalinity of the blood, and that the effect of artificial serum is due to this cause. They have tested the bicarbonate on a number of suppurating gangrenous wounds, panaris, phlegmonous abscesses and dermatoses, and they conclude their very favorable report with the remark that the still unattained ideal dressing would be one which killed the microbes like the antiseptics—which the bicarbonate does not—while still respecting the integrity of the cells.—*Presse Méd.*, September 18.

Ocular Affections of Utero-Ovarian Origin.—In ocular affections connected with utero-ovarian trouble—which are more frequent than usually supposed—Professor Mooren relieves the tenacious hyperæsthesia of the retina with the following: Potassium bromid 4 grams, lupulin 6.5 grams, pulv. rhubarb 1.5 grams, extract of centaurea, q. s. Make into 120 pills. Take three pills three times a day. If the ovary is the cause of the ocular troubles he gives: Atropin sulphate 3 centigrams; licorice powder 2.5 grams; extract of licorice q. s. Make sixty pills. Take three pills a day. If the reflex ocular irritation depends upon some simple functional disturbance in the uterus or ovaries he administers Paracelsus' elixir in the dose of two half teaspoonfuls a day for several weeks, in the case of robust patients, otherwise reducing this amount to a quarter teaspoonful, or merely several drops during the few days preceding the menses. A copious metrorrhagia may induce a serous effusion in the retina, or a neuro-retinitis, which are relieved by cold compresses or ice to the back of the neck, with leeches to the mastoid epiphyses and saline purgatives, if necessary. Local treatment to remove the cause in all cases.—*Semaine Méd.*, September 28.

Modern Treatment of an Infection.—Professor Grasset observes that this treatment is based upon the principle that we can not attack the microbe directly, but must direct all our energies to stimulate and augment the spontaneous resistance of the organism. He rejects serum treatment, except for diphtheria, also antiseptic, "as internal antiseptics is extremely difficult to realize and can only be exceptionally accomplished, and also antithermics, as they are useless and even dangerous in the treatment of infective diseases, except in certain rare and well-defined cases. His treatment is therefore restricted to: 1. The régime, stimulating, tonic. 2. Blood-letting, white and red, that is, venesection and diuretics, sudorifics and purgatives. 3. Water in every form and at all temperatures, baths, lotions, injections, drinks, etc. Water acts as a stimulant and diuretic. The cold bath benefits less by the effect on the temperature than by facilitating the elimination and oxidation of the toxins, stimulating the organism and soothing the nervous symptoms. 4. Injections of salt solution, or artificial serum, which have a three-fold therapeutic effect. They stimulate and remove the arterial hypotension and protect against anemia, while they also help to eliminate the toxins and at the same time produce unmistakable reactional phenomena.—*Progrès Méd.*, September 24.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

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Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, NOVEMBER 5, 1898.

THE MICROBE OF CONTAGIOUS PLEURO-PNEUMONIA.

The essential lesion of contagious pleuro-pneumonia of cattle (a peripneumonia of the French) consists in the distention of the interlobular connective tissue spaces by a large quantity of inflammatory exudate. If a drop of this serum is inoculated into the subcutaneous tissue there will appear, after from nine to twenty five days, an inflammatory engorgement of varying dimensions, which is often followed by death. At the autopsy there is found a large quantity of yellowish serum in the tissue spaces, which is here and there coagulated into gelatinous masses. The exudation sometimes amounts to several liters. Animals that recover after a slight sickness of a few days become refractory to experimental inoculation as well as to natural contagion.

This fluid, so virulent for animals of the bovine species, is without action upon other species. These facts were, according to NOCARD and ROUX,¹ demonstrated by WILLEMS in 1850.

The demonstration of the specific microbe of pleuro-pneumonia, its isolation and cultivation, would constitute a very desirable progress. Heretofore all attempts, in innumerable ways, in that direction have failed.

The introduction of collodion sacs for the purpose of cultivating microbes in the living body, such as was practiced by METCHNIKOFF, ROUX and SALEMBENI, in their study of the toxin and antitoxin of cholera, appears to have been a very happy idea. The wall of

collodion constitutes a perfect barrier to the microbes, as well as to the cells. The microbes may multiply in the interior of the sac, because they are protected from the phagocytes. On the other hand, this wall is permeable to fluids and substances dissolved in them, forming a perfect osmotic membrane. In this way poisonous substances produced by the bacteria pass outward, so that the microbic auto-intoxication does not take place, and, finally, the substances in the serum of the animal used may enter the sac.

NOCARD and ROUX employed such sacs in the study of the microbe of pleuro-pneumonia, inoculating the bouillon which they contained with a trace of the serum of pleuro-pneumonia and then inserting the sacs into the peritoneal cavity of rabbits. In from fifteen to twenty days the sacs were found to contain an opalescent fluid, slightly albuminous, which contained, neither cells nor microbes that would grow on the ordinary media. With a magnification of 2000 diameters and a very strong light, a great quantity of very small mobile points were seen, of such minuteness that it was difficult to say, even after staining, what their exact form could be. No such bodies occurred in the fluid of a sac of collodion, inserted in the same manner without having been inoculated with the pleuro-pneumonic exudate. Sub-cultures of the fluid of the first sac gave exactly similar results. Incubating rabbits, which become emaciated, may die before the day fixed for the autopsy. The blood of the organs of such rabbits failed to give any growths of bacteria after inoculation upon various media and even into collodion sacs. Death resulted—in all probability an intoxication due to outward diffusion of the products of the microbe. Here is a new example of an animal being very susceptible to the toxins of a microbe to which it is insusceptible.

Collodion sacs, inoculated in the same way as described and inserted into the peritoneum of guinea-pigs, did not give any growths. Hence, it may be concluded that it concerned a special micro-organism, which multiplied in successive cultures in the medium produced by osmotic changes in the interior of the fluid in the collodion sac inserted into the rabbit's peritoneal cavity. This micro-organism was found by successive inoculations into cattle to be the virulent agent of pleuro-pneumonia.

Subsequently it was found possible to cultivate this microbe outside the abdomen of the rabbit by inoculating sterilized bouillon which had been allowed to remain in the peritoneal cavity of a cow or of a rabbit in collodion sacs for several weeks. Then the bouillon acquired the properties necessary for the growth of the pleuro-pneumonic microbe in the test-tube; further experiments showed that the addition of four drops of the serum of the rabbit or of the cow to 5 c.c. of a solution of peptone² rendered this also

¹ Le microbe de la péripneumonie: Annales de l'Institut Pasteur, xii, 1898, p. 240.

² As recommended by Martin, Annales de l'Institut Pasteur, 12, January, 1898.

a suitable culture-medium, so that it is now possible to cultivate the microbe of pleuro-pneumonia in the ordinary way. It will now be possible to study its toxin and make attempts to modify its virulence.

These extremely interesting observations point the way in which it may be possible to study certain other diseases, the specific microbe of which have not yet been isolated. It is very interesting also to note that NOCARD and ROUX have brought into prominence a micro-organism of such minuteness that the ultimate limits of our present means of magnification have practically been reached. Really the final criterion of the presence and multiplication of a micro-organism in the cultures described is furnished by inoculations.

TYPHOID WITH PROMINENT RENAL SYMPTOMS.

While typhoid fever presents many distinct types, as afebrile, ambulatory, abortive, hemorrhagic, and qualifying adjectives of this kind are a positive aid to the student, attempts at such classification as pneumo-typhoid, nephrotyphoid, and names of like character, can not but make the subject extremely intricate, even when they are manifestly designed to indicate the organ or system upon which the brunt of the attack is falling. It were better then to speak, not of nephrotyphoid, but of typhoid with prominent renal symptoms. This variety is not uncommon, as a review of many recent reports of typhoid will show. The renal complications may occur at the height of the disease, when no particular trouble in diagnosis occurs, or nephritis may occur as a sequela. Occasionally, as in a case reported by WILSON, a primary attack apparently involves the kidneys only, an acute nephritis of typhoid origin, if we may so use the term, the intestinal symptoms being completely masked by those of the urinary. Usually, in this class of cases, a relapse occurs, in which the abdominal typhoidal symptoms become in their turn prominent, the kidneys, strangely enough, suffering but little. Even when a relapse does not occur, the Widal test will remain the deciding factor, and it might be stated here that in every case of acute nephritis, the agglutination reaction should be carefully employed for the following reasons: While, as a rule, the diets of nephritic and typhoid patients are the same, yet it must be admitted that many good practitioners allow their nephritic patients fruits and even occasionally a little solid food. When it comes to the question of drugs it can be readily seen that a positive diagnosis is of the utmost importance; for while on the one hand, in nephritic cases, calomel and the saline cathartics are unquestionably indicated, on the other, in typhoid, such remedies would in many instances work great harm, causing perhaps a perforation of the bowel, severe hemorrhage, or both. As regards the care of the excreta a point of considerable practical interest is presented. When the diagnosis of

typhoid nephritis is made, the urine and feces are promptly subjected to the action of disinfectants as in all typhoid cases; but suppose the diagnosis to be made merely of acute nephritis with the typhoid origin undiscovered; naturally, in such a case, no efforts at disinfection are made, and one might readily imagine another Plymouth, Pa., experience.

The symptoms of an ordinary acute nephritis may greatly resemble a typhoid at the onset. The onset of nephritis may be gradual (though usually sudden) and accompanied by severe headache, pain in the back and limbs, nausea and vomiting, a slight fever, pallor of the skin, and perhaps a slight edema of the eyelids, the only distinctive feature being the urinary changes, diminution of the amount of urine even to total suppression, high specific gravity, presence of large amounts of albumin, and microscopically, casts, epithelial and blood. If it were not for the Widal test it might be totally impossible to diagnose a co-existing typhoid until perhaps the rose-colored eruption, blood in the stools or the symptoms of possible perforation suddenly opened our eyes. Yet another difficulty presents itself: In the early stages of typhoid, the agglutination reaction is not in evidence, often appearing only after the characteristic temperature curve, the eruption, and other abdominal symptoms have practically settled the diagnosis. It behooves us then to always bear in mind that in all cases of typhoid infection, a negative result to the serum test in the early stages of the disease will not warrant us in concluding that the reaction will not occur later on or that the disease under consideration is not typhoid. The practical point in all this is that in all cases of nephritis it must always be remembered that no matter how apparently clear the etiologic factors may be, there is always a danger of coincident typhoid, and we should be on our guard not only not to institute treatment which would be deleterious to a possible enteric fever, but to also adopt measures tending to the prevention of the spread of the disease.

MALARIAL AFFECTIONS OF THE EYE.

It seems strange when one considers the vast amount of space given to rare ophthalmoscopic affections in the various text-books on the eye that but little or no room is allotted to the effects of the plasmodium malarie on this most important structure. Possibly this is on account of a natural hesitancy to report or describe, as malarial, eye affections in which no blood examination has been made; possibly it is because the observers have not looked upon the malaria as the exciting cause. Among the external eye diseases depending upon the malarial parasite, probably a serpiginous ulcer of the cornea is the most common. Phlyctenular keratitis also occurs, and occasionally a herpetic eruption involving the upper lid and supra-orbital region; indeed the two latter conditions may co-exist. These affections have all occurred

in the experience of the writer and, in all of them, an examination of the fresh blood revealed the presence of the plasmodium.

YARR, in the *British Medical Journal* of September 24, in his article on "Malarial Affections of the Eye," states that tropical practitioners are continually on the watch for ocular manifestations which experience has taught them are characteristic of malaria, cases "with characteristic symptoms, characteristic ophthalmoscopic symptoms, and above all characteristic pathology." He thinks that all ocular troubles the result of malarial infection have their starting-point in disturbances of circulation, and classifies them under the heads of neuritis, hemorrhage into the retina, retino-choroiditis, and effusions into the vitreous. YARR has given a most complete record of neuritic symptoms, symptoms that will readily distinguish the malarial neuritis from all other forms, and includes the following: The sufferer as a rule has had several attacks of paludism previous to the onset of the present symptoms. At the beginning of his ocular trouble complaint is made of supra-orbital neuralgia and great aversion to light; night blindness is also present. Perception for colors is not reduced unless complete atrophy supervenes. One of the most characteristic symptoms, according to YARR, is the great diminution of visual acuity, its sudden increase on the ingestion of quinin, and a perhaps subsequent fall even under the influence of that drug. The ophthalmoscopic examination reveals "swelling of the papilla, which assumes a greyish red color, edema of the circumpapillary retina, with effacement of the papillary margins, and enlarged and tortuous veins." In over 30 per cent. of the cases, he describes small retinal hemorrhages confined for the most part to the periphery. One symptom, due to the presence of the plasmodia within the capillaries, "peculiar coloration of the papilla, *tinte rouge-grisâtre*," is said to be pathognomonic. In conclusion it is stated "about 80 per cent. of cases terminate in a partial atrophy, indicated by varying diminution of visual acuity, irregular contraction of the field, and slight greyishness of the disc; many end in apparently complete recovery; some rare cases go on to complete atrophy." The affection is usually binocular. Under retinal hemorrhage two chief varieties are described; the small peripheral and the large peripapillary, in which the former are by far the more common; indeed YARR suggests that probably many of the slight interferences of sight that occur in ague are due to these minute punctiform hemorrhages associated with edematous retinae. The large hemorrhages are most liable to be present in those afflicted with pernicious fever, in the stage of so-called malarial cachexia, and may be so large as to result in immediate and total abolition of sight. In about one-fifth of all the intermittent fevers, there develops an edema of the retinal structures which as a rule promptly subsides and ul-

timately completely disappears with the cessation of the disease. Occasionally, however, the process continues, involves the deeper ocular tunic, and the inevitable contraction of the new-formed connective tissue brings about an atrophic condition of retina, choroid and disc. Under effusions into the vitreous, YARR mentions a condition in which a peculiar whitish reflex is observed when the reflected light is used. This, it is thought, is due to serous infiltration into the vitreous, superinduced by paludism; in one case reported it certainly responded to the administration of quinin. Among the occasional ocular diseases due to malarial poisoning may be mentioned periodic blue vision, central scotoma, sudden and persistent amaurosis, and amaurosis ending in atrophy. In conclusion YARR warns the oculist to always bear in mind that amaurosis may be caused by the quinin which the patient is taking, a blindness of several days even being due occasionally to this cause.

THE COMPULSORY NOTIFICATION OF VENEREAL DISEASES.

It may be stated as a general hygienic principle, that is, one in regard to which medical authorities are generally agreed, that compulsory notification of infectious diseases is an indispensable adjunct to the medical defense of the public from their ravages. The public itself, with its dread of these maladies, far greater than that felt by the physician himself, falls in readily with the idea, and endures and imposes inconveniences none the less serious because they are voluntarily assumed. This is true as regards some disorders at the present time that were not long since hardly reckoned as seriously infectious, and which were consequently allowed to propagate themselves freely, in many communities at least. It is probable, or at least possible, that the number of disorders that will be held as reportable is by no means complete, and that with our increasing knowledge of germs and their action in producing disease, we will come to consider it necessary perhaps to demand isolation and full sanitary precautions in many disorders now considered harmless as regards contagion or infection. The medical and lay public are both passing through an educational stage, in this regard, and the tendencies of the former, or a large and influential part of it, are decidedly on the advance in this respect at the present time.

A recent item of news from Germany stated in effect that an ordinance had been passed requiring physicians to report as infectious diseases all cases of venereal disease, when such could be done, in their opinion, without detriment to important interests. The leaving of the matter thus to private judgment must practically emasculate the law, but that does not affect the fact of the recognition of the principle that these affections ought in the interest of the public health to be reported. It is, when stated baldly, a

little odd that disorders, one of which is not only directly contagious by personal contact, but may also be communicated by intermediaries, clothing, drinking-vessels, etc., as well as transmitted to offspring, and that has as its consequence some of the most serious disorders to which mankind is liable, and another that, according to the latest view, is responsible for a very large proportion of the special disorders of the female sex, should not only be not subject to compulsory notification, but should, of all others, be most strictly protected by law. If violations of medical confidence are likely to be anywhere followed by exemplary legal punishment, it is in just these cases, where the peril to the community and to individuals is overlooked as compared with the effects of revelations of what are assumed to be disreputable facts. The result is innumerable innocent victims by marriage and otherwise, and if we are to accept the estimates of some specialists as to the prevalence of gonorrhoea in the male population of our cities, and consider them in connection with the views of modern gynecologists as to the evil effects of this disease, conjugally acquired, upon female health, the risks an innocent girl runs in marriage seem formidable enough to warrant almost any legal restrictions to meet the evil. The laws that only compel one quasi-criminal class of female unfortunates to submit to legal regulations, while possibly of some utility in military garrisons, have not proved their efficiency in the defense of the general public, and their success in any case is disputed and disputable.

Whether a law requiring compulsory notification would be practicable for all these cases is perhaps open to question; that it would be evaded to a considerable extent may be assumed as certain. The liability to heavy penalties and damages for non-reporting would probably strengthen the law and make it more effective. The record might even be only a temporary one, the physicians' reports being filed alphabetically and destroyed after a certificate of recovery. In any case they could be kept as it were confidential, and reference to them allowed only under pledges of secrecy and for thoroughly valid reasons. Under such conditions compulsory notification of venereal diseases might be to a certain extent a public protection, at least a partial safeguard against infection of the innocent. How far the German regulation will be effective is another question, and a rather more dubious one.

At the present time our health boards require notification of only a few acute infectious diseases, but there are chronic ones equally infectious and hardly less deserving inclusion in such a list. It is true that as a rule they are less immediately dangerous to human life, but they are many of them more repulsive and ultimately as fatal. Leprosy is one of these about which there is no question whatever; the need of its isolation is clear, and yet there are lepers going

about in our large cities, pursuing ordinary avocations and constantly coming into contact with others who may receive their contagion. The danger from this disorder, however, is infinitesimal in comparison to that from the multitudes who carry about with them the infection of syphilis, which is innocently acquired, it is safe to say, a hundred times more frequently than is that of leprosy, and which has in it possibilities of evil hardly less than those of the other more dreaded disorder. It is a matter certainly of interest that the principle of its sanitary control by legal notification has been recognized as well as that of the hardly less formidable gonorrhoea, and the further development of the idea will be worth observing. As physicians we can not be indifferent to a measure which, whether fully practicable or not, is yet an effort in the right direction. The compulsory notification of these diseases, if it can be practically carried out and thoroughly enforced, ought to be as a sanitary measure free from the objections to the older registration laws that apply to only a limited portion of one sex, while it should be a still more efficient aid to public sanitation and incidentally also to better morals.

WHY SHOULD WE ESTIMATE FOR UREA?

We have been taught that the excretion of uric acid to urea stands in the relation of 1 to 33. HAIG states "My researches have extended over a large part of the last twelve years, but taking only the figures of the longer periods of my estimation of my own excretion, we get a total of 2351 days, in which 28,447 gr. of uric acid, 805,432 gr. of urea and 127,725 of acid (reckoned as oxalic acid) were excreted, giving a relation of uric acid to urea of about 1 to 28, and a relation of acid to urea of 1 to 6.3."

If we desire to estimate the amount of uric acid in a given sample of urine, and turn to the process first devised by HOPKINS, we might be astounded at the lengthened process necessary to obtain the amount of such a common ingredient as uric acid. Indeed, the quantitative estimation is hardly ever resorted to at the present day, on account of its tediousness and certain errors which might ensue from the expertness required in making the estimation. The simple quantitative method of precipitating the uric acid by acidulating the urine with hydrochloric acid and collecting on an equipoised filter is also open to serious and fallacious results. Therefore, it saves time and trouble to say that the daily excretion of uric acid to urea stands in the relation of 1 to 33 and, after estimating the amount of urea, it is an easy matter to compute the amount of uric acid excreted daily in a given quantity of urine.

The specific gravity method is also simple in estimating the amount of urea. For instance, a method is given which states that: "A given specimen of urine, neither albuminous nor saccharin, containing a normal

proportion of chlorids, and having a specific gravity of 1020-4 is a quantity of 1500 c.c. (50 oz.) in twenty-four hours, may be taken as a standard normal specimen containing 2 to 2.5 per cent. of urea. These conditions being observed, a higher specific gravity would indicate an increased proportion, and a lower a diminished proportion. Under these circumstances, a specific gravity of 1014 indicates about 1 per cent. of urea and of 1028 to 1030 about 3 per cent." Here again there is room for unbounded fallacy.

But what of the more accurate methods for the estimation of urea, as now taught by the foremost medical colleges? DAVY'S method, which depends upon the decomposition of urea by means of sodium hypochlorite, has certain objections, because it is stated that NaClO in the presence of caustic alkalies causes the evolution of only one-half of the nitrogen of urea, the remainder being retained as a cyanate. With the KJELDAHL method the writer has had no experience. The method, however, which seems to be the favorite is that known as the "hypobromite," and depends upon the decomposition of the urea in the urine by means of sodium hypobromite (NaBrO), with the production of sodium bromid (NaBr), water, carbon dioxid (CO₂) and the evolution of nitrogen. After correcting for temperature and barometric pressure, the nitrogen in the hypobromite method can probably be most accurately estimated. Suppose that we have before us a given specimen of urine and we desire to find the amount of urea by the hypobromite method and, after completing the examination in detail, we find the amount of urea present in this given specimen. It is true, we have at last obtained the correct data in regard to the amount of urea in the urine, but it is also true that we have not determined the amount of metabolic activity nor the amount of animal food eaten the day before by the patient, and upon these factors depends the average normal amount of urea in the urine. Therefore it is hard to devise a *standard* normal amount of urea, because it varies with katabolism and with the amount of animal food giving a great amount of urea, and vice versa.

What is the normal amount of urea excreted by man? MUSSER states that the average daily amount of urea excreted by an adult in the twenty-four hours is about 500 grains. According to VON JAKSCH it is from 496 to 620 grains. PURDY places it at 512.4 grains; NEUBAUER and VOGEL from 387 to 620 grains; TYSON from 310 to 620 grains. SIMON states the case very explicitly when he says: "The amount of urea is well illustrated by comparing the condition of the poorly nourished North German laboring population with that of the well-fed merchants; the excretion of urea in the former amounting only to from 271 to 519 grains of urea and in the latter to 465 or 620 grains." A careful review of this subject therefore discloses the fact that the average daily

amount of urea excreted by man varies from 271 grains (SIMON) to 630 grains—the maximum amount designated by other writers. Since the normal amount of urea in the urine depends upon katabolic activity and upon the amount of nitrogenous food ingested, and since this normal amount is so variable, we may well ask of what real benefit is the estimation of urea in the urine?

THE ARMY MEDICAL DEPARTMENT OF MANILA.

Reports recently received at the Surgeon-General's office from Manila, Philippine Islands, from Lieut.-Colonel HENRY LIPPINCOTT, chief surgeon, Department of the Pacific, give a view of the condition of medical affairs at this far-away military station. As yet the men of this command have undergone none of the fatal experiences of the troops in the home camps. Typhoid fever existed in Camps Merriam and Merritt, San Francisco, Cal., which they occupied prior to their embarkation, but the infected men were left behind in the field hospital at the Presidio. The troops were necessarily closely packed on shipboard during the long voyage, but they had distilled water to drink and, instead of the sinks which spread the infection in our insanitary camps, they had latrines flushed by a constant stream of sea water. The disease was thus held in abeyance, but we may expect to hear in progress of time of the development and spread of typhoid fever among them unless medical and military officers profit by our experiences in this quarter of the globe and take especial care of the sanitation of their barracks and quarters. It is interesting to remark that the landing of supplies from the transports through the surf at Cavité and Camp Dewey was as difficult and dangerous as the landing at Daiquiri and Siboney, and that heavy rains fell constantly during active operations in the Philippines as in Cuba, yet although the troops, at the date of Colonel LIPPINCOTT'S dispatches, had been ashore at Manila for as long a period as the Fifth Corps stayed in the vicinity of Santiago, and had been subjected to some hard field service in their attack upon the Spanish lines, there had been no such breakdown of the health of the men as occurred in General SHAFER'S command. This alone demonstrates that there were climatic conditions and local infections in the one case that were not present in the other, and goes far to answer the question which has been put so often recently: Who is responsible?

The number of deaths from disease and accidents since the first fleet sailed from San Francisco (May 25) has been only 29, with 14 of which typhoid fever is credited. The other items in the bill of mortality are: Pneumonia 3, dysentery 2, meningitis 3, and 1 each from septicemia, paralysis, cardiac rheumatism, endocarditis, appendicitis, insolation and morphin poisoning (suicide). This for over three months in a command of 18,000 men is equivalent to an annual

rate of only 6.44 per 1000, which would be considered an excellent record for troops well cared for in good barracks in times of peace.

The lists of battle casualties show that 11 men were killed and 12 officers and 104 men wounded, 1 officer and 7 men dying from the effects of their wounds. In the attack on Manila, August 13, the field hospitals were not moved forward, as Camp Dewey was only four and a half miles from the scene of action. All the wounded were dressed and comfortably in bed by 7 P.M. of the day of the attack. No amputation was considered necessary, although there were some severe wounds complicated with fracture of the limbs. The field hospitals were removed from Camp Dewey, August 17, to the Spanish military hospital in Manila. This hospital is in fair repair and has room for 400 patients. Prior to placing our people in the wards the woodwork was cleaned and thoroughly disinfected. It is probable that some of the sick at Cavite will be transported to this establishment.

During the voyage to Manila Colonel LIPPINCOTT prepared a circular for the guidance of medical officers and typewritten copies bearing the approval of the commanding general, were issued before the attack. The instructions thus conveyed proved of great value at a time when the conditions are said to have been most trying. It is officially reported that the Surgeon-General may well be proud of the field and hospital work of the volunteer medical officers.

The health of the command is stated to be fairly good, although the sick list is larger than it would be were the troops better situated in a sanitary way. They are all quartered in buildings; some are well housed, others are not. There is a great tendency to stomacic and intestinal troubles referred to the difficulty in restraining the men from eating and drinking unwholesome articles. Dysentery is common and malarial fevers are of frequent occurrence.

CORRESPONDENCE.

Judge Kohlsaas and the Probate Court.

CHICAGO, Oct. 31, 1898.

To the Editor:—Some of the statements which have appeared in the medical press of late criticising the official acts of Judge Kohlsaas appear very strange to the thousands of citizens of Chicago who have known him, as has the writer, for twenty years or more. His reputation as lawyer and judge is so very different from that sought to be given him by the critics, that the thought at once arises that there must be a mistake somewhere. If it were a fact that Judge Kohlsaas habitually, or even occasionally, ruled differently in regard to physicians from his rulings with others, that fact alone would show his unfitness for the bench, and not only physicians but others should unite to secure his defeat. The writer, having waited in vain for some one to make reply to these criticisms, and thinking it due to the profession that they should be informed if these things are so, has undertaken a somewhat hurried investigation on his own account and desires to publish his results and conclusions. And believing it but just that Judge

Kohlsaas should have the opportunity to be heard in his own behalf, the writer addressed a note to him in which he asked him if it were a fact that he as a judge ruled that he "would not in any case allow more than one bill for medical services to be collected against an estate in his court," and that he would not allow more than \$2 per visit to a physician under any circumstances." Judge Kohlsaas's reply is certainly sufficiently explicit on these points. After stating that these criticisms had been called to his attention, but that he had not thought them worthy of notice, he says: "I answer the statements you quote categorically." "I have not stated, nor have I held that I would not allow more than one physician's bill against an estate." "The claim is too ridiculous for consideration." "The records of the court utterly refute the charge." "I suppose I did refuse some doctor's bill in some particular case, owing to the circumstances of that case, but I do not recall any one such case." "No such general line of action has ever suggested itself to me." "As to the other matter, i. e., that I will not allow to exceed \$2 per visit, I can only appeal to the record, in which the statement is contradicted a hundred times." "Both of these allegations are the malignant offspring of some disgruntled claimant who makes no allowance for the particular facts in the case as they appeared to the court at the time, or the harassing and oppressing duties of the probate court in this county." "Any one acquainted with the working of the court here will know that the constant and imperative effort of the court is necessary in order to make the administration expenses as small as possible. To do this in the great volume of business, requires almost infinite patience and diligence. Lawyers, doctors, administrators, executors, guardians and undertakers have often taken exception to what seemed just to the court. Certainly any one of these classes has just as much reason to complain as have the physicians."

It so happened that Dr. M. P. Hatfield of this city was the first one to whom the writer spoke about this matter, and he at once said that in one case coming under his personal knowledge, a case in which he had been called to give testimony as to the value of medical services, \$3 per visit had been allowed by Judge Kohlsaas.

Personal examination of the docket of the probate court shows incontrovertibly that Judge Kohlsaas's statements are correct. Running through the records of November, 1897, far enough back to be of unmistakable value, we find, as can any one who chooses to make the examination, numerous cases where more than one physician was allowed to collect from the same estate, and where more than \$2 per visit was allowed. A few instances only will be quoted. Both Dr. W. K. Harrison and Dr. E. J. George were allowed their bills for services against the same estate, the former being allowed his charge of \$2 per visit in all cases but one, in which a charge of \$3 was allowed. Drs. St. John, Loring, Warren and Butler were allowed bills aggregating five hundred and fifty-odd dollars against the estate of Peter Ross, two of the charges being consultations at \$25 each. One of these bills was reduced from the claim as presented, but the aggregate allowed was as stated above. Dr. A. V. Hutchinson was allowed \$2, \$3 and \$4 a visit. Dr. P. H. Matthei was allowed \$3 per visit, and Dr. J. S. Mitchell \$3 per visit and \$2 for office consultation. These examples could apparently be multiplied indefinitely were not this sufficient.

The writer has no particular concern that Judge Kohlsaas should be re-elected, and would not object to any fair and honest means brought to bear to prevent his re-election, but he does resent that any one should attempt under false pretenses to use the intelligent medical profession to further a personal grudge or to pull political chestnuts out of the fire.

Respectfully,

HORACE M. STARKEY, M.D.

Judge Kohlsaas Defended.

CHICAGO, Oct. 31, 1898.

To the Editor:—Your issue of Oct. 8, 1898, contains a letter from Dr. D. H. Galloway in which it is made to appear that Judge Kohlsaas refuse to allow: 1, more than one physician's bill against an estate; and 2, more than two dollars per visit, no matter what the service may have been.

Here are a few facts found in the records of the Probate Court, available to the whole world and ready to the hand of the most casual inquirer:

Estate of Sarah A. Toohy. Docket 43, p. 274. Claims allowed Nov. 22, 1897: Dr. D. R. Brower \$153. Dr. Jas. H. Etheridge \$200.

Estate of Daniel Butters. Docket 42, p. 230. Claims allowed May 25, 1897: Dr. Frank Billings \$100. Dr. R. D. MacArthur \$354. Dr. Jos. M. Patton \$150.

Estate of Jos. T. Torrence. Docket 43, p. 151. Claims allowed Dec. 31, 1896: Dr. John H. Chew \$25. Dr. A. H. Cooke \$25. Dr. Frank Billings \$50. Dr. R. R. Campbell \$325. Dr. R. D. MacArthur \$2,385.

The humor of Dr. Galloway's letter lies in the fact that there are hundreds of similar illustrations to be had by merely opening a book.

As to the "two dollar a visit" statement consider the following:

Estate of Isabella L. Dunning. Docket 48, p. 148. Oct. 24, 1898. Allowed: Albert B. Strong, M.D., five dollars a visit.

Estate of Daniel Butters. Docket 42, p. 230. May 25, 1897. Allowed: Dr. Frank Billings, seven visits, \$100.

Estate of Edwin Partridge. Docket 41, p. 196. July 22, 1896. Allowed: Dr. E. O. F. Roler \$10 for a night visit.

Illustrations similar to the foregoing exist score upon score, and these are cited for information of physicians, most of whom are interested.

PHILIP CLARKSON.

1009 Ashland Block.

Chloroform and Gaslight Intoxication.

200 OAKWOOD BOUL., CHICAGO, Oct. 25, 1898.

To the Editor:—A note under the above title, in the *JOURNAL* of October 22, suggests a degree of ignorance or carelessness on the part of the doctors responsible for the occurrence, which I hope is, but may not be, entirely absent from the profession in this country. At any rate, it seems to me to be of sufficient importance to justify a further notice. The case is as follows: A patient was anesthetized with chloroform in the presence of a gaslight. The narcosis lasted three hours and during that time the doctors and nurse experienced a spasmodic cough. Patient died in six hours, the nurse in twenty-four hours and the doctor was "at the point of death" for two or three days. The fatal results were attributed to the inhalation of the fumes produced from the combustion of the vapor of chloroform in the gas jet. The products of the combustion of chloroform are chlorin and hydrochloric and carbonic acid.

There is a very simple way of overcoming this difficulty and one which I have very frequently employed with entirely satisfactory results. This consists in accompanying the vapor of chloroform with the vapor of ammonia; the latter neutralizes the noxious gases, producing the chlorid and carbonate of ammonium, which are entirely innocuous in the quantity produced. This may be accomplished by pouring a little ammonia water on a piece of gauze or a towel and waving it in the air occasionally or hanging it up near the gas and replenishing the ammonia from time to time. So little is required that the odor of ammonia is scarcely noticeable.

A few months ago I wrote to a firm and suggested that this fact be stated in their price list, where so many useful facts are given, and they replied that the enormous quantity of chloroform vapor present in some operating-rooms made this

impracticable if not impossible; that the amount of ammonia necessary would make the room uninhabitable. I have repeatedly used this method and have never had any bad effects and indeed none present has ever complained of any inconvenience from either the ammonia or the chloroform and sometimes the operators did not know that any such procedure was being carried out.

A surgeon told me that he performed an operation in one of Chicago's hospitals, which lasted a little over an hour and that during the operation the anestheticizer administered to the patient, the attendants and the air of the room *eight ounces* of chloroform. The only remedy for such a condition would be to get another anestheticizer.

If this suggestion is borne in mind when giving chloroform at night, there need not be any more deaths from chloroform and gaslight intoxication.

Yours very truly,

D. H. GALLOWAY, M.D.

Chairman's Address of the Section on Neurology.

ST. LOUIS, Mo., Oct. 25, 1888.

To the Editor:—When I began to get my address ready for my quarterly in order to place it for future reference, I sent galley proof to the secretary of the Section. The paper has been printed, but three months after the meeting at Denver.

I did as I have done heretofore, having no desire to antedate the *JOURNAL*, but being absent over three months with a sick wife, did not know that you had not published it. You can do as you please about abstract, but I do not think Section work will appear as complete as the *ASSOCIATION* would desire for future reference with only abstracts of president's addresses.

If you print only as an abstract kindly put this in your correspondence column, as I wish to go on record with the explanation and gentle protest, my gentle and amiable friend.

I do not think you are wise in excluding any address for the good of the *ASSOCIATION*, no matter what authors may do with them as to other journals, especially the quarterly.

If you decide to publish only an abstract kindly say where the full text may be found, but, if you do, please record my kick. . . .

Very truly yours,

C. H. HUGHES, M.D.

ANSWER:—The full text of Professor Hughes' article may be read in Brother Hughes' valuable journal, the *Alienist and Neurologist* of July, 1898. We regret extremely that the good brother could not wait until the publication of the other papers of the Section on Neurology in the *JOURNAL*, but having decided otherwise, our Chairman's address necessarily falls under the rule.

The Proposed Medical Examiners' Bill.

CHICAGO, Oct. 28, 1898.

To the Editor:—In the October issue of the *Chicago Medical Recorder*, there appears a report of some remarks I made at a recent meeting of the Chicago Medical Society, in reference to the proposed "Medical Examiners' Bill" for Illinois. The report simply contains my objection, and makes no mention of the remedy I suggested for the evil pointed out. I happen to know that this omission is not the fault of the stenographer. For this reason I ask the *JOURNAL* to privilege me with a few remarks on the proposed bill.

This Medical Bill, originated and prepared by physicians, is accordingly *pro bono publico*, i. e., for the purpose of excluding from the practice of medicine all persons not educationally fitted according to orthodox ideas. This is a laudable purpose and a child of a good principle. But the promoters of the proposed bill, as it now stands, are so generous that they propose to secure the purpose of the bill by the sacrifice of another good principle, viz: a strict adherence to principle, or the preservation of personal identity, while homeopaths, eclectic and

regulars all have more or less recognition by the intelligent laity. They certainly differ very materially in the principles of internal medicine, which is surely a very important matter, so that, for regulars to officially endorse homeopaths and homeopaths to endorse regulars, as will practically be the case with this proposed Board of Examiners, we will have an exhibition of acknowledged bankruptcy of medical principles, because to the physician, the focal point of all medical knowledge is therapeutics. It is proposed that opposites shall officially endorse and recommend opposites to public favor! Now, my suggestion, made to the Chicago Medical Society, was that the avowed object of the proposed bill would be secured by the several schools simply co-operating along the lines common to all, and which would include everything in the usual medical curriculum, excepting internal therapeutics. This would preserve self-respect all around, while the diploma of a "recognized" medical college, which is to be a prerequisite for admission to the State's examination, would be a reasonable guarantee of qualification in internal therapeutics. That other States have omitted this feature can not be an argument for the same fault in Illinois, unless it is good reasoning to say that because others have been weak and foolish we should be weak and foolish also. Men holding opposing principles can and should respect each other's honesty of opinions, and for the very same reason they can not afford to unnecessarily compromise their principles, especially their professional principles, for any purpose whatever. "High potencies" are either correct or they are monstrous mockeries.

Respectfully, J. SANDERSON CHRISTISON, M.D.

Conservative Treatment of Intestinal Occlusion by Internal Electricity.

CHICAGO, Oct. 31, 1898.

To the Editor:—The above caption is the title of a very interesting paper by R. P. Johnson, M.D., in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Oct. 22, 1898.

It is not the purpose of this reply to criticise adversely the idea or method of treatment set forth in said article. There are, however, one or two points to which I wish especially to call attention.

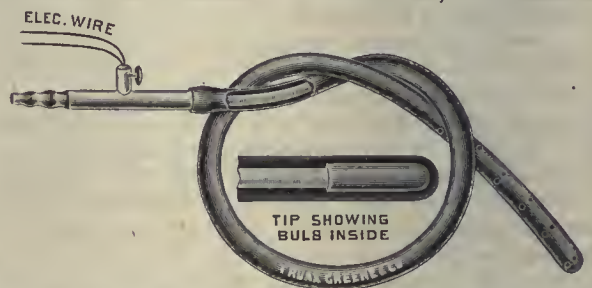
1. The method and manner of application embodied in the paper is the same as that given to the medical profession by M. Boudet of Paris eighteen or twenty years ago, and subsequently by Dr. M. A. Cleaves of New York, and others. As the essayist quotes quite extensively from Dr. Larat, I take it, from the quotations used, that he refers to Dr. Larat's article on "Intestinal Occlusion Treated by Electricity," in "Bigelow's International System of Electro-Therapeutics," which also gives a very good account of Boudet's efforts and experiments, as well as a clever description of his electrode and the salt solution used by him. Consequently he must be more or less familiar with these facts and, therefore, I think, should have given Boudet at least a little credit for his original work and untiring efforts. Dr. Larat also states that it was Duchenne who first directed attention to the treatment of obstruction of the bowels and habitual constipation by means of electricity, and as he used the faradic current almost exclusively in his experiments, physicians as a rule have had recourse to the same current. However, in 1876, Leroy d'Etiolles observed that smooth muscles were not affected by faradic excitations, and that, on the contrary, they are the most powerful in causing contraction of striated muscles. Later, Boudet insisted on this same distinction, basing his conclusions not so much on the cases he had successfully treated by electric injections as on the physiologic observations made by experiments on animals. He also observed that to give the intestines a galvanic current of sufficient intensity and duration to produce the desired effect with the metallic electrode, there was great danger of causing an eschar of the

mucous membrane. To avoid this, he invented an electrode which consisted of a gum tube, with holes in the side, supplied with a hollow metallic mandrin to which could be attached a fountain syringe and binding-post for fastening the battery cord. He used a salt solution for the injection, and the galvanic current, which he interrupted every half minute.

2. To use the author's electrode, as directed in his paper, the mandrin, which is exposed to the salt injection, will become corroded, and the oxychlorid of the metal of which it is made set free and driven into the tissues, a condition which might be undesirable.

3. I understand that the Doctor has patented his electrode. I shall not, in this paper, attempt to discuss *pro* and *con* this phase of the subject, but suffice it to say that such is certainly not in keeping with the "Code." As the method of treatment and similar electrodes have been used for years both in this country and Europe, he surely has no claim to priority, originality, uniqueness or first discovery.

In view of these deductions and facts, and recognizing the importance of electric injections as recommended by Boudet and others in the treatment of intestinal obstruction and habitual constipation, I had constructed for my use by Truax, Greene & Co., Chicago, an electrode which they have seen fit to name "Dr. J. R. Pennington's Colon Electrode," a cut of which is herein represented. It consists of a flexible metallic cable on which is vulcanized india-rubber and, at the distal end



a disc of soluble copper, carbon, zinc, gold or platinum may be attached, according to the purpose for which the electrode is to be used. To the proximal end may be attached a fountain syringe and tip of battery cord. This electrode is enclosed in a smooth, soft-rubber colon tube, so that the current only comes in contact with the mucous surface through an aqueous medium injected through the tube. With this electrode no salt or other solution can come in contact with the flexible mandrin to corrode it, and with it we not only get the combined effect of water and electricity, by which the mucous membrane of the entire bowel is given an electric bath and peristalsis actively stimulated, but because of the variety of discs, one can also carry out indications for cataphoric medication or the diffusion of medicated solutions into the diseased tissues, a method which seems to us might be of some importance in the treatment of enteritis, intestinal catarrh, fermentation, putrefactive conditions and mucous colitis, as well as relieving obstructions of the bowel and habitual constipation.

Columbus Memorial Bldg.

J. R. PENNINGTON, M.D.

Separate Cranial Bones.

ADRIAN, MICH., Oct. 25, 1898.

To the Editor:—The case of Dr. Roseberry, reported in the JOURNAL of October 15, reminds me of an almost identical one which occurred in my early practice. Mrs. R. M., of about 30 years, was delivered May 16, 1871, of a full-term child, male and still-born, the bones of whose cranium were completely separated, and feeling, as Dr. R. expressed it, like a bag of bones. This was her second confinement, and the labor was normal and easy, the child weighing six pounds. Her previous child was a strong, healthy male. The woman died a few years subsequently of tuberculosis. I have no further history of the case.

Yours truly,

WM. E. JEWETT, M.D.

PUBLIC HEALTH.

Medical Attendance at Theaters.—The Paris *préfet de police* has ordered each theater to make arrangements so that a physician will always be present from the beginning to the end of the performance, and also at the general rehearsals.

Contagiousness of Pneumonia.—The contagiousness of Pneumonia is not generally accepted, but Dumont has observed five cases in forty in which the coincidence was so striking that he considers mild prophylactic measures should be extended to this disease.—*Nord Med.*, October 1.

Health in Chicago.—The Health Department's report for September gives 1780 deaths for the month, a rate of 1.10 per 1000, as compared with 1.04 per 1000 for September, 1897, and 1.02 for September, 1896. The principal causes of death were: Diseases of the nervous system 219, consumption 182, diarrheal disease 155, other acute intestinal diseases 179, heart diseases 96, typhoid fever 65, cancer 63, pneumonia 61, diphtheria and membranous croup 52, bronchitis 49. The deaths of persons under 1 year of age numbered 470 and between 1 and 5 years 232.

Adulterates of Food and Drink.—A writer in the London *Lancet*, August 27, points out the fact that, in these days, the adulterations of food are generally made with substances that are wholesome, or at least not markedly injurious to health. These adulterations, therefore, come under the head of commercial cheats rather than sanitary offenses; they are cheap substitutions rather than poisonous sophistications. Margarine is an excellent food substance, but it is not butter; and wheaten flour is good, but the fact of coloring it with turmeric does not make it mustard. Gooseberry wine, again, is an excellent beverage, but it can not with the smallest degree of truth be called champagne, even though the name has been accepted for years by the public as a synonym for cheap champagne. Lord Palmerston, it is said, once told a deputation of wine merchants who waited on him that there was never a good champagne year in France unless there was a good apple crop in Normandy. We should like to think that this was because the season which was favorable to the production of good grapes was also favorable to the production of good apples. It is also stated that many owners of large pear orchards in France are under contract to send their entire produce to a firm of wine merchants in the champagne district. It is evident, if this be true, that a large section of the public is beguiled into regarding cider, perry and gooseberry wine as champagne. In other words, pears, apples and certain berries evidently afford abundant material for making a very popular, excellent and palatable drink. In spite of this fact people are constantly in pursuit of some fruit-juice beverage. But really good cider, perry and the like are not easy to procure except in the immediate neighborhood of their production. Under the falsely described and tempting title of champagne, however, the public eagerly drinks, smacks its lips and calls it an excellent wine. And thus the immoral traffic in substitution is encouraged and sustained, to the enormous profit of the dealer and greatly to the detriment of the purse of the consumer.

Formaldehyde House Disinfection.—The Schlossmanglyco formol apparatus (*JOURNAL*, xxx, 397) has proved extremely effective at the Manheim General Hospital, where it has been given a thorough trial. The glycoformol is a solution of formaldehyde solutum, glycerin (to prevent polymerization) and water. It is heated over a spirit-lamp inside a ring shaped vessel, in which water is also vaporized. The steam from both passes together into four brass receptacles from which it is forced out at a pressure of half an atmosphere, forming a whirling vapor that sets the entire air of the room in motion, so dense that it is impossible to see an electric light or sunlighted window through it. Three hours are sufficient to kill all pos-

sibly accessible germs, even anthrax spores dried on a thread and placed in the toe of a boot or in a slightly opened trousers pocket, but the fumes do not penetrate to the center of a thick mattress in this time, and these are disinfected by impregnating them with 2 per cent. solution of formol. While this apparatus surpasses all others to date in the rapidity and effectiveness of its work, it has the great disadvantage that the pungent odor of the formaldehyde clings to the room for several days, and can not be removed entirely even with ammonia spray, which it is impossible to use on painted surfaces. Rabbits are killed by the glycoformol fumes but are not affected by the fumes from any other apparatus. The apparatus costs eighty marks and is guaranteed to disinfect eighty cubic meters. Czaplewski's experience with it has not been equally satisfactory, and he states that the glycerin leaves a sticky deposit on objects. He also finds that an ordinary steam spray inhaling apparatus will answer the purpose equally well, as the glycerin is unnecessary, the effect depending upon the moisture. With this simple arrangement, similar to Lister's carbolic spray, he secured as good results as others with the Schlossman, spraying 600 to 750 c.c. water to a liter of formalin in an hour, and thus disinfecting a space of fifty cubic meters. The main point is plenty of formaldehyde and plenty of steam in the finest spray. If there is dead air or the surface is already wet, the formaldehyde does not penetrate so effectively.—*Munich Med. Woch.*, October 11.

Tuberculosis in North Carolina.—The bulletin of the State Board of Health contains some striking reflections on the prevalence of tuberculosis in that State. The figures are given as approximate and as an aid to a gradual opening up of the subject. Estimating the population of North Carolina at 2,000,000 and the annual death-rate at 15 per 1000 there are 30,000 deaths in the State annually. The usual proportion of the deaths from tuberculosis to the whole number of deaths is generally agreed to be one in seven. That would make over 4000 persons dying of that disease every year. Previous to death they were of course in the last stage of the disease and, therefore, virulent foci of infection, and should, according to the resolution, be removed to the sanitarium to prevent infection of other members of the family. Taken at this stage very few cures could be hoped for, but owing to scientific care and treatment, many would be carried over to the next year, and the number of this class would therefore be still larger the second. On a basis of 4000 deaths, it would seem to us fair to assume that there are twice as many in the intermediate and incipient stage, and as they hold out a hope of cure they should have the advantages of the sanitarium. So that the total number in sight to be cared for is 12,000. To allow for any exaggeration, let us deduct 33.5 per cent. That would leave 8000. If 25 per cent. of these are able to attend a private institution, 6000 would be left to be cared for by the State. At \$150 per patient, the cost for maintenance would be \$900,000 per annum; counting in interest on plant and incidentals we will call it \$1,000,000, which is about the present total cost of our State government, including its eleemosynary institutions. Everything has to have a beginning, and the outlay at first would be small and the good accomplished proportional, but it is very difficult to make a beginning when the end is far out of sight. If funds were available, say at the rate of \$10,000 per year, the greatest amount of good would doubtless be obtained in such a State as North Carolina by educative measures, and not by the establishment of sanitarium. Unless the public and the lay press, in the future, show a greater alacrity to grasp the importance of the subject, than they have in the past, several years must elapse before radical preventive measures will receive support. By missionary labors from county to county, from hamlet to hamlet, it is probable that ten times as much could be accomplished in preventing the spread of tuberculosis, with the same amount of money, as could be done through sanitarium. God speed every effort to stay the "great white plague," which robs so many of our homes of their loved ones, but let us be sure that our efforts are wisely directed.

BOOK NOTICES.

The Principles and Practice of Hydrotherapy, a Guide to the Application of Water in Disease, for Students and Practitioners of Medicine. By SIMON BARUCH, M.D. With numerous illustrations. Pp. 435. New York: William Wood and Company. 1898.

There is no question that in the general neglect of hydrotherapy the profession deprive themselves of a most valuable therapeutic remedy, and this volume, better than any other with which we are acquainted, systematizes and makes available modern methods of therapeutic use of water.

The work treats of the physiologic effects of water; the anatomy and physiology of the skin; functions of the skin; physical properties of water; rationale of the action of water in health; the effects of hydiatic application upon the distribution and composition of the blood; influence of hydiatic application on the respiration, on the muscular system and temperature; the practice of hydrotherapy; ablution; half bath; affusion; sheet bath; cold rub; wet pack: wet compress; precordial compress; the full bath; the cold full bath; therapeutic indication of the full cold bath; fever; reason for therapeutic supremacy of the cold bath; infectious fever; objections urged against the Brand method; contraindications to the bath; the warm full bath; the continuous or hammock bath; localized continuous baths; the douche; the hip bath; irrigation, lavage, enteroclysis, etc.; steam as a stypic; the internal use of water; therapeutic indications; practical application of hydrotherapy. Then follow indications for its use in certain specified diseases.

Chapter 25 is given up to the discussion and treatment of chronic rheumatism and gout; chapter 26 to the hydiatic prescription, and chapter 27 to a historic summary of the existing state of hydrotherapy in Germany, Italy, France, England and America, concluding with a plea for instruction in hydrotherapy in our colleges and hospitals. The work is timely and we fully commend it, and we are sure of its hearty reception.

The Principles and Practice of Medicine. Designed for the Use of Practitioners and Students of Medicine. By WILLIAM OSLER, M.D. Third edition, entirely revised and enlarged. New York: D. Appleton & Co. Pp. 1181.

This edition has been wholly recast and the arrangement of the sections changed. As in the former edition there are eleven sections, but the titles have been changed as follow:

1. Specific Infectious Diseases.
2. Diseases Due to Animal Parasite.
3. Intoxication and Sunstroke.
4. Constitutional Diseases.
5. Diseases of Digestive System.
6. Diseases of the Respiratory System.
7. Diseases of the Circulatory System.
8. Diseases of the Blood and Ductless Glands.
9. Diseases of the Kidneys.
10. Diseases of the Nervous System.
11. Diseases of the Muscles.

The author states that the following articles have been rewritten or are new, viz.: Vaccination, Beriberi, The Bubonic Plague, Cerebro-Spinal Fever, Pneumonia, Malta, Gonorrhoeal Infection, Cancer of the Stomach, The Gastric Neuroses, Enteroptosis, The Cirrhoses of the Liver, Jaundice, the Diseases of the Bile-passages, Diseases of the Pancreas, Diseases of the Thymus Gland, Diseases of the Spleen, Lymphatism, Addison's Disease, Encephalitis, Neurasthenia, Erythro-melalgia, and many shorter articles, as Hypertrophic Stenosis of the Pylorus, Ether Pneumonia, Anesthesia, Paralysis, Pneumaturia, Albumosuria, etc.

Into the sections on Typhoid Fever, Tuberculosis, Rheumatic Fever, Diabetes, Gout, Parasitic Diseases, Diseases of the Blood, Heart, Lungs and Kidneys, much new matter has been incorporated. The section on diseases of the nervous

system has been rearranged and an attempt has been made to group the diseases in accordance with the modern conceptions of the anatomy and functions of the parts.

We have little to add to our notice of the second edition (vide JOURNAL, Nov. 30, 1895, page 966). The criticisms then made hold good now, but we regarded the work as one of the ablest contributions to the literature of the subject in this country, an opinion which we still hold.

A Treatise of Diseases of the Ear, Together with a Brief Sketch of the Anatomy and Physiology of This Organ. By ALBERT H. BUCK, M.D. Third revised edition. Pp., 592. New York: William Wood and Company. 1898.

The present tendency to eliminate specialists is well shown by the author in his preface when he says: "During the past few years the boundary lines of the territory which was formerly supposed to belong to the aural surgeon have been very materially extended. At first the larger part of the domain of rhinology was annexed, the legitimate right of such a transfer being recognized by all candid minds. Then later when it was discovered that many of the intracranial diseases of otitic origin previously looked upon as almost necessarily fatal were to a large extent curable, aural surgeons were obliged to decide promptly whether they should leave this new work entirely to the general surgeon or should assume all its grave responsibility themselves. The great majority of them accepted the trust without any hesitation, and the numerous reports of successful operations that have been published by them in recent years both abroad and in this country show that this new domain has been rightly added to the aural surgeon's former territory.

The author, who is an experienced editor as well as an able practitioner, has here accumulated an enormous mass of facts and has set them forth very skilfully; in consequence we have a text-book at once authoritative and attractive.

Manual of Chemistry. A Guide to Lectures and Laboratory Work for Beginners in Chemistry. A Text-book specially adapted for Students of Pharmacy and Medicine. By W. SIMON, Ph. D., M.D., Professor of Chemistry and Toxicology, College of Physicians and Surgeons, Baltimore; Professor of Chemistry in the Maryland College of Pharmacy. New (Sixth) edition. In one 8vo volume of 552 pages, with 46 engravings and 8 colored plates illustrating 64 of the most important chemic tests. Philadelphia and New York: Lea Brothers & Co. Price, Cloth, \$3.00 net.

We had the pleasure of reviewing the fifth edition of this work in 1896, and during the three years that have elapsed many important results of scientific progress have been recorded in this volume.

The peculiar feature of the book is the plates giving the actual color and color-changes of most of the important tests in science and physiology as a permanent set and standard of comparison for the determination of important questions depending upon the test-tube.

The author has not yet adopted fully the orthography recommended by the American Association for the Advancement of Science, but the decimal system has been strictly adhered to in all weights and measures, and degrees of temperature expressed in the same system, though the corresponding degrees of the Fahrenheit scale have been mentioned.

This edition is destined to retain the favorable opinion expressed of previous ones; and it well merits its deserved popularity.

King's American Dispensary. By HARVEY W. FELTER, M.D., and JOHN URI LLOYD, PH. M. New edition. Entirely rewritten and enlarged. Two volumes royal octavo, each volume containing over 950 pp. with complete indexes. Cincinnati: The Ohio Valley Co. Volume i. Cloth \$4.50 per volume, post-paid. Sheep \$5.00 per volume, post-paid.

It is a pity that such an excellent and so well known a book should have been printed on such thin paper as to cheapen its appearance.

The long period of time during which the work has been be-

fore the public has established its reputation as an exhaustive, learned and valuable contribution to medical literature. The present edition is lacking in none of the characteristics which have made previous editions so popular.

An Introduction to Pathology and Morbid Anatomy. By T. HENRY GREEN, M.D., F.R.C. P. Revised and enlarged by H. MONTAGUE MURRAY, M.D., F. R. C. P. New 8th American edition, thoroughly revised from the 8th English edition, by WALTER MARTIN, P.H.B., M.D. Illustrated with 216 engravings of which six are in colors. Pp. 582. Philadelphia and New York: Lea Bros. & Co., 1898.

The present edition of this book has been prepared from the eighth English edition. Many new illustrations have been substituted for less satisfactory ones in the last edition. The arrangement of the text has been altered and several new sections have been inserted. The new illustrations have been taken entirely from German sources.

A new section on some of the animal parasites has been inserted. In the section on tumors, glioma has been classed under benign new growths. Lymphomata have been omitted and placed under diseases of the lymphatic glands, and the class, endothelioma, has been introduced.

This popular text-book, by the frequent revision it has undergone, is kept fully up-to-date, and notwithstanding the rapid changes and great advancement made in pathology it will still be found fully abreast of the times.

The Medical Register and Directory of the Indian Empire. By JAMES R. WALLACE, M.D., F.R.C.S.P., Editor *Indian Medical Record*. Second edition, 1898. Cloth. Pp. 777. Calcutta, India: Barker Bros., 150 Dharamtala Street. 1898.

This volume's contents is arranged in seven parts, Part I containing: postal information; monies, measures, weights, etc.; calculating tables, ready reckoner; and medical items. Part II comprises initial nomenclature, the General Medical Council of Great Britain and titular distinguished members of the profession. In Part III the medical acts of Great Britain, medical education in the British Isles and in the Indian Empire occupy 338 pages, while Part IV has to do with the Indian Medical Association: The military medical services of India occupy 76 pages, i.e., Part V, while Part VI contains the retired list and Part VII a general alphabetic list of government officers, medical practitioners, etc.

Practical Diagnosis. The Use of Symptoms in the Diagnosis of Disease. By HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Third edition, enlarged and thoroughly revised. In one octavo volume of 615 pages, with 204 engravings and 13 full-page colored plates. Philadelphia and New York; Lea Brothers & Co. Cloth, \$4.75 net.

Three editions of this book have been called for in two years, which is sufficient indication of the popularity it has obtained in this country and Great Britain. The text of this third edition has been carefully revised, also important new matter has been added, and new illustrations, taken from life, by photography, have been introduced to render the text more practically useful.

This edition is intended as a companion volume to the seventh edition of the author's "Practical Therapeutics," which is published simultaneously.

The second edition of this book was only published last year, notwithstanding which fact it has been thoroughly revised, and the present edition will be found fully up-to-date, and the peculiar features which made the popularity of the former editions have been retained.

Notes on Disinfectants and Disinfection. By A. G. YOUNG, M.D., Secretary of the State Board of Health of Maine. Paper, 218 pp. Augusta: Kennebec Journal Print, 1898.

This volume is a reprint from the tenth report of the board and contains much of value to the physician. The author has endeavored to present a review of the experimental work which has been done, more particularly in recent years, for the pur-

pose of determining the germicidal value of the various agents which have been in use, or have been suggested as disinfectants. He gives some attention to their antiseptic and deodorant properties; also to the methods and conditions under which the investigations were made. The various subjects are considered in their alphabetic order and a decided value is given to the references to the literature, in that the date of the publication is included with the volume and page reference, showing at once whether the work is or is not recent.

The Student's Histology. A Course of Normal Histology for the Students and Practitioners of Medicine. By MAURICE N. MILLER, M.D. Revised by Herbert N. Williams, M.D. Third Edition, revised. Profusely illustrated. Pp. 259. New York: William Wood and Company. 1898.

This book is divided into three parts, the first consisting wholly of the technology, the laboratory, microscope and preparation of tissues for microscopic purposes. The second part is given up to the study of the structural elements of the body—connective tissue, cartilage, bone, muscular tissue, blood. The third part relates to the organs of the body, which include the skin, the circulatory system, the lymphatic system, the spleen, the respiratory organs, teeth, glands, alimentary canal, liver, kidney, male and female generative organs, suprarenal body, nervous system, spinal cord and the brain.

The work is well printed, the illustrations are fine and we commend the book.

Text-Book of Medical and Pharmaceutical Chemistry. By ELIAS H. BARTLEY, B.S., M.D., Ph. G. Fifth edition, revised and enlarged. Pp., 788. With 86 illustrations. Philadelphia: P. Blakiston's Sons & Co. 1898.

This edition of this popular book has been thoroughly revised, the chapter on nutrition, clinical examination of milk, gastric contents, vomit and feces having been largely rewritten. The size of the book has not been increased. The reformed spelling of chemic terms has been accepted in part. The work is full and complete, and deserves a place in the library of the progressive physician. For the student there is no more solid and trustworthy guide.

Official Messages to Board of Cook County Commissioners, 1894-1898, with an introduction, 1886-1894. By D. D. HEALY, pp. 207, Chicago: J. M. W. Jones, Stationery and Printing Company, 1898.

This book is of great interest to all interested in the hospitals and charities of Cook County, and whatever may be said in criticism of the fact that the largest hospital in the State is without a medical superintendent in charge, it must be admitted that the Board of Commissioners have gone before the public in the person of their most brilliant and skillful president.

The reforms which have been instituted, so far as they have gone, were necessary and in the interest of the people and of good government.

President Healy, in retiring from office, will have the satisfaction of having conscientiously and ably performed the onerous duties of his office with fidelity, courage and ability, and we believe all will concede in general terms the recommendations of President Healy that Chicago shall be placed under one system, and that within the city limits all county and township governments be abolished.

Proceedings of the Kansas State Medical Society. Paper. Pp. 124. Topeka: A. D. Bauer. 1898.

These proceedings are for the thirty second annual meeting, held at Topeka, Kan., May 5 and 6, 1898. The volume contains a list of the incorporators of the society, officers for 1897 and for 1898, a list of the ex-presidents, of the members, and the following papers: "Mule's Operation—a Substitute for Enucleation;" "Faith Healing and its Congeners;" "Rational Treatment of Ovarian and Uterine Diseases;" "Neurasthenia;" "Club Foot or Talipes;" "Some Laboratory Notes;" "Treatment of Cancer of the Cervix Uteri by Carbide of Calcium;" "Multiple Neuritis;" "The Malarial Parasite."

Archives of the Roentgen Ray. London: The Rebman Publishing Company. W. B. Saunders, Philadelphia, American agent. 1898.

The August number is now on our table and is a very entertaining one, containing extracts from the proceedings of the Roentgen Society, many original articles, besides the usual number of skiagraph plates.

A Laboratory Guide in Urinalysis and Toxicology. By R. A. WITTHAUS, A.M., M.D. Pp. 112. Fourth edition. New York: William Wood and Company. Price \$1.00.

This work, as its name implies, is a thorough guide to the laboratory, and is arranged so conveniently and the directions given are so minute that the student will find it well-nigh indispensable.

NECROLOGY.

FRANCIS L. HAYNES, M.D., Los Angeles, Cal., died October 18. He was born in 1850, in Pennsylvania, and at the age of 20 years received the degree of Doctor of Medicine and Bachelor of Philosophy, from the University of Pennsylvania. Immediately upon his graduation he became interested in the Philadelphia Episcopal Hospital, where he remained for eighteen months, and was afterward connected with this institution as visiting physician. He practiced continuously in Philadelphia until May, 1887, when he removed to Los Angeles on account of ill health, and was elected professor of gynecology in the Medical University of Southern California. In surgery, he was the apostle of antisepsis in Southern California. He was also interested in sociology and allied subjects, and was appointed by Governor Markham trustee of the Whittier State School, being an active member of that board when the Whittier school was at its best. For the past eighteen months, Dr. Haynes has been obliged to abandon his work, and for a long period before that he could work only intermittently.

MARIAN DECAUSSEY, M.D., Sealy, Texas, October 21 aged 56 years.—Claude Everett, M.D., Promise City, Iowa, October 20, aged 27 years.—W. C. Forester, M.D., Birmingham, Ala., October 22, aged 37 years.—Louis C. Horn, M.D., Baltimore, Md., October 23, aged 58 years.—Julius A. Johnston, M.D., Alexandria, La., October 19, aged 45 years.—E. C. Miller, M.D., an instructor in the anatomic department of Northwestern University Medical School, Chicago, October 23.—I. J. Miller, Jr., M.D., Cincinnati, Ohio, October 23, aged 30 years.—Charles J. Milliken, M.D., Cherry Field, Me., October 16, aged 55 years.—J. H. Omo, M.D., Maysville, Ind., October 22, aged 65 years.—William T. Plant, M.D., Syracuse, N. Y., October 27, aged 62 years.—H. T. Snyder, M.D., North Wales, Pa., October 22, aged 33 years.—Hezekiah Starr, M.D., Baltimore, Md., October 23, aged 82 years.—Robert Stein, M.D., Dayton, Ohio, October 20, aged 37 years.—William N. Stowe, M.D., Wellfleet, Mass., October 17, aged 53 years.

SOCIETY NEWS.

An International Congress of Pharmacy will be held at Paris in 1900. Professor Planchon is the chairman of the committee of organization.

Society of Washington Ophthalmologists and Otolologists.—The first fall meeting of the Society, October 21, was called to order by the president, Dr. Swan M. Burnette. Dr. Newell read a paper on "Esophoria and Ciliary Spasm," and Dr. Belt one on "Inflammation of the Middle Ear."

Washington Gynecological and Obstetrical Society.—The 286th meeting was held on October 21, the election of officers resulting as follows: T. C. Smith, president; J. W. Bovee and Wm. P. Carr, vice-presidents; John Van Rensselaer, treasurer; J.

T. Kelly, recording secretary; Edwin F. Morse, corresponding secretary. The following committees were selected: J. T. Winter, F. L. Tompkins, F. E. Morse, business; W. N. Sprigg, H. B. Deale, M. F. Cuthbert, admissions; C. W. Cooke, H. B. Deale, J. T. Kelly, publication; G. N. Acker, W. C. Bowen and J. T. Kelly, microscopic. The Society adjourned to the annual banquet, held at the Arlington. In the course of the evening remarks were made by the following members: T. C. Smith, toastmaster; Drs. Prentiss, Magruder, King, Bowen, Bromwell, Fry, Bovee, Kelly, Stone, Van Rensselaer, Sprigg, J. T. Johnson, H. L. E. Johnson, Deale, Cooke, Adams, Cuthbert, Winter, Morse, Balloch and Acker. The latter was chairman of the banquet committee, and at the close the Society complimented him on the success of the evening.

Washington Medical Society.—At the meeting on October 26, it was resolved that the meeting on the 2nd prox. should be a memorial meeting, in honor of Dr. N. S. Lincoln, deceased. Dr. Stone presented the specimen and gave the history of a successful "Nephrectomy for Cystic and Fatty Degeneration of the Kidney." The patient was a woman, age 42 years, whom he treated at the Columbia Hospital. An interesting feature of the case mentioned was, that the patient gave no special symptoms of the disease, and was sent to the institution for supposed fibroma of the uterus. An incision was made over the mass, and the growth, containing several pints of fluid, was enucleated. Hemorrhage was severe, followed by shock, and required the intravenous injection of normal salt solution. The patient is now convalescing; two large calculi were found in the growth. The specimen was referred to the microscopic committee for special report. Dr. C. H. Allen read a paper on "Syringomyelia," and presented the gross and microscopic specimens. He gave a very interesting account of the history of the case, and went into the general subject of etiology, pathology and symptomatology of the disease. Dr. Robert Reyburn gave his personal investigation of the pollution of the Potomac water at Piedmont and Cumberland, Md., mentioning the cause and character of pollution, and giving an interesting account of the legal action of the residents of those cities in their endeavor to correct the abuses. He indicated the consequent danger to the water-supply of Washington City.

MISCELLANY.

Personal.—Dr. Robert Heesler, pathologist to the Central Indiana Hospital for Insane, at Indianapolis, has resigned, and will spend the coming year in study in Europe.

Reorganization of the Medical Department of the Navy.—It is understood that a bill to give a better standing to certain medical officers of the navy will be introduced at the coming session of Congress. It is certain that this corps deserves all the support and kindly recognition that a grateful country can give. The following is the text of the proposed bill:

AN ACT.—*Be it enacted by the Senate and House of Representatives of the United States in Congress assembled:*

That assistant-surgeons of the United States Navy, shall, from the date of their entrance into the service, rank with lieutenants (junior grade) of the line.

After five years from date of appointment as assistant-surgeons they shall be examined by a board of medical officers (now existing) and upon the successful completion of such examination, they are to be promoted to the grade of passed assistant-surgeon with the rank of lieutenants (senior grade) of the line.

That the higher grades are to take the rank of lieutenant-commander, commander, captain, and commodore respectively.

That all benefits derived from existing laws relative to the pay of medical officers is to continue the same, except in the case of assistant and passed assistant-surgeons ranking with lieutenants (junior or senior grade) provided for in this bill, whose pay is to correspond with lieutenants (junior or senior grade) of the line.

Argument.—Medical men enter the army between the ages of 21 and 28 years and take the rank of first lieutenant of cavalry, which corresponds to a junior lieutenant of the navy.

Five years from date of entrance into the army, they are by law promoted to the rank of captain of cavalry, which corresponds to a senior lieutenant of the navy. After this grade they are promoted to surgeon with the rank of major, which is equivalent to lieutenant-commander of the navy.

Diabetes Mellitus.—This is a rare affection in children, but three new cases have been recently reported—Haushaler, a girl of 10 years, and Seiffert (*Jahrbuch f. Kind.*). The pancreas was found typically atrophied in the two cases that came to the necropsy, weighing twelve and twenty-five grams.

Pathogenesis of Epilepsy.—Prof. J. Prus of Lemberg announces, as the result of extensive research and experimentation on dogs, that Unverricht's "irradiation theory" of the transmission of cortical epilepsy along the surface of the cortex is untenable, also that the pyramidal tracts do not participate at all in the transmission of cortical epilepsy. The excitation is transmitted from the cortex to the medulla oblongata in cortical epilepsy by motor tracts which he calls extra-pyramidal tracts, and which pass from the cortex to the medulla and the spinal cord through the upper part of the central brain, and cross in the medulla oblongata. These tracts not only transmit the reflexes but also the voluntary stimulus for complicated movements. He asserts that after anesthetizing the cortex with cocaine, no stimulus, no matter how powerful, would produce an epileptic attack; hence the stimulation of sensory nerves and cells is necessary to the production of an epileptic attack. He explains the epileptic attack produced by irritation of the cortex as the expression of the dynamic activity of the nerve-centers, or in other words, as a complicated reflex process produced by irritation of the sensory nerve elements of the cortex. The attack is generalized by means of the gray matter—middle brain, medulla and spinal cord. There are no special centers which are exclusively the seat of epilepsy, nor any essential differences between cortical and genuine epilepsy.—*Vienna Klin. Woch.*, September 22.

Communicability of Malarial Fevers.—Dr. Coronado of Havana has given (*Revista de Anatom. Patolog. y Clinicas*) views apparently contradictory to those of Koch, on the point of the contagious properties of the paludal fevers. If his observations are confirmed it will need to be taken into account that there exists at least a moderate or occasional element of connection by contact and fomites. In the first place, he has been able repeatedly to locate the plasmodium of Laveran in the excreta and vomit of fever patients; and this has been done in cases where there existed no hemorrhagic conditions of either stomach or bowels. He, with others, has found that the malarial parasite can exist in waters containing decomposing vegetal matters, as well as in sea-water; in well-diluted and sterilized broths the plasmodia live, grow and develop. He has noted also the coincident development of an aspergillus of a bright amber hue when the implantation is made in non-sterilized media. This is in concordance with the observation of other investigators with regard to the specific germs of other infectious diseases. The writer cites various clinical facts in support of this statement. Among the passengers on a small coast vessel running to Havana there were always some affected with malarial fevers. Shortly afterward the robust sailors, who had never suffered from malaria, were stricken with the disease. In all these cases repeated examinations of the blood revealed the presence of the plasmodium. He believes that the transportation of numerous malaria-stricken persons served to convert these vessels into real foci, and this can only be realized in the presence of contagious disease. If the known germ of paludism became exhausted in the disease organism, as has been supposed, the facts cited above would have no rational explanation. But these facts go to confirm what the writer

had already proven experimentally; that the dejections of persons suffering from malaria contain live germs whose existence may be easily demonstrated. Near a place called Candelaria there is a sugar plantation where four families have lived for over twenty years without ever having suffered from paludal fevers. As a result of the reconcentration into the town of Candelaria many malarial persons of the surrounding towns and villages took refuge there. Soon afterward various members of the four families referred to in the preceding paragraph began to suffer from various types of malarial fevers whose diagnosis was confirmed in the laboratory. Now, the mode of living of these persons did not vary in the least from other times, the water which they made use of was the same. It was only necessary for some reconcentrados to come in contact with these persons to provoke paludism.—*Ohio Sanitary Bulletin*, September.

Phototherapeutics of Measles.—Chatinière describes four cases of measles commencing with sudden and violent symptoms, which he cured by simply having the windows hung with red curtains, shutting out the white rays entirely and using a photographic red lantern at night. The disease completed its evolution in twenty-four hours to four days, every symptom vanishing, and the children were up, bathed and out of doors by the sixth day. One child complained that the light was too dim for him to play, and the parents took down the curtains, followed by an immediate return of all the symptoms, reappearance of the eruption and fever, with general lassitude, all passing away in two hours after replacing the curtains.—*Presse Méd.*, September 10.

Artificial Albumin.—Professor Lilienfeld recently read a paper before the International Congress for Applied Chemistry, at Vienna, on the artificial production of albumin. The *Scientific American* for September 10 says he found it possible to prepare pepton hydrochlorid by the condensation of phenol and glycooll with phosphoric oxychlorid. The substance thus obtained gives all the reactions of albuminoids. By previous conversion into the sulphate and decomposition of the latter, free pepton was obtained which resembled, both in its chemic and physiologic behavior, the natural pepton from albumin. The analytic data corresponded with those given by natural pepton. Dr. Lilienfeld does not claim to have made albumin by synthesis, but to have made pepton—a digestion product of albumin. Chemists will not readily believe that pepton has been really synthesized, as a proteid molecule is so complex, mobile, and of such high instability, that a change in its constitution may be readily brought about, so that until more definite tests are made, and until Dr. Lilienfeld pleases to give more of the details of his processes, which he holds secret at present, pending the issuance of a patent, they will be apt to suspend judgment. Even if artificial albumin may be produced at a moderate price, it does not necessarily follow that it will in any way tend to solve the problem of food-supply, and we are not sure as yet that the new product is physiologically identical with that produced in nature's laboratory. Pure albumin has been made on a large scale and it is not at all dear, but we are not aware it has ever occupied an important position in dietetics, or that it has been proposed as a substitute for ordinary articles of food; so that it is really absurd to think the time will come when we shall carry about a complete meal in a pill-box, and, like the artificial diamond, Professor Lilienfeld's discovery may not be valuable from a commercial point of view, certainly not while glycooll is selling for some \$75 a kilogram. The subject of chemic synthesis is an important one, and in Germany alone, in scores of laboratories, chemists are actively experimenting along this line.

Artificial Immunity to Mixed Infection.—Bernheim reports from the Vienna Hyg. Institute that he has succeeded in immunizing goats with the streptococcus and diphtheria bacterium,

until their serum confers passive immunity against this mixed infection.—*Munich Med. Woch.*, October 4.

Fish Bones in the Alimentary Canal.—Three cases have been observed recently, in Copenhagen, of a chronic intestinal affection caused by accumulations of fish bones in the intestines. The fact that a fish diet does not oftener lead to this result was explained by Faber's investigations. He found that normally active gastric juice poured over fish bones dissolves the small bones entirely and partially digests the large ones, rendering them soft and transparent. After entering the intestines they pass through unaffected by the intestinal secretions. The patients in the three cases of obstruction noted were all below average intelligence and the gastric juice was also below the normal acidity.—*Hospitaltidende*, May 25.

Operations for Extra-Uterine Pregnancy.—Seventy-nine operations are reported by M. Strauch (*Wratsch*, 18), with no deaths. Laparotomy was performed 63 times. The hematocele was opened through the vagina 9 times; twice the uninjured, two-months' pregnant tube was extirpated per vaginam, and once the entire uterus was removed to arrest excessive hemorrhage. The youngest patient was 21, the oldest 46 years old. The ovus was found uninjured in nine cases. The right tube was involved in 31 cases, the left in 39; 16 were nullipara; 9 had borne a child a year and 16 over ten years before.

Obstruction of the Murphy Button.—Tieber reports a fatal case of obstruction of the lumen of the Murphy button by a plum-stone, and comments on several other cases in which the button became corked with hard fecal lumps, concluding that the use of the button should always be preceded by rinsing out the stomach and evacuating the intestines to remove foreign bodies, while liquid food should be given for a while afterward.—*Vienna Klin. Woch.*, October 6.

An Improved Caoula.—A canula for irrigating the anterior urethra, designed by Professor Mendoza of Madrid, who indorses it warmly, consists of two concentric tubes, the inner projecting 1.5 mm. beyond the outer, which has slits in its sides to allow the immediate reflux of the fluid. The irrigation is completely restricted to the anterior portion alone, and the patient can accomplish it conveniently without assistance.—*Derm. Ztschft.*, September.

Results of Treatment of Glaucoma.—Seventy-six patients in Haab's private practice have been followed, and the results of treatment shown more satisfactorily than usually supposed. In acute inflammatory and chronic glaucoma 62.5 and 60 per cent. have been permanently cured, that is there is absence of all hypertonicity, and in the 8 cases of recurrence, the trouble was dissipated with myotics and only 2 proved incurable. In 91.5 per cent. the visual acuity has been preserved as good as before the iridectomy and, in some, it has improved. There has been no hypertonicity in 77 per cent. of the cases treated by iridectomy and in 60 per cent. with sclerotomy; the latter should be considered the secondary operation, and combined with myotics if necessary. The prognosis is much less favorable in hemorrhagic glaucoma; only 20 per cent. were cured and in 40 per cent. the vision retained. The less serious the intervention in these cases the better results, consequently sclerotomy is preferable. Haab has observed a slight hypertonicity at night, disappearing during the day, which may explain the cases in which the excavation of the optic nerve continues progressively, without evidence of hypertonicity.—*Presse Méd.*, September 24.

Penetrating Power of Formaldehyde.—This has been found to be greater than usually supposed, by Professor de Rechter of Brussels, who has been testing it in an apparatus with two connecting chambers in which human and animal cadavers were exposed to the fumes of 40 per cent. formaldehyde. The cadavers could be kept thus for a number of months without

showing any trace of decomposition, or it was arrested if it had already commenced. When the cadavers had been exposed a sufficient length of time, they could be kept a long while, without evidences of putrefaction, in the ordinary air. In cadavers of guinea-pigs that had died from anthrax or tuberculosis, and also in the lungs from tuberculous cows, the organs were found completely sterile in two to six days. The tests prove that the formol fumes penetrate the entire substance of the cadavers and positively kill the bacteria and anthrax spores in them.—*Munich Med. Woch.*, October 4.

Precautions in Artificial Respiration.—According to the Vienna correspondent of the London *Lancet*, August 27, Dr. Brosch, in an article published in the *Archiv. für Klinische Medizin*, gives an account of thirty-one experiments he has made in order to prove the possibility of the gastric contents being drawn into the lungs during artificial respiration. The greatest quantity of fluid which can be aspirated by artificial respiration amounts to 1210 c.c. The difference between experiments on the dead body and the conditions met with in the living subject is that aspiration of the gastric contents during artificial respiration is more easy in the living subject than in the dead body. The methods of artificial diaphragmatic respiration are the sources of the greatest danger. An experiment made by Dr. Brosch proved that even in the living subject, when the stomach is full, its contents may be pressed into the pharyngeal cavity by massage and that the cardiac orifice offers but a trifling resistance. An elastic tube introduced into the esophagus will prevent the contents of the stomach from finding their way into the air passages, and Dr. Brosch recommends that this precaution should be taken before artificial respiration is commenced.

An Important Oatheling.—The Fifth International Congress of Hydrology, Climatology and Geology, opened at Liège in September with 240 attendants, almost all from abroad. Excursions to Ostend, Spa and Aix proved interesting illustrations of the addresses on mineral waters. The necessity of a department of public health in every country was emphasized. Felix of Brussels contended that this department should include in its scope, hygiene, labor and public assistance, as the only way to prevent and combat victoriously the causes of poverty and of physical and moral disease, to utilize economically and impartially the resources of benevolence by centralizing them, and to guarantee the laboring classes against the accidents and infirmities of labor and old age. He claimed in addition that the government should suppress distilleries altogether, stating that the revenues from alcohol had increased from 42,000,000 to 61,000,000 francs in 1896-97, showing the constant spread of the evil. He made an urgent appeal for sanatoria for convalescents, observing that the State should look after its wounded in the alcoholic slaughter constantly going on, and not be content merely to bury the dead. Ameye described his process for sterilizing mineral waters without detracting from their medicinal value or altering the taste. They are slowly pasteurized in the bottles to 98 degrees C. and then slowly cooled. A special needle allows the escape of the impure carbonic gas and prevents breaking the bottles. The air is afterward extracted and the bottle filled with pure carbonic gas, which asphyxiates the organisms in the water deprived of air. The next Congress will meet at Grenoble in 1901.

Not Bound to Furnish Medical Attendance.—The supreme judicial court of Massachusetts holds, in the case of Davis vs. Forbes, July 14, 1898, which was an action brought to recover for personal injuries sustained by an employe, that the defendant was under no legal obligation to furnish the plaintiff with medical attendance, even if he had been liable for the injury. The case of a seaman injured on shipboard, it says, is different.

Verdict for Injuries to Nervous System.—Where, in an action to recover damages for personal injuries resulting from the negli-

gence of the defendant, the evidence tended to prove permanent injuries to the nervous system of the plaintiff, and especially to the nerves of her face, causing severe and protracted attacks of neuralgia and headaches, the court of appeals of Kansas holds, in *Atchison, Topeka & Santa Fe Railroad Company vs. Lee*, Aug. 10, 1898, that the allowance of \$1,000 for permanent injuries was not so excessive as to indicate passion and prejudice on the part of the jury against the defendant.

Preparation of Hypothetic Questions.—The first appellate division of the supreme court of New York says in *Preston vs. the Ocean Steamship Company of Savannah*, Aug. 10, 1898, that it seems to it proper that attention should be called to the constant abuse in the preparation of hypothetic questions asked medical experts to prove the prior physical condition of a plaintiff. It is often most difficult for the court to determine, at the time such a question is asked, whether there is evidence to sustain a finding that all the facts that the witness is asked to assume did exist; and counsel should always remember that, continues the court, if a hypothetic question of this character is allowed, and if anything is assumed not based upon facts either admitted or established by evidence, or which, if controverted, the jury might legitimately find on weighing the evidence, an exception to the admission of such a question may be fatal to a verdict.

Can Not Test by Habeas Corpus.—In the case of *People ex rel. Birkholz vs. Jonas*, where the relator had been committed to the county jail by a justice of the peace of Cook County, in default of payment of a fine imposed for the practising of medicine without a license, the supreme court of Illinois holds that he could not by habeas corpus proceedings test the constitutionality of the act to regulate the practice of medicine under which he was convicted. It says that the justice of the peace had jurisdiction to hear the case and to render the judgment against the relator, which was complained of, and in doing so said justice had full power and jurisdiction to decide all the questions involved in the case, including the question whether or not the law under which the prosecution was instituted was constitutional. The fact that the court was an inferior one, and that its decision of a constitutional question might not be of great authority as a precedent, did not change the case in any degree. If he chose, the relator could have appealed from the judgment of the justice, and have had a trial *de novo* in a proper court of record, in which trial he could, by presenting propositions of law, have preserved for review the constitutionality of the law under which judgment was rendered. For these reasons, the writ of habeas corpus was denied.

Attending Physician Alone Prohibited.—The Pennsylvania act of June 18, 1895, is in the following words: "That no person authorized to practice physics or surgery shall be allowed, in any civil case, to disclose any information which he acquired in attending a patient in a professional capacity, and which was necessary to enable him to act in that capacity, which shall tend to blacken the character of the patient, without his consent." It will be seen at once, says the supreme court of Pennsylvania, in *Wells vs. the New England Mutual Life Insurance Company*, July 21, 1896, that the act establishes a personal incapacity only. It is the physician attending a patient who is prohibited from testifying to information acquired while rendering professional service. He is prohibited by the words, "no person authorized," etc., "shall be allowed to disclose any information," etc. No other person who, being present at the time when the information was communicated, heard the same, would be prevented by this act from testifying to the very matter in question. It is only the physician himself who is prohibited, and that is manifestly on account of the professional relation between himself and his patient. Where a physician was examined as a witness, and his deposition taken, at a time anterior to the passage of the

above act, and at that time he was perfectly competent to testify to the matter in question, but subsequently, and before the trial in court, died, and the act above quoted was passed, the court holds that it was error to rule out the deposition because of the incompetency of the witness at the time of the trial if he had been living.

May Testify as to Another's Bill.—A judgment obtained for the amount of a bill for medical services was reversed by the supreme court of South Carolina, in the case of *Ward vs. the Ohio River and Charleston Railway Company*, July 19, 1898, because of the refusal of the circuit judge to allow an expert witness, a physician, to testify whether the bill for medical services was unreasonable and too high, notwithstanding the witness had heard the plaintiff, as a physician, testify to said charges, and had also seen the foot that was treated. The judge ruled that, as an expert, the witness could not give his opinion on the facts of the case. But the supreme court says that it is unable to distinguish between lawyers and doctors as witnesses, for a lawyer is allowed to give his opinion in court as a witness touching the value of a brother lawyer's account for services. Why may not a physician testify in the same way as to the compensation sought by a brother physician? The jury are not concluded by the opinions of either lawyers or doctors. They may still weigh the evidence (the opinions of experts) by reference to the nature of the services rendered, the time occupied in their performance and other attending circumstances, and by applying to them their own experience and knowledge of the character of such services. The court adds, these observations are directed to those cases where there is the absence of an express contract between the parties as to such charges.

N. Y. School of Clinical Medicine.—The forthcoming "Prospectus" of this school will contain, among other additions, the names of Prof. Herman Collyer in gynecology, Prof. John J. Morrissey in practice of medicine, and Associate Prof. M. Kenyon, operative surgery on the eye and ear. Louis Fischer, M.D., has been elected secretary.

Washington.

HEALTH OF THE DISTRICT.—The report of the health officer for the week ended October 22 shows the total number of deaths to have been 119, of which 62 were white and 57 colored. At the close of the week there were 134 cases of diphtheria and 105 cases of scarlet fever under treatment.

San Francisco.

NEW MEDICAL BUILDING.—October 22, the new home of the Medical Department of the University of the State of California was formally opened and dedicated. For eleven years this department of the university has been fighting to obtain from the State a more suitable building, and this event was the closing scene of the long struggle. Dr. Cole delivered the opening address, which was followed by one by Regent Dr. Rowell. His and the address of the president of the University, Prof. Kellogg, were very significant of future intentions regarding the Medical Department. It is the open and avowed desire of at least two members of the Board of Regents, to see the Medical Department take the leading place in medical education in this country. The address for the faculty of the Medical Department was by Washington Dodge, M.D. Miss Rachel Leona Ash, B.S., University of California, and a senior student of the Medical Department, then presented, in the name of the women graduates of this department, an oil painting of the late Adolph Sutro, the donor of the land on which the affiliated colleges are built. Dr. R. Beverley Cole, as the president of the Medical Department, accepted the gift of the portrait of Mr. Sutro, in the name of the faculty, and assured the donors that it would be placed to their satisfaction. After the close of the exercises the regents, faculty and invited guests were served lunch in one of the recitation rooms.

The regular college work in the new building commenced on the 24th.

Philadelphia.

DR. HUIDEKOPER RETURNS.—The hospital ship *Relief*, with 238 sick soldiers from Porto Rico has reached this city. On board was Dr. Rush Shippen Huidekoper, who has been detached from his command in Porto Rico to report before the investigating committee at Washington. In an interview with a press reporter he stated that he was still chief surgeon of the United States troops in Porto Rico, and would return to his duties there after reporting before the investigating committee in Washington.

ST. JOSEPH'S HOSPITAL.—The forty-ninth annual report of this hospital has recently been issued: Bequests of the late George S. Pepper, amounting to \$35,687.50 have been received, the interest only of which is available. During the year just closed a total of 1814 patients were treated in the hospital, 722 free of charge, while 30 paid a small amount, really less than the actual cost of maintenance, and 1062 made a fair compensation, the excess over net cost being devoted to the general expenses of the institution. The intimate relationship which the hospital bears to municipal needs is demonstrated by the fact that the service of the police patrol brought 459 cases of injuries and emergencies, while the ambulance service responded to 274 calls, the total number of accident cases treated in the receiving ward and house being 1515. The most notable improvement of the year is the building of a new wing at the Seventeenth Street entrance, in which has been installed a thoroughly equipped pathologic laboratory.

PEACE JUBILEE.—Although this city has been crowded by hundreds of thousands of visitors to see the Peace Jubilee parades, and although most of these people were upon about nine miles of streets, there have been but comparatively few casualties reported, and only one which has resulted fatally.

MORTALITY STATISTICS.—The total number of deaths for the week ending October 29, was 348, being a decrease of 41 over last week, and a decrease of 1 over the corresponding period of last year. Of the total number of deaths 87 were under five years of age.

LECTURE.—At a recent meeting of the Fellowship of Ethical Research, Dr. Daniel G. Brinton delivered an address on the "Diseases of Nations." He is quoted as treating the nation as an organism like the human body, and discussed such diseases as render it incapable of self-preservation. The speaker then stated "That according to history the average life of a nation was from 800 to 1000 years, its disintegration for the most part being due to moral disease, as corrupt government, or priesthood, though nations do not fail from psychologic cause." The etiology of the diseases of nations he thought due to imperfect nutrition, poisons, mental coma, and sexual aberrations, each one of which received due consideration from the speaker; reviewing the causation factors in the health and welfare of this country, Dr. Brinton believes that our mode of life, use of stimulants and drugs might have some tendency toward mental coma.

ANOTHER HOSPITAL TRAIN.—The German Hospital recently sent another train to Camp Meade, returning with thirty-six soldiers, many of whom are suffering from typhoid fever. The train was in charge of Dr. Charles Turnbull of the hospital staff, the medical department being under the charge of Dr. Carl Freese. The Board of Trustees was represented by Horace E. Smith, and the Government by Major Peyton. It is stated that the entire expense of the train was borne by John D. Lankenau, President of the Board of Trustees of the Hospital. The Government also brought back twenty-two soldiers to be distributed to the different hospitals of the city.

RESULTS OF WIDAL REACTION.—Out of twenty-five cases of fever among soldiers recently admitted to the St. Joseph's Hospital, Dr. Joseph Sailer reported that in fifteen cases a positive reaction was obtained, and all subsequently turned out to be typhoid fever, while in several in which a negative

reaction was obtained they subsequently proved not to be typhoid. Dr. Pease of the Bureau of Health states that as a result of his examinations the positive reaction has been subsequently confirmed by a clinical history of typhoid in 97 per cent. of the cases.

SOLDIERS TO JEFFERSON HOSPITAL.—Jefferson Hospital was one of the first institutions here to offer its facilities for the treatment of sick soldiers of the Government. Not only this, but the whole graduating class volunteered their services in case of need. Appreciating the courtesy, the Government recently dispatched a hospital train carrying twenty-four men from Camp Meade to that institution.

CONTRIBUTIONS TO NATIONAL RELIEF COMMISSION.—Mr. George C. Thomas, through the banking firm of Drexel & Co., makes the following statement regarding contributions for the relief of sick soldiers: Cash previously acknowledged, \$77,294.35; value of supplies contributed to date, \$40,345.00; total, \$117,639.35. In addition, the "Medico Chi." reported contributions aggregating \$5,229.67, and the Woman's Hospital, \$339.20.

MUNICIPAL HOSPITAL.—One day this week fire broke out in the drying room of the laundry connected with the Municipal Hospital, in which are many patients suffering from diphtheria and scarlet fever. Some excitement was necessarily occasioned for the time being, but the flames were promptly controlled, and the damage sustained was small.

CHANGE OF ADDRESS.

Bellamy, R., from Newport, R. I. to 210 W. 57th Street, New York, N. Y.
 Brock, G. S., from Bush to London, Ky.
 Birdsell, W. G., from Denver, Colo. to El Paso, Texas.
 Collins, B. F., from Toronto to 215 N. Phelps Street, Youngstown, Ohio.
 Clements, G. E., from Crawfordsville, Ind. to 757 W. Monroe Street, Chicago, Ill.
 Campbell, W. H., from 330 W. Fourth Street to 330 E. Fourth Street, Cincinnati, Ohio.
 Druet, A. L., from Marysville to Anamosa, Iowa.
 Gessner, H. B., from 731 Carondelet Street to 1450 N. Rocheblane Street, New Orleans, La.
 Gibbs, M. D., from Macon to Gillett, Colo.
 Hoffmann, A., from 174 Ashland Boul. to 6041 Vernon Ave., Chicago, Ill.
 Jones, C. C., from Brook to John Sealy Hospt., Galveston, Texas.
 Leach, W. D., from 1125 to 1087 Washington Boul., Chicago, Ill.
 McKlveen, F. G., from 103 Byers Street to 150 So. Broadway, Denver, Colo.
 Monette, G. N., from 1124 St. Charles to 1021 Baronne Street, New Orleans, La.
 Reed, J. H., from Burnett's Creek to Hammond, Ind.
 Rietz, P. C., from Chicago, Ill. to Evansville, Ind.
 Shortridge, W. R., from Monroe, Wis. to Elgin, Ill.
 Ussery, W. C., from St. Louis, Mo. to Paris, Ky.
 Vedeler, C., from Locust, Iowa to 715 W. Harrison, Chicago, Ill.
 Van der Veen, C., from 143 Fountain Street to 554 Grandville Avenue, Grand Rapids, Mich.
 Wertz, J. A., from 509 Third to 861 Trumbull Ave., Detroit, Mich.

LETTERS RECEIVED.

Amos, C. F., Lumberport, W. Va.; Allen & Hanburys, Ltd., New York, N. Y.
 Blincoe, A. G., Bardstown, Ky.; Bunce, W. C., Oberlin, Ohio; Bromine-Iodine Chemical Co., Binghamton, N. Y.; Bashaw, Darwin, Craigsville, Va.; Bailey, S., Mt. Airy, Iowa.
 Cox, Heldman & Shortle, Chicago, Ill.
 Dodsworth & Dunbar, Cincinnati, Ohio; Daniel, J. B., Atlanta, Ga.; Dale, J. F., Lemont, Pa.; Derrick, Paul E. Adv. Agency, New York, N. Y.; Eastman, J. R., Indianapolis, Ind.; Eastman, T. N., Uniontown, Pa.; Elliott, H. G., New York, N. Y.
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The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, NOVEMBER 12, 1898.

No. 20.

ORIGINAL ARTICLES.

THE RELATIONS OF PELVIC AND NERVOUS DISEASES.

WITH SPECIAL REFERENCE TO OÖPHORECTOMY FOR FUNCTIONAL NERVOUS DISORDERS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The question before us is one of great importance, and has presented difficulties fully commensurate therewith, but experience, more accurate and trustworthy if less fascinating and brilliant than the most ingenious theorizing, has answered at least a part of it.

There can be no doubt as to the frequent and important relationship existing between the two sets of symptoms under discussion, but the nature of the connection and the way in which it is established in each individual case is a matter by no means so clear, while the interpretations which may be put upon the same set of phenomena differ as widely as the theories and prejudices of those who are called upon to make the decision. The ease with which all nervous symptoms may be so simply and confidently referred to disorders of the pelvic organs, and the equal facility with which objections on the ground of physiology or experience may be silenced by a jaunty and wholesale use of that much-misunderstood and overworked word "reflex," have settled it as a well-understood fact in the minds of a large part of the laity as well as of the profession, that if a woman is "nervous," and has at the same time some uterine displacement or inflammation or neuralgia, the real cause of her sufferings has been found, and there can be no doubt of the relation of cause and effect between them. The belief has led to a vast amount of gynecology and surgery useless and worse than useless.

I presume it is true that the popular ideas are often more extreme in this direction than those of the most conservative, at least, of the profession, and that a certain amount of treatment is undertaken quite as much to satisfy the wishes of the patient or her friends, as to carry out the requirements of a well-considered diagnosis. But the popular medical errors of today, as has been shrewdly remarked, are the professional medical errors of a former generation, and women believe as our predecessors taught their mothers, and not as we would teach themselves. In great numbers of the cases of chronic invalidism familiar to most of us, the mutual interaction of somatic and psychic influences has made so complicated an entanglement, that in the individual case the truth is by no means easy to trace; and when the practitioner has placed before him for immediate adoption one or the other of two extreme alternatives, that which brings into the

foreground distinct symptoms and definite lesions susceptible of operative interference, is naturally enough the more attractive. This apparent decisiveness and practicality, combined with a full appreciation of the safety of modern surgery, have led to an immense amount of activity that has done more harm than good.

There are two distinct ways in which the influence of the pelvic organs upon the nervous system is felt. In the first, the diseases of the uterus, ovaries and adnexa produce the same amount and kind of nervous symptoms that other wasting and painful diseases may do, either directly, or indirectly by way of anemia and impaired nutrition. It has often been remarked that hysteria is not usually found in connection with gross organic disease of the uterus, and the same is true of the more vague condition of neurasthenia. Even with such lesions as displacements, which might be supposed—as keeping up a more permanent irritation of a low grade—specially prone to cause functional disturbances; we find the latter associated, not so much with an extreme proclivity, for instance, as with those slighter forms only to be detected by the trained senses of the specialist. In other words, when well-marked and clearly diagnostic lesions of the pelvic viscera coexist with the well-marked nervous symptoms, there is no close correspondence in the severity of the two sets, and it seems to me more philosophic, without denying all influence to the pelvic viscera, to assume that in the great majority of cases the pelvic lesions are certainly not the only factor—and perhaps not even the important and causative one—but rather are coexistent and dependent either upon two different causes or upon a single one underlying both, which may often be a general impairment of nutrition. The fact that the attention of nervous patients is so frequently and strongly directed to the pelvic organs proves no more and no less than the kindred facts of "nervous dyspepsia," cardiac disease or "spine disease."

The second of these ways is that much less easily explicable influence which the physical development of the sexual organs, normal or abnormal, exerts upon the growth and functions of the nervous system in some of its higher manifestations—evident at a very early age, rising to its greatest activity during the period of complete sexual development, and again decreasing or disappearing after the time of involution. Here also it is quite as true that the two developments, pelvic and nervous, are coincident, rather than that either is strictly consequent upon the other. Certain it is that interference with the normal relations and development of the two under the influence of improper education, social conventionalities, or conflicting interests, has much to do with the production of certain forms of nervous disease.

Like many other well-known facts, these relations are open to wrong interpretation on both sides. They may be, in the individual case, obscure and totally overlooked and all connection denied, though of this

error in practice the risk is slight. If the practitioner be inclined to forget, there is usually a hypochondriac patient or her disinterested friend to remind him. On the other hand, their importance may be grossly exaggerated. While we have admitted the close connection and parallel growth of the sexual organs and portions of the nervous organization, it is probably true that after a time, perhaps an early one, the habit of growth on each side becomes fixed and can progress independently of the other, so that nervous peculiarities which at first were closely connected with the sexual development have become established, and remain with comparatively little reference thereto. It is understood that among animals the effect of castration upon the general growth decreases according to the degree of maturity already attained, and the same thing is undoubtedly true of the human being.

The cessation of sexual activity in the female is marked in the popular, even more than in the professional mind, by a decided tendency to nervous as well as physical disorders. The more gradual changes, or perhaps rather, fixation or crystallization, of mental characteristics, which go on slowly and gradually for some years in both sexes, being emphasized in the female by a well-marked and definite phenomenon, are very likely to be referred to that phenomenon as a cause, if, as not infrequently happens, those peculiarities approach the borders of mental unsoundness or exaggerated nervousness. In by far the greater number of cases the "change of life" is accomplished with but little disturbance, but it is exceedingly difficult to disprove to the patient that vague effect so commonly attributed to it, in view of the long time over which its influence is often suspected to be felt, sometimes hardly less than a fourth of the allotted years between the cradle and the grave. A woman is very apt to begin to think about it if she has any ill-defined nervous trouble at the age of 35 years, and will not cease to do so until it is accomplished, which may not be until she is 55.

Weir Mitchell has had the records of a large number of cases of melancholia examined with reference to the age at which they began, and finds no statistical ground for attributing its occurrence, as is so often done, to the change of life. In regard to neurasthenic symptoms it is certainly not strange that they should be more marked at a time when the general vigor is on the wane; when outward circumstances are very possibly of a character to throw one back upon her own resources, and call attention to her own physical and psychical peculiarities, but there is certainly no close limitation to the precise period marked by the cessation of the menstrual function. That crystallization of character which is likely to take place as years advance occurs in both sexes, and may be much earlier in one person than in another. Dr. Holmes' allusion to old women of both sexes is sufficiently familiar, as well as the complaint of Admiral Jervis that the Channel Fleet was commanded by "a lot of old women disguised as young men." If the connection were a very intimate and causative one we ought to see, instead of mental troubles coming on at the menopause, a very marked and positive cessation of them when the "change of life" is accomplished, which is very far from being the rule, although such exceptions do occur.

Looking at these relations from a therapeutic point of view, we may consider the treatment of nervous disorders by local treatment of the pelvic organs, and

on the other hand, the influence of agencies acting through the nervous system upon disease of the pelvic viscera. It seems to go without saying that if a local cause of irritation is keeping up functional nervous disorders, it should, if possible, be removed, unless the removal will leave behind more trouble than it will take away. This is the question to be decided as each individual case comes before us, and is to be answered in the light of experience rather than as a matter of abstract probability. It is to be answered from the combined knowledge of the gynecologist and neurologist, united perhaps in the person of the same physician, but never by the mere operator anxious for a "record." When diagnosis is clear and treatment certain, or as nearly so as can reasonably be expected, there is little more to be said, but when the advantages to be expected from local treatment are somewhat doubtful and when it means feeling one's way through a wilderness of doubtful diagnosis to a merely possible cure, then even minor gynecology becomes of questionable benefit, and the very decided offsets should be carefully weighed.

A mass of hypochondriacal delusions can be more easily built up on this basis than on any other unless it is on the "spine." To be sure heart and lungs and liver and blood may serve their turn, but are more easily ruled out on account of the greater definiteness of the symptoms which can reasonably be assigned to them. Tradition, popular prejudice and accident play no inconsiderable parts in giving "that bad eminence" to the pelvic organs. An attack of "uterus on the brain" is not always wholly the fault of the patient. Like many other psychic abnormalities and superstitions it may be the result of faulty education, for which the over-enthusiasm of our own profession is often largely responsible.

When, however, we come to that less explicable and definite but no less real relation, where the functional activity, normal or abnormal, of the pelvic viscera is closely allied with nervous and mental manifestations and where pelvic disorder, instead of being, like lesions in other organs, simply a source of irritation, wasting or infection, is the origin or, perhaps more correctly a part and parcel of the nervous disorder, then the question of surgical interference is less easy to answer. If we are to look upon the growth of the two systems in question as rather corresponding and harmonious than as consequential, it is certainly possible or probable that after the early stages either one of them may pursue its course independently, if the other be abruptly interfered with.

It is certainly conceivable, on the other hand, that in many severe neuroses the removal of the most essential organs of the sexual system might be of great benefit, and we must look to experience rather than to a priori considerations for a decision. Under the stimulus of this theory and of hope, combined with confidence in the present security of surgical manipulations, the experiment has now been made many times.

If it were possible to anticipate by years the fate of each child; if we could know as a certainty, as we can now guess, what might be the abnormal tendencies in each, and what would be its opportunities for the restraint and correction of them, it is far from improbable that such an operation might prevent or modify their further development—although at the price of checking other growth—and would be a great source of relief to the patient, the family or the community.

This is as likely to be true of the male sex as of the other. But who would take this responsibility? Certainly not the physician, who knows that his fears are not always justified, and is aware how much may be done by training and by medicine. Who would voluntarily submit to it? Certainly not those who need it most.

In our present conditions of diagnosis and of civilization, it is as impracticable as the imprisonment from infancy of the hereditary thief or the hanging of the murderer before he has selected his victim. But experience in men and animals goes to show that if this change is effected later in life, its action upon the general sexual characteristics is much less. The growth and development has been accomplished and remains comparatively unchanged. Unfortunately, it is this condition which most closely represents the results usually found when it is sought to relieve the chronic nervous sufferer by a so-called "normal" oöphorectomy. The nervous disposition remains the same after the psychic effects of the operation perse have passed off, with the additional burden of new locations and excuses for pain, and the disappointment of a last resource tried and failed.

It has happened to me to have brought to my attention a considerable number of cases, which, for one reason or another, connected for the most part with nervous conditions, have had ovaries removed, either healthy or not seriously diseased. It would be, of course, entirely unfair to conclude statistically from these that the operation is nearly always a failure, for it is only the failures which call for further treatment, while the successes do not present themselves at "nervines." I have, however, taken pains to inquire for other cases of which these patients may have heard, since they are not likely to take so important a step without some definite encouragement, but without getting hold of enough of them to make me change my opinion.

I have heard of the remark having been made by some distinguished obstetrician that every woman who has been able to get out of bed unharmed in less than a week after confinement, was a curse to her sex, and a similar view might properly be taken of the very few successful cases of "normal oöphorectomy." Four years ago I reported upon twenty cases of this kind which had come to my knowledge, which gave one case of complete and decisive recovery apparently due to the operation, one (aged 40) in fair health, the operation in this case having been done for actual ovarian disease; one death, after many years of invalidism, succeeding the operation, but in no way connected with it; one death from cocaine; one hopelessly insane. Some of the remainder, except one not heard from, were invalids for some years, and many are still so. In a few there was improvement as regards dysmenorrhea and local pain, without any material change in the general condition. I do not know what happened to most of them during the last four years. Fifteen others have come to my notice since, some of whom were inmates and some applicants for admission to an institution for the care of nervous cases. My information as to some of them is not sufficiently minute to make a statistical statement of much value. Two of them, some years after the operation, were "better," or "much better," but of the eight with whose cases I was more acquainted, only one seems to have experienced any benefit, and this of a doubtful character. She had

the ovaries removed in 1894; grew worse until 1896; had the uterus removed in 1897, and went home "well." She seems, by her letter, to have had considerable sickness since, but is now "gaining and hopeful," a not unusual frame of mind for a time, but not always confidentially shared by the physician who has the opportunity to watch such cases after the first enthusiasm has worn off. One died after a condition of extreme nervousness with hallucinations, but it is not probable that the operation, which was for actual ovarian disease, had anything to do in one way or another with the final symptoms. It can only be said that it had not cured her nervous condition. One shot herself six months after a "very successful operation."

Mrs. J., a corpulent, dark-complexioned woman, had a variety of severe hysterical symptoms, ostensibly as the result of a fall from a bicycle. After much ineffectual treatment, her ovaries were removed. I heard, from time to time, of the continuance and aggravation of her mental and nervous symptoms, and after some time she sought readmission to the institution where she had been treated previous to the operation.

Mrs. M., decidedly neurotic, was much grieved by the death of a daughter in early childhood. She was operated on for an appendicitis, in which one ovary was involved, with, according to her own statement, the distinct stipulation that the other was not to be meddled with. The surgeon, however, saying that there would probably be something the matter with it by and by, removed this also. Her disappointment and indignation at the breach of trust, and the loss of the possibility of another child was justifiably extreme. She is now a broken-down and incorrigible narcotist, saying that she has nothing to live for, and refusing to give up her morphin.

A young woman, of much courage and energy, but neurotic heredity and antecedents, had vertigo and some curious notions of the agoraphobic type, which she managed partially to conceal, knowing them to be morbid. She had both ovaries removed, and afterward managed to get through a training-school for nurses. She soon broke down again, and although, after long rest she improved somewhat, again went to pieces on slight provocation.

The others present no special points of interest.

Notwithstanding these unfavorable results and the conviction that on the whole these cases did no better than, perhaps not so well as, the same number submitted to a sufficiently prolonged, and careful non-operative treatment, it would be going too far to say that the operation is never justifiable. There are cases whose nervous symptoms are so severe and so utterly rebellious to all other treatment that the slightest chance of getting rid of them, even at the risk of establishing new ones, may justifiably be taken. They can not be much worse, and they may be a little better.

Such cases are far from common, and can not be made to cover a tithe of the operations which have been done. The inconvenience and sufferings of dysmenorrhea, local pelvic neuralgias, and the more remote conditions of neurasthenia, dyspepsia, headache and others, are only in the rarest possible instances adequate excuse for it. The objection, however, arises not from the fact that there are undesirable accompaniments, for the price of comfort, even if not of cure, would not be too great to pay if one could be sure of obtaining for it the desired result, but because in the vast majority of cases the price is paid and can not be recovered, while the relief is either none at all or only such as may be temporarily obtained from any strong impression whose effect is hopefully awaited.

In nineteen-twentieths of the cases, normal oöphorectomy stands on the same basis as regards its immediate effect on the patient as any of the popular forms of faith cure. No form of functional trouble

of the nerves, even when supposed on good grounds to be connected with disease of the pelvic organs, should be submitted to oöphorectomy until every other means has been tried, not merely perfunctorily and as a mere excuse for operating, but methodically and faithfully.

On the other hand, what is to be expected of treatment of nervous symptoms as to its effect upon actual pelvic disease? According to the faith-curists of all sorts—everything; according to rational pathology, little cure but much relief in some cases. Every one knows how much the condition of nutrition influences the degree to which local symptoms become wearing and irritating upon the general system. Purely subjective pelvic sensations are not disease of the pelvic organs at all, and provided they are recognized as being what they really are, no one would pretend to treat them locally, but erroneous diagnosis has undoubtedly thrown many such cases, either into the hands of faith-curists, who have not failed to glorify themselves therefrom as cures of organic disease, or into those of operators, with the result already described.

On the other hand, we know how useless, and worse than useless, it is to persuade a patient with cancer or fibroid that her pain is only "nervousness," and hemorrhages of no consequence. The attempt to do so, if successful, may cost her life, and is little less than criminal. Faith-curists, whatever their sect, and whatever we may think of their claims or results in functional cases, are here the most rampant and dangerous of quacks.

From all which it follows that, in this region, as in many others where medicine and surgery come in close contact, the diagnosis is the crucial point, and it should be made before the operation. Experiment with good results hoped for is not justifiable, and "art for art's sake" is no motto for the surgeon.

THE METHODS EMPLOYED IN EXAMINING THE EYES FOR THE DETECTION OF HYSTERIA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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CHICAGO.

Although much has been written regarding the value of the ocular signs and symptoms of hysteria in the diagnosis of that disease, I believe there is good reason for returning to several matters in this connection that seem to me of vital importance, especially as I do not think sufficient stress is commonly laid upon the means by which one must arrive at diagnostic conclusions.

My own belief, after a somewhat extended acquaintance with this disease is, that, if one were to make a special study of that organ that most uniformly exhibits the evidence of hysteria, the eye would afford the most information, even more emphatically than the skin or the mucous membranes. On the other hand, anomalies of the general sensibility are probably more easily detected by the average individual (who methodically searches for them) than are ocular defects. But as the scientific observer omits no examination that will assist him in arriving at proper conclusions in diagnosis, prognosis or therapy, I enter a plea for a more thorough and more general use of

certain methods employed by the ophthalmologist in detecting the presence of ocular hysteria as one manifest of the general neurosis.

First of all, then, what are the commonest ocular manifestations of hysteria, what the most reliable means for their detection, and how may errors in examination be avoided? I need hardly say that some acquaintance with the use of the ophthalmoscope is of great value in the diagnosis of ocular hysteria, and in investigating the subject one should be certain that there are no alterations in the interior of the eye to account for the visual disturbances. It is not fitting that I should point out the value of ophthalmoscopic examinations to the trained neurologist; I do not very well see how he can dispense with them. Should he be unable to examine the background of the eye with the mirror he should at all events, seek a report upon the condition of the fundus at the hands of some confrère expert in that work. As is the case with other organs of the body, there are absolutely no tissue alterations to be found in any part of the eye, due to the presence of hysteria. A negative report upon the fundus condition is, therefore, a *sine qua non* in examining a suspected hysterope.

ANOMALIES OF ACCOMMODATION.

Taking one age with another, the commonest ocular sign of hysteria is a defect in the focusing power of the eye—anomalies of accommodation. For various reasons these conditions have been called *hysteric insufficiency of accommodation, ciliary paresis or paralysis, painful accommodation, nervous asthenopia*, etc. The patient complains of the usual symptoms of asthenopia—pain in the eyes and forehead when attempting to read or do any other near work, blurring of print, photophobia, frequent winking, etc. These cases are rarely permanently relieved by glasses or by an exclusive local treatment of the eye. In all there is a defect in the range of accommodation. This so-called paresis of accommodation is nearly always in the form of a true hysteric contracture of the ciliary muscle—the motor power by which the eye is focused for various distances. The nearest point for which the eye can accommodate itself for the distinct seeing of small objects varies with the age of the individual. As you are well aware, this point is quite close to the eye in childhood, remote from it in old age. On the other hand, every eye has a certain range of accommodation; that is, there is a certain space within which small objects can be distinctly seen, and when the eye is normal, or when the refraction is rendered normal by distance glasses, this range is singularly and wonderfully constant in individuals of the same age, and I believe that the neurologist who is on the lookout for deviations from the normal accommodations will obtain assistance in diagnosis by bearing this fact in mind. For all practical purposes, however, one may ignore the extent of this accommodative range and confine one's attention to the nearest point of distinct vision, that is almost always affected in hysteria, that is to say, is usually too near or too far away from the eye of the hysterope. The following table indicates the proper distance, and it is a very easy thing to determine any deviation:

Age.	Nearest point of distinct vision.
10	7 cm.
15	8 "
20	10 "
25	11.7 "

Age.	Nearest point of distinct vision.
30	14 cm.
35	18 "
40	22 "
45	28.6 "
50	40.5 "

An eye that is under the influence of hysteria acts either as if it were under the influence of pilocarpin or atropin; the patient is able to read fine print either abnormally near or sees small objects most distinctly farther away than he should.

In practice, all that it is necessary to do is to have the distant vision, if abnormal, corrected by glasses and then ask the suspected individual to read the finest diamond print, held as near to the eye as possible. The patient, with his back to a good light, is asked to read a portion of a page of this print, at the normal distance from the eye, as shown by the table. If he continues to read it when brought a couple of centimeters or more nearer, or if he cannot read unless it is removed farther away than the normal distance, a defect of accommodation is certainly present. I recommend this as one of the most satisfactory and most easily applied of all the tests. As in other forms of spasm or paralysis of accommodation, the condition may often be relieved by glasses. It often happens that a young subject must be treated as if he were sixty years of age, requiring a strong convex glass for reading at the normal distance or a concave glass for street wear. In both instances a few drops of a 1 per cent. solution of atropia will disclose the true refraction, often unmasking the hysteric character of the defect.

DEFECTS IN THE FIELD OF VISION.

As every neurologist knows, defects in the field of vision constitute some of the commonest signs of disease of the ocular apparatus, and that they are of paramount importance, while a knowledge of their peculiarities is of great value in determining the presence of hysteria. For purposes of comparison, I show two perimeter charts: one of the normal field and the other furnished by a hysterope under my care. The predominant peculiarity of an hysteric anomaly of the visual field is, that while in every other disease (except hysteria) where peripheral limitations occur, the color field is affected *pari passu*, or in a greater proportion than the field for white. In non-hysteric diseases perception of color is often entirely lost, and yet fairly large areas susceptible to visual sensation from a white disc remain. In hysteric amblyopia the field for colors is of greater extent or is less affected proportionately than the field for white objects, *just the reverse of that which obtains in other nervous affections*. Even where the field for white is still the largest it can usually be shown (when there is *any* perimetric defect) that the visual field for red is larger than that for blue, and measurements for these colors should always be made in doubtful cases. One of the best examples of this reversal of the color field occurred in the case of a young lady, aged 17, in delicate health, who began to complain of her eyes. She then noticed that she could not see well in the distance or read ordinary print with the right eye. There were no fundus changes; patient was distinctly hysteric; had attacks of weeping without apparent cause, pharyngeal anesthesia, lump in her throat, etc. She had spasm of accommodation, was able to read only coarse print and that at from 6 to 10 cm. in front of the eye. She could not read fine print at any distance. I wish

you would especially notice that her field for red is larger than that for white.

It must be remembered, that even where the patient does not complain of visual disturbances quite marked defects of indirect vision may be present. If these do not proclaim themselves at once they may be developed by fatigue of the retina. The patient is asked to look steadily for a couple of minutes at a near object and then the field for red and green should be mapped out, followed by that for white, and vice versa. The amblyopia may be so marked that the field for white and colors is reduced to the vanishing point, a condition of affairs which it is not improper to regard as an anesthesia of the perceptive elements of the retina and in correspondence with the loss or perversion of sensation exhibited by the skin and mucous membranes in other phases of the disease. In such instances it rarely happens, even where the central vision is reduced to 1/10 or 1/20 of the normal, that it prevents the patient from walking about as if he had good vision. I have now under my care a child who can not read the coarsest print at any distance, whose distant vision is reduced to finger counting at four feet and whose color-field and the area for white measure about 5 degrees, and yet to all outward appearances she has good eyesight, that is, she does not stumble over small articles of furniture placed in her path and her parents have difficulty in believing that her vision is defective.

My principal reason for referring to these defects in the visual field, so well known to all of you, is to insist upon a certain form of examination. Hysteria is essentially a fatigue neurosis and in the use of a subjective test like the perimeter one may easily obtain evidence that is quite misleading. In other words, mapping out the limits of the field of vision in a hysterope requires more time and patience than is generally given to it. In my opinion, all uncomplicated cases of hysteric defect show a concentric contraction and a fairly uniform boundary of the visual field. In the case whose field I show you there were, when it was first measured, several apparently reentrant angles, but these disappeared when the patient was allowed to close her eyes and rest for an instant every thirty seconds during the examination. I do not think that hand perimeters, or objects simply held in front of the face, should be used in examining hysteric patients. A stationary perimeter, accurately adjusted should always be employed and the suspected hysterope should remove the chin from the rest and close the eyes frequently during the examination. Moreover, only one eye should be examined at a sitting and control tests must be repeatedly made. I have often had an opportunity to observe the necessity for taking these precautions, and am convinced that improper conclusions may readily be drawn from the usual method of examination.

MONOCULAR DIPLOPIA OR POLYOPIA

is a curious hysteric phenomenon, probably the result of ciliary spasm. When care is taken not to suggest it to the patient, it may be developed in many hysteroopes. I say developed, because, like defects in the field of vision, the patient is usually unconscious of the double vision, as such. It commonly presents itself to him or her as part of the visual defect and the manner in which the examination is carried out is of great importance. A test should be made in both a lighted and darkened room. In the former, one eye being covered, a white match is held vertically three

or four inches in front of the uncovered eye. As it is slowly moved from its first position to a point three or four feet away, the patient is asked how many matches he sees. In most cases the match will present a double image when held quite near the face; the images approach each other and become confused as they are removed, to again separate more and more until the meter distance is reached. The match is again, from this point, gradually brought close to the eye, when the same phenomena, but in reverse order, will be manifest. The second eye is similarly examined and, finally, the room is darkened and a further (control) test is made with a small candle flame. Sometimes three or more images (polyopia) are observed and it is usually possible to exclude one or more of these by interposing a card, so as to cover various segments of pupillary area during examination.

A few words about *pupillary anomalies* in hysteric subjects, because there is much confusion on this point. As a rule, when either or both pupils are unusually contracted or unusually expanded the ordinary reflexes are preserved, that is, they *contract* when light is thrown upon them and when suddenly asked to fix a near object, and they expand when light is withdrawn or when the patient is told to gaze into the far distance. This is, or ought to be, a very simple matter, but in cases of hysteric amblyopia some care should be observed in making the examinations. The patient should be seated facing a half-lighted window; the unclosed eyes are completely covered with a black cloth and he is told to look, and to continue to look, as if gazing upon a distant object which has been previously pointed out to him. In thirty seconds the cover should be suddenly removed and the contractions of the pupils, or its absence, noted. The reflex contraction of the pupils for convergence or accommodation should be tested in a light as dim as is consistent with the observer's ability to see the patient's pupils. Having been told to look at an object across the room for half a minute, he is now asked to quickly fix the end of the finger held four inches from the patient's face. By means of these simple but effective devices one may often avoid the mistake of concluding that he has to deal with a pupil that does not respond to the reflexes mentioned.

I need not remind you that in hysteric amblyopia we frequently find *macropsia* and *micropsia*. Usually the patient complains of this strange symptom, probably due to irregular contracture of the ciliary muscle, but it is often worth while to test for it. A long, lighted candle is held before each eye of the patient at distances of one, four and ten feet, and he is asked whether it gets longer or smaller in size. Notes are made of his answer and the experiment repeated in a day or two.

A very common and, in my opinion, characteristic eye-sign in hysteria is spasm of the orbicularis, the so-called blepharospasm. When this is unilateral and accompanied by photophobia, or spasm of accommodation, it is almost invariably hysteric, and I believe that the majority of the spasms of the orbicularis are of this character, whether in the form of blinking or constant winking of the eyes, or where the spasm is much more marked and involves the facial muscle.

The Phonendoscope as an Ear Trumpet.—Surprising results have been obtained with deaf subjects, especially in reading aloud to them, by removing the external rubber plate of a phonendoscope, and speaking directly into the apparatus, as into a phonograph, with the tubes in the deaf person's ears.

HYSTERIA IN CHILDREN.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. G. BILLER, M.D.

CHEROKEE, IOWA.

Hysteria is recognized as well worthy of our deepest study and best thought, by those most familiar with it. Notwithstanding this fact, and the volumes that have been written about it, we must acknowledge that in many ways we are woefully ignorant regarding it. We all, probably, feel at times as though, if there were anything which we have not found out by practical experience pertaining to this disorder, we are perfectly willing to remain uninformed.

No matter how willing we may be to call it quits, our omnipresent foe (hysteria) never will consent to that, and by appearing in new phases and new forms, as well as new combinations, forces us to learn more and more regarding it. The more we know of it the less liable we are to use some such an expression as, "Oh! it is nothing but hysteria, and does not amount to anything!" No one would want to say that of any other disease which causes so much suffering and unhappiness, and destroys the pleasures and comforts of as many homes as does hysteria. The temptation thus to speak of it is because we often feel that if the patients would, they could, control themselves, and we back up our ideas with the fact that some simple but disagreeable treatment has often caused the entire disappearance of the symptoms, and for this reason it is thought that if very much were the matter the result would have been different. These brilliant and dashing flank movements are not always successful, and we have to settle down to a regular siege, from which we often withdraw defeated, and too often our defeat is caused by our treating our foe with contempt; the patient becomes dissatisfied and passes, frequently, into the hands of some quack or charlatan, who thrives by accidentally—and probably unconsciously—knowing how to take advantage of some of the tricks of this powerful but susceptible enemy of the human family. Every physician, after having hours, days and weeks of his time taken up with hysterical patients, must oftentimes ask himself: "Where did all this host of hysterical men and women come from?" The answer to the question is: "From the mis-born, and mis-raised boys and girls of the past generation, and the children of the same class in the present generation are hurrying forward to recruit the ranks." I believe a hysterical woman can oftener be cured before she is fifteen years old than after, and it is for this reason that I wish to call your attention to hysteria in children.

This subject, as far as treatment can go, may be divided, primarily, into two classes: the first, those cases which never have hysteria till after puberty, but whose physiologic and psychologic development have been such as to leave the seeds well planted in a soil that has been carefully fertilized for their maturing. This would hardly be called hysteria in childhood, but the principal damage is done then, and that is the time when proper treatment should have been applied.

In the second division, we have the disease fully developed during childhood. It is often surprising to note what apparently slight suggestions will develop a hysterical attack in a young child. I remember a boy 3 years of age, who, upon getting up in the

morning, a week or so after having seen a man who was paralyzed in one leg go by a few times, said his leg was no good, and he could not use it and did not; careful examination was made, and nothing abnormal discovered except that he would not use that leg; he dragged it around all day, but that night, after he was put to bed, his father went in to play with him, and in the excitement of the play his paralysis disappeared, and he seemed never to think of it again. This was a child of very active imagination, and his mind had undoubtedly been impressed until he was unable to move his leg.

I have since then had two cases of partial paraplegia of hysterical origin in children. They were sisters, and of quite dull and heavy minds, whose imaginations were slow to be excited, and when the result was produced, it was just as slow and tedious to overcome. The father of these children had died of tubercular trouble, which started in the back, and one of his legs became nearly useless from sciatic neuritis. The children, after the father's death, were left in the mother's charge; she unwisely had a great deal to say about the father's sickness, and especially about his back and the inability to use his legs. The children were fond of sweet food and were allowed to indulge in cake, pie, etc.; in fact, this was about their whole diet. The living room was lighted by two small windows which were shaded by porches, and was heated in winter by a hard coal burner which was not much smaller than the room; the children's health was carefully watched by the mother; every little pain or nervousness was inquired after and examined into. The elder of these two girls (who were the youngest of a large family) had a spinal curvature, which became tender and painful; a short time elapsed before a cast was applied, and during this period she suddenly became unable to move the legs, and when put on her feet would tumble over if not held up. If held up for a little while she could partially stand by rising on her toes. Reflexes and sensation were normal, and after the application of a well-fitting plaster cast the legs became all right.

About a year later, the younger child, then about eight years old, was brought to see me for severe pain in the head; her temperature was above normal, pulse rapid; this continued for several months, and then began to improve, but all at once the legs became useless; she would not stand on them, and part of the time could not move them. Reflexes were normal; there was some pain in the crural nerves, otherwise sensations were normal. Various kinds and methods of treatment having been tried without success, galvanism was used for two months. At the end of this time she began to improve, and was soon able to be up and around; in a few weeks more she seemed as well as usual. She remained well for a year, when she had a slight tonsillitis, and before she was relieved of this her legs were again paralyzed. The battery was resorted to, and in a few weeks it had the desired result, although, to the best of my belief, no current came from the battery. No. 2 had hardly got her legs to work before No. 1 took cold and had paralyzed legs; the battery was still in the same condition, and it took six weeks to get the girl around.

This last attack was about a year ago. I have urged a better diet and more light in the living room and no conversation about sickness or sick people; but it is hard to convince the mother that anything but inheritance has aught to do with the sickness.

Paralytic hysteria, as represented by the above cases, is not so common as some of the psychic forms, but it is so marked that it attracts attention at once, while the latter often does not attract sufficient attention to be diagnosed as hysteria. I believe some of the peculiar fears of childhood are often manifestations of hysteria. I knew a little boy who would scream and cry so that he had to be taken from the room if any one began singing or playing the organ; this child afterward developed very marked hysterical symptoms.

Night terrors are undoubtedly, at times, of hysterical origin; for instance, a child three or four years of age, awoke one night screaming, and said the rats were after him; the next morning he did not want to eat breakfast in the dining-room for fear of the rats. This kept on night after night, and soon his naps in the day time were troubled with these terrors, and it was almost impossible to do any thing with him for hours at a time; regulation of diet, amusement and medical treatment, were all tried without benefit. The condition was carefully explained to the mother, who was advised to make him control himself. That afternoon he had a nap, and awoke the same as usual with the wild cry of rats; he would not sit on a chair or stay in bed or even be quiet in his mother's arms. No man with delirium tremens ever had greater fear of snakes than that poor child had of rats; the mother told him in a very decided tone that he would be whipped if he did not stop, and then, as he did not mind, he was spanked. This forced him to control himself for a few minutes; then he began again, and the spanking was repeated. This had to be done two or three times, but finally the child was forced to control himself, and was never troubled that way again. This may seem cruel treatment, but it became necessary, in some way, to force the child to exercise sufficient will-power to overcome his excessive imagination. The boy several times since has shown marked symptoms of hysteria, but owing to the care he has had has completely outgrown them.

I do not wish you to understand me as advocating whipping as a cure for hysteria, but in these psychical forms, the child must be brought, in some way, to control itself and taught to continue this, and there is no question but what fear forces not only children but grown people as well to keep their imagination and desires well in hand. The cases which require punishment are, I believe, rare, but all these unfortunate children should have a strong hand to help guide and direct their imaginations.

One of the best instructors in self-government is the association of the child with other children; our public school life is valuable for that if for no other reason; there is no question but that children are often abused and imposed upon, still they soon learn that they can get along better if they behave themselves, and that if they wish to enjoy their play they must be agreeable to their playfellows. This is an excellent discipline, although it may occasionally make the parents a little angry when they think their child has been used unjustly—as it often is—but we must all expect to suffer some for the public good. The rough plays that bring home torn clothes and bruised bodies and limbs are not to be looked down upon. It is the freedom of the boy to indulge in any sort of physical recreation that his desires may dictate that has much to do with making his sex less liable to hysteria than the sex of his less fortunate

sister. The boy, as soon as he is old enough to be around, is dressed so that he can run, jump or turn heels over head; in fact, his movements are not interfered with in any way, either by dress or custom, but how is it with his sister? Whatever of liberty there is left after the method of dressing is taken from her by custom and the fear of being considered immodest. I think the little girl was right, who, when reproved for turning heels over head in the front yard, said, "if people did not want to see her, they must not go by when she was turning heels over head." She had the true sense of woman's rights—the right to be healthy and enjoy health in physical recreation.

Children should be well fed, and these neurotic children, as a rule, are poor eaters, both in quality and quantity. They should be confined to plain, nourishing food, and then forced to eat it. People often tell us they cannot get their children to eat, and are surprised when you insist upon their being made to eat; but I have had the pleasure of seeing several of these rapidly improve under judicious feeding. One case I will briefly describe: She was a delicate, nervous little girl, who was thin and anemic, unable to sleep at night because of nervousness. She wanted no breakfast, unless it were a cracker or a cookie, scarcely any dinner excepting dessert, but at supper she generally did eat a little better. She was absolutely forced to eat a large dish of oatmeal and milk, without sugar, each morning; a dinner of bread and butter, potatoes and eggs or meat, and drink a glass of milk, no dessert; for supper, she had a dish of oatmeal and milk, bread and butter and some kind of sauce, generally stewed fruit, either dried or fresh. Besides this diet she was allowed plenty of fruit, and was sent early to bed. She has been on this stuffing treatment for nearly two years, and is now strong, does her school work easily and well, never has headache, sleeps well, except that she gets up early in the morning. This child's poor health was attributed to going to school, as is done in a number of cases, and the children are kept out of school. I think there is no question but that their school work is too much for them in their physical condition, but too often this condition is caused more by the improper home life than the school life.

Neurotic children suffer greatly from competitive examinations at school, and from the extra work that is often imposed upon them in preparing for school entertainments—especially in preparing for public recitations. I knew one young girl of 13 or 14 years of age who was standing her school work well till she was selected for an important part in some special exercise. She was impressed with the importance of her part, and from the careful drilling she got she became frightened and nervous, and finally ended by going into a hysterical faint after one of these drills. It was a year and a half before she was able to go to school again, and she had during that time vertigo and other hysterical manifestations. At the end of this period she started to school, but she has never been allowed to do any but regular work, which she has accomplished with ease.

I have not referred to the medicinal treatment, for it has been quite thoroughly impressed on my mind that drugs are seldom indicated, and their value is questionable. The price of healthy children is the same as that of Liberty—Eternal Vigilance—and unless parents and physicians are willing to pay that price, we can not expect to avoid hysteria and many of its relatives.

ORIFICIAL IRRITATION IN RELATION TO NEURAL DISTURBANCES.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEO. V. I. BROWN, M.D., D.D.S., C.M.

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It would seem, upon consideration, that many operations brought forward by the gynecologists during the last few years for relief of so-called reflex pains and other nervous disorders, particularly neuralgia and migrainoid headaches, have not given the relief that was promised for them. The same is undoubtedly true to a considerable extent in regard to the rectal surgeon's efforts, and notwithstanding the fact that deviating septa and hypertrophied turbinates have freely given off their offending portions, there still remain many who suffer constantly without a hope of relief; and in directing your attention into a new channel with regard to etiology and treatment of these conditions, I would urge the fact that, with a high nervous organization and free distribution of nerve-supply quite as complex as that of the other orifices referred to, the normal mouth has thirty-two teeth as additional predisposing factors, each with its own separate nerve-fibers from the wide-spreading carrier of sensation—the trigeminus. In addition to these connections each root is surrounded by a highly vascular peridental membrane, also in close connection with the blood- and nerve-supply, making it not unreasonable to suppose that all these taken together would offer a very frequent source of irritation. Considering also the fact that through caries the pulps of these teeth and the nerve elements they contain are often exposed directly to external irritants, the etiology, factors, particularly with affections within the range of the direct nerve-supply through which they carry the sensation, ought in a large number of cases to be found to be within the oral cavity. That this is often true without being suspected, through misleading symptoms, the trouble being treated as having its origin in some other of the orifices, will be shown, I think, by the cases described later.

Literature upon the subject of this and kindred disorders is very vague. We find neurasthenia, anemia and numerous other emias, held in a general way to be reponsible, and the recommended treatment beyond certain limitations, also becomes very general, depending chiefly upon general constitutional care, which is all very well so far as it goes, but as a rule the patients suffer on just the same. It is evident to those sufficiently interested to be more than casual observers that in close study of the symptomatology of those affections, with a view to discovering certain definite causes of irritation and the mode of procedure best calculated in each particular case to remove the etiology factors, lies hope of relief. During the last few years my efforts have been directed to the study of certain peculiar forms of trifacial irritation, particularly one form of which little or nothing in the way of description seems to be extant in the literature of the subject.

Without attempting to go into a general or even a partially detailed description of the various possible irritations from within the oral cavity, I desire to treat of what I have found to be a very common associate of neural disorders. It is a noticeable fact that in the

mouths of all those so affected, wherever the natural teeth remain, their occlusal surfaces show that constant grinding and rubbing has abraded them, through the extreme pressure brought to bear during the paroxysms—if the pain be paroxysmal occurring in an intense nervous state—the result of hours of painful suffering or other like conditions. This has frequent mention by writers as noticeable among those who suffer from such disorders, but in no instance do I find where an author has thought fit to reverse the order of things and make the habit of the jaws, which is responsible for this condition, one of the etiologic factors in bringing about the disease, rather than a result, as it is generally held to be. Last year, before the Section of Stomatology, I described this hyperkinetic condition of the muscles of mastication and explained how irritation of the brain-centers governing these muscles, whether as a symptom of other neural disturbance or vice versa, would produce the same result, namely, an irritation of the peridental membrane surrounding the roots of the teeth, and how, through their apical foramina, this irritation might be communicated to the many branches of the nerve, after which, as is well understood, the point at which that result expressed itself in pain, muscular spasm, tenderness of neuritis, hyperesthesia, anesthesia, or whatever the effect might be, could be reflected anywhere along the path of the nerve among its associates. Certain forms of this peridental inflammation and the resulting pain are quite familiar to dentists, but that there was grave trouble frequently caused by other forms of this affection, with which neither they nor physicians were commonly familiar, I have long been satisfied, and in the paper referred to I described a number of cases of extremely aggravated pain in the head and face, which were cured, or to a considerable extent relieved, at my hands, by the simple method of grinding the crowns of the particular teeth affected in such a manner that they could no longer be brought together. Since the writing of that paper, however, and during the last few months, through my connection with Trinity Hospital in Milwaukee, another form of this particular trouble has come to my notice in several cases, with symptoms such as are commonly ascribed to reflex expressions of uterine diseases, and it is to these that I purpose calling your attention.

In order that something may be understood of the manner of the operation of the jaws, which makes this possible, a little description of their anatomic relations, with particular reference to the development of this idea seems to be in order. Through the pterygoids a lateral grinding motion of the jaw of man takes place, which if pursued at night is easily noticed, and usually attention is called to it. If, however, the masseter and temporal muscles are called into unusual activity, the result is that the jaws are pressed firmly and tightly together, with a force varying in individuals from 200 to 270 pounds. With the jaws closed normally and the occlusion perfect, this force would be comparatively equally divided among the whole number of teeth. If, however, as usually happens in these cases, the jaws be shifted a little to one side or slightly forward or backward, then certain portions of individual teeth are brought together, and they alone must bear this tremendous force. Ordinarily the membrane surrounding the root is capable of withstanding a considerable amount of pressure for a considerable length of time. But by the continued application of this pressure, especially when weakened by

other more general conditions, as of circulation or otherwise, this power of resistance becomes impaired and then one of two things must result—either a local disturbance made manifest by elongation of the tooth and soreness to pressure, a not generally serious affection, accompanied sometimes by localized pain, usually comparatively easily remedied, or as I have believed, a direct communication of this irritation to the larger nerve trunks, to be by them carried to other parts. It has been recently proven that the old idea—as given in Gray's and other anatomies—of a direct communication of artery, vein and nerve, from the apical foramen to the main trunk of the nerve, passing along the jaw, is generally, if not always, incorrect, and that there is a more complex nervous connection with nerve filaments extending directly from this membrane to the main nerve supply, and this scientific histologic demonstration is directly in line with my own clinical observation, because it explains at once what I believe I have demonstrated to be true: that any or all the nervous symptoms generally recognized can be the direct result of peripheral irritation through this peridental membrane. We are all familiar with the much-written and widely understood neural disturbances consequent upon eye-strain, but whoever heard of neurasthenia, hysteria or neuralgia resulting from jaw-strain, and yet this is exactly what does occur. If the use of certain muscles and the straining of those muscles can cause neurotic symptoms through irritation of the optic nerve-supply, why can not the continued application of hundreds of pounds of force directly to certain other branches of the nerve through which sensation is transmitted do so equally with the other part. This theoretic explanation is, I believe, borne out quite fully by the following cases which, for example, I desire to describe:

Case 1.—Mrs. ——— complained of a general debility, loss of strength and poor circulation, and suffered intense pain at rather short intervals, which finally became shorter until the pain was almost continuous between her eyes at the base of the brain and in the vicinity of the ear upon the left side. Three operations by gynecologists, who had mistaken her symptoms for reflex pain due to some womb disorder, left her rather worse than better. The treatment of certain inflamed conditions of the pulps of her teeth and maxillary sinus, and a correction by grinding the surfaces of tooth crowns, giving evidence of receiving rather more than their share of the wear and tear has given her, at least for the few months past since the operation, complete relief.

Case 2.—Mrs. ———, a very great sufferer, pain in eyes, back of the head, which during severe paroxysms was severely felt also in the back, arms and leg, had become almost a hopeless neuroathenic. The birth of the last of her five children was coincident with the onset of the severe symptoms and naturally led to treatment for laceration and endometritis, but without result. The abraded crowns of several teeth and the set expression during pain facilitated diagnosis; the treatment applied was to grind the occlusal surfaces of the affected teeth until they could not meet in occlusion, and treatment of pulps of the teeth that were irritated, resulting in complete relief from pain and a generally improved condition.

Two cases were reported in the paper before referred to, one in which hyperesthesia of the lower lip and chin was instantly relieved by the extraction of a bicuspid tooth of a woman who had been treated, as she said, "for falling of the womb"; and another, a girl about 17 years old, whose extreme suffering for about eighteen months was finally relieved by grinding down certain teeth, irritated by grinding at night, found to be the probable result of sexual excitement as shown by a history of the case.

Many similar instances might be recited in which the symptoms of pathologic oral conditions have been

confused with those of the eye, ear, nose and rectum, as well as of the vagina and uterus, but the present purpose is chiefly to call attention to the fact that this habit of the muscles of the jaws is of extremely common occurrence—in fact, nearly always an active feature of nervous states—for if caused, as sometimes happens, by overstimulus of the centers controlling those muscles, the result of some etiologic excitement elsewhere, then the effect is simply to increase the severity of symptoms; on the other hand, it may be the irritant, and solely responsible, but in either case the simple attention necessary to correction of the difficulty is a matter of first necessity in the treatment of a large majority of sufferers from functional and other disorders of the nervous system.

NERVOUSNESS AN ELEMENT IN HYPERPYREXIA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. C. HERSMAN, M.D.

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Temperature, from Hippocrates down, has been recognized as a factor in disease. In the present paper the topic is to be discussed with reference to the explosive (nerve-storm-like) and sudden elevation of temperature under certain mental impressions or conditions.

Musser attributes the stability of temperature to the central regulating apparatus, called the thermotoxic apparatus. This aggregation of forces is under the control of the nervous system, either through the motor or special nerves which pass with them to and from definite centers in the brain, called heat centers. He claims that the elevation of temperature is due to the increased disintegration of nitrogenous tissue. It has also been said that the high range is caused by the taking in of more poison than is gotten rid of, or, to give bacteriologic zest to the expression, the microbes are in competition with the corpuscles of the blood.

High temperatures are not so dangerous, or so uniformly fatal, as low. Da Costa records a recovery from a temperature of 110 F. in the axilla, following cerebral rheumatism. Teal reports a case of recovery from a spinal injury with a range of temperature of 112 to 114 F., which continued for days. Dr. J. B. Murdoch of Pittsburg, formerly Dean of the Medical Department of the Western University of Pennsylvania, admitted a case to the Western Pennsylvania Hospital Dec. 13, 1893, whose temperature on the eighth, ninth, tenth and eleventh days was respectively 112, 114.8, 119 and 120 F. His patient had hysteric symptoms and he, with others of the staff who saw the case, decided that the hysteria was the cause of the high temperature. The cause of these high temperatures is mere conjecture. The increased disintegration of nitrogenous tissue and the microbes in competition with the blood corpuscles can not be relied on.

Experiments upon dogs have shown that to irritate certain centers of the brain will control temperature, while destruction of the center will cause a high rise. I have thought that a hyperesthetic condition of the

heat center might answer for the cause, but according to the irritation theory, nothing short of a paralysis of the center could cause the rise, while the hyperesthesia would control it. In the following cases the last thing mentioned could be the only plausible one to me:

Case 1.—K. R., aged 21, American, nurse. Disease diagnosed as spinal meningitis. Admitted to South Side Hospital Dec. 4, 1897. Family history negative. Personal history, typhoid two or three years prior. During the course of the disease she complained severely of a pain in back of head. Delirium marked. Three months ago confined to bed with severe pain around cecum and caput coli, with some inflation. No elevation of temperature, but nervous, with inclination to hysteric symptoms.

Present trouble began with severe headache, with boring pain in back of neck, followed by numerous chills and muscles of back of neck rigid, with head slightly drawn back, tenderness along spine and mild delirium. Retention of urine. At times evening temperature 107 F., but was promptly reduced in a very few minutes with ice sponge. Antipyretics had little effect. Pulse at times very weak. On the seventh day the temperature was highest, 118 F.

At times the temperature would drop from 110 F. to normal in a very few (twenty) minutes without interference, but mostly the sponge bath was resorted to with very prompt effect. Usually when she had the high temperatures she had marked hysteric symptoms. The fever always abated most rapidly when treated by those in whom she had most faith and liked best. A visit from friends would provoke an attack, seemingly, to me, to show how sick she was.

My diagnosis differed from those who had preceded me, as I could see nothing but a very exaggerated nervous condition attended by hyperpyrexia and hysteric symptoms. At the end of fifteen days she was sent home.

Case 2.—Lizzie N., aged 29, Irish, domestic. In United States eight years. Admitted to South Side Hospital of Pittsburg, Dec. 10, 1897, her disease having been diagnosed articular rheumatism of one week's duration, which was ushered in by a chill.

On admission temperature 99 F., pulse 102, respiration 24. Joints sore and very tender, especially the knees. On the second day after admission the temperature became normal. On the fourth day 104 F., eighth and ninth days normal. On the thirteenth day normal, but on the fourteenth it rose to 106.2, pulse 80. On the eighteenth day 110.9, pulse 80; twenty-third day 11:30 A.M., 110, but at 2:30 P.M. had dropped to 99, pulse 80. At various times from the eighteenth to the twenty-third day the thermometer registered 110.

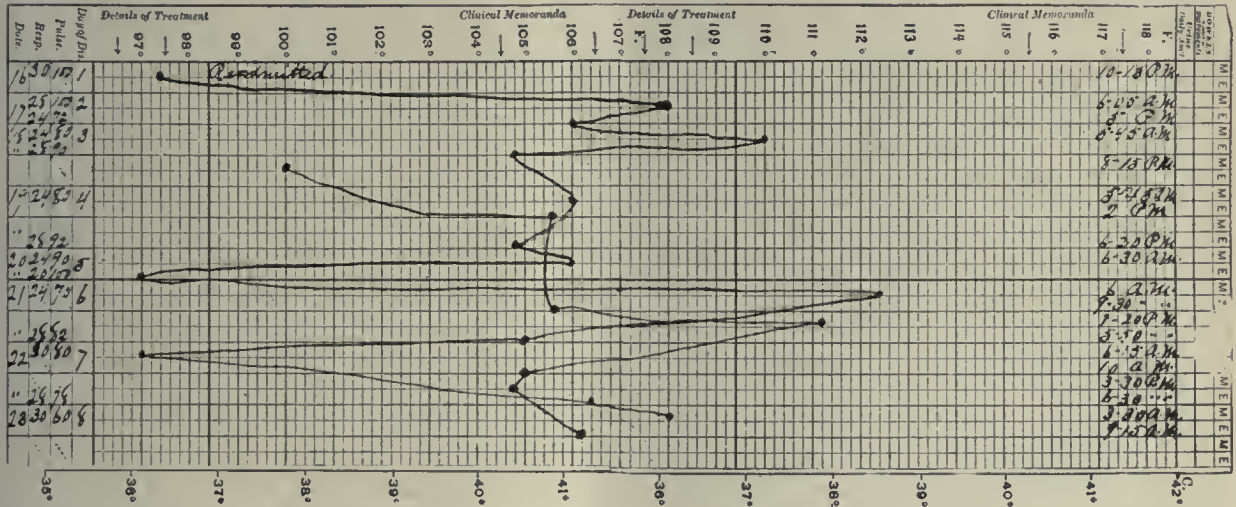
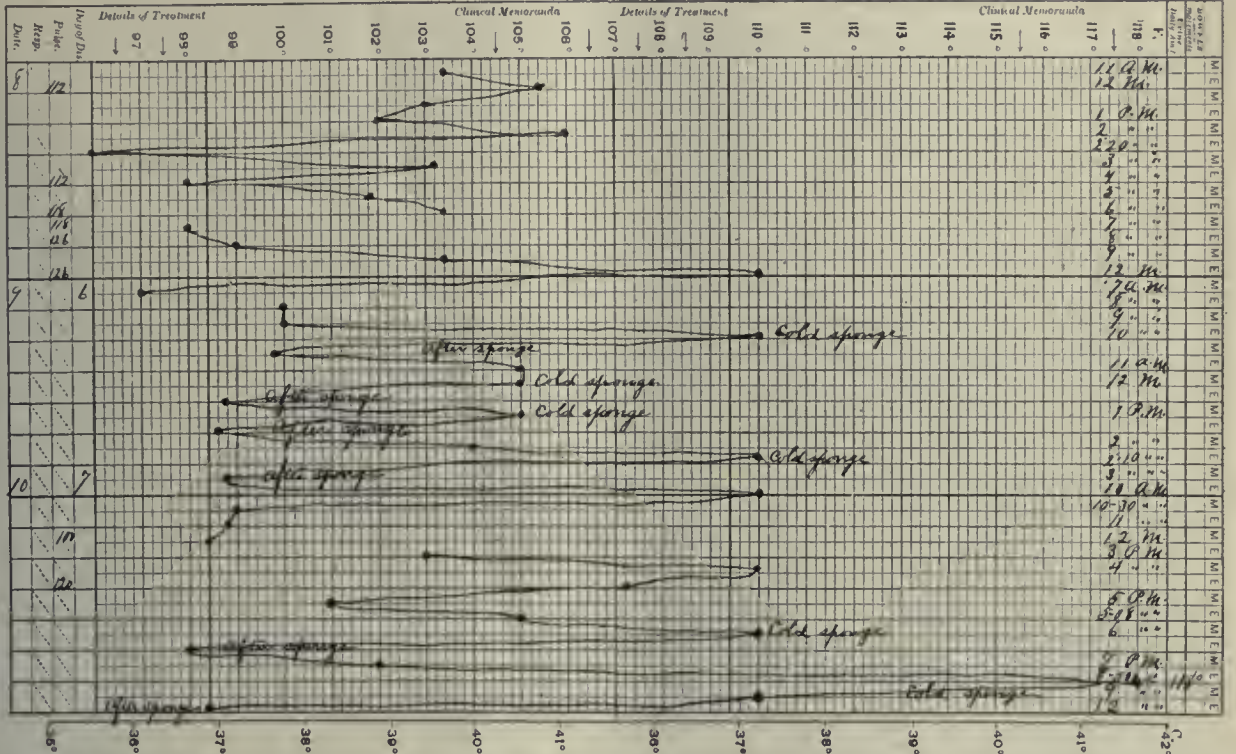
On the thirty-fourth day of the disease the register was 112. On the thirty-fifth day at 11:30 A.M. I took her temperature under the tongue at 116 F., with a pulse of 80 and a cool skin, and twenty minutes after I left the ward it was registered at 102 by another thermometer. On the forty-second day after admission the thermometer registered 118.4. Her temperature for the past few days ran along from 105 to 108, occasionally down as low as 104, and once to 103. This continued up to the sixty-ninth day, when the temperature dropped to 99, following a chill, but soon to return to its old haunts, 108 to 110. This high range continued until the eighty-sixth day, when at 3:20 A.M. it registered 98, but again went back to 107.4, which continued until the ninety-third day, when she became dissatisfied and asked permission to leave the hospital, which was granted.

She left with a temperature of 104.8 and walked with slight assistance to the street-cars, three squares away, but on the evening of the same day she returned slightly intoxicated and asked to be readmitted. Her temperature was then 97.4. On the second day after readmission her temperature was 108, on the third 110, on the fifth 112.4, on the sixth, A.M. 97, but at 1:20 P.M. was again at 111.2; on the seventh 97, but on the eighth was 108, at which time she was sent out of the hospital, 101 days after her first admission.

She went to the home of her former employer, where she remained for about ten days, going about the house, and occasionally going out. On attempting to alight from a street-car she broke her ankle and was sent to a hospital. Her improvement has been continuous and her temperature has never been above 99.4 F. Usually it has been normal. In the first hospital her rest at night was very much broken. Sometimes she would sleep all night, at others lie awake until 3 or 4 o'clock in the morning. If the interne not in attendance on her would administer her hypnotic she would be likely to lie awake all night watching for "her doctor," to find out whether the

medicine was correct. Seemingly, the hypnotic administered by the wrong person destroyed the hypnosis. If she were piqued or worried the temperature would rise. At times when she was perfectly quiet, skin cool, pulse normal (or almost so), her temperature would be highest. These temperatures were

were completely overpowered (paralyzed), the radiation possibly interfered with, consequently the heat storage. Specimen sections of temperature chart give an idea of extreme fall and rise.



taken with both fever and bath thermometers, under the tongue, in the axilla and in the rectum.

During this period of hyperpyrexia she could sit up in bed, at times on a chair, and she always expressed herself as relieved and rested afterward. At times she was led about the room, which seemed to have more effect on her high temperature than drugs.

Like all the Celtic race, she was very much afraid of dying, and when most agitated her temperature was highest. After a talk with her, an examination, or a pretense to such, and an assurance that she was better, her temperature would usually lower. One nurse she disliked, and her presence would aggravate her fever.

Query: What was the disease in the two cases reported? My diagnosis was hysteric hyperpyrexia. The tender joints in the one, and the tender spine in the other, were hysteric symptoms, rather than rheumatic or meningitic. The emotional centers were so overburdened or exaggerated that the heat centers

DISCORDANT SOUNDS A MENACE TO NERVES.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The reason for selecting this subject is because of a number of inquiries made to me personally, regarding the why and the wherefores relative to it; and as in some instances I was at a loss for ready answer, it behooved me to place my theme in the hands of those whose learning and experience I am sure will help me out of a quandary, rather than turn a critical eye upon

it, and so, by making public their demands my inquisitors may benefit.

It is needless to record statistics in speaking of this every-day evil whereby our tympani are assailed, and which by becoming inured deceive us into believing there is no particular harm done. Even though statistics were brought forth, what objections might arise to the statement: "noises create a disturbance of the nervous elements to the degree that they are vouched a place in the category of causations of disease." Therefore, it is the object of this paper to reason from pure observation, and attempt a clear analysis for the judgment of the profession, as to whether the above statement is worthy of consideration, and embody in its entirety a question answerable by that same honorable body. Then let us lay down for consideration some instances in our experience: certain mental records which have sunken into the fertile lands of our memory, making their impressions accordingly. To begin, shall we admit that when a healthy condition of the nerves exists, the greater amount of nervous shock we bear with impunity, but by frequent repetitions the less able are we to withstand the resulting jar.

We have acquired from nations now fallen into decay and almost, if not entirely, obliterated, an intuitive knowledge of many of our present customs, not to mention the suggestions and realizations of innumerable arts, inventions and sciences, so useful to mankind. These customs we adapt unwittingly, as new wants present. Relative to this instinctive tact of man, should we go further—beyond the human—is it not observed in a few peculiarities, that even the lower animals lend their aid in suggesting means to us? Call to mind the quail when disturbed in its foraging: by the suddenness of flight, by the noise of its wings in rapid vibration, it will disconcert the disturbers. If the enemy is startled the birds escape; some of us in our maiden attempts afield may have been vividly reminded of this, if we forgot to use our fowling-piece before the game was beyond gunshot. Prior to long-distance warfare, a pretty successful scheme (shall I call it bluff) was in vogue among the Chinese, which upon the superstitious children of ignorance, played a prominent part in enhancing China's length and breadth. These people calculate upon fright as a means of conquest, thereby saving the lives of friends and foes alike, at the same time gaining the end in view. A bloated, elaborately painted wind-dragon, then may account for Chinese supremacy and their populous empire. The tiger roars, so it is said by some, with his leap upon the exquisitely high-strung fawn, thus gaining a moment's hesitation, and before the prey is in motion his talons grip its tender flesh.

For no rhyme or reason, in these modern days, with every new invention there accompanies a new noise, so to speak. The snorting, bellowing locomotive engine replaces the musical post-chaise; the screeching, whistling steamer has supplanted the galley and the sailing craft, teeming with romance. And with the explosive fire-arm comes an innovation upon the bow and arrow. The ancients may not have been so cleanly, but they certainly were less noisy. I was told when at Gibraltar that during target practice and drill with the great guns, the loss in frangible property amounts to not a little sum; and I may instance a dozen other experiences wherein noise—and not a woman—was at the bottom of misfortune. I once

knew an octogenarian farmer, who, when asked why he did not take a lantern in traveling over lonely roads at night, replied that he carried a pistol, which would give him light if needs be in case of attack; he evidently did not wish to attract attention to himself unless waylaid, and then he had light and sound stowed away ever ready. In certain land-locked harbors I have heard the inhabitants complaining of tugs and other noisy boats blowing off their whistles especially those known as calliopes. The would-be waggishness, or to-what-purpose desire of these tug captains, deserves a compensation suited to the perpetrator. Have not the cartoonists discovered the tired and irritated visitor from the provinces, racking his brains in the uproarious city, unable to collect his faculties; and has the father, nightshirted and capped, marching the colicky infant in the small hours of the night, escaped this artist's humorous vein? Little mirth it would be if the tables were turned, were it possible to do so. All these things call to light the necessity for a scientific investigation of the question of useless noise.

In a few cities it has been proposed passing an ordinance against the ringing of church bells—this may to some disturb the "day of rest"—but why not include in this an ordinance for week days: the shouting of street hawkers, the clanging of other varieties of bells, the steam whistle of the factory, and last but not least, our young vender of the daily press, with his shrill tenor announcing the never-ceasing "extra!" How much better is the silent signal, both in war and in peace; take the popular foot-ball game and we find that the teams under better control are those who have mastered the silent signals of command. One reason the modern war vessel is so deadly, may be said to be because it is absolutely as accurate as a floating battery can be; and is not the cause of this accuracy due in great measure to the silent commands sent from the conning-tower by the captain to each of his subordinates, shut off from him and each other by walls of steel? When an order is indicated upon a dial manipulated by electric transmission one receives the same in a tranquil state of mind; but if the order is shouted at him by one, two, three or more in rapid succession (as of yore), then there is excuse for confusion in carrying out commands. In this treatise a good deal is left to the imagination, and my theme, I must admit, is undeveloped; so I beg much leniency for my awkward manner of launching it forth on a scientific basis, and ask those interested most to consider it as merely an advance guard for a subject worthy better forces.

MORAL INSANITY IN INEBRIETY.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1893.

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The term "moral insanity" is applied to a class of symptoms about which much difference of opinion exists. Formerly this was a veritable battle-ground between metaphysicians and alienists, but latterly this has subsided, and the questions now in dispute are differentiations and exact meanings of terms. I shall limit my study of the subject to certain well-marked symptoms which, taken alone or associated with other symptoms, appear to have the same signifi-

cance. Moral insanity is marked by a low sense of right and wrong, and by conduct which does not recognize the rights of others, or duty and obligation to any one. The ethical sense and consciousness of the relation to others, of truthfulness, of honesty, of respect for the good and true, for law, or for the opinions of others, is enfeebled or wanting altogether. Such cases may not exhibit marked intellectual weakness and may appear to have average judgment and discrimination in the conduct of affairs; yet have no moral sense of obligation to do right and to be truthful and honest to others. Such men are intriguing, deceitful, dishonest, taking advantage of every opportunity to gratify their most selfish desires irrespective of all consequences to others. The higher levels of cerebral development, which are the altruistic sentiments, the capacity to recognize and adjust conduct to the general good of all, are wanting. What is called character motive, purpose in life, or the morale of the man, his relations to others, are all the last formed elements of brain growth. Insanity, which is confined to these psychic centers, is well established. Without doubt other parts of the brain are affected, but they do not appear, except from a careful study. I think it also well established that sudden changes of character are always due to changes in the organic activities of the brain centers. It is asserted, and defended with many good reasons, that consciousness is an element of the brain which recognizes the higher relations of right and wrong, of duty, and all the higher psychic claims of justice and truthfulness and the relation to our fellow-man. The higher this development the stronger the man, and its absence or feebleness approaches imbecility. The general term "character and morale" describes this best. A veritable insanity in which this part of the brain was the most seriously affected has been described over a century ago. All the authorities recognize it but attach widely differing importance to its meaning.

Cases like the following are not uncommon, and probably illustrate this condition more clearly than by theories: A. B., a physician of average ability, culture and good character, with an excellent reputation for honesty and sobriety, began gradually to be untruthful, intriguing and dishonest. He made out double bills and denied payment even when his signature on receipts was shown. He exaggerated his business, drove his children away from home, was cruel to his wife and tyrannical to every one under his care. This increased and was not associated with any apparent intellectual changes. He was not passionate or emotional, but cool, and gave no explanation for his conduct. He became involved in forgery and assault, and died before the trial from some heart failure. This was moral insanity in which the physical basis was not recognized.

In inebriety these symptoms of moral defects and insanity are common, no matter what the conditions and standing of the person may be. It seems to follow the poisoning from alcohol inevitably, and in some cases very markedly. Two classes appear very prominently, one with heredity and the other apparently acquired. Wherever there is a marked history of heredity, of alcoholic parents, or of neurotic degenerate ancestors, a feeble or deficient consciousness of right and wrong is found. Alcohol used continuously retards growth, diminishes vitality, and prevents development. Drinking parents have deficient vitality and are unable to transmit to the next generation full

normal vigor. The last and highest formed element of brain power—consciousness—is the first to suffer from alcohol. Hence drinking parents can not have children with full normal consciousness. This faculty will be wanting or very feebly developed. This is the rule to which the exceptions are rare. This defect may be associated with much intelligence and intellectual capacity and power to cover it up.

A man prominent in the political world is in private life devoid of all sense of justice, of right and wrong, and duty to others. He is untruthful and dishonest, and when his own interests are in conflict, will sacrifice any person or principle to gain his ends. He is of unsound intellect, yet able to pose behind a mask of honesty often acting honestly and talking of duty, but always from the most selfish motives. He is married, has a position in society, but keeps mistresses, and is open to every suggestion that promises his personal and selfish gratification. His parents were wine-dealers and drinkers, both of them waiting on customers over the bar. Only one child grew to manhood, and entered politics as a trade. He is temperate, but a moral paralytic, or a moral maniac with capacity to conceal this condition. A man who became one of the great swindlers and forgers of the day, but who was able to keep out of prison by intrigue and cunning, came from drinking parentage. To his associates he is known as without any sense of duty and obligation to any one and is a literal Bedouin.

That these conditions are due to inheritance is apparent from the following: A boy with excessive drinking parents was taken in infancy and educated in the most careful way. All the higher faculties were cultivated to an unusual degree, and he entered the church as a brilliant clergyman. He was found to be untruthful in regard to himself, suspicious of others in matters of personal reputation, and grasping even up to the border of theft on many matters. The collections in the church had to be kept out of sight and always suffered if they passed through his hands. He became involved in spreading scandal, and seemed oblivious of the danger of such conduct, and broke up the church by his irregularities. For ten years, until his death, he was in continual trouble with every church he was associated with. Here the evidence was clear that he had inherited defective consciousness, which no training or surroundings could overcome.

In cases where inebriety has been acquired by accident, contagion, surroundings and conditions of living, these moral insanities vary widely and are not so general, but are confined to particular things. In one case excessive untruthfulness and dishonesty in all business relations was associated with sympathetic tenderness to all his associates. In another, intense suspicion and doubt of the honesty of others was associated with excessive desire to be truthful. Another was excessively immoral, seeking opportunities for sexual intercourse at all times, was hysterically religious and anxious for the conversion of the world. Another was intriguing, secretive, treacherous and uncertain in his talk and conduct, and yet lived a moral, upright life. These are almost infinite in variety and manifestation, and all show profound changes in the moral faculties. The more common forms are illustrated in this case: A. B., a business man of good reputation and standing in the community, began to drink after a protracted illness from typhoid fever. Two years later he was an inebriate.

His mind continued bright and clear, but his character had changed. He was deceitful, suspicious and slanderous. He thought his sons and clerks were robbing him and that his wife was in league with them. He had his books examined by an expert and was in doubt when they were found correct. He told falsehoods about his business and family, and grew more and more egotistical about his mental capacity to reason and decide on all matters. He was harsh and tyrannical to his wife at times, lost all pride of character in the community and sense of duty to others. He was exacting to have anything done for his own interests, and oblivious of others and their feelings and tastes. As a patient, he was intensely selfish and grasping, even up to theft; was fawning and obsequious, promising everything and doing the opposite. He imagined evil of every one and told malicious stories without any foundation, then denied them. He was always reporting others as doing wrong, and supposed every one to have only the basest motives. He stopped drinking, but thought all others drank and concealed it. This man left the asylum and is yet sober after some years, but is morally insane.

In a general summary of the common symptoms following the use of alcohol, untruthfulness, or a low respect for their word, is most prominent. A man who previously took pride in the correctness of his promises and statements, will become indifferent, promise anything, make any statements, whether true or false. A man previously honest and trustworthy will be found doing dishonest things, cheating persons, taking advantage in little matters, and failing to act fairly in the interest of others. Then follows suspicion of motives and conduct, doubting the honesty and purity of persons. This deepens into delusions of intrigue and deception of others, extreme pessimism and doubt of everything, or a state of mind which may be called "combative erythiasism" follows, in which the distress of others is pleasing. This is manifest in malicious criticism and scandal, pointing out faults and magnifying them, apparently enjoying the knowledge of the dishonesty and malice of others and the irritation which follows from the publicity which they give to it. Sexual conduct is without restraint; the ties of family and duty become less and less; intense personal selfishness to gratify every impulse at all expense follows. The taste for gambling and speculation becomes a morbid impulse, often to retrieve their waning fortunes. Recklessness in the use of money, throwing it away without motive or purpose; or extreme parsimony to hoard it, and grasping selfishness, equally unseasonable, are common. As in other insanities, exaltation of the *ego* follows, and intense confidence in themselves and their power of reasoning and ability to do anything possible is present.

Many persons who exhibit all these symptoms appear to be but little changed in other respects. They carry on business, seemingly make plans and execute them, and appear to casual observers the same. These insanities seem to concentrate into particular lines or ranges of thought. Consciousness of truthfulness may be almost entirely absent, and in other respects appear the same. Moral recognition of the higher truths of faith and trust are gone, yet he may act sensibly and be a church member. In one case an inebriate lawyer doubted the honesty of every one and thought no one was pure or had good motives,

and yet he acted on what seemed the opposite. It was surroundings alone that held him; the restraints of society covered up an insanity which only needed a favorable opportunity to break out. In another case, a teacher who had drunk many years, became a secret thief, purloining everything which he fancied, and when likely to be detected, restoring it in some mysterious way. He appeared and talked honestly and yet when not observed took advantage of every opportunity to appropriate anything that came in his way. A number of cases of inebriates have been reported where this kleptomaniac impulse took on certain peculiar forms. Thus one man when drinking stole bibles, another jewelry, and when discovered gave it up freely. One man stole washtubs. A woman inebriate always took aprons and towels; another man stole soap, and so on. The most unusual and unreasonable things were taken, concealed, and given up freely without any sense of the nature of the acts. One class of inebriates exhibit this insanity in malicious slander, another in extreme suspicion, another in vindictiveness to resent real or imaginary evils, another in immorality and impurity of act and thought. Many of the chronic cases exhibit all these phases in one. The oft-repeated expression that "inebriety is criminality" is true in a general sense, when criminality is understood as a course of conduct in which duty, right and obligation to each other are ignored. The inebriate has physically defective senses; he is not able to adjust himself to the outside world correctly, because his knowledge of their relations is imperfect. His power of reasoning is also deranged, because the impressions from without are faulty and the integrity of the normal action of the nervous system is impaired. The coarser lesions are well recognized and can be traced in all cases. Beyond this, conduct indicates the higher moral defects and changes. Psychological changes, as loss of pride, of character, of honor, respect for the truth, of duty to others, low motives or no motives, extreme pessimism, are the first and common changes which lead up to criminal acts. The paralyzing action of alcohol is first seen on the moral brain of consciousness; in the dullness and defective workings of the higher functional activities. The changes observed when a man is under the influence of spirits, is vaguely called the removal of the restraint of reason, and dominance of the animal impulses—the brute triumphing over the real man. In reality it is palsy of the consciousness, a cutting off of some part of the higher brain, and consequent confusion of the lower brain and its workings. Impressions and their meaning are confused and obscure; the higher relation of events and conditions of life are unrecognized. It is asserted that 3 per cent. of all persons born are without normal consciousness of right and wrong and their relations to others. They have retarded brain development. The part of the brain which constitutes the moral control or consciousness of the higher duties is wanting or undeveloped. Such persons are defectives, and insane in the general meaning of that word, and like demented, are incapable of normal healthy adjustment to the relations of life. When an apparently normal state of this brain function has existed and then a great abnormality follows in thought, word and conduct, disease is present. Comparison of the conduct and character of inebriates before alcohol is used and after they become habitués, brings out some startling facts that are unrecognized.

From the lowest type of a demented inebriate on one side to the moderate drinker at meals and the fashionable clubman, there is a distinct relation and chain of cause and effect. The clear moral insanity of the one is traceable to the other without any sharp dividing lines. The moderate drinker and clubman who proves to be the defaulter, or who is involved in conduct that is criminal, or who becomes a principal in crime, is suffering from disease differing only in degree from the degenerate inebriate tramp. Moral insanity is a very prominent phase of all inebriety. Its absence in any given case is always an exception to the rule. A man with a high moral development, after he becomes an inebriate may retain the form and externals of his previous character. He may be more emphatic in his display of some qualities, such as religion, truthfulness and duty, and yet in other matters be oblivious of all obligation and duty. One such man, who prayed for inebriates and lectured on temperance, carried on an intrigue and sold his influence to the highest bidder. Another man acted as an agent for the sale of stolen goods, and at the same time carried on a great reform revival; and another was engaged in gold mine swindles, while lecturing every night for temperance. The moral insanity was called hypocrisy and in a legal phrase was malicious, criminal and vicious. In reality it was degeneration and disease, the breaking down of one part of the brain while the others remained apparently clear. In our Civil War a noted general was drunk to excess at times; previously he was noted for his hearty frankness and honesty, but was found unreliable, intriguing and failed when needed most. He showed petty weaknesses and untruthfulness, with malice that was unknown before in his character. He finally died a moral wreck after the war was over, having become almost criminal in his thoughts and acts. A clergyman became a secret inebriate and later became involved in a low intrigue and was turned out of the pulpit. He was insane, his consciousness became palsied and for a time he taught ethical truth automatically. The possibility of one part of the brain being affected and the rest doing normal work, and this condition being concealed, is a reality which every experience confirms. The very close relation of one part of the brain with the other makes it impossible for health and disease to exist together, and yet moral insanity may be present and be concealed from general observation. A study of conduct will reveal it and a comparison with previous conduct will show its growth and development. The inebriate who has lost pride of character and sense of duty and obligation, truthfulness and honor, may seem to be the same in many ways for a long time, but sooner or later this moral diseased condition will spread and his whole organism show degeneration. I shall conclude this brief study with the records of two cases which have occupied public attention and been the topic of bitter discussion.

Case 1.—John Blank. Father was a strolling actor of irregular character and an inebriate. He married a woman of average ability from a good family. The father died before John was born and two years later his mother married again. John was brought up with great care and tenderness. His later education was of the best character. He was a leader of his class as a scholar and an athlete. To his mother and intimates he displayed an intense selfishness, putting his interests and desires above all others, and had no consideration of the pain and distress of others. He was cruel in his conduct to any one who was in his way to the achievement of any purpose or desire. He finally became a lawyer and was thoroughly unscrupulous in

money matters. Although not miserly or avaricious, as a politician he was without honor or pride of character and would stoop to anything to accomplish his purpose. He married a rich woman and soon after swindled his father-in-law and possessed himself of a large property. Then he drank and began to live a fast life, had a mistress, attended horse races. Wherever he went he swindled and falsified and was feared by every one who had any dealings with him. He went into stock gambling and was swindled and swindled others. To his wife and children he was cruel and violent in his conduct. After a period of excessive use of spirits, he killed his wife and made no effort to conceal it, or run away. On the trial his schemes for deception and fraud were revealed to the astonishment of every one. Truthfulness, honor, duty, and all the qualities which go to make character were absent. He was convicted, but the sentence was commuted to a life imprisonment. In this case moral idiocy was inherited. The higher part of the brain was undeveloped and beyond the reach of culture and education. Without culture he would have early sunk to a low tramp criminal and burglar, and been a pauper degenerate, dying early. With culture he became a higher grade of criminal, and yet he was unable to appreciate ethical truth or moral relations. He was insane from birth; alcohol intensified and developed this condition. The insanity was of the higher ethical brain, and concealed except to those who knew him intimately.

Case 2.—The second case came from a good family and was normal in all his relations to others. Was truthful, honest, and seemed generous and very kind. After a severe attack of typhoid fever, in which he was given large quantities of spirits, he began to use alcohol daily. His father died and left him in charge of a large business interest. His character changed. His regard for his word was lost. He was suspicious of his mother and brothers, and took money out of the business and concealed it. He left his home for a hotel, and when drinking excessively, wrote violent scandalous letters to his family and employes. He associated with low women, but treated them harshly, refused to give them money, and was constantly in trouble. No public exposure disturbed him. He was frequently in court for petty swindles and refused to pay unless forced to. His business declined and was finally taken out of his hands, and he became a low blackmailer and beggar, drinking at all times and places. He was examined for lunacy and decided to be sane. No symptoms of insanity were found, nothing but wilfulness and vicious cunning, was the opinion of Philadelphia experts. Finally he was convicted as an accessory to murder and incendiarism, and sent to prison for life. This was clearly moral insanity acquired. His family and early history showed no trace of defective consciousness or moral weakness. His parents were temperate, moral people, church members above all suspicion. In his early life he attended church and Sunday school, and was a lovable, attractive character. He began his business career with his father, and seemed in every way most honorable and honest. He displayed excellent judgment and was intrusted with large business interests which he faithfully executed. During the illness from typhoid his father died, and on his recovery he was put in charge of the business. A total change of character which followed his recovery might have been due to the spirits given, or the injury of some local center from the fever. At all events, the use of alcohol intensified and fixed this condition. In both of these a great deal of mental vigor and superficial sanity was associated with this low moral brain force. The experts could find no impairment of his reasoning and memory, and concluded his conduct was simply vicious.

In the first case immoralities and dishonesties of conduct were judged from the same point of view. To these experts, failures to observe the relations of right and wrong, duty and obligation, had no physical basis, and were mere psychic temporary lapses. The use of alcohol was accountable for this and as this could be stopped any moment, it was a condition which the person could control at will. Fortunately such views are but the survival of theories of long ago. The central point I wish to emphasize is that moral insanity follows all use of alcohol, and is present in all inebriates to a greater or less degree. This condition is inherited and acquired, and exists to a far greater extent than would be supposed. There are many excellent men who use spirits not to a great excess, who are sufferers from disease. The constant beer and spirit drinker will be found to present the

most numerous examples. This field of study will furnish defects and degenerations, which follow the same uniform laws as other more apparent lesions.

SOME MEDICO-LEGAL ASPECTS OF SENILE DEMENTIA.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Perhaps the most marked feature in the relations of Law and Medicine which has become prominent within the last twenty-five years, is the tendency to "break wills," or contest them upon the ground of mental unsoundness; said mental unsoundness being usually attributed to the advanced age of the testator which the medical expert—being compelled to give a name—denominates "Senile Dementia."

It is not likely there are more old persons making wills, or that senile dementia is on the increase, and our query is: Why has litigation on this ground become more frequent than it was a half century ago? As our laws pertaining to wills have not changed, and as the disease—so-called senile dementia—has not changed, why is that about nine in ten wills made by wealthy persons are subject to litigation, and the wealth earned by the testator, which was as much his own as his watch or his jack-knife, is diverted from the channel indicated in his last request, into the pockets of the attorneys, primarily, and, occasionally—some of it—to the account of his unworthy and remote relations?

From careful observation extending over thirty-six years, I am of the opinion that the change referred to is largely due to a degeneration in the character of the Bar, and a decided weakness in the character of the Bench; attorneys who instigate litigation, and ignorant judges who sum up the evidence without knowledge and deliver weak opinions. Then, we have another cause: Our form of government; our system of education; and lack of that religious and moral training which teaches filial respect, gratitude and love for parents and benefactors.

Still another reason for breaking wills is the inadequacy of the statutory laws in most, if not all, of our States, to protect the wishes of the testator, and that the question of mental unsoundness is submitted to a jury of men totally ignorant of the whole subject of mental phenomena either in health or disease; and their knowledge of the case presented to them can only be gained through the tortured and tortuous examination and cross-examination of most ignorant men, women and children who are called as witnesses; and then, to complicate the matter, there are the lawyers for the prosecution and defense, who have gained a hurried something of senile dementia from some text-book—usually written by one not a professional alienist—and have a shallow knowledge of "will-making power" gleaned from theoretical essays, or works on medical jurisprudence written by a lawyer. All these causes are in constant action, and combined, produce those astonishing and unjust verdicts of "mental unsoundness" which are so commonly returned by juries in "will cases," and which are so encouraging to all the relations of a testator to the third and fourth generation. Then there is the judge—the thirteenth jurymen—ready to estimate

the value of the evidence, and also to give opinions and rulings. And yet, for a judge to translate, so to speak, the evidence in a case of insanity of any form, would require a knowledge of anatomy and physiology from the moment of conception to the period when the will was made, or the crime committed.

So much for the legal side of my subject, for the medical side cuts but a small figure. There are two kinds of medical experts. The first and largest class are professional experts. I mean those who will take a fee and appear before the jury for either the prosecution or defence—whichever will pay the most—as expert witnesses, in cases involving the most intricate knowledge of the chemistry of poisons, in surgery of all kinds, obstetrics, mental and nervous diseases. And there are experts well qualified, who are honest, but who are hoodwinked by the attorneys on either side to consent to a condition presented to them in a hypothetical case. Now, unfortunately, attorneys are not sworn to tell "the truth, the whole truth, and nothing but the truth," and the expert is employed according to his expressed opinion. The methods employed may be strictly legal in form, but the introduction of witnesses of fact, and of medical witnesses who are not alienists by profession, and of expert witnesses, almost forbids an appreciation of the truth as to the testamentary ability of the testator. No matter how great their ability, their value to the jury as a means of determining the mental condition of the testator is absolutely nothing more than the confusion of tongues in Babel.

The expert witness is not allowed to form an opinion from the evidence given by the witnesses, and thus explain to the judge and jury the value of the symptoms for or against the testator's mental soundness; but the expert witness must listen to a hypothetical case, yea, not one hypothetical case, but two, and from these hypothetical cases he must form and give a direct opinion as to the testator's mental condition. Now when we consider the fact that the attorneys are but playing a game of hazard, as much as a professional gambler does in a game of "draw poker," we can see how absolutely valueless the expert testimony may be made. The experts for the prosecution and those for the defense are pitted against each other as cocks in a cock-main—an expert acid and an expert alkali neutralizing each other.

I give as an example of legal logic, and how the medical expert is handled and compelled to swear falsely, the following: After the direct examination by the prosecution the expert is handed over to the defense. After again answering various unimportant questions as to former history, etc., the defense begins: "You have sworn that the animal in question that ate the cabbage was a rabbit. Now we wish you to listen to a hypothetical case: 'An animal was found eating the grocer's cabbage; this animal was of white skin with black spots; its hind quarters are slightly higher than its fore quarters; in movement it either runs, walks, or leaps; it has two eyes, and two ears, rather long, slightly pendent. It is predatory in its habits and a ruminative animal; it devours clover, grass, cabbage, etc.' Now, Doctor, with these facts as presented in our hypothetical case, is not this animal a goat? Answer my question." "Well, it might be either" answers the expert. Then the defense howls, appeals to the judge in a heated little speech for the benefit of the jury, and shows that the witness is either stubborn, or so ignorant that he does not know

a rabbit from a goat. Then the expert is finally pinned down to "no" or "yes," and he has to swear that which he knows to have been a rabbit was a goat. Then, when the defense gets its case on to the expert for the prosecution, said expert acknowledges that a goat is a rabbit, and the paid experts are arrayed against one another like champion football players, but the result is usually without effect upon the ignorant jury, or upon the judge.

The difficulty in the matter, when senile dementia or incapacity is made the basis of a suit, rests in the misapprehension that senility is insanity, whereas it is but a condition wherein the mind of aged persons no longer records new ideas, and has forgotten many old ones. It is a change, physiologic in character, that would come to every human being should the vitality of the heart and assimilation of nutriment continue long enough. The physical and mental activities are retarded and limited, but the memories stored up in the mind's great granary are rarely destroyed. An apple may have a speck of decay, and yet have much perfect and palatable fruit.

Bachal's description of old age shows a condition where life's beautiful sunset is pointed at by unprincipled lawyers and avaricious heirs as a black and bursting storm-cloud of disease: "Seated near the fire, and concentrated within himself, a stranger to everything without him, he passes his days there, deprived of desire, of passion and sensation. Speaking little because he is determined by nothing to break his silence, yet happy in feeling he still exists when almost every other sentiment is gone." To the physiologist it means diminished blood supply through an atrophied brain and changed qualities of blood through imperfect nutrition. The quality of the blood which is required for renewed mental activity is yet rich enough in vital principle to brush the dust from the pictured memories within the brain cells. This is senility. To entirely wipe out the images and thoughts etched upon the tablets of the minds of the aged is senile dementia. Now, there is a period where the transition is so slow from the former to the latter that it is extremely difficult for the laity, the judiciary, or even medical men who are not alienists, to determine the mental capacity of the aged subject. I would suggest and assert that where an individual owns property which he has acquired by his own efforts, and is able to describe that property, and knows to whom he wishes to convey it, that person, no matter what other mental deficiencies may exist, is of sufficiently sound mind to devise and will such property to whomsoever he may desire.

The gradual failure of the special senses by which all knowledge has been obtained deceives the unprofessional observer; the defective vision, the deafness usually associated with old age, disable the individual from participating in the social life about him, and with the fading brilliancy of the eye, the arcus senilis, and relaxed and atrophied lower jaw, give to the individual a peculiar stupid and demented expression, yet such person, properly addressed, will display that he has not yet ceased to think with some degree of accuracy and vigor. "The latter fact," says Ray, "will be known only to his intimate friends, while his defects are noted by common and occasional observers, who are always ready to decide upon a person's mental capacity from an occasional glimpse of his manner, or a few remarks upon most ordinary topics." Every physician knows that there are many old per-

sons who display lack of memory; many miscall names and do not recognize at all times—perhaps from imperfect vision—persons whom they have long known, yet, when the subject of property is touched upon, or their business interests mentioned, they understand perfectly well, and converse upon business and family matters with perfect understanding.

One of the greatest evils of our system of dealing with will contests, where the allegation is that of senile dementia, is that the trial is before a jury who know that the expert testimony upon both sides is paid for, and that the evidence given by experts is based upon hypothetical cases, and even a very ignorant jury would note the great discrepancy between the wily lawyers' hypothesis and the observed facts as related by the most ordinary witnesses. It is astonishing to note with what perfect ease the most stupid, ordinary, ignorant man, woman or child can calmly diagnose these cases which would puzzle the most proficient scholar in psychiatry, and by their testimony put the most expert alienist to shame before the jury. In a recent trial in Indiana, conducted by the most prominent attorneys in America, a will was thrown out upon the jury finding the old man who dictated it was of unsound mind. The following, in brief, is a sample of the evidence:

Witness (a negro barber) says "Mr. X. went to sleep while being shaved; when roused up looked kind of wild and confused."

Attorney—"Do you believe Mr. X. was of sound or unsound mind?"

Witness—"Unsound."

Newspaper boy—"Have seen Mr. X. often; sell him papers; he had tobacco spit in the corner of his mouth; looks like he don't know nothin'."

Attorney—"Do you think him of sound or unsound mind?"

Witness—"Unsound."

A farmer's testimony was that when the testator visited him he put his horse with others in a stall, and when he, the testator, was going away, he went into the wrong stall and put the harness upon the wrong horse.

Attorney—"Do you believe Mr. X. was of sound or unsound mind?"

Witness—"Unsound"—notwithstanding that the stable was dark and the testator could see, at best, but imperfectly.

A physician noticed Mr. X. at the postoffice; his trousers were not closed. "I whispered the fact to him, but he went on without correcting the impropriety." (X. was deaf as a post.)

Attorney—"Do you consider the man of sound or unsound mind?" "Witness—Of unsound mind."

It was proven that the testator frequently forgot the names of persons; lost his locality at times; repeated the same things over. It was also proven that up to the time of making his will he kept accurate written account of all his business and financial transactions, and wrote most sensible and affectionate letters to his children and grandchildren—those children who, although left in affluence, rushed into court to put the stamp of insanity upon him ere the grass was grown over his grave. Thus, through the ignorance of the "thirteenth member of the jury," most ignorant witnesses were permitted to give expert testimony; were boldly encouraged to pronounce upon the physical condition and mental capacity of a person they hardly knew.

There is no standard by which mental capacity can be measured by the courts, and judges take to themselves the grave responsibility of deciding questions upon which they are as ignorant as they are adverse to one another. So uncertain are the judges, that they command neither the respect nor the confidence of the people, and are therefore shorn of the moral force and influence that properly appertain to judgments of courts.

The following will illustrate the views of a few eminent jurists upon the general subject of insanity:

"General insanity would necessarily preclude a trial, as a person in that condition can make no defense whatever."—Beardley, C. J.

"That you are of unsound mind I believe, but that is no reason why you should not be punished as an example to others."—Bramwell, B.

"To execute an insane person is against law, and of extreme inhumanity and cruelty, and can be no warning to others."—Sir E. Coke.

"To relieve from responsibility, insanity must be absolute; a man must know no more than an infant, a brute, or wild beast."—Tracy, J.

"Absolute insanity not necessary; if the prisoner was insane with reference to the crime charged, it is sufficient."—Beardley, C. J.

"It must be clearly shown that the accused did not know right from wrong. Partial insanity no bar to responsibility."—English Judges in Conference.

"The preceding opinion designated 'exquisitely inhumane' and absurdly impracticable."—Ladd, J.

"The test lies in the word 'power.' Had the accused power to know right from wrong, and had he power to adhere to the former and avoid the latter?"—Brewster, J.

"The law does not recognize 'uncontrollable impulse' if the prisoner knew right from wrong."—Alderson, B.

"There is an uncontrollable impulse, or irresistible inclination to kill, which, when proved, relieves from responsibility."—Gibson, C. J.

"If he knew that he was committing an act against God and nature, he is responsible."—Lord Lyndehurst.

"If the person acted under uncontrollable impulse, notwithstanding his knowledge, the act was not his act; hence he was not responsible."—Shaw, C. J.

"Moral insanity affirmed to be held a good defense by all enlightened jurists."—Robertson, J.

"Moral insanity denied as being a good defense, and the opinion that it was, declared to be most startling, irresponsible and dangerous doctrine, unknown to the courts of last resort in either Britain or this country."—Williams, C. J.

"If he did not know that the act he was doing was wrong, he is not responsible."—Tindal, C. J.

"If he knew that the act was wrong at the time he committed the deed, he is responsible."—Parke, B.

"The defense must prove absolute alienation beyond all doubt; such insanity as would prevent the accused from knowing that murder was a crime against the laws of God and nature, and that there was no other proof of insanity which would excuse murder or any other crime."—Sir James Mansfield.

"An insane man can not commit a crime. If there is a doubt of the insanity, how can the jury say a sane man committed the crime? A reasonable doubt as to insanity should avail as much as a doubt of any matter of fact."—Crawford, J.

"The onus of proving insanity is on the accused, and if left in doubt, the jury should convict."—Rolph, B.

"The onus of proof of insanity, as well as of guilt, rests on the State after the presumption of sanity has been removed by the defense."—Cooley, C. J.

"The proof of insanity to acquit should be as strong as the proof of guilt to convict."—Hornblower, C. J.

"If the jury entertain a reasonable doubt of insanity, they ought to acquit."—Doe, J.

"A preponderance of evidence in favor of insanity should acquit."—Shaw, C. J.

"Whether there is such a mental disease (dipsomania) is a matter of science and fact, not of law."—Smith, C. J.

"If he knew that the act was a crime forbidden by the law, he was responsible."—Lord Brougham.

"There are no legal tests of insanity. When the judge gives a legal test of insanity, he either testifies to a question of fact, or the expert witness has testified to a question of law. Thus the law is brought into conflict with itself."—Doe, J.

"The introduction of medical opinions and theories in the subject of insanity has proceeded upon the vicious principle of considering insanity a disease."—Lord Chancellor Westbury.

"Judges and lawyers, profoundly ignorant of insanity, have invaded the province of medical experts—the province of those who know all that is known on the subject—and for legal tests use exploded obsolete medical theories."—Doe, J.

"Ordinary men of the world are just as competent as witnesses as medical experts in insanity cases."—Bramwell, B.

"Medical experts are infinitely better qualified to judge of insanity than are courts or lawyers."—Ladd, J.

"Expert testimony not only of no value, but worse than that."—Davis, J.

"Expert testimony of great weight, and deserves the respectful consideration of the jury as competent evidence."—Shaw, C. J.

"The whole difficulty is that courts have undertaken to declare that to be a law which is a matter of fact. All symptoms and all tests of mental disease are purely matters of fact for the jury, and not matters of law for the judge."—Doe, J.

The constantly increasing litigation in America when questions of sanity and insanity are involved, demands some change in method and in law. Maudsley says: "It is notorious that the acquittal or conviction of a prisoner when insanity is alleged, is a matter of chance. Were the issue to be decided by tossing up a shilling instead of by the grave procedure of a trial in court, it could hardly be more uncertain." A celebrated British jurist says: "Acquittal on the plea of insanity is a mere matter of accident."

In one simple change of law much time and expensive litigation could be saved: 1, that the judge may only call upon experts to aid in translating, as it were, the evidence as given by the witnesses; 2, none but practical alienists should be called as experts in insanity cases. The general practitioner can not be an expert in insanity any more than a mechanical engineer could be an expert in the construction of a watch. The experts called by the court should hear all the evidence given, and not hypothetical cases of either side. Experts should be paid by the State or county, and not be allowed to take fees from either the prosecution or the defense.

When we have arrived, as we will in time, at that period of enlightenment, there will be less tendency to useless and unjust litigation; a man's property may be conveyed as he may devise; guilty persons will not be acquitted and innocent persons hanged in the sacred name of Justice.

SOME EXPERIMENTS IN URIC ACID—UREA.

EXCRETION BY THE KIDNEYS IN AN INDIVIDUAL UPON A MILK DIET, AND IN A CASE OF RECURRENT MELANCHOLY.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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I. MILK DIET.

Before the Section on General Medicine at the semi-centennial meeting of the Association the writer presented a study of "The Role of Uric Acid in Neurasthenia and Allied States,"¹ and drew the conclusions from the investigation that uric acid and its congeners must be potent causes in many cases of neurasthenia and other like nervous disorders, or must again cause aggravation of essential cases. Since that time further experiments as to the knowledge

¹ Virginia Medical Semi-Monthly, June 25, 1897; Medical and Surgical Reporter, March 31, 1898.

needed of internal metabolism and the significance of the amount of uric acid excretion to such bodily disturbance have been carried out; and, as first suggested in the paper quoted, the quantitative determination of uric acid on a milk diet has been sought for.

Dr. S. Weir Mitchell kindly selected a private case of exaggerated subconscious-self (hysteria) and of mild functional nerve tire at the Infirmary of Nervous Diseases for my urinalyses. This woman we feel was but little away from physiologic functioning, her malady being largely loss of will power, of idiopathic etiology. This is mentioned so as to not be misleading and to thus assume very probably about a normal secretion and excretion of an average individual, which is the desideratum. Having her under control in a hospital carried out the ideal conditions for watching and testing carefully the effects of milk diet on uric acid excretion in health.

Mrs. F. B., age 40 years. There is a negative family history. Patient has always been physically pretty healthy, but very nervous. When young was subject to causeless, painless and bloodless attacks of vomiting. No rumination. Menstruation first began at 13 years, is regular; lasting about one and a half days; scanty, but not painful. As further evidence of her essential nerve weakness, we may mention neuralgic attacks at 33 years and of causeless irritable bladder, the urine being found normal. No reason can be determined for her not ever being pregnant. Her generative organs are normal.

Hysterical manifestations in an exaggerated form followed business cares and the nursing of patient's father and mother, some seventeen months before the time she came under treatment, Nov. 11, 1897. The vomiting attacks of childhood recurred and became a "habit." She ejected much mucus—never food. Sudden hysterical gastrectasia and meteorism, with final abdominal contraction and sequent gushing of gas from the mouth ensued; occurring daily at exactly 4 P. M.—a mental habit—for two weeks before she came under treatment. She also then had marked subjective and objective vertigo, although her hearing and ears were pronounced normal. There were hysterical syncopal attacks, and daily nervous chills, attacks of transient amblyopia, intense frontal headache and at night frightful dreams, with jerking of head to the right, the consciousness always being preserved, however. Has not walked alone these seventeen months from supposed hip disease—also a hysterical vagary. We examined her very carefully and as to the secretions, but could find no physical or chemic alteration in any organ, excretive or secretive. Her appetite was very good, and after the thorough régime of the full "rest" treatment, became ravenous, so that she had discomfort after meals, and the ingesta was therefore lessened. Her tongue was large, clean, flabby, tooth-indented. There was no abdominal distress, but slight pressure tenderness on palpation over right upper quadrant of abdomen, due to the gastric distention noted. On being put to bed our patient's weight was 134 pounds, her temperature was 98 degrees F., respiration 20 and pulse 92, rhythmic and compressible. She was at first placed on the regular "house" diet—a cereal for breakfast, with the addition of four "meat balls" daily and Nestlé's food 3iv in the morning on waking. Liquid malt 3ii was administered twice a day, and besides the usual general massage and faradism daily, phosphate of soda 3ss before meals and an occasional dose of spirits chloroform, gtt xv,

acted well as laxative and carminative; while the useful pil. sumbul comp., t. i. d., was the tonic therapeutic in the case. Fl. ext. cascara sag., gtt xx, at night, followed by a warm water enema at 10 A.M. proved of value when constipation was annoying. Her temperature was usually slightly elevated after massage.

With this outline the uric acid excretion remained normal up to Nov. 27, 1897, when she was placed upon a skim-milk diet; at first 3iv every two hours, gradually increased up to 3viii every two hours, when a dram of lime water was added to assist digestion; then the amount of milk was pushed to 3xii every two hours in the waking day. Some "fullness" in nape of neck was relieved by application of an ice bag daily, usually toward the evening hours. Isolation being insisted upon, we thus had, with Swedish movements added, an ideal rest with natural metabolism in an apparently healthy body, assisted by the passive exercise and absence in it of loss of nerve energy.

At the end of a fortnight the woman was gradually gotten up, at first fifteen minutes twice daily and increased five minutes at each daily sitting, as there was no necessity for prolonged rest in so actively hysterical a case, where true nerve exhaustion played so little a rôle. Dr. Thomson could find no adequate cause for headache in the eyes, and its irregular recurrence did not lead us to suppose it of metabolic origin. The following table (No. 1) gives the results of my urinalyses during the milk period and after, from Dec. 4 to Dec. 23, 1897, beginning after the woman had been upon milk alone for a week. The urea was also estimated upon a number of occasions. The amount of milk administered reached at its acme one hundred and twenty ounces, proving the normal metabolism of the system; for, too, there was at no time oxalates to make suspicious such suboxidation.

The method employed for quantitative uric acid determination was that of Heintz, previously detailed in my paper already quoted, and therefore (worked under similar conditions of examining the specimen at once) there can be but little fallacy in the findings.²

Taking the normal excretion of urea as 2.8 per cent. and of uric acid as .05 per cent. (i. e. 2.8 gm. urea in 24 hours, and 6 gm. uric acid in 24 hours—and 8 gm. NaCl in 24 hours) it is to be noted at the end of the week of milk diet the urea had fallen to 1.4 per cent. while the uric acid had lessened to .04 per cent., the amount of urine excreted varying daily from 20 to 30 cm. (2630 c.c.) as shown in Table I. The lessening of pigment was a notable point; also the reduction in all solids as shown by the sp. gr. gradually lessening from 1020 at first to 1012 at end of first week on the milk diet, to 1010 at the end of a fortnight. Now the urea had become reduced to 1.3 per cent. and uric acid to .03 per cent., so that very few crystals could be detected without centrifugation. The urine had now become very limpid, of a light greenish color, and contained practically no deposit, and reaching by the eighteenth day of milk diet without vacillation the lowest ebb in both urea (1.2 per cent.) and uric acid (.019 per cent.). The uric acid continued to *recede* after eggs had now been added to the diet for 24 hours (to .016 per cent.); the urea *promptly* rising in the same time, however, to 1.4 per

² In a private communication from Dr. Chas. E. Simon, the kind suggestion to adopt the Hopkins method, "with the modification that you decompose your ammonium urate with a decinormal solution of HCl and retitrate the excess with NaOH, using dimethyl-acido-azo-benzol as an indicator, 1 c.c., corresponding to 0.0168 gm. of uric acid," will be used in future work.

cent. This we feel rules an excess of uric acid in this case out of court—a normal condition of body.

House (meat) diet was ordered on the twenty-second day, and the urea, which had then risen to 2 per cent., became less (1.6 per cent.), while the uric acid, which had the day before begun to rise, now took on more active production and elimination, reaching .03 per cent. on the twenty-second and .034 per cent. on the twenty-third day of experimentation, the urea coming slowly up to 1.8 per cent.; and on the twenty-fourth day urea reached the 2 per cent. mark, uric acid being .036 per cent. On the twenty-fifth day the urea remained at 2 per cent., while the uric acid tide had risen to 4 per cent., and on the twenty-sixth day the uric acid was recorded .046 per cent (about normal), while the urea was lacking 8 per cent. of normal.

This see-sawing in the relative proportion of urea and uric acid, while showing on the whole the tendency to lessening of both when proteids are cut off or bodily tissues are suboxidized, yet, as held in my previous studies, shows clearly enough that the ratio of urea to uric acid is not held at a fixed proportion, but that if one is *more* the other is apt to be *less*, no doubt due to the degree of oxidation in the process. Recent studies of urine have further legitimately proven that where there is much disturbance of metabolism in a given case, besides this urea-uric acid disproportion, oxalate crystals are more in evidence.

Now in the past year, since we have gotten a reliable quantitative test for indican,³ we may yet hope for some reliable quantitative proportion test of oxalates and other by-products to uric acid; and that the therapeutic value of such understanding may further on in physiologic chemistry help our treatment of the dread uric acid diathesis.

5. Urea at the end of twenty-second day is 1.6 per cent., uric acid is .03 per cent.; diet again increased.

6. Urea at the end of twenty-sixth day back to 2 per cent., little less than normal; uric acid to .046 per cent., slightly less than normal. The patient's weight on Nov. 13, 1897, was 134 pounds, by the 27th excess of fat was massaged away to 132 pounds. Eleven days on a milk diet brought her up to 136½ pounds, and on December 25 it was 144½ pounds, on Jan. 8, 1898, 154 pounds, a gain of twenty-one and one-half pounds in forty-two days.

7. Urine progressively decreased in amount when patient was taken off milk diet largely and solid food substituted. (Proteid food produces about half uric acid formed perhaps, the rest probably coming from body by oxidation; see No. 10.)

8. Specific gravity lowered in proportion to increase in the amount of urine excreted.

9. Color of urine lessened in proportion to increase in the amount of urine excreted.

10. It is here positively established that uric acid in the urine is reduced to a minimum on a milk diet (about one half the normal).

11. Trace of *indican detected on twentieth, twenty-first, twenty-second and twenty-third days after solid food was largely added (fermentation).

IN SHORT RECURRENT MELANCHOLY.

The following table (No. 2) is the detailed record of a case of irregular mental depression of short duration in the case of a man in otherwise excellent health, and whose case is detailed by Dr. Weir Mitchell,⁴ to which very singularly interesting clinical record the reader is referred. The conclusions we reached from the examination of this middle-aged man's urine have been stated by Dr. Mitchell in his book, and I am again indebted to that gentlemen for permission to publish first here the details in tabular form, which are somewhat in accord with work done later by Dr. Cleon M. Hibbard,⁵ and of the pioneer in uric acid studies, Haig, who refers to the same conditions.⁶

Our own experiments in states of mental depression are confined to the critical analyses in this one case

TABLE 1.—URIC ACID FINDINGS (MILK DIET).

Date.	Amount, twenty-four hours.	Amount taken in ounces.	Specific gravity.	Color and sediment.	Urea, percentage.	Uric acid, grams to per cent.	Notes.
Dec. 4, 1897.	83 oz. or 2490 c.c.	8	1012	Light straw	1.4	.04	End of first week on milk, 4 ounces (with 1 dram aq. calcis) every two hours until 12 ounces milk every two hours taken (120 ounces.)
Dec. 5, 1897.	88 oz. of 2640 c.c.	8	1011	Light greenish.	.039	.038	
Dec. 6, 1897.	82 oz. or 2460 c.c.	8	1010	Light greenish, no pigment.	.038	.034	Weight, 136 pounds end of second week on milk.
Dec. 7, 1897.	83 oz. or 2490 c.c.	8	1010	Light greenish, no pigment.	.034	.032	
Dec. 8, 1897.	86 oz. or 2580 c.c.	8	1010	Light greenish, no pigment.	.032	.032	Menstruation regular.
Dec. 9, 1897.	80 oz. or 2400 c.c.	8	1009	Light greenish, no pigment.	.032	.031	
Dec. 10, 1897.	82 oz. or 2460 c.c.	8	1010	Light greenish, no pigment.	.031	.03+	Diet (eggs, soups) increased eighteenth day.
Dec. 11, 1897.	84 oz. or 2520 c.c.	8	1011	Light greenish, no pigment.	1.3	.029	
Dec. 12, 1897.	85 oz. or 2550 c.c.	8	1011	Light greenish, no pigment.	.029	.03+	Home diet, meat, etc., twenty-second day.
Dec. 13, 1897.	82 oz. or 2460 c.c.	8	1012	Light greenish, no pigment.	1.2	.028	
Dec. 14, 1897.	80 oz. or 2400 c.c.	8	1012	Light greenish, no pigment.	.028	.019	No medicine except occasional dose of trional or bromid for insomnia spts. chloroformi for acidity of stomach twenty-sixth day.
Dec. 15, 1897.	70 oz. or 2100 c.c.	8	1014	Light greenish, no pigment.	.019	.018	
Dec. 16, 1897.	70 oz. or 2100 c.c.	8	1013	Light straw	1.4	.016	Home diet, meat, etc., twenty-second day.
Dec. 17, 1897.	65 oz. or 1950 c.c.	8	1014	Light straw	.016	.023	
Dec. 18, 1897.	68 oz. or 2040 c.c.	8	1016	Darker pigment.	2	.03	No medicine except occasional dose of trional or bromid for insomnia spts. chloroformi for acidity of stomach twenty-sixth day.
Dec. 19, 1897.	69 oz. or 2070 c.c.	8	1020	Natural straw color.	1.6	.034	
Dec. 20, 1897.	69 oz. or 2070 c.c.	8	1020	Natural straw color.	1.8	.036	No medicine except occasional dose of trional or bromid for insomnia spts. chloroformi for acidity of stomach twenty-sixth day.
Dec. 21, 1897.	68 oz. or 2040 c.c.	8	1021	Natural straw color.	2	.04	
Dec. 22, 1897.	64 oz. or 1920 c.c.	8	1021+	Natural straw color.	2	.046	
Dec. 23, 1897.	60 oz. or 1800 c.c.	8	1023	High color, slight sediment, urates.	2		

No albumin, glucose nor indican found, except a trace of indican on December 20.

POINTS IN CONCLUSION IN URINE FINDINGS IN MILK-DIET CASE.

1. Great increase of amount of urine in one week after, upon skim milk alone (up to 120 ounces in twenty-four hours), the patient passing twice the normal amount of limpid urine.

2. Urea at the end of first week goes down to one-half normal, uric acid to .04 per cent.

3. Urea at the end of second week goes down to 1.3 per cent. and uric acid to .03 per cent. Up to this time amount of urine remaining twice normal.

4. Urea at the end of eighteenth day is 1.4 per cent., uric acid .016 per cent., one-fifth of normal. Diet now increased.

of short but decided recurrences without other known cause, and where melancholy rather than true melancholia seems the better term to use, as suggested by Dr. Mitchell in this case, since the man is not unbalanced by the "cloud suddenly descending unawares

³ A Method for the Quantitative Estimation of Indican and Indirubin in the Urine. H. Richardson, M.D. and E. L. Whitney, M.D. (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, April 16, 1898.)

*Indicanuria and Peptonuria: Transactions Philadelphia Medical Society, June, 1894.

⁴ Clinical Lessons on Nervous Diseases, S. Weir Mitchell, M.D. Lea Bros. & Co., 1897, pp. 53 to 57.

⁵ A Study of the Excretion of Urea and Uric Acid in Melancholia and in a Case Presenting Recurrent Periods of Confusion and Depression. American Journal of Insanity, April 18, 1898.

⁶ Mental Depression and the Excretion of Uric Acid, Practitioner Nov. 13, 1888.

upon him," and yet making the *compos mentis* suffering the more acute.

This man has greatly improved since last year by regularly abstaining from excess of proteids, by care as to bodily chilling and by outdoor life on his ranch in Iowa. "Dull care" we hope may finally be driven away by super-oxidation and restored nutrition.

We hope in future studies to elaborate the suggestive steps indicated in this work, but feel today confident of almost as wide a horizon in the sphere of etiology of disease through perverted metabolism as in the domain of bacteriology. Many of the remote reasons for such disturbed metabolic action may perhaps never be determined, yet the results are becoming

TABLE II.—EXAMINATIONS OF MR. C. E. (RECURRENT MELANCHOLY).
Urine of twenty-four hours; 7 P.M. to 7 P.M.

Date.	Condition.	Amount.	Amount taken, ounces.	Sp. gr.	Color.	Urea; grams in 1 c.c.	Uric acid.	Blood.
Jan. 13, 1897.	Depressed ten hours	45 oz. or 1350 c.c.	8	1020		.026542 = 2.6%	10 $\frac{1}{4}$ grs.	
Jan. 14, 1897.	Wt. patient, urine while much depressed	55 oz. or 1650 c.c.	8	1014		.024192 = 2.4%	10 $\frac{1}{2}$ grs.; indican +.	
Jan. 14, 1897.	Not depressed latter part of day	55 oz. or 1650 c.c.	8	1018		.025290 = 2.5%	100 mgm. in 200 c.c.; indican	
Jan. 15, 1897.	Well, unusually so during last 17 hrs.	37 oz. or 1110 c.c.	8	1022		.02688 = 2.6%	8 $\frac{1}{4}$ grs.; indican	
Jan. 16, 1897.	Slept well; B. normal; pulse small, 74 to min.; T. 98.4° F.	45 oz. or 1350 c.c.	8	1020		.02474 = 2.4%	9 $\frac{1}{2}$ grs.; indican	
Jan. 17, 1897.	Reasonably well	42 oz. or 1260 c.c.	8	1018		.02688 = 2.6%	9 20 grs.; indican	7:30 P.M.; good spirits; r.b.c.
Jan. 18, 1897.	Very bright	55 oz. or 1650 c.c.	8	1020		.02688 = 2.6%	10 $\frac{1}{2}$ grs.; no indican	[4,200,000; H = 90; w. b. c.
Jan. 19, 1897*	Bright, then bad attack of throat irritation	48 oz. or 1440 c.c.	8	1018		.02642 = 2.6%	10 $\frac{1}{4}$ grs.; no indican	[10,000.
Jan. 20, 1897.	Well; some depression last few hours	56 oz. or 1680 c.c.	8	1020		.02642 = 2.6%	16 $\frac{1}{2}$ grs.; no indican	
Jan. 20, 1897.	During time very well part of day	33 oz. or 990 c.c.	8	1019		.02642 = 2.6%	7 $\frac{1}{2}$ grs.; indic., trace	Phosphatic sediment on
Jan. 20, 1897.	Very bad; see "card" acc't of attack	4	4	1022		.024192 = 2.4%	8 grs.; indic., mark'd	standing + in each specim.
Jan. 22, 1897.	Quite well since 20th.	42 oz. or 1260 c.c.	8	1020		.02688 = 2.6%	7 $\frac{1}{2}$ grs.; indic., trace	men. Test for combined
Jan. 23, 1897.	Twice somewhat depressed	36 oz. or 1080 c.c.	8	1022		.025290 = 2.5%	8.1 grs.; indic., trace	sulphates; not made.

* Patient's ever-changing mental state entailed frequent urinalyses on Jan. 20. No brickdust deposit, albumin or glucose in any of above.

ANALYSIS OF TABLE—QUANTITATIVE FINDINGS AS TO URIC ACID, UREA AND INDICAN IN THIRTEEN SPECIMENS.

1. Urine was saved for twenty-four hours.
2. Eight ounces of the amount used in tests.
3. Amounts passed in twenty four hours calculated as to proportion of uric acid and urea voided.
4. Specific gravity recorded.
5. Per cent. of urea given.
6. Grains of uric acid (11 normal for 1200 c.c.) voided in the entire amount of twenty-four hours' urine.
7. Indican tested as to color (with muriatic acid and sat. sol. chlorid of lime).
8. Albumin and glucose tested for in each case.
9. Patient was on ordinary "mixed" diet and in full activity. No medicine.
10. R. b. c., 4,200,000. No leucocytosis. H = 90 per cent.

CONCLUSIONS—URINE ANALYSIS, CASE OF RECURRENT MELANCHOLIA.

1. The specific gravity of the urine bore no relation to amount of urine voided.
2. The acidity of the urine was always marked.
3. Color of urine was higher when amount voided smaller.
4. There was no "brick dust" deposit of urates.
5. Average amount of urea voided in twenty-four hours equaled 2.5 per cent.
6. The normal (urea) being 2.7 to 3 per cent., this reduction can not be positively stated as abnormal, but the continuous subnormal amount with the fact that more than the average quantity of urine voided continuously would lead to the thought that suboxidation of proteids existed.
7. The lowest amounts of urea were recovered on the two occasions when the patient was much depressed mentally, viz., Jan. 14, 1897, 2.4 per cent. and Jan. 21, 1897, 2.4 per cent. In other examinations, recovered 2.5 and 2.6 per cent.
8. On corresponding dates, Jan. 14, 1897, uric acid equaled 10.5 grains, calculated for twenty four hours; Jan. 20, 1897, uric acid equaled 8 grains, calculated for twenty-four hours.
9. In the former (Jan. 14, 1897) 1650 c.c. voided in twenty-four hours, specific gravity 1014; in the latter (Jan. 20, 1897) only 990 c.c. voided in twenty four hours, specific gravity 1022.
10. Marked color reaction for indican was obtained in each of the two attacks of depression noted during the study. It was found in less amount in seven of the remaining eleven specimens recorded in the table.
11. The patient passed 55 ounces (1650 c.c.) on one day of his typic depression, the second day only passing 33 ounces (990 c.c.).
12. As both contained indican in large (color reaction) amounts, intestinal putrefaction may possibly be an important factor.
13. No albumin or glucose found in any specimen.
14. As to where the uric acid may be when not recovered in urine could possibly be told by difficult analysis of the blood at the time.

more manifest and we are grossly derelict of duty if we fail to search and apply the therapeutic measure for relief and cure. The actual "why" is not always possible to find out. An intelligent woman recently, on learning of the theory of the neuron, immediately put the trite question: "Why should the neurons have motion?"

THE PULSE: ITS DIAGNOSTIC AND PROGNOSTIC VALUE.

Read before the Orleans Parish, La., Medical Society, Sept. 24, 1898.

BY T. S. DABNEY, M.D.
NEW ORLEANS, LA.

The proper study of mankind is man.—*Pope*.
Have you a working pulse?—*Shakespeare*.

Mr. President and Gentlemen: In the mad scramble for novelties which seems to have seized our profession, as it did the ancient Athenians, you may be surprised at my presumption in asking your attention to so prosaic a subject as "The Pulse: Its Diagnostic and Prognostic Value."

This is the age of the infinitesimally small, and he who would spring, like Minerva, full grown into fame, must, like Pasteur, Koch, Sanarelli, Klebs, Loeffler, Eberth and Laveran, succeed in standing sponsor for some micro-organism. Failing that, you might yet seek the "bubble reputation" by investigations into the biology of certain of these lower forms of life, and like MacCallum and Opie of Johns Hopkins, succeed in catching the Halteridium of Labbe in his amorous advances. These observers having shown that the passive granular form of this hematazoon is the female, and the lusty, aggressive hyaline form the male, is but to open the way for a more thorough study of their family relations.

Pardon me for this digression, but I felt some apology due you for occupying your time with the pulse of man himself instead of that of some schizomyces. Without underestimating the labors of those toilers in the hitherto untrodden fields of bacteriology, you will yet excuse me for not believing that man is of the bacillus, by the bacillus and for the bacillus.

The physicians in the olden times gave much careful attention to the pulse, and the amount of information to be gained in its study is astounding. By the introduction of percussion by Anenbrugger in 1761, and auscultation by Lænnec in 1816, the interest in the study of the pulse, was decidedly lessened. This interest was further diminished by the introduction in 1861 by Marey, of the sphygmograph. The clinical thermometer, introduced somewhat later, dealt a death-blow to the painstaking study of the pulse. Every new study tends to force the old to the background. We must ever bear in mind that not all that is old is bad, nor all that is new good. Let us rather follow the noble advice given by St. Paul to the Thessalonians: "Prove all things; hold fast that which is good." Tried in the crucible of time the gold can be separated from the dross. I hold with Cicero that: "Not to know what happened before we were born is to remain always a child." I welcome every new discovery that renders diagnosis or prognosis more certain, and while fully appreciating the impetus given physical diagnosis by the introduction of means and methods of precision, yet I firmly believe in holding fast to all that is good and in profiting by the experience of those that preceded us.

The value of the study of the pulse can not be over-estimated. The sphygmograph but records what the finger feels, and the more the finger is educated the more it feels. The tracing of the sphygmograph is, as it were, a photograph of the pulse, and like all photographs, lacks tone, expression and volume—the original must have been known to be appreciated. Without seriously considering the claims of the Arabs, Moors and Chinese—and their claims are many—we may state that Galen of Pergamos, Mysia, is the earliest authentic writer on the pulse, and he seems to have read it like an open book. I do not believe there is a more masterly and comprehensive treatise on this subject than that by him who won the double sobriquet of "Paradoxologus" (wonder-speaker), and "Paradoxopœus" (wonder-worker), in imperial Rome, where he became the physician to the emperors, Lucius Verus and Marcus Aurelius. To Galen, the pulse seemed to speak, and his prognosis, based upon it, often smacks of the marvelous. Though living in the second century, he was unquestionably a great physician, and to his close study of the pulse, much, if not most, of his reputation was due; for it is an indisputable fact that nothing adds more to a physician's fame than an accurate prognosis. Nothing strikes the human intellect with more awe than one's ability to read aright the portents of the taps of those "muffled drums (that) are beating funeral marches to the grave."

Strange as it may appear, Hippocrates seems to have paid as little attention to the value of the pulse as the majority of the teachers of physical diagnosis in our schools today. About all to be learned of the pulse in the average medical school, now-a-days, is to count it.

Galen named and accurately described thirty-six different varieties of the pulse. Just think of it! I can not do better than to reproduce his original table:

1. Long pulse; the artery strikes several or all of the fingers.
2. Short pulse; artery strikes only one or two fingers.
3. Wide pulse; artery distended.
4. Narrow pulse; artery contracted.
5. Elevated pulse; artery strikes forcibly and repels hand.
6. Low pulse; artery scarcely perceptible.
7. Big pulse; artery distended in width, length and elevation.

8. Small pulse; artery little distended according to these three diameters.
9. Quick.
10. Slow.
11. Frequent.
12. Rare.
13. Vehement or strong; artery strikes fingers forcibly.
14. Feeble or languishing; reverse of above.
15. Hard; the finger yields to the pulsation.
16. Soft; the pulsation yields to the compressing finger.
17. Full; the artery is full and resists the touch.
18. Empty; the artery disappears, yielding to the finger, possessing no solidity.
19. Equal.
20. Unequal.
21. Rat-tail; starts large and rapidly diminishes down to a point like a rat's tail.
22. The feeble rat-tail; one seeming to cease, or ceasing altogether.
23. The rat-tail that strikes more forcibly the two middle fingers, scarcely touching the first and last.
24. Intermittent.
25. Intercident.
26. Failing; stopping altogether.
27. Capricious; interrupted in the middle of its diastole, then finishing in quicker time than that of its commencement.
28. Dicrotic; striking twice like a hammer rebounding from an anvil.
29. Wavy; rising gradually under the fingers.
30. Vermicular; like a worm.
31. Formicating; like an ant.
32. Trembling.
33. Palpitating.
34. Convulsive; artery tense like a cord.
35. Serrated; strikes fingers unequally, like a saw.
36. Ardent; artery rising and striking promptly and forcibly.

To take the pulse properly, the physician should be seated by the side of the patient, who should be in a sitting or recumbent posture, with arm extended and resting on some support. The physician should lightly place the four fingers of his right hand over the left radial artery of the patient, with his index finger nearest patient's hand; the little finger will thus be the first to receive the stroke. The pulse should always be taken at each wrist, for reasons to be given later. By so doing the presence of aneurysms can often be suspected, and frequently verified. Pressure should alternately be made and relaxed to determine the hardness or softness, force or feebleness, the largeness or smallness, the swiftness or slowness of the pulse. Again, other factors, such as the frequency, the rareness, the irregularity, the inequality, must be taken into account. A strong pulse is characterized by volume and vigor; a weak one by the reverse conditions. To the tyro, the number of pulsations to the minute, which can generally be counted accurately by means of a watch, is all-important; but valuable as this information often is, it is the least important of all other signs to the experienced clinician, who cares little whether the heart contracts seventy-five or a hundred times a minute. He is mainly interested in the dynamics of the viscus, rather than in the derangement of its running-gear. A few drops of digitalis, the fractional part of a grain of glonoin, a glass of beer, fright and the various neuroses, readily serve to affect the inhibitory or accelerator fibers of that "rope of mingled strands"—the vagus and the sympathetic system. Above all things, should the family physician be familiar with the pulses of his patients in health, for, as is well known, some families have abnormally slow and others fast pulses. According to Fothergill (The Physiologic Factor in Diagnosis), "a pulse of 40 or even less is not rare" (normally). All of us are familiar with patients whose pulses in health run from 90 to 100 and even higher. Then again, arhythmia, cousin-

germain to the dilated ventricle, is normal in a number of persons whose hearts beat with regularity only under the stimulating effects of pyrexia. Again, we find intermittency—that sign so closely linked with muscular and structural decay, always alarming and frequently speaking in unmistakable tones of impending disaster—is often but a neurotic trick, or else it may be caused by any sudden shock, by excitement, by advancing years, or in the convalescence from severe illness. We should ever bear in mind that the pulse depends upon three things: the ventricular systole, the arterial walls and the state of the arterioles.

The antithesis in the state of the arterioles is beautifully shown in the pyrexias, and in the granular kidney. In the former the blood flows freely through relaxed arterioles, giving us the rapid pulse of half-distended and slack vessels. The accelerator fibers of the vagus or sympathetic being stimulated, the heart pumps vigorously to supply blood for the unfilled vessels. In the latter, the roots of the vagus being flooded the inhibitory strands of the vagus are excited and the heart's action slowed, and we have the ominous, cord-like pulse of high arterial tension. As a fast pulse does not necessarily imply mural decay nor pyrexia, so a slow one is not of necessity of grave import. That the slow pulse of yellow fever is not due to any specific bacillus nor its ptomains, but rather to the toxic effect of an accumulation of the bile salts in the blood is clearly shown by the presence of the same symptom in ordinary cases of icterus. This fact is further accentuated by the coincidence of the appearance of colemia and the bradycardia and by their disappearance *pari passu*. It may, *en passant*, be stated (Louis' law) that the earlier the appearance of jaundice (pronounced) the graver the prognosis; commencing by or before the third day, death is almost certain; by the fifth day, death more probable than recovery; after seventh day, recovery almost assured. It will thus be seen that bile, like muscarin, first markedly slows the heart's action by powerfully irritating the inhibitory fibers of the vagus. If this irritation be carried too far the heart's action is slowed down until it ceases altogether. In such an event the patient will be found to be of a bronzed or mahogany tint, so marked is the cholemia. Accepting this as a fact the logical treatment readily suggests itself and the rationale of the large, high saline enemata is understood. However, the ordinary slow pulse of typhus icteroides, as you all know full well, is not of grave moment. The danger lies in the rising and not in the falling pulse ordinarily. To put it more scientifically, we have more to apprehend in this disease from the stimulating effect of some specific toxin upon the accelerator fibers of the sympathetic system than from the effect of bile upon the inhibitory centers of cerebro-spinal origin. It is hardly necessary, in this connection, to call your attention to the lack of correlation of pulse and temperature so pronounced in yellow fever; but it may not be amiss as a diagnostic point, to state that a falling pulse, taken in connection with a rising temperature in an acute febrile disease, is well nigh pathognomonic of yellow fever. The elder Faget called particular attention to this anomaly.

It is in pulmonary disease that the prognostic value of the pulse is invaluable. Be it phthisis or pneumonia, a rapid and steadily-increasing pulse-rate is ominous. In the early diagnosis of phthisis, I regard it as far more valuable than the clinical thermometer, though the value of that instrument can hardly be

overestimated. Often the rapid pulse will enable one to diagnosticate phthisis before the thermometer gives any evidence of pyrexia, and long before any physical signs are appreciable. A pulse running from 90 to 100 habitually, in a person of bad family history, demands your urgent attention, and you should not lose valuable time waiting for "cultures" to confirm your suspicions, but act promptly in giving your patient the benefit of the best dietetic, therapeutic and climatic treatment—treat the disease first, diagnose it afterward, and thereby avoid following the advice, seriously given to his class, of a distinguished pathologist of my acquaintance: "follow *all* their patients to the dead-house."

The fast pulse of nervousness can readily be differentiated. You should also bear in mind that tachycardia in old alcoholics, is the rule, and hence of no prognostic value. Moderate but habitual drinkers generally have an accelerated pulse-rate. All you gentlemen who have had occasion to make many examinations for life assurance—I think "assurance" the correct term—must have been struck with this peculiarity of the pulse of the ordinary man-around-town who habitually takes a stimulant with his lunch, and usually a cocktail before dinner, and a postcoena *pousse-café*.

The bradycardia of fatty degeneration of the heart is apparent rather than real, as many of the ventricular contractions are too feeble to propel the blood with sufficient force to be appreciated at the radial. The stethoscope will clear up the discrepancy. The slow pulse of the gouty heart, or rather the hypertrophied heart of chronic Bright's disease, is readily differentiated, as it is tense and cord-like and usually accompanied by large quantities of limpid urine of low specific gravity. However, in time, when fatty degeneration sets in, and the walls of the heart become weakened, the ventricles lose their force, and the urine becomes scanty and high-colored. When this stage is reached, the patient is on the down-grade, or as Fothergill tersely puts it: "An increasing bulk of urine tells that the case is at the stage of waxing hypertrophy; the fall in bulk tells that the hypertrophy is being undermined by a histolytic process." From a prognostic point of view, this symptom can not be too strongly insisted upon, for as Traube truly says, a high blood-pressure means a large bulk of urine, and conversely. The polyuria of hysteria, with its tight pulse, is but another proof of Traube's aphorism. The large quantity of limpid urine passed by the hysterical, robs the high arterial tension found in this class, of its significance. The pulse of failing hypertrophy is so characteristic and is fraught with such a hopeless prognosis that you will pardon my stating that whenever the pulse of a sufferer from chronic nephritis beats regularly for several strokes, quickly followed by several imperfect strokes, a slight halt, and then a full contraction, you may safely say that the curtain on the last act of the drama of life is about to be rung down.

The simple halt of the neurotic or the dyspeptic can never be mistaken for this grave sign, as it is never preceded by the imperfect strokes. However, in some dyspeptics the halt is so well marked as to be plainly and painfully remarked by the patients themselves. Much needless suffering has been caused this unfortunate class of patients by the hasty diagnosis of heart disease. I recall the case of a wealthy lady of this city, a great sufferer from atonic dyspepsia and this

form of abrupt halt, who, for years, was in constant dread of sudden death. In spite of my frequent assurances that her stomach and not her heart was the viscus affected, she could not quite believe that her former medical advisers were all wrong, and I alone right, for, "can I not feel my heart stop?" she would often say. During one of her trips north, I prevailed on her to consult that chief among diagnosticians, DaCosta. Since that time, ten years ago, she has learned that flatulence by pressure on the tendinous portion of the diaphragm can cause tumultuous action of the heart as well as complete intermittency.

Dr. Dehio of Dorpat claims that most cases of bradycardia are due to nutritional changes in the automatic nerve centers in the heart, dependent probably on local sclerosis of the branches of the coronary arteries leading to such centers. As shown by Dr. J. W. Ogle (London *Lancet*, February, 1898) in four cases reported by him to the London Pathological Society, the bradycardia was associated with thickening of the endocardium and fibrinous deposits mostly at the bases of the ventricles. The bradycardia of true angina pectoris is nearly always associated with sclerosis, calcification or ossification of the coronary arteries themselves, or else a similar condition at or near the aortic opening. This condition renders the prognosis very grave, and calls for promptness in lowering arterial tension, in toning up the cardiac musculature, and in anticipating cerebral ischemia. The prompt administration of such remedies as nitrite amyl, trinitrin and strychnia, with the continued use of the iodids, fulfil such requirements. All vasoconstrictors, such as ergot, digitalis and quinin, should be studiously avoided. Morphia should be given, *if at all*, with the greatest caution.

In this connection it might be well to call attention to the cardiac ganglia imbedded in the auricles. These ganglia are intimately connected with the sympathetic nervous system. They are purely sensory, and have no motor fibers. Romberg and His have demonstrated in the heart muscular transition fibers that pass directly from the auricles to the ventricles, and the rhythmic action of the heart is now believed to be entirely dependent upon the contraction of these muscular fibers, and is not due, as was generally held, to the cerebrospinal or sympathetic systems. The action of the heart is therefore automatic. Uremia is responsible for a considerable number of cases of bradycardia. These cases are markedly benefited by rest, a milk diet, warm baths and abundance of pure water. The great majority of cases of bradycardia are due to diseases of the cord and brain. In these cases the prognosis is hopeless. The prognosis in other cases depends upon the cause—toxæmias, neuroses, reflex, and convalescence from various diseases, etc.

The cause, taken in connection with the dynamics of the heart, should enable you to prognosticate accurately. Given a slow pulse, accompanied, upon slight exertion, by vertigo from cerebral anemia, cyanosis and dyspnea, your prognosis must of necessity be grave; but, on the other hand, as long as the slow, strong beats of the heart supply all wants of brain and body, the prognosis is favorable. However, it can be stated broadly, that arrhythmia is usually of grave import. Occurring in children in connection with fever, it is strongly suggestive of tuberculous meningitis.

The unequal pulse always demands a guarded prog-

nosis, as it usually denotes an aneurysm involving the root of the subclavian artery, although it may be due to obliteration of the radial by injury or by some growth making pressure on the vessel. At other times it is purely neurotic.

It is beyond the scope of this paper to enter into details in reference to the many varieties of pulse and their significance. I have endeavored but to point the way and to remind all general practitioners of medicine that "the proper study of mankind is man," and the more thorough our study of man, the more competent and successful practitioners we will become. I would not dissuade any of the younger members of the profession from the alluring fields of bacteriology, for medicine is under lasting obligations to the careful students of the lower forms of life, but let us never forget that it is by the art and not by the science of medicine that we gain our reputation, and, incidentally, our livelihood. All can not be celebrated botanists, chemists, neurologists, bacteriologists and pathologists. Let us take unto ourselves the homely proverb, *ne sutor crepidam judicaret*. By availing ourselves of the labors of these men in special fields we will profit greatly; but our success as practising physicians, now, as formerly, will depend upon our close observation of all that concerns *homo hincanus*.

Charles Darwin was astounded at the instantaneous and immense reputation his "Origin of Species" brought him. He tells us in his modest way that he had done nothing but *observe* closely; aye, there is the secret, he had *observed*, closely, accurately, scientifically, the minutest detail. As in natural history, so in medicine. How many of us have eyes, yet see not; ears, yet hear not? Shakespeare spoke truly when he said: "Most poor things point to rich ends." There are men in our calling who have studied so carefully the stomach of the mosquito that they are able to tell you all the reasons why the malarial hematozoon prefers that particular viscus of that particular dipter to that of its gregarines or coccidia. This is all very interesting and scientific, but we do not treat gastric catarrh of the mosquito. By close observation of the laws of health and disease, we all may become qualified to practice the art of medicine successfully. It is a well-known fact that the treatment of many diseases, notably pneumonia, tuberculosis, malaria and pertussis, has not been crowned with better results since the microscope has introduced to us the Lilliputian armies that cause their pathology; nor have the most successful practitioners been those best versed in the pure realms of science. The close observers have always, in every age, been the most successful physicians. With Oliver Wendell Holmes I say:

How blest is he who knows no meaner strife,
Than art's long struggle with the foes of life.

A CASE OF ADIPOSIS DOLOROSA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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In a paper read before the Philadelphia Neurological Society in 1891, Henry¹ reported the case of a married woman, 63 years old, in whom, at the age of

¹ *Journal of Nervous and Mental Disease*, March, 1891, p. 154.

49, somewhat circumscribed, painful, fatty swellings appeared successively in various parts of the body. The patient was an immoderate drinker and had had epileptiform convulsions frequently in infancy. Menstruation had begun at 11 and had ceased abruptly at 35. Sensibility was impaired in proportion to the deposition of fat. The case was described as one of *myxedematoid dystrophy*, and for the condition the designation *paratrophy* was proposed. In a paper read before the American Neurological Association in 1888, Dercum² reported the case of a widow, 51 years old, in whom the arms began to enlarge at the age of 48 or 49 and were the seat of pain. Back, shoulders, arms and sides of the chest became the seat of huge pendulous masses, firm yet elastic, in places finely lobulated and feeling like bundles of worms. Menstruation had begun at 15 and had ceased abruptly at 35. Microscopic examination of a bit of tissue removed from one of the swellings disclosed the presence of only fat and connective tissue. The case was described as one of *subcutaneous connective-tissue dystrophy* associated with symptoms resembling myxedema. In a subsequent communication Dercum³ reports in greater detail both of the foregoing cases, together with a third, describing them as "three cases of a hitherto unclassified affection resembling in its grosser aspects obesity, but associated with special nervous symptoms," and proposing for them the name of *adiposis dolorosa*. The third of these cases occurred in a widow, 60 years old, who had for many years had soft, fat-like masses or swellings in various parts of the body that were painful to touch. Cutaneous sensibility was diminished and the patient was demented. Death resulted from gradual failure of vital force and the thyroid gland was found to be enlarged, indurated and calcified. Death occurred also in the first of these cases and the thyroid was found likewise indurated and calcareous, although small.

In the article on *adiposis dolorosa* in "A Text-book on Nervous Diseases by American Authors,"⁴ Collins refers to six cases under the observation of Peterson and Loveland and to one under his own observation. He states that all of the cases but one occurred in women from 40 to 60 years of age; that in but one could a specific or alcoholic history be ruled out, and that in all a neuropathic predisposition was evident.

In a consideration of the treatment of myxedema, cretinism, exophthalmic goiter, obesity, etc., with thyroid extract, Ewald⁵ refers to the case of a man, 47 years old, weighing 217 lbs., who presented a puffy appearance, with thick masses of fat about the nipples and the umbilicus and upon the neck, and pains resembling those of neuritis. Perspiration was scanty and the condition was suggestive of myxedema, though wanting in the characteristic features of this disorder.

Spiller⁶ has reported three cases of *adiposis dolorosa*, all in women, two unmarried and aged 25 and 65 respectively, and the other married and 45 years old. In the first there were both diffuse enlargement and distinct painful swellings, with paroxysmal exacerbations. Menstruation was normal. In the second case the patient began to grow stout at 40, when menstruation ceased. For thirteen years there had been pain in the lower extremities, and for two years in the fatty

tissue of the limbs and trunk, with paroxysmal exacerbations. The obesity had increased markedly since the advent of the latter pain. There were tenderness and pain on palpation, manipulation and pressure, and no anesthesia. The fatty accumulation was marked on the thighs, the calves, the abdomen, the nates and the back, and also in the arms, though less in the forearms and absent from the feet and the hands. There was no special deposit of fat and no pain in the face or neck. The isthmus of the thyroid was exceedingly small. The third patient had been corpulent for twelve or thirteen years, following the birth of her last child. Pain had been present for years, recurring in paroxysms. Swellings appeared beneath the skin of the lower extremities, at first small, then larger and finally diminishing in size. Sensibility was preserved and the face was not involved. Improvement followed massage and the administration of thyroid extract. A cross-section of muscle from one of these cases showed no appreciable deviation from the normal, except perhaps a slight enlargement of the nuclei.

To this small number of cases I am able to add a further one, and also the notes of a case kindly placed at my disposal by Dr. Dercum:

M. G., a married white woman, 48 years old, was admitted to the medical department of the Philadelphia Hospital June 6, 1896, and shortly afterward the following facts were elicited: Her mother had been dropsical and had died at the age of 86. Her father and one brother had been killed in war. Two other and older brothers were alive and well. A sister also was living at the age of 60 years. Another sister had died in a dropsical state. The sister and one brother were said to be stout, but within ordinary limits. A maternal great-grandmother also had been unduly stout. The patient related that she had suffered from attacks of erysipelas of the lower extremities on four different occasions, the first at about the age of 30, the second six years later, the third at some forgotten time after, and the fourth a year before coming under observation. She had borne five children, all delivered instrumentally. Of these one had died during birth and another of diphtheria; of the remainder one boy and one girl were spare and a daughter of 28 was stout. Her husband had died of pneumonia eighteen years previously. Menstruation had begun at the age of 13 years and had been regular and painless until the age of 41, recurring thereafter with increasing frequency and being attended with excessive hemorrhage. At the age of 35 the patient is said to have broken down from overwork and worry. At this time twitchings were observed, and a sense of such movements had persisted thereafter. After an interval of uncertain length the woman noticed enlargement of the abdomen. Then the lower extremities became involved, the increase in size extending gradually and progressively over the entire body, with the exception of the face and the hands and the feet. The patient had suffered a good deal from pains in the back, especially in the sacral and interscapular regions. The pain was intermittent and had set in with the accumulation of fat. For more than two years there had been a more or less constant sensation of beating in the head, and for a year or more ringing in the ears. There was no vertigo, and auditory perception was good. The appetite was preserved; it had never been excessive, and the patient had no preference for, nor had she indulged in, special kinds of food. There was at times nausea and occasionally vomiting, the ejected matters sometimes containing blood. For more than a year the patient had been helpless, being compelled to lie abed and unable to move about. She occupied two single beds in the hospital and was scarcely able to help herself in any way.

On examination at the time of admission to the hospital heart and lungs were found to present no abnormality. The face was scarcely larger or fuller than that of a person of ordinary size. The circumference of the neck was 17 inches, of the bust 60 inches, of the waist 53 inches, of the abdomen 70 inches, of the arm above the elbow 21.5 inches. The temperature, taken for months at a time, adhered to the normal level; the respirations fluctuated between 18 and 32, averaging perhaps 24; the pulse ranged between 68 and 108, averaging about 84. The urine, examined repeatedly, displayed a specific gravity between 1019 and 1028 and, other than the presence of a small number of leucocytes, exhibited no deviation from the

² University Medical Magazine, December, 1888, p. 140.

³ American Journal of the Medical Sciences, 1892, p. 521.

⁴ Edited by Dercum, Philadelphia, 1895, p. 898.

⁵ Berliner klinische Wochenschrift, Jan. 21, 1898, p. 268.

⁶ Medical News, Feb. 26, 1898, p. 268.

normal. On examination on June 18, 1897, the hands were observed to be well nourished, but of ordinary size. The circumference of the forearms above the wrist was 7.25 inches, below the styloid processes 6.6 inches. At the elbow there were marked creases on the dorsal and palmar aspects. The circumference 1 inch below the flexure was on the right 13.75

der.. The fat of the neck was not markedly increased. The breasts were large and extensive, though flat, falling in huge apron-like folds. The right appeared to be larger than the left and its pigmentation was the more pronounced. The mammillary areolæ were marked, and also the tubercles. The circumference of the trunk at the waist was 41 inches, at the level of the



inches, on the left 12.5 inches. There was only a small growth of hair in the axillæ. The mid-humeral circumference on the right was 16.5 inches, on the left 16 inches. The upper extremity was strikingly conoidal in form, with the base at the shoul-

sacrum 59 inches. The distance from the olecranon process of the ulna to the styloid process was 10 inches, from the acromion to the olecranon 13.75 inches. The circumference at the middle of the thigh was 31 inches. The distance from the outer

margin of the patella to the external malleolus was 16 inches and to the outer extremity of the inguinal fold 17 inches. The circumference at the middle of the leg was 17.5 inches. The right foot was 9.75 inches long, the left 10.25 inches. The surface of the skin was mottled, purplish and cyanotic on the right side of the body, on which the patient lay. The heart sounds were quite clear and distinct. The tongue was broad, fissured and tremulous; the patient stated that it had always presented a similar appearance. The ears were not enlarged. The thyroid gland could not be felt. The hair was soft and unctuous. The skin also was soft, and perspiration was free. The masses of fat yielded a cord-like sensation to touch, and manipulation elicited tenderness. The patient had received varied treatment, without appreciable effect. For a time desiccated extract of thyroid gland was prescribed, 5 grains twice daily, but in a short time the patient declined to take the medicament, complaining, among other things, that she had been poisoned by some of the drugs she had received. Subsequently she developed pronounced delusions and it became necessary to remove her to the department for the insane.

ladder and wounded the right leg above the ankle with a rusty nail. Symptoms of lymphangitis developed, from which recovery ensued. Three months later the left leg was wounded as the result of a fall and it became inflamed and increased in size. The enlargement extended upward, and in a short time the right leg also began to increase in size. The hyperplastic parts became the seat of cracks and fissures and indolent recurring ulcers. The illustrations accompanying the report show great enlargement of the legs, thighs and abdomen, with immense buttocks, full shoulders, while the face, feet and hands were relatively small.

As an instance of a further anomalous form of *obesity* may be mention a case reported by Adler,⁸ occurring in a mulatto, 53 years old, with a syphilitic history,



While it may be objected that this case is lacking in some of the symptoms of *adiposis dolorosa*, as laid down by Dercum, it will be conceded that it is unlike an ordinary case of obesity. The principal accumulations or deposits are nearest the trunk and they hang in conspicuous folds, while the degree of incapacitation for the simplest activity is extreme. Pain has not been a prominent symptom and we have no knowledge of paroxysmal variations in the degree of enlargement, but the patient's memory was not reliable and her statements were at times wanting in positiveness. The case is in some respects not unlike one reported by Laidlaw⁷ as an example of *elephantiasis*, occurring in a woman, 45 years old, who in the performance of some laborious task at the age of 27, suffered an injury of the abdomen near the umbilicus. The cutaneous and the subcutaneous tissues of the affected parts became reddened, swollen and infiltrated. The acute symptoms soon subsided, leaving well-marked hypertrophy, which gradually diminished. Two years later the left leg became covered with scales and enlarged, and the abdominal condition grew gradually worse. Seven years after this the woman fell from a

but with none of obesity in the family, who presented an enormous growth in the middle line at the back of the neck, two smaller bilateral masses symmetrically situated in the occipital region, another in the middle line below the chin forming an immense dewlap and extending up into the parotid regions, one in each groin absolutely symmetrical and projecting forward as well-rounded swellings. A more diffuse fatty deposit was present on the arms and forearms. There was one unilateral tumor over the left rectus muscle above the level of the umbilicus. The several growths were movable and free from pain, while the overlying skin was tense and unadherent.

I am indebted to Dr. Dercum for the following notes:

A married woman, 36 years old, in excellent health and free from physical abnormality, while standing in the aisle of a trolley car, was thrown to the floor as the result of a collision with a heavy wagon and at once became unconscious. She was sent home in a carriage and was subsequently unable to move without assistance. Later she was able to sit up in a rolling-chair and got about with the aid of crutches. A miscarriage took place fourteen days after the accident. The patient suffered greatly from pain. When examined, a year after the accident, she could not stand without assistance, although she could

⁷ Jour. of Am. Med. Ass'n, vol. xxvii, p. 145.

⁸ Pacific Medical Journal, September, 1893, p. 529.

walk with the aid of crutches. Superficial pressure over the spine in the lower dorsal, lower lumbar and sacral regions and also over the coccyx induced pain, and deep pressure over the muscles of the back of the trunk in the lower dorsal and lumbar regions on the left side, and in less degree on the right side, elicited tenderness. Similar tenderness was noted also on the left side of the chest. Transmitted shock caused pain referred to the lumbar region, flexion of the trunk pain referred to the same region, and especially lateral flexion to the left. Attempts to extend the legs, with the patient seated on a chair, induced pain referred to the back of the legs and thighs. The knee-jerks were exaggerated. There was some analgesia of the left arm, left leg and left side of the trunk, but no inflammatory or ovarian tenderness, and no limitation of the visual fields. Upon the left forearm there were found seven or eight small swellings, varying in size from a small marble to a walnut, soft to the touch and apparently made up of fatty tissue. These were exceedingly painful and tender on pressure. The patient was positive that they had made their appearance some six weeks after her accident, when she became aware of the presence of several slightly swollen and tender places upon the left forearm. These had increased in size and continued to be painful. The patient suffered from occipital headache, from a sense of constriction of the head, from vertigo, at times from ringing in the ears and from backache, relieved by the recumbent posture. She slept badly, having difficulty in getting to sleep and being disturbed by frightful dreams. She felt worse in the morning on arising than at night on retiring. She suffered from indigestion and chronic constipation. Palpitation of the heart was frequent, especially after unpleasant dreams. Micturition was increased in frequency, particularly at night. Perspiration was induced by slight exertion. On examination, some nine months later, it was found there had been some subsidence of the symptoms indicative of spinal strain. The painful masses upon the left forearm were still present and had undergone no appreciable change in size. There were now noticed, in addition, several large, diffuse swellings upon the lower portion of the back and in the sacral region. These were soft and painful and tender on pressure, and like the others, although larger.

As defined by Dercum,⁹ *adiposis dolorosa* is a disorder characterized by irregular, sometimes symmetrical, deposits of fatty masses in various portions of the body, preceded or attended with pain. It appears about middle life or later and the larger number of cases have occurred in females. In some there been an alcoholic history, in others a syphilitic history; in still others rheumatism may have been an etiologic factor; further, traumatism may be a provocative agency. Nothing more definite, however, can be said of the etiology. The principal manifestation is the presence of masses of fatty tissue of variable size, sometimes exceedingly large, variously distributed upon the trunk and the extremities, and the seat of pain sometimes spontaneous, sometimes induced by pressure or manipulation. The affection may set in with pain of neuritic character and the swellings may undergo increase of size in paroxysms attended with exacerbations of pain. The new fatty tissue has a boggy, soft, at times pultaceous and wormlike, feel. Face, hands and feet are not involved. In some cases sensibility is impaired. The skin exhibits no gross changes. Hemorrhages from mucous surfaces have been observed in some cases. The disease is essentially chronic, with a tendency to be progressive in course. The morbid anatomy consists, so far as is known, in an increase of fatty and connective tissue, with degenerative changes in nerves. The thyroid gland has been found indurated and calcareous. The disorder differs from other forms of obesity in the presence of pains and sometimes of impaired sensibility; and from myxedema in the freedom of face, hands and feet and in the absence of the pronounced mental and trophic manifestations of that disease. In treatment good results may be expected from administration of thyroid extract and from massage.

SOME CONSIDERATIONS OF THE SYMPTOMATOLOGY IN THE DIAGNOSIS OF TABES.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. M. AIKIN, M.D.

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OMAHA, NEB.

About two years since, a physician doing a large practice in general medicine, impressed me wonderfully with the statement that seven cases of locomotor ataxia had come under his observation and treatment during the preceding three months. Of these, five had completely recovered, one died after three weeks' illness, from inability to swallow food, and one was convalescent. My disbelief in the curability of tabes induced me to seriously consider the *alleged* prevalence of the malady as truly alarming, whereupon I began investigating vital statistics from several of the large cities of the United States, and found that in the whole number of deaths reported as due directly to some form of nervous disease, only about 1.2 per cent. was accredited to locomotor ataxia. Reviewing some cases neurologic in character, that I was permitted to observe and treat during the five years preceding 1897, the shortest period for observation in any one case being one year, I was unable, in seventeen out of twenty-three alleged cases of locomotor ataxia, to verify the diagnosis.

The observation of symptoms in disease is quite as necessary as the accumulation of evidence in a legal case, and a knowledge of their meaning is certainly no less imperative in forming right conclusions, than is the action of a judicial mind in estimating the value of testimony in a case at law. Moreover, clinical evidence in disease is quite as truthful as testimony at the bar, while microscopic findings certainly can not be more liable to error than twelve jurors, each exposed to ulterior influences.

During the past few years, the surprising advance of medical minds in the pathogenesis of nerve tissue per se is without a parallel in any branch of medicine, or period in its history. I therefore proceed—with a confidence maintained not alone by self-gleaned facts, but supported by truths, the authenticity for which many medical men in this ASSOCIATION deserve honorable mention—to assume that neurologic medicine has established a basis from which a proper estimate of the evidence, in at least the more common diseases of the nervous system, may render serious mistakes in diagnosis unpardonable.

The activity shown by American physicians recently, in placing before the public so many excellent text-books and essays, treating especially of the features of nervous diseases, gives assurance irrefutable that those already in active practice have easy access to the latest information on this class of diseases.

The American propensity to observe, and inquire into the meaning of the thing seen, has placed him as a leader of the world in his observation and knowledge of the phenomena of the nervous system. Clinical evidences in individual instances of nervous diseases presenting varying symptoms, are accumulating and must accumulate until, by comparison and elimination, we arrive at the characteristics of a type, as has years since been done by internal medicine in

⁹ Twentieth Century Practice, vol. xi, p. 554.

some of the exanthematous diseases—e.g., measles and scarlet fever—which shall be accepted and accorded a place in medical nomenclature.

Early observers discovered and recorded symptoms indicative of some grave disorder of the nervous system, but not until about half a century since was any exact account given locating the pathology productive of these symptoms in the spinal cord, thereby elevating the group to the dignity of nosologic consideration, and ten years later the name "locomotor ataxia" was coined. This term was an unfortunate one, in that it fails to convey anatomic location, or character of the neural changes, but further, in that it does afford the incompetent or careless observer a convenient peg on which to hang every case of nervous phenomena presenting sensory disturbances with pain, or difficulty of locomotion unless by constantly watching the placing of the feet. If perchance, too, the knee-jerk is absent, the testimony closes and the label "locomotor ataxia" is attached.

No member of this ASSOCIATION would venture a diagnosis on the foregoing clinical history, but I doubt not many physicians present have seen and treated patients whose lives had been rendered more miserable by long-continued treatment for locomotor ataxia, when in reality they were suffering from some other, and possibly curable, malady of the nervous system. The chronicity, too, of tabes, carrying the patient through periods of time measured only by months and years to the full development of its clinical picture, may so separate the sign-boards along the route, as to allow the most experienced clinician an opportunity for error in conclusions; whereas in our observation of acute diseases such errors are less likely, because we are accustomed to reviewing the whole course of the malady in a few days, or at farthest weeks, of time. No other chronic disease of the nervous system is so much talked about by the laity, lawyer or incompetent physician, and like ovaritis and appendicitis, the frequency with which tabes is diagnosed gives cause for doubts as to a right observation and interpretation of symptoms. The indefiniteness of the name enhances its popularity, and the chronicity of the malady makes it a convenient receptacle for all symptoms suggesting cord disease, the incorrectness of which may be difficult to demonstrate. Moreover, the cerebral vagaries and spinal symptoms incident to a depreciated condition of the nervous system may cause—not alone in the inexperienced physician—a suspicion of tabes, thereby casting an irreparable gloom over the mind of a person afflicted with the modern and euphonious neurasthenia.

Early recognition of tabes is desirable not alone in our treatment, but for prognosis; yet the wider our observation of cases, the greater is our surprise at the multiplicity of the symptoms and their order of appearance, often causing the most accurate observer some anxiety in making a diagnosis, until he has made repeated examinations, or can at one sitting get a complete and intelligent clinical history covering a long period of time; for until degeneration has begun in the cord, symptoms presenting indisputable evidence of the malady are wanting. The sensory symptoms, so often preceding any motor manifestations, are frequently regarded as rheumatic, and if accompanied by digestive disorder with occasional vomiting, may cause our attention to be fixed on chronic gastritis with muscular rheumatism. We would be surprised at our easy transition to a different conclusion, if on

closer examination we have revealed to us a fact, that the pains are confined to the lower extremities, intermittent in time, and lancinating in character; while the vomit appeared at intervals wholly independent of the time when food was taken, and was not immediately preceded by nausea or gastric distress. In the event of such evidence, we may justly suspicion a case of tabes. Moreover, symptoms essential to the complete clinical picture, but as yet not fully developed, or having appeared, are forgotten or considered by the patient as being wholly unimportant, may be brought into view by a careful retrospective history of the case. If the ataxic condition is uppermost in the patient's mind, and is especially annoying during his nocturnal excursions, he may be entirely unconcerned about the occasional darting pains in the bladder, bowels, rectum or anus, and ready to explain the paroxysms of dyspnea or motor impairment of the glottis as a result of "a little cold," but in the absence of pulmonary cardiac, cystic or bowel disease, such symptoms having existed or now present should form collateral testimony of positive value in the tabetic. If peripheral limitation of vision is noticed, the onset being rapid, then gradually retarding in progress until months pass before perceptible changes in the field of vision are noticed, the seeming stay of progress should not lend strong hopes for a favorable issue, since gray degeneration of the optic nerve in tabes is first rapid, then retarded, and usually centripetal in course. Pupillary reaction to light is lost. As between the hyperesthesias, anesthetics, paresthesias and pains of tabes, we may rightly regard the latter as the earliest to appear, most annoying in character, and persistent in duration. They are lancinating, come without warning, and are prone to greater severity at night, but unaccompanied by febrile disturbance and not of the short duration commonly seen in the early stage of a multiple neuritis. Impairment of sensation, though most frequent and of greatest severity in the lower extremities, may first appear elsewhere.

In the records in my case-book, appears the evidence in the case of a physician under my care for four years, whose early pains were in the back and hip muscles; he also complained of a sense of constriction of the body, but unmarked by a zone definitely localized. If anesthesia be present in any case under observation, it is interesting to note its extent, for in tabes it will invade the deeper tissues as well, and muscular contraction by the electric current, or the pains of pleurisy, may be unfelt. Another point of great value in differential diagnosis is the presence of inco-ordination of movement, without loss of motor power; this is a characteristic of tabes, and may for months or years precede all sensory disturbance.

Again, the early manifestations of motor disorder may have been so lightly considered by the patient as to have escaped his notice, or been forgotten when suffering from subsequent lightning pains; this can be easily accounted for, because motor power was not impaired, but the evidence is of paramount importance when we remember that ataxia in tabes differs in nowise from inco-ordination incident to combined lateral and posterior column sclerosis, but in this latter, a history of muscular weakness, with *early* exaggeration, then subsequent loss of knee-jerk, is the rule, whereas in tabes increased knee-jerk never occurs, and its disappearance is an early symptom.

Absence of the knee-jerk and the existence of ataxia.

are essential features in the clinical picture of tabes, yet their appearance in so many non-tabetic affections of the nervous system tends to nullify their importance in differential diagnosis, unless they are stable, and supported by other evidence.

Articular enlargement, pointed out by Charcot and insisted upon as frequently an early symptom, has been verified by several medical gentlemen of note, and merits our careful observation, as its presence may be the one symptom needed to the unfolding of a true case of tabes. I have been unable to verify, and am unwilling to accept as true, the statement recently current in several medical journals, that absence of pain in the popliteal space, on extension of the leg with extreme flexion of the thigh, is an early and positive proof of tabes; since the same clinical effect may be produced by a traumatism or disease limited to the anterior crural nerve. If of differential diagnostic value at all; its existence must be bilateral. Moreover, the absence of knee-jerk as a common factor in either affection cancels its diagnostic value, while motor weakness and muscular wasting—if present—negative any tabetic assumption. In a large percentage of tabetics the ataxia is a late symptom, and in such cases it is doubtless true that the lancinating pains are more constantly accompanied by optic atrophy and arthropathies.

Localized sweating was a noticeable feature in two cases under my observation. The first was unilateral in extent, the second was limited to the face, neck and arm of one side. The first one of these was seen by Dr. C. K. Mills of Philadelphia, who verified our diagnosis and noted this peculiar vasomotor disturbance. That this symptom belongs peculiarly to tabes remains an open question, for other cord or spinal nerve root affections may find *direct* expression in the same symptom or through the sympathetic system. In either case its differential diagnostic value becomes void.

THE THERAPEUTIC VALUE OF THE VARIOUS ANTI-MALARIAL AGENTS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. R. GILBERT, M.D.
DALLAS, TEXAS.

Under this title we must at least give a limited number of drugs a hearing, though it be near impossible to consider each that has been given as an anti-malarial agent, for most, if not every drug found in the materia medica, has at some time received credit for its anti-malarial effect upon the human economy.

Before we enter upon the therapy of the subject of malaria, we should know what the pathology of the trouble is, so that we may intelligently administer those remedies that will the earliest counteract or destroy the pathologic condition that exists, with the least detriment to the human organism.

We know that when a person is inoculated with this bacillus malarie, he will surely have a malarial fever. While there is a slight difference in the germs that cause the various forms of malarial fever, they are practically the same, for the agent that will destroy one will also destroy the other. There have been a variety of opinions expressed as to how this organism enters into the blood. Some are earnest advocates of the avenue of entrance being the air-passages, and others the alimentary canal. And those who calmly

sum up all of the evidence and weigh it well in the balance, must be forced to the conclusion that the malaria bacillus enters both by the lungs and alimentary canal. One may become infected from water, another from food; and he who sleeps in a low altitude inhabited by this germ will most surely become the victim of this familiar disease, malaria.

Since we know what our condition is, when to look for paroxysms, and their cause, the next thing to consider is whether we can find, in our great armamentarium, an agent that we can diffuse into the blood of our patient, which will destroy the bacillus, and at the same time not do material damage.

When we look over the past, we find the housewife and the physician both endeavoring to administer to the wants of the wretched mortal who is apparently trying to shake the cords out of the old bed. One in his or her effort is drenching the poor sufferer with hot teas when he is already afire, another giving some herb that *they say* is good for *chills*. On and on they went, until at last, by mere accident, the great specific was discovered.

There are but few diseases for which we possess anything near a specific, but to the great relief of suffering humanity, we have ever ready in our armamentarium that drug which, when administered so that it may become diffused into the blood, will destroy the *bacilli malarie*, and do no hurt to the cells that go to make up the human body. This drug that is known in every household is *quinin*. Now, since we have a specific for the disease in consideration, it only remains to consider how it should be administered to attain this end and the helpful adjuvants, and last but not least, what we are to do when the patient's idiosyncrasy positively prohibits the use of our great boon to humanity.

Quinin, the great prime agent, has been administered in many different ways, and every recent textbook gives the various methods of administration and suggests the best way of administration, and those who are without experience in treating malarial fevers will find there are those minute points of technic that are only acquired by experience that they must learn.

I will say nothing of the way to administer this drug by the stomach, because I can add no more than all good, recent authors have laid down as rules to follow. I will make a few suggestions on the two much-neglected methods of quinin administration, viz., hypodermic and intravenous. It is only to those who live in the intensely malarious districts that these two methods will be of much interest practically, for stomach administration will suffice in all mild cases, as this drug will be taken up by assimilation; but when the physician is called to see a patient with a malarial paroxysm that is commonly called a congestive chill, and perhaps has reached that state of malarial hematuria and hematemesis where absorption or assimilation through the natural avenues is impossible, we must then reach our conclusion very rapidly for the bacilli malarie are causing such a combustion in the blood that the life of the individual will soon be gone, unless we can introduce into the blood that agent which will destroy the bacilli.

Hypodermic use first suggests itself to us, and when we take the soluble salts of quinin, such as the muriate, we can usually get enough of the drug into the circulation to destroy the great adversary. But sometimes we are too late to depend upon even the hypodermic injection into the subcutaneous tissue, for

death is so near at hand that the circulation is not sufficient to carry the drug into the volume of blood of the body from the capillaries. In this our dire extremity, if we inject a quantity, say a half-dram, into a vein, and use circulatory stimulants, we may often rob the grave of a victim.

The great object to be ever kept in view, for all know how to administer, is that if you can get this great germ-destroyer into the blood in time, where the germ of malaria is only found, you can save that poor mortal from an untimely grave. Then it becomes our duty to familiarize ourselves with the methods of hypodermic and intravenous medication.

For those who have the idiosyncrasy for quinin we will find salicin and salicylate of soda of great advantage. When given in large doses, it will have quite a satisfactory result. But fortunately for all, we seldom find a patient who will not stand some of the salts obtained from the Peruvian bark.

In old chronic cases it is necessary to give something else attention beside the disease germ. For after a person has long been the victim of malaria, he is sure to suffer from some weakened organ that has received the brunt of the burden in carrying the great and complex machine through the siege of poison that has been pouring acid on the polished plates and rusting the surface until it has overworked and loaded up the liver, kidneys and spleen, until a few more months among this poison would return them whence they came. This brings us, not to anti-malarials, but to that part of our armamentarium marked alteratives, and from them we select those best suited to the individual case. Arsenic and iodine will often be our selection, for in them we find that while we restore organs to their natural function we brace and tone up the nervous system, that has been shaken around for months, and made subservient to all emotional and outside influences.

There are other alteratives that will to some degree answer our purpose, but those are exceptional cases where arsenic and iodine will not render most good in chronic malaria. So, in our summing up of the therapeutic value of various anti-malarial agents, there are few drugs we need consider. We have the specific for the malarial poison, and by closely studying the complications and administering to them properly, we will relieve many who now suffer from crippled organs caused by long-continued malarial fevers.

TREATMENT OF CONGENITAL TALIPES

Presented to the Section on Diseases of Children at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY HARRIET E. GARRISON, M.D.

DIXON, ILL.

As I am not an orthopedic surgeon, in assigning me the task of preparing a paper upon the treatment of congenital talipes our worthy secretary has given me a burden which I feel unable to carry. What I desire to present to this society are the results obtained in the immediate treatment of the very few cases of congenital talipes which have occurred in my obstetric practice. It does not usually fall to the lot of a country practitioner to have many cases of congenital talipes, but we meet them occasionally at the most unlooked-for times and places, and it behooves us to be prepared for the unexpected.

One of the great benefits to be derived from a country practice is the necessity for alertness to recognize

and preparation to cope with any form of disease or surgical emergency, for at the time there is the greatest demand there is the least opportunity to procure a skilled specialist. Unless a physician is willing to give patient study to every branch of medical science he should never become a country doctor. For twenty years I practiced obstetrics in my general country work without meeting a case of talipes, and then in fifteen months I had three cases.

Case 1.—I was in the country, six miles from my office, and although I bathed the child I did not notice anything abnormal. The second day the father visited my office to tell me he thought one of the baby's ankles was out of joint. I immediately visited the child and found the right foot abducted to the third degree of talipes. There must have been an increase in the abnormal position since my visit or I could not have failed to notice it in the bath. The abduction had produced luxation of the joint, as I could feel the articulating surface of the tibia grate upon the os calcis and astragalus as I made gentle pressure on the joint with thumb and forefinger of the left hand, while I slowly drew the foot into position with my right hand. The foot and leg had previously been bathed in very warm boracic acid solution and, while held in position slightly adducted, was bandaged lightly with a narrow gauze roller bandage from the toes to near the knee. The bandage was then dampened and a little plaister-of-Paris dusted over it and allowed to dry while the foot was held in position. The dressing was left in position two weeks and then was removed by the mother. The mother was directed to keep watch of the baby's toes, that they remained the right color, that there might not be any danger from the pressure; and she was instructed how to apply gentle massage to the joint and adductor muscles every day after the bandage was removed. I did not see the child until it was nineteen months old, when it was brought to my office for treatment for the ankle, which was swollen and tender, from a wrench which had been given it by the child catching its foot in between two boards. The faithfulness with which the mother had carried out the massage treatment could be seen in the superior development of the muscles of the right leg over those of the left. There was still slight extension of the foot on the ankle, but not as much as in the left leg. The child had walked from the twelfth month. This extension of the foot on the ankle and a slight tendency of the shoes to wrinkle on the inside was all that remained of the talipes. As the child was wearing cloth buttoned shoes I advised a well-fitting pair of leather, laced, and if these wrinkled, to have the inside further strengthened by a piece of stiff leather.

Case 2 was five miles in the country in another direction from No. 1, and was a case of talipes calcareus, with the extension surface of the toes resting against the foreleg; this was accompanied by flat foot. The outer and inner extensor tendons of the foot were contracted until they stood out like whipcords, and the deformity seemed due to this contraction and a little displacement of the fourth tarsal bone. The foot could be easily brought into position, which was all the treatment given on the day of birth, with direction to the nurse to draw it into position whenever the baby received attention. As there was no improvement on my visit the second day, I replaced the tarso-metatarsal articulation, applied a pad of folds of gauze over the joints and bandaged from toes to above the ankle while the foot was in correct position. This held the foot properly and the nurse was directed to keep it on as long as it stayed in place; but to notify me as soon as there was any appearance of displacement of the foot. I saw no more of the child until it was over five months old, when I went to the house for the purpose of inspecting the foot, and could not tell which foot had been deformed, as they were both straight and used with the same freedom and correct movement.

Case 3 was double equino-varus of the first degree, complicated with bow-legs and knock-knee. As the child was given in care of a trained nurse, and as she did not think the condition serious enough to need any attention, nothing was done until the child was a month old, when I was called to clip the frenum linguae for tongue-tie. At this time the mother called my attention to the fact that when the baby contracted its feet they turned in and never out. I pointed out the curvature in the legs and tendency of the knees to come together and advised a system of massage to strengthen the muscles of the legs. In the course of six weeks, the mother told me, that the feet were just as likely to turn out as in when flexed. At the present time, six months later, the legs are very much straightened and there is no appearance of talipes.

It hardly seems worth while to dwell on the probable cause of this condition in the three infants, but the same factor was present in all three—mothers below the normal and fathers tall. This was especially noticeable in Case 3, as the mother's regular weight is 95 pounds and father's 175. The child weighed 8 pounds and was 19 inches long. Cases 2 and 3 both had a prominent vertebra. The twelfth dorsal vertebra was prominent, as though the spine might have been sharply flexed at this point during intra-uterine life. In these cases the mothers were instructed to apply extension to the spine every night by placing the child across the knee with the shoulders and hips suspended and at the same time to apply gentle massage the full length of the spine and legs. I have never found a mother who was too careless or lacked sufficient intellect to apply the massage systematically, after the benefits to be derived from it had been explained.

In the treatment of congenital talipes my experience leads me to believe that the earlier it is begun the more easily the balance between the antagonizing muscles is restored and that every child's feet should be critically examined to see if the muscle-balance is even, and if not, efforts to restore it should begin immediately.

RECENT EXPERIENCES IN MILITARY SURGERY AFTER THE BATTLE OF SANTIAGO.

ON BOARD THE HOSPITAL SHIP "RELIEF," JULY 22, 1898.

WOUND INFECTIONS.

Military surgery is no more nor less than emergency surgery in civil practice. The surgeon in daily practice has learned long ago that every accidental wound must practically be regarded and treated as an infected wound. In this respect the military surgeon of today has the advantage over his colleague in civil practice in knowing that the small caliber bullet inflicts wounds which *per se* are more often aseptic than septic. Our recent experience in Cuba has shown that the small jacketed bullet seldom carries with it into the tissues clothing or any other infectious substances. Most of the wounds of the soft tissues, uncomplicated by visceral lesions, which in themselves would become a source of infection, healed by primary intention in a remarkably short time. If infection followed it usually did so in the superficial portion of the wound in connection with the skin, and what is more than suggestive, the wound of exit was more frequently affected than the wound of entrance. This can be readily explained from the larger size of the wound and more extensive laceration and tearing of the tissues. In many of the cases ideal healing of the wound did not occur, owing to a subsequent limited superficial suppuration of the wound. The deep tissues were seldom implicated in such cases. I have reason to believe that some of the compound fractures which are now suppurating had such a source of infection, that is, the extension of a superficial infection to the seat of fracture. Two weeks have now elapsed since the battle of Santiago was fought and we are now in a position to inquire more critically into the manner in which the wounds became infected. The many failures in protecting the more serious wounds against infection are attributable to three principal causes: 1. Inadequate supply of first dressing. 2. Faulty application of first dressing. 3. Unnecessary change of dressing. The medical officers with the regiments and in the field hospitals were hampered in their work by an insufficiency of proper material. The rapidity with which the invasion was planned and executed, the difficulties encountered in transporting the hospital supplies to the front and the unexpected large number of wounded readily explain the lack of dressing material when

it was most needed. Many of the dressings were too small and not sufficiently secured to keep them in place in transporting the wounded from the front to the field hospitals. As a rule, not enough attention was paid to the immobilization of the injured part, an important element in securing rest for the wound and in guarding against displacement of the dressings. It is a source of regret that plaster-of-Paris dressings were not more frequently employed in the treatment of gunshot fractures of the extremities. Another very palpable evil in causing infection was the too common practice of unnecessary change of dressing. The transfer of patients from one surgeon to another could not be avoided. Patients brought from the first dressing station to the field hospital usually were subjected to a change of dressing and, when a few days later they reached the General Hospital at Siboney, they had to undergo the same ordeal and often not only once, but as often as they came into the hands of another surgeon. Patients not thus treated were dissatisfied, as the laymen are still laboring under the erroneous impression that the oftener a wound is dressed the quicker it will heal. It is difficult to eradicate such a deep-rooted and time-honored belief, and patients will continue to clamor for a change of dressing, and the good-natured, hard-working surgeons only too often yield to such unreasonable requests. The evil of middlemost surgery has become very apparent during our brief Cuban campaign and has taught us an important lesson that must be heeded in the future. Our military surgeons must learn to realize the value and importance of first aid dressing. In all cases where the first examination does not reveal the existence of complications which require subsequent operative treatment the diagnosis tag should convey this important instruction: "*Dressing not to be touched unless symptoms demand it.*" Such instruction is significant and must be followed to the letter by all surgeons in subsequent charge of the patient.

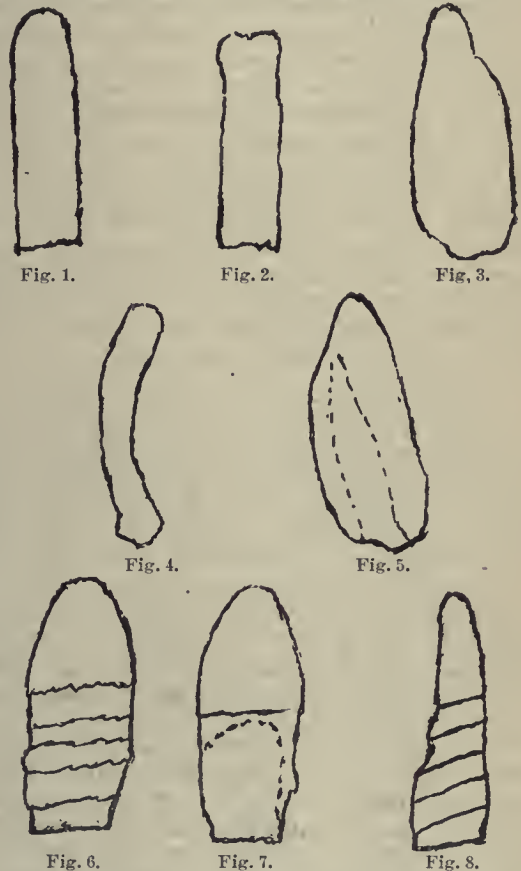
I am satisfied more than ever of the necessity of including in the first-aid dressing package an antiseptic powder. For years I have used for this purpose a combination of boracic acid and salicylic acid, 4:1, with the most satisfactory results. I am also partial to sterile absorbent cotton for this particular purpose, as it constitutes a more perfect filter than loose gauze. A teaspoonful of this powder dusted on the wound forms with the blood that escapes and the overlying cotton a firm crust, which seals the wound hermetically. Should the primary dressing become saturated with blood, the same powder should be dusted over the wet dressing, and an additional compress of cotton is added to the dressing. After the first dressing has been applied it should not be removed except for good and substantial reasons. Much can be done in the after-treatment in the way of adjusting the bandage and in immobilizing the injured part, but the first dressing must remain unless local or general symptoms set in which would warrant its removal. Malaria and yellow fever, that crept in upon us so insidiously, are responsible for many unnecessary changes of dressing. The appearance of fever in a wounded man naturally leads to the suspicion that there is something wrong in the wound. Many dressings were changed on this ground, nothing abnormal was found in the wounds, and a day or two later the nature of the fever was recognized and the patients were either given quinin or were sent to the yellow fever hospital, in accordance with the diagnosis made. *Every change of dressing, more especially in military practice, is attended by risk of infection and must be scrupulously avoided, unless local or general symptoms indicate the existence of complications which demand surgical intervention.* In writing the above it is not my intention to cast any reflection on the work of our surgeons; on the contrary, I willingly bear witness to the ability, faithfulness and unselfishness with which they have done their duty. A better and more conscientious group of medical officers it would be difficult to select anywhere. The results on the

whole are excellent, but I am hopeful that they can be improved in the future by placing more stress and attention to the value and importance of the first dressing, and wish to repeat again and in a most forcible way the language of the late Professor von Nussbaum: "*The fate of the wounded rests in the hands of the one who applies the first dressing.*" If this is true in civil practice, its meaning can not be misinterpreted in military surgery.

EFFECTS OF BULLETS ON THE SOFT TISSUES.

In recent cases the small tubular wound made by the Mauser bullet was surrounded by a narrow zone of contused tissue, and the wound space itself filled either with liquid or coagulated blood. A few days later the wound itself was found surrounded with an area of suppuration, which varied in extent according to the nature of the tissues and the amount of extravasation. In cases in which the bullet passed through the tissues some distance, and not far from the surface of the skin the location and direction of the wound canal was indicated by discoloration of the skin a few days after the injury occurred. In a number of cases of aseptic wounds in which the bullet had lodged in the tissues and was removed a week or ten days later, I had an opportunity to study the remote effects of the injury on the tissues. In all cases the swelling of the tissues at this time had nearly or entirely obliterated the tubular wound, the location of which was indicated by a dark discoloration, parenchymatous extravasation, remains of fluid or coagulated blood, and a limited area of edema and infiltration. These conditions served as a useful guide in following the course of the bullet. The bullet itself was usually found loose in a small cavity filled with liquid blood or blood serum, while a more extensive zone of infiltration indicated the early stage of encapsulation. I have no further doubt but what the new bullet will become encapsulated and remain harmless in the tissues, as readily or more so than the old-fashioned leaden bullet. In isolated cases late suppuration at the seat of the bullet resulted in the formation of a circumscribed abscess, a complication which aided the surgeons in locating, finding and removing the missile. It was a surprise to us all to find that in more than 10 per cent. of all the wounded, the bullet was found lodged in the tissues, a vastly greater number than we had any reason to expect. The reason for this became apparent when we began to study the condition of the bullets removed. A large proportion of the bullets removed were found deformed, showing that they were deflected bullets, which had struck a hard object or passed through a resisting medium before they reached the final object for which they were intended. The ground upon which the battle was fought is stony and covered with trees and thick underbrush, furnishing the most favorable conditions for deflection of the missiles. Some of the firing was done at a great distance, so that occasionally a spent ball was found in the soft tissues without injury of the bones. Such a bullet is shown in Fig. 1. The bullet is a nickel encased Mauser projectile, natural size, the jacket perfect, and was removed from behind the tibia about four inches above the ankle joint. It entered the calf of the leg below the popliteal space and never touched the bone. Fig. 2 represents the same kind of a bullet, the point flattened and mushroomed, removed from the head of the tibia. This bullet was probably fired from a great distance, and the deformity was produced by the bone. Figs. 3, 4, 5, represent a nickel-clad bullet very much deformed. It was found lodged in the deep tissues of the thigh about two inches from the wound of entrance, slightly overlapping the femur near the middle of the shaft. The bullet evidently struck a stone behind its point, and was deflected before it entered the tissues. It was much flattened and curved. Fig. 3 shows the convex side point of bullet and jacket perfect. Fig. 4 shows the edge and curve of the bullet. Fig. 5 represents the convex side, showing a wide rent in the jacket indicated by the dotted lines, the lead exposed between them. Figs. 6, 7, 8, illustrate

the deformity of a large caliber brass-clad bullet. As the bullet was removed from the soft tissues from a wound without bone injury, the deformity must have been caused outside of the body. The bullet is flattened on one side from a point near the tip to near the base of the lead core. Fig. 6 shows the convex side; behind the last transverse groove the lead is exposed. Fig. 7 illustrates the flattened side of the dotted line, indicating a defect in the brass jacket. Fig. 8 shows the margin of the bullet, and the location and extent of flattening. As the Spanish army is armed exclusively with the Mauser rifle, the weapon from which this bullet was fired must have been in the hands of a volunteer, or possibly a Cuban.



THE VALUE OF THE X-RAY IN MILITARY PRACTICE.

The use of the probe as a diagnostic instrument in locating bullets in modern military service has been almost entirely superseded by dissection and the employment of the X-ray. If from the nature of the injury and the symptoms presented the bullet is located in a part of the body readily and safely accessible to the knife and it is deemed advisable and expedient to remove it, this can often be done more expeditiously and with a greater degree of certainty by enlarging the track made by the probe in finding and on the forceps in extracting the bullet. If, as is often the case, the whereabouts of the bullet is not known, its presence and exact location can be determined without any pain or any additional risks to the patient by the use of the X-ray. All of the bullets removed on board the hospital ship *Relief* were located in this manner. Dr. Gray, an expert in skiagraphy, who has charge of the scientific work of the floating hospital, has been of the greatest service to the surgeons in enabling them to locate bullets and in guiding them as to the advisability of undertaking an operation for their removal. His large collection of skiagraph pictures will also furnish a flood of new light on the effects of the small caliber bullet on the different bones of the body. Dr. Gray's work will constitute an essential and enduring corner-stone of a much-needed modern work on military

surgery. The skiagraph has enabled us to diagnosticate the existence or absence of fractures in a number of doubtful cases in which we had to depend exclusively on this diagnostic resource. In fractures in close proximity to large joints the X-ray has been of the greatest value in ascertaining whether or not the fracture extended into the joint. In one case of gunshot wound at the base of the thigh in which the bullet passed in the direction of the trochanteric portion of the femur, opinions were at variance concerning the extent of injury to the bone. Some of the surgeons made a diagnosis of fracture while others contended that there was no fracture but believed that the bullet had made a deep groove in the anterior portion of the bone and had possibly opened the capsule of the joint at the same time. The X-ray picture clearly demonstrated the absence of fracture and the existence of a deep furrow with numerous fragments on each side. The X-ray apparatus also proved of the greatest practical utility in showing the displacement of fragments in gunshot fractures of the long bones, which enabled the surgeons to resort to timely measures to prevent vicious union. The fluoroscope has greatly added to the practical value of skiagraphy. In the light of our recent experience the X-ray has become an indispensable diagnostic resource to the military surgeon in active service, and the suggestion that every chief surgeon of every army corps should be supplied with a portable apparatus and an expert to use it, must be considered a timely and urgent one.

THE WOUNDED OF THE BATTLE OF SANTIAGO.

It will be of interest to the profession to learn something definite of the nature of the wounds and their more remote results on the victims of Spanish bullets in the battle of Santiago. Two weeks have passed away since the battle. A considerable number of the wounded have died since, and many have left for the United States on the *Olivette*, *Solace* and transport ships. Among the 130 wounded now on the way to their homes on the hospital ship, *Relief*, I have selected a number of cases of more than usual interest, for the purpose of studying the effects of the small caliber bullet, immediate and remote, on the different organs and regions of the body. It is my intention to give the course of the bullets by marking on the diagrams accompanying the report of each case, the wound of entrance and exit. A study of the diagrams will show that deflection of the bullet in the body is exceptional. As a rule, the wound canal was in a perfectly straight line from one wound to the other. By following the track of the bullet it is not difficult to determine the organ or organs implicated in the injury. I shall classify the cases so as to embrace gunshot wounds of 1, the head; 2, the neck; 3, the spine; 4, the chest; 5, the abdomen; 6, the extremities.

GUNSHOT WOUNDS OF THE HEAD.

To my own knowledge, a number of gunshot wounds of the head that survived long enough to be transported to the general hospital at Siboney, died within twelve days after the receipt of the injury. In all of the cases intracranial infection was the immediate cause of death. Encephalitis and leptomenigitis constituted the fatal complications. The beginning of the intracranial inflammation was always announced by cerebral hernia, which in size was proportionate to the extent and intensity of the inflammatory process. The surgical treatment resorted to in most instances proved powerless in limiting the infection. If these cases had been studied with a little more care during life, and if postmortem examinations had been made more frequently, valuable material could have been obtained for the advancement of the as yet imperfectly developed science of cerebral localization.

Case 1.—Fred Shockley, Company D, Tenth Cavalry, wounded July 2. When injury was received the patient was lying on his abdomen with chest and head extended at the base of the ridge occupied by the enemy, which position readily

explains the unusual course of the bullet. The bullet struck the occipital base at a tangent, producing a comminuted fracture with depression; it then made a deep groove in the back of the neck and then re-entered the body on a level with the first rib to the left of the seventh cervical vertebra, passed through the chest and escaped in front through the second intercostal space, a little to the left of the mammary line (Fig. 9). Soon after the injury was received he coughed up a

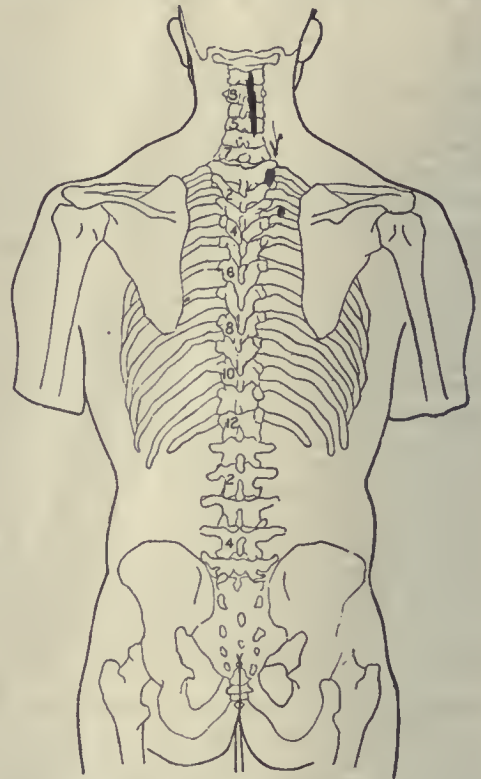


Fig. 9.

small quantity of blood; no hemorrhage since or any indications of pneumothorax, pneumonia or pleuritis. The chest wounds healed by primary intention. At first had convulsions for a few moments; no loss of consciousness, but clonic spasms of both arms. At present intellect is unimpaired; has some headache and a sensation of throbbing in the head; some impairment of motion and sensation of right leg and complete loss of motion of toes of right foot; has some pain in eyes and slight dimness of vision.

Case 2.—Patrick Ward, Company I, Third Cavalry, admitted from hospital at Siboney to hospital ship, *Relief*, July 11. Injury probably received in the same manner as in Case 1. A large defect in the occipital bone marked the wound of entrance and exit in the skull, the opening enlarged by operation. The

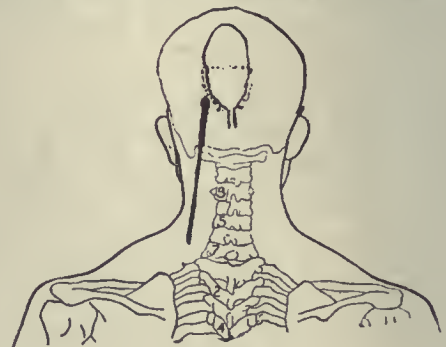


Fig. 10.

linear wound below, and extending as far as the last cervical vertebra, was undoubtedly made in following and removing

the bullet. The cranial defect and course of bullet are outlined in Figure 10.

A cerebral hernia projects from the opening, and a deep-seated cerebral abscess was recently discovered, opened and drained. In part the hernia is covered by skin. Both parietal bones are the seat of a comminuted fracture. Mental faculties not impaired; no focal symptoms. The patient is losing strength rapidly and will soon succumb to the intra-cranial lesion.

Case 3.—Jerome Russel, Company A, Thirteenth Infantry, was wounded July 1. When brought on board the *Relief* a cerebral hernia about the size of a hen's egg was found over the sagittal suture, an inch in front of the occipital protuberance. The wound was suppurating, and digital exploration revealed a small circular opening directly in front of the occipital protuberance. This opening was evidently the wound of entrance, and by operation, had been connected with the wound of exit by a channel an inch in length and half as wide. The hernia occupied the wound of exit. A number of loose fragments of bone have been removed at different times. There is marked hemiplegia on the left side, the forearm is strongly flexed and in close contact with the chest. Sensation is not diminished; speech clear, but ideas confused; pupils react to light; incontinence of urine; extensive decubitus over sacrum; temperature 100.5 degrees F.; pulse and respiration normal.

Case 4.—B. C. Parker, Company C, Fourth Infantry, was wounded July 1. The bullet entered the left temporal region, comminuting the bone in that region extensively, and escaped over the left frontal eminence (Fig. 11). The cranial defect was increased by the removal of a number of loose fragments. There had been quite a profuse sero-purulent discharge from

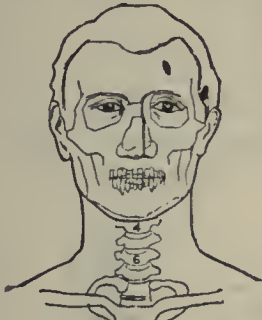


Fig. 11.

the wound. The only focal symptom consists in a pricking sensation in the right foot or chest when the wound is being dressed. His mind is clear most of the time, occasionally slight confusion and wandering. The absence of cerebral hernia in this case is the surest indication that the infection is local.

GUNSHOT WOUNDS OF THE NECK.

Case 5.—Lieut. Albert Scott, Company C, Thirteenth Infantry, on July 1, while standing with his company at the

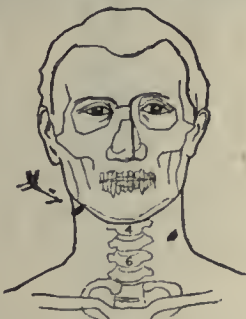


Fig. 12.

foot of a hill, during the advance on Santiago, received a wound in the neck. The bullet entered the neck on the right

side just below the inferior maxillary bone, one inch in front of the angle of the jaw. The wound of entrance is a clean cut hole about the size of a lead pencil. The course of the bullet was backward and slightly downward, emerging at the back of the neck on a level with and to the left of the fifth cervical vertebra (Fig. 12).

At the moment the injury was inflicted he felt no pain in the wound, but he experienced a sensation as if he had been grasped by the wrists and thrown violently to the ground. The wound of exit is of the same size and appearance as the wound of entrance. Very slight hemorrhage. A few minutes after receiving the injury he was carried from the firing line by members of his company, and was soon transported to the First Division Hospital, where he remained for ten days, after which he was removed in an ambulance to the hospital at Siboney, a distance of seven miles over a very rough road, and a day later was transferred to the *Relief*.

He first became aware of the existence of the wound on the way from the field to the hospital. At the time he came on board the hospital ship he was voiceless, and made constant efforts to clear his bronchial tubes of mucus. Complete paralysis of right arm and leg, and partial loss of power in left arm and leg. Respiration normal, but an almost constant spasmodic cough, no control over sphincters, involuntary passages from both bladder and bowels, great debility and profuse sweating; complains of pain all over the body. Morphina and atropin given to subdue pain. A radiograph taken by Dr. Gray shows an injury of one of the cervical vertebrae, probably the fifth. Injury seems to be to the left of the body of the bone. Has received no treatment other than complete rest and a nightly anodyne as noted above, which secures a good night's sleep, and markedly diminishes the sweating. Has regained control of the sphincters, and is able to use bed pan and urinal.

July 19.—During the past six days there has been a decided improvement in the general condition of the patient. He is brighter in appearance, he can articulate more distinctly, and there is a decided return of power in the right leg. The right hand is still absolutely powerless, but the grip of the left hand is decidedly stronger. Appetite and circulation good.

July 21.—Improvement in general condition still continues. The external wounds healed by primary intention, and the scars can only be seen on making a very careful inspection. Trional and eulphonal have been substituted for the morphina.

Case 6.—Oscar C. Buck, Company F, Second Infantry, was shot by a sharpshooter hiding in a tree, July 11. The bullet

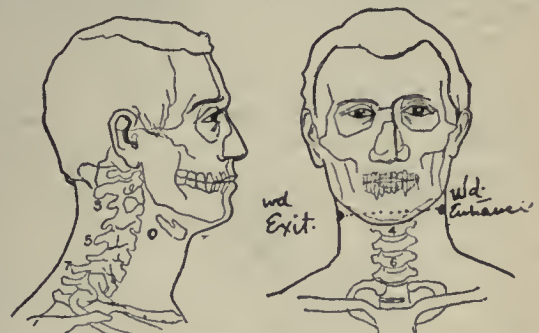


Fig. 13.

passed through the neck from side to side. The first and only evidence the patient had that he was injured was bleeding from the throat, the hemorrhage at first being quite profuse. Stiffness of the neck and pain on movement have been the only symptoms complained of since. The bullet entered over the sterno-cleido-mastoid muscle on the left side, about two and one-half inches from the mastoid process. The wound of entrance was circular and very small; the wound of exit on the same level but about half an inch nearer the spine (Fig. 13)

Three days later a small superficial abscess formed in the wound of exit, which was evacuated by dilating the wound. Both wounds were perfectly healed July 20. Judging from the course of the bullet it is difficult to understand how the principal nerves and large vessels of the neck escaped injury. This is one of those cases that require careful watching, as a traumatic aneurysm may develop later in the throat if the bullet injured the external tunics of either of the carotid arteries.

Case 7.—Charles F. Flickinger, Company C, Fourth Infantry, was wounded July 1, while lying down. The bullet entered the left posterior cervical triangle on a level with the spinous process of the fifth cervical vertebra, midway between the spine and the posterior border of the sterno-cleido-mastoid muscle, and emerged opposite the spinous process of the

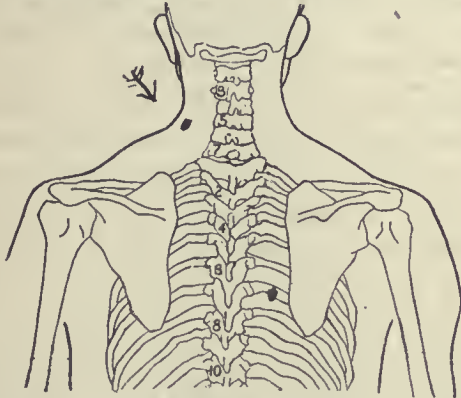


Fig. 14a.

seventh dorsal vertebra, and equidistant from that point and the posterior border of the scapula (Fig. 14a). The patient complains of severe pain in shoulders on attempting to move, but is free from any symptoms that would indicate any injury to the spinal cord. He was within 100 yards of the enemy when he was wounded.

GUNSHOT WOUNDS OF THE SPINE.

All cases of gunshot wounds of the spine in which the cord was seriously damaged have died, or will die in the near future. The immediate cause of death in such cases is either a septic leptomeningitis or sepsis and exhaustion from decubitus. Death from the first named cause takes place early as the result of infection of the wound and extension of the inflammation at the seat of the visceral injury along the meninges and surface of the spinal cord. The first case of this kind I saw was at El Caney a few days after the battle of Santiago. The patient was a Spanish prisoner. I found him lying on the bare stone floor of the village church. The bullet had entered over the center of the spine at the junction of the dorsal with the lumbar vertebrae, its course apparently being directly forward. Complete paraplegia below the seat of injury. The bladder was distended, nearly reaching the level of the umbilicus; incontinence of urine. The neck, trunk above the wound, and upper extremities rigid; fever; pulse rapid and small, countenance extremely pale. The wound was protected by a small dirty dressing, and was suppurating. I doubt not that the patient died in less than twenty-four hours after I saw him. Wounds of the spine without injury to cord were frequently attended by temporary paralysis varying greatly in degree and duration.

Case 8.—George Kelly, Company C, Seventeenth Infantry, was shot July 1, while lying in a prone position. The bullet, which was fired from a blackhouse on the summit of a hill, at a distance of about 600 yards, entered the body at a point a little below and at the middle of the right ilium, and emerged from the opposite side about three inches below the crest of the left ilium (Fig. 14b). The patient asserts that he suffered intense pain immediately after he was shot, and that he is now free from pain except when he attempts to walk. The pain

thus caused he refers to the sacro coccygeal articulation. The wounds are healed, and the absence of paralysis is the best evidence that the contents of the spinal canal escaped injury, although the bullet must have passed transversely through the first sacral vertebra.

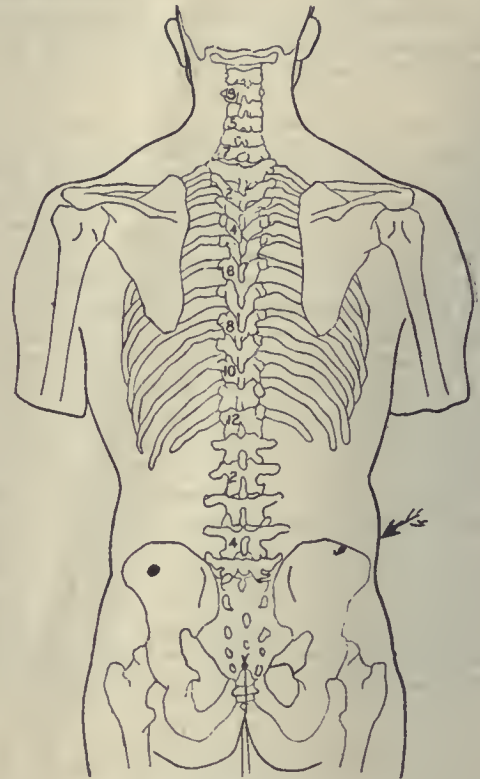


Fig. 14b.

Case 9.—John Robinson, Company C, Twenty-fourth Infantry. The bullet entered the supraspinous fossa of left scapula and escaped from the right lumbar region, having perforated

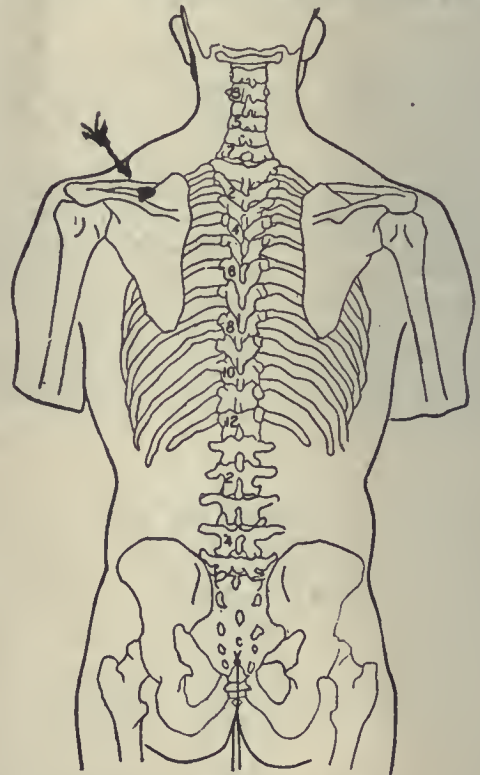


Fig. 15.

in its long course the lung, spinal cord, diaphragm and liver

(Fig. 15). Wounds healed in ten days. Expectoration bloody, complete paraplegia. Beginning extensive decubitus over sacrum and spinous processes.

Case 10.—Otto Derr, Company A, Twenty-first Infantry, was wounded July 2. Bullet passed through the chest from side to side from the post-axillary line on the right side to a corresponding point on the opposite side, on a level with the seventh intercostal space. Complete paralysis of motion and sensation below the seat of spinal injury. The wounds healed, but life was threatened at the time from a commencing septic decubitus.

Case 11.—Lewis W. Carlisle, Company K, Seventy-first New York Volunteers, was hit by a shrapnel in the back, on a level with the third lumbar vertebra, shattering the spinous and left lateral processes of the same. The missile was removed as soon as the patient reached the Division Hospital. As profuse suppuration set in and continued, the patient was anesthetized July 18, and a number of fragments of bone removed. A large abscess cavity in the right lumbar region communicated with the wound. The cavity was drained by making a counter-opening in line with Simon's incision. Impaired sensation in the right leg was the most important local symptom in this case.

Case 12.—Charles J. Reardon, Company C, Sixteenth Infantry, was wounded by a fragment of shrapnel which struck him as he lay on his back with his shoulders raised ready to fire. The wound was directly over the spine, on a level with the fourth dorsal vertebra, the missile evidently opening the spinal canal and injuring its contents. The foreign body remains imbedded in the tissues; its location so far has not been determined. Paraplegia is complete below the level of the umbilicus. On July 18 the patient was still alive, but an extensive moist decubitus became the direct cause of death in the course of a few days.

GUNSHOT WOUNDS OF THE CHEST.

It is well known that during the Civil War men had a better chance for life when the bullet passed through

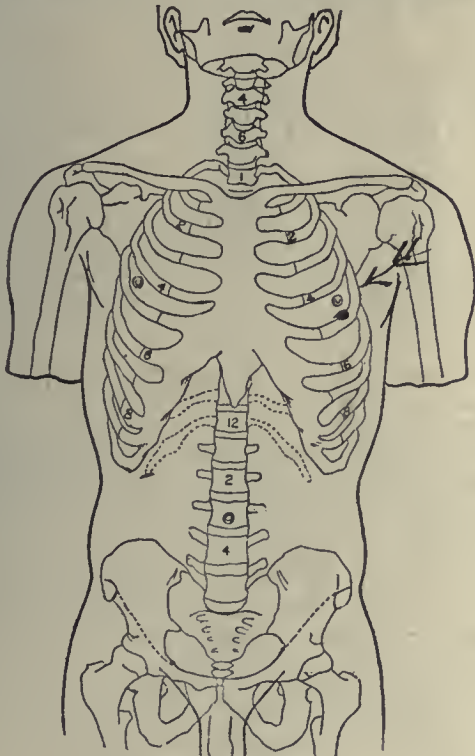
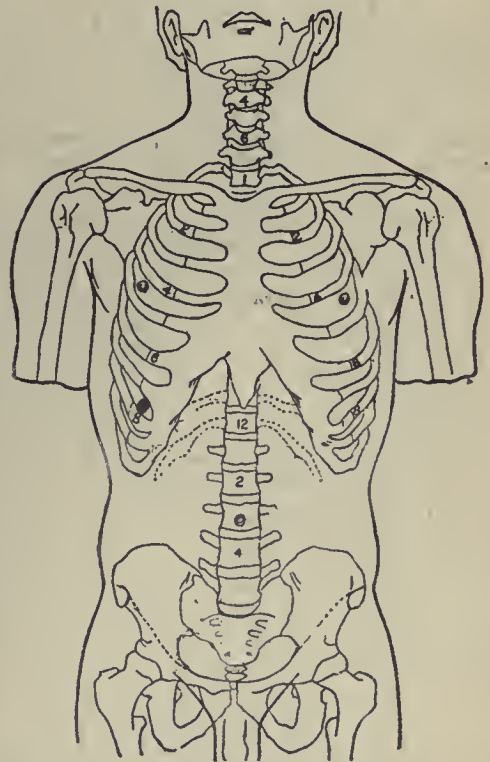
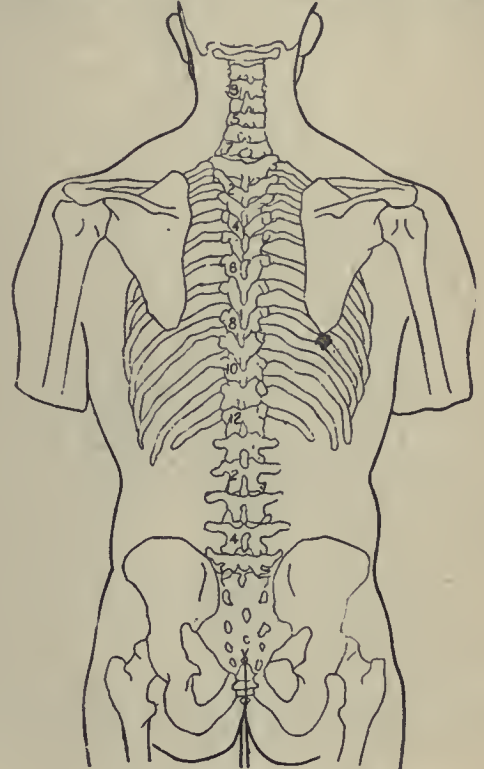


Fig. 16.

the chest than when the chest was opened and the ball removed. The same remains true now, although not to the same extent, as the small caliber bullet is less likely to carry with

it into the chest clothing or other infective material. The number of cases of chest wounds that lived long enough to reach the hospital on the coast is still more astonishing, and what is surprising is the fact that unless the hemorrhage was



Figs. 17.

severe the symptoms were mild, some of the patients being confined to bed only for a few days. All of these cases were treated on the expectant plan, i.e., by dressing the external wound or wounds in the usual manner. In no instance was the pleural cavity opened for the purpose of arresting the hemorrhage.

Case 13.—Wm. A. Cooper, Company A, Tenth Cavalry, was wounded July 1. The bullet entered an inch below the left nipple, and escaped from the body an inch below the costal arch in the mammary line (Fig. 16). It is questionable whether the bullet opened either the pleural or peritoneal cavity, as the injury was not followed by any symptoms referable to visceral

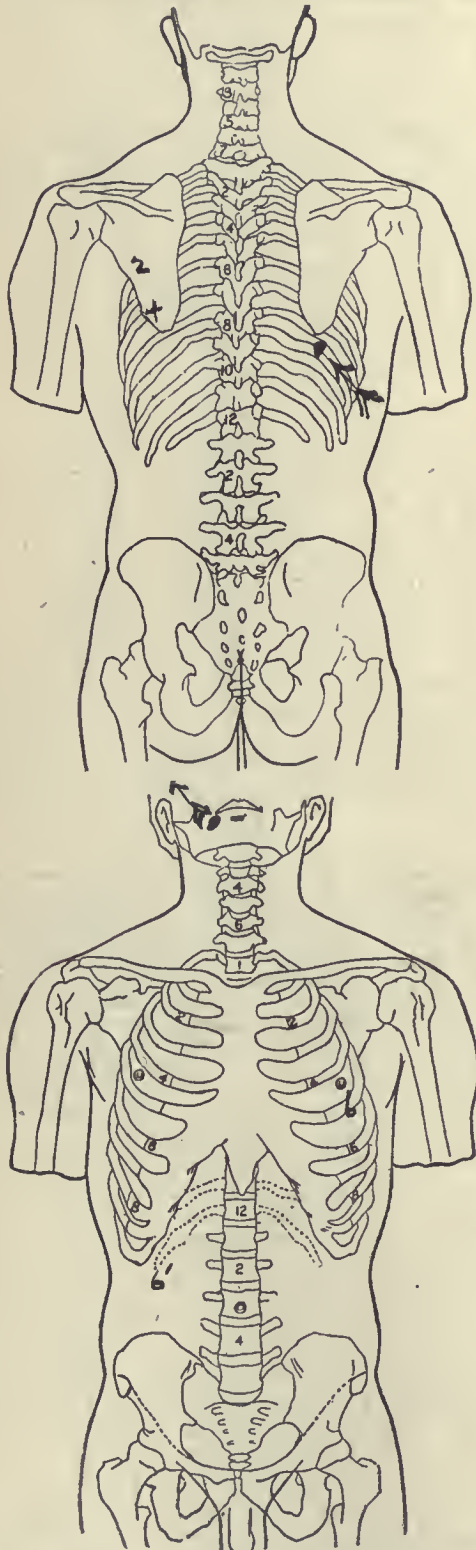


Fig. 18.

wounds of the chest or abdomen, although the course of the bullet was such as to give rise to the suspicion that either or both of these cavities might have been invaded.

Case 14.—Edward O'Flaherty, Company C, Sixteenth In-

fantry, was wounded July 2 by a 45-caliber ball from a bursting shrapnel. The projectile entered below the angle of the right scapula, passed through the lung, diaphragm and liver, lodging beneath the skin in front, between the seventh and eighth ribs (Fig. 17). Bloody expectoration for some time and slight rise in temperature.

July 12.—Temperature normal.

July 21.—Patient suffers but little inconvenience from his wound. No peritoneal or pleural effusion. General condition promises an early and complete recovery.

Case 15.—John B. Semca, Company G, Twenty-second Infantry, was wounded July 1, by a bullet which entered his back just below the angle of the left scapula, passed upward through the lung, neck and jaw and emerged through the alveolar process of the right bicuspid tooth, cutting the tongue slightly (Fig. 18). All wounds healed in a short time by primary intention. Hemoptysis profuse immediately after he was shot, and slight for the following few days. Left arm at first nearly powerless, with desquamation of skin of the hand. Function of the arm is returning gradually. In three weeks

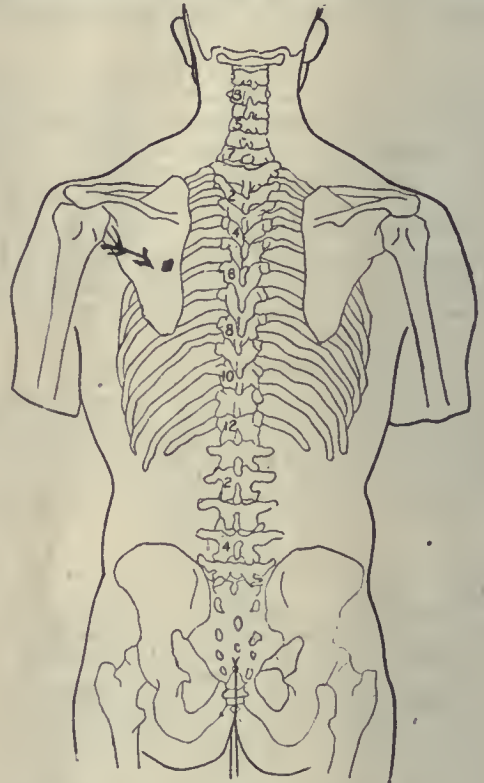


Fig. 19.

the patient was able to sit up for a short time each day. Physical examination of the chest at this time revealed nothing abnormal.

Case 16.—Winslow Clark, Company G, First Volunteer Cavalry, was wounded July 1, by a bullet which entered the chest by first perforating the left scapula through the infraspinous fossa, three inches above the angle and a inch from the spinal border (Fig. 19). No wound of exit. The probable course of the bullet was downward and forward. Some hemoptysis and fever. No vomiting of blood. The hemothorax was quite extensive and was relieved by tapping, a week after the injury. He is now (July 22) convalescing rapidly.

Case 17.—Arthur Fairbrother, Company C, Third Cavalry, sustained a perforating gunshot wound of the chest July 1. The bullet entered the chest just below the middle of the right clavicle (Fig. 20). No wound of exit. Hemoptysis rather profuse, followed by hemothorax. Has had fever, off and on, probably malarial. Patient was admitted to the *Relief* July 15. Wound not completely closed. On coughing, dark fluid blood

escapes. Nearly the entire pleural cavity filled with blood. Two days later three pints of dark fluid blood were removed by tapping and siphonage. Sputum at this time still bloody.

July 22.—Patient much improved. No signs of empyema. Hemothorax diminished, but may require a second tapping.

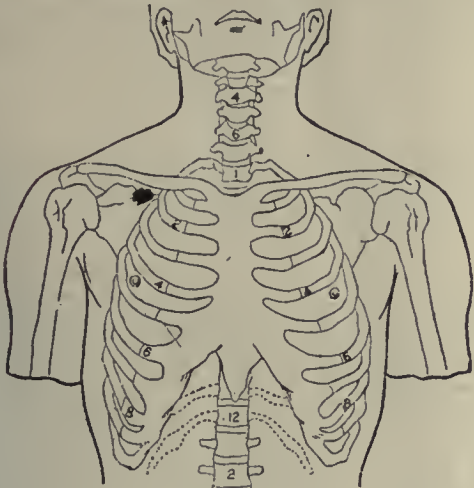


Fig. 20.
(To be continued.)

SOCIETY PROCEEDINGS.

Chicago Ophthalmological and Otological Society.

Regular Meeting held in the Stewart Building, Oct. 11, 1898.

Dr. COLEMAN occupied the chair. He exhibited a patient on whom he had performed Mule's operation some two weeks before, and who had been wearing the artificial eye for two days. The excursion of the eye is 25 degrees up and down, and 20 degrees out. The operation was followed by very little reaction, which he ascribed to the cauterizing of the inner wall of the sclera with 95 per cent. carbolic acid, and the free use of hot water.

Dr. HOTZ had examined many cases of Mule's operation, and found that practically the only advantage was that the sulcus in the upper lid under the brow was less deep than in the ordinary enucleation; that the movements of the artificial eye over the Mule's globe were not any greater than in ordinary enucleations.

Dr. CASEY A. WOOD had done Mule's operation twice. In one case the glass ball was promptly extruded, and the other case was lost sight of, so that the result was not known. He concludes that inasmuch as the thing that seems to be desired, i. e., the prominence of the prosthesis, is the principal source of subsequent danger from pressure, there is very little in the procedure to recommend over a proper enucleation or evisceration. He referred to the aluminum frames exhibited by Bryant at the meeting of the AMERICAN MEDICAL ASSOCIATION in Denver.

CONGENITAL DISTICHIASIS.

Dr. CASEY A. WOOD presented two cases, father and daughter. Both patients exhibited absolutely normal lids apart from the supernumerary cilia. In both cases the second row is of fine white hairs, on the inner margins of both lids, few of them impinging on the cornea. The latter is free from opacity and the conjunctivæ are practically normal. Occasionally some lashes touch the corneal surface and have to be extracted. There is a plain history of both patients having exhibited the condition from early infancy.

Dr. HOTZ had seen a case in which there was a row of eyelashes coming out directly from the posterior lip of the margin, faint, fine-looking hairs protruding from the lid about one-eighth of an inch. These were easily extracted, and were found to be quite long and seemed to come from the Meibomian ducts. After being pulled a few times they ceased growing. He suggested that electrolysis be tried in Dr. Wood's cases.

Dr. WOOD stated that he had intended to try the use of nitric acid inserted into the base of the lash by means of a fine toothpick. He had found it less painful and more thorough than electrolysis.

UNUSUAL INTOLERANCE OF MYDRIATICS.

Dr. HOTZ had seen a patient, 60 years old, in August, suffering from an attack of iritis. He had a previous attack some five years before, and had used atropin at that time. He had suffered more severely from the effects of atropin than from the iritis. The symptoms during this attack were characteristic, and in spite of the previous experience Dr. Hotz dropped scopolamin in his eye several times within an hour. The pupil dilated slowly and irregularly, and the redness of the eyeball was less, but the lids were edematous and swollen. The pupil was not well dilated, and duboisin was prescribed instead of scopolamin. This had the desired effect upon the pupil, but the lids were much swollen; the conjunctiva discharged a good deal of mucus; the skin of the cheek was much puffed, and at places serum exuded. Within twenty-four hours the whole right side of the face was intensely swollen; the skin furrows were deep and eroded, and crusts of dried secretion were found everywhere. The symptoms of iritis subsided very rapidly and the duboisin was stopped. Within twenty-four hours the swelling of the face began to subside and disappeared within four days. There were no constitutional symptoms.

Dr. COLBURN—I have had almost the same experience in the case of a cataract extraction. About two years ago I operated on the left eye, and atropin produced all the symptoms that the Doctor has described. Last winter I operated on the right eye, and I used duboisin instead of the atropin, and again I had a fearful eye. The lids were distended, the nostrils closed and both eyes and the whole of the face and neck were involved, and it looked very angry. I could give no other explanation than atropin poisoning. He again had all the symptoms that the Doctor speaks of; it was the most fearful case of apparent erysipelas that I ever saw. The recovery from the operation was not interfered with: the visual result was good.

Dr. WOOD had found that there was a dermal idiosyncrasy in many patients for atropin, and that a distinct dermatitis would arise when the drug was rubbed on the skin of the arm or leg, etc.

Dr. PINCKARD had had one case where a single drop of atropin, duboisin, or hyocin brought on very marked constitutional symptoms, but not any skin symptoms. The patient was a woman about 30 years of age.

SARCOMA OF THE LID.

Dr. PINCKARD—The patient, a woman 30 years of age, I first saw in May of this year. For the past two months she had noticed a gradually increasing swelling on the lower lid just to the outer side of the punctum. It was then about the size of a large pea, the skin being a trifle reddened, and the conjunctiva a dark red color. I thought that it was a chalazion and advised its removal. On making an incision into the tumor, however, I found it to be solid, and cut out a little piece which on examination proved to be sarcoma. The question of the differential diagnosis is certainly very difficult. The only peculiarity that I noticed, and which I probably should not have noticed but for the subsequent developments, was that the border of the lid was very much raised at the site of the tumor, thus disturbing the line of the lower lid. I have not found this to be the case with chalazion, the swelling generally extending only outward or inward, and not interfering with the line of the lid border. The patient was sent to the hospital, and under ether a large V-shaped incision, beginning at the inner canthus and to the outer side of the middle of the lid and joining about an inch below the lid, was made, and the whole section removed. The caruncle, the lachrymal sac and some of the orbital tissue were also removed. The outer half of the lid was joined to the skin of the nose and healed readily by first intention, leaving but a comparatively slight scar. Some few weeks later I saw the patient for the last time, and at the site of the scar there was a suspicious looking growth, which I thought was probably the return of the sarcoma. I heard from her some two weeks ago, and she states that this had disappeared. I do not see how it is possible to make a differential diagnosis between sarcoma and chalazion before a section is made into the tumor. Certainly in this case, with the possible exception of the lid edge, there was nothing characteristic. The patient was healthy in all other respects, and no doubt this was a primary sarcoma of the lid.

Dr. WESCOTT removed from a child, early in the summer, a tumor which extended the entire length of the tarsus and covered it very completely. Some three years before, Dr. Holmes had seen the case and thought it was a chalazion, and was surprised when he cut through the skin to find a solid tumor. Dr. Holmes curetted it, but it returned very slowly, and had been growing up to the time the child was brought to Dr. Wescott. The tumor was dissected out, and the examination showed it to be a pure angioma. There was no return in five months.

DRESSINGS OF CATARACT CASES.

Dr. COLEMAN—In the last three cases I did not apply a compress bandage, simply put a gauze shade suspended by plaster on the forehead, and covered that with a papier-mache shield, and I have never had less reaction than in those cases. We all very well know that in aged people, if we tie up the eye for forty-eight hours, we may produce a conjunctivitis.

IRIDECTOMY.

Dr. COLEMAN—No one has advocated preliminary iridectomy. Landolt has written the best article I have seen of late years on cataract extraction, and he says that beyond all controversy preliminary iridectomy offers the safest prospect for recovery. All things considered, for me preliminary iridectomy affords the greatest amount of success. In reply to a question as to the use of eserin, Dr. Coleman said: I question the efficacy of it in the simple operation. I would not use eserin to prevent prolapse, but atropin. The latter, by opening the gateway, takes the pressure of the aqueous off the posterior surface of the iris and thus prevents prolapse.

Dr. HOTZ—I have never divided the operation to save the patient annoyance and nervous excitement of two operations, when I can get along with one. I do not know whether there would be anything gained by, or any greater safety in the preliminary operation.

Dr. BULSON of Fort Wayne—In discussing a paper that was presented at the recent meeting of the British Medical Association, a noted ophthalmologist cited a case in which the wound, following removal of cataract, remained open for seven or eight days. This was supposed to be due to the fact that the incision had been made wholly in corneal tissue, which in the aged repairs slowly. I have recently had under my care a similar case, in which, owing to the unruiness of the patient, the incision was made wholly in the cornea. This wound remained with escape of aqueous, for a period of five days, and notwithstanding that a small iridectomy was performed no prolapse occurred. Under pressure bandage and the stimulating effect of hot compresses the wound closed very nicely. As to the use of eserin, I do not presume to speak from a great amount of experience, as I use the drug in exceptional cases only. I believe it to be irritating in a large percentage of cases and therefore prefer to limit its use as much as possible. I have seen weak solutions produce violent irritation, and for that reason have learned to look upon all applications of eserin with considerable suspicion.

Dr. WESCOTT—I am still doing the combination and hesitate to change. I have also seen decided irritation from a half grain solution of eserin, and my ordinary prescription is an eighth or quarter of an ounce. I believe in using atropin after extraction, but I do not begin it early, and frequently have omitted it until the fourth day.

Dr. PINCKARD—When I was the house officer in the infirmary in Boston, Dr. Chandler devised an operation and operated on fifty cases with a device which was quite ingenious. He argued that the prolapse of the iris was due to the gushing forth of the aqueous, carrying the iris with it. So after doing his extraction, he cut a small piece the size of a pin-head, out of the peripheral edge of the iris. The idea is certainly ingenious and, so far as I know, was original with him. By this means he left the pupil round, and that part of the iris with the hole in it was always covered by the upper lid, and through this hole fluids could pass to the anterior chamber and thus diminish the danger of prolapse.

Dr. ROBERTSON—After operations for cataract it is desirable to have as small a pupil as possible, that is, as small a clear pupil as possible. Whether you do a simple or a modified operation, there is nearly always some secondary cataract developed, and it is desirable to have a pinhole pupil through the secondary one, for the reason that you get a greater range of accommodation. The larger your pupil the less accommodating power you have left in the eye. There is one case I recall where the man had enough accommodation to see at a distance and read with the same lens, this, not on account of any true accommodation, but by reason of the pinhole pupil, all rays of light entering the eye being practically parallel. These patients can by squinting the eye, make pressure on the globe by the lids so that the eyeball is elongated by mechanic force. This would create an artificial myopia, and in such a way give the patient an artificial accommodation. This artificial myopia can exist to an unknown amount, and we are not unwilling to concede that we might develop 3.00 D. or 5.00 D., which would be changing the diameter of the eye only 1.75 mm. I do not think it makes much difference when you fit the patient after extraction, as some will wear the same correction always, while others require changing often.

Dr. WESTCOTT—I had one traumatic case of cataract in a

boy where I did a very small iridectomy and got vision of 20/40 with the proper lens. With the same lens the boy could read the smallest type. I ascribe this power to the very small pupil.

DISCUSSION ON CAPSULOTOMY.

Dr. COLEMAN—In doing capsulotomy with the ordinary capsule I should not be tempted to use a forceps, but in a tough capsule I am very decidedly in favor of using the forceps, and in the few instances in which I have had occasion to use it, the result has been most satisfactory. I do not see why some of the text-books should recommend removing the capsule subsequently to removing the lens. This seems to me very dangerous.

Dr. HOTZ—My experience is somewhat unique, but in all my extractions I never came across any capsule that I could not cut with a cystitome. If I should encounter one that the cystitome should fail to cut, I should rather remove the cataract in the capsule *à la Pagenstecher*.

DISCUSSION ON SECONDARY OPERATION.

Dr. HOTZ—I dislike to do secondary operations, and if a patient has anywhere near satisfactory vision I do not perform them for the sake of getting better vision. I can not understand how anybody can advocate them so persistently as if they were the simplest and most harmless operations. No matter what instrument may be used, the mechanic action certainly is not so much cutting as tearing. We have very little chance to cut a capsule, and I have found that the membrane will yield before the knife until it tears. If the membrane is very thin, no serious reaction follows; but if at all thick the reaction is severe. In cases of dense membrane, I am in the habit of using two fine sharp hooks introduced through the cornea, and tearing the capsule in the center. As the traction of one hook resists the other, there is no dragging on the ciliary region. Even in cases of thin membrane, I have seen violent reaction follow secondary operation and have been able to demonstrate the presence of a small thread of vitreous in the hole in the capsule.

Dr. COLEMAN—I most heartily agree with what Dr. Hotz has said, and I can not understand why some operators make so light of a secondary operation. While the knife needle in my hands has been followed by unfortunate results, I have quite frequently operated on tough membranes with the de Wecker's scissors, and always with gratifying success, a good pupil having been secured and with very little reaction.

Dr. PINCKARD—I have often seen the operation referred to by Dr. Hotz, done in Boston, particularly by Dr. Jeffries. Usually but one hook was used, the other point of traction being a Bowman needle. The needle was passed through the cornea and into the center of the capsule, and then a hook introduced from the opposite side and a tear made with the needle as a point of resistance.

Dr. WESTCOTT I have accomplished the same thing by introducing two needles on opposite sides of the cornea into the center of the capsule and thus tearing the capsule.

DISCUSSION OF REFRACTION OF CATARACT CASES.

Dr. WESTCOTT—We have to be guided in these matters very largely by the means of our patients. A good many, especially those from the country, are very anxious, for more than one reason, to return as soon as possible, and they all want some sort of a glass when they go home. I have been in the habit of measuring the refraction carefully between the end of the second week and the beginning of the fourth week, and have given the patient the spheric lens which gave him the best vision. I have asked some of these patients to come back in three or four months, and I know that in more than one instance I have been able to give a permanent glass at the end of sixty days, that was still the best glass I could find in a year. In other cases, one of which I have in mind now, I found a very decided change at the end of a year. I extracted a cataract up in Minnesota last September. I left the patient two or three weeks after the extraction, and he accepted then a +9 sphere with a +4 cylinder. I gave him a +9 to wear and he was perfectly satisfied, except that he could not read. This year I found the patient had even less vision, 20/100, with the best correction which I could give him, which was a +12 sphere and a +4 cylinder, at which he was very much surprised. In the dark room I found that the posterior capsule was thrown into fine vertical folds. The anterior capsule was out of the way entirely. I advised needling, and performed the operation on the following day. After a week's time, during which there was absolutely no reaction, the patient accepted the same correction, but got 20/30 vision, and was able to read his newspaper. If we could see all our cataract patients once a month for a year, we could decide this quee-

tion, but otherwise I do not see how we can. I ask my patients to stay in town a month, when they come from outside for cataract extraction. Then I ask them to come back in three months, and then again in six months, if the glasses are not perfectly satisfactory for all purposes, and in that way I have given some patients better satisfaction, I am sure, than I could if I set any definite time for giving final correction.

Chicago Medical Society.

Regular Meeting Oct. 26, 1898.

Dr. J. C. HOAG, first vice-president, occupied the chair.

Dr. HAROLD N. MOYER presented a paper to the meeting, entitled

DUMBNESS OR CONGENITAL APHASIA OF A FAMILY TYPE WITHOUT DEAFNESS OR OBVIOUS MENTAL DEFECT.

He described the case of a boy, 9 years of age, who was otherwise bright and intelligent, who understood all that was said to him, but who had spoken only the one word "mamma" until his eighth year. It could not be learned at what time of life he acquired this word. Inquiry into the family history showed that the father was totally aphasic until 6 years of age, and that two brothers and one sister were similarly affected, none of the latter speaking until 4 years of age. A paternal uncle and cousin were affected with lalling all their lives. The two brothers of the patient grew up and occupied positions in life above that of the parents. The father and two grown sons had an excellent command of language, free from all defects of articulation.

He referred to several classic examples of sudden speech in those who had been previously dumb: the son of Cræsus and the Samian athlete.

The extreme rarity of the affection was shown, an examination of 4485 mutes showing this condition in only seven, and many of these were more defective as to general mentality than those which he described. The explanation of Bastian was referred to, in which he claims that language is to a certain extent instinctive, and in these cases there is some barrier to the emission of speech; under the influence of a strong emotion that is swept aside and speech follows. One of the cases coming under his observation did not speak until the fourth year. Then speech suddenly began, at first imperfect, but in three months he spoke as well as the average child of his age.

Dr. CHARLES H. MILLER presented a paper on

THE PROTEOLYTIC VALUE OF MALT.

After briefly reviewing standard authorities and giving the results of experimentation, he draws the following deductions:

1. Properly prepared, light-colored, semiliquid extracts of malt, possessing strong amyolytic power, have also positive proteolytic value, though decidedly less marked than the better known ferments, pepsin and trypsin.

2. The reaction of the media bears an important relation to the results obtained. This influence is believed to be as follows in sequence of greater activity; 2 per cent. lactic acid; 5 per cent. sodium carbonate; 6 per cent. sodium chlorid (neutral), and 5 per cent. hydrochloric acid.

3. Judging from these experiments, and in the proportions employed, the proteolytic power of malt extracts is about 5 per cent. that of pepsin or pancreation.

4. The dry diastase preparations were not found to possess proteolytic power. The best results were obtained by a freshly prepared extract of malt just before use.

Good malt extract is a valuable food, concentrated and immediately assimilable. It is capable of immediately converting enormous quantities of non-diffusible carbohydrate food starches into soluble dextrin or maltose forms, ready for the use of the body. It is in the amounts commonly administered, capable of largely converting the proteids of an ordinary meal into diffusible peptones. It is distinctively a pleasant medicine, and one readily combined with practically all other remedies, often completely obscuring their disagreeable properties. Malt extract is a first class remedy, and the simplest rules of combination render it doubly satisfactory to use. Regarding administration; it should be given just before or with the meal, and can always be advantageously combined with lactic acid to pleasant tartness, other medicines not interfering.

Dr. DANIEL R. BROWER offered the following preamble and resolutions, which were adopted:

WHEREAS, the members of the Chicago Medical Society regard with deep concern the demoralizing and unprofessional conduct of Prof. Emil Behring in lending his aid to the Dye Works (Farbwerke) of Hocht-on-the-Main, Germany, to the securing of a patent on diphtheria antitoxin; and

WHEREAS, the behavior of Professor Behring is derogatory

to the professional character, in conflict with the ancient traditions of medicine, and in sorry contrast with the example of Simpson, Pasteur, Lister, Helmholtz and a host of other illustrious physicians; and

WHEREAS, the history of recent biologic science clearly exhibits the important contributions made to the development and establishment of serum therapy by a number of Behring's predecessors and contemporaries, whose credit he seeks to appropriate; and

WHEREAS, antitoxin of the highest grade, possessing a potency and efficacy far greater than that of the Behring product, has for years been supplied in the American market, at reasonable prices, therefore be it

Resolved, by the Chicago Medical Society, that Professor Behring's conduct is unworthy of his scientific reputation; that his claims to priority in the discovery of antitoxin serum are unfounded; and that the granting of his patent, after five successive rejections by the examiner, was unjust, erroneous and contrary to public policy;

Resolved, that it is the duty of every member of the Chicago Medical Society to renounce the use of the Behring serum, and that the American manufacturers who purpose contesting the patent in the courts are entitled to the moral and substantial support of every American practitioner;

Resolved, that the secretary be requested to send copies of these resolutions to the leading medical journals of the United States, thus giving them a wide publicity.

San Francisco Academy of Medicine.

October Meeting.

Dr. CAGLIERI read a carefully prepared paper on a case of

ACTINOMYCOSIS OF THE LUNG,

which was of considerable interest, as it presented some rather novel features and as these cases seem to be somewhat rare. The patient was a woman 30 years of age, married and having one child. The history, as obtained by the Doctor when he first saw the case, some little time after the onset of the disease, was as follows: The woman was of very slender build and extremely nervous; there was no family history of any nervous, tubercular or specific trouble. She lived in a comfortable home, well provided with all the necessities and many of the luxuries of life. The illness had commenced with a sudden consolidation of the middle and lower lobes of the right lung, accompanied with a temperature of 105 degrees; after ten days this seemed to slowly resolve, and the temperature dropped to 101 degrees, with rises in the mornings. No further change had occurred up to the time when the case was first seen by Dr. Caglieri, about a month from the first onset. When thus seen she was very much wasted; respirations were rapid and shallow, the left chest having less motion than the right; the breasts were soft, smooth and flabby; the lower half of the right chest was the site of a very perceptible fremitus. On the right side was found an area of dulness extending as high as the sixth rib in the median line, and as high as the fourth rib on the side. Other portions of the right and the whole of the left lung were hyperresonant. On auscultation a large variety of râles could be detected—puerile, bronchial, and moist—and vocal resonance was reduced. The heart sounds were weak, but otherwise practically normal. The abdomen presented no abnormality. A diagnosis was made of a sacculated right pleural effusion, and it was decided to at once examine with the exploring needle. The needle located, on somewhat deep puncture, thick, creamy pus. On the following day, when it was attempted to aspirate and wash out the right pleural cavity, it was found that no pus could be drawn into the bottle, no matter where the needle was introduced and no matter how deep the puncture. At this time she was suffering from an almost continuous cough, with more or less bloody expectoration and night sweats. The sputum was carefully examined, but no tubercle bacilli could be found. A few days later the exploring needle was again used, directed in various points and rather deep; again a small amount of thick pus was found, and it was decided that there were a number of small sacs of pus at various points, held between the lung and the chest wall. Shortly after the last exploratory operation an area of inflammatory congestion appeared on the right breast, at about the region of the fifth to the seventh ribs. This was edematous, congested and painful on pressure, and it was thought that there might be some periostitis, resulting from infection from the exploring needle. An incision along the rib showed the presence of some periostitis; the lesion was then scraped and packed. The inflammatory process seemed to be but little checked, however, and very soon other foci appeared, ulcera-

tion set in and many small yellow granulations made their appearance at the site of the inflammatory trouble. It was now suspected to be a case of actinomycosis, and slides were made from the pus of the ulcerating areas, and also of the sputum. Nothing was evident in the sputum, but in the pus were found numbers of rod-like bodies, easily identified as the actinomycosis. The patient was then placed on iodine and Fowler's solution, and intravenous injections of corrosive sublimate were about to be tried, when the patient changed her doctor. She was not seen again for some weeks, when she once more sent for Dr. Caglieri, who found her condition much worse; she had been operated upon a number of times for "lupus," but without any benefit. There were ten or twelve sinuses when she was seen again; she was very weak, and the expectoration of bloody sputum was almost continuous. She rapidly sank and died two weeks later. No postmortem could be held. The Doctor then took up the clinical features of the case, and suggested that there were four conditions to be considered:

1. Was the pneumonia the primary condition, on which through exhaustion, the actinomycosis had become engrafted?
2. Was the actinomycosis a primary condition, which had simply been aggravated by the pneumonia?
3. Had the actinomycosis produced a consolidation, which resembled a true pneumonia?

He then cited a case reported by Dr. Hodenpyle in the *Medical Record* during 1890, in which the clinical symptoms were practically identical with those in his own case, and in which a postmortem had been made; in his opinion the postmortem changes in the case he had just reported would have been found to have been the same as in the case reported by Dr. Hodenpyle.

Dr. KENGLER mentioned a case he had recently seen in which there had been very much the same history, except that the symptoms all pointed to an incurable involvement of the liver, but on postmortem examination he had found a very large abscess of the liver, with also a large amount of pus at different points in the pleura. No slides nor cultures had been made, so that it was impossible to say that it was really a case of actinomycosis, but in his opinion this was the diagnosis. Shortly before death lung symptoms made their appearance, and there was quite an area of solidification on the right side of the chest.

Dr. TAIT objected to the Doctor's making the comparison of the postmortem changes in his case and another case, when he could not say that the condition in his own case was thus and so. He also suggests that there might have been enlargement of the glands, or at any rate infection of them, even though they were not very evident, and that infection did often involve the glands in these cases. He also thought the pus drawn at first should have been examined, and the possibility of the real trouble suspected. He mentioned the value of the examination of all such cases by means of the X-rays, as such examination tended to elucidate the diagnosis very materially by showing whether the pus was in the lung, or in a large pleural sac, or in a number of small sacs.

Dr. CAGLIERI, in closing the discussion, said that he did not believe it all necessary to examine every case of pleural effusion by means of the X-rays, and that he doubted the actual value of such examination, though he had not employed it. As to the postmortem condition being assumed to be the same as the case reported by Dr. Hodenpyle, he had read reports of four other cases presenting the same clinical features, and they had a remarkable correspondence in the matter of the postmortem condition; he, therefore, thought it not improbable that his case was subject to the same or similar changes, and so mentioned what he thought would probably have been found if such examination had been made. He did not agree with Dr. Tait in the matter of the enlargement of the glands, for he was quite sure that in the case just reported there was no such enlargement, and he also thought there had been no infection, though of this he could not be sure. This case was peculiar, in that it began acutely and so continued, and that at first there was nothing to point in any way to any condition other than a pneumonia, with subsequent formation of pus in the pleural cavity.

Mr. GILLIHAN, a senior student in the Medical Department of the University of California, presented some beautifully preserved and mounted specimens, and described the formula and method of making the preservative mixture. The formula had been suggested to the chief of the University Clinic Laboratory by Dr. Philip King Brown. It is as follows:

GELATIN-FORMALIN FLUID.

Soak the gelatin in distilled water for twenty-four hours; pour off the water and then warm the gelatin over a water bath

until fluid; then cook, of the gelatin (fluid), 1 part; distilled water, 1 part; glycerin, 2 parts; this should be cooked until the whole is well mixed, stirring all the time with a glass rod. It should then be strained through a flannel cloth and allowed to cool somewhat, when enough 40 per cent. formalin is added to make a 4 per cent. solution. Into this solution, while at about 37 degrees C., the specimens should be placed. Mr. Gillihan said that he had found some trouble with the formula as given, and more trouble with the gelatin as found in the market; owing to bad gelatin a number of specimens had turned milky white a short time after they were put up. He had experimented with all the varieties of gelatin which the San Francisco market afforded, and had found that Knox's gelatin was the one which gave the most satisfactory results. He said also that it was very difficult to make the proper measurements when the solutions were hot, so he had calculated and experimented until he had arrived at the proper quantities to be taken before assembling. The formula as he now uses it, is as follows: Gelatin (dry) 50 gm.; glycerin, 450 gm.; distilled water, 400 gm.; formalin (40 per cent.) 100 gm. The formalin must be very carefully added at the last, or the whole will coagulate. He had found that the best method of making permanent specimens was to use a Petrie dish of the requisite size, making the seal between the dish and the cover by means of a mixture of paraffin and resin, equal parts, which could be poured into the space between dish and cover while hot. Among the specimens shown was one which had been exposed to sunlight every day for two months; it was of a brain section, and had not faded at all.

Dr. F. DUDLEY TAIT exhibited a specimen of a cancerous breast which he had removed by Kocher's operation, and spoke of the relative values of Halstead's and Kocher's operations for amputation of the breast in cancer. He was quite of the opinion that Kocher's operation was very much superior to that of Halstead, and for many reasons. It made the operation much more simple, cleanly, and less liable to cause inoculation by means of carrying infection to uninfected tissues. It was also less bloody; he had operated in one case where only five ligatures had to be tied in the course of the operation. This question was discussed by Drs. Sherman and Brunn.

Mississippi Valley Medical Association.

Twenty-fourth Annual Meeting, held at Nashville, Tenn.,

Oct. 11-16, 1898.

Concluded from page 1114.

THIRD DAY—AFTERNOON SESSION.

Dr. ALEX. C. WIENER of Chicago read a paper on

SURGICAL TREATMENT OF PARALYSIS IN CHILDREN.

A clear distinction should be made in diagnosis as well as treatment between cerebral and spinal paralysis. A common symptom in both diseases is paralysis, and yet there is great difference between the two affections. In spastic paralysis one group of muscles becomes rigid and overpowers its opponents, rendering them overstretched and useless, but still their innervation is by no means disturbed. In spinal paralysis there is a true degeneration of the lower neuron and the dependent muscular groups. This being borne in mind, the treatment is to equalize the balance between the spastic and the overstretched muscular group by lengthening the rigid muscles. This is done either by tenotomy, resection of tendons or loosening the attachments of the muscles from the bone, as is done in a spastic condition of the adductor muscles of the pelvis. The after-treatment consists mainly in not allowing the extremity to leave its over-corrected position too soon, and in strengthening the functionally weakened opponents by massage, baths and electricity. Apparatus in these cases is utterly useless and should be entirely discarded. Any other peripheral cause of reflex irritation, as phimosis, occlusion of the prepuce, or of the clitoris, is to be removed. In anterior poliomyelitis we have to deal with a true paralysis of certain muscular groups. This may be overcome by apparatus which supplants the paralyzed muscles, or by operative procedure. This consists of dividing the belly of an active muscle up to the place of its insertion and sewing the corresponding part of the tendon into the cleft of the tendon which belongs to the paralyzed muscle. The inactive muscle is supplied with the vigor of the innervated muscle, taking care, as Milliken has pointed out, that the sheath of the tendon is preserved. By this artificial change in the arrangement of muscles the function of one muscle is transmitted to another. There is taking place an alteration of the reflex activity in the nerve centers of the muscles; hence the

importance of the function of the extremity is by no means a mere mechanical act.

Dr. JOSEPH RILUS EASTMAN of Indianapolis read a paper on

THE DIAGNOSIS OF GONORRHEA IN WOMEN.

The diagnosis of this affection in women is comparatively easy, even without the microscope. With a history of impure coitus, free purulent secretion from the vulva, vagina and urethra; intertrigo burning on micturition and vesical tenesmus, the diagnosis is not far to seek. Upon inspection one usually detects a discharge of tenacious pus, or greenish or yellowish streaks upon the linen may alone be in evidence. The symptoms of gonorrhoea in women were dwelt upon at great length.

The gonococcus grows upon flat epithelium. A comprehensive examination of the discharge is not complete until the secretions of the urethra, Skene's lacunæ, the glands of Bartholin, the vagina and cervix, have been searched through; and in chronic cases several preparations should be made from each of these. To secure unmixed gonorrhoeal pus from the cervix uteri, care should be taken that the platinum wire does not come in contact with the vagina. It is best first to rinse, and then dry the vagina with cotton to free it from mucus.

It will be concluded after many examinations for gonococci, that the urethra is the seat of predilection of gonorrhoea in women, and that the vulvitis and vaginitis are secondary, being caused by the bathing of these parts with the discharge from the urethra and cervix. The diagnosis of acute gonorrhoea may be made by contemplation of the clinical phenomena alone. For example, if acute urethritis be present, it is almost certain that the gonococcus is to blame. Observation for a few days will establish the diagnosis beyond conjecture, since the symptoms of non-specific urethritis will disappear rapidly. In chronic gonorrhoea too much dependence upon clinical manifestations is hazardous. Condylomata are often present, but appear also often independently of gonorrhoea. Débris-laden discharge from the vulvo-vaginal glands is usually an expression of old gonorrhoea, but other germs, as the staphylococcus aureus and saprophytic forms, may occasion just such discharge. Among the more common indications of chronic gonorrhoea are the maculae gonorrhoeicæ of Sanger; red papules about the openings of the vulvo-vaginal glands; sclerotic inflammation of these glands, and scars and erosions in the vulva. All these conditions may be caused by other germs than gonococci. Here, as in acute gonorrhoea, the most reliable indication is the urethritis.

Dr. A. M. CARTLEDGE of Louisville read a paper on

POSTERIOR DISPLACEMENTS OF THE UTERUS,

in which he dealt with the subject from a clinical standpoint. He discussed the causes, symptoms and diagnosis of these displacements. Treatment should be divided into measures which correct the cause and methods of support by suturing and shortening the round ligaments. Sometimes it is necessary to employ both methods in the same individual in order to make the result durable. In the first category are to be included thorough curettage; repair of cervical lacerations, if present; perineorrhaphy and restoration of the pelvic floor; tonics, laxatives, and rest. These methods, if carried out successfully, will ultimately relieve the vast majority of posterior displacements. They are not so dramatic or sudden in their relief as ventrofixation and Alexander's operation, but are more in accord with rational ideas. In order to succeed they require time—six to eight months—for the structures to resume their normal tone. They also usually require to be supplemented for some weeks or months following their performance by anterior and posterior tamponnage, or a well-fitting pessary to hold the uterus in position until the repaired parts regain their strength. It is irrational surgery to use any form of support until existing causes have been as far as possible removed.

As between ventrofixation, and Alexander's operation, preference should be given the latter, if no accompanying disease is suspected. Where such disease exists, the operation of ventrofixation should be practised, as is given opportunity for inspection and correction of the pelvic disease. It is the best operation in all cases of adherent uteri.

Dr. A. H. CORDIER of Kansas City, Mo., followed with a paper entitled

SOME PHASES OF INTESTINAL OBSTRUCTION.

The causes of this condition are many and varied. Modern methods of diagnosis in skilled hands have led to the saving of many lives, which, heretofore, would have been lost by delay in resorting to the proper treatment. While the diagnosis of intestinal obstruction can usually be made early, there are some cases in which the pathologic manifestations are so insidious or vague that their detection requires time and much clinical

analysis. The symptoms of intestinal obstruction were thoroughly outlined. He said the falsehoods uttered by pain and the truths untold by opium have been very expensive to human life in the management of intestinal obstruction. Surgical treatment for the relief of this condition should be resorted to early. It should be thorough and quick. No protracted delays or chronic surgery should enter into the management of an acute intestinal strangulation, as these cases stand prolonged anesthesia and slow surgery badly.

Dr. F. F. LAWRENCE of Columbus, Ohio, followed with a contribution entitled "Essentials to Success in Abdominal Surgery."

Dr. BAYARD HOLMES of Chicago read a paper entitled "The Surgical Treatment of Exophthalmic Goiter." He said the surgical treatment is based on the theory that in this disease the direct morbid factor is an increase in the normal excretion of the thyroid gland. He gave a synopsis of the physiology and pathology and an outline of the embryology of the thyroid, after which he reported a case upon which he had operated, which was a very powerful argument in favor of surgery in dealing with this affection.

Dr. J. S. NOWLIN of Shelbyville, Tenn., contributed an article on "Some Forms of Gangrene and their Treatment." Gangrene means death of a part, and is applied to the soft tissues. The blood is always involved in this disease. If the blood is performing its functions, there can be no local death. The blood-channels being destroyed, gangrene necessarily follows. Gangrene appears sometimes suddenly after injuries to the spinal cord. A normal functional activity in the blood prevents the first step in the process of inflammation. Simple endarteritis may be the cause of gangrene; an inflamed artery is then surcharged with blood, stasis results, coagulation takes place, the lumen is destroyed to a certain extent and gangrene results. Sepsis is doubtless a most frequent cause of gangrene in the extremities. In traumatic gangrene the surgeon should look out for sepsis. If there be a simple endarteritis with tissue formation, amputation should be performed at the first evidence of failing vitality.

FOURTH DAY—MORNING SESSION.

Dr. A. H. OSNESS of Dayton contributed a paper on "Diphtheria and its Logical Treatment." He said the pathologic process in diphtheria is caused by the serum albumin at the point of infection becoming moderated from incorporation with the specific virus. It is then repudiated by the blood-stream and exudes into the neighboring tissues, where it, plus necrotic cells and fibrin, forms the pseudo-membrane, that is, a congenial nidus for the Klebs-Loeffler bacillus. The intoxication of the system depends upon the energy of the lymphatics upon which devolves the removal of the exudate. In the treatment the use of antitoxin serum offers the risk of over-toxicity from additional toxin, or systemic impairment from invalidism of the centers; while monosulphide of calcium has been given in three-quarter-grain doses every half hour for a period of thirty-six hours to children with the best of results. Water should be taken internally quite freely to help elimination of the toxin, local swabbing being resorted to as well, with a mixture such as the physician deems necessary.

Dr. WILLIAM K. JAKES of Chicago followed with an excellent contribution on "The Early Diagnosis of Diphtheria," which appeared in full in the JOURNAL of October 29, p. 1046.

Dr. H. W. WHITTAKER of Columbus read a paper on "Pichi." In Chili, South America, pichi is found growing as a shrub in abundance. No doubt the active principle of the drug resides in the balsamic resin, but chemic examinations have so far been unsatisfactory in determining its chemic composition. The annoying symptoms of chronic cystitis with enlarged prostate yield to the action of pichi, as was illustrated by the citation of a case. Cystitis complicating specific urethral infection, involving the prostatic urethra, is a combination which under favorable circumstances does not readily respond to treatment, and yet under the influence of this drug the conditions become more tolerable. This remedy is indicated in all the various forms of diseases of the liver. In gall-stones, pichi has proven a valuable remedy in assisting the secretion of bile and theoretically aiding the discharge of the stones. Uric acid formations rapidly disappear from the urine under the corrective influence of this remedy and the general condition of the patient improves.

Dr. I. HENRY CARSTENS of Detroit reported a case of rupture of the body of the uterus during confinement.

Dr. A. RAVOGLI of Cincinnati presented "A Few Practical Points in the Treatment of Posterior Urethritis." The author recapitulated the principles of the treatment for this disease as: 1, irrigations with the Janet method in a recent case of gonorrhoea will in many cases prevent posterior urethritis; 2, irriga-

tion with the recurrent catheter, with permanganate of potassium, followed by injections of protargol, will cure in a relatively short time a case of subacute posterior urethritis without complications; 3, when chronic posterior urethritis lasts for a long time, and has caused infiltration of the submucous tissues, then the application of a sound with ichthol salve gives the best results.

Dr. F. E. KELLY of Lamoille, Ill., read a paper on "Varicocele." The author outlined the operation for radical cure and the indications for its performance. He considers Bennett's operation of resection of the veins and shortening of the spermatic cord the ideal radical procedure, which he described in detail.

Dr. R. A. BATE of Louisville read a paper on "The Arthritic Diathesis." The term "diathesis" is applied to an inherited predisposition to altered nutrition. He assumed in diathesis an inability on the part of the cells to produce oxidation. He mentioned the diseases generally conceded to be dependent upon the arthritic diathesis. He has experienced favorable results from antilitheic remedies in glycosuria, nasal and bronchial asthma, lithiasis, albuminuria, obesity, eczema, parosis, rheumatism, angina pectoris, recurrent typhlitis, vertigo, biliousness, dyspepsia, neuralgia and migraine.

Dr. ALBERT E. STERNE of Indianapolis contributed a paper entitled "A Trilogy of Diseases: Acute Articular Rheumatism, Endocarditis and Chorea." He advanced considerations concerning the nature of these three affections and of the connection of chorea with manifestly infectious disease, namely, acute articular rheumatism. A case was reported in point. While he could report several instances of chorea associated with both arthritis and heart lesions, this is the only case known to him where the sequence of this trilogy seemed distinctly connected with a suppurating injury, following a fairly incontestable portal to the invasion of the ordinary pus microbes to the system. If it be admitted that valvular disease is mainly rheumatic, or at least infectious in character, then the list of cases of chorea connected with the diathesis becomes much greater, inasmuch as from 25 to 50 per cent. (Osler) of cardiac patients give a history of chorea. Looking at the question impartially, it seems almost imperative to assume an intimate relationship between the three diseases.

The following preamble and resolutions were offered and unanimously adopted:

WHEREAS, The general public, the medical profession and the drug trade of the United States have long suffered extortion at the hands of foreign manufacturers of synthetic remedies; and

WHEREAS, Our lax and indulgent patent laws bestow a triple monopoly upon the process, the composition and the name of chemic products for medicinal use, thus excluding every possibility of a healthy competition; and

WHEREAS, The same evil has been recently disclosed in the domain of biologic medicine by the patent granted Prof. Emil Behring and the Hocchat Farbwerke on anti-diphtheritic serum, a patent which could not be obtained in Germany, France, England, or Canada; therefore be it

Resolved, By the Mississippi Valley Medical Association that the seal of its condemnation be placed upon the unethical and unprofessional conduct of Professor Behring; that it is the duty of every member to renounce the use of the Behring serum; and that the American manufacturers who purpose contesting the patent in the courts are entitled to the moral and substantial support of every American practitioner;

Resolved, That an earnest appeal be made to the members of the commission on the revision of our patent and trademark laws, appointed by President McKinley, and their assistance invoked for the modification of existing laws and the suppression of prevailing abuses;

Resolved, That a copy of these resolutions be sent to every medical journal in the United States and to the members of said commission, as follows: Hon. Arthur P. Greeley, assistant commissioner of patents, Washington, D. C.; Hon. Peter Grosscup, Chicago, and Mr. Francis Forbes, New York City;

Resolved, That the members of this Society be urged to write their Congressional representatives at Washington and bespeak their support of any measures of relief ultimately proposed by the commission.

The following officers were elected for the ensuing year:

President—Dr. Duncan Eve, Nashville.

First Vice-President—Dr. A. J. Ochener, Chicago.

Second Vice-President—Dr. J. C. Morfit, St. Louis.

Secretary—Dr. Henry E. Tuley, Louisville, re-elected.

Treasurer—Dr. Dudley S. Reynolds, Louisville, re-elected.

Chicago was selected as the place for holding the next meeting, the time of which is to be fixed by the committee of arrangements and the executive officers.

Seventieth Congress of German Naturalists and Physicians.

These congresses are always well attended, and prove an instructive intercommunication of ideas in various domains of science. It was held this year at Düsseldorf, with over 2300 registered.

Professor KLEIN delivered the first address, on the necessity of courses in the universities to complete the instruction afforded by the technical and medical colleges, for those who wish to acquire a special knowledge beyond the average required for the ordinary career, mentioning as an instance and a distinct progress, the advanced course in physical processes on the largest scale, at the Göttingen University, illustrated by heating appliances, dynamos, etc., supplied by private initiative, a company formed of prominent engineers and firms, who supplement their gift with their advice.

Professor TILLMAN's address on "One Hundred Years in Surgery," pointed out the lines for the further development of surgery in the scientific deepening of surgical pathology and the closest co-operation with the other branches of medicine, especially internal.

V. NOORDEN recommended Trousseau's forgotten treatment of asthma bronchiale with atropin, commencing with .5 and increasing progressively to 4 milligrams and then decreasing. No secondary effects have been observed and this treatment wards off a recurrence of the affection for a long while, although it has little effect on an existing attack.

BLUM considers the thyroid gland a deintoxicant. He affirms that the iodine found in the gland is used to neutralize toxins. The toxic substances in the blood which normally are taken up and rendered inoffensive by the thyroid pass into the circulation after removal of the gland, and cause not only clinical but pathologic-anatomic symptoms of irritation in the central nervous system, which correspond in every way to the disturbances caused by intoxications. The toxin is therefore a nerve toxin, which is generated normally in the organism, and normally is arrested by the thyroid and deprived of its toxicity.

DRESER described the effects of heroin, a new morphin derivative, which is tenfold as effective as codein in rendering the breathing slower, while only one-tenth as toxic. He has found it very valuable as a cough medicine; dose 0.01. It also doubles the volume and strength of the inspiration and favors the lungs by relaxing the muscles throughout the body.

W. SCHMIDT described the simple technic of his fermentation test of the functions of the intestines, which sometimes gives the clue to disturbances of the small intestine in the absence of all other symptoms. It is based on the principle of the tests of the X-deficit in the gastric juice by after-digestion, showing which of the unused remains of the food are to be considered as pathologic appearances and which as normal losses.

SCHÜLTZE's surgical treatment of lupus of the face covers the defect with whole flaps taken from the neck after the patches have been excised. If the mucous membrane of the nose is involved, he first removes the skin and leaves the membrane till a month later. To limit the plastic operation as much as possible he detaches the nostrils from the back of the nose and extends them until entirely healed, when he sutures them in place again. He waits from six to twelve months after extirpation of the lupus patches before he reconstructs a total defect of the nose or lips. In 57 cases he has had eight relapses around the edges.

ENGEL and ALBUS reported successful treatment of lupus with the Roentgen ray.

KRABELL recommends a metal shield to protect the sound skin.

FRANK, in the discussion of Cesarean section, observed that the danger of hemorrhage depends less upon the manner of incision than upon the location of the placenta, although the danger of infection is greater, the more the uterus is handled.

EVERKE stated that the results of Cesarean section would not be more unfavorable than the results of perforation, if the cases were seen earlier, and attributed his 11 per cent. mortality from sepsis in thirty-five cases to the fact that all cases had been repeatedly examined before reaching him. He warned against the danger of operating before actual labor had commenced. In his three cases of sepsis after conservative section, he found the uterine wound gaping. The main point therefore is a perfect suture of the uterus. To accomplish this he now applies inner, decidual threads tied on the side of the uterus, with additional, outer threads, deep and superficial, tied toward the peritoneal cavity. Five of his conservatively treated patients have borne children since.

ESCHERICH discussed the significance of bacteria in the etiology of gastro-intestinal disturbances of infants, stating that wherever there was evident infection and contagion a chain

coccus was invariably found in the feces and vomit, which Heubner confirmed, and after death, in the viscera, especially the lungs. He found that in the disturbances unmistakably caused by the bacillus coli, there was a serum reaction, as in typhus, but only with bacilli cultivated from the same individual. He has found disinfection of the intestines unreliable, but has derived great benefit from dietetic measures that influenced the bacterial vegetation by altering the food stratum. These infective affections require more care than hitherto supposed, to avoid contact infection, and keep them apart from suppurating wounds and septic matters, as in the prophylaxis of puerperal fever.

M. MENDELSON delivered an able address on "Nursing the Sick." He ranks it as "a science with an exceptionally large number of means at its disposal to accomplish its ends," and, with scientifically applied stimuli, affect the functions of the organism and control blood-pressure, perspiration, respiration, sleep, etc. Further research in regard to therapeutically effective stimuli should be accompanied with scientific study of their application by the nurse.

GOLDBERG related the extremely beneficial results he had attained in urogenital tuberculosis, with 1.0 to 3.0 ichthyl *per diem* in a fluid form. Not only did the general health improve, but all the local phenomena were favorably affected.

SCHEDE added three and KRABEL one, to the eight cases on record (Graf) of permanent recovery after an operation to relieve severe Jacksonian epilepsy. Success is only probable when all the symptoms are present.

B. BENDIX reported his investigation of 140 women to determine the effect of menstruation on the lacteal secretion. He found that the menses returned in 60 per cent. during the nursing period, usually commencing six to eight weeks post-partum, but they did not affect the milk, or so slightly as to be unimportant in most cases, and hence that, everything else being favorable, there is no need to reject a wet-nurse on this account. Even a slight decrease in the quantity of richness of the milk during the period soon adjusts itself and does not affect the child.

BARDENHEUER proclaimed the necessity of extremely radical procedure in tuberculous hip processes, not hesitating to remove large pieces of the pelvis, which possesses immense regenerating power. He fastens the articulation, as he finds that without this measure the musculature of the femur becomes relaxed in time, and the femur finally slips past the acetabulum.

WOLFF reported nineteen cases of extensive resection of the pelvis for tuberculosis with abscesses in 80 per cent., in one case extending from the iliac crest to the knee. The anamnesis is especially important in the diagnosis as even a trifling injury may induce it. Many persons who are suspected of simulation or neurasthenia are in reality affected with tuberculosis of the synchondrosis sacro-iliaca, finally disclosed by the breaking through of an abscess. Suppurating meningitis or rectal paralysis may follow the extensive operation, but less effectual intervention is sure to leave a permanent fistula. He endorses Bardenheuer's method, which he has followed in twelve cases with five deaths. The first incision is carried along the iliac crest to the spina ant. sup., followed by a perpendicular incision to the sacrum, close to the synchondrosis. The lower transverse incision is then made as far as the tuber ischii. The whole of the musculature is then raised with the periosteum, followed by an incision along the labium int. cristae iliei; subperiosteal detaching of the psoas from above downward, and sawing with the Gigli saw from the foramen to the spina ant. inf. The ileum can then be worked loose. He showed some radiographs illustrating the remarkable regeneration of the pelvis afterward.

KRABEL described the twelve cases in which he has extirpated the spleen, with seven recoveries. If there is prolapsus, it is apt to be dangerous.

LEICHTENSTERN called attention to the cystitis and tumors in the bladder which affect persons handling toluidin and naphthylamin in anilin works.

NAUNYN, in his address on "Cholelithiasis," advocated surgical intervention in acute and chronic cystitis, cholangioitis acutissima, but with incarcerated stones, chronic colangioitis, and pericholangioitis with adhesions, fistula or carcinoma, the intervention should be preceded with a thorough Carlsbad course. He recommends a course at home, drinking, morning and afternoon, three or four glasses of Carlsbad water—the artificial preferred, never the dissolved salts—and lying down for three hours twice a day, with large, thick, linseed cataplasms over the region, avoiding beer and wine, fat and raw food. In seeking carcinoma metastases he warned never to forget to palpate Douglas's pouch. Löbker's statistics showed two deaths out of 172 cases operated in the last eight years (157 women and 15 men), of whom 10 per cent. had carcinoma.

Other communications on "Formaldehyde Disinfection," "Malt Soup for Sick Infants," "Tetanus," etc., have already been summarized in the JOURNAL.

SCHLOSSMANN exhibited his disinfecting apparatus, which filled the hall with mist in a few minutes.

Ninth Italian Congress of Internal Medicine.

GUIDO BACCELLI turned from the duties of Minister of State to preside over the meeting of this congress at Turin in October. He mentioned in his opening address, as an instance of the marvels accomplished by the endovenous injection of heroic medicines, that Robert Koch, who is now in Italy making a comparative study of "Malaria," after his experiences in South Africa, was recently examining a couple of cases of extremely severe pernicious "malaria," one in the pre-agonic stage, and requested that the cadaver be sent to him the next day, but a single endovenous injection of quinin placed the patient on his feet again to the amazement of all. The subjects for the day were

VENESECTION AND ORGAN THERAPY.

He observed that he had seen most remarkable results follow venesection, especially in capillary bronchitis and acute nephritis. He explains its action in the latter case by the fact that the peripheral pressure of the effusion in inflammation of Bowman's capsule, presses on the small blood-vessels and retards the circulation through the delicate apparatus of the glomerulus, from which the entire functional economy of the kidney suffers; the epithelium undergoes fatty degeneration, and the urine diminishes in quantity with symptoms of progressively increasing toxemia. He has saved and even secured complete regeneration of the kidney in hundreds of cases like this by opening a vein in the foot. Rummo concluded his address on organ therapy with the remark that this new branch of therapeutics is firmly based on observation and experience, but requires additional research, which should be conducted patiently and seriously, without sensational notoriety. Bozzolo summed up the question from the practical point of view that the thyroid has a most important position in therapeutics; the thymus and ovary are also important, the testes of some utility and the kidney and liver promising. No other organ has as yet found practical application.

MARAGLIANO'S address on "Venesection" confirmed the benefits and limitations of phlebotomy as proclaimed by Galen: "the depletion and depuration of the organism," adding that Sanguicrui has established that within certain limits, venesection never produces functional alterations nor disturbances in the nutrition in animals. He also states that the muscular fibers of the heart are nearly always found slightly altered in dogs, enough to suggest fatty degeneration, which some investigators have noted after venesection, to which they attributed it. He has also observed a certain number of tiny drops of fat in the capillaries of the dog's brain in the normal condition, which also throws light on the fatty degeneration of the capillaries observed in anemia consecutive to venesection. The composition of the blood, he continued, is not constant, but subject to changes, which, however, never affect any of the functions of the organism. He even considers it possible that the entire number of corpuscles are not all actively engaged at once, and that a part can substitute and perform the function of the whole. He reported a number of tests and experiments demonstrating that impoverishing the blood has no injurious effect upon the evolution of infective diseases, but is even directly beneficial when the lungs are not working properly and are unable to eliminate the excess of carbonic acid formed in a blood particularly rich in red corpuscles. Traube expressed this fact when he stated that persons whose blood contains less red corpuscles than the average are less affected by pulmonary disturbances than others, and even a small amount of lung surface is sufficient to eliminate their carbonic acid. This fact explains the manifest improvement after venesection in pneumonia, which he has observed again and again in his own practice; the dyspnea and cyanosis decrease, while the elimination of carbonic acid increases. On the other hand, in cases of circumscribed pulmonary lesions, the elimination of carbonic acid decreases after venesection, showing that the elimination had been practically normal. Recent research (Robin) has proved that venesection promotes oxidation processes in pneumonia, and everything tends to the assumption that when the corpuscles are inert they are useless. He agrees with Zakharine that venesection is especially beneficial in active congestions with hemorrhage, especially of the respiratory apparatus and brain. The amount necessary to obtain the mechanical effect required in these cases is from 200 to 400 c.c. Zakharine even ascribes a *revulsive* action to phlebotomy.

claiming that the congestion may be drawn to a remote vascular region, and Calabrese added two corroboratory observations of severe, rebellious hemoptysis in tuberculosis, arrested by a few leeches applied to the base of the thorax. Maragliano also dwelt upon the advantages of venesection in eliminating the toxins circulating in the blood, especially in renal or pulmonary insufficiency, or when there is some obstacle to the passage of bile into the intestines, and also in the auto-intoxications resulting, usually, from the suppression or functional alteration of the organs designed for the defense of the organism against the poisons it manufactures spontaneously. Bouchard has demonstrated that 500 grams of blood taken from an uremic subject contains 8 grams of extractive matters, i. e., about the same amount as is eliminated normally by the kidneys during the twenty-four hours. The attempt has been made in cerebrospinal meningitis to clear the blood by venesection of all the toxic substances accumulating in it, and favorable results have been obtained with it in diplococcic toxemia, combined with salt solution, especially in regard to the complicating hypostolic phenomena, although these facts are not yet fully established. In uremic intoxication, an amount varying from 500 to 1000 c.c. is withdrawn. The simultaneous injection of salt solution, preventing variation in the blood pressure, enables a larger amount to be taken than would be otherwise possible. Attempts have also been made to stimulate the formation of blood in rebellious anemia by withdrawing a small amount, 50 to 100 c.c.

CHLOROSIS.

RIVA ROCCI explains chlorosis as the result of an insufficiency of the biochemic function of the red corpuscles, combined with a lack of hemoglobin. The "hypoglobulia" and poikilocytosis are merely secondary causes. Aporti's investigations have established that in vertebrates, the cytogenesis and the hemoglobin-genesis are independent of each other. The corpuscle is born colorless and gradually takes on color as it manufactures its own hemoglobin out of the iron in the organism. The corpuscles of chlorotic subjects seem to have less aptitude for the manufacture of hemoglobin. If this primary cause of chlorosis is admitted, it is easy to understand the heredity of chlorosis, its recurrences, appearance at puberty, etc. He reported research which proves that iron increases the amount of hemoglobin, while arsenic increases the number of the red corpuscles. He noted the remarkable improvement attained with Blaud's pills, taken in the large dose of twenty to twenty-five a day.

DE RENZI emphasized the benefits and complete cures secured with rest in bed, and Devoto reported eight chlorotics in whom absolute repose produced prompt and decided improvement, without iron. The appetite returned in ten days and the cure was complete in forty, in a case he described at some length. Zoia mentioned that Bizzozero's demonstration of the formation of the red corpuscles in the marrow in adults, led him to study the ferratin in the marrow, and he was surprised to find it only present in the most insignificant amount, compared to what is found in the liver, which fact confirms Riva-Rocci's theory.

DE DOMINICIS attributes the albuminuria to gastro-intestinal auto-intoxication a certain, sudden, intense albuminuria observed, with edema, in which the kidneys are no more involved than the other organs, and return to normal with appropriate dietetic measures or lavage of the blood.

"Post-infective Interstitial Nephritis and Renal Sclerosis" were explained by Patella, who injected animals with urine from pneumonia and typhus patients, finding that the pneumococcus and Eberth's bacillus are capable of producing various alterations in the kidneys, especially interstitial nephritis, from which a sclerosing process develops.

BENVENUTI announced that "primary splenomegalia" is the result of an intoxication and not of an infection. It is difficult to differentiate from pure splenic anemia, but is indicated by cirrhotic alterations if they are present, although there does not seem to be any connection between the lesions of the spleen and those of the liver in many cases. The splenic lesions are characterized by fibro-adenia.

MARENCHI described regeneration of the peripheral nerve-fibers, from some experiments in which he had cut the pneumogastric on one side and fifteen days later on the other, and six days afterward excised the portion of the nerve first cut with the cicatrix. The microscope revealed the entire absence of nerve-fibers at the cicatrix, from which he concludes that the re-establishment of the function of the severed nerve does not depend upon its regeneration, but is effected by means of collateral nerve routes.

BUSCHINI called attention to the diagnostic value of the slight rhythmic jerks of the head that accompany the pulsation

in cases of aneurysm of the aorta, noted by Coop. They disappear about twenty-four hours before the rupture of the aneurysm, and may disappear partially or entirely if clots form in the aneurysm.

In connection with the Congress there was a most interesting exhibition to illustrate the history of medicine, with autograph works and reproductions of the priceless treasures of the Vatican and other museums, and collections throughout the country, among them Leonardo da Vinci's anatomic drawings with his autograph notes in his peculiar style of "mirror writing." One case contained reproductions of the votive offerings and designs carved on the pillars of the ancient temple of Esculapius at Tevere. There were also autograph and unpublished manuscript by Malpighi, Rolandi, and other famous names. The *Gazetta degli Osp.* of October 2 contains reproductions of some of the curious illustrations of these early works on medicine.

Italian Congress of Hygiene.

Turin not only welcomed the Congress of Internal Medicine in October, but also the Congress of Surgery and the Congress of Hygiene, all three remarkable for the number of leading men, who occupy important political positions, in which respect Italy is exceptionally favored.

Among the subjects treated was the success of Professor Slavov's serotherapy of anthrax, which has been found effective not only in animals but in man. The Congress passed resolutions urging the government to provide means to produce this serum on a larger scale.

MATTEI reported the efficacy of fluid extract of lemon in the prophylaxis and cure of "malaria," confirmed by the experience of a number present, but for fear that the lay public might be led to neglect the use of quinin, the lemon treatment was not generally endorsed, and the subject was referred to the next congress for further discussion.

OTTOLENGHI stated that a three per thousand solution of corrosive sublimate will not kill the bacilli in tuberculous sputa, but this is accomplished with a 10 per cent. solution of lysol. It was decided that this matter be agitated until an unfailing disinfectant be definitely accepted for this purpose.

The necessity of greater uniformity in the technique of bacteriologic analysis of waters, was emphasized, to enable comparison of the work in different laboratories.

Resolutions were passed in favor of a central department of public health, and the Congress adjourned to meet next year at Como, where the centennial of the invention of the Voltaic pile is to be celebrated.

SELECTIONS.

Gheel Insane Colony.—The *Charities Review* for October considers the question of the influence of a colony of demented or feeble-minded upon the neighboring community. To begin with, it should be borne in mind that the Gheel colony for Belgic insane dates back about thirteen centuries, beginning on a small scale and progressing with varying fortunes until the present, when almost every home in the town is a part of the great cottage hospital utilized by the State. For all these centuries the insane have had the run of the streets of Gheel, and the citizens' familiarity with the whims and caprices of their guests eliminates every look and tone that might point to any inequalities of condition, and in time the newcomer learns to act as he sees others act. When a new patient arrives he is taken to the infirmary, a comfortable building in the outskirts of the town. Here the first diagnosis is made, and if there is no fear of violence to himself or others, he is put in the general ward for closer observation. The nurse is summoned to take to his home his new charge, and he is told as much of the patient's history as he should know, in addition to explicit directions as to the diet and care that is demanded. The patient is taken at once into entirely new surroundings; into a home, in fact, where he will be regarded with interest and not suspicion. Occupation is also provided as far as possible and the guest encouraged by pay and praise to assist in the work of the house or farm, and in the withdrawal of his

thoughts from himself he takes an interest in the joys and sorrows, trials and labors of those around him. The rules do not allow any family to take more than two patients, and prescribe in explicit terms the care which they must receive, the way in which the rooms must be furnished, the clothing to be worn, the beds on which they sleep, and the food provided. The physician must visit each patient at least once a month, and the inspectors drop in at irregular intervals. Since the majority of the households of Gheel are supported by their insane boarders it is important that the rules should be obeyed, but this is not the only motive for acting humanely. When we recall that for generation after generation the people have been daily exercising patience and showing sympathy, it is easy to see that it is the very nature of these people to be kind and gentle. One of the questions which frames itself in the minds of all who hear of this unique institution is: "How does this large contingent of feeble-minded affect the native population?" The daily association with the simple from childhood on would surely influence more and more each generation, but it does not appear to be the case, and in fact, the great success which has attended the college at Gheel proves conclusively that the Gheelois are as clever as any of their neighbors. The explanation for this unexpected immunity from mental atrophy is that the entire population is apparently oblivious to the presence in their midst of anything abnormal. If this were not the case, it is easy to see how 2000 insane living in the homes and walking the streets might cast a blighting influence over their environment. The colony releases as cured or benefited a yearly average of perhaps 20 per 1000, although efforts are made to reserve the colony for the least promising cases, keeping the curables at home.

Health Resort in Southern India.—The mountain resorts at Simla and Darjeeling, India, are comparatively familiar names to English and American readers, but Kodaikanal, a sanitarium nearer the south end of the peninsula, is seldom spoken of. It is 7200 feet above the sea, near the summit of the Pulney mountains, and has been especially advantageous to missionaries for nearly half a century. Two American missionaries were the first to ascend the precipitous mountains and find there a relief for the deadly burning heat of the lower plains. Groves, springs and a lake exist and add to the climatic attractions of the place, and a railroad now runs not far from the foot of the peak. Stone houses have been erected around and above the lake, and their accommodations are well nigh exhausted during April and May, the two most trying of the hot months of the year, in Southern India. It is a great boon for the adult members of the foreign missions, and also for their children, to have this outing, which saves in many cases the expensive trip to America, when recuperation becomes imperative. Rev. Jacob Chamberlain, M. D., writing to the *Missionary Review* about the history of this lofty resort, says: "It is singular that nearly all the great sanatoria of India, north and south, are at practically the same elevation above the sea, Simla being 7116, Darjeeling 7168, Ootacamund, 7271, Kodaikanal 7209. Simla is the summer capital of the Viceroy, Darjeeling of Bengal, and Ootacamund of Madras, and hosts of government officials, with their families, accompany the governors there, and other Europeans swarm those places. Kodaikanal, however, is a smaller and more quiet place. Its climate is less damp than many of the hill stations. Being nearer the equator, in latitude 10 degrees and 15 minutes north, its climate varies but little in different seasons of the year. The thermometer 100 feet above the lake never goes below 40 degrees in the cold months, and it never rises above 76 degrees in hot months. In January and February, frost is seen on the shores of the lake, but never 100 feet above. In April and May, the hottest months, the mercury seldom marks above 75 degrees or below 60 degrees, thus varying less than

15 degrees night and day, week in and week out. Essentially the same of the temperature during the hot months of the year, might be said of nearly all the great sanatoria of India. There is not the real tonic effect of frost upon the system. It does not build one up who is run down as a winter in the temperate zone does; but an occasional change to one of these sanatoria is exceedingly helpful in preventing the utter breakdown that has wrecked many a promising missionary career too near its beginning.

New Mexico as a Health Resort.—In *Public Health* for September, Dr. Curtiss Bailey writes at length and with illustrative diagrams, regarding certain climatic peculiarities of "the dry belt of the West," especially of Las Vegas in New Mexico. The climate of New Mexico, though far from ideal, can only be understood and appreciated by comparison with that of other States and countries. A survey of its climatic conditions, such as its altitude, its southerly latitude, its even average temperature, its low humidity, the small amount of precipitation, its excess of sunshine, the minute amounts of aqueous vapor contained in its atmosphere, its isolation from large populous centers, its great distance from large bodies of water, its immunity from high winds and sandstorms, and its freedom from unsanitary surroundings, should convince the reader that there does not exist a better or more ideal climate for the elimination of disease and the restoration of health. One of the prime factors of climate is wind. While it is true that severe winds scour the high plateaus and mesas of the Rockies, yet in localities like Las Vegas Hot Springs, which is situated beneath and sheltered by foot hills, high winds never occur. At Santa Fé, a town fifty miles distant, where the velocity of the wind is, if anything, in excess of that of Las Vegas Hot Springs, we find the annual velocity 60,891 miles. This compares favorably with certain other American cities. The prevailing winds, which are westerly, cross the snowclad peaks of the Rockies, and those foot-hill districts which, covered with terebinthinate growths, saturate them with balsamic odors and healing powers. No large cities interposing to contaminate them, the air here compares with that of midocean, the purest known. The coolness of the nights, which renders sleep possible and pleasant, is explained by the difference which exists between the sun and shade in high altitudes as compared with sea-level. It is estimated that for every 235 feet rise, a difference of 1 degree F. is found between sun and shade. This accounts for the warmth of the sun early in the day, and also explains the rapid fall of temperature at sunset. There is no doubt that the beneficial effects of sunshine increase with altitude. But favorable as may be these conditions, the vast differences do not exist which are generally accredited New Mexico as compared with lower altitudes. Nature demands the same from her children wherever they be; her laws are equally in force everywhere. The conveniences and luxuries of home life can not be sacrificed by the invalid upon the altar of climate. The intelligence, direction and watchful care are as important in one locality as in another. The bed-ridden at home can not rough it on the plains and mountains of New Mexico and expect favorable results. Many have been the disappointments because of such erroneous impressions. Exposures at home, due to atmospheric changes, are both frequent and dangerous; the same is true in New Mexico, even though it be in a lesser degree. The patient needs medical assistance and attention as much on the table-lands of the Rockies as within his native environment. Whatever is necessary for the recuperation and restoration of health at sea-level is equally essential in New Mexico, for climate, though of primary importance in combating disease in the more serious affections, must call to its aid those methods which, applied under less favorable atmospheric conditions, are of no avail.

PRACTICAL NOTES.

Gastric Fermentations.—The following mixture is prescribed by M. Einhorn for the fermentations connected with gastrectasia from stenosis of the pylorus: Resorcin 4 gm., bismuth subnitrate 20 gm., aq. dest. 200 gm. A tablespoonful in a glass of water half an hour before meals three times a day.—*Semaine Méd.*, September 14.

Intrauterine Injections.—Tipiakoy recommends in salpingo-ovaritis and parametritis, irrigation of the uterus with a tepid five per thousand solution of sublimate, continued for three or four weeks. It is also very beneficial preliminary to an operation on the adnexa, by reducing the tumefaction and inflammation.—*Semaine Méd.*, August 24.

Hemostasis with Gelatin.—All the inconveniences of tampons and the dangers of renewing the hemorrhage when they are renewed, after ablation of tumors of the nose, are avoided by dropping a little 1 per cent. gelatinized water from a syringe on the pedicle of the tumor after the first severest gush has been arrested by compression. The clot forms almost instantaneously. Every time the blood appears, check it afresh with the gelatin, warning the patient not to blow his nose, and to stay in bed twenty-four hours, and instil gelatinized or oxygenated water every two hours.—*Semaine Méd.*, September 14.

Treatment of Varicocele.—The assistant stands at the right of the reclining patient and pushes the testes up against the pubis, holding the scrotum between the fore and second finger of his left hand, while with the right he draws out the double wall of the inferior portion into a flat, square apron. The operator then inserts a Reverdin needle into the scrotum just below the testes, and a ligature is made, passing through the derma and tied moderately tight, so that the drawn up bag thus formed of the under portion of the scrotum, hangs directly beneath the testes, neither in front nor behind. Chloroform is unnecessary.—Professor Nimier: *Revue de Chirurgie*, October 10.

Mitigations of Graves' Disease.—Dr. Roland G. Curtiss of Philadelphia (*Internat. Clinics*, Vol. iv, Series v, p. 78) concludes an article on this affection as follows: Graves' disease is hereditary, therefore the marriage of those having such an inheritance should be discouraged. A person with such an inheritance should reside at an elevation of more than 500 feet; should avoid great excitement or any highly exciting occupation; should shun a residence in a limestone region, and hesitate to select a home in a locality where the disease is common, no matter what the locality may be; and should avoid any cause of anemia, as well as excessive study, prolonged mental or sexual strain or anything likely to induce a neurasthenic condition.

Ergot in Chronic Malaria.—Jacobi (*Med. News*, October 22) reports cases and concludes from his use of ergot that: 1. Certain cases of chronic intermittent fever occur, with large tumefaction of the spleen, which, having resisted the action of quinin, arsenic, etc., are benefited by ergot. 2. The contracting effect of the ergot is noticed within a reasonable time, when the splenic enlargement is not old or firmly established. 3. The attacks will disappear before the diminution in the size of the spleen is very marked. 4. Chills are not noted, as a rule, after the use of ergot, though temperature remains irregular. 5. Plasmodia do not disappear so rapidly as with quinin, where the latter is effective, though many apparently intractable cases get well with ergot.

Aneson, the New Anesthetic.—This is a colorless, aqueous solution of trichlor-pseudobutyl-alcohol or acetone-chloroform and corresponds to a 2 to 2.5 solution of cocain, but has none of the latter's local irritation and is non-toxic. As much as seven-

teen grams have been used without after-effects. The anesthetic effect is also immediate, with no interval, as with cocain. In suturing, a small amount of aneson injected at the points where the stitches are to be taken will prevent pain. Even inflammatory phlegmonous processes can be rendered perfectly insensible if sufficient aneson is used to keep them flooded all the time. The anesthesia was not perfect in all cases, but this can be said of all other anesthetics. L. Sternberge of Berlin concludes his report of a dozen tests of aneson in the *Klin.-Therap. Woch.*, of September 25 by recommending it as a useful and safe anesthetic.

Peripheral Neuritis.—The connection between peripheral neuritis and chronic deforming rheumatism is evidenced by thirteen observations on record in which a peripheral neuritis was noted with chronic deforming rheumatism, one observation of spinal meningitis and six observations of alterations in the spinal cord accompanying pronounced peripheral neuritis. Pitres and Carrière comment on these cases (two personal) that the neuritis is not the essential cause of the rheumatism by any means, but probably plays an important part in the production and localization of the trophic alterations of chronic rheumatism and is itself the effect of the antecedent lesions of the tissues or of the humors of whose nature we are still ignorant. The neuritis is evidently a sort of intermediary between the general disease, the rheumatism, and the articular dystrophy.—*Archiv Clin. de Bordeaux*, August.

Purulent Ophthalmia and Ophthalmia Neonatorum.—In these diseases Jenkins (*Med. Record*, October 29) uses the following: Argenti nitratis, gr. v-x; acaciæ, ʒi (or q. s.); aquæ destillatæ, ʒss; petrolati liquidi, ʒss; to be made into an emulsion and shaken well before using. He believes the various potent solutions and crayon applications often do more injury to the eye than the diseases, and that this emulsion is the least injurious and most efficacious in all forms of purulent disease of the eye. In the initial stage the customary treatment for blenorrhœa is to be followed, the emulsion resorted to on the establishment of suppuration, when, the patient on his back and the lids everted, the eye being cleansed with a hot 1 to 5000 sublimate or potassium permanganate solution, two or more minims are dropped into the eye. The surgeon should then manipulate the everted lids so that the emulsion penetrates "to the utmost recesses of the folds of transition of the conjunctiva." The emulsion should at first be used every twelve or twenty-four hours; afterward twenty-four, forty-eight or sixty hours, until the discharge entirely ceases.

Gelatin in Aneurysms.—Lancereux presented a couple of patients at a recent meeting of the Paris Académie de Médecine, cured by subcutaneous injections of 150 to 250 c.c. of a solution containing 2 gm. of gelatin to 100 gm. physiologic salt solution. One patient had received twelve injections in the gluteal region between January and May, and two new aneurysms, appearing lower down, were definitely arrested with a single injection. Nature heals an aneurysm by the formation of clots in the cavity of the sac, until the lumen becomes as small as the rest of the artery. The aim of therapeutics should therefore be to assist nature in the formation of these clots, and this can be accomplished by rendering the blood more coagulable with gelatin. A sac-shaped aneurysm, with its slower current and uneven walls, is especially amenable to this treatment, but a spindle-shaped dilation is not affected by it. He reported five observations and Huchard another. The latter by this method has arrested uncontrollable hemoptysis in a tuberculous patient. Fournier called attention to the extreme frequency of syphilis in the etiology of aneurysm of the aorta, noting that one of the patients presented was a syphilitic, and mentioned a new cause of error in the diagnosis of aneurysm of the aorta of syphilitic origin: the appearance of a large gummatous patch in front of the aorta, which presents every indication and is accompanied by all the symptoms of aneurysm of the aorta, but is in reality nothing of the kind. It yields readily to specific treatment, but it must not be supposed that it is an aneurysm that has been cured.—*Bulletin*, October 11.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5 00
Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, NOVEMBER 12, 1898.

THE RELATION OF MALARIA TO RENAL DISEASE.

The profession is coming to recognize more and more the interdependence in health and disease which exists between the various organs of the body, and that maladies which exert their primary and dominant influence upon one organ may simultaneously or consequently seriously derange another part far removed from the site of the early lesion. In no organs of the body is this interdependence of function better developed than in those which occupy the abdominal cavity, or lie in adjacent parts, and as a result of this we see secondary renal changes following diseases in the liver, the spleen and the intestinal canal in a considerable number of maladies. It is, however, particularly in those diseases which are called infectious that the kidneys are apt to suffer, for they are the organs by which the toxins or poisonous matters produced by the infecting micro-organism must be chiefly eliminated from the body, and it is for this reason, in all probability, that nephritis so frequently follows scarlet fever and other acute infections. As the years go by it becomes evident that primary renal disease is much less frequent than it was originally considered to be and more commonly it is recognized as a purely secondary affection.

In this connection recent studies which have been made concerning the influence of malarial infection upon the kidney are of very great interest, and it seems to be the universal experience of those who have made a careful study of malarial infection that albuminuria indicating renal difficulty due to malaria is exceedingly common. Thus OSLER states that it

occurred in 46.4 per cent. of the cases in his wards, and THAYER has recently shown that casts of the urinary tubules were found in 17.5 per cent. of the cases, indicating that there was a true inflammation of the kidney in these cases of the disease. Furthermore, he has also shown that in 1832 cases of nephritis, 26 were of malarial origin. In confirmation of these statistics KERLEY has also reported the case of a child of 18 months who developed malarial nephritis, and he quotes MONCORVO's article, in which it is stated that in Rio Janeiro it is not rare to find children suffering from acute nephritis as the result of malarial poisoning.

FRUITNIGHT has also reported similar cases, and it is evident that physicians called upon to treat malarial cases should carefully watch the state of the kidneys by a constant examination of the urine.

These facts are also interesting in connection with the well-known antagonism of many prominent practitioners to the use of quinin in malarial fever, associated with renal changes, and we believe that great caution is necessary concerning the use of this medicament, particularly when the kidneys are involved, first, because quinin in large doses acts as an irritant to the kidney, and second, because it has been found in cases where the kidneys were manifestly impaired that the drug seemed to produce serious renal complications. No less an authority than Koch, on his return from Africa, has asserted that the abuse of quinin in severe malarial infection of the estivo-autumnal type is responsible for many of the complications seen in the malignant forms of malarial fever in that country. It seems to be universally agreed that it is the estivo-autumnal parasite which most frequently produces nephritis. Yet this is the type in which the physician is most tempted to push the drug, as it is the least affected by ordinary doses of quinin. In other words, that form of malarial infection which, by its persistency, would lead to the use of large quantities of quinin also produces a condition of the kidney which makes the use of large doses of this drug of doubtful advantage.

A PSYCHOLOGIC QUESTION OF PRACTICAL IMPORTANCE.

Once in a while, but fortunately not very often, we hear of an accident by land or sea which is utterly unaccounted for on any ordinary rules guiding human conduct, and which seems to demand, or at least justify, the presumption that there are psychologic moments, in which, without any special stress or emergency, there is sometimes a sort of mental vertigo concerning more particularly the judgment of those in whose hands important interests are placed involving property and even human life. A few years ago a great English battleship went down by collision, the latter directly due to orders given by the admiral, who at the time was considered the most promising and

competent of his rank in the British navy. An order was given by him, and repeated in spite of all the remonstrances that the strict discipline of the service would permit, that ignored the plainest rules of common sense, and the carrying of it out cost the lives of some four hundred British sailors and of one of the most formidable of England's fighting ships. It appeared from the inquiry into the disaster that there was no revealable cause for its occurrence other than some inexplicable mental condition on the part of the admiral, by reason of which he had, in spite of his perfect knowledge of the facts, considered the safe turning radius of the ship to be some hundreds of feet less than it really was, a sort of mental process in which one ordinarily a good mathematician will for the moment conceive that two and two make five or some other equally improbable proposition. Other similar instances can be adduced; a conductor, for example, in spite of explicit train orders, signals his engineer to start out to certain disaster, and very recently a powerful, well-found steamer was lost with serious sacrifice of human life under conditions that are difficult to appreciate without some such presumption as has been mentioned. The ship was miles off her proper course, was headed in the wrong direction; the captain, one of the most trusted and reliable of all those employed by the company owning the ship, was himself in charge of the deck at the time of the accident, and the rocks upon which the vessel struck were well-known dangers, while the conditions of weather, daylight, etc., were not such as to excuse the disaster on other grounds.

It would be natural to suppose that the temporary mental derangement that caused these accidents might be due to alcoholic indulgence on the part of those responsible, but this probability seems to be ruled out by the evidence in some cases, and we must look further for the cause. It can not, moreover, be commonly attributed to mental strain or excitement, for such conditions often are notably absent. We seem to be restricted by exclusion to this view: that able and competent men are subject, under certain special conditions which are, as yet, not clearly understood, to a paralysis of judgment, or rather, perhaps it should be said, to an absolute inability to realize at the moment the real relation of things and the consequences of this non-recognition. This theory has been strongly brought out in the discussion of Admiral TRYON's case, and it has much to be said in its favor. In minor matters we not infrequently hear people say that they can not explain why they did this or that irrational act; the impulse of the moment, a partial defect of attention or some other excuse generally serving for an explanation at the time. It is only when the consequences are serious, as in case of shipwreck or railroad disaster, that the subject receives much attention or excites general interest. That such conditions should occur in those who have

the most important interests in charge makes the subject one of special importance, requiring careful inquiry into the causes and prevention, especially in those whose judgment and attention are taxed. The question arises whether they may not be overtaxed and this be a direct cause of their occasional failure. It is well known that locomotive engineers sometimes break down completely after long-continued nervous strain, and are then sometimes even subject to hallucinations that affect their judgment in critical cases. This, however, may be another matter altogether from the momentary intellectual derangement that makes a shipmaster or railway conductor give an order directly contrary to his own better judgment, with disaster, it may be, as the result. We may assume that there is in some of these cases an intellectual *petit mal*, but it is more reasonable to refer them to something less distinctly pathologic and more in the common order of events. Such errors of attention and judgment must be occurring frequently in common life, but being without specially evil consequences, they are commonly overlooked or forgotten. That they may occur also when every reason should be against it, and in those who by education and training ought to be particularly on their guard against them, only raises the question of their investigation.

A study of all known accidents from this cause, taking into consideration not only the habits, conditions, surroundings, age and all other circumstances of those responsible, would be a possibly valuable contribution, but thorough and extensive investigations into the pathology of attention generally are likely to be the means by which we are to obtain the more practically valuable results. The time may come when those in responsible positions requiring quickness of attention and perception and reliability of judgment, like certain railway employes and other officials, will have to undergo examinations by trained psychologists, to test their fitness in these respects. At present we require tests for the special senses and some of their refinements, such as color perception, but it is not hard to see that the faculties of attention and intellectual quickness are even more important. It is hard to find accidents by land or sea that can be exclusively attributed to color blindness or other special defects, but some temporary higher intellectual aberration is fairly forced on our attention as a cause of such disasters.

BLOOD CRYSTALS.

The hematologist frequently encounters under the microscope crystalloid bodies of varied shapes and sizes. As a rule these are without any practical significance. Their presence, however, may be accounted for in various ways. In the first place they may be of hemoglobin. We have known for a considerable time that though the hemoglobin of human blood

resists laboratory crystallization, that of some of the lower animals, notably the guinea-pig, can be readily crystallized outside the body. In the healthy blood crystallized hemoglobin can be easily demonstrated: a large drop of blood is placed upon a slide, and after coagulation of the margin has taken place the cover is lowered gently, and after from twelve to twenty-four hours the hemoglobin appears as rhombic crystals. In diseased blood, and particularly in leukemia, pernicious anemia, and the septic processes, septicemia and pyemia, it appears much earlier—from a few minutes to a few hours. It may be noted here that human hemoglobin always crystallizes as reduced hemoglobin, a point which may serve to distinguish human blood from that of the lower animals. It would seem that from the readiness with which crystallized hemoglobin appears in conditions of the blood attended with destruction of the red corpuscles, its early presence indicated a retrograde condition on the part of the blood.

Hematoidin crystals are of more frequent occurrence. They are almost always described as a constituent of old blood extravasations, cysts, spleen infarcts, old thrombi, and especially old cerebral softening. In the anemias, pernicious anemia and leukemia, these crystals are often found within the white corpuscles, though this may occur in a specimen of healthy blood as well.

Found more frequently in leukemic blood than in any other diseased condition are the so-called CHARCOT-LEYDEN crystals, though they are by no means peculiar to this disease. They occur as long, colorless, pointed needles, and are identical with the spermin crystals found in the seminal fluid. It would seem from the above that, as far as our knowledge now extends, the presence of these crystals aids us practically nothing in the study of the blood, the only fact of importance being their early presence and in increased numbers in blood which is undergoing a progressive loss in its vitality.

THE ASSOCIATION OF TRAUMATISM AND INFECTION.

During the early part of 1898 we published in the *JOURNAL* an editorial dealing with this subject, in which it was pointed out that the relationship between traumatism and infection possessed an interest not only to the medical man, but also to the lawyer, in that comparatively mild injuries might result in severe infections in so short a space of time that the patient's death might be directly attributed to the accident. As some of the literature covering this matter was quoted in that editorial it is not necessary at present to quote it a second time, but it is interesting to note that very recently two American investigators, CHEESMAN and MELZER, have published in the *Journal of Experimental Medicine*, a research to determine how far injury of a part rendered it susceptible to infec-

tious processes. We need not quote the technique which they employed nor the literature which they studied in the preparation of their research, but it is worthy of note that they found that any interference with the function of an organ caused micro-organisms introduced into the blood to grow with great rapidity and to produce grave injury, and, further, that if one of the organs, such as the spleen for example, were injured and the animal infected with a pathogenic micro-organism, these micro-organisms found lodgment at the site of these lesions and developed with extraordinary rapidity and virulence. They also found that although micro-organisms might be injected into the blood-stream these micro-organisms speedily disappeared from the current and were found congregated, not in the healthy organs, but in that which had been injured. They also cite a remarkable fact, namely, that even after the injection of bacteria into the blood this fluid remains sterile in many instances. On the ground that blood is a liquid tissue it is suggested that it, like other tissues, permits the growth of bacteria only when it has been injured, all of which goes to emphasize the scientific basis for the well-known clinical fact that any condition of injury or debility in one part of the body renders an individual so affected susceptible to almost any infection to which he may be exposed. Thus we see how clinical observation and empiric statements can be and are substantiated by scientific research from year to year. All these facts also emphasize the importance of preparing a patient who is about to be subject to a surgical operation, in such a way that every organ in the body is in proper functional activity and strength, so that it may not be prone to infection should the blood become thrown open to disease micro-organisms. How often do we see tubercular areas attacked by the operator in the bones or in the pelvis, without the physician first taking heed that the pulmonary organs are in as good condition as it is possible to put them in, and how frequently the physician meets with cases in which, as a result of operations, secondary infections have ensued. Many of the cases of so-called ether pneumonia, post-operative nephritis, and similar conditions, might perhaps be avoided if particular pains were taken in every case to have every organ in the body prepared to resist disease to the greatest extent before the patient is put to the test of endurance.

THE COMMISSION EVIL.

An evil has lately sprung up which is not specially creditable to those concerned; this is the practice of paying commissions or rebates by specialists to persons bringing them cases. A few years since the medical world was set sneering, by the well-authenticated report that in a certain city the physicians sent out drummers to board incoming trains and by skilful touting to secure business for their respective employ-

ers. Fabulous tales were told of the wealth piled up in this way, and when the light was turned on this practice, the Legislature enacted a law that all persons engaged in this business should wear a badge. This put an end to this scandal. There is little difference between these now obsolete methods and those now practiced in many of our Northern cities, only that professional men are employed as drummers and the slice of the fee is larger.

Another variety of this commercialism has reached the hitherto honest practitioner in the country. The plan is this: Dr. A. brings a patient to Specialist B. or General Surgeon C. A. says, "here is a man abundantly able to pay a good fee, charge him liberally, but I want one-third or one-half." Should the specialist or the general surgeon refuse to accede to this proposition, the patient is taken elsewhere to some less scrupulous brother.

The wrong is to the unsuspecting victim; he trusts his family physician to send him to the specialist of his selection to be sure, but he has a moral right to expect that selection to be made on honest judgment and not with regard to the division of a great fee. Nor is this practice fair to the specialist and surgeon, for they get the credit of charging an exorbitant fee, only a part of which they actually receive.

No. Let each practitioner have his regular and proper fee, and if any division must be made, let the patient know exactly whom he is paying.

THE WAR INVESTIGATING COMMITTEE.

The War Committee of Investigation visited Chicago this week and took testimony of various volunteer medical officers. Colonel SENN, Dr. CUTHBERTSON and others testified. As the testimony was of general interest we will reproduce it in our next issue.

CORRESPONDENCE.

Braces in Spinal Curvature. A Discussion of a Few Points found in an Editorial of Sept. 10, 1898, in the Journal of the American Medical Association.

NEW YORK, Oct. 31, 1898.

To the Editor:—I observe in the JOURNAL of September 10 an editorial on "Curvature of the Spine," which is so far at variance with clinical observations, scientific facts, and known truths, that I believe, in the interest of the profession and the unfortunate individuals afflicted with this deformity, that a short discussion of the editorial and its subject-matter, will not be wholly out of place.

I quote from the editorial: "What greater mistake can there be in medicine than that of fitting a brace to a child suffering from spinal curvature?" . . . "What folly, what total lack of reason it would seem to put a splint on a weak muscle!" . . . "The fault is entirely one of nutrition and development."

These statements are misleading, both to the profession and to the patient. They are arbitrary in their inception, empiric and unscientific as an edict. These statements would lead the reader to believe that all cases were attended with weak or paralyzed muscles as an etiologic factor. Now, I am prepared

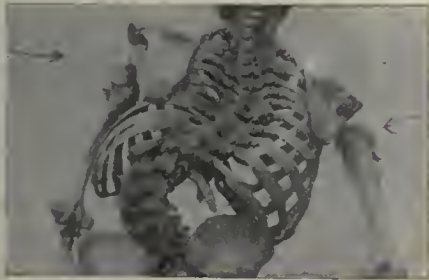
to state and demonstrate that not all cases of lateral curvature of the spine are attended with weak or paralyzed muscles as an etiologic factor. Cases of lateral curvature of the spine, due to a short leg or bad position in sitting, have their origin primarily in bone changes. Many cases of lateral curvature of the spine begin in bone disease located on one side of the body of the vertebrae, which disease leads to a lateral curve by the destruction of bone, and in other instances by the absorption of the intervertebral cartilage and bone from pressure. In such cases the muscles have nothing whatever to do with pathologic changes which take place in the bone. Such cases are not by any means rare nor in the minority, and I would like to ask whether these wholesale edicts which are promulgated in the editorial are intended to apply to such cases as I have just mentioned, which clinical observations demonstrate, and the entire orthopedic profession, perhaps, with an occasional exception, will verify. In such cases, the weakness of muscle occurring on one side (the convex) of the curve is a secondary result, depending entirely on the primary curve in the bone, and surely, to prevent further destruction by absorption of the vertebrae or intervertebral cartilages, a support to relieve pressure is of paramount importance. In deformities of the extremities caused by paralysis of muscle, and more especially so-called spastic paralysis, the only way to prevent bone and ligamentous changes, which would result in hopeless deformities, is by applying appropriate braces and even resorting to extensive tenotomy or myotomy to weaken the strong muscles; thus establishing normal compensation between the muscles. The same rule holds good in lateral curvature of the spine. The spinal column is a flexible lever operated upon by masses of muscle on either side of it. If one set of muscles is two or three times stronger than the antagonizing ones, lateral curvature will result, in spite of gymnastics, massage or electricity, unless the spinal column can be reinforced by a proper brace to hold it in a straight position, to prevent absorption of bone by pressure. I, therefore, can see no "folly nor lack of reason," in applying a suitable support to lateral curvature of the spine, any more than I can see "folly or lack of reason" in applying a brace to a foot paralyzed, to prevent talipes varo equinus.

It may be argued that massage will prevent a clubfoot occurring in spastic paralysis. This I know, with an occasional exception, is impossible, because I have tried it in a large number of cases. It may also be argued that massage and gymnastics, without bracing, will cure all cases of lateral curvature of the spine. This I also know to be an error, because I have seen scores of cases treated with gymnastics and massage by our best orthopedic surgeons in this city, and still these cases have gone on increasing in curve, due to pressure absorption. Proper bracing, together with gymnastics and forcible redressment, should be the rule of treatment in cases requiring it. One may as well attempt to straighten a crooked mast of a ship, which had become warped and bent by the weather, by tightening the shrouds and stays, as to straighten cases of lateral curvature of the spine of the second degree with gymnastics and massage without proper bracing.

Another quotation from the editorial: "There are in medicine and surgery a number of conditions which are hidden from observation and palpation, perhaps they are further obscured by a feeling of uncertainty in the anatomy of the part, and at no time in the course of the disease can we see, feel or measure in millimeters the exact extent of the lesion. The physician will invariably draw down the curtain of obscurity before such a case, lose his clearness of vision and make haphazard thrusts at both diagnosis and treatment." There are many factors in the etiology of lateral curvature of the spine, which the profession know but little about. We are perfectly familiar with pathologic conditions which take place in lateral curvature of the spine. The dissecting-room has told the story. We also

know of something like eight or ten different causes of this curvature, but we do not know the whole of them. It is for this reason that I believe your editorial makes a mistake in its dictum in stating: "What greater mistake can there be in medicine than that of fitting a brace to a child suffering from spinal curvature?" This edict would imply a *perfect knowledge of the etiology of all forms of lateral curvature and that it was always to be found in the muscles alone.* This together with, "The fault is entirely one of nutrition and development," is a mistake.

In many cases changes due to nutrition and development are secondary, the curve not being caused by weak or paralyzed muscles, but by other potent agency. e.g., rachitis, bad position, a short leg and even a diseased vertebra. Surely these conditions require bracing, together with proper treatment, after bone changes in the vertebral columns have taken place. Then a little further on, I find all the causes of lateral curvature summed up in the following sentence: "The predisposing causes are prolonged ill-health, rapid growth and rickets, occurring in girls between 12 and 20 years, while the exciting causes may be a one sided position at school, a faulty position in standing, an obliquity in the pelvis, and it would seem from the fact that it is usually right-sided, that a hypertrophy of the muscles on this side acts as a prominent factor." Now, as a matter of fact, the hypertrophy of the muscles is not upon the side of convexity. If the hypertrophied muscles were upon that side they alone would strengthen the spine, and there would be no occasion for gymnastics or other exercises. The paralyzed or weak muscles are always upon the side of convexity and not on the side of concavity.



When the deviation from the median line amounts to more than one-half of the diameter of the vertebrae, it will invariably increase, under any form of treatment short of proper bracing to relieve the pressure at the point of curve, for the reason that the weight of the head and shoulders, upon the flexible spine, while the patient is in an upright position, will constantly exert pressure on that point, and absorption will go on as many hours a day as the patient is in an upright position, no matter if the muscles are developed in strength and size to those of a gymnast.

The illustration appended represents an advanced form of double lateral rotary spinal curvature with its attending bone changes. On the left side the ribs are approximated and even overlapping. The intercostal muscles and ligaments on the left side are put upon the stretch while upon the right they are contracted and have become shortened or destroyed. In the lower curve the transverse processes upon the concave side of the curve have become firmly locked together, as also they have in the upper curve, while upon the convex side of both curves, the transverse processes are as widely separated as the ligaments will permit. In both these curves the vertebrae have become thin and wedged-shaped, the point of the wedge being directed toward the concave curve. The muscles in this specimen were found to be degenerated and almost entirely destroyed over the convexity of the curve, while they were shortened and nearly normal in the concavity of the curves.

The spine is rotated in the direction of each of the curves, following the law that "rotation takes place in the direction of curve." Gymnastics could only be harmful in a case of this kind; nothing but appropriate bracing could arrest the progress of the deformity, and *nothing could be done to change the pathologic curves in the bone.* It would be necessary to change the shape of the thorax and ribs, and lengthen the intercostal muscles and ligaments to effect a cure, which is impossible.

Muscles do not hold the spine erect. There never was a greater error taught. Muscles only balance the spine. Ligaments and the bony construction of the spinal column, together with intermittent action of the muscles to balance the spine, hold the spine erect. Muscles would tire out if they were put upon the stretch for any length of time, as can be illustrated by an effort to hold the arm in a horizontal position from the body; it will quickly fall to the side, and the muscles become temporarily paralyzed. Then, again, poliomyelitis paralyzes groups of muscles, which is a very frequent cause of lateral curvature. How are we going to restore tone to these muscles short of curing the lesion in the spinal cord, inasmuch as we know that these lesions are usually permanent, paralysis of muscles on one side allows of lateral deviation, and the weight of the head and shoulders producing pressure at the point of curve must necessarily result in absorption of the vertebrae by pressure through the lifetime of the individual? On the concave side of the curve will be found the shortened ligaments and shortened fibrous elements of the muscle. We know that when similar conditions exist in the muscles in the lower extremities, and spastic changes have taken place, nothing but a tenotomy and possibly an extensive myotomy will relieve the deformity. *Gymnastics and massage are of little use, or positively harmful in such cases.* The knife and proper bracing, together with gymnastics to assist in strengthening the opposing muscles, if they were not totally paralyzed on the convex side of the curve, are truly indicated.

That "the ligaments are lax and insecure," is not the fact; the ligaments are positively put upon the stretch on the convex side of the curve and upon the concave side are contracted and shortened, together with the fibrous structure of the muscles. Pathologic specimens in my possession, which I have dissected out, demonstrate these facts. The idea that ligaments are "lax and insecure" originated in the *mind* of the "gymnastic" orthopedic years ago. The dissecting-room explains the error, as it has many of the absurd theories in regard to deformities. To the quotation "Apparatus only defeats the object of the treatment in a great majority of cases by preventing development; an apparatus, no matter how skilfully constructed, can not correct a deformity of this kind," I may add that *no amount of gymnastics or other exercises can, or every has, diminished the curve due to bone changes in lateral curvature of the spine.* When the vertebrae have become deformed from destruction of bone, from absorption due to pressure, and changes have taken place in the ribs and intercostal muscles, that deformity will remain; and the sooner writers upon the subject admit this fact the better it will be for both surgeons and patients. The most that can be accomplished is to arrest the deformity by preventing further changes at the point of curve, by pressure, and aid in the formation of compensatory curves. *That apparatus prevents development is as erroneous as the statement is incorrect.* An apparatus which is only worn when the patient is in an upright position, in connection with proper gymnastics and other exercises, does not prevent development, but, on the contrary, such patients will more rapidly develop muscles that are weaker than without it. Clinical observations demonstrate this fact. To illustrate: In club-foot the extensor muscles have become weak on account of the feet having been drawn around to an abnormal position, by the stronger muscles putting the weaker ones upon the stretch.

This stretching of the anterior tibial group of muscles produces degeneration and temporary paralysis by pressure. The sheath and fibrous tissue of the muscle are approximated by stretching, making pressure upon the muscle cell. These same pathologic changes take place in the muscle of the back on the side of the convexity, and, as in club-feet, these muscles will not regain their tone until the tension is taken off them, and this is best done, in club feet, by overcoming the deformity immediately, by operating and bracing, and in the spine, by taking the tension off the muscles by putting the spine in an extended position. When the spine is so extended a proper support will hold it so while the patient is erect. This can only be done by an apparatus of some sort or recumbency in bed.

I am very sorry that it was necessary for me to write this letter, but as I stated in the beginning, it seems to me that the points which the editorial mentioned should be open to discussion in the JOURNAL.

A. M. PHELPS, M.D.

"The Jugglery of Statistics"—A Bungling Prestidigitator.

PHILADELPHIA, Oct. 30, 1898.

To the Editor:—In answer to your correspondent who writes under a part of the above title, permit me to quote a reply which appears in the *Philadelphia Medical Journal* of November 5:

"The Jugglery of Statistics, a Reply to an Absurd Editorial" is the title of an article occupying one and one-fourth columns in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of Oct. 29, 1898, and written by Dr. Charles Smart, Deputy Surgeon-General of the U. S. Army. The writer is very scornful and contemptuous of the statistics of medical men in general, and of the *Philadelphia Medical Journal* in particular, viewing all of us from the lofty point of an expert dealing with ignoramuses. He admits the accuracy of the figures given in our editorial, namely, that in the Civil War 66.6 per cent. of deaths were from disease, and in the Spanish War 88.1 per cent. It was this difference that we thought needed explanation, and with all deference to our cynic critic we still think it demands it. This is the way we are disposed of:

"The absurdity of this may be well illustrated by adding to the statistics and ratios given above those derived from the reports of the engagement of Admiral Dewey's fleet on May 1, 1898, at Manila. Dewey's fight lasted only one day. The figures given for the Spanish War covered a period of five months, and those of the Civil War a period of five years and two months; but as the element of time does not enter into the calculations of the ratios criticised this element need not be considered in the engagement at Manila. Here we find that no man was killed, no man died of wounds received, but that one man, an engineer officer, succumbed to heat exhaustion or insolation. Stating these figures as percentages of the total mortality we find: killed 0 per cent., died of wounds 0 per cent., died of disease 100 per cent., as compared with 88.1 per cent. in the Spanish War, and with 66.6 per cent. in the War of the Rebellion. If it is not needful for the Honorable Sirs to give such high consideration to the greater death-rate from disease as compared with the deaths from wounds and deaths on the battlefield in the Spanish War considered as a whole, how serious is the consideration they ought to give to this frightful rate of mortality from disease as compared with that from battle casualties in the Bay of Manila."

Now, is there a schoolboy of ten years of age who could not see the "absurdity of this?" If so, he should be whipped and put to his "arithmetic" again. What right has Dr. Smart to say that "the element of time does not enter into the calculation?" It is precisely this element of time that gives the subject any intelligibility whatsoever. The figures are for the entire periods of the two wars. Were there not a great many days during the Civil War when, no battles occurring, there were no deaths whatever from battle or from wounds, but in which large numbers died from disease? Will not our critic kindly spare us from the necessity of replying to such utter nonsense in future? And will he not also spare us the dis-

courtesy of applying his contemptuous remarks to himself? The death from the heat exhaustion at Manila, by the way, did not occur during, but some time after the battle. The "element of time" being excluded, the percentages of deaths during the entire Spanish-American War were as follows: killed, 0 per cent.; died of wounds, 0 per cent.; died of disease, 0 per cent. Q. E. D.

We add as a postscript to the above two thoughts which, as it occurs to us, have not been heretofore brought out: 1. The Civil War was longer, and therefore the number of deaths from disease would necessarily be enormously greater relatively than in a war of short duration. 2. The figures quoted of the deaths from disease in our recent war were made up some time ago, but since then additional deaths have been occurring every day. And the end is not yet reached. The percentage given of deaths from disease in the late war is consequently too low. Such considerations will have no weight with expert statisticians who think that "the element of time does not enter into the calculations."

Respectfully yours,

GEO. M. GOULD, M.D.

Retarded Delivery.

RYAN, IOWA, Oct. 29, 1898.

To the Editor:—The writer was called Thursday evening, October 20, to attend Mrs. C., a primipara, aged 21 years, with small but roomy pelvis and fine muscular development. Vigorous pains were established by 11 P.M., with the position right occipito anterior. Dilatation of the cervix was soon complete, and matters advanced steadily till early morning when, with the head well down on the perineum, and strong pains, all progress ceased. At 7:30 A.M., the mother showing signs of nervous and physical exhaustion, forceps were applied and the head easily delivered. The cord was found tightly wound around the child's neck. Traction on the cord resulted in severing its placental attachment and the child was quickly delivered. On measurement, the cord was found to be nine inches in length, and had evidently furnished one, if not the chief cause for the retarded delivery.

A. H. SCOFIELD, A.M., M.D.

BOOK NOTICES.

A Manual of Otology. By GORHAM BACON, A.B., M.D., Professor of Otology, Cornell University Medical College, New York; Aural Surgeon, New York Eye and Ear Infirmary. With an introductory chapter by Clarence Blake, M.D., Professor of Otology in Harvard University. New York and Philadelphia: Lea Brothers & Co., 1898.

This manual, written for students, furnishes in a very compact form all the information they need about the anatomy, physiology and the diseases of the ear. To impress upon the student the close relation of the upper air passages to aural diseases, the author has added a chapter on adenoid growths, enlarged tonsils and diseases of the nasal passages. The book is well written, small and inexpensive and undoubtedly will become popular with the students. It is profusely illustrated, and contains a colored plate representing a brain abscess. If colored plates at all, we should think in a manual of otology a series of colored pictures representing the drumhead in health and disease would certainly be far more appropriate than the picture of a brain abscess.

Medical Communications of the Massachusetts Medical Society. Volume xxvii, No. 3. Boston: 1898.

The contents of this volume are: 1. "Annual Discourses," by William T. Councilman, M.D. 2. "Some Modern Methods of the Treatment of Phthisis and its Symptoms," by Edward O. Otis, M.D. 3. "Types of Habit Neuro-Psychoses," by Edward W. Taylor, M.D. 4. "The Toxin of Diphtheria and its Antitoxin," by Theobald Smith, M.D. 5. "Recent Progress in the

Bacteriology of Typhoid Fever." by Mark W. Richardson, M.D. 6. "Epidemic Cerebro-Spinal Meningitis," by Arthur H. Wetworth, M.D. 7. "The Educational Treatment of Neurasthenia and Certain Hysterical States," by Morton Prince, M.D. 8. "The Question of the Curability of Cancer of the Breast," by J. Collins Warren, M.D. 9. "Correction by Operation of Some Nasal Deformities and Disfigurements," by George H. Marks, M.D. 10. "Formaldehyde Gas as a Disinfectant," by David D. Brough, M.D. 11. "The Pathology of Acute Infectious Osteomyelitis," by Edward H. Nicholas, M.D. 12. "The Shattuck Lectures, the Influence of the North American Climate on the People," by Sir William H. Hingston, M.D. The volume concludes with the proceedings, Councils of the Society and reports of the various officers. The articles are of a high class, and the volume shows that the advanced standing taken by the authors and the papers constitute marked additions to American medical literature.

The Care of the Baby, a Manual for Mothers and Nurses, Containing Practical Directions for the Management of Infancy and Childhood in Health and in Disease. By J. P. CROZER GRIFFITH, M.D. Second edition. Revised. Pp. 404. Philadelphia: W. B. Saunders, 1898. Price \$1.50.

The work is considerably larger than the former edition and is much improved. It has been completely revised and some new illustrations have been added. The work is designed particularly for mothers anxious to inform themselves with regard to the best way of caring for their children in sickness and in health, but is not intended in any way to take the place of the physician; indeed, the physician will find it of great service, as an aid to his efforts and in maintaining his authority.

A Manual of Venereal Diseases. By JAMES R. HAYDEN, M.D., with 54 illustrations. Pp. 304. New York and Philadelphia: Lea Bros. & Co., 1898.

This is the second edition, and, like all Gaul, it is divided into three parts, 1, being devoted to gonorrhoea and its complications; 2, to the chancroid, and 3, to syphilis. There are nineteen chapters in the first part, two in the second and twenty-two in the third. It is concisely written and its teachings are sound. We regret to see that the old British system of weights and measures is adhered to in the prescription writing.

Hygiene of the Voice, with Twenty-seven Illustrations. By THOMAS F. RUMBOLD, M.D. Paper, 114 pp. St. Louis, Mo.: Witt Publishing Company, 1898.

The author states in his preface that his own experience teaches him not only that none but medical men should attempt the treatment of voice-users, but only specialists who have limited their practice to diseases of the throat, nose and ear should treat these diseases. This is not a book on treatment, per se, but a book which is intended to inculcate knowledge of the laws of vocal hygiene. Its teachings are wise and conservative.

The Essentials of Materia Medica, Therapeutics, and Prescription Writings. Arranged in the form of questions and answers prepared especially for students of medicine. By HENRY MORRIS, M.D. Pp. 288. Fifth edition, revised and enlarged. Philadelphia: W. B. Saunders, 1898. Price \$1.00.

We are pleased to see in this little volume that the metric system of weights and measures, has been introduced and that otherwise it has been revised and brought up to date. It follows closely the last edition of the United States Pharmacopeia and will be found very useful to those for whom it has been prepared.

The Pocket Formulary for the Treatment of Diseases in Children. By LUDWIG FREYBERGER, M.D., Vienna. Flexible covers. Pp. 208. London: Rebman Publishing Company, Limited, 1898.

In this "Formulary" prepared of the drugs used in the treatment of children, the names are arranged, alphabetically, and the volume concludes with a therapeutic index. It will be found very useful as a remembrancer, and convenient for immediate reference.

Twenty-fifth Annual Session of the Florida Medical Association.—Paper. Pp. 161. Jacksonville: Vance Printing Co. 1898.

This volume comprises the papers and proceedings of the twenty-fifth annual session of this body, held at Jacksonville, Fla., April 26, 1898; also the constitution of this association and the Code of Ethics of the AMERICAN MEDICAL ASSOCIATION, with a list of members of the Florida Association. The volume lacks an index.

The American Pocket Medical Dictionary. Edited by W. A. NEWMAN DORLAND, A.M., M.D., Assistant Obstetrician to the Hospital of the University of Pennsylvania, etc. Containing the pronunciation and definition of over 26,000 of the terms used in medicine and the kindred sciences, along with over sixty extensive tables. Philadelphia: W. B. Saunders, 1898. Price \$1.25 net.

This is a handy pocket dictionary which is so full and complete that it puts to shame some of the more pretentious volumes. We commend it.

Tenth Report of the State Board of Health of the State of Maine, 1896-1897. Paper. Pp. 395. Augusta: Kennebec Journal Print, 1898.

This report is for the two years ending Dec. 31, 1897, contains a list of the members of the Board, the Secretary's report and two special papers, one a "Bacteriologic Report upon Formaldehyde," by Prof. F. C. Robinson and B. L. Bryant, and one entitled "Notes on Disinfectants and Disinfection," by the Secretary, A. G. Young, also printed separately and so noticed in the JOURNAL's book notices.

Pamphlets Received.

Abuse and Dangers of Cocain, The. By W. Scheppegreggell, New Orleans. Reprinted from Med. News.

An Additional Case of Double Congenital Microphthalmos; What Should the General Practitioner know About the Eye? By Cassius D. Westcott, Chicago. Reprinted from Journal American Medical Association and The Corpsman.

Annual Report of the Essex County Hospital for the Insane, Newark, N. J. Paper, illustrated. Pp. 72.

Arid Atmosphere of Our Houses in Winter, The. By Henry J. Barnes, Boston. Reprinted from Trans. Am. Pub. Health Assn.

Clinical Study of Interstitial Nephritis, with Methods of Diagnosis. By Everett J. Brown, Decatur, Ill. Reprinted from Med. Record.

Conservative Treatment of Fibroid Tumors by Myomectomy; Conservative Treatment of Pelvic Suppuration of Puerperal Origin; Operation for Restoration of Uretbra and Closura of Vesico-Vaginal Fistula Involving Neck of the Bladder; Some of the Disadvantages of Vaginal Drainage for Pelvic Abscess. By Charles P. Noble, Philadelphia. Reprinted from Philadelphia Med. Jour.; Am. Jour. of Obstet., and Am. Gyn. & Obstet. Journal.

Contribution to the Study of the Muscular Dystrophies, a; Orchitis, or Epididymitis, as a Complication or Sequel to Typhoid Fever. By A. A. Eshner, Philadelphia. Reprinted from Am. Jour. of the Med. Sci. and Phila. Med. Jour.

Dangers of Specialism in Medicine, The; Manifestations of Syphilis in the Mouth. By L. Duncan Bulkley, New York City. Reprints from Bul. Am. Acad. of Med. and Dental Cosmos.

Deaths (Ten) Surgical and Causes; Dermal Coverings of Animals and Plants; Serpents and Their Venom: Copperhead, Coral and Rattlesnake. By B. Merrill Ricketts, Cincinnati. Reprinted from Lancet-Clinic.

Diseases of the Alimentary Canal; Treatment. By J. O. DeCoursey, St. Libory, Ill. Reprinted from Cour. of Med.

Effect of Hypertrophy of the Inferior Turbinal on the Nasal Septum. By Lewis S. Somers, Philadelphia. Reprinted from University Med. Mag. Emotional Prodigality; Melancholia. By W. X. Sudduth, Chicago. Reprints.

Endemic Leprosy in Louisiana. By Isadore Dyer, New Orleans, La. Reprinted from Phila. Med. Jour.

Erosion of the knee in Children, with Conservation of the Epiphyseal Cartilage; Preliminary Report on Treatment of Dislocation of the Hip by Operative and Manipulative Methods; Questions in the Treatment of Congenital Dislocations of the Hip; Scorbutus in Infants, Some California Cases; Traumatic Dislocations of the Hip in Children, Old and Recent. By H. M. Sherman, San Francisco, Cal. Reprints.

Flies as Spreaders of Sickness in Camps. By M. A. Veeder, Lyons, N. Y. Reprinted from Med. Record.

Individual Communion Cup and its Critics, The. By H. S. Anders, Philadelphia. Reprinted from Penn. Med. Jour.

Intravenous Injection of Normal Saline Solution. By H. T. Hanks, New York City. Reprinted from Am. Gyn. and Obstet. Jour.

Kryofin. By A. E. Minds, St. Louis, Mo. Reprinted from Tri-State Med. Jour.

List of Members of the Medical Association of the District of Columbia. Paper. Washington, D. C.

Modern Treatment of Tuberculosis. By Charles Denison, Denver, Colo. Reprinted from Journal American Medical Association.

My Name's Appendicitis. By Emma B. Standley, Alexis, Ill. Reprinted from Chicago Clinic.

New Treatment for Trachoma. By George F. Keiper, Lafayette, Ind. Reprinted from Ophthalmic Record.

Plea for Posterity. By A. L. Russel, Midway, Pa. Reprinted from Phila. Med. Jour.

Sleeplessness; Its Cause and Treatment. By E. S. Pettyjohn, Alma, Mich. Reprinted from the Phys. and Surg.

Two Cases of Fibroma of the Broad Ligament. By John C. Dacosta, Philadelphia, Pa. Reprinted from Am. Jour. of Obstet.

Trade Pamphlets.

Caroid. Am. Ferment Co., Jersey City, N. J.
 Catalogue No. 1. New York Med. Book Co., New York City.
 Illustrated Announcement. Harvey Med. College, Chicago.
 New Medical Publications. Lea Bros. & Co., Phila. and New York.
 Sprague Dry-Heated-Air Apparatus, the Sprague Hot-Air Treatment
 Co., Chicago.
 Hunyadi János Natural Purgative Water Drawn from Saxlehner's
 Bitter-Water Springs, near Budapest. Cloth. Illustrated. Pp. 113.
 Budapest: Andreas Saxlehner, 1898.

PUBLIC HEALTH.

An Official Warning.—C. A. Lindsley, M.D., secretary of the Connecticut State Board of Health, reminds his colleagues of the fact that during the last few weeks many soldiers have returned from the numerous military camps, convalescent from typhoid fever or taken down with it after their return. Each of these cases is a source of further infection unless the precautions, which are now so well known and so effective, are carefully and scrupulously observed. The infective agent is a living germ, which is thrown off in great abundance from every typhoid patient, with the excretions from his bowels and kidneys. The immediate destruction of these germs by some disinfectant is the only means of safety. The importation of so many cases into the State, and their wide distribution in various places, will be very likely to cause additional local outbreaks of the disease if vigilant and unremitting attention is not given to the thorough disinfection of the discharges from the patients and whatever of the bedding or clothing may be soiled by them. Circulars on the means of preventing and restricting typhoid fever will be sent freely to any persons on application. The sickroom should have in it only sufficient furniture for use and comfort; no carpets, tablecloths, pictures, draperies or ornamental hangings. The practice of suspending towels and sheets about the sickroom, saturated with carbolic acid and other odorous solutions, cannot be commended. It has little other effect than to frequently cause nausea and headache in the patient and attendants. The mattress should be protected by an impervious rubber sheeting under the usual bed sheets. Two or more will be necessary, so that they can be changed and cleaned as required. The rubber sheet should be thoroughly sponged with carbolic solution, then dried and aired in the sun for several hours. The body- and bed-linen should be changed daily. Never shake them. As soon as removed immerse them in a disinfecting solution composed of carbolic acid and water, 1 part to 40, or in a bichlorid of mercury solution, 1 part to 1000. Let them soak four hours or longer, then boil them for half an hour and wash with soap. All food brought into the sick-room and not consumed by the patient should be burned. The nurses should wash their hands whenever they may have become soiled by handling the patient or the clothing, and at ways before eating or leaving the room. The same rule should be observed by the physicians and other attendants. The importance of extreme cleanliness of the hands of the patient might be added as a means to the prevention of those relapses of fever that are the result of autoinfection. During the prevalence of typhoid, it is prudent to boil all the drinking water and all the milk. When such attention is given to disinfection, rigid isolation is not necessary; and when disinfection is neglected, isolation will be of little importance.—Circular No. 75, 2d edition.

Heavy Mortality by Plague in India.—About two years have passed since the plague became epidemic in the Bombay district, and in that time over 105,500 deaths, or an average per month of 4400 deaths have been admitted to have occurred. In addition to this huge total there have been many thousand deaths from the plague that have been registered as from other febrile causes. In one week in September, this year, in the Bombay Presidency, there were reported 3635 cases and 2749 deaths by plague. In Bombay City, the last week in September, there were 209 deaths, as compared with 127 in the week previous. In Bombay Presidency the number of deaths increased from 3000 in the previous week to 4000, chiefly in Dharwar, Belgaum, Satara and Kolhapur. Calcutta is free, and only one death is reported from Karachi, but the plague is becoming epidemic in Bangalore city, where 124 deaths have occurred.

Three cases are reported from Hyderabad State, three from Wallunden in the Punjab, and sixteen in four districts of Madras. The editor of the London *Lancet* makes the following comment: "The quarantine and severely repressive measures which have been favored hitherto have, as we all know, given rise to a great deal of native discontent and opposition, and as they have not been attended with the successful results which were anticipated or hoped for, the Government of India has had to relax them. The progress of the epidemic in India is conforming to what has been the history of plague elsewhere in the past and in China, the enforcement of land quarantine is attended with serious hardships and is moreover, simply impracticable; the natives would prefer to run the risk of contracting plague to submitting to the severely repressive measures hitherto enforced. As a matter of policy the government is justified in relaxing them under the circumstances in which it is placed. With regard to inoculation, remarkable success is reported from Hubli, and it is stated that no less than 32,000 people have gone through the process. During the existing outbreak in that city only sixty-nine of these have been attacked, while among 8500 uninoculated there have been 417 attacks. If these figures be reliable they speak for themselves. In the district around, however, there have been a large number of deaths, the Dharwar district, in which Hubli is situated, being credited with 1047 cases and 892 deaths. To show how differently inoculation has been received at different places there remains only to compare Calcutta and Bombay, each with about 750,000 inhabitants and about 2000 and 20,000 persons inoculated respectively, against Hubli, with a population of about 40,000 and no less than 32,000 inoculations. In Bombay there have been 27,305 deaths from plague, and in Calcutta about 200.

Trichinous Pork Products in Germany.—During the fifteen years beginning with the decree of 1883, forbidding the importation of American meat into Germany, the latter country has official knowledge of 3003 cases of illness due to trichinæ, with 207 fatalities. Of these there were 1242 cases, or 41.3 per cent. of all, traced to European pork; deaths by this cause 102, or 49.7 per cent. of all. The remainder was due to a variety of sources, but in not one of these 3003 was it proven that the illness was caused by the use of American salted, pickled, or tinned meat, nor by smoked sausage imported under imperial decree of 1891. This statement holds good for all Germany. In confirmation of this fact, a society of importers of meat hereinbefore mentioned has issued posters wherein a reward of \$238 is offered to the person who can prove that trichinæ have been transferred to human beings by the consumption of American salted or pickled pork or smoked sausage imported under the imperial decree of 1891, canceling the edict forbidding the importation. The inspection of American meats and sausages is much more rigid than the tests for the German home products. The American product is twice inspected. Before the meat leaves the United States, from each hog, as a whole, the inspector selects six samples or pieces, and from these pieces are taken eighteen cuts, to which is applied the microscopic test. When this meat reaches Germany it is again cut into eight or ten pieces; from each of these the inspector selects three samples or pieces, and from each of these samples or pieces three are taken for the microscopic test. This results in the inspection of ninety separate pieces from the American hog, while in the inspection of the German hog only eighteen pieces are tested. It is reported that uninspected American hog products have been introduced into Germany from Belgium, in boxes in which other regularly inspected meats had been received from America, bearing the label of microscopic inspection. Originally, in the microscopic inspections in the United States, the certificates thereof were the same as those given for usual ante and postmortem inspections, with the addition of a red stamp placed on the certificate stating that the goods mentioned were microscopically inspected and found free from trichinæ. On one occasion a carload of bacon arrived at the custom-house of Aix la Cha-

pelle, the certificate of which was without the red stamp. The customhouse officers refused to let the car enter Germany and reported the case to the buyer at Düren. This man wrote to the Antwerp firm that he refused to accept said car, because he was entitled to receive the meat regularly inspected as required by the German laws. The seller at Antwerp replied that, in fact, the meats in question had been regularly inspected microscopically, and it was by mistake that the certificate did not bear the red stamp; that such an error happened sometimes, but that the United States consul in Antwerp would rectify the certificate if the buyer would return it for that purpose. Unfortunately for the Düren merchant, he believed this story, sent the certificate back, and received it again two or three days afterward bearing now the red stamp. He presented this document at the custom-house at Aix la Chapelle, in order to have the carload entered into Germany; but the custom-house officer had reported first to the American consul at Antwerp, and when he learned that the consul had neither changed the certificate nor been authorized to do so, the entrance into Germany was refused and the buyer placed under accusation of having falsified a public document. After several years, the suit terminated in the Supreme Court at Leipzig with a sentence of the Düren merchant to eight days' imprisonment for assisting in the falsification of a public document. The Belgian merchant, of course, could not be prosecuted in Germany. How many times the Belgian port has sent into Germany uninspected meats, it is impossible to say. It is rumored that a regular traffic in empty boxes with proper inspection labels and certificates has existed in Antwerp for some time, with a probability of a like organization in Rotterdam.—"Consular Reports," October.

SOCIETY NEWS.

Tri-State Medical Association.—At the annual meeting of this Association, at Birmingham, Ala., the following officers were elected and Chattanooga, Tenn., chosen as the next place of meeting: President, George A. Baxter, Chattanooga; first vice-president, M. C. McGammon, Nashville; second vice-president, W. D. Travis, Covington, Ga.; third vice-president, George S. Brown, Birmingham; secretary, Frank Trester Smith, Chattanooga; treasurer, Cooper Holtzklaw, Chattanooga.

Iowa State Association of Railway Surgeons.—At the annual meeting held in Clinton, October 13 and 14, the following officers were elected for the current year: President, H. L. Getz, Marshalltown; vice-president, A. L. Wright, Carroll; treasurer, C. B. Powell, Albia; secretary, Ira K. Gardner, New Hampton. Ottumwa was selected as the next place of meeting, October, 1899.

Washington, D. C., Medical Society.—The meeting of the society on the 2d inst. was called to order by the president, Dr. Busey, in memorial of the late Dr. Lincoln. Dr. J. Ford Thompson, chairman of the committee, read the resolutions of respect and condolence which had been prepared, and on motion they were adopted. Dr. I. C. Roese read a memorial notice of Dr. Lincoln, and eulogistic remarks were made by Drs. Lovejoy, Makall, Loering, Murray, Godding, W. W. Johnston, Mary Parsons, and Morgan.

Detroit Academy of Medicine.—At the regular meeting, October 25, Dr. E. H. Troy read a paper on "Cholera Infantum." He thought the bacteriology of the subject is in such confusion, little can at present be said on the subject, except to affirm that such violent vomiting and purging as always occurs in true cholera infantum can result only from the poisons produced by most virulent germs. Such large, watery movements must result from severe depression to the central nervous system. Hence the study along this line had been made in regard to treatment. Two drugs were advocated for their effect: the one on the central nervous system, and the other on its effect upon the nerve endings in the intestines, viz., chloral hydrate and dilute hydrocyanic acid, these had been given in small doses frequently repeated, and their action carefully noted. In addition, enemata of normal saline solution

had been used frequently repeated. Under this treatment better results had been secured than with the older methods. In the discussion it was stated that the lessened number of cases of cholera infantum in Detroit now as compared with twenty-five years ago is as much due to improved sewerage and pavements as to the improved methods of feeding infants. Further, the presence of the island park and the more extensive use of the Detroit River by the poorer classes has been a most potent factor in keeping the mortality down to its present level.

Washington, D. C., Medical and Surgical Society.—The society met on October 31, in celebration of its decennial. Dr. Lewlyn Elliott, the president of the society, opened the exercises with an address, in which he outlined the history of the early formation of the society, tracing its growth during the past ten years and referring to the valuable papers and discussions by the different members. He also referred to the future work and the good they might accomplish in the future of medicine and hygiene. Dr. Landon B. Edwards of Richmond, Va., discussed the benefits of medical examining boards to the community and the medical profession. Dr. W. W. Johnston read a paper on the relation of health to education, based on his observation and study of the early education of children, and Dr. George M. Krober read one entitled "Higher Medical Education, and a Plea for Better Training for the Volunteer Medical Officer." He touched upon the losses of the army in the war with Spain, and praised the Surgeon-General's conduct of his department. He suggested that the medical colleges should pay attention to the line of work which would fit physicians especially for military service, and he called special attention to the excellent equipment and the facilities offered by Washington for the study of medicine, asserting that the many advantages were not fully known to many members of the medical profession. The meeting closed with a banquet at which Dr. Elliott presided. Toasts were responded to by Drs. Stone, Kelly, Kober, Edwards, Alden, Woodward, Bishop, Massen and Morgan.

Southern Illinois Medical Association.—The program of the meeting to be held in Cairo, Ill., Nov. 17 and 18, 1898, includes: "Influence of the Climate of New Mexico in the Treatment of Diseases of the Chest," by Wm. Curtiss Bailey, Las Vegas Hot Springs, N. M.; "Typhoid Fever—A Case with Unusual Manifestations," by A. M. Lee, Carbondale, Ill., discussion led by J. W. Armstrong, Centralia, Ill.; "Report of Two Cases of Hydrophthalmos," by James Moores Ball, St. Louis, discussion led by A. C. Corr, East St. Louis, Ill.; "Typhoid Fever in a Country Practice," by S. P. Schroeder, Hazleton, Ill., discussion led by C. W. Sibley, Fairfield, Ill.; "Sanitation and State Medicine," by A. C. Corr, East St. Louis, Ill., discussion led by J. W. Pettit, Ottawa, Ill.; "Some Reminiscences of the Southern Illinois Medical Association," by H. Wardner, Laporte, Ind.; "Paretic Dementia," by F. Samuel Dodds, Anna, Ill., discussion led by H. C. Hall, Omaha; "Some Practical Observations in Typhoid Fever," by H. V. Ferrell, Carterville, Ill.; "Case of Compound Fracture of Same Knee-Joint Complicated with Compound Fracture of Same Femur Above the Condyles; Leg Saved by Means of Hodgen's Splint," discussion led by Chas. H. Starkell, Belleville, Ill.; "Medical and Surgical Treatment of Renal Calculi, with Report of Seven Cases," by H. C. Mitchell, Carbondale, Ill., discussion led by Dr. Bransford Lewis, St. Louis; "The Importance of Early Operation in Cholelithiasis," by A. H. Meisenbach, St. Louis, discussion led by J. H. Mitchell, Mt. Vernon, Ill.; "Some Neglected Signs in Gynecologic Examination," by Jno. A. Hale, Alto Bass, Ill., discussion led by B. F. Crehbs, Carmi, Ill.; "Ectopic Gestation—Diagnosis and Treatment," by J. L. Wiggins, East St. Louis, Ill., discussion led by H. H. Mudd, St. Louis; "Rectal Diseases—Its Surgical Treatment," by Phil. H. Stewart, Paducah, Ky., discussion led by Leon Strause, St. Louis; "Peritoneal Abscess Simu-

lating Fibroid Tumor," by H. J. Welsh, Cairo, Ill., discussion led by H. C. Gault, Sparta, Ill.; "Personal Experience in Operating with the Use of Infiltration Anesthesia," by Louis T. Riesmeyer, St. Louis; "Ventre-Fixation for Retroversion," by George Wiley Broome, St. Louis; "Circumcision," by Wm. A. James, Chester, Ill., discussion led by H. C. Fairbrother, East St. Louis, Ill.

NECROLOGY.

J. D. AMES, M.D., Dekoven, Ky., aged 80 years, October 31. —Peter H. Brooks, M.D., Lima, Ohio, October 28. —J. W. Davis, M.D., Smyrna, Tenn., October 31, aged 77 years. —Roswell Fox, M.D., Wethersfield, Conn., October 26, aged 73 years. —S. E. Givan, M.D., Burney, Ind., October 25. —J. H. Head, M.D., Centralia, Mo., October 29, aged 58 years. —B. H. Paschall, M.D., Arrington, Tenn., November 1, aged 73 years. —David Randall, M.D., Morrisville, Vt., October 25. —Albion P. Snow, M.D., Winthrop, Me., October 25, aged 69 years.

DEATHS ABROAD.—Professor Bouchacourt of Lyons, France, author of numerous works on obstetrics and gynecology, hydatid and hydatiform degeneration of the kidneys in the fetus, etc., 87 years of age.—Dr. Heydenreich, professor of clinical surgery at Nancy, France; H. Spöndli, formerly professor of obstetrics at Zurich; D. Toscani, professor of legal medicine, Rome.—Dr. Slawiansky, professor of gynecology at St. Petersburg.

MISCELLANY.

Through a typographical error the name of Prof. Nicholas Senn was omitted from his War Correspondence (see page 1164.)

Renal Surgery.—Bazet of San Francisco, in a paper on the "Advances in and the Present State of Renal Surgery" (*Phil. Med. Jour.*, October 22), reduces the conditions calling for operation in renal lithiasis, to three: 1, calculus in a healthy kidney; 2, calculus in a diseased kidney; 3, anuria. In the second condition, lesions due to aseptic calculi are characterized by sclerosis or hydronephrosis, and he considers removal of the organ by immediate nephrectomy most logical in the former, while calculus hydronephrosis requires conservative treatment, the kidney, "though thinned and disturbed" being still useful, primary nephrectomy being advised "only when the renal pocket is enormous and the parenchyma is reduced to the thickness of a thin sheet of paper;" otherwise nephrotomy is the operation to be selected, and is preferable in septic lesions with or without distention. Anuria calls for immediate operation.

Pharyngeal Adenoids.—Delavan (*N. Y. Med. Jour.*, October 29) emphasizes thoroughness and humanity as the two essentials to success in operative treatment of this condition. Atrophy of the remainder, after partial removal of an adenoid growth, he considers the exception; rather, the tissue remaining, being unhealthy, is likely to remain so, and may cause life-long annoyance to the patient or injury to surrounding parts. He considers in detail the various methods of removal and the anesthetics of use, advising complete anesthesia to secure ideal conditions for operating, and the blunt forceps for the most thorough removal.

Infective Nature of Eclampsia.—Professor Stroganoff asserts that eclampsia should be included among the infective diseases, giving as his reasons: 1. That it is a general disease, affecting all the parenchymatous organs. 2. That it is an acute affection, commencing explosively or after a certain prodrome. 3. The fever that accompanies it occasionally, especially the postmortem thermic elevation peculiar to an infective disease. 4. One attack confers immunity. 5. The marked genus epidemicus; in 1897 25 per cent. died, while in nineteen cases this year there has been no mortality. 7. It is impossible to explain the increase of eclampsia in populous centers other-

wise than by accepting the theory of its infective character, which he is now seeking to prove definitely. His communication in *Wratsch*, Nos. 26 to 35, contains tables showing the links in a number of series.

The Heart.—V. Frey ascribes the rhythmic action of the heart to the muscles, remarking that every bit of the heart, whether it contains a ganglion or not, is capable of automatic activity. The rhythmus is more rapid and less disturbed by extraneous influences, the nearer to the venous portion of the heart, which imposes its rhythm upon the whole. The nerves of the heart are largely centripetal, serving for the important reflexes on the organ, respiration and lungs. The centrifugal nerves affect the normal muscular rhythm and peristalsis by altering the number and vigor of the contractions or the transmission of the impulse. Tropic nerve action has not been established nor the co-operation of the ganglion cells in any of the functions of the heart. He estimates the volume of the beat as much less than formerly assumed. The probable quantum in man is 50 to 60 c.c. The work of the heart is extremely dependent upon external conditions, such as pressure of other organs, etc., and modern science possesses means to determine these variables, at least on the isolated heart, which opens new points of view for the study of medicinal substances.—*Cong. of Germ. Nat. and Physicians.*

Murmurs of "Mitral Insufficiency."—Dr. C. F. Hoover in the *Cleveland Medical Journal*, states that in his experience there is a difficulty demonstrating a genuine mitral insufficiency. The regurgitation of the mitral wave is not visible. A curious inconsistency between the causes and occurrence of murmurs is in the fact that we do not always have the murmur when a valvular insufficiency is present. The fact that we can demonstrate a dilatation of the right ventricle and see a positive venous pulse, to my mind, shows the presence of a genuine tricuspid regurgitation. In spite of this we sometimes have these conditions without any murmur at all over the right side of the heart. He believes cardiopulmonary murmurs occur more frequently than many would concede. Often murmurs associated with acute dilatation can not be endocardial in origin. A young man with an acute infection came to the hospital with an increased precordial dullness, with a very distinct thrill over the apex. Percussion shows that the apex is covered by a tongue of lung. If this patient would make a forced expiration the heart would become more exposed, as you can show by palpation and percussion and the thrill and murmur entirely disappear. This patient has an acute dilatation; nevertheless, when there is no lung intervening between the heart and chest-wall, the murmur is not audible. Another point is the time of this murmur. It occurs during the first portion of the anteroposterior excursion of the heart. Dr. Stengel suggests the production of a murmur occurring in relative insufficiency in this way, viz., that the contraction of the papillary muscles produces a genuine mitral insufficiency. If we accept the interpretation of the heart's impulse and the rôle of the papillary muscles in the cardiac activity, as given by Roy and Adami, we should always hear such a murmur at the end of the anteroposterior excursion of the heart. Experience shows that in a very large proportion of the cases of relative insufficiency of the heart the murmur is heard during the first portion of the anteroposterior excursion. I believe there is such a thing as a genuine murmur of relative insufficiency due to the dilatation of the mitral ring. But my experience in the murmurs of relative insufficiency accompanying acute dilatation leads me to believe that they are very frequently pulmonary and not endocardial in origin.

Acute Fatal Pancreatitis.—In temperate climates acute pancreatitis is so seldom met with that it is a curio even among pathologists. We note in the *Lancet* that a case has been reported lately from Hong Kong, one of the papers of that city

containing an account of an inquest held upon the body of the ward-master of the Government Civil Hospital, who was found dead in his quarters at the hospital on March 17. Dr. Atkinson, the principal medical officer, in his evidence said that he was summoned in the afternoon to see Mr. Feltham. He found him lying dead on the sofa. At the postmortem examination made on the following day, at which he was present, the cause of death appeared uncertain and the stomach and contents were handed over to the government analyst. The government analyst, deposed to examining the contents of the deceased's stomach: it contained nineteen grains of chloral and one-third grain of morphia. He had last seen deceased alive at midday on the 17th. Dr. Lowson, who made the post-mortem examination, deposed to finding acute inflammation of the stomach and pancreas; in the head of the latter there was a large hemorrhagic extravasation. The condition found could not have been caused by either chloral or morphia and in all probability the deceased could not have taken more than thirty grains of chloral, for the absorbing powers of the stomach must have been considerably impaired. The cause of death was syncope in acute gastritis and pancreatitis possibly accelerated by a medicinal dose of chloral. The presiding magistrate gave his finding in accordance with this evidence.

Tuberculosis Pulmonum Traumatica.—Dr. Schrader of Berlin has advanced the opinion that trauma is a cause not only of acute pneumonia, but also of chronic pulmonary disease. He relates the following case: A man, aged 29 years, previously healthy, and with no family history of phthisis, had a severe fall on the right side of the back, and was unconscious for fifteen minutes. On the same evening he felt ill, and was admitted into the hospital two days after the accident. There was then considerable grazing over the right scapula, and pain was complained of in the chest corresponding to the injured part. The breathing was difficult and the temperature 38.8 degrees C. The breathing sounds were absent, vocal vibration increased, and the percussion note impaired in the region underlying the injury. The diagnosis of pneumonia of the right middle and lower lobes was eventually made. About thirteen days after the accident tubercle bacilli were found in the sputum. The patient's condition remained much the same for some days. There was loss of weight. Eventually improvement took place, so that four months after the accident there were no abnormal physical signs beyond a slightly impaired note over the lower part of the right lung. The author refers to some recorded cases of supposed phthisis following injury. He draws attention to the fact that before traumatism the patient was absolutely well. Whether the pneumonia following the injury is to be looked upon as a confusion pneumonia which favored the invasion of the tubercle bacillus, or whether it was a tuberculous bronchopneumonia from the beginning, it is difficult to decide. The author is inclined to accept the latter interpretation. The temperature chart was characteristic of tuberculosis. Finally, the author summarizes the evidence in favor of this view: 1. The development and course of the tuberculous lesion were carefully observed after the accident; 2, the disease corresponded to the site of the injury; 3, there was no clinical evidence of tuberculous disease in the lung immediately after the injury, and no history of previous illness; 4, certain proof of tuberculosis was forthcoming some little time after the accident, the development of which was quite in keeping with that of the ordinary disease.—*British Medical Journal*.

Physiologic Albuminuria.—Herter, before the New York Academy of Medicine, recently (*Phila. Med. Jour.*, October 29) emphasized the fact that when certain delicate tests for albumin are employed, there is serious danger of calling substances albumin that have an entirely different origin and significance. He considers the cold nitric and potassium ferrocyanid tests,

though not entirely free from this objection, used with the heat test, the most practicable means of recognizing albumin. Where these tests fail to disclose albumin in the urine, which may be found by other reagents, the patient may be assured that he has no albuminuria, and "albuminurias that can not be recognized by the three tests mentioned are only important as material for erroneous practical conclusions, and have no interest for the practitioner."

Chloroform Anesthesia.—Before the recent meeting of the American Laryngologic Association, Hinkel (*N. Y. Med. Jour.* October 29) reported a case of death immediately following an operation for nasopharyngeal adenoids, chloroform being the anesthetic used. In addition he gives other statistic and pathologic data, showing an abnormally high mortality from such anesthesia "for the removal of lymphoid hypertrophies of the pharynx," and that the "general use of chloroform in the operations for hypertrophied tonsils or nasopharyngeal adenoids is inadmissible."

Massage in Italy.—The *Gazz. degli Osp.* states that massage is in high favor at Giappone, where it is practiced as regularly as the Turks perform their ablutions or the Chinese smoke opium. From the humblest street peddler to the "upper ten," the masseur is summoned when the day's work is over, and in spite of the humidity of the climate, the people of Giappone are exempt from a number of the ills that flesh is heir to, which afflict the dwellers in other towns. The masseurs use for superficial manipulations a heavy wooden ball set in another ball, which they grasp and knead the tissues by pressing and rotating. A similar device was described in the *JOURNAL*, Vol. xxvii, page 270.

Pasteur Institutes.—The Berlin correspondent of the *London Lancet* writes that after having absolutely refused for more than ten years now to put any faith in the Pasteur treatment for rabies, the Germans have at last resolved to try it. An appropriation for an experimental station for the treatment according to Pasteur's method is one of the items in the medical budget for the year. It is to be carried on in connection with the Institute for Infectious Diseases, Professor Koch's department. Though it is said to be only experimental, it would seem as though this was scarcely more than a half-hearted apology for the refusal to have had anything to do with it before. The treatment itself is far beyond its tentative stage, and each year brings more and more encouraging statistics as to its results in Russia, in Italy, in India and in Egypt. The bacteriologic laboratory which was founded by Pasteur at Constantinople by request of the Sultan, has recently reopened its doors after a long period of idleness due to an alleged indifference and carelessness of the State officials and to lack of funds. The French charge d' affaires protested, as did the Imperial Society of medicine, and in this way the attention of the Sultan was drawn to the precarious state of an institution in which he had taken the greatest interest. It is probable that the work of the institution will be greatly developed, for orders have been given that the director of the institute shall want for nothing.

Tetanus.—Stintzing has established, on animals, that the tetanus bacillus generates toxins at its entering point, which may pass into the circulation to some extent, but are mostly carried along the nerves in the neighborhood to the subarachnoidal space or spinal cord, from where they produce their effect, starting from the entering point, spreading later into general tetanus, which occurs more rapidly in man, owing probably to the larger size of the channels of transmission. The points particularly attacked by the toxin seem to be the motor ganglion cells in the anterior cornua. He states that 96 cases of tetanus have been treated to date with Behring's serum, with 35 deaths, but only in 15 cases was the serum given as Behring insists, not later than twenty-six hours after the com-

mencement of the attack. Ten out of these fifteen died. Krokiewicz has injected an emulsion of brain matter in salt solution in one case, with prompt recovery. Vincenzi has recently demonstrated that the bile of tetanized animals possesses antitoxic properties. Escherich reported six new cases of "pseudo tetanus," first described by him at Moscow, characterized by persistent, tonic contractions and trismus, which run their course without fever and recover in a few weeks.—*Cong. of Germ. Nat. and Physicians.*

Concussion vs. Intoxication.—Dr. L. D. Mason, in the *Brooklyn Medical Journal*, instances one of those deplorable cases to which attention has been frequently called in the *JOURNAL*, where the police imprison an injured person under a station-house diagnosis of drunkenness. It was one of those night cases where a bicyclist was struck by a trolley-car and suffered from temporary confusion of thought as a result of the injury. A roundsman and sergeant of police, in order to save time and bother, took upon themselves the responsibility of not calling in medical advice and locked up the innocent and dazed but sober gentleman for the night. In other words, both insult and injustice were added to injury. It was not long ago that one of our leading medical societies appointed a committee to investigate concerning the care of persons who were found unconscious on the street or elsewhere by the police, and also more particularly to reform the action of the hospital authorities concerning the reception or refusal to receive all such persons, under certain conditions. The conclusions that the special committee finally arrived at after considering the whole matter from a scientific and humane standpoint, was that all persons found upon the street in an unconscious or semi-conscious condition, or in such condition as not to be able to care for themselves, should receive prompt medical aid, and if necessary be removed to the nearest hospital, and that the mere supposition of intoxication should not interfere with such care or disposal of the persons rendered unconscious or unable to care for themselves. The committee showed that not unfrequently persons were seriously injured while intoxicated, and that frequently alcoholic liquors were given to persons after injury or sickness; so that the mere fact that the patient was under alcoholic influence should not exclude the possibility of serious injury or disease. The fact was that the injured person was suffering from slight cerebral concussion, resulting in confusion of thought and simulating a mild form of alcoholic intoxication. It was simply a case of mistaken diagnosis on the part of the roundsman doctor and the sergeant who acted as consulting surgeon in the case. The remedy, a night in the lock-up, was rather severe and totally uncalled for. An innocent injured man was punished with false imprisonment in consequence of his injury. The system is a wrong one that put the roundsman in the position to differentiate between cerebral concussion from a trolley-car accident and a mild form of alcoholic intoxication. If this presumptuous policy for the police is to persist, it may be well to suggest that a new question be answered by all applicants for the police force, in accordance with the rules governing the civil service examination: "What are the main points in the differential diagnosis between moderate cerebral concussion, and consequent mental disturbance, and the milder forms of alcoholic intoxication?"

Improved Ear Trumpet.—Kugel of Bucharest has designed a trumpet on the principle of the ear of the horse, like which it is shaped, instead of the usual large flaring rim, to concentrate the sounds. This shape obviates the annoying resonance of the ordinary trumpet, especially as there are a number of holes pierced in the conducting tube. Gruber and Politzer endorsed the new trumpet at a recent meeting of the Austrian Society of Otolgy. Bing also suggested that as the sounds collected by the receiver are all transmitted to the ear together, instead of being concentrated as when light is focused, the

tube that conveys the sounds from the receiver to the ear should be as large as possible, with no space wasted. He therefore suppresses the tube altogether and applies the receiver directly to the entrance of the auditory canal, thus securing a fuller tone, and intends to supplement the instrument with a hollow plate over the mastoid apophysis, to promote osseous conductivity.—*Rev. Hebd. de Laryng.*, October 8.

A Needle-Swallowing Epileptic.—Dr. Charlton Bastian has reported a case communicated to him by a physician at Guisborough, who stated that eighty-six needles and one pin had been removed from the patient, a female inmate of the workhouse there. Fourteen others were still to be felt in different parts of the left side of the body. Of these needles, seven are very large, ranging from three and one-fourth to three and three-fourth inches in length. The patient is now 55 years of age, and has been subject to fits from early childhood. She was admitted into the workhouse in 1886. She sometimes had several fits in one day, and rarely passed a day without having one. She recovered quickly from the attacks, and nothing like a post-epileptic automatic state had ever been recognized. She was described as fairly intelligent, but as having fits of bad temper, in which she refused to do anything except knitting, and would not take her food. She had no morbid appetites, and her conduct toward others had been on the whole satisfactory since her admission. Needles were first noticed in her body after she had been in the workhouse about twelve months, during which time she had been accustomed to do much sewing, and often had packets of needles in her possession. The needles had all been extracted by the doctor, the nurse, or the matron, or else by the patient in the presence of one of them. With the exception of one needle expelled from the mouth during a fit of coughing, all had been extracted from some part of the left side of the body, principally from the hypochondriac, lumbar, and iliac regions, or from the buttock and the thigh. No abscesses have occurred in connection with the presence or passage of any of the needles, nor had wounds of vessels or great nerves ever been produced. The patient was not distinctly hemi-anæsthetic, though there did seem to be some blunting of sensibility on the left side of the body. She had never been seen passing needles into her body, nor would she make any definite statements on the subject. She had complained very little of pain from the presence of needles in her body, but of some irritation and tenderness when they were approaching the skin and were about to emerge. The needles then caused some slight inflammatory redness, and often some induration of the tissues immediately around them, but no suppuration. The sites from which needles had been extracted were indicated by small white scars. This strange needle-cushion-like patient had apparently had nothing to gain by thus torturing herself in so extraordinary a manner.

Plumbers Examined as a Health Measure.—Under modern systems of house building and disposal of sewage, the dangers to the health of the entire public, arising from defective plumbing, are so great, and at the same time so insidious, that were the State unable to provide for the proper regulation and supervision of the plumber in his work, so as to minimize the danger to the public health from the escape of sewer gas, the supreme court of Wisconsin well says that the State would certainly be unable to protect the public life and health in a most important particular. This power, it adds, may be exercised by the legislature by demanding practical knowledge of his business on the part of the plumber, or it may be done by requiring inspection and supervision of his work by experts, or by both means combined; and, when such regulations are brought before the courts, the question simply is whether or not they are really appropriate and reasonable measures for

the promotion of the public health and safety, and hence are a valid exercise of the police power. For example, the court holds, in the case of *State vs. Benzenberg*, Sept. 20, 1898, that a law is not unreasonable when it requires that a master or journeyman plumber shall be examined as to his practical knowledge of plumbing, house drainage, and plumbing ventilation, all of which may be acquired in the school of actual experience, while assisting a practical plumber at his work, it not being anticipated that more than this practical knowledge will be required by any examining board. But the court, at the same time, holds that chapter 338 of the Laws of Wisconsin for 1897, entitled "An act relative to the licensing of plumbers and the supervision of the business of plumbing," is void, as discriminating between persons under the same circumstances and conditions, the discrimination being in favor of firms and corporations as against a plumber doing business alone, because it would permit several plumbers to form a partnership or corporation, and all engage in practical plumbing, when only one of their number had obtained, or perhaps was able to obtain, a certificate of competency.

Not Liable for Use of Impure Vaccine.—A municipal corporation, while enforcing a valid ordinance requiring citizens and residents of the city to submit to vaccination, is exercising a governmental power, and, the supreme court of Georgia holds, in the recent case of *Wyatt vs. the City of Rome*, is therefore not liable to a citizen who may sustain damage on account of impure vaccine matter administered to him by one of the officers or agents of such corporation. To allow any citizen a right of action on account of injuries, real or supposed, that he may have suffered in the interest of the public good, the court says, would be to paralyze the arm of the municipal government, and either render it incapable of acting for the public weal, or would render such action so dangerous that the possible evil consequences to it, resulting from the multiplicity of suits, might be as great as the smallpox itself. Hence, the wisdom of the law in exempting it from liability on such an alleged injury as one resulting from the negligent administration of impure vaccine matter by the officers or agents of a city while enforcing a valid ordinance. The right to prescribe regulations looking to the preservation of the public health, further says the court, is one of those sovereign powers that belong to the State. This power can be delegated by the State to any of its subdivisions of government, such as a municipality or a county, and in the use of it by such subdivisions they are in the exercise of a function purely governmental. When a municipality exercises a governmental power conferred upon it by the State, it is just as if the State itself were in the exercise of the function thus conferred. And it is upon the idea, as old as the English law—"the king can do no wrong"—that the sovereignty of a State protects it against suits by its subjects; no one having a right to hold it liable for any of its officers or agents, unless such right is expressly granted by the State itself. Among the precedents which have been established by courts of last resort that are apparently exceptions to this general rule, the supreme court of Georgia says it has been able to find none that would hold a city liable for any injury that may be sustained as the result of enforcing measures legally enacted for the promotion and preservation of the public health.

Professional Secrecy.—The *Klin.-therap. Woch.* of October 9 describes a case in which a physician was consulted in regard to the health of a daughter whom he found pregnant, but considering himself bound to professional secrecy, he diagnosed the case to the parents as anemia. The parents later ascribed the paternity to him in spite of the girl's declarations to the contrary, as the only possible explanation of his reticence.

Disreputable, but not Larceny.—That Francis M. Steward was convicted of larceny, in the criminal court of Cook County,

the supreme court of Illinois holds, in the reversed case of *Steward vs. People*, was error. According to the statement of the case made by the supreme court and the evidence for the State, the defendant in the criminal court was a doctor, in Chicago; Herman Klepstein was a shipper of a carload of live stock that came to the city, and Timothy Englehard was a person in the habit of bringing patients to the defendant, and receiving some compensation for doing so. Klepstein fell in with Englehard, who after a little time, asked him what was the matter with him, saying that he looked sick. When they got down town, Englehard said that he had to go to the defendant's office to get some medicine for his baby. He persuaded Klepstein to go into the office, and spoke to the defendant about medicine for his baby, and then introduced Klepstein and said that he looked sick, that his eyes looked bad. After the introduction the defendant told Klepstein that he looked sick, but he replied that he was not sick. Then the defendant said that he was a professor, and could tell when people were sick, but could not tell what was the matter until he made an examination. He and Englehard told Klepstein to pull off his overcoat, etc., and one or both assisted him more or less. After the examination which followed, the defendant told Klepstein that he had heart disease, brain trouble and piles; demanded \$150 for the treatment said to have already begun; finally took a draft for \$50 and a note for the balance; wrote out a prescription and all went to a drug store, where the prescription was filled, Klepstein paying \$3.75 for the package of medicine handed to him, and telling a clerk about the arrangement for treatment and that he was afraid the Doctor would not cure him. The note Klepstein got back later, and he admitted that at the time of the examination he told the defendant that he would deposit \$200 if he would make him as strong and healthy as he was when he was 17 years old, but that the defendant said that he could not do that. A thorough examination made by another physician, ten days later than the one just mentioned, developed nothing of any consequence in the way of disease, but seemed to show that, on the whole, the man was in good condition and health. Now, while under these circumstances, the defendant was convicted of the larceny of the draft for \$50 from Klepstein, the supreme court holds that larceny was not committed, no matter what else it might be, because the crime of larceny always includes the taking and conversion of property without consent of the owner. It says that the methods employed were disreputable, and that Klepstein was over-persuaded and induced to do what he would not otherwise have done; but that there was no larceny, because Klepstein meant to part with the draft absolutely and no force or duress was used upon him.

Commendatory Report.—The report by Surgeon General Reypen of the Navy Department, on the work of the naval surgeons, is admirable. It shows the very best of organization, and the most complete and thorough efficiency in this department. Everything was provided for, everything was on time, and never in the history of naval warfare has such care or success been in evidence. The mortality in the hospital ship, itself a new feature, showed no greater percentage than in well-conducted hospitals on shore. The sudden call for hospital accommodations for hundreds of Spanish prisoners was instantly and fully met. An outbreak of yellow fever was localized and stamped out. A daughter of the Secretary of the Navy and other trained nurses volunteered for service and did admirable work. Indeed, the report is one to make us proud that there was one such efficient department in the management of the war.—*The Independent*.

Unavailing Heroism.—A most notable Alpine accident, and one that was marked by as magnificent a display of heroism as can well be described, is that by which Professor Nasse of Berlin lost his life. Dr. Nasse, well-known as the assistant to

Professor von Bergmann, and Dr. Borchardt, with two guides, the four roped together, were crossing the Piz Balne over a snow bridge which was considered quite safe by the guides. The bridge gave way and the leading guide and Professor Nasse fell into the crevasses. Professor Nasse had the rope around his chest and hung in midair for half an hour. To relieve the intolerable strain the leading guide cut the rope between himself and Professor Nasse and disappeared into the depths. The other guide and Dr. Borchardt were then able to pull Professor Nasse up, but he was dead. It is cheering to know that the guide who so willingly offered his own life was not killed, but was found unhurt by a rescue party. But as a heroic action it is beyond all praise. Men have risked their lives on the battle-field in many very noble ways, but there they have the excitement and the lust of fighting to keep them up. Here, however, there was nothing of the kind, almost certain and horrible death stared him in the face. Two actions we can recall which are in some way comparable—the one which happened in England when the driver and fireman of the Great Western express stuck to their engine, so as to stop the train, although being boiled alive, and the other the well-known instance of the steersman of the burning steamer on Lake Erie who stood at the wheel while slowly scorching, so that he might steer the ship to land. The news of Professor Nasse's terrible death was received with the utmost sympathy among medical and lay circles in Berlin, where he had a prominent position as head of the out-patient department of the Royal Surgical Clinic. He had made a good many contributions to modern surgery, and came especially into notice during the late Græco-Turkish war as a leader of the German Red Cross Mission to Constantinople. Professor Nasse resided several months in the Turkish metropolis as chief surgeon to the great military hospital of that city. It was a sad coincidence that on the day of his death the *Official Gazette* published the news of his being decorated by the Sultan in recognition of the services he had rendered to the Turkish wounded soldiers.—*London Lancet*.

Death of a Soldier's Nurse.—Miss R. H. Walworth, a volunteer nurse at the camp at Montauk Point, lost her life from typhoid fever contracted at the camp hospital. She and her mother, Mrs. Ellen H. Walworth, were among the heroic volunteer corps of nurses that early went out from New York City to help the returning sick soldiers. The Walworth family name is one that is historic in the annals of that State, and many and sincere have been the tributes paid to the departed patriotic lady.

The London Hospital.—This institution, said to be the largest hospital in the world, except that at Vienna, is constantly engaged upon improvements. A recent change has been to make a charge of three pence for medicines or for surgical dressings in the out-patient department, it being found that those who can afford this nominal charge give it willingly, the sum being remitted in the case of those really unable to pay it. It is thought that the adoption of this plan will benefit the hospital to the extent of some \$5,000 a year. A feature of the London Hospital is the provision of separate wards for patients of the Jewish persuasion, for whom food is specially prepared in a Jewish kitchen. Four new operating theaters are being constructed, which are to be models of all that modern science can devise, an Australian gentleman having given \$65,000 for this purpose. They will be fitted with an apparatus which will force ice-cooled air into the theaters during the hot weather, and warm filtered air during cold, the pressure being such that under all circumstances there will be a current of air passing from the interior outward. Besides being the largest hospital in the world, after that in Vienna, the London Hospital will, when the present additions and alterations are effected, be the most advanced scientifically.—*American Practitioner and News*, October 1.

Dermatologic Statistics.—In "Impressions and Conclusions Based upon a Study of 5000 Cases of Skin Disease Treated During the Year," Allen (*Med. Record*, October 22) says that "the diseases giving over 1 per cent of the total number and showing the largest number of cases are, in the order of greatest frequency, as follows: Eczema (including all varieties), 985; impetigo contagiosa, 444; pediculosis capillitii, 365; vaccinia, 531; dermatitis 'pediculosa,' 210; urticaria, 170; scabies, 164; dermatitis (traumatica), 142; acne, 141; favus, 139; intertrigo and intertrigo eczema, 127; tinea carinata, 124; tinea tonsurans, 92; tinea furuncle, 97; syphiloderma, 84; dermatitis calorica (including burns), 75; erysipelas, 72; abscess, 70; verruca, 67; pediculosis corporis, 59; pruritus, 58; psoriasis, 58; erythema multiforme, 54.

Osteopathy and the "Medical Age."—In the *Medical Age* of October 25 the following communication from the publisher, Wm. A. Warren concerning the libel suit of William Smith, osteopathist, appeared:

"Dr. William Smith, osteopathist, has a grievance against the *Medical Age*, and demands \$25,000 damages. The ground of his plaint is an editorial, reflecting discredit on Dr. Smith, on the *Journal of Osteopathy*, and on osteopaths in general. The subject is set forth editorially in the *Medical Age* of Sept. 26, 1898, and a reprint of this editorial will be sent on application. I need hardly assure any one familiar with the past record of the *Age*, that William Smith, M.D., D.O., has a large contract on his hands. His quest for damages is likely to prove futile, and his armor will need patching if it is to withstand the hard legal knocks that will be showered and battered upon it before he touches one dollar of the *Age's* money! Pray do not fancy, however, that William Smith and osteopathy are to be lightly dismissed with the contempt that they merit. There is no use in blinking the fact that the lack of efficient organization among reputable medical men has permitted the whole brood of quacks and charlatans to flourish apace. By the strangest irony of fate, Osteopathy, in some respects the most grotesque of medical aberrations, has well illustrated Lecky's dictum that a small but cohesive and determined minority can exert a political influence wholly disproportionate to its real weight and numbers. In Kentucky, thanks to the resolute leadership of a handful of physicians, ably guided by Dr. Mathews, the osteopaths have been driven from the State. Not so, however, in Missouri or—I blush to say it—in Michigan, Vermont, North Dakota, South Dakota, Illinois, Colorado and North Carolina (*American Medico-Surgical Bulletin*). In these more lax and indulgent communities Osteopathy boasts its numerous followers, its "schools of instruction," its periodicals of propaganda, its political influence in legislation, its shameful immunity from the penalties by which society properly seeks to rid itself of quackish parasites. Emboldened by its success, Osteopathy now enters the courts and offers battle to a medical journal which disputes its respectability. The challenge is accepted. In the interest of science, in defiance of a quackery that continues a deep disgrace to an enlightened age and a stain on the communities which give it shelter, the *Age* proposes to maintain its position and to continue its denunciations of the ignorant pretenders who fatten on the sufferings of the credulous and confiding. Having put my hand to the plow in this uncompromising fight with quackery, I beg leave to assure you that there will be no turning back. I need not point out the bearings this contest must have on the interests of legitimate medicine, and I earnestly hope that the *Age* may count on the moral support and commendation of the entire profession."

Premium for a Life-Saving Invention.—The Belgian Government having decided to offer a premium of \$10,000 to the inventor of a paste for matches which will be free from phosphorus, and which will ignite on cloth or on any other surface, a ministerial decree has been issued determining the conditions. The competition will be international in character and will remain open until Jan. 1, 1899.

Telegraphy without Wires.—The compiler of the Consular Reports for September has received from Liège, under date of July 19, a letter from a professor of a San Francisco school of engineering, who has been investigating inventions of wireless telegraphy. The professor refers to the system of Dr. Della Riccia, connected with the Montefiore Institute of Electricity

at Liège. Dr. Riccia has made improvements on apparatus already in use, simplifying it and increasing its power, and claims that he can confine the oscillations of the transmitter to any special point, to the exclusion of all others. In case of communication between war vessels or forts, the message could be transmitted to one alone; in case of fog at sea, the oscillations would not be limited. Dr. Riccia, it is said, can make the presence of a vessel known to another at a distance of thirty miles, and telegraph real messages seven miles.

Explosion of Liquefied Air.—At the Polytechnic Institute of Brooklyn recently a violent explosion resulted from an experiment made by Prof. Irving Fay, with the newly discovered liquid air. It occurred after the class in chemistry had been dismissed, so Professor Fay alone was injured, and it was for a time thought he might lose his eyesight, but this danger has happily been escaped. The agents that were in use, at the time of the accident, were red phosphorus and a waning supply of liquid air, that is believed to have become nearly pure oxygen by the loss of its nitrogen. The exact reaction that took place is not fully understood, but it is probable that the volume of liquid air in the possession of the Professor had been standing exposed to the atmosphere for too long a time to have been a safe exponent of the properties of the new agent. The force of the explosion, like that of dynamite, seems to have been exerted in a downward direction.

No Copper in Green Oysters.—Green oysters have become a subject of fresh discussion. The United States Fish Commission has given renewed attention to the prevalence of green oysters in the Chesapeake region and elsewhere. It is the general opinion among oyster consumers that green oysters are made so by copper, with which they have been contaminated, and that they are therefore unwholesome. But it has been repeatedly demonstrated and announced by the commission that the green oysters owe their color to vegetable matter, which serves as food, and that no impairment of the food value of the oyster results from this condition. The circulation by the press of a report that copper in considerable quantities had been discovered in English oysters induced the commission to make a re-examination of the subject, and this has confirmed previous tests. There is no copper in the green oysters of the United States.—*Sportsman's Magazine*, October.

Gleecings.—Expulsion of a mole containing a four months' fetus.—*Brazil Méd.*, September 1.—Death from anti-diphtheria serum administered for long-continued bronchial asthma in a child of 10 years, with slightly arrhythmic action.—*Semaine Méd.* September 28—Phocas relates two cases of post-operative paralysis after abdominal hysterectomy.—*Journ. de Méd. de Paris*, October 9.—Intraperitoneal injections of oxygen found effective in ascites complicating either tuberculous peritonitis or cirrhosis.—*Klin. Therap. Woch.*, October 16.—E. Fischer keeps a cloth constantly moistened with alcohol over erysipelatous patches and claims that they heal rapidly under it.—*St. Pet. Méd. Woch.*, No. 38.—Menelik, King of Abyssinia, has become very much interested in the first hospital established in his capital (erected by the Russian mission), insists upon being summoned to every important operation, and is delighted when allowed to serve as an assistant.—Cyanosis noted as a reliable symptom in the early diagnosis of acute general miliary tuberculosis.—In experiments on eighteen rabbits and guinea-pigs inoculated with various severe infections, it was found that the germ never passed into the milk as long as the teats were intact.—*Gazz. d. Osp.*, October 9.

Societies.

The following recent meetings are noted:

Alabama.—Tri-state Medical Association, Birmingham, October 27.
Connecticut.—New Haven County Medical Society, New Haven, October 27.
Illinois.—Chicago Medical Society, November 2.

Indiana.—Henry County Medical Society, New Castle, October 21; Vanderburgh Medical Society, Evansville, October 18.
Iowa.—Polk County Medical Society, Des Moines, November 1.

Kentucky.—Southern Kentucky Medical Association, Russellville, November 2 and 3; Southwestern Kentucky Medical Association, Mayfield, October 25.

Maryland.—Frederick County Medical Society, Frederick, organized October 30.

Michigan.—Grand Rapids Medical and Surgical Society, October 24; Manistee County Medical Society, Manistee October 26; Wayne County Medical Society, Detroit, October 20.

Minnesota.—Minnesota Academy of Medicine, Minneapolis, November 2.

Missouri.—Central District Medical Society of Missouri, Sedalia, November 3; Medical Society of City Hospital Alumni, St. Louis, November 3; St. Joseph Medical Society, October 25; St. Louis Medical Society of Missouri, November 5.

New York.—Binghamton Academy of Medicine, October 25; Medical Society of the County of Queens, Jamaica, L. I., October 25; State Medical Association, New York City, October 18, 19 and 20; Suffolk County Medical Society, Patchogue, October 28; Syracuse Academy of Medicine, October 25; Union Medical Society, Hoosick Falls, October 26.

Ohio.—Mansfield Academy of Medicine, October 25; Perry County Medical Society, New Livingston, October 20; Tuscarawas County Medical Society, Canal Dover, October 25.

Pennsylvania.—Bucks County Medical Society, Doylestown, November 2; Pathological Society of Philadelphia, October 27.

Rhode Island.—Medico-Legal Society, Providence, October 27.

Annual Report of Illinois State Board of Health.—This 19-20th annual report contains a valuable summary of the laws and regulations governing the practice of medicine in the States and Territories of the Union including Hawaii. The following is a synopsis:

ALABAMA.—Certificate of successful examination by Board of Censors of the Medical Association of the State or the Boards of Censors of the several county medical societies in affiliation. Diplomas confer no right to practice. Senior Censor, W. H. Sanders, M.D., Mobile.

ALASKA.—No law.

ARIZONA.—Certificate of successful examination by Board of Territorial Medical Examiners, after presentation of diploma from a properly and lawfully organized medical college. Secretary of Board, C. D. Belden, M.D., Phenix.

ARKANSAS.—Practically no law.

CALIFORNIA.—Certificate issued on presentation of diploma from a medical college in good standing issued by one of the State Board of Examiners, regular, homeopathic or eclectic. Secretary representing State Medical Society, G. G. Wadsworth, M.D., San Francisco.

COLORADO.—Certificate based on diploma from a recognized medical college or successful examination by State Board of Medical Examiners. Secretary of Board, T. A. Hughes, M.D., Denver.

CONNECTICUT.—Certificate of successful examination by committee appointed by State Board of Health. Regular, homeopathic or eclectic. Diplomas confer no right to practice. Secretary representing State Medical Society, G. A. Lindsley, M.D., New Haven.

DELAWARE.—Certificates conferred only by Medical Council after presentation of diploma from a legally incorporated medical college and successful examination by Board of Medical Examiners, either regular, homeopathic or eclectic. Diplomas confer no right to practice. Secretary of Medical Council, I. S. Vallendigham, Middletown.

DISTRICT OF COLUMBIA.—License by Board of Medical Supervisors after successful examination and diploma from a legally authorized medical college. Secretary of Board, W. G. Woodward, M.D., Washington.

FLORIDA.—Certificate of successful examination by District Board of Medical Examiners. Diplomas confer no right to

practice. Secretaries of District Boards (from Polk's Medical Directory, 1898), 1st, C. B. McKinnon, M.D., Pensacola; 2d, G. W. Lamar, M.D., Quincy; 3d, W. R. Chalkee, M.D., Lake City; 4th, R. H. Dean, M.D., Jacksonville; 5th, G. E. Welch, M.D., Palatka; 6th, L. W. Weedon, M.D., Tampa; 7th, R. L. Harris, M.D., Orlando.

GEORGIA.—License issued after satisfactory examination by the Board representing the regular, homeopathic or eclectic schools of medicine. Secretary representing regular school, E. R. Anthony, M.D., Griffin.

HAWAII.—Under the laws of the Republic of Hawaii certificates are issued to graduates from recognized colleges after a satisfactory examination by the Board of Health.

IDAHO.—Certificate from State Board of Medical Examiners based on diploma and satisfactory examination by the Board. Secretary, C. L. Sweet, M.D., Boise.

ILLINOIS (law now in force).—Certificate by the State Board of Health based on diploma from a recognized medical college or a satisfactory examination by the Board. (Proposed law).—License by Board of Medical Examiners based upon diploma of a recognized medical college and a satisfactory examination by the Board. License to be renewed annually, at the discretion of the Board. Secretary, J. A. Egan, M.D., Springfield.

INDIANA.—Certificate based upon a diploma from a recognized medical college or after a satisfactory examination by the State Board of Medical Examiners. Secretary, W. F. Curryer, M.D., Indianapolis.

INDIAN TERRITORY.—Cherokee Nation: An examination by Board of Medical Examiners. Secretary, I. W. McClendon, M.D., Colgate. Choctaw Nation: the same, except an annual fee of \$10 for a permit.

IOWA (In force Jan. 1, 1899).—Certificate from State Board of Medical Examiners based upon a diploma from a recognized medical college and satisfactory examination by the Board. Secretary, J. F. Kennedy, M.D., Des Moines.

KANSAS.—Registry of diploma from some "respectable medical college," or certificate of qualification from some state or county medical society. Secretary of State Board, H. Z. Gill, M.D., Pittsburg.

KENTUCKY.—Certificate from State Board of Health based upon diploma from "some reputable and legally chartered medical college endorsed as such by the Board." Secretary, J. N. McCormack, M.D., Bowling Green.

LOUISIANA.—Certificate based upon diploma from a medical college in good standing and a satisfactory examination by the State Board of Medical Examiners. Secretary, representing State Medical Society, H. S. Cocram, M.D.

MAINE.—Certificate of successful examination by the State Board of Registration. Secretary, A. K. P. Meserve, M.D., Portland.

MARYLAND.—A certificate based upon a satisfactory examination by the State Board of Medical Examiners. Secretary, representing Medical and Chirurgical Society of Maryland, J. McP. Scott, Hagerstown.

MASSACHUSETTS.—License after a satisfactory examination by the State Board of Registration in Medicine. Secretary of Board, Edwin C. Harvey, Boston.

MICHIGAN.—Registration with the county clerk of a diploma from any legally authorized medical college.

MINNESOTA (In force Jan. 1, 1899).—License issued by the State Board of Medical Examiners after a satisfactory examination and presentation of evidence of having attended four full courses, at a recognized medical college, of at least twenty-six weeks each, no two courses being in the same year. Secretary, J. B. Brimhall, M.D., St. Paul.

MISSOURI.—Similar to Illinois. Secretary of State Board of Health, Paul Paquin, M.D., St. Louis.

MONTANA.—A certificate based upon a diploma from a recognized medical college or after a satisfactory examination by

the State Board of Medical Examiners, and evidence of having attended four courses of lectures of at least six months each. Secretary, Henry Chapple, M.D., Billings.

NEBRASKA.—A certificate issued by the State Board of Health upon a diploma from a "legally chartered medical school or college in good standing." Holders of diplomas must have attended four courses of lectures in four separate years. Secretary of Board, B. F. Crummer, M.D., Omaha.

NEVADA.—A record of diploma filed with county recorder from "some regularly chartered medical school."

NEW HAMPSHIRE.—License by State Board of Medical Examiners after a satisfactory examination by the Board, or based upon license from another State having an equal standard of qualifications. Secretary representing New Hampshire Medical Society, J. T. Greely, M.D., Nashua.

NEW JERSEY.—A license after successful examination by the State Board of Medical Examiners, diploma from a recognized medical college. Candidates must have studied medicine four years, including three courses of lectures in different years, and present evidence of preliminary education. Secretary of the Board, E. L. B. Godfrey, Camden.

NEW MEXICO.—Certificate based upon a diploma from a medical college in good standing, or a satisfactory examination by the Territorial Board of Health. Secretary, J. M. Cunningham, M.D., Las Vegas.

NEW YORK.—License issued by State Board of Examiners, after a satisfactory examination and evidence of having studied medicine not less than four years in a medical college having a satisfactory standard. Secretary representing New York State Medical Society, Melvil Dewey, M.D., Albany.

NORTH CAROLINA.—A license issued upon successful examination by the State Board of Medical Examiners. Diploma confers no right to practice. Secretary, H. B. Weaver, M.D., Asheville.

NORTH DAKOTA.—Similar to North Carolina. Secretary, H. M. Wheeler, M.D., Grand Forks.

OHIO.—(In force Jan. 1, 1899).—Certificate issued by a State Board of Registration and Examination, based upon diploma from a college requiring four years of study and in good standing with the Board. Secretary of the Board, Frank Winders, M.D., Columbus.

OKLAHOMA.—A license based upon a diploma of a "medical college," or after a satisfactory examination by the Board of Examiners. Secretary, L. Haynes Buxton, M.D.

OREGON.—A license issued by the State Board of Medical Examiners after a satisfactory examination. Secretary, B. E. Miller, M.D., Portland.

PENNSYLVANIA.—A license granted by the Medical Council after a satisfactory examination and a diploma from a recognized medical college. Secretary, Hon. J. W. Latta, Philadelphia.

PORTO RICO.—Graduates from a reputable medical college will probably be allowed to practice.

RHODE ISLAND.—A certificate based upon a diploma from a recognized medical college having a four year course, or after a satisfactory examination by the State Board of Health. Secretary, G. T. Swarts, M.D., Providence.

SOUTH CAROLINA.—A certificate issued by the State Board of Medical Examiners to holders of diplomas after a successful examination. Secretary, S. C. Baker, M.D., Sumter.

SOUTH DAKOTA.—A license by the State Board of Health based upon a diploma from a recognized medical college. Secretary, F. H. Files, Sioux Falls.

TENNESSEE.—A license after a satisfactory examination by the State Board of Medical Examiners. Secretary, T. J. Hapel, Trenton.

TEXAS.—A license after examination by the District Board of Medical Examiners.

UTAH.—A certificate issued to holders of diplomas after an

examination by the State Board of Medical Examiners. Secretary, B. Stringham, M.D., Salt Lake City.

VERMONT.—A license based upon a diploma from a reputable medical college, or after examination by the Board of Censors. Secretary, representing Vermont Medical Society, H. H. Lee, M.D., Wells River.

VIRGINIA.—A license after an examination by the State Board of Medical Examiners. Secretary, R. S. Martin, Stuart.

WASHINGTON.—Similar to Virginia. Secretary, J. H. Hoxley, M.D., Spangle.

WEST VIRGINIA.—A license after an examination by the State Board of Health. Secretary, A. R. Barbee, M.D., Mount Pleasant.

WISCONSIN.—A license based upon a diploma from a recognized medical college, or after a satisfactory examination by the Board of Medical Examiners. Secretary, H. M. Ludwig, M.D., Richland Center.

WYOMING.—The record of diploma with the Registrar of Deeds.

Philadelphia.

PREVENTION OF DIPHTHERIA.—For several weeks there has been a gradual increase in the number of cases of diphtheria among children, especially those attending the public schools of the city and it became so general that it at once attracted the attention of the Board of Health, which body is making heroic efforts to reduce the number of cases, on the principle that "an ounce of prevention is worth a pound of cure," and orders have been issued giving definite information to janitors of the different buildings used for school purposes describing in detail the proper means of using disinfectants about the rooms, halls and stairways. Dr. Woodward of the Board of Health has presented a resolution that the diphtheria placard should not be removed from any house in which there has been a case of diphtheria and that there shall be no disinfection of bedding or clothing until bacteriologic examination made in the laboratory of the Board of Health shall have demonstrated that the bacilli of diphtheria are absent from the throat of the patient.

RED CROSS SOCIETY.—The building formerly owned by the Pennsylvania Epileptic Hospital has been turned over to the Red Cross Society of Pennsylvania for the establishment of a new hospital. The building has been furnished by the equipment formerly used at Camp Meade, but owing to the work having been finished at that place the material was brought here. A staff of five physicians will look after patients, and is composed of Drs. Richard Clemon, Samuel Ashhurst, Clarence B. Franklin, Samuel Gerhardt and I. W. O'Neil. Twenty nurses will be in attendance. The capacity of the hospital is sixty beds placed in two wards, and it is stated that the Red Cross Society takes great pride in its new venture and is leaving no stone unturned to make it a first-class hospital. A train was dispatched during the week to Camp Meade and sixty soldiers taken to the new hospital. The institution is in need of supplies such as linen, tables, chairs, china, tinware, etc., which it is hoped will soon be replaced by new material.

HOSPITAL TRAINS.—The War Department has requested the National Relief Association to send hospital trains to Camp Meade and bring ninety sick soldiers to Philadelphia hospitals. October 30, twenty-four patients were brought here and sent to the Presbyterian and Jefferson Hospitals. October 31, another train was dispatched under the charge of a staff composed of ten physicians from the University, Presbyterian and German Hospitals, together with a corps of twelve nurses. November 1, at the request of the War Department, the National Relief Association dispatched another train to Camp Meade returning with fifty-six patients, many of whom are suffering from typhoid fever. Of this number twenty were sent to the St. Joseph Hospital, twenty to the German Hospital, and sixteen to the Jewish Hospital. On November 4, it was proposed to bring about 150 soldiers to be assigned to the different hospitals.

MORTALITY STATISTICS.—For the week ending November 12, there was a total of 394 deaths, an increase of 46 over last week and of 61 over the corresponding period of last year. Of the total number of deaths, 82 occurred in children under the age of five years.

KNOCK-OUT DROPS GIVEN SOLDIERS.—Two soldiers, members of the Fourteenth Pennsylvania Volunteers, while in attendance upon the jubilee festivities here last week became acquainted with a man who gave them liquor from a bottle he took from his pocket. Shortly afterward they were found in an unconscious condition and were taken to the hospital. The death of one man had recently occurred under similar circumstances. An autopsy was made by the Coroner's physician, but the actual cause of death has not been divulged, though it is reported that the patient died of poison. Detectives are at work upon all the cases and it is thought traces have been found which may lead to the apprehension of the guilty persons. While chloral is the usual ingredient of knock-out drops, it is not yet known whether or not it is responsible for the serious illness of these two soldiers and the death of the one man.

CAMDEN.—Several members of the Water Committee of the city of Camden recently discussed the question of better water for that city. From the fact that the contractor had cut off the supply from the artesian wells and had started to draw the city's supply of water from the Delaware River, it is feared that an epidemic of typhoid fever will sweep over the town. It is stated that the reports from the Board of Health go to show that since the artesian system had been in vogue typhoid fever had diminished from 40 to 60 per cent., which decrease was thought to be due to the purer water. The trouble came about over the fact that the city demanded of the contractor that a test be made regarding the amount of water supplied, but this was refused and the supply of water cut off. In this connection it may be stated that the trial of Peter E. Smith of Philadelphia, who is charged by Walter N. Stevenson a member of the City Council, with an attempt to bribe the latter, has been before the court this week. Strange to say Smith is also a member of the City Council. Stevenson stated under oath that Smith offered him \$5000 for his vote in favor of the Schuylkill Valley Water Bill, which attracted so much attention during the epidemic of typhoid fever here last spring. On the other hand, the defendant has introduced a plea of alibi, and witnesses have sworn that it was impossible for him to have been present in Stevenson's office at the time the latter states the bribe was offered. Charges and counter-charges are being made by both parties, and the case elicits no little public interest. But the fact is painfully evident, at any rate, that the people are still using unfiltered Schuylkill water, as proved each week by the number of deaths from typhoid fever.

UNIVERSITY OF PENNSYLVANIA.—Owing to the death of Dr. William Pepper, president of the alumni of the University of Pennsylvania, the Board of Managers of the General Memorial Society recently elected Effingham P. Norris, '71, to fill the vacancy. A memorial gate will be erected on the University campus, by the class of 1872, to cost \$3000. The General Alumni have undertaken to raise the balance of \$200 solicited by the Houston Club Memorial Committee for the erection of an archway in the new dormitory system in memory of the students who were killed during the late Spanish war.

GIFT OF \$1,000,000.—Mrs. Imogene Bennett Wellens, daughter of Joseph M. Bennett, has begun the contest against the probate of the will of the deceased. It will be remembered that Joseph M. Bennett recently gave to the University of Pennsylvania certain pieces of property adjacent to the University grounds, upon which were to be erected certain buildings to "further aid and encourage the said trustees in carrying out more practically and thoroughly the coeducation of women and girls." Besides this bequest various other ones were made to charitable institutions. In the will Mrs. Wellens was entirely ignored.

PRECAUTIONS AGAINST THE PLAGUE.—Owing to the receipt of a message by the Marine-Hospital Service and by public reports of the death of three persons from bubonic plague in Vienna, the quarantine officers of this city have received instructions from Washington to use stringent measures in regard to preventing the introduction of the disease by steerage passengers who have been through the infected district of Europe.

REPORT OF NATIONAL RELIEF COMMISSION.—Mr. George C. Thomas, treasurer of the National Relief Commission, makes known the following contributions: Cash previously received, \$78,173.47; items, \$85; value of supplies received to date, \$40,345; grand total, cash and supplies, \$118,603.47.

NATIONAL RELIEF ASSOCIATION.—At a recent meeting of the executive committee of the National Relief Association, two gentlemen were appointed to go to Washington to confer with the Secretary of War relative to the future work of the Commission. The committee is composed of President Converse and Secretary French. It will be remembered that the National Relief Association has been doing noble work in caring for the sick soldiers in the army camps and in bringing them to this city to be placed in well-equipped hospitals. It now seems that the Commission is being overwhelmed and it is stated that much of the work now done by them in fact should be done by the government. It is also reported that the Commission has been bearing part of the government's expense in this matter and the two members have been dispatched to Washington to look after the matter.

HONOR TO NAME OF FORMER PHILADELPHIAN.—The President has given direction to the proper authorities in charge designating that the general field hospital at Camp Lexington, Ky., be named John Blair Gibbs, U. S. A., General Hospital, in honor of that much beloved officer who was killed in the second skirmish of the American troops at Guantanamo on the night of June 12. Dr. Gibbs formerly lived in Philadelphia, graduating at the University of Pennsylvania, but in recent years lived in New York, where he held prominent positions on the staff of the Roosevelt Hospital and a prominent medical college.

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward for the week ended October 29 gives the total number of deaths as 120—65 whites and 55 colored. The principal causes were: Apoplexy, 8; consumption, 12; diphtheria, 7; heart disease, 13; diseases of kidneys, 8; malarial fever, 5; pneumonia, 10; scarlet fever, 1; typhoid fever, 6. The total number of births was 105—53 whites and 52 colored. At the close of the week there were 139 cases of diphtheria and 106 cases of scarlet fever under treatment.

HEALTH REGULATION ENFORCED.—The father of a child convalescing with scarlet fever was fined in the police court for violating the law for the prevention of the spreading of contagious diseases. One of the medical inspectors of the health department found the convalescing child on the street before the official quarantine had been removed; the father was held responsible and was fined \$15.

PHYSICIANS APPOINTED.—On the recommendation of Health Officer Woodward, John H. Stoutenburgh has been appointed by the Commissioners to the position of Assistant Medical Sanitary Inspector, with a compensation of \$2.50 *per diem*. J. F. Reppeti will act as physician to the poor during the assignment of Dr. Stoutenburgh. L. E. LeFetra has been appointed medical school inspector in New York City. Dr. LeFetra passed first in the competitive examination for the position, 276 applicants being examined.

SURGEON SUEB.—A patient entered suit recently against Dr. George C. Burton to recover alleged damages in the sum of \$25,000. The plaintiff claims to have suffered from a shortening of a limb after a fracture, and sets up the stereotyped charge of "unskillful doctor."

PUBLIC HEALTH COMMITTEE.—At the meeting of the Committee on Public Health of the Washington Board of Trade, recently held, it was decided to recommend to Congress the filtration of the city water-supply, the extension of the sewer system, and the reclamation of the Anacostia flats. The latter recommendation was considered particularly important, as a large number of the paludal diseases prevalent in Washington are traced directly as originating from these flats. The report of the Commandant of the U. S. Navy Yard, the surgeon-in-charge of the Government Hospital for the Insane, and the Washington Asylum Hospital, point out the disease-spreading influence of this cess-pool. The Superintendent of Public Schools for the eastern section of the city, submitted a tabulated statement showing the number of cases of malarial diseases among pupils who reside in this locality.

THE FORTNIGHTLY CLUB.—The 79th meeting of the Fortnightly Club was held at the residence of Dr. A. F. A. King, on the 28th ult.

Work of Fiction.—Dr. Weir Mitchell's novel, "The Adventures of Francois," has been issued simultaneously in New York, London, Canada and Australia. In New York the twenty-fifth thousand was on the press before publication.

An Effect of Diet.—Mrs. Dix: "Don't you think your husband is rather headstrong for an invalid?" Mrs. Hix: "Yes, and the doctor's to blame for it, too." Mrs. Dix: "Indeed! And why, pray?" Mrs. Hix: "He refuses to allow him to take any nourishment but goat's milk."—Chicago News. But suppose the patient should become bull-headed in his obstinacy?

CHANGE OF ADDRESS.

Allen, C. J., from East Barnard, Vt., to 6 Winthrop St., Winchester, Mass.
 Christenson, A., from Washburn to Wausau, Wis.
 Crook, L. F., from Hico to Adell, Tex.
 Ellis, E. J. C., from Clayton to Benzonia, Mich.
 Hayes, T. D., from Chicago, Ill., to Arbroth, La.
 Hudson, A. S., from 271 to 230 Tremont St., Boston, Mass.
 Ketcham, C. L., from Cincinnati, O., to New Alsace, Ind.
 Matteson, D. E., from Lima, O., to Marion, Ind.
 Rollins, F. H., from West Salem, Wis., to St. Charles, Minn.
 Terrill, L. B., from Anderson, Ind., to Continental Bldg., Memphis, Tenn.
 Yates, H. W., from St. Luke's Hospt. to 1411 Fort St. W., Detroit, Mich.

LETTERS RECEIVED.

Allen, C. L., Washington, D. C.; Ashmead, A. S., New York, N. Y.
 Broga, W. W., Springfield, Mass.; Browning, B. Ray, Littleton, N. C.; Bernd, Henry & Co., St. Louis, Mo.; Boston, Gore & Web Mfg. Co., Chelsea, Mass.; Bickey, W. A., Toledo, O.
 Cheney, J. V., Chicago, Ill.; Carnes, U. M., Cleveland, O.; Cokenower, J. W., Des Moines, Ia.; Curtis, A. M., Washington, D. C.; Clements, Jos., Kansas City, Mo.; Coc, H. W., Portland, Oregon; Chadwick, H. J., Grand Rapids, Mich.; Cleaves, M. A., New York, N. Y.; Coleman, W., Troy, O.; Chenoweth, W. J., Decatur, Ill.; Crosby Friesian Fur Co., The, Rochester, N. Y.; Curl, J. L., Osa, Mo.; Clements, J., Kansas City, Mo.
 David, E. L., (2), Louisville, Ky.; Davison, F. B., Fleetville, Pa.; Daniel, J. B., Atlanta, Ga.; Dixon, J. L., Springfield, Mass.
 Fischer Chemical Importing Co., New York, N. Y.; Fischer, Louis (3), New York, N. Y.; Fuchs, W. C. (2), Chicago, Ill.; Frazer, W. A., Lyle, Minn.
 Gardner, I. K., New Hampton, Ia.; Gould, Geo. M., Philadelphia, Pa.; Ganett, G. H., Miller Grove, Tex.
 Hummel Adv. Agency, A. L., New York, N. Y.; Holmes, C. H., Cincinnati, O.; Harper & Brothers, New York, N. Y.; Hainlin, J. E., Davenport, Ia.; Hicks Newspaper Adv. Agency, New York, N. Y.
 Jenks, H. D., Detroit, Mich.; Jones, D. J., Lisbon, O.; Jones, W. T., Georgetown, Tex.
 Kress & Owen Co., New York, N. Y.; Kempson, J. F., New York, N. Y.; Lehn & Fink (2), New York, N. Y.; Lounsbury, L., Binghamton, N. Y.; Leuschner, R., Mt. Clemens, Mich.
 Matteson, J. B., Brooklyn, N. Y.; Mellin's Food Co., Boston, Mass.; Merrell Chemical Co., W. S. (2), Cincinnati, O.; Minor, J. C., Hot Springs, Ark.; Merrick, M. B., Passaic, N. J.; Musser, J. H., Philadelphia, Pa.; Morse Adv. Agency, L. D., New York, N. Y.; Moure, E. J., Bordeaux, France; Mulford Co., H. K., Philadelphia, Pa.; Morrison, Plummer & Company, Chicago, Ill.; Moore, Geo., Lynn, Mass.; McClanahan, H. W., Omaha, Neb.; McCall, H. B., Lenexa, Kas.; McCurry, J. H., Credit, Ark.; McKesson & Robbins (3), New York, N. Y.
 Nind, J., Newton, Chicago, Ill.
 O'Connor, W., Woodbine, Ia.
 Patrick, H. T., Chicago, Ill.; Paul, E., Derrick Adv. Agency, New York, N. Y.; Pope, F. F., Ashby, Mass.; Pressey, A. J., Cleveland, O.; Publishers' Collection Agency (2), Chicago, Ill.
 Randolph, J., Arvonia, Va.; Rio Chemical Co., St. Louis, Mo.; Rowley, W. S., Indianapolis, Ind.
 Sprague, W. B., Enreka Springs, Ark.; Steele, W. J., Brooklyn, N. Y.; Smith, Kline & French Co., Philadelphia, Pa.; Straw, E. E., Rural Retreat, Va.; Schering & Glatz, New York, N. Y.
 Trowbridge, L. S., Detroit, Mich.; Tri-Eliziria Remedy Co., Memphis, Tenn.
 Van Houten & Ten Broeck, New York, N. Y.; Van Slyke, W. H., Hancock, Mich.
 Warren, W. M., Detroit, Mich.; Willard State Hospital, Willard, N. Y.; Whitstone, A. S., Milaca, Minn.; West, S. L., Philadelphia, Pa.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, NOVEMBER 19, 1898.

No. 21.

ADDRESS.

MEMORIAL ADDRESS ON THE DEATH OF DR. I. N. QUIMBY,

CHAIRMAN OF THE SECTION ON STATE MEDICINE,

BY CHAS. H. SHEPARD, M.D.

CHAIRMAN PRO TEM.
BROOKLYN, N. Y.

The loss of our Chairman, Dr. Isaac N. Quimby of New Jersey at a time when we were expecting so much from him, is a heavy blow.

Dr. Quimby was one who impressed all favorably at first sight, but a closer acquaintance more distinctly revealed his noble qualities. His genial manner and forcible way of presenting whatever he had to say, whether in public debate or in the private circle, won for him a host of friends.



ISAAC N. QUIMBY, M.D.

Born Aug. 5, 1831, and educated in New Jersey, he early turned his attention to the medical field of his native State, graduating in 1859, from the University College of New York, the second in his class, with a special certificate of honor. Upon the breaking out of the Rebellion Dr. Quimby entered the army as a volunteer surgeon, serving with Gen. McClellan's forces in the Chickahominy swamps. He was at Harrison's Landing, and at Antietam, remaining with his division until after the battles of the Wilderness, when on account of illness he returned home, and shortly after resumed his medical practice.

His experience eminently qualified him to fill a lectureship in the spring course of the University Medical College in 1866-68, and also as assistant to

Prof. A. C. Post, in his surgical clinic. Soon after, his activity found vent in the establishment of the Hudson County, now Christ's, Hospital, of which he was the originator in 1868, and he continued as its surgeon until 1873, at the same time being one of the attending surgeons of the City Hospital, Jersey City.

His membership in the AMERICAN MEDICAL ASSOCIATION, and as one of the Judicial Council, was marked by a broad and liberal spirit that gave him a large popularity, and nearly landed him in the presidential chair. His visits abroad as a delegate from the AMERICAN MEDICAL ASSOCIATION, to the International Medical Congress in London, in 1881, again to Copenhagen, in 1884, and at Rome, Italy, in 1894, added to his ripe experience and gave him a large fund of knowledge which made him more useful for the remainder of his days. This same spirit drew him into the membership of the numerous medical societies, including the American Medical Temperance Association, of which he was one of the founders, and its vice president until his death.

His labors in the temperance field were marked by a thorough earnestness. He approached the subject from a scientific standpoint, his experience both in hospitals and private practice confirming him in the conviction that total abstinence from alcohol was the only safeguard for our people. No one was more ready to make sacrifices, either of time or money, for this great truth. With both pen and voice he sought unweariedly to promote this movement, which seemed so important to him.

But of all the causes he espoused, that of scientific temperance education in the public schools throughout our land appealed to him most forcibly as the one foundation of all reforms, in that it commenced at the fountain source. His clear mind appreciated the advantage to humanity which would be gained by having our children taught the facts with regard to the action of alcohol and other narcotics. For five years he was senior member of the medical committee having in charge that noble work of enlightenment, and in no place will he be more missed than in that advisory board. His earnestness, combined with quick perception and fearless action, kept him always in a leading position.

The practical side of Dr. Quimby was shown by the fact that he devised several important improvements in surgical operations, and a number of valuable papers illustrating them are on record. Not alone to the medical field was his work confined, but his public spirit gave him the high honor of being president of the first Citizen's Association of Jersey City, in 1870, which was instrumental in breaking the corrupt official ring which then controlled the affairs of that city. Again, his industry and zeal for the good of his fellow-citizens was marked in exposing and blocking corruption in the State legislature in

1882, and his integrity of character was such as to bring to him the nomination, in 1883, of Governor of New Jersey, by the prohibitionists, which honor he declined.

In the midst of his busy life this great man has fallen, and all of us feel that we have lost a genial friend and a trusted counsellor, who was ever ready to give us of the best that he had. Taken ill on the 29th of April last, his life forces were so exhausted that he could not rally, and in one week he passed to the great beyond. On May 11 he was laid in his final resting-place, leaving his bright example as a valuable heritage to cheer us on in every good word and work.

What lesson has his life left for us? He was sixty-seven years young, for he could not be called an old man. One thing it may teach us: not to be so prodigal of our life forces. It is likely that had he been a little more conservative of his strength he might still have been with us. Let us then study more earnestly those things that tend to the preservation of life and the prevention of disease, which our Section so nobly represents. Preventive medicine, as we understand it, leads to the prevention of the use of medicine by advancing along sanitary lines, with such care of the body and its environments that disease will be prevented, and the use of medicine rendered unnecessary.

This work is committed to our hands, and let us realize that it is not for today alone that we plod, but as the movement passes along to succeeding generations it will gather increasing force and become a blessing to millions yet unborn. Thus shall we aid in the great work of humanity.

By all means let us have a Department of Health.

ORIGINAL ARTICLES.

ABOULIA IN RELATION TO HYSTERIA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., July 7-10, 1898.

BY L. HARRISON METTLER, A.M., M.D.

Professor of Physiology of the Nervous System in the College of Physicians and Surgeons of Chicago (Medical Department of the University of Illinois).

CHICAGO.

That hysteria is a cerebro-spinal neurosis is now an accepted fact. In its many neuromimetic manifestations it presents both a psychic and a purely neurotic front. It is a mental trouble, but has associated with it at times undoubted sensory-motor disturbances. Sir James Paget used to say that the hysteric exclaims, "I can not;" that it looks much as if it were "I will not;" but that in reality it is, "I can not will." This is one of those clever generalizations that cover much knowledge, but still leave much unsaid. Certain paralyzes and anesthetics of hysteria can not well be attributed to volitional influences, at least in their late manifestations. Something more than a mere oblivion of the will power must be invoked to account for some of the singular phenomena revealed in connection with the special senses. Many of the visceral and vasomotor symptoms are clearly beyond the power of the patient's volitional faculty. Hence, hysteria must be recognized as a double-faced phenomenon. There is a clearly-defined affection of certain centers lower than those that subserve the purposes of mentalization. Hysteria is not entirely an

affair of the brain and the will. This fact has introduced much confusion into the study of the pathology of the disease. Can it be possible, in view of this double-sidedness of the symptoms of hysteria, that the latter is really a combination of two affections: a mental (psychic, volitional) and a more strictly neurotic (subpsychic, ganglionic)? Some have so thought, but the distinction is arbitrary, for mentalization is as much neurotic as is any more strictly sensory-motor manifestation.

Without doubt, hysteria is *ab origine* a functional disturbance of that part of the encephalon or cerebral center concerned in the make-up of the so-called faculty of the will. On the other hand, it is equally true that many of the symptoms of hysteria, such as hemianesthesia and anuria, reveal a functional disturbance of nerve centers much lower than those of the cerebral cortex. Therefore, either we have two forms of disease under the head "hysteria"—a cerebral and a spinal neurosis—or we have a general concomitant neurosis of the whole cerebro-spinal apparatus, its manifestations revealing a variety in harmony with the various functional characteristics of the different centers involved; or we have a single disease, a functional disturbance of the cerebral (psychic) centers involved in the constitution of the intellectual faculties (especially the so-called volition) and this in turn affects secondarily the lower or subcerebral centers. The first two views are not as popular as the last. Gowers seems to accept the third view, for he says "it is certain that the disease (hysteria) can only be really cured by the restoration of the normal balance of cerebral function but the secondary disturbance of lower centers (e. g., vasomotor) may at times preponderate over that which can be recognized in the highest, and may be independent in their degree and in some cases apparently (though not really) in their occurrence." My own observations, both here and in Paris, incline me strongly to regard hysteria as primarily a cerebral trouble, an aboulia, and it seems to me that the aphorism of Sir James Paget is in the main correct.

Now, to harmonize this theory of hysteria with the manifestations of the disease in the lower or sub-psychic centers, I have for some time past felt that there must be a change made in some of our notions in regard to the so-called volitional faculty. For example, it seems clear enough to me that every case of genuine hysteria (in which category I do not class hysterical manifestations of purely reflex origin) has its start in a disturbance of the will power, but if I regarded the will as a distinct entity, a special faculty with a special habitat, I do not understand how it can *directly* affect the lower, involuntary centers. I can not comprehend how an individual's disturbed will power can bring about a hemianesthesia and its transference. I must reconstruct my old psychologic ideas in regard to the will, or else relinquish the view entirely that the will is at all concerned in the phenomena of hysteria. I can not do the latter, and so I have accepted a theory of the will which seems to me logical, and on the basis of which I see my way clear to an explanation of the phenomena of hysteria.

What is the will and where is it located? Is it, as some of the older psychologists taught, an intellectual faculty, existing per se and having a local habitat in the brain? The will-function has obviously to do with every voluntary organ and tissue in the body, and if it were possible to definitely locate its center, say

somewhere in the fore-brain, much of the confusion now surrounding pathology would vanish. It would then be comparatively easy to understand how this faculty, seated in diseased brain tissue, might emit or receive abnormal impulses from all the organs of the body. Such an explanation would be eminently physical and easy of elaboration. Such an explanation would rest, however, upon an erroneous conception of the prime nature of volition. *The will is not a faculty that emits or receives anything. It is a term, a definition, merely expressive of a choice, the preponderance of a motive, the outward representation of an inward impulse that is stronger than the other impulses.* The manifestation of volition usually terminates in an action, but this action is not the result of the operation of some particular volitional center in the cortex; it is the result of certain ideas or feelings (impulses) which preponderate at the time and so involve more or less the whole sensory-motor apparatus. In the language of Ribot, "voluntary activity appears to us as a stage in that progressive evolution which proceeds from simple reflex action, where the tendency to movement is irresistible, to the abstract idea, where the tendency to action is at the minimum." The will is thus merely a consciousness of a kind of internal, mental reflex. Mind is made up of sensory-motor activities, real or representative. On the one hand, a vast quantity of afferent impulses, pouring in through the various avenues of special sense and being stored up in the brain by means of heredity in the race and simple memory in the individual, interweave themselves into latent ideas and feelings. These latent impulses, awakened into activity by newer incoming impulses, set into play the motor or idio-motor representative centers, which send out efferent impulses to terminate in muscular action. The transitional process that takes place within the brain from afferent to efferent impulse is recognized in consciousness, and is spoken of as the exercise of the will. As I have just intimated, the time of the reception of the afferent impulses that ultimately go to make up the mental world of ideas and feelings and the time when the corresponding efferent impulses that terminate in voluntary action are sent out need not necessarily be the same or even successive. If a voluntary act is performed today (efferent impulse), the preponderating idea or feeling which gives it birth (afferent impulse) may have been acquired years before and have lain dormant in the meanwhile. The essential fact in regard to voluntary action is that it is always necessarily preceded by some idea or motive, and this idea or motive may have been stored up by memory or by heredity years before. The reflex character of the will is the point to be insisted upon. It is made up always of an antecedent and a consequent; the transference of the former into the latter is what consciousness recognizes and denominates the will.

Upon first thought, this reflex theory of the will would seem to banish all notion of its freedom, but here again the error is made that the will is a special faculty, a thing by itself, of which freedom may be predicated. But there is no such entity as the will, and a thing that does not exist can not be said to be bounden or free. The so-called will, let it be repeated, is merely the expression or conscious representation of a set of impulses acting more vigorously at the moment than any other set of impulses. The phenomenon of inhibition illustrates well this conception of the will. Take for example the depressive

effect of fear. A child learns by observation when its guardians are angry with it. It sees the raised hand and the frown on the face. It learns to associate these signs with punishment and pain (afferent impulses). The memory of pain (latent impulse) awakens a mental state in which certain intended actions are inhibited (efferent impulse). At times these awakened memories (latent impulses) of pain are overridden by others (also latent impulses) more powerful, such for instance as some strong feeling of pleasure expected of the intended action, and as a result the desired inhibition does not obtain. In the latter case the child does what it wanted to in spite of the threatened punishment. The afferent impulse which awakened in memory the idea of pleasure in connection with the intended action was stronger than the afferent impulse which was associated in memory with the idea of pain. Hence the efferent impulse represented by the child doing what it intended to do was different. It looks as though the child willed differently; in reality there was merely a conscious transference from one action to another in accordance with the relative strength of the preceding motives (afferent impulses).

A burglar fears the law to a certain extent and his memory of punishment, acquired by instruction or by actual experience, inhibits him so much in his acts that what he does he does by stealth and under the cover of darkness. If the motive for burglarizing be much stronger than his fear of punishment he will be less restrained and bolder. His mental inhibition will be overcome by his mental avariciousness. This mental conflict, this internal struggle between motives of various strengths, these motives having all been acquired some time previously through the special senses, terminates in some corresponding form of action, and to the onlooker from the outside it appears as though the man had merely exercised some faculty, the will, in deciding to act as he did. Two latent impulses may at times neutralize each other and we say of them, the individual will is paralyzed. A burst of anger, for instance, may be made to suddenly vanish by a recollection of a terrible accident to the victim of the anger.

In all these instances the actions of the individual are "willed" in accordance with the predominance of this or that motive; but the "willing" process is not the result of an action on the part of some special faculty seated somewhere in the frontal lobe and directing this muscle or that organ to functionate. The will is, therefore, psychologically at least, "an individual reaction," and "that which is inmost to us."

"The ego, albeit an effect, is a cause and that in the strictest sense." "To sum up, we have seen that from the lowest reflex action to the highest act of will, the transition is imperceptible and that we can not say precisely where volition proper, that is the personal reaction, begins. The difference is the most pronounced at the two ends of the series: at one end extreme simplicity, at the other extreme complexity; on one hand a reaction that is ever the same in all the individuals of the same species, on the other a reaction which varies according to the individual. Simplicity and permanence, complexity and change are here paired" (Ribot). In the consideration of hysteria and its management this conception of the will is of immense importance and throws light upon much that has heretofore been dark.

This conception of the will involves the idea of a

reflex, or as Ribot expresses it, a reaction. Aboulia means, therefore, a paralysis of the psychic or mental reflex. According to the latest physiologic data, the cortex is as much peripheral in relation to the centers of subconsciousness as are the integument, muscles, etc. An impulse originating in the cortical motor area is *reflected* through the lower subcortical ganglia and anterior cornua to its appropriate muscle just as much as though it had been reflected from some point in the skin around through the anterior cornua to the corresponding muscle. We are all familiar with the reflex picture presented when some portion of the body comes unexpectedly in contact with a hot iron. The reflex picture produced by an awakened sensory area of the cortex is just the same, though not as apparent as the former. Let me illustrate: Suppose I move my arm. The older psychology would say that such a movement being voluntary, originated in some special volitional faculty. Upon a moment's reflection I think it will be seen that such a movement of the arm, though originating in the cerebral cortex, is as much of a reflex as if the same movement had been produced by touching a hot piece of iron. The only difference is, that consciousness is *immediately* cognizant of the former reflex. When I "willed" to move my arm, I did so from some motive, else there would have been no movement. Inertia is as much a law of the mental as of the physical world. In analyzing the motive that caused me to move my arm, there is found underlying it some previous sensory or apparent impulse which may have immediately preceded the movement or have been stored up in memory a long time before. Some discussion I may have had with a friend about the movement of my arm, or some desire I may have had to show my prowess, which desire may have been originally implanted in me by some one praising or criticising me; or any one of a thousand different reasons may have led me to move my arm. I certainly had a motive for moving it at all, and that motive was created out of some influence from the outer world exerted upon me through one or more of my special senses at or prior to the moment when the arm was moved.

Suppose I touch a hot iron and then in spite of the pain, keep my hand on the iron. Is not that a pure voluntary act in direct opposition to a reflex? No; in such a case the cortical reflex is merely stronger than the cutaneous. Why do I keep my hand on the heated iron in spite of the pain? Simply because I have a motive for so doing. That motive may be the love of praise, emulation or experimentation, but whatever it is, it is based upon some previous sensory impulse poured in upon me from the outer world. Those impulses have been received, and if they have been latent, have been stored up in the sensory cortex. The matter may be formulated somewhat thus: No motive, no voluntary act; no sensations, no motive; hence all voluntary acts are in their last analysis referable to prior sensations and the so-called will is thus shown to be a sensory-motor reflex.

I grant this does not leave much room for the idea of a "free will," but it appears to me as a most rational explanation of volition, which in its final analysis proves to be merely the personal reaction of the individual to past and present impulses. The "wills" of different individuals, or their personal reactions differ just as the sensibilities of all mere protoplasm, the amebæ, for instance, differ in their response to exter-

nal irritation. If this explanation of "will" be well understood, much can be made clear as to the nature and treatment of hysteria.

We call hysteria a neurosis, a neuromimesis. In its typical form it seems to be a rational disorder, almost an aboulomania; yet there are symptoms, as I have said before, that seem to lie outside of the influence of the will. It is both a psychic and purely neurotic disease. Psychosis and neurosis are, however, the same. Mind is made up of sensory-motor phenomena or their cortical representation. I have endeavored to show that "will" especially is merely a sensory-motor reflex, and, therefore, hysteria from every point of view is simply a neurosis. It is a neurosis of the cerebro-spinal system involving its great sensory-motor reflex function. In idiopathic hysteria it is the higher arc, the cortical reflex arc, that seems to be affected; in hysterical manifestations due to extra-neurotic lesions it is the lower or subcortical reflex arc that is involved. The reflex character of the hysterical manifestations caused by a diseased ovary are obvious enough at times, but while not so obvious, nevertheless just as much of a reflex is the hysteria produced by cortical trouble such as may have been produced by bad heredity, bad education, bad discipline and other factors that enter into the making of the individual's character, *his personal reaction*. We say a hysterical patient's will-power is at fault; as a fact, however, her higher sensory-motor reflex apparatus is at fault, and she does things and reveals symptoms because certain bizarre impulses have taken the place of more rational and appropriate impulses. The trouble may be entirely on the sensory side of the arc, and in most cases it is; then, in conjunction with the various anesthetics, there may be complete absence of choice between motives or complete non-volition (aboulia). Again, the impulse from the sensory side of the arc may be so feeble as to awaken only the feeblest sort of a motor response (partial aboulia). Thirdly, the impulse from the sensory side may be so abnormal and extraordinary as to terminate in the strangest sort of movements (aboulomania). A hysterical patient, therefore, may exhibit sensory or motor paralysis (volitional) from mere absence of appropriate sensory impulses, or from two or more sensory impulses conflicting and neutralizing one another; or, she may reveal the strangest sort of motor symptoms and assume attitudes (for sympathy and effect, we say) because her motives (sensory impulses), past and present, have been unnatural and inappropriate. Illustrations of all these conditions will readily occur to any one who has seen much of hysteria. Therefore, I think we can safely say that hysteria is a neurosis involving the great sensory-motor reflex function of the cerebro-spinal apparatus; that the typical form (aboulia) is a disturbance of the higher (cerebral) sensory-motor reflex as much as are the hysterical symptoms caused by a disturbance in the lower (spinal cord, ganglionic) sensory-motor reflex arc. Being a neurosis, involving all the cerebro-spinal reflexes, it is easily seen why hysteria should mimic all organic diseases involving the same reflex arcs.

From the above standpoint, the treatment of hysteria becomes plain. In the lower form of the disease all extraneural sources of irritation should be sought for and removed so as to restore the integrity of the lower reflex arcs. In the higher form, a new set of different impulses and new motives should be

awakened so as to restore the equilibrium of the higher or cortical sensory-motor reflex arc. Of course, heredity is a tremendous obstacle to overcome, but is not altogether insurmountable. Given, therefore, all measures to restore the physical condition, nutrition, etc., of the tissues involved, the treatment of hysteria resolves itself into the study and correction of the patient's sensory-motor reflexes. This involves so many obvious details that I will not occupy your time now in rehearsing them.

Reliance Building.

THE RELATION OF NEURASTHENIA TO INSANITY.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The vast increase of our knowledge of the nervous system and its application to disease has been found to be most useful in the correction of certain former erroneous inferences. Hence a complete revolution has taken place in our knowledge of its pathologic states, which has also been the means of greatly enlarging the range of its organic lesions, at the same time materially limiting the scope and significance of its so-called functional affections. In spite of our grand success, however, in unraveling the secrets of the morbid changes in both structure and function of the neuron, much still remains to be done before we can successfully cross the Rubicon that separates organic lesions from those that are of purely functional origin.

This uncertainty of our knowledge has led to the formation and maintenance of a false system of nomenclature which not only confuses but greatly hinders the progress of scientific nosography. Hence many terms have come into general use which at the time of their advent were very convenient screens to shield our ignorance, but as our knowledge increased the scope of their power and significance was greatly reduced and limited, until today a larger and fuller knowledge renders many of them futile and actual misnomers. Others again embody a generalized morbid state or condition which later investigation renders capable of scientific classification, thereby greatly limiting their former power and significance, and unless the physician is fully aware of the changes wrought by such advance, he is greatly handicapped in his interpretation of the term, and his skill in diagnosis proportionately suffers. In no branch of medicine are such mistakes more common and conspicuous than those found to be associated with lesions of the nervous system. Nor is this strange when we remember its complex mechanism and the difficulty experienced in mastering the details of its scientific study in health and disease.

One of the most striking and widespread examples of mistaken identity in the true interpretation of the significance of the term is found associated with the morbid condition designated as "neurasthenia." I doubt if there is a more common and serious affection of the nervous system that is more generally misunderstood by the profession at large than this *fatigue-neurosis*. It is surprising to find the gross indifference manifested on the part of many physicians toward its real nature and character. Not only do they treat neurasthenia carelessly, but they refer to it

slightingly, and imply both by word and conduct that they believe the patient to be a malingerer, and that his sufferings are entirely false and even conjured for the occasion. It will, therefore, be the purpose of this paper to try and correct such erroneous inference as well as place it upon its true scientific basis.

The term "neurasthenia" was supposed to have been first used by Dr. Beard in describing a general morbid weakness or exhausted state of the nervous system. Later investigations, however, prove that his claim to priority in its use was an erroneous one. To Dr. VanDusen belongs the credit of using it as early as 1867 in his valuable paper entitled "Observation Upon a Form of Nervous Exhaustion, or Neurasthenia Culminating in Insanity," which appeared two years earlier than Beard's famous monograph. It has since been shown, however, that neither of these physicians invented the term, as it can be found in Dunglison's Medical Dictionary published in 1833. Notwithstanding these facts, the medical profession is under lasting obligations to Dr. Beard for the persistent manner in which he emphasized the importance of its study, thereby acquiring for himself an enduring monument in medical science. Prior to his labor in this direction, much confusion prevailed in the interpretation of a large group of symptoms which were fundamentally dependent upon a morbid weakness of the nerve centers, but which had been previously ascribed to disease of the various visceral organs involved, such as perverted conditions of the kidney, liver, stomach, uterus, etc. The result of Beard's work, however, led to a more thorough systematic study of its pathogenesis, which is still in progress, and the conclusions so far reached warrant the assertion that expresses an affection which does not limit itself to any part of the nervous apparatus, but affects it as a whole. Hence it is an extremely generalized condition, and often associated with other functional and organic diseases.

Its extremely generalized character may therefore affect the brain, spinal cord, peripheral nerves, the visceral organs, and indeed all parts of the human organism subject to nervous innervation. Consequently its symptomatology is exceedingly extensive and varied. This wide range of involvement has led to much confusion and is the responsible agent for the vague, ill-defined notions entertained by many concerning the true nature and character of neurasthenia; some physicians even going so far as to deny its existence altogether as a clinical entity. Laying aside all controversy, the consensus of opinion today by those most competent to speak declares that neurasthenia in its quintessence is a true fatigue neurosis characterized with an increased morbid reaction of the ganglionic nerve centers to all kinds of impressions, both mental and physical, whether slight or profound; producing an excessive nervous weakness and nervous irritability, which constitute its chief cardinal symptoms. Moreover, recent investigation demonstrates that while the various symptom groups occurring in neurasthenia are numerous and differ widely in detail, yet there are always present certain essential features that constitute a well-defined clinical syndrome. These have been termed by Charcot as neurasthenic stigmata.

All authorities agree that the cardinal symptoms of neurasthenia present well-marked evidence of weakness and irritability of the nerve centers which in themselves are expressive of fatigue. Weakness and

irritability of the nervous mechanisms that preside over the various bodily organs are, therefore, the chief clinical phenomena, belonging to any and all varieties of neurasthenia. These may present themselves in all degrees of intensity and are usually accompanied with other symptoms which denote the particular functions of the nervous system that are involved. Hence we may have involvement of the motor, sensory, reflex, trophic, secretory, visceral and psychical mechanisms which furnish a wide and varied range of clinical phenomena. But it matters little what part of the nervous apparatus is included in the pathologic process, the two dominating factors that are present and common to all varieties, and that which defines neurasthenia as a separate and distinct clinical entity are weakness and irritability of the various nervous functions involved. They are, therefore, properly regarded as the essential primary or fundamental symptoms of the lesion while all other associated clinical evidences of involvement are termed secondary or adventitious symptoms. These latter may be the outgrowth of the former and are simply parts of a well-defined harmonious entity.

Neurasthenia, therefore, presents two great classes of symptoms, viz: primary and secondary or adventitious, which may affect both the physical and mental constitution in varying degrees of intensity. The skill of the physician, therefore, in its diagnosis depends upon his ability to differentiate the one from the other, and upon this largely hinges the prognosis. Moreover, neurasthenia is variously classified by different authors according to its etiology, symptomatology or the apparent seat of lesion. Hence we may have cerebral, spinal, traumatic, sexual, toxic, reflex and many other forms of the disease. While no doubt this method has some advantages, yet it often proves very confusing and misleading.

A classification that recognizes neurasthenia in its entirety is to my mind, therefore, much preferable, and from this standpoint it can be reduced to two classes, viz: 1, complicated; 2, uncomplicated neurasthenia. In the former it may be found associated with many functional as well as organic diseases, such as epilepsy, syphilis, malaria, gout, rheumatism, uterine disease, hypochondria, sexual perversion, insanity, as well as many other morbid conditions. In the latter it presents itself by a conspicuous absence of any such complications, in which case it is known as simple or uncomplicated neurasthenia. The effects of either class, however, produce symptoms which may be referred to both the physical as well as mental constitution of the individual, and present a wide range of clinical phenomena that are, for the most part, subjective in character. While it is true that much speculation has been indulged in relative to its pathology, we are still compelled to admit that so far we are unable to positively declare what the actual changes of the nervous elements are in neurasthenia.

The two important symptoms, viz: morbid irritability and morbid weakness of the nerve centers, have been shown by Hodge to be due to changes in the nerve cell itself, and that the lesion of fatigue is loss of cellular substance involving the nucleus, protoplasm and even the capsule itself. According to Dercum, this waste of nerve substance had been demonstrated by Mosso to alter the constitution of the blood, producing a true toxemia that strongly inhibits the physiologic action of the nervous elements distributed to the voluntary muscles and

other organs of the body. Let this be as it may, it is certain that the element of autotoxemia enters largely into the production of neurasthenia, and often gives rise to tissue changes that are commonly found associated with its more severe forms. The continued results, however, of nerve strain from any cause, that form so prominent a factor in American business, social, political, and professional life, operate upon the physical and mental organization in such a manner as to exhaust strength or vital force more rapidly than recuperation takes place. Consequently nervous exhaustion or neurasthenia ultimately ensues. More especially is this found to be true of persons inheriting a neurotic diathesis, as this renders them more susceptible to the baleful influences of the common causes of neurasthenia. Excess and abuse, of any and all kinds, with faulty methods of living, operating upon such an individual are recognized by all authorities to be potent factors in the production of neurasthenia. Dana claims that the causes of neurasthenia can be reduced to two agents, viz: bad heredity and foolish living (*Twentieth Century Practice.*)

The reduced nervous energy that results from such causes seriously affects the visceral organs and nutritive functions of the body, which is expressed clinically by a marked weakness or inaction as well as want of vigor of all the bodily processes. A feeling of bodily illness is thus engendered that attracts the attention of the patient to himself and ultimately forms the basis of morbid fears or nosophobia. This again leads to the development of despondency, petulance, irritability, selfishness, impatience and vacillating conduct, all of which are marked features of the formative or incipient stage of insanity. All authorities agree that incipient insanity is attended with physical and mental changes that are indicative of nervous exhaustion, and that clinically they are expressed by a diminution or want of vigor of all the bodily processes. Moreover, despondency and nervous irritability are also marked features of early insanity.

The relation of neurasthenia to insanity, therefore, cannot be overestimated; indeed the relation one bears to the other in a large number of cases is so very close as to almost establish a true equivalency. Kirchoff has clearly shown that certain insanities, such as melancholia, mania, paranoia and paralytic dementia may develop upon a neurasthenic basis, while Chapin, in his recent work on Insanity, just published, also declares that the larger proportion of hospital admissions received in an acute stage of insanity have a history of neurasthenia. He therefore fitly styles it the "soil out of which insanity develops." Unfortunately, too often the close relation that exists between neurasthenia and insanity is entirely overlooked and even ignored. Consequently many a curable case becomes incurable by failure on the part of the physician to recognize its true nature and character. Moreover, its close relation to hysteric states often leads the physician to treat it with contempt, under the mistaken idea that the barometric changes from day to day indicate a fraudulent basis. Nothing could be further from the truth, as there is plenty of evidence in every genuine case of neurasthenia to explain its fluctuating tendencies even in its most simple and uncomplicated forms. One of the most important signs of neurasthenia becoming complicated with mental disorder is the manner in which the feelings, thoughts and actions of the patient absorb his entire attention. This self-consciousness

is a marked feature of many forms of neurasthenia and betrays the serious invasion of the higher mental faculties in the progress of the malady.

These concepts have been variously designated by different authors as obsessions, impulsions, imperative concepts, besetments and fixed ideas. They usually consist, however, of a general feeling of anxiety, which amounts to morbid doubts and fears that later lead to impulsive acts. They irresistibly force themselves upon the individual, dominating his every thought, word and deed. In their more severe forms they constitute the various phobias, but as they present themselves in all degrees of intensity, it is the degree combined with their persistency that indicates their true seriousness. For convenience of study Regis (See Manual Mental Medicine, p. 262) has divided them into three classes, viz: 1, those characterized by indecision, of which all kinds of morbid doubts are typical; 2, those characterized by all kinds of morbid fears; 3, those characterized by morbid propensities or irresistible tendencies. Each of these is again subdivided. For instance, Ball has divided the first class, or doubters, into five subdivisions, according to the nature of their predominating ideas. Hence we have: 1. "The metaphysicians, who are especially haunted by abstract questions of all kinds, such as doubts concerning heaven, hell, the world, the deity, etc." 2. "The realists, who constantly revolve in their thoughts the lower and base details of objects, such for example as the conformation of the genital organs, copulation, etc." 3. "The scrupulous, whose doubts pertain to forms of religion, such as accusing themselves of committing the unpardonable sin, or of some theft, etc." 4. "The timorous, who are fearful of committing some indelicate action by even allowing their clothing to come in contact with that of others, etc." 5. "The counters, whose doubts are manifested under the form of irresistible enumeration." Such patients never get through counting different objects, such as door knobs, the houses on the street, or their numbers, etc."

The second class, or those suffering from morbid fears or phobias, is divided into three subdivisions:— 1. those who have a morbid fear of all kinds of objects. Its expression is extremely varied, and may involve such articles as glass, knives, pins, guns, thunder, flowers, besides certain kinds of food and drink. 2. Those who have a morbid fear of places, elements or diseases. Such patients are morbidly fearful of high places, bridges, streets, churches, theaters, rivers, beside a dread of all kinds of diseases, such as heart disease, liver disease, cancer, etc. 3. Those who have a morbid or irresistible propensity to steal, lie, cheat, drink, blaspheme, set on fire, or abuse the sexual organs. All of these various states are ably shown by Regis to be due to lesions of the will and are often associated with neurasthenia.

In a limited degree they are commonly present in health; indeed very few of us escape the presence of doubts, fears or impulses as isolated sudden thoughts, but which are controlled by the dominating power of inhibition. For instance, it is a common experience for persons looking from a height to be tempted to jump down; or in walking on the street are suddenly seized with a desire to count the houses or numbers on the doors, etc. But these sudden impulses are easily resisted or controlled, but when they appear as a complication of neurasthenia, they are often morbidly persistent and get beyond the control of the

will. In their exaggerated forms, they therefore constitute a serious symptom and may become the dominant feature of a grave form of insanity. In all cases, however, where their presence can be demonstrated, they are to be regarded as marks of true degeneracy, often remaining latent for years, to be brought to the surface by some sudden or severe shock to the nervous system; such as trauma, or severe mental and physical strains, beside excesses of all kinds. That such states also often accompany insanity is generally recognized, but I repeat it is their intensity combined with their persistency that indicate their true seriousness. Moreover, there can be little doubt that certain crimes are due to such sudden impulses which arise in the minds of persons who are not ordinarily regarded as insane, and which the subjects are wholly unable to resist. Hence they are truly irresponsible and should be given the benefit of the doubt. From the fact that such symptoms are so frequently seen in both neurasthenia and insanity, the close relation that exists between the two cannot be overestimated. Indeed, all the evidence proves conclusively that neurasthenia in its more profound types presents many symptoms in common with true insanity, and the line of demarkation that separates the one from the other is at times as dimly drawn as that which exists between sanity and insanity, physiology and pathology.

Moreover, the teaching of our text-books in regard to their differential diagnosis is often very misleading, for we are taught to believe that in neurasthenia the morbid fears can be removed by a process of reasoning, and that the patient can be convinced of his mistaken ideas; while in true insanity no amount of reasoning succeeds in convincing the patient of his mistaken notions. If this was taken as a criterion, many a neurasthenic patient would be regarded as suffering from insanity, when as a matter of fact his neurasthenic condition had not reached that extreme degree of mental impairment that is synonymous with true insane delusions although the morbid fears apparently resist all forms of reasoning. It must be confessed, however, that when the morbid doubts or fears reach a certain degree of intensity, combined with persistency, they then often become the equivalent of true insane delusions and should be treated accordingly.

That many cases of neurasthenia become thus complicated is clear to all, and the importance of the close relation that exists between neurasthenia and insanity, I repeat again, cannot be overestimated; indeed it often requires at best much practical knowledge and experience to recognize the appearance of one and the disappearance of the other.

In conclusion I wish to add that in the preparation of this paper I desire to acknowledge my indebtedness to such authors as Regis, Dercum, Dana, Gray, Kirchoff, Clouston, Blandford, Diller and many others, beside cullings from recent neurologic and psychological literature.

DISCUSSION.

Dr. MEYER—The daily work in the hospitals for the insane leads one continually to the following dilemma: that we either have to give up making diagnoses and take everything as diffused manifestations of sickness or disease, in which case we would be inclined to let neurasthenia be just one of the initial symptoms of insanity—something that may or may not go over into insanity; or, we can take the plan which I am more inclined to follow for clinical reasons, viz., endeavor to

single out those forms of neurasthenia which we know are initial stages of certain forms of disease, and try to keep those separate and apart from neurasthenia that always remains neurasthenia without ever going over into insanity. Dr. Maclean has made a classification of insanity in which he takes neurasthenia to be the initial symptom of all general insanity, even of general paralysis. If we do that we give up all clinical method. The fact that symptoms in the beginning of general paralysis may be those of neurasthenia, should not induce us to say that that is the same neurasthenia which may exist independently and never go over into general paralysis except after previous syphilitic infection. For clinical reasons, therefore, in working out problems, I should hesitate very much to allow neurasthenia to take quite as broad a field as Dr. Puntton gave it. We have to distinguish besides, the simple neurasthenic constitution; then the real fatigue neurosis; then the initial stages of definite forms of disease, such as general paralysis, and such as periodic insanities or any special form of insanity. I admit that it is at present almost impossible to say at the start in certain forms of neurasthenia what it is. I think that it is easy enough to distinguish the constitutional neurasthenia from an acute fatigue neurosis; it is also rather easy to distinguish neurasthenia that is the beginning of general paralysis; but, nevertheless, there will be a great number of cases that will lead us into the habit of looking upon neurasthenia as that diffused field into which we are inclined to throw anything that we can not classify anywhere else.

Dr. H. S. DRAYTON of New York—My first acquaintance with this Protean form of neurosis was derived from reading certain pamphlets by Dr. Beard of New York. I think it is to Dr. Beard that we owe the term "neurasthenia." Some eighteen or twenty years ago he published a volume entitled "American Nervousness," in which he described a train of symptoms that seemed peculiar to American civilization, and a little later he came out with this term "neurasthenia." He described the peculiar category of symptoms which were included under this form as having a particular relation to our American climate and civilization, and since I have heard a good deal about the Denver climate of late I have been wondering whether or not there is anything here that is at all curative of neurasthenia. Now it seems to me that in the effort to make a differential statement so that we can determine at all what there is peculiarly its own in neurasthenia, we might ascribe to that form of nerve disease a capricious category of symptoms; that is, that neurasthenia is indicated more by caprices of habit, caprices of mental expression. The causative factors are to be looked at from the point of view of the individual's heredity and life, as in all forms of nerve disease. Not long ago, Dr. Spitzger, whose name I think is very well known in this circle, delivered a very elaborate opinion with regard to the difference to be drawn between neurasthenia and melancholia, and in a nutshell, he seemed to be of the opinion that most neurasthenic troubles were traceable to specific cause. Looking at the subject from one aspect, that is, the number of cases of young people affected, young men especially affected by neurasthenia, it strikes me from my own observation that the great majority of these causes are found among the comparatively young; so that it may be termed a trouble or affection of those chiefly under 40 years of age. Now, can we fairly discriminate; I might ask, can we draw a very fine line of demarcation between neurasthenia and melancholia? It strikes me that we cannot. From what I have heard from the late reader in that most admirable paper, my opinion is confirmed in regard to the relation of neurasthenia to insanity. Accepting that view, we see the necessary relation to melancholic patients.

Dr. TOMLINSON—The more experience I have in the observation of cases of insanity the more am I confirmed in the conclusion that it is about time to call a halt in multiform classifications and diagnoses, and while we can say that the average case of insanity presents certain physical conditions which have for their outward manifestations the characteristics of neurasthenia, still, at the same time, this is present in all cases of insanity, and there is no difference between the neurasthenic manifestations of an insane person and the neurasthenic manifestations of a person who is not insane. So far as trying to make a relation between them is concerned, it only ends in confusion. While the insane person may in the earlier stages, or may, all through the outbreak of mental disturbance, manifest neurasthenic symptoms, still the neurasthenic symptoms have nothing to do with the insanity, nor does the insanity have anything to do with the neurasthenia. It is a matter of

relation rather than of causation. It is not those cases in which neurasthenia is most marked that afterward become insane. The same holds true with regard to the other conditions which are supposed to differentiate forms of insanity, and so far as their practical care and treatment are concerned, in the effort to make a diagnosis and to put this case or that case into a marked classification, this has a tendency to obscure and interfere with our treatment. Furthermore, there is not, so far as I know, any pathologic difference, and we have to go further back in the history of the case to determine just what the significance of these manifestations is. It seems to me it lies in the difference of degree of instability or defect in the individual who becomes insane or neurasthenic, and that we can get a clearer and more definite idea of the subject by recognizing the neurasthenic as representing a certain degree of instability. So long as we do not bear this in mind, the more we try to classify, and the more we try to understand these cases, the more will we become confused. In my own work I have practically given up attempting to make a diagnosis or attempting to classify one case from another, because I see that one case, although it may manifest a certain number of symptoms which might place that individual case in a certain classification, still during the period of the illness or mental disturbance there will be a whole host of other symptoms manifest themselves which would seem to put the case in another category. So, while it may for a time be of interest to classify them, so far as the patient is concerned, it is important to recognize that it does not make any difference what their condition is—what we have to deal with is the insanity, and back of that is the degree of the defect of the individual, and upon the degree of that defect will depend the diagnosis.

Dr. HOPPE—I believe that the view which the individual members hold depends upon the standpoint from which they see their cases, whether in insane asylums or in general practice. Personally I have never seen but one case of neurasthenia pass into insanity. I believe that these cases are very sharply divided and identified, and I do not think that the pure form of neurasthenia will ever pass into insanity. For instance, take that class of neurasthenics who have fixed ideas. Their judgment may be wrong in this respect, but in all other respects it is right. It is not so much an error of judgment as it is based upon a fear which can be classed among the phobias or neurasthenias which occur in those cases of neurasthenia which are constitutional in character and based upon hereditary defects. I believe there is a very sharp line of demarcation between neurasthenia and melancholia. It is true that in neurasthenia we have depressed states; but that in my estimation does not constitute melancholia. I believe that the fundamental idea of melancholia is the idea of self-accusation: that the patient takes some point in his past history, real or imaginary, which he accuses himself of having committed, and which he looks upon as the cause of all his mental pain and suffering, whereas we never see that in the depressed form of neurasthenia.

Dr. ESKRIDGE—I shall have to differ from my friend Dr. Hoppe. I have seen quite a number of cases of neurasthenia pass into melancholia. During the past fourteen years I have been able to follow my cases from the clinic room and the office to the insane asylum, having the privilege of visiting patients there from time to time during that period. I have thus been able to follow a great many cases of neurasthenia. There is a very close relation between neurasthenia and insanity. I doubt very much whether any one can positively say that a given case of neurasthenia will not pass into melancholia. I doubt very much whether anyone can say with any degree of certainty that this particular case of neurasthenia is not melancholia. A great many cases of melancholia begin with neurasthenic symptoms. Whether that passes into insanity depends upon several causes, but two of the principal are the hereditary condition of the patient—that is the nervous stamina—and the man's hands into which the patient falls. There is certainly a very strong personal element in treating these cases of neurasthenia and beginning cases of melancholia. That person who can inspire confidence; that person who can make his patient feel that he or she is going to get better, whether he is a good physician or not, will have more effect than a second physician who has not personal magnetism. I do not believe that we ought to try to draw a hard and fast line between neurasthenia and melancholia.

Dr. JOHN PUNTON, Kansas City—I have nothing more to say except that I appreciate highly the kind manner in which my paper has been received, and from the remarks that have been made it is evident that we are not altogether settled in our opinions as to whether there is a relation between neurasthenia and insanity or not. As far as I am concerned, my position is the same as Dr. Eskridge's.

A CLINICAL STUDY OF MULTIPLE NEURITIS IN YOUNG CHILDREN.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The following brief clinical studies of multiple neuritis embrace only those cases in which were found motor and sensory paralysis of symmetric development, but do not include that form of neuritis which affects only the muscles of the palate or of the nose, as shown by regurgitations of fluids, with nasal voice or those cases affecting only the ocular muscles.

Diphtheria is undoubtedly by far the greatest cause of multiple neuritis. Comparatively few cases are caused by the other infectious diseases. Smallpox is not infrequently a cause of the disease, but I have seen no mention made of chicken-pox giving rise to the disease. I, unfortunately, have one case to report of the production of the disease by arsenic given during the course of treatment of chorea. I have twelve cases to report, the causes of which were: arsenic administered for chorea, 1 child; diphtheria, 9 cases; varicella, 1 case, and measles 1 case. Seven children were cured, 5 died. In none of my cases were the sphincters involved; in all cases there were some deviations from the normal mental condition of the child. This last symptom I have seen little stress laid upon. The first symptom noticed was simply a weakness of the extremities, followed rapidly by inability to stand or walk—the motor paralysis appearing first, followed at once by the sensory paralysis, the recovery being first of the sensory and later of the motor paralysis.

No allusion was made in medical literature of paralysis following diphtheria until the end of the 16th century, the first mention being made in 1580. Ghisi, in 1747, describes an attack in his own son, and adds that he "left to nature the cure of the strange consequences." The first description of the disease in America was given by Dr. Bard of New York, in 1771. Few authorities describe multiple neuritis in children, although diphtheretic paralysis was described long before the disease was considered to be a neuritis. In looking over the statistics of paralysis following diphtheria, I find no distinction is made, or in only a few instances, of paralysis affecting the throat only and a general multiple paralysis. In the collective investigation of the American Pediatric Society, of 189 cases, the paralysis was general in 8 only. They report 3384 cases with 9.7 per cent. followed by paralysis. Various other estimates are given of from 5 to 15 per cent. All authorities agree as to the rarity of death, although one authority thinks physicians are too optimistic in regard to the mortality. Of my 9 cases, 3 were treated during the attack of diphtheria with antitoxin; of these three, 2 died. Five of the 9 children were treated during the attack of diphtheria. In 7 cases the Klebs-Loeffler bacilli were found; the other two occurred before the discovery of the bacilli. The ages varied from 23 months to 12 years.

Case 1.—Willis S., the youngest child, 23 months, had an attack of diphtheria, moderately severe. One week later there was hoarseness followed by regurgitation of fluids through nose, nasal voice, and internal strabismus of both eyes. At the end of the first week the child was unable to stand alone, or walk, pain over track of nerves, most marked in the lower extremi-

ties, anesthesia, as shown by the indifference to prick of pins; the temperature test was not applied; the child lacked its normal intelligence. The symptoms increased rather in extent than intensity, the muscles of the neck becoming involved. The rectal temperature varied from 101 to 104.5, with at the end 106. Death occurred in a spasm at the end of the fourth week from the first appearance of the sore throat.

Case 2.—Joe S., 4 years; seen on the eighth day of diphtheria. Klebs-Loeffler bacilli found, nose, pharynx and tonsils involved, moderately severe attack; throat normal and free from bacilli on the thirteenth day after the first symptom. Thirty-one days after the first appearance of the sore throat, or eighteen days after recovery from the diphtheria, nasal voice and regurgitation of fluids were noticed, and the child walked with difficulty; this increased in severity, the child became unable to either stand or walk alone, pain on pressure over the nerves of the lower extremity, with anesthesia. The muscles of the trunk and neck were not involved. The child again began to walk fifteen days after the symptoms of nasal voice and regurgitation were noticed, with complete recovery shortly after.

Case 3.—Sara N., had a mild attack of sore throat, according to the history of the mother, from which she recovered. In the fifth week after, nasal voice and regurgitation of food began. The child complained of being tired and disinclined to walk; this gradually increased, and at the end of four weeks she was suddenly seized with pain in all the extremities, and shortly after was unable to stand, walk, sit or hold head up: marked tenderness and anesthesia in all extremities. The temperature test showed great pain when heat was applied, but she insisted that the cold made her feel much better. The tenderness over the track of the nerves was intense; the temperature varied from 101 to 104.5; there was gradual loss of intelligence. Five days after she complained of severe pain, the physical signs of broncho-pneumonia were found; death occurred in the ninth week from the first symptoms of sore throat.

Case 4.—John K., 3 years; recovered from a mild attack of chicken-pox about July 1. On the 7th the child was attacked by laryngeal diphtheria. Antitoxin was given, and the child was completely recovered by July 14: the bacilli persisted until July 31. August 1 the mother noticed the nasal voice and a very slight regurgitation of fluids—on the 7th the child held the head to one side, staggered when attempting to walk, and fell down frequently; four days later was unable to stand alone; anesthesia marked; temperature test showed heat felt over a part of both limbs—of lower extremities, less on upper and on the trunk. Child at times seemed delirious, intelligence very much below his normal, died suddenly, apparently from cardiac paralysis on the eighteenth day after the first regurgitation of fluids.

Case 5.—Mild attack of diphtheria, December 30. Antitoxin given; complete recovery on the eighteenth day. February 7, without previous regurgitation of food, child began to limp, and fell down a great deal, complained of pain in the legs; four days later could walk only by dragging the feet, and at times crossed his legs during locomotion; could not stand nor walk alone; marked pain over track of nerves, with marked anesthesia of both legs; no reaction to cold temperature test. Slight reaction to heat; upper extremities normal; could sit alone, but only a few minutes. On the sixteenth day internal strabismus of the left eye was noticed; on the twenty-first day attempted to walk; twenty days later completely well. The intelligence of this child was less affected than the others.

Case 6.—Annie P., 9 years. Early in November had an eruption on the hands, the nature of which was not known. No attention was paid to this, and about December 1 complained of inability to walk, and regurgitation of fluids and nasal voice. When seen a few days later could neither stand or sit alone; tenderness over track of nerves, patella reflex nearly absent. The symptoms remained about the same for a month, then marked change in the intelligence, utterly unable to move the lower limbs or hold the head up; tenderness over track of nerves much more marked, with marked anesthesia. Entire absence of patella reflex; slight atrophy of lower limbs; could not swallow even solid food without choking. All symptoms continued to increase in severity; intelligence became more affected; there was anesthesia of all limbs and of the throat, as shown by the indifference to the introduction of the stomach tube, this being at first much resisted. The disease lasted from November 1, the time of appearance of the eruption, to January 29, when death occurred apparently from cardiac paralysis.

Case 7.—George Mc., 5 years. In the latter part of March had a mild sore throat; well in a week. One month later child began to behave strangely and staggered when walking. This slowly increased, then nasal voice and regurgitation of food.

In ten days from first symptoms, child decidedly idiotic. Could not sit, stand or walk, even with much assistance. Pain over track of nerves, anesthesia most marked in the lower extremities. Patella reflex absent. On the fifteenth day very slight improvement, which gradually increased and the child was entirely well, with his usual intelligence thirty days later.

Case 8.—Charlie S., 4 years. Diphtheria September 1, moderately severe; treated with antitoxin; made a good recovery. October 5 child became sleepy, some regurgitation of fluids; two days later marked tenderness over track of nerves in the lower extremities; unable to stand alone or walk; four days after the first symptom of regurgitation, child unable to hold head up or sit alone; very marked tenderness over the track of the nerves in the lower extremity, to a less extent in the upper extremities; anesthesia marked over lower limbs, less over upper; in parts of chest and abdomen marked anesthesia; much muco-purulent discharge in mouth and throat; intelligence much diminished; the lungs showed signs of a general broncho-pneumonia, and very numerous pleuritic rales. The patella reflex entirely absent. The anesthesia and paralysis became marked, and death occurred on the ninth day from the first symptom of regurgitation and weakness.

Case 9.—Christine N., 6 years. January 6, mild attack of diphtheria, from which she apparently completely recovered. February 18, feverish and vomited; complained of much pain in both legs and was unable to walk; admitted to the New York Infirmary for Women and Children; absence of patella reflex on both sides; marked pain and tenderness over the track of the nerves, with very marked anesthesia to prick of pins and to the heat test; slight reaction to cold; upper limbs and trunk were normal; both feet extended; neither nasal voice or regurgitation of fluids; child not so bright as she is normally; can not stand alone nor take a step alone. Symptoms gradually decreased and child was well, with normal sensation and no paralysis March 27.

Case 10.—Nettie B., 9 years. February 29, eruption of chickenpox, which followed a normal course. Two weeks later child was taken out by an elder sister and complained of being too tired to walk; was out a long time and returned complaining of pain in both legs and inability to stand or walk alone. When seen the next morning there was marked tenderness over the track of the nerves, diminished patella reflex. The inability to walk increased; pain became more marked with noticeable anesthesia; nearly entire obliteration of patella reflex. Symptoms remained about the same; child could walk with great difficulty when supported. The disposition was extremely "cranky," the reverse of her normal condition. The upper extremities were at no time involved. At the end of three weeks the symptoms diminished in intensity, and gradual improvement took place. The child was perfectly well by May 15.

Case 11.—Rose B., 11 years. Entered the New York Infirmary, February 20, with a mild attack of chorea; by March 22 there had been little improvement in the symptoms and 5 minims Fowler's solution was ordered to be given every three hours day and night, a minim to be added each day. On March 29 she was taking 11 minims, when she vomited and the drug was discontinued for twenty-four hours. April 7, she was taking 119 minims, when a red papilla eruption was noticed, and symptoms of gastric catarrh, and the note was made that the arsenic had very little effect upon the chorea, so it was discontinued. April 13, the child seemed not to see and hear well. On the 19th very little twitching; May 2, no twitching. During this time the child had been disinclined to walk; had not seemed as intelligent as usual. May 12 the gait was very irregular and uncertain; dragged both legs; there was marked tenderness on pressure over the nerves; on the 21st utterly unable to stand alone, much pain over nerves, marked anesthesia in lower limbs. The symptoms of neuritis reached their height at this time and began slowly to disappear. June 4, began to walk a little with assistance; July 9 walking normally; no tenderness over the nerves; anesthesia had disappeared; discharged July 14, with no trace of either neuritis or chorea.

Several cases similar to Rose B. are found in medical literature, but the dose at the time of the development of the neuritis was smaller. This child received in the last twenty-four hours of the medication Fowler's solution $\frac{1}{3}$ iiss, or $1 \frac{3}{5}$ gr. arsenious acid. One case is reported by Dr. Roberts, in which the child received 66 minims in twenty-four hours in three doses. In my case the symptoms of neuritis at first closely resembled those found at the end of chorea. The weakness and paralysis, with the anesthesia, appeared abruptly. The upper extremities were not

affected, but the trunk muscle seemed weak; the child could sit alone only for a few moments.

Case 12.—Anna J., 4 years. December 2, eruption of measles in the normal manner. December 3 the child refused to speak; seemed apathetic. A day or two later would smile and laugh without reason. Seven days after the first appearance of apathy the child could neither sit nor stand alone, cried when placed on her feet; marked tenderness over the track of the nerves in the lower extremities, with anesthesia. Between the third and the seventh day the symptoms gradually progressed and reached their height on the seventh day, remaining the same until the eleventh day, when she began to notice a little, and made her desires known by crying and pointing to objects, and attempted to stand but cried when placed on her feet. On the sixteenth day made an attempt to speak, but seemed unable to articulate; tried to walk on the nineteenth day, and was able to articulate; could stand alone and walk, but inordinately, on the twenty-second day; by the twenty-eighth day could speak distinctly, if not excited, put words into sentences, walked about but staggered some; pain over track of nerves and anesthesia nearly gone. Child walked normally at the end of six weeks; spoke as well as before illness at the end of three months.

In none of my cases were the sphincter muscles attacked. The family history in all cases was unimportant, except in the case of George N., whose parents are alcoholic, and Charlie S., whose mother died of tuberculosis during the child's attack of diphtheria. All the children except Nettie B., were tenement-house children. The sanitary surroundings of John K. were especially bad; the child lived in rooms into which daylight came in midsummer only from 10 A.M. to 3 P.M.

The differential diagnosis was made chiefly from Landry's paralysis, but in this the paralysis begins in the legs, spreading from one to the other, then to the upper extremities; in my cases the paralysis began in both legs at the same time. In the cases of diphtheria the nasal voice and regurgitation preceded the loss of power in the limbs; in none of my cases was there a question of poliomyelitis. The question of Friedrich's disease, I think, could be thought of only in the case of the child with measles, the only resemblance being the disturbance of speech. From myelitis the diagnosis was made from the symmetrically located pain, and no involvement of either bladder or rectum, and in each case the distinct history of a preceding infectious disease, except in the case of Annie P., in which the diagnosis of an infectious disease was uncertain, but with the first symptoms of inability to walk, was present the regurgitation of fluids and nasal voice, which are not found in myelitis. The treatment consisted of strychnin, either by the mouth or hyperdermatically; stimulants when indicated.

THE RECOGNITION AND TREATMENT OF EARLY MYXEDEMA IN CHILDHOOD.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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That myxedema is not a disease *per se*, but a symptom, or collection of symptoms, dependent upon the absence, or upon a diseased condition of the thyroid gland, is now generally accepted to be a fact, the degree of severity of the symptoms depending upon the extent to which destruction of the secreting portion of the gland in question has taken place. That cretinism, myxedema and goiter (so-called) are but

variations of the one disease, is a view that is gaining adherents, as closer study into these conditions reveals the similarity in many of their symptoms, and the excellent results obtained in their treatment by the same therapeutic means. Sir William Gull¹ first defined myxedema as "a cretinoid state supervening in adult life in women," and drew attention to the similarity between myxedema and cretinism, expressing his opinion that both are allied. Ord² and others have also pointed out this similarity.

The accepted cause of the conditions is either absence of, or disease of, the thyroid gland. If the gland is congenitally absent, we get the condition known as true cretinism, either congenital or sporadic. When changes in the gland occur early, we have the cretinoid condition, or early myxedema; when these changes occur in persons who have attained full physical

trophic stage of a cirrhosis. Where this enlargement or hypertrophy is not general, we probably have to deal with a simple hypertrophy of the functioning portion of the gland consequent upon changes in another portion. Murray,⁴ in his excellent article on myxedema, says, in dwelling upon the differences between the varieties of myxedema: "In this connection it must be borne in mind that the actual size of the thyroid gland is not necessarily an indication of the amount of functional activity of which it is capable. A considerably enlarged gland may, from the nature of the structural enlargement, be just as incapable of carrying on its function as an atrophied gland." At the same time, the presence of a goiter does not of necessity presuppose myxedema, since that portion of the gland which remains may suffice in secretory power to continue the patient's normal



Sadie K.



Sadie K.

growth, we have myxedema. So much of value has been written of recent years in relation to the first and third divisions mentioned above, that it would be presumption on my part to add to or criticise; but in relation to the second, or type of early myxedema, it may be pardonable to present a few cases for consideration.

It was the occurrence of goiter in cases presenting some of the symptoms of myxedema, but in which growth had not been arrested, which first drew the writer's attention. In the adult, myxedema is nearly always found accompanied by a reduction in the size of the thyroid gland. Criminis,³ however, records a case in Thibet, in which the gland was enlarged. In the Clinical Society's report, in 59 cases of myxedema noted, 4 showed enlargement of the gland, and in 3 of 22 of the total number of cases, the gland had previously been enlarged. It is very probable that, in these cases of enlargement, without exophthalmus, we have to deal with a gland in the early or hyper-

health. Witness the fact that in some cases where goiter has been present from childhood, growth and the mental status have apparently not been interfered with, and the patient is, to all appearances, in perfectly normal health, but where the entire gland takes part in the process, the patient's health must suffer.

Having a change in the structure of the gland, we naturally get a change in the character, or quantity of the gland secretion, or both, and it is to this change that the symptoms of these allied conditions are due. Where the goitrous enlargement disappears under the use of thyroid extract or other preparation of this gland, it is very probable that, through the entrance of the active principle of the preparation—believed to be an organic iodine compound, discovered by Baumann and by him named thyreiodin—into the system, the deficit of this compound in the patient's economy is made up, an equilibrium is re-established, and the abnormal activity of the healthy portion of the gland ceasing, this decreases to the original size.

In view of these facts, I think we are justified in looking upon a spontaneous enlargement of the thyroid gland occurring in infancy or childhood, as being the precursor of more pronounced symptoms of myxedema, if allowed to go unheeded.

In this connection the following cases may prove of interest:

Case 1.—Sadie K., 8½ years. Both parents American. No tuberculous or specific disease on either side; maternal grandfather has a well-marked goiter which, he says, has been present as long as he can remember. (Patient first seen during the early part of January, 1897. Child presents a well-marked tumor over the anterior and antero-lateral aspects of the neck. Tumor first noticed two years ago, and has been growing slowly but steadily ever since. Tumor corresponds to the location of the thyroid gland, and measures, as nearly as can be determined, about 3½ inches horizontally, and about 2 inches vertically. (See Figs. 1 and 2.) The left side of the tumor (right of cut) gives a distinct sensation of fluctuation, presumably due to a cyst. The outline of the cystic portion shows the

single daily doses of three grains, after which its use was again interrupted. Within a month the gland began to enlarge again. The resumption of treatment was again followed by a prompt reduction in size. The same results occurred in each instance, upon interruption and resumption of treatment. At the present time, and for some months past, the patient has been receiving a single dose of ½ gr. every second day, and the gland and the general condition have remained normal.

Case 2.—Sylvester C., 11 years. Hungarian. Came under treatment during the summer of 1897, for a cough which had persisted for some months, accompanied at times by slight muco-purulent expectoration. Physical examination revealed signs of a mild tracheo-bronchitis. The thyroid gland was appreciably enlarged, although, owing to indistinctness of its outline, the exact measurements could not be obtained. On palpation, the enlargement was apparently uniform over the entire gland, and nowhere of a cystic nature. Inquiry revealed that the mother of the boy has had a goiter since childhood, but apparently enjoys good health. No family history of syphilis or tuberculosis obtainable, except that a paternal uncle died of phthisis. The tumor had first been noticed four years ago, and had grown slowly. No symptoms of mental change



Sadie K.

left lobe and the isthmus to be involved. Over the right lobe the outline is less distinct, and the sensation that of a solid growth.

No pulsation over the tumor; no dilatation of the superficial vessels; no pressure symptoms; no apparent thickening, or scaling, or abnormal dryness of the skin. Hair coarse and dry; no falling out of hair has been noticed. Patellar reflexes unimpaired; no giddiness or headaches. It has, however, been noticed that the child's memory is somewhat impaired, in that she is beginning to forget her childish rhymes and songs. She is also less inclined to play with other children than formerly.

She was at first put upon the saturated solution of potassium iodid, in drop doses, t. i. d. This was continued for three weeks, with the result that the tumor became distinctly more tense and hard, but no smaller. January 26 the iodid was stopped, and the patient put upon a reliable preparation of thyroid extract, in tablet form, in doses of three grains, once daily for three days; after this in the same dose, twice daily, and then, after the same length of time, this was increased to three times daily, at which dose it was continued. Within two weeks a marked diminution in the size of the tumor was perceptible, preceded by softening over its entire surface. By the middle of the following April the tumor had entirely disappeared, and the child was to all appearances normal. (See Figs. 3 and 4.) For some months the extract was continued in



Sadie K.

had been noticed. The use of thyroid extract was begun—in addition to a mild expectorant—in accordance with the plan outlined in Case 1, with the result that, after one week's treatment, the tumor had decidedly diminished in size. After three weeks the gland had returned to its normal size, and remained so until the case passed from under observation, some weeks later. This removal from treatment was reported to be due to the fact that the mother said that she had had a goiter from childhood without suffering, consequently she could see no reason for its treatment in the boy. The cough had disappeared entirely.

Case 3.—Mary McD., 14; Irish parentage. The child was brought for treatment August 2, 1897, because of habitual constipation, frequently accompanied by headache. Further questioning and examination, because of the typically myxedematous character of the skin of the face, elicited the following facts: History of the beginning of the condition is indefinite. The mouth and limbs twitch a good deal at times. Sleeps poorly; is dull and listless, sitting in an apathetic condition almost the entire time; does not care to play. Memory very poor. The child is of an affectionate disposition but rather timid. At times develops a destructive tendency, although this is not marked; this condition has, however, been more marked during the past year. At times complains of a pain in the cardiac region, and of shortness of breath. Speech is indistinct and

stuttering. Seems to grope for the words. Slight thyroid enlargement. The child began to menstruate when 9 years old, and this function continued quite regularly for two years. During the past three years, however, it has been entirely absent. Thickening and puffiness of the skin, especially of the trunk and face; teeth irregular and of Hutchinson type; slight anemia; hair dry and wiry. No especial loss of hair has been noticed, although the eyebrows and lashes are scant. Some drooping of lower eye-lids, and puffiness of the skin under the eyes. Slight internal strabismus, noticeable only at times. Heart-action rapid and somewhat feeble.

Since the change in the child's condition was first appreciated, it has been noticed that perspiration has lessened, until now it is practically absent, even in hot weather. At the beginning of the change she was in next to the highest class in the primary grade in one of our Public Schools. As the condition developed the child was gradually "put back" into lower classes until she was again in the lowest class. Her teachers then recommended her removal from school. The girl is the product of the third conception. The first terminated at the seventh, the second at the middle of the eighth month. In both instances the fetus was still-born. No direct history of specific disease in either parent is obtainable. Several other children in the family are apparently normal and healthy. Weight 68 lbs.

The diagnosis of myxedema accompanying congenital syphilis was made, and the treatment, as outlined in Case 1, begun.

September 15, a gradual improvement has been noticed since the beginning of treatment. Child acts brighter; wants to go out and play. First change noticed was that the child, of her own volition, seized a broom and swept the room. Now desires to help her mother with work, such as drying and washing dishes. Speaks far more plainly. Begins to spell and write again. September 22, at the end of the first week of treatment weighed 65½ lbs; now weighs 70 lbs. She again takes up her slate and has begun to play with her doll. Recalls some facts about her class and teacher. November 1, much brighter; wants to go to school; sleeps quietly at night now. Has begun to read in the "first reader." Has become sensitive to the taunts of her playmates. Not much lessening as yet in the thickening of the skin. Since the above the child has been kept steadily under observation and treatment. The mental condition has slowly but steadily improved. While still far from being a bright child, she is, compared with her former mental state, a different being. The general physical condition, too, is much improved, although there is still much thickening of the skin. The thyroid enlargement disappeared within the first month of treatment.

The only unpleasant effect of the extract noticed in any of the cases, was restlessness during sleep in Case 1, after the treatment had been in progress several weeks. Cessation in the use of the extract for a few days was quickly followed by the complete disappearance of the symptom.

I have chosen to class the above three cases together as variations in degree of the one condition, myxedema, for I believe that in those cases of goiter in which thyroid extract exerts a beneficial effect, by causing the disappearance of the enlargement, we have to deal with a condition of the gland, which may, if unchecked, go on to the development of a more pronounced form of this disease, as we see it in the adult, or of the cretinoid state, according to the age of the patient. Furthermore, I hold a trial of the thyroid extract, in cases of goiter without exophthalmos in children, to be fully justified. Bruns⁵, of Tübingen, in speaking of the treatment of twelve cases of goiter gave as the result: Four children (ages 4 to 12), were cured completely. At the end of a fortnight there was a marked decrease observable in the size of the tumor, and in one month thereafter it had entirely disappeared. In one case of goiter, accompanied by a cyst in the thyroid, the goiter disappeared, but the cyst remained unaffected by the treatment. He gave one to two drams of the fresh thyroid gland inclosed in a wafer, or in a sandwich, once a week. His conclusion was that the treatment succeeds best in children. Herrick⁶ states that thyroid extract is of value

in simple hyperplastic struma, especially in the young.

I am indebted to Prof. A. Jacobi and to Dr. F. Huber, his chief of clinic, for the privilege of reporting Cases 2 and 3.

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NEURAL DYNAMICS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY W. J. HERDMAN, M.D., LL.D.

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The learned author of our most recent work on the nervous system and its diseases has said: "Some knowledge of the dynamics of the nervous tissues is of fundamental importance to the student of nervous phenomena and nervous disease, who should know something of the stimuli to which nerve-cells and nerve fibers react; of the manner and degree of this reaction; of the phenomena by which it is attended and of the nature of molecular transmission." (Chas. K. Mills.)

Progress in clearing up the mysteries which attend especially the origin of functional disorders of the nervous system requires more complete and exact knowledge of neural dynamics. And as the organic changes are but the secondary stages of disorders which were necessarily functional in the beginning of the derangement, faulty dynamics must account for these also.

In the nervous system, exhibiting vital phenomena either of normal or abnormal nature, we have to deal with matter and motion: the same two elements which underlie all the phenomena of the physical universe. Right conceptions therefore of the nature and arrangement of the matter which constitutes nervous tissue and of the motions which act upon it and originate in it are indispensable to a correct interpretation of nerve action. Our knowledge is changing and enlarging daily concerning the structure and arrangement of the nervous tissues which constitute the machinery that serves to receive, transform and transmit the motion peculiar to it, and this added knowledge requires us to modify the conceptions we have previously entertained of the workings of that mechanism. It is but natural that the recent positive acquisitions to our knowledge of the minute structure of the nervous system have stimulated endeavors to explain by means of them many of the phenomena, both physiologic and pathologic, which are associated with nerve action, such as sleep, hypnotism, hysteria, epilepsy, etc., which have baffled all attempts at explanation and yet have for many reasons provoked perpetual inquiry. But it has seemed to me that all attempts at explanation that have come under my notice, even though they have called to their aid the evidences furnished by modern histologic research, have been too narrow in their conception and too limited in the range of elements considered as entering into the processes dealt with, to be of much profit in elucidating them. I refer especially to such suggestions made by several biologists and some neurologists as the one that the phenomena of mental action, hysteria, hypnotism, sleep, etc., may be accounted for by the mobility of the dendrites of the cortex neurons. Even if we should

ultimately discover it to be a fact that the neuron prolongations possess such mobility—for this at present is little more than an assumption—the questions still remain to be answered: What occasions such movements? And how do they serve to transmit impressions from neuron to neuron? We must have firmer ground to rest on than that furnished by a doubtful ameboid movement of neural protoplasm before we can form a very rational or comprehensive conception of the dynamics of the nervous system.

Starting with the essential elements by means of which nerve phenomena are manifested, we find them consisting of three main sets of neurons: 1, The afferent (or sensory); 2, the central; 3, the motor or efferent. These constitute the machinery for transforming various forms of what might be termed extraneural energy into neural energy and again delivering it in some form to the outer world. In considering neural dynamics therefore, we have to occupy ourselves with the nature of this machinery, the neurons, and with the various forms of energy which it serves to transform.

We find the neurons discontinuous cell-elements best arranged for their effective work in chains, each link so related to its special associates as to, in some manner, influence them and not others. These cell-elements are composed of a vitalized protoplasm of highly complex chemic composition in which conditions are most favorable for a great range of molecular rearrangement and modification. The character of the arrangement and modification of the protoplasmic atoms and molecules will of course be determined by the nature of the motions to which they are subjected, and whereas, we can conceive a congregation of living protoplasmic molecules may offer at first some resistance to any extraneous form of motion by reason of their pre-existing inter-chemic and inter-molecular relations, yet any added motion from external sources to which they are able to respond would in time, by its frequent repetition, result in modifying their structure and arrangement. While we may not be able, as yet, either by chemic analysis or by microscopic research to distinguish any difference in the composition or structure of the protoplasm that makes up the substance of neurons differing in function, yet it is presumable that such a difference does exist, and is evidenced by their special capacity to respond to certain forms of motion and not to others. This assumption of the difference in molecular arrangement of the protoplasm of neural chains of different function, is still further justified by the very evident structural difference in the end-organs of the neurons where they first receive that form of motion to which they are especially sensitive and which constitutes their peculiar stimulus.

The human organism possesses six distinct forms of peripheral expansions of sensory neurons: olfactory, optic, auditory, gustatory, tactile, muscular, all of which can be readily demonstrated, and it is highly probably that sensations of temperature and the various forms of common sensation (such as that of position, pain, hunger, thirst, fatigue) have a special terminal nerve structure capable of responding to the conditions which attend each of them. It is chiefly by means of these special mechanisms constituting the end-organs of the sensory nerves that the human organism is capable of utilizing the various forms of energy which it receives and in turn transforms them into the neural and other activities characteristic of

animal life. Energy in the form of translatory motion of comparatively slow and perhaps irregular periods is transformed into nerve motion by the tactile corpuscles and the nerve terminations in muscle spindles. More rapid translatory motion with shorter wave lengths excites the mechanism which ultimately reaches the special end-organ of the auditory nerve.

The sense of touch and the muscular sense are excited by direct pressure of an object on the end-organ, or by the communication of such pressure through the medium of the overlying skin or other tissues. In the sense of hearing the end-organ of the auditory nerve requires that the pressure be communicated through the medium of the elastic atmosphere, which, while it is motion of much greater frequency of pulsations of periods (16,000 per second being the ordinary limit of sound perceptions for the human ear), is still a form of motion that may be termed molar in distinction from molecular motion. The end-organ of those neurons that are designed to detect varying degrees of temperature are tuned to molecular motion in which the wave lengths and the frequency of vibrations far exceed those which excite the auditory sense. Radiant energy, which in its slowest molecular vibrations we recognize by the temperature sense as heat, consists of vibrations in the ether of at least 107,000,000,000 per second, and as the highest audible note that can be detected by the best trained human ear is produced by about 40,000 impulses per second, there remain over thirty-one octaves of vibrations which, in all probability, exist in the universe either in the air or in the ether, for which the human organism possesses no receptive mechanism by which consciousness can be impressed, since we have no sensory nerves adapted for responding to such vibrations as intervene between the highest sound vibrations that the human ear can detect and the slowest ones that are recognizable as heat.

The ether vibrations known to us have a frequency varying from 107,000,000,000,000 per second to 40,000,000,000,000 per second, a range which if expressed in musical terms would amount to about $8\frac{1}{2}$ octaves. All of these ether waves are capable of transformation into heat or chemic action, according to the nature of the substance upon which they fall. The slower waves are, however, better adapted for transformation into heat, the more rapid ones for effecting chemic interchange. Certain of these ether waves, those with a rapidity of vibration from 293,000,000,000,000 to 757,000,000,000,000 per second "not only produce thermal and chemic effects, but have the power when they strike the retina of the eye of causing changes in the layer of rods and cones, which in their turn act as a stimulus to the optic nerve." The primary stimulus is here, as in the touch, muscular, auditory and temperature sense end-organs, a wave of motion communicated from an external source either by direct contact or through the medium of the air or the ether. If the rods and cones be wanting, as when the structure of the retina atrophies, ether waves, within the specified range for the normal retina, may beat upon the wasted surface continuously but without avail in exciting light sensations. The peculiar structural or molecular arrangement which is present in the normally acting rods and cones of the retina is indispensable for the production of visual sensations, as likewise are ether waves of the proper rapidity.

While we do not know positively the nature of the change which takes place in any one of the forms of

sensory end-organ so far considered, when acted upon by its appropriate kind of motion, analogies in physics and mechanics teach us that the end-organ is simply a machine devised for transforming that special form of motion into another form of motion that we term nerve-motion. The majority of the facts, which we have not now time to enumerate, appear to justify the conclusion that the first step in this transforming process is a chemic change, a rearrangement in the protoplasmic molecules of which the cells in the end-organs are made up.

In the two remaining special senses—smell and taste—where the substance affecting the end-organ first enters into solution and is thus brought into intimate molecular contact with the cells forming the end-organ of the sensory nerve, the chemic nature of the primary step in the stimulation seems to be without question. Since atoms of substances known to us make up the protoplasmic molecules of these end-organs, and since motion in forms with which we are also somewhat familiar, are the primary agents of stimulation or excitation of these molecules, we are justified in attempting an explanation of what occurs by the use of these terms already familiar to us before assuming the intervention of any new or less familiar ones. We know that these various forms of motion do cause molecular rearrangement, that is, chemic modifications, in the complex organization of living protoplasm. Unstable protoplasmic compounds in the end-organs are shaken into an arrangement of molecules more stable, and the molecular or chemic rearrangement results in the setting free of a certain amount of energy in some form, to become potential or be expended elsewhere. What occurs as a result of this is a modification of some sort, in the peripheral neuron with which the end-organ is connected; a modification that enables it, in turn, to change the conditions present in more central neurons with which its ramifications are associated. Whenever the energy set free in a peripheral sensory neuron gives rise to changes in an associated central neuron that energy has taken the form of some sort of motion.

In the light of our present conception of the histologic composition of the nervous system, that of associated but disconnected individual elements, what is the form of motion that will best account for this influence which we see exerted by one neuron upon another? In attempting to answer this question we must remember that "chemic action implies electric action, electric action implies conduction and induction, distribution and attraction, resulting in movements which may be massive, molecular or atomic, and these movements result in selective groupings." (A. E. Dolbear.) It is possible that the resulting movements due to chemic changes and their accompanying electric action, which takes place in a neuron as the result of stimulus, may have at times a range sufficient to be detected under the microscope, provided the conditions are favorable, and so give foundation to the belief in ameboid movements of nerve-cells, but this is merely incidental. It is certainly true, and can be demonstrated, that the molecular disturbance within the protoplasmic contents of a living cell does cause a change in the surface tension of the cell, and this is accompanied by a difference in electric potential which is also demonstrable. Not only at the moment of stimulation would the living neuron possess this condition of surface tension and electric potential of static form, but this would be its normal condition at all times, as a result of the nutri-

tive activities in the protoplasmic contents. At the moment of appropriate stimulation the electric potential would be in some degree changed—either increased or diminished—and the relations which neurons bear to each other in associated chains is such that a variation in the electric potential in one would be attended by a corresponding change in the others. Some such view of neural dynamics appears to be held by Broadbent, who in a recent address on "Brain Origin" (*Brain*, 1895), after reviewing certain of the current theories, has said, "It has long seemed to me that a conception which better fits in with all the phenomena of nervous action is, that instead of this passive attitude of the periphery and centers one to the other, and of the centers, sensory and motor alike, toward each other, the relation in all cases is one of mutual tension and resistance. That is, that at all points specialized for the liberation of nerve motion, latent energy is generated and exists in a potential form, which in the absence of restraining condition is a counterbalancing energy developed in the centers or peripheral nerve expansion, with which any given point is connected by nerve fibers."

My conception, suggested by the structure and arrangement of neurons, and one which appears to be justified by the facts as far as we know them is, that associated neurons bear the relationship to each other of charged electric condensers. A disturbance of potential in one can not take place without causing a correlated change in the associated ones. This implies that the substance separating the associated neurons is of the nature of an insulator or non-conductor. That a substance differing in structure and function from that of the neurons does lie between them, and that this substance does not interfere with the action of one neuron upon its associated neurons are facts which we must recognize. "In physics, proper, whenever there is a lack of continuity in the medium where energy is being transferred, there is a corresponding change in the form of the energy." (Dolbear.) Whatever the nature of the energy that is developed in the neuron, it must undergo some modification in order to cross the interneural substance. If a state of static tension in the neuron is created by the nutritive activities that are continually maintained within it—and of this there can be no doubt—then accompanying this static tension there will be set up in the environment of each neuron an inductive influence which, in a state of rest, will be exactly balanced by the opposing inductive influence emanating from associated neurons. But where action takes place, as when the peripheral sensory neuron is disturbed in its molecular arrangement, and so in its static potential, by some impinging motion acting as a stimulant to it, then the inductive influence surrounding the disturbed neuron, and which envelops or extends into the field of its associated neurons, is correspondingly modified, and this modification in induction in turn acts as a stimulus to the central associated neurons. It appears to me that the change which the energy undergoes in effecting its passage from neuron to neuron is of the nature of magnetic induction resulting from a change of static tension. Chemic action, heat, pressure or mechanic movement, none of them seem so well adapted to effect the definite and prompt reaction that follows the disturbance due to a stimulus, as does energy in this form of static electric tension.

My attempt has been to propose a theory which will not only account for the generation of what has been

termed nerve force, but which will also account for its conduction in the neuron, and its transmission from neuron to neuron. To do this I have sought to reduce to their simplest conceptions the physical and physiologic conditions present in the structure of the essential elements of the nervous system, and to state what appears to me to be the most probable physical results of such conditions consistent with the phenomena we observe. In recapitulation: The nutritive processes of the neuron, presided over by the nucleus, maintain the protoplasmic contents in that state of readiness for action which constitutes the primary or fundamental stage of all nerve function. This creates in the neuron a condition of surface tension and of static electric potential, and is perhaps accompanied by some protoplasmic or amoeboid movement.

Each neuron in this state or condition has a restraining or balancing influence while at rest, upon all other neurons within its field of influence by reason of the energy exerted by it in the form of what is known as electro-magnetic induction.

The end-organs of the sensory nerves serve as avenues of ingress for such forms of motion as are attuned to their mechanism, and this added motion serves to create a molecular rearrangement of the nature of a chemic change in the protoplasm of the neuron, and this is accompanied by a change in the static potential.

A change in the static potential is inseparable from a change in the electro-magnetic field surrounding the neuron, and this variation of the electro-magnetic field acts as a stimulus upon every neuron associated with the one whose end-organ has been excited.

Thus conduction and transference of nerve force are, according to this theory, to be regarded as of the nature of electro-static phenomena.

DISCUSSION.

Dr. COE of Oregon—As I came in a friend of mine in another Section wanted to know where the Section on Neurology was to hold its meetings. I told him in the Baptist church. He said, "I think if there is any Section that ought to meet in the Baptist church it is the Neurological Section, because if any one gets into deep water it is the neurologists;" and I think that this is entirely too deep for me to discuss at this time.

Dr. D. R. BROWER of Chicago—I am not equal to the discussion of this important question. Some of the statements in the paper are facts, and these we all admit. As to the theories therein, they are plausible and reasonable theories, and I thank Dr. Herdman for the wonderful suggestiveness of his paper.

Dr. SEARCY—I have been much interested in the paper on the dynamics of the nervous system. It is one of the opening fields of medicine, and psychologic medicine especially. The unit of life is the cell, and the unit of the nervous system is the nerve-cell. We are learning probably more of the action of the nerve-cell in the neuron of the cortex than in any other part of the nervous system, because we find those cells more isolated and more easy of access in their structure, their function and their site. As worked out of late, possibly we can say the dynamics of the neuron consist of the received motions, and adjusting its emitted motion to those received—which is a vital phenomena. The way I have criticized nearly all philosophic theories along this line is that we attempt to describe animate phenomena by inanimate phenomena; for instance, describing the functions of the neuron by a reference to electricity. We would simplify our work if we would describe vital motion by simpler vital motion, describing, for instance, the extremely complex nervous system of man by studying the movements in the lower organisms, in amoeboids and protozoa, showing the movements in their simpler forms. We can grade up the vital phenomena from that basis much better than we can by attempting to explain them by inanimate phenomena.

Dr. ADAM A. FORD of Denver—One suggestion came to me in listening to this very able paper, and that is with regard to the ultimate action of the molecule, or rather the atom in the molecule, affecting the neuron extremity. The paper indicated

a variety of different actions due to vibratory action up to a number of trillions. Where can we differentiate chemic action from other action? Can we not trace it to the various forms of vorticular action in the action of these ultimate atoms? I believe it is one of the theories of scientists, now accepted; that this co-ordinated form of action in the atom is vorticular action, and owing to the different formation of this vortex, together with its affinities, we have certain manifestations of power, of force. Might not the author of this paper explain this theory, so as to include vorticular action?

Dr. MEYER—I should like to ask Dr. Herdman with regard to the conduction time. The conduction time has been used in a great many of the du Beromo phenomena in nerve elements. It seems, if I may trust my memory of physics, that the difficulty of meeting the objections rising from the conduction time become rather greater in the theory suggested, than even in the idea that was originally held by du Beromo.

Dr. PETERSON of New York—The author has given a great deal of thought to this subject, and the critic of his paper should at least give as much time as he has to it. The paper is purely speculative, but speculative papers, I think, always have a certain charm. The theory advanced, in my opinion, is as reasonable a theory as ever given in neural dynamics. If I understood Dr. Herdman rightly, it was based upon the installation and independence of the neuron. That is by no means proved, and the most recent researches would tend to show that it is probably untrue. However, theories like these are the tentacles of the scientific octopus, reaching out in every direction for truths, and therefore, are extremely useful.

Dr. W. J. HERDMAN—While, as has been said, such papers as this are largely speculative, my attempt has been to give a solid foundation of fact for the building up of those speculative ideas. The question of vitality has been raised. It is, as we all know, a very much debated question among physiologists at the present time as to whether all manifestations of vitality are not physical and chemic; that molecular arrangements have simply reached a certain stage when these are the natural outcome of the molecular and anatomic arrangement; and I must say that, from the recent investigations I have made on that subject, covering the last five years, the evidence is largely on the side of the man who holds what is called the mechanic view. It is with relation to that view, and to making it bear on the side of neural dynamics, that this paper has been prepared. I have not yet subjected the theory to the tests of nerve condition, as has been asked by Dr. Meyer. I have not conceived how it could be, or how the static condition of an individual neuron could be subjected to the test which has been made of nerve conductivity in the physiologic laboratory method, but some device, perhaps, can be arranged for bringing that under observation as well. It has seemed to me that we must take into consideration what we know in physics and physiology, and bring this knowledge together, and see how the two will dovetail.

UREMIC FOCAL LESIONS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The literature on localized lesions of the central nervous system occurring as a result of uremic attacks is very scanty. A diligent perusal of many American text-books on general internal medicine, as well as the text-books on nervous diseases, fails to find mention of the subject at all.

It is true that compared with the multiform manifestations of uremia, especially compared with the frequency of convulsive attacks, the paralytic attacks occur very rarely; or, perhaps, it were better to say, are rarely recorded, and this is probably due to the peculiar character of the paralytic attacks and to the rapidity with which the manifestations disappear. The study becomes all the more interesting because of the light which the subject seems to throw upon the nature of other central disturbances of the nervous system. If the advance in our knowledge of medicine has been marked in the past quarter of a

century in any one particular direction, it is in that of the somatic origin of the various forms of insanity and of the ordinary diseases of the nervous system, in other words, that the intellect or the soul itself is never affected, but that its disordered manifestations are due to a diseased condition of the media through which it acts. The first successes, among which we may mention Mendel's classic demonstration of the pathologic conditions underlying dementia paralytica, were followed by countless endeavors in all parts of the world to establish the relation between diseased conditions of the brain and the disordered manifestations of cerebral activity. The results, as regards cerebral localization and mapping out of areas of the cortex, with their distinct functions, both sensorial and motor, have, as you know, been crowned with brilliant success. It, however, had a tendency to narrowing our conception of nervous diseases, by referring, or trying to refer, all disordered conditions of the nervous system, psychical, sensorial and motor, primarily to the brain or spinal cord. We know today that the anatomic investigation of the majority of insanities and of all the so-called functional diseases of the nervous system has met only with signal failure.

It may be held that this failure is due to the inefficiency of our physical and chemic means of investigation, but the probabilities are that we will have to go back to the old clinical methods of investigation: to study the human body in life as well as the organs after death. To look upon sickness, no matter what its character, may be a manifestation of a disordered condition of the whole body rather than a disorder of the function of one particular organ. In the light of recent investigations, especially of the functional diseases, we know that the brain and spinal cord are often more sinned against than sinning, and that a remedy for the relief of the functional affections is more often to be sought in correcting a disordered condition of blood, stomach, intestines, thyroid gland and kidneys, rather than of the brain. Bouchard, in his well-known publications on auto-intoxication, started the pendulum to swing away from anatomic investigations of the brain in functional diseases to the study of diseased manifestations of the more distant organs of the body. More beautiful and more classic disturbances of the functions of the central nervous system can not be found than the investigation of the nervous arrangements found in uremic intoxications.

I have purposely waited a very long time before publishing these cases, because I wished to be sure of the diagnosis. We know only too well how our most interesting and rare cases are cleared up and relegated to the classes of common diseases by time, which as a rule, shows us that that which we looked upon as a rare or extraordinary occurrence or disease was only an ordinary symptom out of time and place.

Case 1.—Uremia in which the first symptom was aphasia, which continued half an hour, followed by a convulsion and hemiplegia of the right side, with complete recovery in twenty-four hours. Mrs. C. K.—, aged 62, married, mother of five children. No miscarriages, no history of syphilis. Patient, who is very heavy, had never been sick before. At noon, Nov. 12, 1895, while at dinner, in the best of spirits, and with a good appetite, she suddenly quit eating in the midst of her meal, attempted to speak, then muttered some unintelligible syllables, grew very much excited on account of her inability to speak, arose from the table and walked about the room. On account of her unintelligible jargon the family thought that she was delirious and had suddenly become insane. She could

not make herself understood, was unable to answer the excited questions put to her, and on my arrival, about half an hour later, was much excited, tried to speak, but could not form her words. She stated afterward that she knew perfectly well what she wanted to say, but could not express her ideas in words. Her face was flushed and congested, the pulse full, hard and rapid. No vertigo, no vomiting, no difficulty of breathing. I obtained a specimen of her urine, and after ordering a purgative by mouth and enema, put patient to bed. On returning after about an hour, after making an urinalysis, I found her unconscious and in a violent convulsion. The convulsive movement, however, was limited to the right side. Respiration stertorous, face deeply congested, the left side flabby and relaxed, the right in a state of clonic convulsions, the left arm and leg were perfectly flaccid and relaxed. After cessation of consciousness the right arm and leg were completely paralyzed. A hot bath was given; profuse perspiration ensued on use of pilocarpin, diuretics and saline purgative. In about an hour consciousness returned, but patient was unable to speak. The paralysis of arm, face and leg was complete on awakening. About 6 P.M. patient began to talk, but not perfectly, still enough to make herself understood. In the course of the next few hours slight movement returned, and in twenty-four hours speech, as well as use of arms and legs, was again perfect. In two or three days the patient was able to be about. Was placed on a strict diet and treated with alkalines, baths and cathartics. The quantity of albumin gradually diminished, but never disappeared entirely. After eighteen months patient is still well; no recurrence of uremia or paralysis. Albuminuria still present; quantity very slight. One interesting point about this case is the double focal lesion—the left third frontal convolution and the right psychomotor area.

Case 2.—June 15, 1896, Mr. H., aged 61, married. Parents both died at an advanced age, presumably from bronchopneumonia. Has not been sick from childhood. Has been a hard worker all his life, doing the work of a molder. While eating dinner, just at the commencement of the meal, patient suddenly lost consciousness, his head sank on his breast and he fell forward, slipping out of his chair on to the floor. He was immediately picked up, and regaining consciousness in a few moments, was supported to the next room and laid on a bed. The family noticed that his face was drawn to the left side, and that he made no use of the right arm or leg. There were no twitchings or convulsions of any kind. I arrived on the scene a half hour after the onset of the attack. Examination: Patient is still in a semi-unconscious condition; can be aroused, however, and is able to assist at the examination. Pupils are normal in size and respond to light, both sides are equal, ext. muscles of both eyes are normal in their function. The right side of face has lost its expression, the naso-labial fold is absent on opening the mouth. The left angle is drawn upward. The tongue is protruded to the left. No loss of sensation in region supplied by fifth nerve. The right arm can scarcely be moved; there is not a complete loss of muscular power, but the grasp of the hand makes scarcely a perceptible impression. The movement of the right leg is good, but there is scarcely any motor power. Reflex of right leg very much diminished. No loss of sensation of either arm or leg. The examination of urine revealed the presence of albumin. Purgation and sweating. On my return, in three hours, I was surprised to see the muscular power of the leg normal; that of the arm greatly increased. On the following morning the paralysis had entirely disappeared.

Albumin remained in urine for about four months. Patient was treated by alkalines and a non-nitrogenous diet. For past eighteen months the urine has contained no albumin at all, and the patient considers himself entirely well.

Case 3.—This case shows one of those variations of focal lesions in which the paralytic onset occurred independent of an attack of uremic convulsions. It is true that the diagnosis is somewhat in doubt. The apoplectic attack may have been caused by an embolism or a hemorrhage from a small artery in the neighborhood of the internal capsule. In my opinion, however, the paralysis was, at first, so complete and the recovery from it so rapid and complete that I have no doubt but it belongs to the category of uremic hemiplegias. J. P., Grand Rapids, Mich., aged 55, unmarried. No history of nervous trouble in the family. Has never been sick, nor nervous. Dec. 5, 1897, at 9:30 P.M., patient, while playing cards, suddenly noticed that he could not use the right arm. A few moments later, while standing on the floor, he sank and would have fallen had he not clutched the table with left hand. The face became distorted at the same time, by the loss of use of right side. No diminution or loss of consciousness; no loss of speech. Patient was taken home at once in a cab. Physician

called and diagnosed right-sided hemiplegia, with involvement of face. Urinalysis showed presence of large quantity of albumin. The attack was sudden, preceded only by violent frontal headaches of some weeks' duration. Regained use of arm in a few hours, and in twelve hours the recovery was complete. Use of leg regained in twenty-four hours. Six weeks after attack patient came to Cincinnati. The examination of nervous system was entirely negative. The examination of the urine showed the presence of 2 per cent. of albumin, large numbers of hyaline and granular casts. The case has been under treatment for Bright's disease for four months at the Good Samaritan Hospital. No uremic symptoms have shown themselves in this time. Quantity of albumin and number of casts remain the same.

Case 4.—The following case seems to bear out the theory that some local predisposition is necessary for the development of the paralytic attacks, some cause present in the center or area of the cortex which renders this center more liable to be attacked by the poisons circulating in the blood during an uremic attack rather than the other parts of the surface.

Mrs. F., aged 64, married, mother of seven children, all healthy, slightly nervous in temperament. Has never been sick before the development of Bright's disease some years ago. Was treated for arteriosclerosis and fatty degeneration of the heart for past three or four years. I saw patient first in January, 1896. Will not burden you with the text of examination except to tell you that she presented a typical fatty heart with well-marked arteriosclerosis. The urine on examination, dark in color, s.g. 1014, 2 per cent. of albumin, no sugar. In August, 1897, patient had a sudden attack of apoplexy, involving external recti of both eyes, especially of the right eye. The right side of face and tongue were involved. Complete loss of power in right arm and right leg, partial paresis of left leg.

Diagnosis: Acute bulbar paralysis, due to thrombosis of a branch of basilar artery in the upper part of pons. Patient gradually improved, and after three or four weeks was able to walk about, although with much difficulty. The arm recovered completely, the right side of face and tongue, as well as the right external rectus, have not recovered after a lapse of two years. On Feb. 12, 1898, was called to see patient. The attendant nurse stated that she had not been as well as usual for a few days; that she had had attacks of vertigo and felt sick at stomach; that she had been somnolent all morning and had not been able to move the right arm and leg at all.

Examination: Patient is in a stupor and can not be aroused sufficiently to assist in the examination. The pupils are contracted and equal in size. Unable to examine external muscles of eyes on account of coma. Constant twitching in the left side of face, loss of sensation of left side of face. The left arm and left leg are in a constant state of clonic spasm, the spasms are small in excursion and momentary in duration, following each other very rapidly. These spasmodic attacks have recurred three or four times in the course of two hours, an interval of fifteen minutes probably between each attack. During the interval the left arm and leg are seen to be completely paralyzed. The muscles are flaccid, relaxed, the limbs fall by their own weight without any resistance on part of the muscles; patellar reflex absent; sensation can not be examined into on account of presence of coma; right arm and leg normal.

Treatment: Purgatives; profuse perspiration induced by heat, applied by using hot water in rubber bags. Consciousness returned in about an hour. The diagnosis of left-sided hemiplegia confirmed by patient's inability to use the arm or leg. The paralysis of the arm and leg disappeared in four or five hours. On the next day the patient was in her usual condition. April 16, 1898, patient again had an attack of uremic coma, with left-sided hemiplegia, and again recovered as in previous attack.

A CLINICAL STUDY OF UREMIC PARALYSIS.

The four above-mentioned cases represent, with but slight exceptions, the clinical aspect of uremic paralysis, and we may draw up in a concise manner the clinical picture of this trouble.

The prodromal symptoms.—While the uremic focal disturbances seldom occur without premonition, we can hardly claim that it has any premonitory symptoms of its own. The onset of the attack is sudden, being either the ordinary uremic convulsion or a sudden attack of aphasia, Jacksonian epilepsy or paralysis, with or without convulsions or loss of consciousness. The premonitory symptoms are rather those of Bright's disease, uremic manifestations of a disor-

dered function of other organs of the body, or there may be general cerebral disturbances, such as headache, vomiting and vertigo, or localized edemata, which are manifestations of a general uremic condition. The uremic attack as such may be typical in its character or it may not be.

During an attack of uremic convulsions with loss of consciousness, heavy stertorous respiration, a full, bounding pulse and contracted pupils, the convulsions may suddenly cease on one side and continue on the other, the limbs in which the convulsions have ceased become flaccid, the muscles become relaxed and when lifted up and allowed to fall, drop in the direction that the force of gravity dictates, muscles offering no resistance whatever to the falling of the limb. The tendon reflexes are usually absent; there is very often a complete loss of sensation in the affected limbs. The face often becomes distorted by the convulsions of the muscles opposite to the paralyzed side, the mouth becomes drawn over to the side free from paralysis, while the cheek on the paralytic side becomes distended by each expiration. Boinet lays down the rule that the uremic hemiplegia coincides always with the uremic coma, and that it disappears when the coma disappears. While this is the rule, we know from the study of reported cases that there are very frequent deviations from it. In the typical cases, it is suddenly noticed during the progress of uremic convulsions that one side of the body is stricken with paralysis in the manner above described. This hemiplegic attack continues during the entire uremic convulsion, and if the outcome is fatal the paralysis is present up to the time of death. If the uremic attack yields to treatment, the hemiplegia sometimes disappears as soon as a patient regains consciousness. In other cases the paralysis rapidly diminishes and in a few hours the muscular power is completely restored. Dr. Rose of Berlin states that these attacks can occur like ordinary apoplectic attacks; after a good night's rest the individual awakens in the morning to find himself paralyzed. Only in very rare instances does the hemiplegia last longer than twenty-four or forty-eight hours.

In rare instances, as Case 3 illustrates, the hemiplegia may begin and become complete while the patient is in full possession of his senses, and the attack is not followed by coma. Case 2 illustrates a mode of onset also rare, in that the coma and hemiplegia occurred simultaneously without being followed or preceded by uremic convulsions. The paralysis has all the characteristics of being cortical in origin. In the beginning, perhaps but for a few minutes, it is complete, but rapidly gives way to paresis. The chief characteristics of the hemiplegic attack are the flaccidity of the muscles and the rapidity with which the paralysis disappears. Boinet states that another of its characteristics is its variability. It is complete in the morning, diminishes at night and increases again in intensity a few hours later. Lancereaux reports a case in which the hemiplegia occurred first on one side of the body, disappeared, and then occurred on the other side. Case 1 is similar to this, aphasia occurring first in a right-handed woman, and during the uremic convulsion which follows there is developed a left-sided hemiplegia.

It is probable that cases where the paralysis was of long duration and those that were followed by contractures were due to localized hemorrhages in the cortex.

The paralysis of the facial muscles may or may not be present in these uremic hemiplegias, and when it is affected it follows the laws of cortical facial paralysis, namely, the lower half of the face alone is involved. Raymond reports a case attended with ptosis. Passing amaurosis is common. Bernard, Chauffard, Raymond, Chantemesse and Level report cases in which the hemiplegia was associated with conjugate deviation of the head and eyes. Aphasia occurring with right-sided hemiplegia is quite common, but occurring alone, or as in Case 1, occurring in a right-handed person with left-sided hemiplegia is very rare. In all four cases which I have recorded, at the time of the examination there was an absence of the loss of sensation. Boinet, however, states that there is habitual association and hemianesthesia with the hemiplegia, and that this hemianesthesia has all the characteristics of being cortical in origin. It is always incomplete and exceedingly transitory, often disappearing before the disappearance of the paralysis. Raymond reports one case in which the anesthesia affected the entire body, another in which the conjunctiva and the mucous membranes were anesthetic.

It is possible that at times also the anesthesia may affect the special senses, as Boinet's case, where the sense of hearing was lost for three weeks.

The prognosis as a rule is bad; the majority of the cases reported were fatal.

The hemiplegic attack itself does not offer a bad prognosis. The prognosis depends upon the severity of the uremic attack, and in my opinion the presence or absence of hemiplegia does not have any influence on the prognosis of the attack, the hemiplegia disappears simultaneously with it or it rarely lasts longer than twenty-four hours. The second of the cases reported in this paper is completely cured, the hemiplegia and the kidney trouble having completely disappeared. I do not believe, however, that there is any relation between the intensity of the renal disturbance and the cerebral symptoms, in this sense, that the most severe forms of uremic convulsions are apt to be followed by cerebral symptoms due to some inherent localized weakness in the cortex of the brain. It seems that the cases that are associated with high temperatures are apt to be fatal. Conjugate deviations of the head and eyes are also unfavorable symptoms.

The diagnosis is very easy, if the examination is carefully made. While it is true that ordinary apoplectic attacks caused by hemorrhage in the brain or by embolism in the cerebral arteries may be accompanied with epileptiform convulsions, an examination of the urine will clear up the diagnosis by demonstrating the presence of large quantities of albumin in the urine. We must not forget, however, that patients with Bright's disease, especially those with interstitial nephritis have as a rule arterial sclerosis and may have an attack of hemorrhage into the brain during the uremic convulsions, which may give rise to hemiplegia during the comatose state. The variability and the flaccidity of the paralysis, the normal temperature and the rapidity with which the paralysis disappears, will enable us to make the differential diagnosis. It will not be so easy, however, to differentiate the purely functional cases of hemiplegia from those due to minute hemorrhages into the cortex (Senator).

A very interesting feature of uremic focal manifestation is the occurrence of localized Jacksonian epi-

leptic attacks. When we take into consideration, as we shall see later, the entire absence of any organic change in the cortex, this feature becomes all the more interesting, because of the almost universal association of an organic focal cortical lesion with the occurrence of circumscribed epileptic attack. Chantemesse and Tenneson, Chauffard and others have reported cases of this kind with autopsies, Dunin five clinical cases, Boinet one. In some of the reported cases the epileptic convulsions occurred during an uremic attack and in others preceded such an event or occurred entirely independent of a generalized intoxication. In Boinet's case four distinct and separate attacks occurred without the attack being followed by paresis. After the fifth attack, however, the hemiplegia set in. The above cited cases, and there are still more in literature, are pure cases of Jacksonian epilepsy. Case 3 in the present report presents a localized epileptiform seizure, but convulsions were present in the paretic extremities.

CAUSATION.

The real cause of these attacks is, as a matter of course, the uremic condition. As to the proximate cause, the authorities are divided. Most individuals afflicted with Bright's disease are subject to arteriosclerosis, and Senator holds that very often these focal disturbances are due to capillary hemorrhages. This opinion is shared by Wagner and Landois. That this may be true for some cases, especially those in which the paralysis does not disappear rapidly, can not be denied. But the autopsies which are on record seem to disprove this theory. Another theory advanced by Landois is that the paretic manifestations are the results of an exhausted condition of the cortical centers resulting from over-irritation resulting from the uremic excitation and subsequent convulsions. This theory, however, fails to explain the causation of those cases in which the Jacksonian epileptic attacks, the paresis or aphasia precede the uremic attacks or occur in uremia in the simple condition of coma.

There are but two possible explanations remaining: one is the toxic theory, and the other the theory of localized cortical edema of Traube. Traube's theory is the theory which ought to explain the occurrence of uremic convulsions in a mechanic way: as a result of edema of the brain there is produced a pressure upon the veins and capillaries which results in an anemia, consequently in a diminished supply of oxygen, and as a result we have the convulsions. Rosa (*Berlin Klin. Woch.*, Feb. 28, 1898) seems to think that it may possibly explain the focal symptoms of uremic attacks. Chantemesse and Tenneson seem to hold the same opinion, and Senator says that, "localized and circumscribed edema may explain the origin of uremic amaurosis and hemiplegia." The majority of authorities are agreed, however, that the uremic condition is the result of an auto-intoxication, and that the real cause of the manifestation is a chemic poison—urea, acetone or whatever it may be—which irritates the brain and produces the symptoms. But how does this bring us any closer to the answer as to how the focal symptoms are produced? We are once more thrown back on theory, for pathology reveals nothing to us. We know that certain parts of the cortex are more subject to the action of the chemic poisons than others, but if we wished to apply this to uremic conditions then the focal lesions ought to be

constant, occurring in every case of uremic convulsions. We can fall back on the old theory of individual idiosyncrasy, but it does not aid us much. Pierret and Senator hold that there may be circumscribed disturbances of circulation, a spasm of a vessel in a localized area of the cortex, resulting from some diseased condition of that vessel, such as arteriosclerosis. As a result of this spasm produced by the toxic condition of the blood, there is a localized ischemia with a subsequent parietic dilatation, stasis of blood, edema and intoxication of the cortex. Assenting to this theory, those areas of the cortex would be most likely to suffer which are supplied by vessels in a state of degeneration.

Baynaud and Pierret hold, and our Case 3 seems to bear out the statement, that focal manifestations due to old brain lesions, which, however, have disappeared, are apt to return as a result of all kinds of systemic infections and intoxications and especially in uremic conditions, which would seem to prove that areas of the brain weakened by some former insult and apparently recovered again, are more susceptible to intoxication than other areas which are normal.

PATHOLOGY.

The anatomic investigations of the fatal cases fail to throw much light upon the etiology of these attacks. They all agree in one respect, namely, that there are no gross anatomic lesions to be found in the brain or spinal cord. Prior to 1881 it was supposed that the hemiplegia occurring during uremic convulsions was always the result of a cerebral hemorrhage. Paetch, about this time, reported three cases in which the hemiplegia continued up to the time of death, and in which the autopsy was practically negative. In one case he reports the presence of an excessive amount of cerebro-spinal fluid and edema of the brain; in another the brain was perfectly normal. The former autopsy was made by Israel, the latter by Jurgens. Paetsch, who holds the theory of localized edema and serous infiltration, lays much stress upon the occurrence of the edema, but we see edema of the brain quite frequently without any paralytic symptoms during life. Dunin publishes another case which presented during life nystagmus diplopia and hemianopia, in which the anatomic examinations, both gross and histologic, were entirely negative. It is interesting here as a collateral proof of the intoxication theory of these focal lesions to refer to two published by Oppenheim (*Charité Annalen*, 1888).

The first case was one of hemiplegia with aphasia, the other a typical case of Jacksonian epilepsy, both being associated with carcinoma, one of the breast the other of the stomach. It was supposed during life that the occurrence of the manifestations on the part of the nervous system were due to the occurrence of metastatic growths in the brain. The autopsies were entirely negative; no changes were found in the brain. The author believes that the attacks were due to intoxication, and that poisons may affect circumscribed areas of the cortex of the brain.

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DISCUSSION.

Dr. SEXTON—I think the considerations which were brought forward in the latter part of Dr. Hoppe's paper lead us really toward the truth in regard to the theory of most of these cases which he is inclined to classify as of uremic origin when hemiplegia is present. It is not quite clear to me how we can have a condition which must necessarily depend upon a local lesion in the brain, without that local lesion ever being demonstrable, and I think that the history of these cases as mentioned is somewhat negative in that direction. What I mean to say is that we can scarcely see the mechanism of the poison which is supposed to produce the hemiplegia. My own opinion would be that the great majority of these cases really depend upon a local hemiplegia, a rupture of minute vessels, in which the absorption of the clot is so perfect that after death the autopsies do not give any evidence of its existence. I do not think there is any doubt that we have many cases of hemiplegia which are due to small hemorrhages. The fact that a quantity of uric acid is found in the urine I do not regard as conclusive, because, as Dr. Hoppe mentioned, the condition of the kidneys favor these ruptures, and it is more plausible to explain the existence of the hemiplegia upon that hypothesis than upon the hypothesis that a limited area of the brain should be poisoned by the uremia, while the remainder of the brain escapes. I have seen a number of cases in which there was a transient hemiplegia, and a certain portion of these cases have albumin in the urine, and yet I was never able to satisfy myself that the presence of Bright's disease was the cause of the hemiplegia.

Dr. LODOR—It has been my good fortune or misfortune to see a great many cases of hemiplegia that I believe are uremic in their origin. I cannot believe with Dr. Sexton that there is an organic base for the origin of them. Uremic hemiplegia following childbirth is more common than most neurologists know. Following in the course of Bright's disease I have noticed those cases that have a rise of temperature—and a rise of temperature is almost entirely secondary—do not get well rapidly or get well at all. In cases that have no rise, or a small rise in temperature, the hemiplegia disappears quickly after the disappearance of the albumin. I cannot see how a hemorrhage could take place from a ruptured blood-vessel and disappear almost as if by magic, as these cases do.

Dr. TOMLINSON—I would like to add the evidence of my experience to confirm the conclusions of Dr. Hoppe's paper, and to call attention to three cases published by Dr. Burr of Philadelphia, in which the history was the same, and which appeared to be apparently true hemiplegia, and yet in which the autopsy showed nothing. In the last year I have had four cases which came to postmortem, and all these cases were cases of interstitial nephritis, with the same symptoms manifested as those described by Dr. Hoppe. One thing I noticed particularly was that the paralysis was not complete; that there were some groups of muscles that were not involved, and that it appeared and disappeared in different parts, coming and going from time to time. The face and the limbs would be paralyzed; the paralysis would disappear from the arm and become more grave in the face, and vice versa. I can also confirm the prognostic effect of the rise of temperature; it has been the same in my own experience. Another thing I have noticed in these cases postmortem, has been the intense edema of the floor of the fourth ventricle. I have concluded that the cause of death in these cases has been the result of this edema, from the uremic poisoning. In my own cases I was able to know of the existence of the nephritis for a long time before the paralysis appeared, and by careful examination to find all the indications of chronic nephritis. Since I have become familiar with them I have been able to almost anticipate these cases and to know what the result will be according to the extent of the nephritis. The recovery of the cases will depend entirely upon the stage of the nephritis. On postmortem, in spite of the most careful study, I have never been able to find any local lesion or disturbance to account for it. I have not made up my mind entirely as to vasomotor edema or vasomotor spasm. I am disposed to think there is a spasm which temporarily deprives that portion of the brain of blood.

Dr. ESKRIDGE—I rise mainly to call attention to the differential diagnosis of Jacksonian epilepsy due to organic lesion from these spasms, due to presumed functional disturbance of the cortex. When we have an organic spasm in the cortex, the muscles involved in the spasm are the last to be affected. The temperature is always high on the affected side, and the patient loses consciousness. I have not met a case of spasm, due to uremic poison, in which there has been much difficulty

in making the diagnosis between that and a limited cortical lesion. I have met with cases in which I was able to make an absolute diagnosis as to whether the paralysis was due to organic lesion or some functional disturbance. As we all know, a few hours' waiting clears the diagnosis in these cases. As a rule, in organic lesions of the cortex, only those muscles affected in the initial spasm will be paralyzed after the convulsion is over. In paralysis due to the effect of a poison, in nephritis and hemiplegia, paralysis of one arm and one leg is common.

Dr. C. EUGENE RIGGS of St. Paul—I think that Dr. Hoppe is to be congratulated on the exceedingly happy way in which he has put this very practical subject before the Section. I am inclined to believe, however, that there is a golden mean that Horace tells about, in which we can probably take a safer position than by saying dogmatically that these are simply due to toxemia, or simply due to hemorrhage. I confess to great sympathy with Dr. Sexton's view. We know that one-third of the cases of organic hemiplegia are probably due to Bright's disease; we know that Bright's disease produces hyaline degenerative changes, and slight pressure will cause this disaster. But we also know that the resulting phenomena depend entirely on the location of the hemorrhage. We all have seen these limited aneurysms in the brain, and if one of these aneurysms happens to break, the first effect is insult to the brain, in which you will find certain phenomena described by Dr. Hoppe, while in a very short time that will all pass away. I think that death may not only be due to the influence of uremia—you have all seen poisons so extremely toxic as to cause death in a short time—but it may also account for the temporary phenomena of paralysis. That seems to me a thoroughly clear and legitimate conclusion. As soon as the kidneys act thoroughly and properly the paralysis will clear up. While the uremic toxemia may account for a number of these cases, still there are a number of other cases due to hyaline fibroid degeneration of the brain.

Dr. C. C. HERSMAN of Pittsburg—I can scarcely conceive the idea that these paralyzes are caused by hemorrhage. In one case that I saw, some time ago, the paralysis was so profound that I was almost persuaded to believe it was a genuine attack of apoplexy, but the clearing up was very rapid, only lasting a few hours. My surprise was, not that it cleared up so soon, but that it was so complete. It seems to me that if a lesion were present, we could scarcely expect such rapid recovery. It is possible, however, that a miliary aneurysm occurring, the profound shock to the part might be the cause of paralysis, and on recovery from the shock, the lesion not being extensive enough to cause a destruction of tissue would answer for the cause and the rapid disappearance. The theory as to vasomotor disturbance has been disputed by many; in fact, all the theories that I have seen suggested have been disputed by others. Consequently we can not say that we have any definite conclusion that we can hold to; but I am inclined to think that the cause is not a lesion or a hemorrhage, any more than it is in the case of epilepsy, or any other convulsion which we might have that is not caused by hemorrhage.

Dr. HEINS—I have noticed that the gentleman in speaking of these cases spoke of them as rather milder cases, and therefore allowed the possibility of recovery in that way. They speak of the percentage of albumin. A case of nephritis is not measured entirely by the amount of albumin that you have. If the gentleman says that 2 per cent. of albumin shows a small kidney lesion, then I would like to ask him what would be a larger percentage? I do not wish to be critical, but it strikes me it is a matter of some importance. It seems to me, too, that it is a bad thing for practitioners of medicine to cast away their anchors, and when you have, as Dr. Sexton has mentioned, an actual lesion that is the probable cause, to throw it aside. It is better to reason it out that way, than to say that there was no hemorrhage, because then you simply have no cause at all.

Dr. HOPPE—In answer to Dr. Hein's question about the percentage of albumin; as a rule the prognosis of kidney trouble is inversely to the amount of albumin present, the most fatal cases of interstitial nephritis being those that have the smallest percentage of albumin. Sometimes men will die without the urine showing any albumin. So the amount of albumin present does not have any bearing on the severity of the attack or the prognosis. The only difference about the paper seems to be as to the immediate cause of the condition in the cortex. We have actual facts at our disposal, and autopsies which have been performed by the best men in the world. I would call your attention particularly to the autopsies made by Jurgens and Israel in Berlin; not only did they make gross pathologic examinations, but they made histologic examinations, and not

any trace was found of any change in the cortex. This is the history, postmortem, of all the cases in which the hemiplegia continued up to the time of death. When the Traube theory of localized edema was still in vogue, some of the autopsies showed edema of the brain. But we know that we find edema even in the brains of drunkards without having any symptoms of paralysis during life.

OCULAR HEADACHES.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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CHICAGO.

This subject is such a large one, and the views and experiences of ophthalmologists as to the rôle played by the eyes in the causation of this important symptom are so diverse, that it is difficult to give it the careful consideration that it merits in the short time allowed. When we reflect upon the mysterious character of headache and the unsatisfactory explanations advanced to account for it, we can understand the difficulty the ophthalmologist encounters when he attempts to give a reason for the faith that is in him, and to correctly interpret his clinical data. Even the exact seat of the pain is not known. Who can say whether it is in the brain itself or in the membranes covering it? In acute inflammation of these membranes it is quite probable that the severe headache is caused by the irritation of the meningeal nerves, but that is entirely different from the functional affair we are considering.

Just what influence vascular dilatation exerts in the production of this neurosis is equally uncertain. If it should be true, as claimed by some observers, that sensory nerve-fibers exist in the vessels of the brain, we could understand how distention of these vessels would give rise to pain, even without the increase of intracranial pressure. It is not improbable that the congestion of the mucous membrane lining some of the accessory cavities of the nose is accountable for many of the frontal headaches coming on after excessive use of the eyes, and this view is strengthened by the clinical observation that such cases are relieved only when, with the correction of the ocular defect, there is combined suitable treatment for the diseased nasal mucous membrane. That there are headaches induced by eye-strain is undeniable, and the discovery that the relief of the strain is followed by alleviation of the pain marks a brilliant advance in our therapeutics.

Notwithstanding that other general conditions may underlie the development of this neurosis, and the ocular condition may be only one factor, still its presence may for the time be a dominant one whose correction will strongly influence the future history of the case. And should the headaches recur at some time subsequent to the relief of the eye-strain, such recurrence would not disprove the value of the treatment, but would prove that some of the other underlying conditions had become dominant factors. Such complex cases are not infrequent, and show the importance of careful examination of the eyes in all cases of headache in which there is any doubt as to the etiology.

In most cases of so-called ocular headache, there is a history of the pain coming on after either mod-

erate or excessive use of the eyes for near work, but to this rule there are numerous exceptions. For example, some cases of excruciating vertical or occipital headaches coming on without any reference to the use of the eyes are relieved after wearing appropriate glasses. One cannot be certain therefore that no ocular defect exists because pain does not manifest itself in the eyes, or because headache does not come on with or immediately after the use of them. I shall not consider headaches occurring in connection with inflammatory conditions in or about the eye, for this would be foreign to the purpose of the paper, but shall speak only of those caused by 1, exposure to bright light; 2, strain of the ciliary muscle (so-called accommodative asthenopia); 3, strain of extrinsic muscles from incoordinate action (the so-called muscular imbalance).

EXPOSURE TO BRIGHT LIGHT.

Cases are not infrequent in which there seems to be a hypersensitiveness of the retina, which may or may not be associated with other nervous manifestations, and in such cases there may follow on exposure of the eyes to bright light a pain in the head or in the back of the eyes. With such persons a headache results when they look continuously at brightly illuminated and glistening surfaces, such as paintings in a picture gallery, a brightly illuminated page, especially if the paper is finely glazed, or if they are exposed to the glare of the snow or of a white, dusty road. The light from the electric lamps also seems to be peculiarly irritating to some eyes, and sufficient at times to excite a headache. In many such cases an examination will show some refractive error causing strain of the accommodation, which will aggravate the difficulty, but in others no such trouble can be found, or the symptoms persist after the correction of such a defect so that we are forced to conclude that excessive irritation of the retina will act as a cause of headache.

Of course, such hyperesthesia of the retina might be a precursor of inflammatory change, in which case a slight congestion of the vessels in and around the optic disc and the yellow spot would be noticed. But in many the ophthalmoscope reveals no such sign of inflammation, while occasionally there is seen only on careful focusing, a peculiar finely-dotted appearance of the retina in the region of the macula lutea, very much as if a mixture of pepper and salt had been sprinkled on it. Whether this represents a beginning pathologic change in the elements of the retina, or is the normal appearance of a retina that is unusually sensitive I do not know.

STRAIN OF THE ACCOMMODATION.

This is the most important and frequent cause of ocular headaches. When the normal emmetropic eye looks at an object more distant than 20 feet, the rays of light from that object are brought to a focus on the retina and produce a clear image without any effort on the part of the muscle of accommodation. If the object is nearer than 20 feet, rays of light emerging from it will not be focused on the retina of the emmetropic eye without the aid of accommodation, and the nearer the object is brought the more accommodation will be necessary. At 20 inches 2 D of accommodation are necessary, at 10 inches 4 D, at 8 inches 5 D, at 5 inches 8 D and so on.

This accommodation is accomplished, as we know, by a change of shape in the crystalline lens, brought

about by the contraction of the ciliary muscle, and if this contraction is excessive there results a strain of this muscle, and even in certain cases a spasm of it, with resulting discomfort and sometimes headache. Children often contract a pernicious habit of sitting in a crouched position with the head bent forward close to the book, thereby putting a great strain on the ciliary muscle, and on account of the compression of the superficial veins of the neck, producing a congestion of the head which may lead to the development of myopia or even more serious complications. Often such children are precocious subjects—inordinate readers, as their parents will tell us—and of a nervous, restless temperament, and they are frequently brought to the specialist for eye-ache and headache. In some of them no error of refraction is discoverable, or the error is so small as to be quite insignificant, and they are benefited by correcting the method of reading and having them use the eyes less for near work.

The hypermetropic eye, by reason of its antero-posterior diameter being too short, is unable to focus parallel rays of light upon the retina, and accordingly accommodation is necessary to see even distant objects distinctly. This places an additional amount of work upon the ciliary muscle, and if astigmatism is also present, the strain is even more severe, for the muscle is constantly trying to correct the unequal meridians of curvature of the cornea, and is therefore contracting unequally. Such an eye is using its accommodation constantly, even for distant objects, and the work of the ciliary muscle is necessarily much greater when near objects are to be seen distinctly. In such a case the ciliary muscle undergoes to a limited extent a compensatory hypertrophy, and is able for a time to do the work assigned to it. But let its nutrition suffer because of impairment of the general forces of the economy, and that work becomes a burden that formerly was done with ease, and the unhappy subject is made aware of the presence of his eyes. Or if additional demands are made upon the accommodation, as for continuous reading, writing, or sewing, the muscle is found unequal to them, and pain is felt not only in the eyes but in the head. This is noticed also when the attention is closely fixed upon distant objects. Astigmatics frequently complain of headaches after going to the theater, or when traveling and looking at the passing landscape, or after a round of shopping.

In London they speak of an "Academy headache," the result of gazing intently at pictures during the exhibition. Such a headache may be partly due to the glare of the light from the brilliant colors on the canvas, and partly to the physical exhaustion incident to the loitering through a picture gallery.

Even slight degrees of astigmatism may be sufficient to cause considerable eye-strain under such conditions, particularly so if the astigmatism is of the oblique variety, in which the principal meridians of curvature of the cornea are no longer horizontal and vertical. The ciliary muscle seems to find greater difficulty in overcoming this kind of astigmatism.

When the individual is in perfect health he may be able to overcome a very considerable refractive error without experiencing any ocular distress, but if for any reason his vitality becomes impaired—particularly his nervous vitality—then he feels the additional strain, which may manifest itself in headaches. This is very noticeable in patients having hypermetropia

or astigmatism who are recovering from some severe exhausting disease, in young persons at the time of puberty, and in persons suffering from neurasthenia. A good illustration of this is to be found in a case of paresis or paralysis of the ciliary muscle following diphtheria. Even after the muscle partly recovers its power, it is very weak and easily becomes fatigued with slight accommodative effort, much more so if it has to overcome also a refractive error of hypermetropia or astigmatism, and this manifests itself by reflected pain in the head.

MUSCULAR INSUFFICIENCY.

We now come to the third cause of ocular headaches—the strain of the extrinsic muscles from lack of balance, so-called “muscular insufficiency” or “muscular imbalance.” This term assumes that one or a group of the eye muscles is too weak for its opponent, and there is therefore a tendency for the optic axes to deviate from the normal. This usually concerns the recti muscles, and of these the internus and the externus are the ones most frequently affected, although the superior or inferior rectus may show signs of weakness, and it is even claimed that at times the oblique muscles are at fault. If this deviation of the optic axes is apparent without tests, there exists strabismus, but if it is only latent, each eye fixing the object, and binocular single vision being present, it is spoken of as insufficiency of one or the other muscle. To this general condition the term “heterophoria” has been given by Stevens, and this is specifically divided into “esophoria, a tending of the visual axes inward; exophoria, a tending of the lines outward, and hyperphoria (right or left), a tending of the right or left visual line in a direction above its fellow.”

Diplopia is so dreaded by the mind, and desire for single vision is so great, that extra effort is made to compel the so-called weak muscle to keep the optic axes in the right direction, and this effort is supposed to cause an unequal strain on the muscular apparatus of the eye that may excite all kinds of neuroses. Headache, megrim, chorea, neuralgia, insomnia, chronic gastric and digestive disturbances, epilepsy, nervous prostration and insanity are some of the conditions that are supposed to result from such eye-strain; and it has even been claimed of late by some of the enthusiasts in this work that an organic disease like trachoma owes its origin in many cases to insufficiency of some of the eye muscles. It is much more difficult to determine the effect produced upon the nervous system by strain of the extrinsic eye muscles, than it is to demonstrate such effect by strain of the ciliary muscles, even with extensive clinical data at hand. In the first place, the tests for heterophoria are not so accurate as those we use for estimating the refraction of the eye, and in the very nature of things they can not be. In the second place, we are dealing with a muscular apparatus far more complex than that which controls accommodation—a muscular apparatus which is innervated by three distinct motor nerves and is intimately connected with the sympathetic system; a muscular apparatus which is double, and must perform wonderful co-ordinate and conjugate movements.

It is extremely difficult to determine with positiveness whether the muscular insufficiency is due to weakness occasioned by organic defect of the muscles themselves, whether it is due to imperfect innervation of the muscles because of some trouble in the nucleus,

or whether it concerns some of the higher centers presiding over co-ordination. In many cases it is even impossible to say whether a given muscle is too weak or its opponent is too strong. In the third place, we have not yet obtained accurate data as to the normal limits of mobility of the eye, and we are therefore not in a position to fix the abnormal.

The assumption that normal abduction must be sufficient to overcome a prism of 8 degrees and normal adduction equal to a prism of from 30 to 50 degrees is purely an assumption. While I am not prepared to deny that heterophoria or muscular insufficiency may in some cases be the cause, or one of the causes, of headaches and other neuroses, yet I hold that the results obtained by many ophthalmologists in the treatment of these cases, and adduced as proofs of the proposition are very far from conclusive. It is true there are cases in which operation on the muscles of the eyes seems to have accomplished results that are indisputable. I have had a few such cases myself, but the majority of them present such complex nervous symptoms, sometimes verging on the hysteric, that it is difficult to say whether, in treating the muscular anomaly, we are attacking the disease itself or only one of its effects.

In considering the location or variety of ocular headache it is impossible to specify any positive characteristic that will differentiate it from headache arising from other causes. In general we may say that the headache brought on by eye-strain is of a dull heavy character, although at times it may be sharp, excruciating and neuralgic, sometimes being so severe as to cause nausea or vomiting without its being a true megrim. Its most frequent seat is in the supra-orbital or frontal region over the frontal and ethmoidal sinuses, a brow-ache, or it may be described as a pain in the back of the eyes or deep in the orbits. The next most frequent location is in the temporal region, and the pain here may be throbbing in character. Occipital headaches are also observed, the pain being sometimes referred to the base of the skull or the nape of the neck, and even reflected to the back and shoulders. Ocular headaches affecting the vertex are, in my experience, less frequent than any of the others.

The most characteristic sign is the occurrence during or after excessive use of the eyes, as in reading or other near work, sight-seeing, shopping, etc., but, as I have mentioned before, this rule is by no means absolute. A person may awake in the night or rise in the morning with a headache apparently excited by an uncorrected astigmatism. As far as true megrim is concerned, my observation leads me to believe that eye-strain, whether accommodative or muscular, is much less frequently a cause of it than of any other variety. It is true that the attack may be aggravated by a refractive error, but I have seen so many severe cases in which no error or muscular anomaly existed, that I am constrained to believe that when such errors are present they do not act as a direct cause of the trouble.

TREATMENT.

As far as regards the treatment, it may be summed up very briefly. Every case of headache, the etiology of which is at all obscure, should receive a careful examination of the eyes, and this should include a most complete examination of the refractive condition as well as a thorough study of the action of

the muscles. Nothing short of an examination by the use of a mydriatic that will completely paralyze the accommodation is sufficient, as it is impossible to discover low degrees of hyperopia and astigmatism if the ciliary muscle is active. Lenses representing the full correction of the refractive error, less .25 or .5D, should be prescribed and their constant wear insisted on. They will not be tolerated unless the eyes are under the influence of a mydriatic, but with its help the eyes adapt themselves to the new relation. Some persons will be able to lay aside the glasses after the functions have returned to normal, without the recurrence of the headaches, or any of the symptoms that prompted their use. This is often noticed in certain cases at the age of pubescence, at which time the nervous equilibrium being so unstable, headaches may occur because of any excitement or irritation, and a slight hyperopia or astigmatism may furnish the cause. The correction of this defect by relieving the ciliary strain, may remove one of the factors and so prevent the headaches.

In cases where the trouble is not relieved by such measures, and it has been determined that a muscular anomaly exists, this should be treated by prisms, exercises, and means to strengthen the weak muscle before its apparently stronger fellow is operated upon.

In conclusion, I wish to emphasize a few of the points made in this paper:

1. There may be headaches which we may be justified in calling "ocular headaches," for in many of them there seems to exist a demonstrable causal relation between the eye-strain and the neurosis. Just how this operates it is impossible to explain at the present time. Possibly when the presence of sensory nerve-fibers in the walls of the blood-vessels of the brain has been demonstrated, such an explanation as the following may be plausible: "The irritation of the sympathetic nerves in the ciliary body by constant contraction of the muscle and the presence of the products of metabolism, causes through the vasomotors a contraction of the blood-vessels, followed by a dilatation and distention with resulting irritation of the sensory fibers."

2. While there may be a number of underlying conditions at work to cause a headache, eye-strain of any kind, if present, may be a dominant factor exciting the attack, or in aggravating it, and the relief of this strain will often exert a most favorable influence.

Finally, no study of headache is complete that does not reckon with the conditions that may exist in the eye, and when etiology is not perfectly clear these conditions should receive careful attention.

103 State Street.

DIAGNOSTIC CHARACTERISTICS OF HEADACHES ACCORDING TO THEIR ORIGIN.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. GRADLE, M.D.

CHICAGO.

The object of the present paper is to point out those peculiarities of headaches which can serve as guides in the search for their origin. The author's experience pertains principally to headaches dependent upon affections of the special senses. But valuable lessons, too, have been learned—in a negative

sense—from the study of those cases which, on investigation, proved to be of different character.

Before proceeding to details, I wish to explain the point of view from which I have been led to regard headaches of peripheral origin. While I agree with the general experience, that a large number of headaches start from some anomaly of the eyes or of the nose, I do not think that the detection of such a peripheral origin ends the investigation of the case. We must consider not merely the peripheral lesion, but also the condition of the nervous system. There are, indeed, certain peripheral conditions which will necessarily cause headache in every case; for instance, acute inflammation of the ciliary body, or acute suppuration of the nasal sinuses. But, on the other hand, inflammatory affections of a more chronic character and mere refractive anomalies lead to headaches only in some, but by no means in all patients. As I have elsewhere shown (*New York Medical Record*, Dec. 17, 1895), the difference in the symptoms hinges on the condition of the nervous system. Errors of refraction do not cause headaches in absolutely normal subjects, they simply produce local discomfort in the eyes. In those instances in which optic defects lead to headaches we can demonstrate a neurotic tendency by close examination of the patient, his family record, his personal history, or sometimes only his subsequent history. The more pronounced the instability of the nervous system, the more likely will comparatively trivial peripheral disturbances lead to headaches.

The characteristics of headaches are: 1, their location, and 2, their time-relations. Their severity is a less reliable guide for evident reasons.

Location.—The most important question concerning the site of a headache is whether it is wholly or predominantly one-sided. One-sided headache is always due to a lesion on the same side of the head, either intracranial or in one of the organs of sense. The only exception is that form of migrain which, though one-sided at the time, alternates regularly between right and left, for in this case the source is not one-sided, if it be peripheral at all. Conversely, however, one-sided lesions may in some instances cause headache not limited to the same side. This is sometimes true of unilateral errors of refraction, as well as of affections of one ethmoid or sphenoid cavity. Apart from the side of the head, the location of a headache furnishes no positive indication as to its source. Although headaches are, as a rule, located in the vicinity of the organ whence they are started, there are so many exceptions to this rule, especially in neurotic subjects, that it has but little diagnostic value.

Time-relations.—From the point of view of their time-relations, headaches can be classified as: 1, paroxysms recurring at *a*, irregular or *b*, regular intervals; 2, attacks following some specific act; 3, more or less continuous pain. In this connection, too, must be considered the date of suffering, and its manner of onset.

1. *a*. Paroxysms of headache of similar intensity and duration and occurring at variable intervals constitute the form called migrain. The experience of oculists is very definite regarding the ocular origin of many instances of migrain. How large the proportion is, the oculist, however, can not state, as his cases are relatively selected. If wholly or predominantly one-sided, migrain is surely dependent on

either an error of refraction, or, in a smaller proportion of cases, on some nasal disease. The only ocular anomaly to which I have personally been able to trace migrain, is astigmatism. Hypermetropia does not cause it. Regarding the so-called muscular anomalies, I have no definite experience. If there are eye symptoms, and especially if the migrain is on the side of the notably weaker eye, an ocular origin is very probable. Still, the absolute proof in a given case can only be furnished by the influence of glasses. Even when astigmatism is present, it is not always the cause of the migrain, and in some few instances optic correction proves disappointing. On the other hand, the absence of eye symptoms does not preclude the existence of a moderate degree of astigmatism as the starting-point of the headache. The form of migrain preceded by scintillations and dim sight—the *scotoma scintillans*—is not always of ocular origin, although often the result of astigmatism.

Migrain is in relatively rare instances induced by nasal disturbances. Gruenwald quotes some convincing instances of ethmoid and sphenoid suppuration. My own experience, however, has included but few cases of well-defined migrain depending on such disease. When Hack made his startling statements, about fifteen years ago, concerning nasal reflexes, he quoted a number of cases of migrain prevented by cauterization of the nasal cavernous tissue. These observations do not seem to have been confirmed to any extent. I have personally seen one-sided migrain occurring in connection with nasal stenosis of the same side. In three of these instances I was able to furnish a proof of the relationship, by the great improvement in the severity and frequency of the attacks after operative removal of the stenosis, but in none of the instances were the paroxysms entirely averted. Migrain of moderate severity and relative infrequency occurs in persons of apparently normal nervous system and good family history. But great frequency, great severity or massing of separate paroxysms into a continuous spell indicate other factors exerting a depressing effect upon the nervous system, besides a possible peripheral origin in the given case.

b. Paroxysms of headache with regular periodicity—recurring about the same hour daily—have mostly been the result of sinus disease in my experience. In most of these instances the pain should really be classified as a neuralgia. If, however, it is not strictly confined to a small area of nerve distribution, the patient may describe it as a headache. I have seen it in connection with acute or subacute inflammation of the various nasal accessory cavities. When starting from the frontal sinus it appears as a supraorbital neuralgia, which, however, may radiate into a diffuse one-sided headache. The diagnosis is not always easy, even on inspection, for suppuration of the frontal sinus of moderate intensity is sometimes almost latent, and often transient, though recurrent. But there was always the history of a preceding acute coryza. These attacks yield quite often to either quinin or antipyrin, even where there exists demonstrable sinus disease. In ethmoid and sphenoid disease the pain is more described as headache than as a circumscribed neuralgia—usually but not invariably one-sided.

2. Of headaches following specific acts the most characteristic is the pain brought on by the use of the eyes for near work. The more precise the coin-

idence of headache with eye-work, the more probable is the origin in either hypermetropia, hypmetropic astigmatism, or myopic astigmatism—in the order mentioned. I do not mean that this order represents the frequency of the three anomalies, but the probability of a headache occurring irregularly and not strictly proportionate to the amount of eye-work increases in the order mentioned. The more neurotic the subject, the greater the probability of headache occurring at irregular occasions during the day, but these eye headaches are never present on rising, and never severe enough to prevent sleep. In any deviations from this rule other factors must be sought for. In highly neurotic subjects these ocular anomalies may bring on headaches on using the eyes even for a distant fixation, as for instance, in the theater. Finally, there are rare instances, generally in anemic, sometimes in hysterical, patients of headaches following strictly upon the use of the eyes where no ocular anomaly of any kind exists.

3. Headaches more or less persistent, or with irregular intermission may result from the same optic anomalies, but only in run-down subjects. Very often other assisting factors can be demonstrated, such as stomach or intestinal disease, loss of sleep, and particularly insufficient out-door exercise. In other instances the refraction may be perfect, but other ocular disease be found. This is sometimes a peripheral choroiditis. Not rarely too, do we find the granular or salt and pepper appearance of the fundus, which I described last year (*JOURNAL AM. MEDICAL ASS'N.*, Jan. 29, 1898), in connection with a highly neurotic disposition. It has seemed to me rather characteristic in such instances, that the pain begins at once on awaking. Continuous one-sided headache if at all connected with the eye, is usually indicative of some serious inflammatory condition, especially if of recent date and rapid onset. Optic neuritis—especially the retrobulbar form—is to be thought of, even if dim sight is not specifically stated by the patient. The most serious condition that may lead to such symptoms is glaucoma and the possibility of chronic glaucoma, as the cause of severe and persistent one-sided headache should not be lost sight of.

Among nasal diseases the forms most likely to lead to persistent and unusually severe headache, are the more intense suppurative inflammations of the sinuses, in which case nasal symptoms can always be elicited. Nocturnal aggravations are not uncommon under these circumstances. Moderate but very persistent headache is occasionally complained of in nasal stenosis of any kind, but only by distinctly neurotic subjects. It is less generally known that inflammatory conditions of the pharyngeal tonsil are sometimes the source of continuous headache, usually not very severe, in both children and adults; in fact, the existence of such transient inflammations in this region is not yet generally recognized. I have seen over a dozen instances where the postnasal mirror showed either the existence of scattered white spots of exudation comparable to lacunar tonsillitis, or suppuration with scabs on the abraded surface at the roof of the pharynx. In most of these instances I was able to stop this headache by appropriate local treatment. I will add finally, that I have seen two instances of persistent, diffuse one-sided headache with irregular exacerbation which could not be traced to any peripheral source except carious teeth, and which ceased promptly after their extraction.

DISCUSSION.

Dr. FRANK P. NORBURY, Jacksonville, Ill.—I think the question of localized headaches is one that should be considered in a broader light than we have had it presented here to day; that is to say, aside from the question of the influence of the eye or of the nose. We frequently meet cases of persistent headache, localized headache, which on examination may not reveal errors of refraction or nasal disturbance, but which nevertheless are persistent and give rise to a great deal of concern, both on the part of the patient and on the part of the physician. We are consulted to relieve the patients from these distressing headaches. I think in all cases presenting persistent headaches it is our duty to go beyond the examination of the eye or the nose or the ordinary neurologic examination; that is to say, we should go into it from the standpoint of internal medicine, because it has been our experience that these conditions can only be relieved, in many cases, by a treatment of the patient as an individual. In one case in particular, a case of diabetes, there was a persistent headache associated with urinary symptoms. The diabetes had not been diagnosed. I subsequently made a diagnosis of diabetes, and the subsequent treatment, regulations, etc., relieved the patient of his headache.

Again, in cases of lithemia—so called uric acid cases—we meet a great many of them with localized headaches; the migraine not altogether limited to one side, varying from side to side, but they are essentially cases that can be relieved and oftentimes relieved speedily, and with permanence, if proper treatment be directed. The lithemic headaches are not unusual with school teachers or in the office men who are confined to their desks, and in persons occupying positions of responsibility wherein they have to use a great deal of mental power, and it is not unusual to find in many of these cases that the headaches are of lithemic origin and can be relieved, and relieved speedily. In Central Illinois, and in fact in the Mississippi Valley, we are apt to meet many cases of headache that are of malarial origin, this being determined by blood examination. Cases which have failed to yield to the ordinary treatment of correction of refraction, or of errors involving the nose, when placed on malarial treatment, are immediately relieved. Then, it is not infrequent to find in some forms of insanity a persistent localized headache. I allude especially to those forms of insanity that are due, say, to valvular disease of the heart. It is probably a rare form, but nevertheless there are cases of insanity due to changes either in the heart or in the arterial system, and I remember one case in particular where valvular disease of the heart was responsible for innutrition of the brain, which, when properly treated, relieved the patient not only of the headache but of the insanity as well. There are cases due to simple anemia, occurring during the adolescent period, and especially in girls. The headaches at that period sometimes, as you know, interfere greatly with young women in their work at college. In young women taking a course in the arts, where application must be constant, the headaches become so violent as to interfere with their studies. Of course, a headache is simply a symptom, and in our investigation of headaches we must be very careful to take into consideration the possibility of all diseases, applying in our diagnosis all the tests we possibly can before we arrive at our decision.

Dr. ROBINSON of Illinois—This is a subject in which I have great interest. I have looked at this subject of headaches, and watched the cases which have been brought before me for many years, including those that are sometimes called headache and sometimes migraine. The causes and treatment are beyond my caliber to understand. I know one family the members of which have had that form of headache for thirty years, occurring every two or three weeks, and the father, son and daughter, for four generations, have these attacks. I have in mind now one case where the patient has been suffering for more than thirty-five years with headache, which at first would come on by a pain over one eye, or a blindness. At the present time the attacks commence usually in the night, and in the morning the headache becomes more severe, and the patient is obliged to keep her bed from 24 to 72 hours. Nothing seems to relieve these paroxysms except morphia, and that only temporarily. The acetanilide, the stimulants, caffeine, and all the medicines I have used, produce only temporary results. I have looked upon these headaches from the standpoint of uremic or uric acid poisoning, and I do not know but that may have some influence. But they recur regularly. In one case the patient will wake up about 2 A.M. with a severe headache. He either gets up and goes around town the next day, or takes a dose of acetanilid, caffeine, bromid, or soda, which will frequently relieve the headache for two or three

weeks. But the poison seems to be bottled up in the system, and breaks forth to such an extent that a strong man is a wreck, unable to do anything, and suffering more than I can describe.

Dr. ESKRIDGE—An interesting form of headache is suspended or postponed headache. I have not infrequently noticed that school children will go all week without suffering, and on Sunday invariably have a headache. The same is true of book-keepers, who will invariably be attacked with headache on Sunday. This can be explained on the same theory that a person carrying a grip or other weight, getting accustomed to it, does not notice it until he puts the grip down. As to migrainous headache, I think we have to look for the cause first, to a defect in the constitution—a defect in the neural structure—and next to some defect probably in the nutrition; but the whole pathology is not known.

Dr. J. W. GIVENS, Black Foot, Idaho—The significance of headache to the patient is one of the things that we all have to confront in our daily practice. The label "headache" is very indefinite, but nevertheless it is the description of the condition of which the patient complains, and the one that we are called upon to relieve. I am sure what Dr. Gradle has said in regard to nasal trouble is true. We notice this fact in this mountainous country, where we have more or less catarrhal trouble. I feel that by attending to and relieving the nose we do a great deal toward relieving the headache. I also think that these wind-storms are responsible for a good many headaches. Then, too, as Dr. Eskridge has said, a great deal of headache is constitutional. The pathology of it in many cases is something like the pathology of epilepsy. We do not know what it is; but the headaches are, in their clinical picture, very like the picture of epilepsy. I do not know what can be done for those cases any more than I know what can be done for epilepsy. Most of them have to be endured. In all cases of headache I think we shall generally find a lowered condition of nutrition, and while the local conditions—the nose, the ear, the teeth—require attention, it is very important to keep the general health up to the very highest point of excellence by the use of pure food, outdoor life as far as possible, the use of cod-liver oil and the tonics, treating the patient, in fact, as we would treat a thorough-bred race horse, if we wanted him to win the race. Treat the patient in this way and keep him in that condition all the time, and you will minimize the likelihood of headaches, or at least reduce their severity.

Dr. WOODSON of Missouri—I have frequently found that headache occurs in anemic conditions, especially in chlorotic girls and in children that eat irregularly or that do not take time to eat, owing to their eagerness to get out to play. I have also found headache occur in persons who give away to fits of anger, or in persons who attempt to overwork themselves, doing as much in one day as they ought to do in two; in persons who sleep in apartments that are not supplied with a sufficiency of fresh air. I also have frequently found headaches associated with catamenial disturbances, and we find it associated with the lesions of specific troubles. So far as giving a fixed prescription for headache is concerned, it would be as impossible as a fixed prescription for any other trouble. As suggested by Dr. Norbury and concurred in by others, it is necessary to look out for the cause, and if possible remove it; in the anemic and chlorotic, insisting upon a sufficient amount of outdoor exercise, and well-ventilated sleeping apartments, with a bountiful supply of nutritious food, and so on throughout the other cases.

Dr. HAROLD N. MOYER, Chicago—I take it that Dr. Gradle's paper was not on migraine at all, that being only incidentally referred to. I suppose his title would have been more nearly correct if it had read, "Characteristics of some headaches according to their origin." But the particular kind of headaches to which his paper referred were those of ocular and nasal origin very largely, and how to differentiate those from one another, and also from neuralgia and the headaches of other origin, I take it, was the purpose of the paper. There is one valuable point in the whole discussion, and that is the conclusion at which Dr. Gradle arrives from his standpoint of the ophthalmologist, one who largely sees cases of eye and nasal trouble primarily. My experience is entirely from the other side, but I substantially agree with his conclusions. I believe that fully 70 per cent. of all the cases of headache that I see are primarily eye-strain headaches, and I would put myself in accord with Dr. Gradle's conclusion as to the indication by which we are to arrive at a diagnosis. Since the subject of migraine has come up, I might mention that I have recently seen a very interesting case suffering from an eye strain. This persistent eye-strain was relieved by the proper glasses, but the patient still has her migraine at stated intervals, showing that there were two kinds of headache present in the same

patient. As to migrain, there is no doubt that in all these cases we are dealing with toxemia, and I think that the investigations of Ratchford have shown conclusively that it is not uric acid, but some of the by-products, and I am satisfied that is the underlying condition in most cases of migrain. However earnestly you look for end-organ disease, however you eliminate eye-strain, there will be a very large proportion of headaches in which you will not discover the cause, and which you will fail to relieve.

Dr. HUGH T. PATRICK, Chicago—I should like to ask one question of Dr. Gradle. I understood him to say that one-sided migrain was due to eye or nose trouble in all cases. If he meant that statement, I wish to verify positively and emphatically dissent from it. If he says that one-sided migrain may be due to eye or nose trouble, I agree with him.

Dr. C. C. HERSMAN, Pittsburg—Quite a number of times in cases of headache thought to be due to eye trouble the headache was not benefited by correcting the eye trouble. I think, as Dr. Meyer stated, we will find the trouble due to a toxic condition. In some cases of angioneurotic edema we have excruciating headaches; it is almost impossible to relieve them without very heavy doses of narcotics, and while we have very little light on angioneurotic edema, still I think that is a toxic condition. In this trouble sometimes the swellings come on close to the monthly period, or we may find it two or three times during the month. A great many of the headaches are attributed to improper food and irregular habits; but if you take these same patients and make them live the most correct life possible for them to live, the attacks will occasionally occur. I do not understand the reader as Dr. Patrick understood him. I understood him to say that when we did have a one-sided headache it was most likely to come on the side of the bad eye.

Dr. T. D. CROTHERS, Hartford, Conn.—There are two facts that I think are very prominent. I think all these cases of headache are practically poison and starvation cases. The whole philosophy turns on that, and if you can eliminate these two elements you are successful.

Dr. CHARLES H. HUGHES—The chair would like to remark that the phenomena of headache are too much viewed from one spot rather than from the whole individual. Any one who has had experience with migrain, of which I have had an abundance for twenty years, knows what constitutes migrain. In my own case I was in the habit of forcing mental action to the utmost limit by the use of coffee. For twenty years of my life I used a half-gallon of coffee between 9 o'clock and bed-time, and forced myself to a condition of wakefulness. I always slept in spite of coffee, but I learned afterward that I did not sleep in each twenty-four hours quite so much as was necessary for daily recuperation. My migrain came upon me in this way: first at the end of thirty days I was obliged to retire *hors de combat* for about one day; could not tolerate the light; so hyperesthetic that I could not tolerate sensation of any kind. The greater part of that day was spent in misery and retirement. Then the conservatism of nature asserted itself; the sleep which followed, and which was more than I was in the habit of getting, was a compensation, and I was restored to a more normal condition. When it became my misfortune to preside over the fortunes of a lunatic asylum these migrain attacks came on every week, and the only thing that conserved my vitality at all was the very fact that it knocked me out so completely that I could not do anything for nearly one day a week. The toxic theory has found a very satisfactory lodgment in my mind. I have no headaches now, and have not had for fully ten years; but I have learned to take care of myself better. The amount of brain strain that a man puts upon himself is sufficient to bring about this condition of the accumulation of toxins, and they cause the trouble, as I think is no doubt the case in our epileptic conditions; but it is necessary to have an organism that is predisposed. Exophoria, esophoria, errors of accommodation and refraction of various kinds are associated conditions, and they tend, where you have a neuro-pathic condition that gives you the headache, to make the latent condition active; but I do not think, as the ophthalmologists assert, that they are every, the sole, exclusive and only cause. As Dr. Brower said, the removal of whatever source of irritation that may exist is good therapy; it is good practice in neurotherapy as in every other department of medicine; but to assume that these migrains are the result of just one thing is a mistake in my judgment. As to medical treatment of my headaches, I learned to use bromid of potassium, afterward bromid of sodium, and I learned to get more rest and to adjust the expenditure of nerve force to my capacity for daily accumulation. The same condition that will give you a diabetic urine will, in the cortex, in the meninges, give rise to a headache; but it seems to me that this whole subject is a sub-

ject concerning the treatment of the individual and his habits. Irritation in the eye will bring out a latent headache.

Dr. HAROLD N. MOYER, Chicago—Is it not true that nine-tenths or more of the migrains practically cease with advancing years?

Dr. HUGHES—That is a fact, I think. At 45 years of age the majority of people cease to have migrain. At that time of life when they begin to understand what life is.

Dr. MOYER—And when their blood-vessels get a little harder?

Dr. HUGHES—That may possibly be the explanation.

Dr. GRADLE—I was not presumptuous enough to come before a Section of Neurologists with a paper on the treatment of headache. My paper merely had to do with the characteristics of some headaches which were relieved by local treatment. I wished to present those symptoms by which the peripheral origin can be determined, and relief obtained. Dr. Patrick did not understand me correctly. I said in the paper that in every case of one-sided headache the cause was either a one-sided intracranial lesion, or an affection of an organ of special sense on the same side. I base this on my own experience. I have never seen an exception to this rule. I was always able to trace such a condition to some affection of one side of the head, with this exception, however, that those cases of migrain which alternate regularly between the right and the left side do not come in the category; they are not due to one-sided lesion, or any other lesion. I have been misunderstood as to the importance of the peripheral lesion in causing headache, especially migrain. I stated in my paper explicitly that in every case of headache, not only the alleged peripheral causes but also the condition of the nervous system needed investigation. I added, furthermore, that there are some peripheral causes so potent that they would introduce headache in anybody, no matter whether they be in good health or not. For instance, a severe injury to the eye, causing inflammation, will invariably produce headache; or severe coryza extending into one of the sinuses of the nose will cause headache as a regular consequence, no matter how perfect the nervous system of the individual. On the other hand, an astigmatism of one diopter or thereabout will not necessarily give eye symptoms to a normal individual, whereas if the individual is run down, or other depressing factors are at work, he will have eye symptoms.

The question has been asked about the frequency of astigmatism as the cause of migrain. That the oculist can not answer, as his cases are selected. In the great majority of cases that were sent to me I was able to demonstrate an ocular origin, but, of course, only those cases came to me where a peripheral origin was suspected. I presume that a large number of cases of migrain have no peripheral origin. The proof is very definite that the peripheral irritation is sufficient to bring on these attacks. That other factors are present, also, there can be no reason to doubt, because of the periodicity of the attack. There must be some other factor. My paper did not deal with the pathology of headaches; I did not refer to these factors, and I am not at all sure that the toxic theory is sufficiently proven.

In answer to Dr. Hughes' query as to cases of astigmatism coming on in school children while they are at work, and disappearing when they leave school for the term, I would say that the astigmatism does not really disappear; the astigmatism is stable in the majority of its conditions; the others are very rare cases. The strain is lessened when the child is at liberty. I consider it very one-sided and altogether wrong to finish the work by prescribing glasses, and not to consider the other factors at all. Of course, if the glasses relieve there is no reason why they should not be given.

EYE SYMPTOMS OF BRAIN TUMOR.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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PHILADELPHIA.

OPTIC NEURITIS.

Among the eye symptoms of brain tumor we naturally think first of optic neuritis, the most striking and significant symptom in cases of this class. Probably not a few practitioners have associated optic neuritis chiefly or wholly with intracranial disease or

intracranial growths. But while it is right that great importance should be attached to this symptom, occurring as it does in 80 or 90 per cent. of all cases, it is necessary to point out that its discovery is far from establishing a diagnosis of brain tumor. It is of very little value to indicate the location of the tumor, and it is worthless as regards revealing the nature of the growth. But it does show with great probability that brain symptoms accompanying it are due to serious organic disease. Even here, however, its indication is not absolute, for, in common with these symptoms, it may arise from different kinds of poisoning.

It has been a matter of some surprise in going over a series of my cases of marked optic neuritis, to find how exceptional has been its connection with intracranial growths, and how many cases occur in connection with other diseases. Thus, among 27 cases, but 17 were probably connected with serious organic diseases of the brain and its membranes, and only 8 of those were—probably five or certainly three—cases of brain tumor. The others arose in connection with renal and vascular diseases, syphilis, various toxic agents, chiefly lead and alcohol, disease in the orbit, or of the ethmoidal and sphenoidal sinuses, or were of such obscure etiology as to be classed as idiopathic.

Unfortunately, optic neuritis due to brain tumor presents no especial characteristics that separate it sharply from optic neuritis due to these other causes. Indeed, it is sometimes difficult to distinguish it from such an entirely different condition as the optic neuritis due to eye-strain, or from the protruding opaque optic disc that occurs in rare cases, probably as a congenital anomaly. So far is optic neuritis from fixing the underlying pathologic condition as one of brain tumor, that in determining the cause of the optic neuritis the other symptoms of the case have to be carefully considered. Still the ophthalmoscopic appearances do give certain indications of the cause of neuritis, which are of value in reaching a diagnosis.

Let us contrast the neuritis due to the various other conditions mentioned with the typical optic neuritis of brain tumor. Such typical neuritis is characterized by great swelling, sometimes 10 or 12 D (3 m.m.), abruptly limited, at no great distance from the margin of the disc, with arteries narrowed, veins dilated and very tortuous, and small vessels much enlarged, but not very numerous, because scattered through the swollen tissue; and small, flame-shaped hemorrhages upon or near the papilla. The other portions of the fundus, except for the alteration in the vessels, are normal, or present changes which are slight as compared with those at the disc, although to this last statement there are very important exceptions.

In contrast with the above: Swelling and discoloration of the disc, occurring as an anomaly, are never of very high degree. No such recorded case showed more than 4 D. swelling of the optic papilla, and in none that I have encountered was the most and prominent portion of the swelling more than 3 D. in front of the level of the neighboring fundus. Again, even with the higher degrees of such swelling the retinal vessels are normal; and the other parts of the fundus are normal, or exhibit no lesions like those of neuroretinitis.

Optic neuritis, due to eye-strain, is more common, but in this also the swelling is limited. The disc may be very red and yet the most prominent vessels be not over 1 D. in advance of the fundus. In this form, too, the larger vessels are but slightly altered, and the

fine vessels of the optic disc are very much more numerous, but are not particularly irregular in caliber or very tortuous.

Under idiopathic optic neuritis, or optic neuritis of unknown causation, I should prefer to place the unusual but not very rare cases that have been ascribed to cold, rheumatism, disturbance of menstruation, etc. The ophthalmoscopic appearances resemble those of optic neuritis due to eye-strain, except that the swelling may be greater and the retinal circulation more interfered with. Optic neuritis of this kind is usually acute, and tends to early and comparatively complete recovery. The field of vision does not present great concentric or irregular contraction as compared with the ophthalmoscopic appearances, although the blind spot may be markedly enlarged and irregular. I have met with one case in which such optic neuritis, with great impairment of vision recurred, yet was followed by almost complete restoration to normal.

Optic neuritis in connection with gummatous growths is rather frequent in the tertiary stage; but it may also occur as one of the earlier secondary lesions of syphilis. I have seen it within three months after the initial lesion. In this stage it presents the clinical appearances of idiopathic optic neuritis and is rather promptly amenable to treatment. Of the form of retro-bulbar optic neuritis that leads to central scotoma without marked ophthalmoscopic changes it is unnecessary here to speak. But in rare cases, certain toxic agents, especially lead, may cause a form of optic neuritis that closely simulates that due to brain disease. It is usually chronic, and attended with great swelling and corresponding disturbance of circulation, while the general condition of the fundus remains, as in the optic neuritis of brain disease, comparatively good. I know of no signs by which one may, with the ophthalmoscope, discriminate between this form and the optic neuritis due to brain tumor. The diagnosis between them must be based on other symptoms, that should be constantly borne in mind in connection with this subject.

But most frequently the doubt as to the significance of optic neuritis rests upon the resemblance of the lesions in certain cases of renal vascular disease, to those connected with brain tumor. The forms of optic neuritis due to these two causes may in typical cases be quite distinct, and in the majority of cases there is exhibited a certain divergence of type. But in some it is absolutely impossible to decide from the ophthalmoscopic examination to which class the particular case belongs; and in some, neuritis due to the one cause inclines rather to the clinical type of the other. The typical differences are these: Optic neuritis due to renal and vascular disease is more apt to be attended by hemorrhages and patches of exudation throughout the fundus; is more apt to be accompanied by the stellate grouping of white spots at the macula; is more apt to be associated with marked irregularities in the caliber and appearances of the vessels, apart from dilatation and tortuosity of the veins. Still, optic neuritis from brain tumor may be accompanied by general retinal hemorrhages and considerable areas of retinal exudation, especially at the macula, or between it and the disc (Harlan). Even the stellate group of white spots in the macula formerly regarded as pathognomonic of albuminuric retinitis may be included among the retinal lesions connected with brain tumor (de Schweinitz).

With very extensive retinal lesions one may say that in all probability the trouble is of renal-vascular origin. With a complete absence of them, one may say that violent optic neuritis is probably due to organic disease within the cranium, but the possibility of confusion should not be lost sight of. Bearing it in mind, examination of the urine will usually show to which class the case belongs.

Given then a case of optic neuritis that can be excluded from the class we have just considered, its existence indicates with great probability the presence of grave organic disease within the cranium. Further than this we can scarcely go. It will be impossible to say from examination of the eyes that the cause is a brain tumor, a meningitis, or a cerebral abscess. The rapidity with which the neuritis runs its course will, however, in some cases give a valuable indication. Although Gowers shows that chronic neuritis never results from a rapidly growing tumor, in a tumor of very slow development the neuritis may be rather more chronic than from any other cause, slowly increasing for many months before vision is seriously impaired and running a course of years before it ends in atrophy.

OPTIC ATROPHY.

This is usually consecutive, coming on as the termination of optic neuritis. As such it has the same significance, and requires the same caution in excluding other possible causes.

Among 40, that I regarded as cases of consecutive atrophy, 13 were apparently due to organic intracranial disease; of these 3 were probably cases of tumor. The tendency in all cases is for optic neuritis to pass into atrophy, but in connection with brain tumor neuritis runs such a chronic course, that a large proportion of patients die before the atrophy predominates. The rapidity of the change to atrophy is usually related to the rapidity of the development of the neuritis. Marked permanent impairment of central vision and contraction of the field of vision are associated rather with the atrophy than with the neuritis. For a considerable time after atrophy is well-marked the evidences of previous neuritis remain unmistakable and not easy to overlook. But if the case be very chronic it is possible that the appearances which characterize the atrophy as consecutive, may be so trifling as to readily escape notice. These appearances are at first the remaining symptoms of neuritis; especially the swelling, now growing pale, the opacity which hides the disc outline, and the patches of exudate in the retina. Later the head of the optic nerve becomes clearly outlined, although still so opaque that the vessels can not be traced far into it. The vessels diminish in size, the veins as well as the arteries, though the former remain relatively large as compared with the latter; the vessel walls are more noticeable than normal, the vessel being sometimes accompanied by white streaks well out into the periphery. Patches of former retinal exudate may now appear as white degeneration, or only as areas of disturbed retinal pigment.

Around the disc may almost always be noticed some disturbance and absorption of the choroid, which is apt to be greatest at the upper and lower margins of the disc. This location distinguishes it from the somewhat similar choroidal changes due to previous eye-strain, which are generally most pronounced at the temporal margin of the disc. In rare cases sim-

ple atrophy, that is, atrophy without previous neuritis, has occurred in the course of brain tumor. It is due to pressure upon the optic nerves, chiasm, or tracts, or to direct destruction of the optic radiations or centers. Having this origin it becomes of considerable localizing value.

CHANGES IN THE PUPIL.

With impairment of accommodation changes in the pupil may occur as effects of direct involvement of the nerve tracts concerned. Sudden temporary disturbances may occur here, as they occasionally do in other forms of chronic organic disease of the brain and cord; but they have no especial significance with regard to brain tumors. The Wernicke symptom or reaction, or want of reaction, of the pupil to light thrown upon the blind half of the retina has in a few cases great localizing value. It throws no light upon the nature of the lesion which produces it. In attempting to elicit this symptom, especially when the vision is greatly impaired and the field contracted in all directions, it is sometimes necessary to throw the light into the eye from a point not greatly removed from the visual axis. In this way contraction of the pupil to light may be obtained, when, if the light were simply let fall toward the periphery of the retina, the result would be entirely negative. Of course, the nearer the light is brought to the direction of the visual axis, the greater the care that must be observed to insure that the pupillary reaction is not brought about by light falling upon the macula. Where the field of vision is still wide and the pupil reacts strongly to light, care should be taken that the light does not reach the seeing half of the retina through the sclera covering it, in sufficient quantity to provoke the contraction of the pupil, when, from light falling on the blind half of the retina, no contraction would occur.

To guard against this source of error I commonly use the light as reflected from the ophthalmoscope mirror, which can be concentrated in a small area upon the face and then turned so as to fall upon only the front and blind side of the eye. For instance, suppose a case of right homonymous hemianopsia—the left half of each retina blind—the source of light being behind the patient, the ophthalmoscope is held to the patient's right, as compared with his visual axis. The light is properly concentrated upon the brow or the nose, and then the mirror turned so that the light area will fall upon the pupil and portion of the sclera to the left of it, the sclera to the right of the cornea remaining in darkness.

PARASES OF THE EXTRAOCULAR MUSCLES.

In connection with brain tumor these are chiefly of value in the matter of localization, and the exact significance of each of the forms of extraocular paralysis in this direction need not now be rehearsed. In a general way such lesions, due to brain tumor, are more slow in their onset, and are longer in reaching complete development than those due to other causes, even perhaps those due to nuclear degeneration. But not much importance should be attached to this, since in connection with brain tumor their development may be entirely sudden.

A subject that has not attracted the attention it should have, and which will probably profitably repay careful study, is that of paresis or transitory disturbances of the extraocular muscles, which occur as distant symptoms with brain tumor, as they do with other

forms of organic disease, and which may be one way that the new growth causes such symptoms as headache and dizziness. In some cases at least they arise early, having probably much the same origin and significance as the mental disturbance, and the tendency to forced positions of the limbs, or involuntary movements that are sometimes seen. They are at least worth studying with the Maddox rod, the tendencies to deviation of the visual axes being taken when the eyes are turned toward various parts of the visual field.

NYSTAGMUS.

Although rarely accompanying blindness from cataract or corneal opacity, nystagmus is encountered in a large proportion of all cases of blindness from disease of the central nervous system. It is generally present when complete blindness has existed for many months in the course of brain tumor; but its occurrence in connection with other intracranial lesions robs it of especial diagnostic importance. It is probably more common and appears earlier in tumor of the cerebellum. In a few cases it appears while there is still fair sight, generally in connection with other disorders of the extraocular muscles.

IMPAIRMENT OF VISION.

Impairment of central vision and limitation of the field of vision may be of importance in calling attention to the existence of serious organic disease. The exactness with which they can be estimated quantitatively, gives them value as indicating the progress of the case. In the large majority of cases, however, they depend upon the optic nerve lesion and indicate its progress rather than that of the original disease. In a few cases where the affection of sight is due to direct involvement of the visual tract the changes in the field of vision become of the highest significance as a localizing symptom. Transient impairments may occur as a distant symptom, having the same significance as the mental disturbances and hysteroid symptoms.

Impairment of color perception can not be regarded as of a special localizing value. As Holden has shown, it may be merely a more delicate indication of the injury to the visual conducting apparatus, before this injury has become sufficient to interfere with the perception of form.

THE STIGMATA OF NERVOUS SYPHILIS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Specific lesions of the nervous system produce localizing symptoms similar in character to those which result from non-specific lesions having the same anatomic seat. Partial epilepsy of gummatous origin or hemiplegia from syphilitic thrombosis of the central arteries has no distinguishing features, per se; associate symptoms alone reveal its real nature. To describe these characteristic symptoms and to emphasize their importance in the diagnosis of cerebral syphilis in particular, is the object of my paper. A brief reference to the salient pathologic features of specific nervous disease is essential for the better understanding of the subject.

It is well known that syphilitic inflammation affects primarily the blood-vessels and meninges of the neu-

axis. While no part of this extensive territory is exempt from specific invasion, the most vulnerable parts are the convexity of the hemispheres, especially in their anterior portion, and more frequently still the base of the brain from the chiasm to the annular protuberance, involving the apparent origin of the cranial nerves. In both the meninges and the blood-vessels these gummatous products occur in two different states of aggregation, the one focal, the other diffuse. In the pia-arachnoid they are generally circumscribed; in the dura, on the contrary, diffuse gummatous infiltration is the rule. In the arterial walls they are also found as plaques or patches resembling atheroma, or as extensive infiltrations of the tunica intima. Remarkable peculiarities of this tissue are its rapid growth, low vitality and the rapidity with which it undergoes retrogressive changes.

Since the meninges envelop every part of the encephalo-spinal axis, and the blood-vessels traverse all its conducting paths and functional centers, a great number and variety of symptoms are to be expected in a general infection like syphilis, with a special predilection for these tissues. The symptoms of specific involvement of the nerve centers are, therefore, apt to be not only multiple but multiform. The initial manifestation may be, indeed, single, but if the disease be left to pursue its own course, evidence of multiple lesions will soon appear. Thus a double hemiplegia with aphasia, depending as it must upon two foci of disease, points to a specific origin, while a right hemiplegia, with or without aphasia, being of necessity due to a single lesion, indicates a common source. Of like significance is the association of symptoms of involvement of the third cranial nerve on one side with hemiplegia of the opposite side. A very striking exception to the law of multiplicity of lesion is the isolated loss of the iritic reflex to light, which is considered by Gowers to be an important indication of cerebral syphilis.

We have already called attention to the fact that the morbid product of syphilitic inflammation, the so-called gummatous exudate, grows rapidly and as rapidly disappears. The symptoms depending upon such lesions must possess the same transitory character. And this is true of all disturbances resulting from the specific process itself. Paresis, aphasia, strabismus and hemianopsia (when not associated with hemiplegia) of acute onset and brief duration, point almost unerringly to the primary effects of gummatous exudations. We must recollect, however, that these products may damage the nerve structures by pressure or by interference with their blood-supply, and that these secondary lesions belong in the class of necroses or degenerations, of which the effects may not be transitory but permanent.

Syphilitic arteritis is a curable malady, but when arterial thrombosis occurs with consequent ischemia and necrosis of that vascular area, the pathologic process is no longer specific, and the clinical history merges into that of common lesions, the disability becomes more or less permanent. Gummatous exudates, compared with other new formations, develop rapidly, and this pathologic feature gives to many specific lesions a characteristic onset. Cerebral hemiplegia of common origin has, as a rule, a sudden onset. Gowers claims that a sudden onset is characteristic of all vascular paralysis. When, however, the hemiplegia depends upon syphilitic thrombosis the onset is rather subacute than sudden. It is preceded by headache in

three-fourths of the cases according to Fournier. Other prodromic symptoms, such as brief spells of partial unconsciousness, transient aphasia, motor weakness on the side afterward paralyzed, are often observed. Fournier observed six cases of hemiplegia from this cause in which the muscular weakness slowly increased from day to day, the hemiplegia being the terminal stage of the process.

Ischemia, from narrowing of the lumen of the diseased artery and necrosis following its complete occlusion, necessitates a subacute onset. Exceptionally, however, a sudden and even fatal apoplexy occurs in specific arterial disease, but such sudden fatalities are caused by rupture of an aneurysm of one of the large vessels at the base of the brain. Again, syphilitic granulation tissue undergoes rapid absorption, and if uninfluenced by treatment is soon reproduced. As a result of this pathologic character the symptoms depending upon the presence of such exudates have a characteristically irregular course. A disease which pursues a uniformly progressive course is, in all probability, not due to a specific process. In this respect we may compare the course of syphilitic dementia with that of progressive paresis. The symptomatology has many points in common, but the course of the two diseases is quite different. Dercum, in differentiating these mental affections, makes the following point relative to syphilitic dementia:

"Even when the mental symptoms have been established they may suddenly recede and marked improvement may take place, to be followed, after an irregular interval of time, by a renewed accession of symptoms. On the other hand, spontaneous arrest and disappearance of certain symptoms may occur, together with the sudden appearance of others entirely new." What is here stated in regard to dementia is equally true of many somatic lesions.

Recurrent vesical disturbance of temporary duration, especially weakness of the detrusor muscle, is exceedingly valuable in the diagnosis of specific disease of the spinal cord. The clinical history of irritation or pressure affecting the cranial nerves often manifests the same irregularity. Gowers calls attention to a relapsing palsy of the third nerve. The well-known variations in the extent of the visual fields and the alterations in the pupillary reaction to light under varying degrees of pressure in the second and third nerves, respectively, are instances of the same irregularity in the evolution of specific diseases of the nervous system.

Headache is another very important stigma of cerebral syphilis. As before stated, it is present in three-fourths of the cases. Dangerous complications seldom occur without this prodromic symptom. It may be truly said that syphilis, like the rattlesnake, seldom strikes without warning. This headache is intense, generally referred to the depth of the brain, an encephalalgia. It is seldom diffuse, but localized in a definite region. When seated in the parieto-frontal region it is either unilateral or predominates on one side. One of the special characteristics of this headache is the regular exacerbations followed by remissions or intermissions to which it is subject. Absent, or quite supportable in the daytime, it reappears or becomes intensified in the early part of the night, and subsides gradually toward morning. Exceptionally, its maximum intensity is in the morning at the waking hour. Very seldom, indeed, does it persist night and day without any variation. This headache is

often accompanied by an evident change in the mental condition of the patient. In mild cases there may be only slowness of thought and inaptitude for sustained mental effort. In more pronounced cases there are veritable mental torpor, amnesia and a noticeable change of character. These prodromes acquire a still more precise signification when there are added to them formication and numbness of the extremities with transient or enduring pains.

Disturbances of sleep are also important stigmata of brain syphilis. Insomnia may be due to cerebral irritation, the result of initial organic changes in the blood-vessels or meninges. In other cases it is dependent upon the severity of the headache. The brain cells must be normally nourished to enjoy repose. The circulatory disturbances incident to specific changes in the brain tissue interfere with cellular nutrition, producing a state of irritable weakness and resulting wakefulness. Insomnia belongs, therefore, among the early manifestations of the disease. Like the other symptoms to which reference has been made, its diagnostic value is derived from association. Grey claims that both insomnia and headache cease on the supervention of paralytic or convulsive phenomena. In two cases of syphilitic hemiplegia recently observed by me, they were greatly, but not completely, relieved. Somnolency is a threatening prodrome of the cerebral complications of syphilis. It varies in intensity from mere drowsiness to profound lethargy. It is usually preceded by a period of very violent headaches. The sufferer pays but little attention to his surroundings. His countenance is dull and expressionless. He has attacks of vertigo, partial loss of consciousness and transient aphasia. He is usually compelled to keep his bed, sunk in almost continual sleep. At night there are mental wanderings and muttering delirium, resembling those of typhoid fever. His groans and complaints plainly show the continuance of violent pains in his head. If, during this semi-comatose condition, symptoms of involvement of the third pair of cranial nerves develop, such as diplopia, strabismus, ptosis, etc., they are evidently dependent upon basal syphilitic meningitis. Absence of fever and a tendency to spontaneous recovery, notwithstanding these ominous symptoms, are additional elements of great diagnostic value. In the milder cases the patient may attend to business, but his executive ability is greatly impaired. His memory is poor. He is unable to concentrate attention upon the matter in hand, and often falls asleep at work, though the previous night may have been passed in deep and continual sleep.

Circulatory disturbance, the result of arterial disease, is evidently the causal factor in these cases. Accordingly, many such cases, if not early detected and properly treated, eventuate in thrombosis, softening and hemiplegia. The value of these stigmata in the diagnosis of the cerebral complications of nervous syphilis is well illustrated in the case of syphilitic epilepsy. It is of quite frequent occurrence. Heubner encountered it twenty times in twenty-six cases of cortical syphilis. The attacks may assume all the known forms of comitial disease, from the mere vertigoes and momentary absences of petit mal to the convulsive attacks and psychic equivalents of grand mal. While the first attack may appear in apparently perfect health, it is usually preceded by the whole cortège of premonitory phenomena common to cerebral syphilis. Severe nocturnal headache is a very common precursor of

the initial paroxysm. The age at which it begins is likewise a valuable stigma. Essential epilepsy begins in early life. When, therefore, epilepsy makes its first appearance in middle life, it is in all possibility, of specific origin. Again, syphilitic epilepsy does not pursue the monotonous inexorable course of the common affection, but bears the stamp of irregularity. This irregularity is manifested by a gradual shortening of the intervals between the paroxysms, eventuating in a series of rapidly recurring attacks, coma and death. It never exists for any great length of time as an isolated affection. It bears the stamp of multiformity. There are soon associated with it various symptoms differing from those of the ordinary disease. Cortical paresis, at first transient and following the attacks, may become paralysis and persist indefinitely.

While there is some loss of memory in essential epilepsy, especially when it becomes chronic, in the specific disease memory is very greatly impaired, and in some cases complete amnesia is manifest from the very first attack. The symptoms of paresis or paralysis of the oculomotor nerves are often added to the combination. Double optic neuritis frequently co-exists, this being in itself characteristic, in that its course is more rapid than when dependent upon any other lesion, not excluding cerebellar tumors. These stigmata also render valuable aid in the differentiation of syphilitic from parietic dementia.

1. Headache is present in both affections, but has different characteristics in each. In specific dementia it is of the usual persistent, paroxysmal, nocturnal type, while in paresis, though a very few severe spells are common, they never occur in long-continued series.

2. Syphilitic dementia pursues a characteristically irregular course. Paralytic phenomena which belong to the final stage of paresis may even precede the mental degeneration of the specific malady. The course of mental decay in paresis is progressive, with but few exceptions, while that of specific dementia is variable. In the latter some symptoms may wholly disappear to be replaced by others of a very different nature. Great mental improvement may take place, the mind may clear up and lucid intervals of long duration supervene.

3. If in a doubtful case, ptosis, strabismus, aphasia, or other paralytic symptoms develop, and especially if it be short-lived, the diagnosis is rendered certain, for suddenness and brevity are the brands of the motor phenomena of cerebral syphilis.

To recapitulate: Syphilis of the nervous system usually manifests itself in middle life, its serious complications being preceded by headache, insomnia or somnolence. It has an acute or subacute onset, pursues an irregular or atypic course, presents a multiplicity or multiformity of phenomena—the distribution of the paralytic symptoms being quite erratic—and causes a very early and marked impairment of the mental faculties.

Anatomic Studies in Insane Asylums.—Nissl made an urgent plea at the German Congress of Alienists, in September, for co-operation in the exact study of the anatomic foundations of the psychiatry of the brain. He proposed that a certain accepted region of the cortex should be studied by his method on a large number of brains in the various establishments, which will further the cause of science much more than a few single brains exhaustively studied.—*Klin-therap. Woch.*, September 25.

THYROID EXTRACT.

SOME RESULTS OF ITS ADMINISTRATION ON THE RED AND WHITE CORPUSCLES AND HEMOGLOBIN IN CASES OF ANEMIA ASSOCIATED WITH MELANCHOLIA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY SAMUEL BELL, M.D.

MEDICAL SUPERINTENDENT, UPPER PENINSULA (MICHIGAN) HOSPITAL FOR THE INSANE, NEWBERRY, MICH.

The field of thyroid therapy, in the light of our present knowledge, is quite limited; experimental data have accumulated during the last year indicating various results. The most favorable, also the most reliable, were given by Ewald of Berlin, in epileptic psychoses, acromegaly, rachitis and Basedow's disease, to the International Congress of Medicine at Weisbaden; also by Professor Bruss of Tubigen, on goiter of the follicular variety, as being affected in a certain and prompt manner; cretinism is reported on by Schmidt; tetany and acromegaly by Schultz of Bonn.

Since beginning a series of experiments in cases of anemia, accompanied, or preceded, by melancholia, I have also observed some recent results, some of which were very good, obtained by Dr. Babcock of the St. Lawrence State Hospital, New York, in a variety of selected cases of mania and melancholia. At the Upper Peninsula (Mich.) Hospital for the Insane nine cases were under treatment in the first series, seven females and two males, all suffering from some form of mental depression.

Blood examinations were made before treatment, weekly, during and afterward, consisting of the enumeration of the red and white corpuscles and the estimation of the percentage of hemoglobin in each case. The counts were made with the Thoma-Leitz instruments, also by centrifugalization; the percentage of hemoglobin was estimated by Fleischl's hemometer. In normal blood in adult life the average number of red cells per cm. is estimated at about five millions for men and four millions five hundred thousand for women. The normal number of white cells per cm. is seven thousand five hundred. In hemoglobin examinations 100 per cent is considered normal when using Fleischl's instrument.

Case 1.—A. K., female, age 27. Had been under treatment about three months, with very little, if any, noticeable improvement. Strong symptoms of passing into primary dementia were present. A selected diet, tonics, exercise and different forms of electricity were all utilized in her case, without any apparent improvement. She was pale and anemic, with a phlegmatic temperament, and was hallucinated. Liver and intestinal secretions inactive, complicated by constipation and mental inertia. Thyroid treatment was begun, giving one 5 gr. tablet three times a day; the dose was gradually increased until fifty grains were being taken daily. This treatment was continued for one month. The temperature and pulse were taken twice a day. During the first ten days of treatment the temperature fluctuated between 98 and 99.4 degrees. When the maximum treatment was given the temperature rose to 101 degrees, remaining there but one day, when it declined to normal, remaining there during the last week of treatment. Pulse at beginning numbered 62; on the second day 50; on the tenth 100; and during the remainder of the month ranged between 98 and 72, the latter when treatment stopped. Pulse increased in rapidity and volume as the temperature rose. When treatment was discontinued there did not appear to be either physical or mental improvement, and for this reason it was no longer continued; her weight now commenced to increase rather rapidly and in a month she gained seventeen and one-half pounds.

Blood examination.—Red cells were normal, or a little above, at beginning and remained so during treatment, until about one day before treatment was stopped, when they diminished about one million; they were about one-sixteenth normal size. Hemoglobin was below normal at beginning and increased about 10 per cent. during treatment; 90 per cent. at commencement, 81 third week and 77 at close. White cells were below normal at beginning, increased 3460 the first week, dropped during the fourth week, and at the close there was an average increase of 2760. In this case the red corpuscles diminished in both size and number, while the white, as also the hemoglobin, increased.

	Red corpuscles.		Leucocytes. Thoma-Leitz.	Hemoglobin.
	Thoma-Leitz.	Centrifuge.		
Feb. 22 .	4,544,000		5,400	70 per cent.
Mar. 1 .	4,736,000		8,860	72 per cent.
Mar. 8 .	4,560,000	3,696,000	8,660	75 per cent.
Mar. 16 .	4,776,000	4,032,000	5,040	81 per cent.
Mar. 22 .	4,704,000	4,368,000	8,160	77 per cent.

Case 2.—M. E., female, age 23. Profoundly depressed, with an anemic appearance. Small amount of adipose tissue. Had been under treatment for nearly five months, without any beneficial results. No physical disease present. When thyroid treatment was commenced the temperature was subnormal, 97 degrees; pulse 80, with cold extremities. Mental activity very sluggish. Second day after this treatment had begun, temperature increased 1 degree; on the tenth day it was 99 degrees, and remained there during treatment. Three 5 gr. tablets were given per diem, and the dose gradually increased until 35 grains were being taken daily. The temperature reached its highest point when 25 grains were being taken. The pulse in this case did not vary much with the change in temperature; during the last week of treatment it ranged from 100 to 116, being a difference of from 20 to 36 at the commencement of treatment, while the temperature remained normal or below. This case was both stuporous and stubborn, was affected rapidly, even by small doses. The cold extremities and surface generally was changed, the blood filling the superficial capillaries and continued so, with some improvement in mental activity, which lasted during treatment; no permanent improvement followed. This patient had received, prior to being admitted at the Upper Peninsula Hospital, a very severe burn, which necessitated amputation of arm at shoulder and subsequently quite extensive skin grafting. During the thyroid medication the old wound, which had almost healed, took on an irritative condition, retarding granulation quite seriously. Physical condition did not change, although she now shows a gain of five pounds in weight.

Blood examination.—The red corpuscles were small and above normal in number from the beginning of treatment until the close, about five million per cm. Leucocytes numbered 8330 at commencement and 5250 at close, showing a diminution of 3080. Sixty-seven per cent. of hemoglobin at beginning increased to 85 during the first week, second week 77, third 82 and fell to 64 at close of treatment, being lower than when treatment was begun. This case differs from the others in that the amount of hemoglobin was reduced, also the number of white corpuscles, while the red cells were not perceptibly influenced.

	Red corpuscles.		Leucocytes. Thoma-Leitz.	Hemoglobin.
	Thoma-Leitz.	Centrifuge.		
Feb. 24 .	5,072,000		8 330	67 per cent.
Mar. 2 .	5,528,000		7,650	85 per cent.
Mar. 9 .	4,992,000	4,516,000	6,940	77 per cent.
Mar. 16 .	5,032,000	4,312,000	8,350	82 per cent.
Mar. 23 .	5,956,000	3,696,000	5,250	64 per cent.

Case 3.—H. G., male, age 30. Treatment begun with 15 grains and increased to 45 per diem. Before beginning treatment temperature was 97 degrees; on the third day 98; on the sixteenth 99.4, the highest point reached during treatment, dropping again to 98 and remaining there during the remainder of treatment. Pulse, 72 at beginning, increased to 100 and dropping again to 80 when treatment ceased. This case was of more than ordinary interest; a young man of good family became depressed and attempted suicide by cutting his throat with a meat ax. After being received at the hospital, he was placed on appropriate treatment, such as tonics, exercise, gymnastics, games, etc., everything with a view to the removal of the cloud from his mental horizon. His case did not yield to this line of treatment; periodic depressed spells were becoming prolonged. At this time he was placed on thyroids. After two weeks' treatment, temperature began to increase, and *pari passu* the mental depression began to give place to a brighter, more cheerful and observing condition; so marked was the change in his general appearance that his friends, in visiting him, observed the improvement. No relapse has occurred and

the periods of mental depression which were quite frequent before, have entirely disappeared. Patient was discharged, in every way much improved and, to all appearances, entirely recovered. His physical condition was a great deal better, having gained twenty pounds.

Blood examination.—Red cells were found to be normal, or slightly below, both in number and size; at commencement numbered 4,728,000, and about the same at the close. The leucocytes were below normal at commencement of treatment (5900) and at the close numbered 8,230, being an increase of 2330. Ninety-one per cent. of hemoglobin at beginning and 94 at the close. This case showed a marked increase in the white corpuscles and a 3 per cent. increase in the hemoglobin, while the character and number of the red cells were not materially changed.

	Red corpuscles.		Leucocytes. Thoma-Leitz.	Hemoglobin.
	Thoma-Leitz.	Centrifuge.		
Feb. 26 .	4,728,000		5,900	91 per cent.
Mar. 3 .	5,096,000		6,280	90 per cent.
Mar. 10 .	4,680,000	4,704,000	8,500	85 per cent.
Mar. 17 .	4,784,000	4,256,000	8,230	94 per cent.

Case 4.—L. B., female, age 36. Under thyroid treatment one month, commenced with 15 grains and increased to 30 per diem. Temperature 98.5 when first dose was given; four days later was subnormal; on the tenth day rose to 99.4, the highest during treatment, and then ranged from 98 to 99 during balance. The pulse was slow at first, and remained so during the greater part of treatment, except during the last few days, when it ran up to 110 and 112. This patient's intellect was not very well developed; had given illegal birth to a child. Was anemic and did not respond to chalybeate and other adjuncts for the building up of the mental and physical condition. She suffered from melancholia agitata and did not improve, either physically or mentally, as the result of this treatment. It is now four months since the treatment ended, but the same fixed delusions and hypochondriacal condition remains. Her weight fluctuated and is now a little below what it was when treatment was discontinued. No blood examination was made in this case.

Case 5.—L. H., female, age 33. Mother of four children. Suffering from a mild form of melancholia with hallucinations. Had been under treatment in the institution about eight months before beginning with the thyroids, without any benefit. Commenced with the usual dose and increased to 25 grains daily. Temperature increased about 1 degree almost immediately, and at the end of thirteen days reached 101.2 degrees, declining gradually to normal and not rising again during remainder of treatment. Circulation increased gradually in conjunction with the temperature; when the latter was highest the pulse was 100, showing an addition of 40 beats, it being but 60 at commencement. At the close of treatment, there was no improvement, either mental or physical; indeed the depression seemed to be more profound and a more anxious appearance generally. Treatment was ended on December 22, and she was then placed on general tonics, together with electricity similar to that which had been given her prior to the thyroid treatment. Her weight now began to increase; during the first month gaining ten pounds; the second month eight pounds, and on the 23d of the third month, when she was discharged cured, her weight showed an increase of twenty-two and one-half pounds. A dense mental cloud which seemed to hang over her less than three months before, and seemed to be deepening, after this treatment gave way to a brighter, happier, more cheerful and appreciative responsive condition, which can only be appreciated thoroughly by her family, friends and those having her welfare at heart. No blood examination was made.

Case 6.—E. S., female, age 25. Mother of two children. Depressed. Had been considered mentally unbalanced for upward of four years before being received at the Upper Peninsular Hospital. Had made an attempt to destroy her two year old child by burning. Began taking 18 grains of thyroid daily, and increased to 27 grains in two weeks. Temperature was 97.4 at beginning; on the third day increased two degrees, and remained at 99.4 during the balance of treatment, with the exception of a brief interval, when it declined to about normal, but immediately rising again. Examination of the urine revealed, at first, traces of albumin, with very few pus corpuscles, urea normal, 2.8 per cent.; at the close of treatment, pus corpuscles had increased, specific gravity increased from 1012 to 1026. Pulse had increased from 66 to 116. Two weeks after treatment ceased her weight had increased six and a half pounds.

Blood examination.—The red blood cells were reduced, also the hemoglobin, the latter 14 per cent., and the white cells increased about one thousand.

	Red Corpuscles.		Leucocytes. Thoma-Leitz.	Hemoglobin.
	Thoma-Leitz.	Centrifuge.		
Mar. 12 .	5,072,000	4,704,000	7,540	94 per cent.
Mar. 19 .	4,884,000	4,704,000	7,690	90 per cent.
Mar. 28 .	5,040,000	4,368,000	7,640	80 per cent.
Apr. 2 .	5,176,000	3,696,000	6,950	82 per cent.
Apr. 8 .	4,364,400	4,368,000	7,030	83 per cent.
Apr. 15 .	4,704,000	4,256,000	8,850	80 per cent.

Case 7.—E. A. C., female, age 45. Suffering from melancholia, with delusions. Would sit in the hall without apparently observing any object or person, from day to day. Suffered from hemicrania. Began by taking 16 grains and increased to 35. Temperature was normal at beginning, and was not increased throughout treatment, but decreased, being 97 degrees at the end of thyroid medication. Circulation was much more affected than the bodily heat, increasing from 74 to 120 per minute during the first ten days of treatment. Urinal examination showed pus corpuscles, epithelium and traces of albumin present throughout treatment; specific gravity 1018; urea 1.2 per cent. Weight remained practically the same during treatment, also after.

Blood examination.—In this case the red blood corpuscles were slightly decreased and the white increased, the latter about two thousand. Hemoglobin remained substantially the same.

	Red Corpuscles.		Leucocytes. Thoma-Leitz.	Hemoglobin.
	Thoma-Leitz.	Centrifuge.		
Mar. 26 .	4,448,000	4,368,000	5,160	80 per cent.
Apr. 3 .	4,061,600	4,256,000	6,400	82 per cent.
Apr. 8 .	5,088,000	4,480,000	6,950	82 per cent.
Apr. 15 .	4,401,600	3,696,000	7,000	80 per cent.

Mental influence.—In the last two cases there was a marked change: a despondent and forlorn appearance has given place to a brighter and more cheerful condition.

Case 8.—P. F., male, age 44. Suffering from stuporous melancholia. Began treatment with 15 grains per diem and increased to 30. Temperature was immediately affected, increasing from 98 to 101 on the third day after treatment had commenced. On the sixteenth day it rose to 102, declining to 101, and remaining there during balance of treatment. Pulse was not influenced so much as the bodily heat, not varying more than twenty beats. Notwithstanding the temperature was markedly influenced there was no improvement in the mental activity. Pus as well as blood corpuscles and traces of albumin and epithelium were present in his urine. In this case the bodily weight was not changed to any appreciable extent.

Blood examination.—The white cells, numerically, were not changed; the red cells were slightly diminished, while the hemoglobin was reduced 14 per cent.

	Red Corpuscles.		Leucocytes. Thoma-Leitz.	Hemoglobin.
	Thoma-Leitz.	Centrifuge.		
Mar. 28 .	4,548,000	4,592,000	6,850	79 per cent.
Apr. 4 .	4,184,000	4,144,000	7,570	76 per cent.
Apr. 11 .	3,700,000	4,592,000	6,660	75 per cent.
Apr. 18 .	4,208,000	4,480,000	6,500	65 per cent.

Case 9.—E. B., female, age 44. Mother of four children. Suffering from melancholia gravis or hypo-melancholia; great mental anxiety. Impairment of motion and inhibition, which dated back about one year from the death of her husband, who was killed by an accident in a mine. There was an entire suppression of the menstrual molimen. Every remedy, therapeutic and otherwise, was exhausted in her behalf, without permanent benefit. She began taking one 5-grain tablet three times a day on March 26, 1898; on the fourth day after beginning treatment the temperature dropped to 97 degrees. Twenty grains were given; the system seemed profoundly impressed; the temperature rose to normal, dropping again to subnormal, treatment was relinquished on the eleventh day on account of the increasing exhaustion. The pulse and respiration were increased slightly. The systolic cardiac impulse very much decreased. Lost eleven pounds in weight during the eleven days of treatment. No improvement in mental or physical condition either during treatment or since it has ceased.

Blood examination.—Red corpuscles increased 728,400; leucocytes 1,330, and hemoglobin 7 per cent.

	Red Corpuscles.		Leucocytes. Thoma-Leitz.	Hemoglobin.
	Thoma-Leitz.	Centrifuge.		
Mar. 25 .	3,624,000	4,144,000	5,200	70 per cent.
Apr. 2 .	4,362,400	4,368,000	6,530	77 per cent.

THErapy AND THEORY OF ACTION.

There are, according to some very reliable authorities, two main theories advanced. The first is the auto-infection theory—the gland having for its func-

tion the destruction of the natural toxins; without the latter we have the condition known as myxedema. The second is the internal secretion theory—the thyroid being considered as a secreting organ. The secretion is taken up by the lymph vessels and is necessary for the proper metabolism of the body, especially for nervous and connective tissue. According to either of these theories, the administration of the desiccated gland supplies the lacking secretion, which may be some chemic substance that is necessary to health or even life. Ewald, in a pithy sentence, states that the gland acts as an antitoxin against certain elements that appear as by-products of tissue change. The exact constituents of this substance have never been definitely made known. An organic iodine compound from the sheep thyroid has been extracted, called thyro-iodine, and in the present state of our knowledge the weight of authority is in favor of this being the effective chemic agent in thyroid therapy.

The rationale of this treatment is not very clear. It may be of great value in mental diseases as a method of diagnosis, but it is difficult to comprehend just how this treatment could improve a case where degenerative changes have taken place in the cell structures. Based on the theory of auto-infection, frequently cases have occurred where malaria, typhus and pleurisy are capable of developing in the blood antitoxins that have resulted in curing cases of mental disease. It is not unreasonable to suppose that in cases of mental alienation due, it may be, to some toxin, rather than to a lesion of the brain, the action of the thyroid is to promote metabolism. This being the case, the utility of thyroid therapy is obvious. In the series of cases treated by me, I have observed that those who were not benefited are developing symptoms of organic disease and passing into a condition of chronic dementia, while in those who were improved, it is a reasonable deduction, on the antitoxin theory, that the condition was functional, and that cellular disorganization had not taken place. Nine cases received the thyroid medication and were under close medical supervision; in five cases there was a marked change for the better, the other four were not, so far as we could observe, favorably influenced, physically or mentally, either during the treatment or since. Three of the five who were improved began to increase in weight during the treatment, and two of them did not until after treatment was relinquished. The psychologic effect was observed almost from the beginning of treatment in those who were permanently improved.

It was noticeable that the minimum dose would produce a systemic effect in some more rapidly than a maximum dose in others. Every case requires close observation and the dose graduated in accordance with the effect produced upon the nerve centers and circulation, or in other words, every case must be a law unto itself. Fifteen grains per diem was the maximum dose to begin with, in some gradually increased to fifty in accordance with indications.

The Modern Magazine.—Managing Editor—"How many pages have you?" Foreman—"Two hundred and twenty-four." Managing Editor—"Two hundred and twenty-four! That would be too bulky. How is it proportioned?" Foreman—"One hundred and ninety pages of advertising and thirty-four pages of reading matter." Managing Editor—"Bring me the proofs of the reading matter. We will have to cut down to 200 pages."—*Ohio State Journal.*

ACUTE MENINGITIS.

OBSERVATIONS ON DIFFERENTIAL DIAGNOSIS AND TREATMENT.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY DANIEL ROBERTS BROWER, A.M., M.D., LL.D.

Professor of Mental Diseases, Materia Medica and Therapeutics, Rush Medical College, Chicago University; Professor of Diseases of the Nervous System, Women's Medical School, Northwestern University; Professor of Diseases of the Nervous System, Post-Graduate Medical School.

CHICAGO, ILL.

The differential diagnosis of the various forms of meningitis is, in my experience, often impossible. There are, however, two methods of certain diagnosis, when available. One is by lumbar puncture of the spinal cord, as recommended by Quincke and Ziemssen, and the bacteriologic examination of the withdrawn fluid to determine the micro-organisms which are present, and the other depends on the Sker sign, described by me in a clinical lecture published in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Jan. 7, 1888, and by Dr. Sker of Chicago twenty years before. The Sker sign when present will enable a diagnosis of



tubercular meningitis to be made very early. It is due to the deposition of tubercle around the pupillary margin of the iris. It shows itself first as a distant wreath of white clouds about a millimeter from the margin (see Fig. 1). This sign occurs before any change has taken place in the size of the pupillary orifice. After three or four days these minute cloud-like masses disappear and a yellowish-brown circle takes their place. (see Fig. 2), becoming more and more attenuated as the pupil dilates. These secondary changes are doubtless due to degeneration of blood-vessels from the tubercular deposits. Unfortunately, this sign is frequently absent, but when present is pathognomonic of tubercular meningitis.

The treatment of the various forms of acute meningitis is very unsatisfactory, as you all well know, not only because of the almost constantly present nausea and vomiting, but also because of the very high mor-

tality. The difficulty of medicating by the mouth led me to adopt, some fifteen years ago, the method of inunction; first with mercury without any success, and then iodoform with some success. I prefer to use the 10 per cent. ointment of iodoform and lanolin, believing that lanolin favors the absorption of the iodoform, this to be applied daily to the shaven scalp. Absorption usually takes place promptly, as I have been enabled to detect the iodine in the urine and saliva one hour after the inunction. The amount absorbed can not be very great, as I have never seen the untoward effects that sometimes follow the use of iodoform in open wounds. I have used in the treatment of a single case as much as 10 grams of iodoform.

The following list of cases was seen in consultation with Chicago physicians from time to time and the results of treatment have been obtained from their statements:

	No. cases.	Recoveries.	Deaths
Dr. J. S. Hunt (deceased)	8	6	2
Dr. J. W. Fitzmaurice, 2876 Archer Ave.	6	4	2
Dr. P. H. Conley, 477 Grand Ave.	2	2	0
Dr. M. L. Loevenson, 523 S. Jefferson St.	2	1	1
Dr. W. D. Neel, 329 W. Erie St.	10	6	4
Dr. David O'Shea, 109 W. 21st St.	7	6	1
Dr. Wm. Martin, 100 State St.	2	1	1
Dr. G. W. Reynolds, 1924 Arlington Pl.	3	3	0
Dr. D. R. Brower, 34 Washington St.	5	3	2
Total	45	32	13

In one of the cases that died in the practice of J. S. Hunt, and in one of the cases I have reported as terminating fatally, the Sker sign was present, making the cases tubercular meningitis. In the other fatal case I have reported, lumbar puncture determined the bacillus tuberculosis to be present.

The following letter was received from Dr. George W. Reynolds:

You asked me to write up the histories of the three cases of cerebral meningitis which you saw with me in consultation. Those cases date back a number of years, and no records of them are now in my possession, although the patients' histories, diagnoses and treatment are still vivid in my recollection. I can remember that after all methods of treatment had been tried and no improvement and death seemed inevitable, you suggested shaving the head and rubbing into the scalp a 10 per cent. inunction of iodoform daily. This treatment was continued daily until marked improvement was evident, after which the frequency of dosage was lengthened to two or more days until the patient was convalescent. In the first case, a child of 2 years, with all the characteristic symptoms of cerebral meningitis well pronounced, who had been ill two or three weeks before you saw him. At that time he was comatose, the fontanelle was open wide and the brain pulsations could be distinctly felt. High temperature and general symptoms indicating a serious cerebral meningitis, with a very grave prognosis. After a week or ten days of the iodoform treatment a marked improvement manifested itself, and the same line of treatment was pursued, but less frequently, until the child appeared perfectly well and was discharged cured. I saw the patient a few days ago, now a boy 12 years of age, and was informed by his father and mother that he was bright and well up in his studies at school. The other two cases I have been unable to locate, although I have tried to do so, consequently my delay in sending you these notes. However, I can assure you that they recovered and were under my observation for one or two years after they were treated by the same method, and were, to all appearances, well. Yours very truly,
G. W. REYNOLDS, M.D.

This communication is presented to the Neurological Section for the purpose of provoking a discussion on the two important topics indicated in the title, hoping to add something to our fund of knowledge in these important matters.

DISEASES OF NERVES REQUIRING SURGICAL TREATMENT.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. HERBERT AUSTIN, M.D., M.R.C.S., ENG.

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I appear before you, gentlemen, not as a neurologist but as a general surgeon. No specialty is entirely isolated. The work of any of us should interest us more or less. The best specialist is he who is well posted on subjects besides those in his own particular line of work.

The nervous system is the most wonderful system in the human body, connecting together, as it does, in some mysterious manner the mental and the physical. It has complete control of the physical, governing all our movements, both voluntary and involuntary. It depends largely upon the site of the lesion in the nervous system as to how grave will be the damage resulting. If in a terminal nerve, such as the ulnar, the parts supplied by it are rendered powerless and motionless; while an injury of the cervical region of the spinal cord reduces the body in an instant to a state of inaction, indifference and paralysis.

From what has already been said it will be seen that the treatment of disease and injury of the nervous system in so far as it interests the surgeon, affords an immense field for further study and research. This study is rendered further interesting from the fact that there is no system in the human body where recuperation takes place to such a marked extent. I am sure that it is a great pleasure to us all to note the very great advances that have been made in surgery of the nervous system within the past few years, so that cases are now successfully treated which but a few years ago would have been regarded as beyond human aid.

In considering the surgery of the nervous system we at once see that it is, of necessity, divided into three parts, namely: 1, surgery of the brain; 2, surgery of the spinal cord; 3, surgery of the nerves. In the third division we find two-subdivisions: *a*, injuries to nerves, such as contusions, strains, compressions, rupture or laceration, puncture, division, foreign bodies in nerves; *b*, diseases of nerves requiring surgical treatment.

This is the portion of the surgery of the nervous system that I wish to touch on. There are seven under this heading that attract our attention: they are sciatica, neuralgia, muscular tic, traumatic paralysis, traumatic neuritis, new growths and tetanus.

SCIATICA.

This affection is often called a neuralgia, but it is in reality generally a neuritis or a peri-neuritis. There are two forms: primary, which is generally of idiopathic origin and usually a neuritis; secondary, which follows some affection of the pelvis, spinal cord or hip-joint and is often a neuralgia. The more common causes are exposure to cold or damp, especially after severe muscular exertion, and the pressure of pelvic tumor on the nerves. Various constitutional conditions, such as gout, rheumatism, syphilis and anemia, are often present. About four males suffer from this disease to one female.

Morbid anatomy.—As stated above it is generally a neuritis; the nerve is red and swollen but the nerve fibers are not often destroyed.

Symptoms.—Pain of a shooting character, which passes down the nerve, is the principal one. The pain is due to the implication of the nervi nervorum. The pain is always increased by any movement. Some spots, usually at the notch and in the middle of the thigh, are more sensitive than others, and become exquisitely painful on pressure. The neuritis in rare instances ascends and involves the cord. Wasting of the muscles occurs in protracted cases, but the reaction of degeneration can seldom if ever be obtained. The duration as well as the severity varies very much, but as a rule it is an obstinate affection, lasting for months, or even, with slight remissions, for years. Relapses are common, and the disease may be relieved in one nerve only to appear in another.

Diagnosis.—Determine whether the disease is primary or secondary to some affection of the pelvis, spinal cord or hip-joint. Affections of the hip-joint can be easily distinguished by the absence of tenderness in the course of the nerve and the pain caused by movement of the hip-joint or by pressure in the region of the trochanter. If sciatica exists, and the hip-joint be sound, then the movements of the joint are free and unaccompanied by pain, unless flexion is carried far enough to render the nerve tense. A careful rectal examination should be made, and in women pelvic tumor should be excluded. Careful examination will usually distinguish between sacro-iliac disease and sciatica. Pressure on the nerve trunks of the cauda equina as a rule causes bilateral pain and disturbance of sensation, and as double sciatica is rare, these symptoms always suggest lesions of the nerve roots. Clearly defined differences usually exist between the severe, lightning pain of tabes and the pain of sciatica.

Treatment.—The internal treatment depends on the case, i.e., whether there are any constitutional conditions existing which require attention. Absolute rest in bed from three to five weeks, fixing the leg on a splint to have as little tension on the nerve as possible, has proved to be especially useful. Osler recommends hydrotherapy, especially the warm baths or mud baths. He states that many severe cases are much relieved by a prolonged residence at one of the thermal springs. In severe cases local applications are often useful. Cold may be applied by means of ice, coil, etc. Counter-irritation, if desired, may be employed by means of a thermocautery or by blisters along the sciatic nerve. Massage is useful; press deeply down and draw the nerve away from the cord. Where the pain is extremely severe, deep injections into the nerve of cocain or eucain, $\frac{1}{8}$ or $\frac{1}{4}$ grain, will give great relief. Morphin, on account of its being such a dangerous remedy in sciatica, because of the great risk there is of the morphin habit being contracted, should be withheld as long as possible, and only when the pain is really unbearable. Never allow a patient to use a hypodermic needle. If milder measures fail then operative procedures should be tried. These are either acupuncture or nerve-stretching. Acupuncture is performed as follows: The patient is laid on his face and any tender spots located by pressure. The nerve should now be punctured by several needles. This will cause a sudden, sharp pain to shoot down the thigh. These needles, which should not be more than a half dozen in number, after being left in for a few moments, are removed and a permanent cure results.

Nerve-stretching.—There seems to be some differ-

ence of opinion as regards the value of this operation in sciatica. Dr. Weir Mitchell states that he never yet met a case where nerve-stretching was necessary, while Erichsen says that this operation has been more successful in sciatica than any other painful affection for which it has been undertaken. This operation was originally introduced by Nussbaum as a mode of treating intense neuralgia following injury. But to Marshall belongs the honor of having first suggested its use for neuritis. He was first to conclude that nerve trunks must contain sensory fibers, distributed in their sheaths, i.e. the *nervi nervorum*. Since that Victor Horsely has clearly shown that medullated fibers terminating in tactile corpuscles exist in the perinsurium and epiceurium of all nerves. From this fact, then, we may conclude that the pain and tenderness of the nerves in neuritis is explained by the pressure upon the *nervi nervorum* and new connective tissue. Now, since in stretching a nerve the strain is first brought to bear on the sheath in which the *nervi nervorum* ramify it is easy to understand that they may be stretched or torn to such an extent as to destroy their conducting power, and thus render the nerve insensible without preventing its transmitting sensory and motor impulses through its proper tubules. It is more convenient to make the incision about the middle of the back of the thigh than at the lower border of the *gluteus maximus*, because here the whole of the ham-string muscles must be drawn inward and the nerve sought for external to them. Expose the nerve by an incision parallel to its course, properly clean it from the surrounding tissues, and then raise it with a blunt hook on the forefinger. Stretch it both centrifugally and centripetally; maintain the traction for about five minutes. The force to be used varies with the size of the nerve. The surgeon must decide as to the force to be used in each separate case. Experiments go to show that the breaking strain of a healthy sciatic nerve is never under eighty pounds.

NEURALGIAS.

These are nerve pains which may or may not be due to organic lesion; to functional disturbance of the central or peripheral extremities of the nerve or to neuritis in the course of the nerve. Neuralgia may occur in almost any part of the body, but is most frequently found in the division of the fifth pair of nerves. In some cases the whole or part of an organ may be affected, while in others one of the larger joints is the seat of very severe suffering. In a third class of cases the extreme cutaneous sensibility is the most marked symptom, the patient wincing and suffering severely whenever touched, however lightly.

Etiology.—The causes of neuralgia are numerous. They may be either constitutional or local. There may be some source of irritation, or an abnormal condition of the ganglionic cells of the sensory nerves may exist. Depressing influences of all kinds are very apt to produce it; and hysteric temperament may cause a spinal and articular form, while various peripheral irritations give rise to some of the more obscure forms of neuralgia. Among the causes may be mentioned exposure to cold, pressure on the nerve, toxic influences, overwork, and various constitutional conditions, such as rheumatism, general debility, anemia, etc. Neuralgia occurs oftener in association with anemia than any other constitutional condition, and this fact explains its frequency among females.

Symptoms.—Pain is the most important symptom. It is of a spontaneous nature; occurs in paroxysms; runs along the course of the nerve by the *nervi nervorum*, and is of a darting, burning character. These paroxysms, lasting from a few moments to some hours, may return at regular intervals. Certain tender points exist along the course of the nerve, usually where the nerve passes from a deeper to a more superficial position. These pains are supposed to be caused by sudden explosions in the ganglionic cells in the gray matter of the cerebrum, where all nerve fibers terminate. Other symptoms of neuralgia are numbness, transient hyperesthesia, vomiting, and various vasomotor disturbances.

Diagnosis.—This is usually easy. From organic disease of a part it can be distinguished by the presence of great superficial tenderness; by a hysteric temperament and by the absence of all the other symptoms of organic disease; from inflammation, by the intermittent nature of the pain, by its occurring in hysteric subjects, and by the absence of the constitutional symptoms of inflammation. When inflammation and neuralgia exist together the diagnosis may be difficult. Here the presence of superficial tenderness and a relief of the pain by deep pressure points to neuralgia, while in inflammation there is no tenderness of the surface, and on deep pressure the pain is extreme.

Treatment.—The treatment varies with the cause. If the cause can not be removed, the disease is incurable, although the suffering may be relieved by suitable means. If the patient's general health is poor, then the neuralgia will recur unless he is built up with tonics and general hygienic measures. For the pain, local applications of a sedative nature, such as opium, aconite, belladonna or chloroform, are often useful. Some of the newer remedies—antipyrin, phenacetin, or antifebrin—should be tried. These failing, then morphin may be tried, but with care, the patient never being allowed to use the hypodermic needle. Cocain, hypodermically, usually relieves the pain for a time. Acupuncture may be tried, or aquapuncture, i. e., the injection of distilled water beneath the skin. Freezing the part with ether spray often proves useful. The continuous electric current may be used, placing the positive sponge near the seat of pain, and with the negative gently rubbing the neuralgic spot until the skin is slightly reddened, and until it causes a slight tingling or burning, but not pain. In the most intractable cases the surgical means that may be tried are nerve-stretching or excision of a portion of the nerve. Of the two operations the latter is to be preferred, but too often the pain returns after it. In fact, the operation can only be of use when the pain is peripheral, due to some irritation existing between the part cut and the ends of the nerve. If the neuralgia depends upon any central cause, or if the irritation exists higher up than the point divided, the operation has always eventually failed, although at times a temporary cessation of pain for a few weeks has occurred.

MUSCULAR TIC.

Muscular tic, also known as "hysteric spasm," is an almost incessant twitching of the facial muscles. It often prevents sleep, and at all times causes great annoyance to the patient. As for its etiology, it is thought that some form of irritation of the facial nerve, the nature of which is yet unknown, acts as a

causative agent. At times this disease is associated with neuralgia of the fifth nerve. In the severer cases the nerve should be stretched. This operation when properly done, causes complete paralysis of the muscles of the face, which lasts a longer or shorter period, according to the force used in stretching. As the nerve recovers its function, however, there is always more or less return of the twitching, so that this operation must be looked upon as a relieving agent merely, and not as a curative one. The operation may be performed as follows: Make a curved incision just behind the ear from the root of the mastoid process to about the level of the angle of the jaw. Next, carefully clean the anterior border of the mastoid process and the edge of the tendon of insertion of the sterno-mastoid muscle. Now turn the parotid gland forward. Crossing the wound at about right angles will be seen the border of the digastric muscle, and parallel to it the nerve emerging from the middle of that part of the mastoid process which is exposed. As the internal jugular vein is in close proximity, great care must be used in cleaning the nerve; when once clear it should be firmly stretched with two blunt hooks.

TRAUMATIC PARALYSIS.

This may be brought on by one of three causes: Injury of brain, injury of cord, or injury of nerves. When due to cerebral injury it may vary from a localized paralysis to a hemiplegia. When due to injury of the cord it varies from a mere impairment of sensation and motion to complete paraplegia, with loss of sensation in the paralyzed parts.

Treatment.—If possible remove the cause of the paralysis, e. g., pressure on the brain or cord, and a complete recovery often may be speedily brought about. In treating any paralysis, we should, if possible, restore the muscles to their usual activity as soon as can be. The tendency to atrophic and other changes should be counteracted. Always see that a paralyzed part is warmly clothed, kept clean and not unduly pressed upon. Passive motion of joints along with attempts at voluntary movements proves very beneficial. Electricity, however, gives the best results in paralysis. It increases the vascularity of a part; improves the nutrition of muscles, nerves and other structures; prevents, retards or removes spasmodic contractions, and it seems that the long-continued use of electricity improves the nutrition of the part of the nerve-center from which the nerve or nerves which supply the affected muscles originate, thus restoring the function of a muscle or nerve when its activity is impaired and thereby bringing about restoration of voluntary movements.

TRAUMATIC NEURITIS.

This may be a result of any injury of a nerve, but generally arises from bruises or strains and is sometimes connected with gout or rheumatism. It is rarely found in amputation stumps unless union has taken place by second intention with unhealthy inflammation and suppuration, thus pressing on the bulbous end of the nerve and causing great pain and muscular spasm. The disease is really a chronic inflammation slowly ascending the nerve, and extending in extreme cases to the cord, giving rise to sclerosis. The symptoms of traumatic neuritis are intense pain and tenderness in the line of the affected nerve. Usually there is weakness or paralysis of some of the muscles supplied, but in some cases there are spasms. There

may be an intense neuralgic pain in the parts supplied by the nerve in some cases; in others, there may be numbness, tingling or anesthesia.

Treatment.—The treatment consists of operative and non-operative measures, milder cases being treated without operation. The tender nerves should be freely blistered and the nerve kept at rest. Great relief is afforded in some cases by a long strip of capsicum plaster applied along the line of the nerve. Constitutional conditions must be treated by suitable remedies. Electricity in the earlier stages of the disease not only is of no use, but may do positive harm. In cases where all these milder efforts have failed, the operations which may be resorted to are three in number: 1, excision of the bulbous ends of the nerves; 2, division or excision of part of the affected nerve; 3, nerve-stretching.

1. *Excision of the bulbous ends of the nerves.*—In some cases where a painful stump is caused by the nerve being implicated in the cicatrix, relief may be given by this operation. In other cases, where the symptoms are due to chronic ascending neuritis, the operation, although giving relief for a time, must fail to produce a cure.

2. *Division or excision of portions of the nerve.*—The smaller nerves are often divided or partly excised in cases of persistent traumatic neuralgia, and as a last resort in extreme cases, portions of the larger nerve trunks have been excised. These operations in some cases give a perfect cure; in others only temporary relief. At times a section of the whole brachial plexus does good.

3. *Nerve-stretching.*—As stated while considering the treatment of sciatica, this operation acts beneficially by stretching the sheath in which the nervi nervorum ramify. This stretches or tears the nervi nervorum so as to render them insensible to pressure upon them of inflammatory exudations and new connective tissue.

NEUROMATA.

A neuroma is a tumor situated on a nerve. There are two classes of neuromata: the true, consisting of a nerve substance proper, and the false, made of fibrous tissue. A true neuroma is generally made up of nerve fibers only, or very occasionally of ganglion cells. A false neuroma, also a fibroma, is made up of white fibrous tissue, the nerve fibers, as a rule, being stretched over it, or passing along one side, very seldom being involved in the tumor mass proper. A fibroma which springs from the epiceurium is by far the commonest form of neuroma. The tubercula dolorosa are small, painful, subcutaneous nodules. Some authorities consider these growths as true fascicular neuromata, while others look upon them as fibromata, and it seems to have been pretty clearly proven that they are not always made of nerve fibers. By far the most interesting form, however, is the plexiform neuroma, in which several hundred tumors are found on the various nerve cords. In one celebrated case, over 1100 distinct tumors were found on the nerves of the body. These cases are usually of congenital origin. Traumatic neuromata may follow a wound or partial division of a nerve. Of course more or less of a bulbous enlargement must be looked for normally on the central end of every divided nerve and will usually cause no trouble. Sometimes, however, the growth becomes too large, becoming excessively tender, and causing the most intense neuralgic pain.

Treatment.—Unless causing inconvenience by the pain it causes or by its bulk, a neuroma should be let alone. Excision is the only available treatment when it becomes necessary to do something to relieve the patient. Complete relief usually follows the excision, but amputation of neuromata often recur. In excising, if possible, remove the tumor from the nerve without cutting across it. This can generally be done. If not, then try and save a few fasciculi, which will preserve the continuity of the nerve and hasten the restoration of its functions. Where complete division is necessary, try and suture the divided ends, but even when this can not be done, restoration of function sometimes occurs.

TETANUS.

Tetanus is an infectious disease marked by tonic spasms of the voluntary muscles with distinct exacerbations. These contractions may be confined to the muscles of the lower jaw (trismus), or to certain other groups of muscles, or they may involve the muscles of the whole body. Tetanus may occur at any age. It is often epidemic among children, when it is known as trismus neonatorum. Males suffer oftener than females by about four to one. This disease is caused by a specific bacillus—the tetanus bacillus, first discovered by Nicolaier, and first obtained in pure culture by Kitasato. This bacillus is motile, grows at ordinary temperatures, forms a slender rod with rounded ends and may grow into long threads. The requirements of Koch's postulates are fulfilled by this bacillus, which is present everywhere, in surface soil and dust. This fact explains why it is that wounds which have been infected by dust or earth are so often followed by tetanus.

Morbid anatomy.—The anatomic changes in tetanus are slight indeed, when one considers the severe symptoms. There are no characteristic pathologic changes found in the brain, cord or neighboring peripheral nerves, only an extensive proliferation of cells being observed on microscopic examination.

Symptoms.—About the first to be noticed are a slight stiffness of the neck, tightness about the jaws and difficulty in mastication. At times a chilly feeling or actual rigors have preceded these symptoms. Tonic spasms of these parts now occur, the condition being popularly known as lockjaw. As the disease progresses, the features become fixed or convulsed from time to time, the angles of the mouth are drawn up, causing a sardonic grin—*risus sardonius*. As the disease advances spasms of the voluntary muscles occur, which cause very severe pain. The muscles of the back are usually attacked next in order of frequency after the muscles of the face. The body is bent backward so as to form a complete arch—the patient resting on the heels and head, a condition known as *opisthotonos*. The *rectus abdominalis* muscle has been torn in the spasm. Sometimes the condition known as *arthotonos*, in which the entire body is perfectly rigid, may occur. Less often the body is drawn forward—*emprosthotonos*—and still more rarely to one side—*pleurosthotonos*. The slightest irritation is enough to bring on a spasm, in which the most distressing pain is felt. Profuse sweating usually occurs during a paroxysm. The temperature in some cases is normal throughout; in others there is a marked pyrexia from the outset, the temperature reaching 105 or 106 degrees before death, and being 109 or 110 degrees, and even higher, soon after death. When death occurs it is usually due to exhaustion from the fre-

quent tetanic spasms, but sometimes death occurs during the paroxysm due to heart failure or asphyxia.

Diagnosis.—In well-developed cases it is easy. From strychnin poisoning it may be told by the fact that there is no rigidity, and that the jaw muscles are never involved early, if at all. In hydrophobia there is no stiffness of the jaws, and in the paroxysms the muscles of the neck and back are not affected.

Prognosis.—In all cases the prognosis is grave. The mortality in the past has been about 75 per cent. According to Hippocrates if patients live past the fourth day they usually recover. Favorable indications are: absence of fever, late onset of the attack and localization of the spasms to the muscles of the face and neck. From recent results it would seem that the death-rate in cases of tetanus in the future will be very much lowered by use of the tetanus antitoxin.

Treatment.—The treatment is both local and constitutional. The local treatment aims to bring the wound into as healthy a condition as possible. This must be done by thorough cleansing and swift antiseptic measures. The local treatment is of the highest importance, from the fact that the toxic agents are produced by the bacilli at the seat of injury. Tillmans recommends the use of the 1 per cent. solution of nitrate of silver, which destroys the bacilli and the spores very rapidly and certainly in one minute. It is doubtful if any good is obtained by nerve-stretching. I now wish to speak of the constitutional treatment. This consists of general measures and a specific one. We must try and remove all irritation and support the patient's strength by plenty of nourishment, as tetanus is a disease causing profound shock and debility. Have bowels and kidney active. Keep patient in a dark room with one attendant. Feed patient by catheter passed through the nose when necessary. Nutritive rectal injections may be used. Spasms are greatly relieved by chloroform given at repeated intervals, but it is more satisfactory to keep the patient thoroughly under the influence of morphin given hypodermically. Spinal irritation is greatly relieved by ice along the whole length of the spine. The ice can usually be left on for six or eight hours, but as it is such a powerful depressing agent, the condition of the patient must be closely watched. Many drugs have been lauded for use in this disease. From a physiologic standpoint, calabar bean is the drug that deserves the most attention, as it is antagonistic to the tetanic spasms caused by strychnin. It has, however, proven not to be a specific for tetanus. Extract *physostigmatis*, $\frac{1}{8}$ gr. should be given every hour until complete contraction of the pupil occurs, and this must be followed by stimulants to counteract the resulting depression. The *London Lancet* recently reports a case caused by the use of this drug.

Specific treatment.—This consists in the use of the antitetanic serum. I firmly believe, from results I have seen and from recent reports published, that any physician failing to use this remedy in a case of tetanus is guilty of criminal negligence. As a rule about 15 c.c. given twice a day, if necessary, will suffice. Every case will be a law unto itself. I believe, further, that we should use this serum as a prophylactic measure in cases where we have reason, from the nature of the wound, to fear that tetanus will follow. Having always found them reliable, I very much prefer the serums produced by Parke, Davis & Co. The conclusions I arrive at are:

1. Sciatica, often called a neuralgia, is generally a neuritis or a perineuritis.
2. The pain in neuritis is due to the pressure on the nervi nervorum, and therefore nerve-stretching is very beneficial.
3. Neuralgia, while it may occur in any part of the body, most commonly affects the fifth cranial nerve.
4. Neuralgia in very many cases is associated with anemia.
5. We should use electric treatment in cases of traumatic paralysis.
6. Antitetanic serum should be used as a protective agent in doubtful cases.
7. The mortality in tetanus will be very much lowered in the future.

ECHINOCOCCUS OF THE LUNGS.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CARL BECK, M.D.
NEW YORK CITY.

As is generally known, echinococcus disease is produced by the *tænia echinococcus*, a parasite whose domicile is in the intestines of the dog, sometimes perhaps also of the cat. Its length is four millimeters. It has four joints, the posterior of which is larger than the remaining three together. The implantation of this parasite causes the formation of hydatids, which grow into cysts and secondary proliferative cysts in various organs of the human body, particularly the liver.

The knowledge of the echinococcus disease dates as far back as to the time of Hippocrates, who described a "*jecur aquâ repletum*" which would open into the abdominal cavity. The same author speaks of an operation on an echinococcus cyst, before which operation adhesions between abdominal wall and cyst should always be produced by the use of artificial moxæ. The true parasitic origin of the disease, however, was not demonstrated until Göze, in 1782, recognized the characteristic heads and hooklets of the *tænia*.

The echinococcus disease is found in all parts of the world; yet with the exception of Iceland, some parts of Australia (Victoria and Tasmania) and the vicinity of Irkutsk, Russia, where it is endemic, it is but rarely observed. Especially rare is the echinococcus disease in this country, which explains fully why the American literature on this most interesting subject is so very scant.¹

The predilection of the echinococcus for the liver is quite natural. The vena portæ leads it by the shortest and broadest route, just as it carries the pyogenic embolus from an infected focus. The echinococcus is found much less frequently in other organs, for instance in the medulla of bones, the pleuræ, the spleen, the intestine, the heart, and still more rarely in the lungs. The literature of echinococcus of the lung is so meager that the following report may deserve record:

An Austrian, 38 years of age, 7 years in the United States, with the following family history: His father died when 61 years of age, from pneumonia; his mother of a brain lesion at

71; a sister died of tuberculosis of the lungs; five brothers are alive and well. The patient never had much association or contact with dogs or cats. About six years ago he had an attack of pleurisy with effusion. He was at first treated medically, and later the serous fluid was aspirated. After a slight improvement, lasting about nine months, he was taken sick again. This time he coughed violently, the expectorations containing much blood. He was treated then for consumption, and was refused admittance at several hospitals, on the ground of the diagnosis. At last he was admitted to a home for consumptives.

About two years ago a slight swelling under the right angle of the scapula appeared, and in the course of about four weeks it became slightly painful; sero-pus was revealed on incision, and some improvement followed, but the cough, accompanied sometimes by vomiting, persisted as before. At last the expectoration became fetid, and the house physician, while examining the sputa for tubercle bacilli, detected hooklets and fragments of cyst wall; the diagnosis of gangrene of the right lung, caused by the invasion of the echinococcus, was made, and the patient was sent to St. Mark's Hospital for operation. It may be added that jaundice was never present.

Nov. 22, 1897, when I saw the patient for the first time, I found the following conditions: A tall, emaciated man; a flat thorax, which expands symmetrically; the left lung is normal, but on the right side, anteriorly and below, there are tympanic sounds, and also râles during inspiration; posteriorly and below there is slight dullness; correspondingly, bronchial breathing and râles are found; the heart is normal; pulse 106, temperature 100.5 F.; the urine contains indican. The patient suffers intensely under vehement coughing spells, especially in the morning, which are always followed by expectorations of a most offensive odor. Sometimes there is dyspnea and also hemoptysis. The sputa amounts to about 200 c.c. in twenty-four hours, and contains pus corpuscles in abundance. There are fibers of the characteristic alveolar type, pigment, hematoidin crystals, disintegrated blood corpuscles, phosphate crystals, streptococci and leptothrix. Neither the bacterium coli commune, which was particularly looked for, nor the tubercle bacillus, could be discovered, nor were any hooklets or cystic fragments found. When the patient expectorates little, the dullness posteriorly is more pronounced, and the respiratory sounds are less audible than in the morning after copious expectoration. Then the bronchial respiratory sounds become more pronounced, again above the region of the fifth, sixth and seventh ribs, where sometimes amphoric breathing can also be perceived. Diagnosis: Lung cavity, caused by gangrene, induced by the invasion of *tænia echinococcus*.

November 24, after the usual aseptic precautions, pneumotomy was performed. In view of the weak pulse of the patient digitalin had been administered during the last forty eight hours, and a saline infusion twice during the last twenty-four hours. Chloroform was given carefully. An incision reaching from the middle axillary line to the transverse process of the sixth dorsal vertebra was made, directly down to the bone, and by keeping the edges of this wound far apart it was possible to expose the fifth and seventh ribs, which now, together with the sixth, were resected. After a portion of the soft tissues also, with the costal pleura, was removed, the lung collapsed slightly, but soon assumed its former expansion. The edges of the cavity being well protected with sterile gauze, a strong aspiratory needle was pushed forward into the center of the exposed area, which yielded blood only. After various efforts in different directions were made in vain, the stylet tip of a Paquelin's cautery (such as I have advised in former publications on the technique of the operation for abscess of the lung, (Forty-eighth Annual Meeting of the AMERICAN MEDICAL ASSOCIATION), was introduced carefully into the center of the exposed area. After a little over an inch of the lung tissue had been perforated, a stream of rust-colored pus of a most offensive odor escaped with a loud noise, and at the same time the patient collapsed rapidly. A sponge was quickly forced into the opening, and under artificial respiration and energetic stimulation the patient rallied. On the following day the cavity was carefully washed, and much pus and detritus discharged, and it was drained by a large rubber drainage-tube, surrounded by iodoform gauze. The secretion was copious during the next four weeks, but its repeated microscopic examination revealed nothing extraordinary.

During the first week after the operation the temperature varied between 99 and 101 F., while the pulse was 90 to 100. The patient slept but little, and was tortured by coughing spells which were nearly as violent as formerly. The respiration on an average was from 30 to 36. As it seemed that there was some retention, probably due to the irregularity of the draining canal, I introduced my finger into the cavity, dilating

¹ Besides this case I had a chance but once to operate upon another echinococcus. It concerned a man aged 34 years, a German by birth, who had resided in this country for eight years and who also denied any particular correlation to dogs. The patient had shown an enlargement above the anterior surface of the liver. No jaundice. Several times a light serous fluid was aspirated, which, although a faulty procedure, was always followed by a slight improvement. May 26, 1892, he submitted to laparotomy at St. Mark's Hospital. Recovery was speedy and perfect.

it thoroughly: a large quantity of bloody pus was discharged again, and by a violent cough a thick membrane, rolled together like a cigarette, was expelled, which proved to be a piece of a cyst-wall. The patient now improved steadily, the discharge lost its odor and became very much less in quantity, and the temperature, pulse and respiration became normal. On February 6 the tube was discarded, and on February 21 the wound was found healed. All the patient complained of now was a sharp pain, which extended into the epigastrium when he tried to inspire deeply. Pressure above the large curvature caused considerable pain, so that when hyperacidity and nausea was noticed, a stomach ulcer was thought of, although no hematemesis was present. The treatment of these symptoms showed no result. The more the retraction of the large scar proceeded, the less intense these pains became, and so it was evident at last that the pain was caused by the process of scar formation in the lung tissue, during which the diaphragm, which undoubtedly had become adherent in the course of the disease, was drawn upward in this vicinity. Under the use of respiratory gymnastics and electricity these attacks disappeared slowly, and the patient was discharged cured June 20, 1898.

Whether the original implantation of the parasite in this case took place in the lungs (primary echinococcus of the lung), or indirectly from the pleura or liver by slow perforation, is not fully evident from the previous history. While the localization of the abscess, which had been incised two years ago, might slightly be looked at in favor of an origination in the liver, the symptoms of an affection of the lungs were predominant from the early beginning of the disease. That well-pronounced symptoms were absent for a long period, could be explained by the slow growth.

A resumé of the diagnostic points may be condensed as follows: 1. Whenever the symptoms of a chronic affection of the lungs become apparent, and pneumonia, circumscribed effusions, pyothorax and infectious diseases (particularly tuberculosis) can be excluded, the possible presence of echinococcus should be thought of, especially so when at a later stage there is violent cough and expectoration of blood and pus of a most offensive odor. 2. In those rare cases where the examination of the sputa fails to show the characteristic elements of the parasite, it should be considered that at the early stage of primary echinococcus the lines of dulness are irregular according to the shape of the cysts, and sharply pronounced, while later on, when it comes to the formation of an abscess cavity, they are replaced by tympanic sounds. Accordingly there is also no abnormal temperature at the beginning, while later on the characteristic irregular temperature-curve points to pus retention. 3. Sometimes there is an expansion of the thoracic wall and a dilatation of its veins. If the abscess wall approaches the chest wall, bulging of the intercostal spaces becomes noticeable.

From this case we learn that the diagnosis of echinococcus of the lung is usually difficult. Its rarity prevents its general and thorough study, but it can fairly be assumed, on the other hand, that it is more frequent than is supposed, because on account of its difficult recognition it is often taken for a different disease. With our better means of investigation and our greater zeal, this disease will in the future be more frequently detected, and pneumotomy, the only proper therapy, will be more often resorted to.

RECENT EXPERIENCES IN MILITARY SURGERY AFTER THE BATTLE OF SANTIAGO.

BY N. SENN, LIEUT. COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

(Concluded from page 1171).

Case 18.—Scanlon, Company K, Third Cavalry, was wounded

on the second day of the battle of Santiago. The ball entered the chest through the third rib midclavicular line on the right side, passed downward and backward and escaped in the gluteal region on the same side, after perforating the ilium (Fig. 21). The ball must have passed through the lung, diaphragm and liver. Hemoptysis slight, but distressing nausea, vomiting and pain. Admitted to the hospital ship *Relief* July 15. At that time he had a constant temperature ranging between 100 and 102 degrees F., vomiting, diarrhea and rapid emaciation. Great pain over the liver and ascending colon. Hemothorax and marked swelling in the region of the liver and abdominal cavity on the right side. Examination of urine negative. Owing to the great debility and pronounced anemia it was not deemed advisable to resort to laparotomy.

Case 19.—Harry Mitchell, Company C, Seventh Infantry, was wounded July 1. The bullet entered over the right acromion process, passed through the apices of both lungs and escaped through the second intercostal space above the right nipple (Fig. 22). No hemoptysis at any time, dry cough and a moderate hemothorax on the right side. Has suffered from

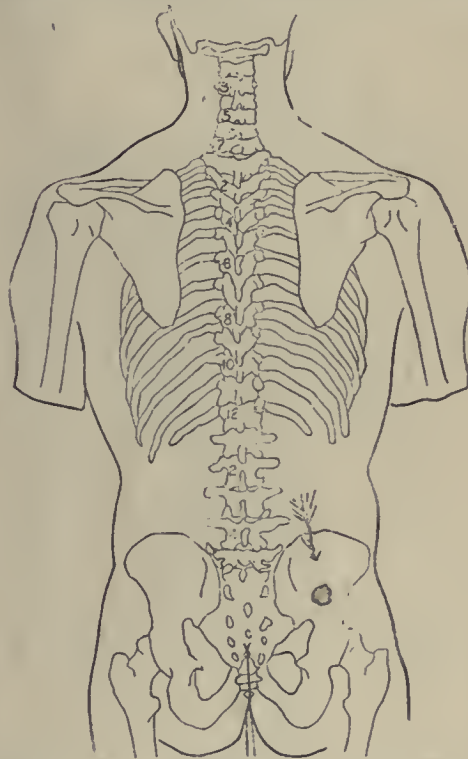


Fig. 21a.

quotidian form of malarial fever, which is yielding to quinin. A speedy and complete recovery is expected.

Case 20.—Lieut. John Robertson, Company G, Sixth Infantry, received a gunshot wound of the upper third of right thigh about 10 o'clock July 1. The profuse hemorrhage was partly controlled by an improvised tourniquet applied by an officer of the line. He was carried to the rear by the men of his company, and while thus conveyed he was shot in the left breast, the bullet entering just below the left nipple and passing through the chest in an antero-posterior direction (Fig. 23). He was wounded a third time, the bullet grazing the inner side of the left knee. The first dressing was applied in the First Division Hospital. The fracture of the thigh was dressed by the use of a long splint. From here he was sent, on July 9, to the Third Division Hospital, and two days later was brought on board the *Relief*. At this time both chest wounds were healed. The thigh wounds remained aseptic. A radiograph showed great displacement of the fragments by overlapping. The fracture was then treated by confining the limb upon a

double-inclined plane, consisting of a hollow posterior splint made of the sheath of the leaf of the cocoa palm, to which was added an anterior thigh splint of wire gauze. After dressing, the limb was placed in a sling. No pulmonary or pleuritic complications.

Case 21.—Henry T. Darby, Company D, Thirteenth Infantry, received a perforating gunshot wound of the chest July 1. The ball entered on the right side, above the angle and at the outer border of the right scapula, passed through the chest and escaped through the fourth intercostal space in front, on the opposite side, two inches outside of the mammary line (Fig. 24.) When the patient came on board the *Relief*, July 9, he complained of great difficulty in breathing; he was pale and greatly prostrated; temperature 102 degrees F. The physical signs indicated the presence of a copious pleuritic effusion on the left side. The chest was opened by an incision through the sixth intercostal space, in the axillary line, July 11. About three pints of fluid blood escaped. Gauze drainage. The lung expanded rapidly and the patient commenced to improve.

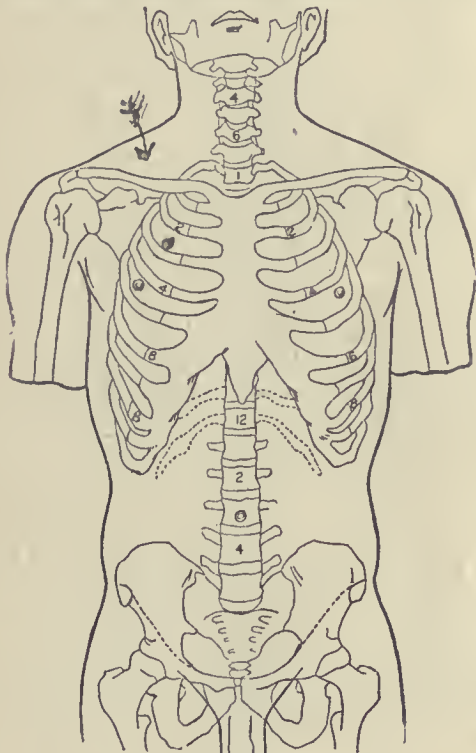


Fig. 21b.

No further doubt can remain in regard to the difference in the mortality of gunshot wounds inflicted with the large and small caliber bullets. The cases related above appear to prove that the danger incident to gunshot wounds of the chest made by the small projectile, consists in complicating injuries involving the heart and large blood-vessels, and that in the absence of such injuries the prognosis is favorable. It seems that empyema is a rare remote result of such injuries. Rib resection and free incision and drainage of the chest in such instances must be reserved for cases in which a positive diagnosis of empyema can be made. The safest and best treatment for hemothorax requiring operative interference is tapping and evacuation by siphonage.

GUNSHOT WOUNDS OF THE ABDOMEN.

Our recent experience in Cuba has more than ever confirmed my conviction that not infrequently cases of penetrating gunshot wounds of the abdomen will recover without active surgical interference. For years I have maintained, as the result of clinical experience and experiments on the cadaver, that a bullet may pass through the abdomen on a level and

above the umbilicus in an antero-posterior direction without producing visceral injuries demanding operative intervention. Elsewhere the results of my experience and experimentation concerning such injuries have been published. If the bullet traverses the small intestine area it is more than probable that from one to fourteen perforations will be found.

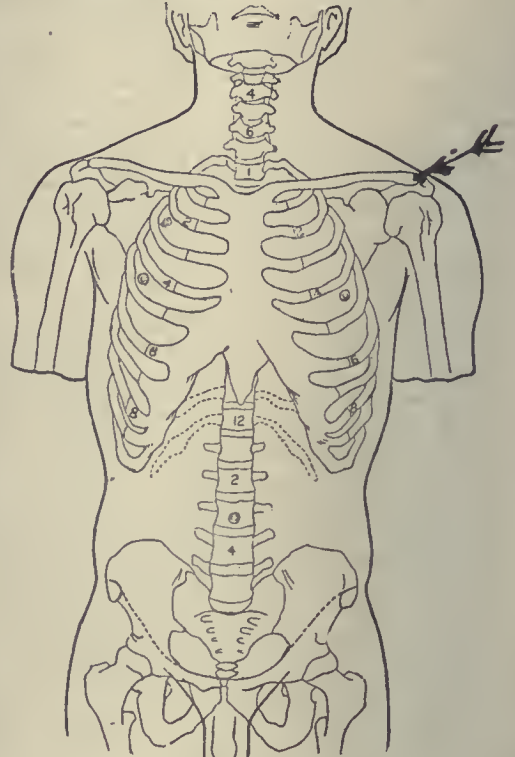


Fig. 22.

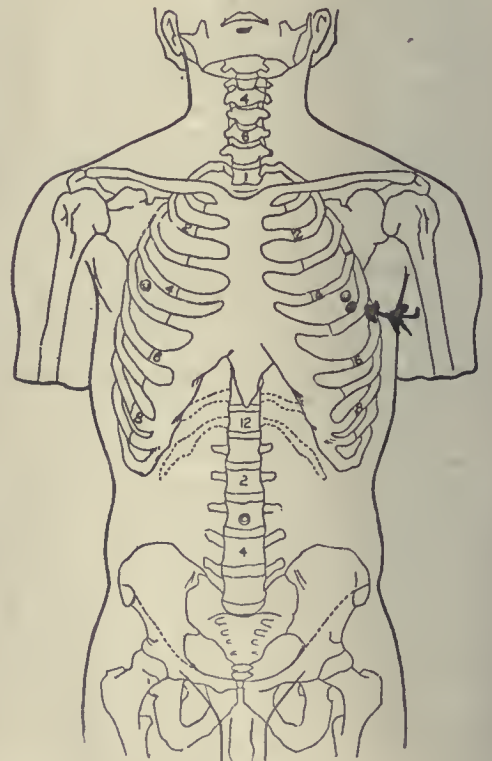


Fig. 23.

Four laparotomies for perforating gunshot wounds of the abdomen were performed in the First Division Hospital, the only ones, to my knowledge, during the Cuban Campaign.

All of the patients died. This unfavorable experience should not deter surgeons from performing the operation in the future in cases in which from the course of the bullet it is reasonable to assume that the bullet has made visceral injuries which would be sure to destroy life without surgical interference. In other cases the employment of diagnostic tests for the purpose of demonstrating the existence or absence of intestinal perforations will enable the surgeon to decide what course to pursue. Abdominal section is always justifiable in cases of internal hemorrhage sufficient in amount to threaten life.

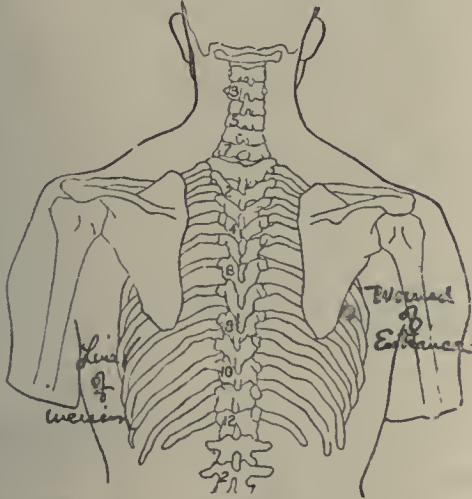


Fig. 24a.

A number of cases of gunshot wounds of the abdomen have been related in connection with gunshot injuries of the neck and chest, in which the cavity of the chest and abdomen and their contents were implicated at the same time, and which are on the way to recovery without laparotomy having been performed. I have seen a number of cases of perforating wounds of the abdomen in the First and Third Division Hospitals that were on a fair way to recovery without operation before they were sent home on transport ships. In most of these instances the bullet wounds were either in the umbilical

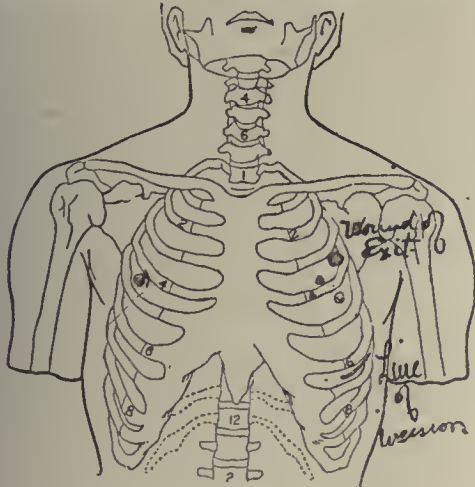


Fig. 24b.

region or one of the iliac fossae. The following case presents features of more than usual clinical and surgical interest:

Case 22.—J. F. Taylor, Company D, Tenth Cavalry, was wounded July 2. At the time the injury was received he was in the ventral prone position. The bullet entered the left shoulder in the infraspinatus fossa one inch below the spinous process of the scapula, and passed downward and inward and lodged under the skin in the median line, two inches above the umbilicus (Fig. 25). Hemoptysis considerable during the first

day, when it gradually subsided. He complained of great pain and tenderness in the right side of the abdomen. No vomiting or symptoms of more than a circumscribed peritonitis. An abscess formed in the abdominal wall, which was opened July 20, and the bullet was removed. From this time on the patient improved rapidly.

GUNSHOT WOUNDS OF THE EXTREMITIES.

It is a source of gratification to know that very few primary amputations were made for gunshot injury of the extremities. All of the surgeons realized the importance of conservative measures in the treatment of such injuries, and limited amputation to cases in which the condition of the soft tissues precluded such a course. A number of secondary amputations became necessary to save life in cases of infected compound fractures, usually complicated with injury and infection of the adjacent joint. Two cases of traumatic aneurysm are now on

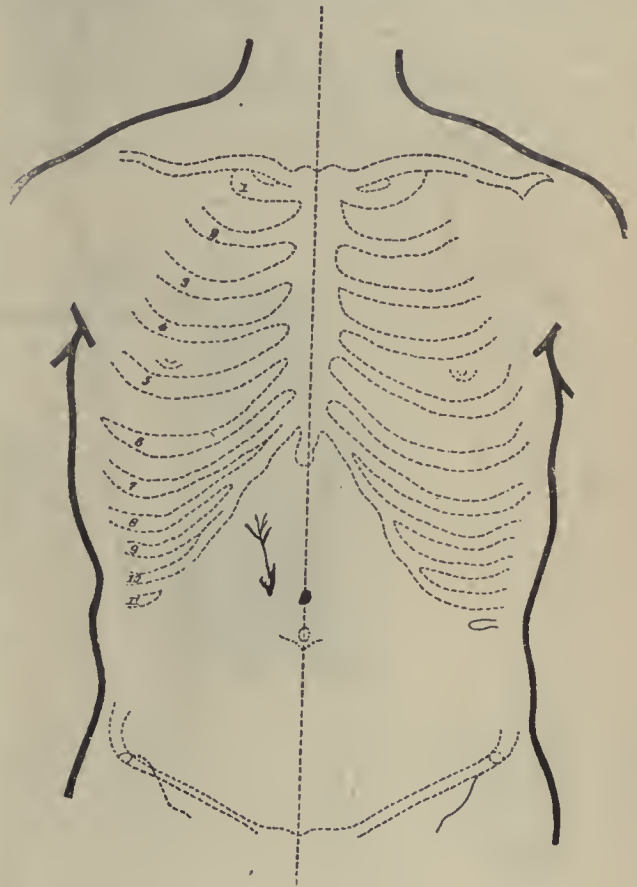


Fig. 25a.

board the *Relief*, one an aneurysmal varix, the other an aneurysm of the femoral artery.

Case 23.—Captain Mosher, Company G, Twenty-second Infantry, received a bullet wound July 1, during the advance on Santiago. Those who saw the patient first assert that the hemorrhage was severe, and that the patient lost consciousness. He was removed to the First Division Hospital and transferred July 10 to the Third Division Hospital, and the following day he was brought on board the *Relief*. I examined the patient at the front five days after the injury and confirmed the diagnosis made by the attending surgeons, who had recognized the anatomic nature of the aneurysm.

The wounds healed by primary intention in less than two weeks. One wound is in the middle of Scarpa's triangle and the other at the level of, and one inch posterior to the great trochanter on the same side. From the fact that there is, as shown by the radiograph, a piece of the jacket of a bullet in

the right popliteal space, it is probable that he was wounded by a plunging fire and that the bullet inflicted the latter wound after emerging from the wound in Scarpa's triangle. The wound in the popliteal space is suppurating. Patient is very anemic and weak. In the triangle directly under the wound there is a pulsating swelling in the direction of the femoral vein, which extends to Poupart's ligament. Fremitus and the characteristic bruit extend a considerable distance above and below the communicating opening between the artery and vein. The treatment consists in rest and tonics. General health of the patient is improving, but there is no change in the local condition. The mental condition much impaired since the injury is gradually improving.

Case 24.—John J. Welch, Company M, Second Massachusetts Volunteers, was wounded July 1. The bullet entered the middle and back of Scarpa's triangle, three inches below Poupart's ligament, directly over the femoral artery, and escaped at a point corresponding with the gluteal crease and to the outside of the femur on the same side (Figures 26). Not much hemorrhage. A well-marked aneurysm developed,

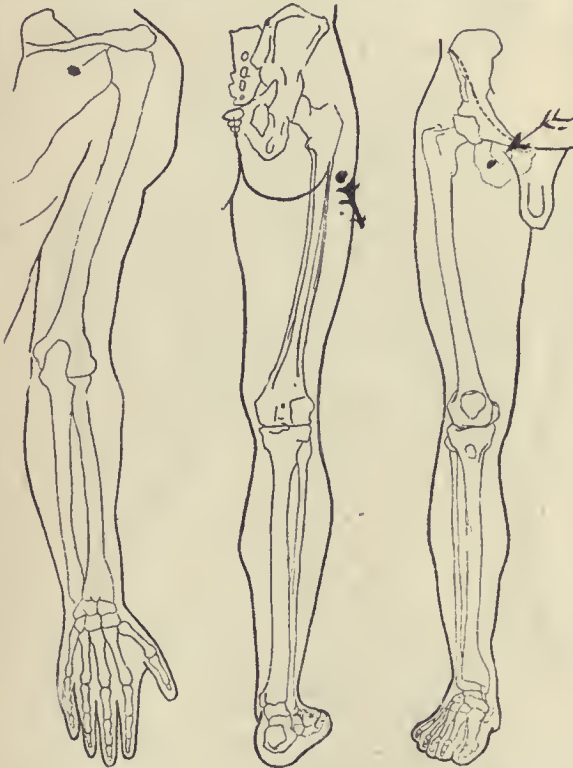


Fig. 25b.

Fig. 26a.

Fig. 26b.

presenting all the physical signs characteristic of such a pathologic condition. The swelling is somewhat elongated, a little larger than a hen's egg, and has not increased in size since the patient came on board the hospital ship. The leg is somewhat edematous and painful. A number of gunshot fractures of the thigh and leg have become infected and are now being treated by establishing free tubular drainage and resorting to frequent or continuous antiseptic irrigation. Owing to the want of reliable plaster of Paris, we had to resort to various kinds of splints, single and double inclined plane, in effecting immobilization. The sheath of the leaf of the cocoa palm has served as an excellent material for this purpose. There is every prospect that most of these cases will ultimately recover with useful limbs.

In conclusion I desire to thank Acting Assistant-Surgeons Metcalfe, Tornsy, Greenleaf, Hartsock, Morrow and Schultze for valuable assistance in preparing this communication.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Regular Meeting, Oct. 14, 1898.

Dr. GEORGE F. BUTLER occupied the chair.

Dr. G. F. HAWLEY of Chicago presented a paper entitled

CHRONIC POST NASAL CATARRH.

He said that the title is applied to a low grade of chronic inflammation located in the post-nasal space. The condition is found at all periods of life, from the nursing infant to the nonagenarian. It is so prevalent in America that it has been entitled by Mackenzie and others "American Catarrh." Whether this prevalence is due to climatic influences or to predisposing factors in those living on this side of the Atlantic, is a mooted question. That post-nasal catarrh may be associated with a neurotic diathesis, due to degeneracy, and also to intra-uterine vaginal states, can hardly be questioned. The functions of life are more or less easily disturbed in such cases, resulting in a predisposition to all types of disease, especially those affecting the glandular system. It is particularly noticeable in the torpid and erethistic types of the tuberculous diathesis, characterized by very light or very dark hair, light or dark eyes, a dark, pallid or light complexion, much perspiration, small blood-vessels, slow, feeble or rapid pulse, and want or excess of energy in mental and physical functions. Nowhere is there a richer supply of glands than in the post-nasal space, hence this is naturally affected early by the condition mentioned. In nearly 90 per cent. of all chronic catarrh the post-nasal space is affected. It has been claimed that a perfectly healthy post-nasal space can hardly be found in this country. The far-reaching baneful effects of this disease can not be questioned, since many secondary disorders affecting the upper air-passages and bronchi are due to post-nasal catarrh. It is the *bête noir* of the singer and public speaker. It is the frequent cause of suppurative and catarrhal inflammation of the middle ear both in the young and old. It is a strong factor in producing deafness in after life. This constant state of inflammation disturbs the circulation, and by causing congestion and hypertrophy of the turbinates, prevents free drainage and obstructs to a greater or less degree the passage of air through the nose.

The causes of this disorder are divisible into predisposing and exciting. Judging from the extensive and early manifestations of this disease, the predisposing causes are inherited or congenital, from maternal leucorrhœa, etc. The exciting causes are sudden changes of temperatures, and diseases affecting the upper air-passages, such as measles, scarlet-fever, diphtheria, etc. The symptoms are so well known that it is hardly worth while to repeat them here.

The clinical aspect of the disease varies according to the age of the patient and the duration of the trouble. In the early stages, particularly in the young, the post nasal space is frequently found more or less filled with masses of tissue, giving to the touch a sensation similar to that of angleworms (adenoid growths of Meyer). This mass is easily broken down and exceedingly vascular. Later on, instead of masses of tissue, isolated growths or nodules occur, more or less evenly distributed over the vault, distinct and independent of each other. These, in the early stage of the disease, are also exceedingly friable. Later these growths become fibrous in character and are difficult to remove. This form of the disease is usually associated with granular pharyngitis. Often, as in cases of old chronic suppurative inflammation of the middle ear, the mucous membrane appears swollen and soggy, seemingly soaked with mucus or serum. Again the mucous membrane, though generally healthy in appearance, presents, in the median line, folds of hypertrophy tissues. These are parallel to each other and run upward from behind the soft palate to the vault. In all these conditions the mucous membrane is highly congested, causing that sense of fullness so distressing to the sufferers from this disorder. He has also found at the median line and near the vault, single cystic growths or swellings about the size of a split bean, smooth to the touch and with the sides gradually running into the adjacent mucous membrane. This is easily destroyed by the finger, exposing a pocket-like depression with smooth and hard walls. Occasionally the mucous membrane is covered by highly vascular granulations, which, though hardly visible on examination, give to the finger a sensation as if passing over velvet or plush. All these abnormal conditions not only prevent a cure, but cause the many distressing symptoms associated with this form of the disease. The importance, therefore, of a thorough examination and treatment of the post-nasal space in all catarrhal affections of the upper air-passages can not be too

strongly urged upon the profession. In no other way can the practitioner expect to accomplish any permanent good, as here lies a strong factor of causation.

The prognosis is good if seen in time and treated properly. If not, the condition gradually grows worse, affecting the neighboring parts and producing ear complications and finally inflammation of the pharynx, larynx and bronchial tubes. Due to disturbance of circulation, the nose becomes gradually closed by thickened mucous membrane, until its natural function is almost entirely destroyed, causing mouth-breathing with all its ill effects.

The treatment is constitutional, surgical and medicinally local. Constitutional treatment depends upon the condition of the individual. It should tend to the building up and supporting of the general health. But few cases of post nasal catarrh can be cured or even relieved without surgical interference, the removal of all outgrowths and diseased tissues. Local applications, in whatever way applied, are for thoroughly cleansing and stimulating the parts affected. Up to the present time attempts to cleanse and medicate the post-nasal space have proven unsatisfactory. The anatomic relations of the parts are such that to thoroughly cleanse and medicate the diseased tissues by any instrument in use is practically impossible. It is due to this fact, more than to the obstinacy of the disease, that a larger percentage of cures does not result. The spray is the best means to accomplish this end. As generally used by the profession, it is open to serious objections. While the atomizers furnished by the instrument makers may thoroughly cleanse the anterior chamber of the nose and the pharyngeal walls, they can force but little medicament into the post-nasal space in the form of spray. The spray soon becomes

new instrument may be good or it may be bad, but in any event he overlooks the etiology and pathology of the condition. He presumes that some medicament sprayed into the nasopharyngeal space by means of his device, will cure a large percentage of cases so treated. We regard the so-called post-nasal catarrh as a symptom of one or more conditions, which are usually found in the nose. A few instances illustrating the point are: 1. Polypoid degeneration located in the posterior part of the nasal chamber would, by occluding the nares and giving rise to an acrid discharge into the post nares, excite an inflammatory action of a low grade in the mucosa of the post-nasal space. 2. An inflammation of the posterior ethmoidal or sphenoidal cells would give rise to a discharge into the post-nares, thereby giving rise to catarrhal inflammation of the membranes of the parts. 3. Dry rhinitis, rhinitis with collapse, and atrophic rhinitis, diminish or abolish the supply of moisture which is physiologically supplied to the inspired air. The nasopharynx and pharynx attempt to supply the deficiency. Overstimulation results, and we have chronic post-nasal catarrh as a result. 4. Post-nasal adenoids are attended by the same conditions. So one might continue to name conditions which give rise to so called post-nasal catarrh. The point I wish to make clear is that post nasal catarrh must be first thought of as a result of one or more antecedent conditions. After having recognized it as such, we must determine which of them are present in the case under consideration. Having determined the cause or causes we are ready to think of the treatment. If the catarrh is caused by nasal polypi, we may hope for relief by removal of the same. If caused by catarrhal or suppurative inflammation of the ethmoidal or sphenoidal cells, we must cure these conditions before hoping



a stream which flows along the inferior meatus until it falls either into the pharynx or, by the aid of the soft palate, passes out into the adjacent nostril. On account of the extreme sensitiveness of the mucous membrane lining the nasal passages, the practitioner is, moreover, restricted in selection of medicament and in its strength. Silver nitrate, for example, one of the best remedies in treating post-nasal catarrh, can be used, if at all, only in very weak solution, on account of the strong reaction produced in the nose. The nose, whether healthy or diseased, must receive the full effects of all medicament intended for the post-nasal space alone. If the attempt be made to spray back of the soft palate, the time allowed for the treatment is so short, from gagging of the patient, that but little effect can be produced upon the diseased tissues. The same objection exists to the use of powders. The brush is not only disagreeable to most patients, but gives unsatisfactory results as well.

One object of this paper is to bring to notice an improved instrument which overcomes many of these difficulties. It is so constructed that it can be inserted through any nostril, no matter how small, until it reaches the post nasal space, where a medicament, by means of a spray, can be applied directly and forcibly against the entire diseased surface. The strength of the medicament is graduated by the amount of spray used, which again is gauged by means of a small set screw at the head of the bottle containing the medicament.

Dr. WILLIAM L. BALENGER—Dr. Hawley's thesis treats of a condition, the relief of which often baffles the efforts of the rhinologist. The very stubbornness of the condition tempts him to devise some new method or instrument for treating it. His

to relieve the post-nasal catarrh. If hypertrophy of the posterior ends of the inferior turbinated bodies exists, we remove them before addressing particular attention to the post-nasal space. And so we can not say any particular method or instrument will cure chronic post-nasal catarrh. When Dr. Hawley says that hypertrophies of the nose disappear after his spray-treatments of the post-nasal space, he certainly is in error. Hypertrophies do not disappear so easily. If an hypertrophy exist, it will only disappear by surgical interference. When Dr. Hawley accuses post-nasal catarrh of causing most nasal disorders, I think he has the cart before the horse. It is a well-recognized pathologic fact that the post-nasal disorder is usually a secondary, and not a primary, affection. I must, therefore, disagree with almost every proposition set forth in Dr. Hawley's thesis. I recognize that chronic post-nasal catarrh is somewhat relieved by post-nasal washing, but I do not believe any considerable number of cures result from such treatment.

Dr. RIES wished to ask Dr. Hawley as to the influence of the maternal parturient canal in producing adenoids in the child as he had understood from the Doctor's paper that the gonococcus of the maternal canal exercised an influence in producing chronic conditions of the mucous membrane of the child leading up to adenoids.

Dr. KIERNAN said that in adenoids two factors had to be taken into consideration—the constitutional condition and the local exciting factor. Adenoids very frequently occurred in degenerates and, all other things being equal, the gonococcus was most likely to be present in the vaginas of degenerate women, or of women who had degenerate husbands. The lat-

est researches on the subject with which Dr. Kiernan was acquainted were those of Dr. O'Toole of San Francisco, which had been reported in the last volume of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. The gonococcus was an exceedingly obstinate infector of mucous membranes, and the effects of its presence were certainly conducive to secondary mixed infection by the streptococci and staphylococci. Hence it could be seen that children born of mothers infected by gonococci might not only have contagious ophthalmia, but also nasal and buccal disorders.

Dr. HAWLEY, closing the discussion—Dr. Ballenger is in error when he states that I claimed in my paper that medicaments sprayed into the naso-pharyngeal space by means of my device will cure a large percentage of cases so treated. I did say, however, that but few cases of post-nasal catarrh can be cured or even relieved without surgical interference; also that the anatomic relations of the parts are such that to thoroughly cleanse and medicate the diseased tissues by any instruments in use is practically impossible, and it was due to this fact that a larger percentage of cures did not result. The spray, or some local application, as I expressly stated, constitutes adjunct treatment. Surgery alone, while it may remove the cause, rarely cures the secondary disease of the mucous membrane. So far as my device is concerned, I simply claim that it offers a superior method of applying such medicaments as may be deemed advisable by the surgeon.

The term post-nasal catarrh, as now used, does not imply a symptom alone, but a disease, a low form of inflammation of the mucous membrane with its many glands and follicles, and presenting various clinical and pathologic conditions, some of which I have herein noted. Whether some or any of these conditions depend upon preexisting trouble in the nose, I neither affirm nor deny. That nasal trouble is often due to preexisting disease in the post-nasal space, I think can at least be conceded. When we note the frequency of the disease, its early manifestations, its baneful effects upon the ear, the throat, and even the bronchial tubes, can we not feel assured that it is also a strong factor in producing trouble in the nose, especially when we see, as I have seen in children, all these conditions—not only in the ear, throat, etc., but in the nose itself—improve by treating the post-nasal space. I think the Doctor is mistaken in his statement that it is a well recognized pathologic fact that post-nasal disorder is usually a disorder secondary to nasal affections, and not a primary one; that is, if he understands post nasal catarrh as I understand it—an actual inflammation existing in the post-nasal space, and not merely a running at the back of the nose due to polypoid or sphenoidal disturbances. Post nasal catarrh can and does exist independently of any nasal trouble, due to constitutional dyscrasia, especially noticeable in the tubercular and weakened type of the Xanthous variety of mankind. That post-nasal catarrh is frequently caused by a lithemic diathesis, as described by Musson, Robinson, Allen and others, I think cannot justly be questioned, and that it is found in the newly-born, through maternal leucorrhœa, as described by O'Toole, must also be admitted. "Post nasal catarrh" is a bad term to use, admitting of too many views as to its meaning, but it is the best we have at present. It is due to this fact, I think, that Dr. Ballenger and myself differ so materially regarding the etiology, pathology and treatment of this disease.

Dr. CARL THEODOR GRAMM presented a paper on the subject of

IMPLANTATION OF FOREIGN OBJECTS IN THE MAXILLÆ.

He explained the paper to be a preliminary report of a study of bone degeneration. Its practical side dealt with the possibility of implanting in the processes of the maxillæ, and having firmly encapsuled there, substitutes for the roots of teeth that have been lost by decay, trauma, or pyorrhœa alveolaris—substances other than ivory, or roots of living or desiccated teeth, all of which are prone to resorption. The author reviewed the character of the maxillæ and the phenomena of bone regeneration in them and pointed with emphasis to, citing a number of experiments and authorities in support of, the claim that the recuperative forces in this bone are markedly in advance of other bones of the body. He then went on to say: "whether in the presence of a mechanic irritant, a substitute for natural roots such as I will describe below, from this bony structure, rich in resources for repair and readily adaptable to altered conditions, would develop a sclerotic envelope for the substitute, or whether the process would be one of degeneration and sloughing is the question to be weighed. It is a question taking us at once into the field of bone resorption and regeneration, bone inflammation and its sequels." The author cited and criticised the experiments and conclusions of thirty-nine authorities who have studied the phenomena of bone develop-

ment. His own experiments, which were carried only through the preliminary stages, were performed upon six dogs, and consisted in removing an upper pre-molar in each of them, freely enlarging the socket and implanting an artificial root made of lead, which was held firmly in position by a mechanic device. The apical portions of these lead roots were bulbous, and at their middle were shallow grooves, which, when filled in with fibrous or osseous tissue, would favor their retention. Four of these dogs were killed in from three to six weeks after the operations, and sections of the jaws removed in order to demonstrate the development of new bone under various conditions. As the result of this work, he holds that further experiments, in which sufficient time is to be given for the solidification of new growth, will verify the hypothesis which formed the basis of this preliminary work, to-wit, that a mechanic irritant such as he proposed, will under favorable conditions cause a sclerotic envelope to be formed about it sufficiently firm to withstand the pressure from articulating teeth. He seeks an analogy in the chronic osteitis in which no rarefaction of bone occurs; in which new growth slowly ossifies, and the Haversian canals and cancellous spaces diminish—a condition commonly known as osseo-sclerosis. The article was illustrated by photo-micrographs and lantern slides from the author's laboratory.

Dr. EUGENE S. TALBOT—About twenty years ago, Dr. Younger first brought prominently before the profession the implantation of teeth; however, the better educated men of the profession looked upon this practice unfavorably. He claimed that a tooth which had been out of the mouth indefinitely could be cleaned by scraping off the periodontal membrane and débris, and disinfected, and, after drilling a hole in the jaw-bone and being implanted, would produce a new periodontal membrane, and apparently be as good a tooth as any. He went so far as to state that the tooth of a mummy which had been dead for thousands of years would be implanted into the jaw of a patient at the International Medical Congress, held at Berlin, and that it would grow firm and become useful indefinitely. This was done, but the operation was unsuccessful, the tooth only lasting a few days. Many teeth have been implanted, but a very small number have proven a success. I have never heard of or seen a case where a new membrane had been produced. These teeth have been treated by the system like any other foreign body, and expelled either bodily or by absorption. Therefore, I have never taken kindly to this operation. The essayist has undertaken some very valuable experiments, and I wish to congratulate him upon the work he is doing. Much may be learned from it. He has not, however, brought us any tangible consideration this evening. His work is only fragmentary, and no definite results have been presented. The work is so incomplete that it is hardly consistent to bring it before this body this evening. Such work requires much time and many experiments to give us definite results. I trust he will continue his work and, when complete, give us material of great value.

Dr. A. E. BALDWIN—This is a subject that has been of very great interest to me. I have not made any original investigations myself, and have consequently been more interested in these experiments than I otherwise would be. While congratulating the writer of the paper upon his experimental work, I can not help but agree with the previous speaker in concluding that the experiments are on a line which will not be productive of any great benefit. Ten years ago, in an interview with Dr. Younger, he claimed to me that these operations of implantation of teeth, which are directly in the line of this paper, would be recognized as a great success all over the country in a few years. I told him then, as I say now, that if the principles laid down by Dr. Younger, which are apparently the same as those of the writer of this paper, are true, we shall have to relearn our histology and physiology. Nature sometimes tolerates these foreign bodies simply in a mechanical way, but it seems to me as though we have not evidence of any natural union between the implanted bone or tooth and the alveolar process.

Dr. GRAMM, in closing the discussion—It is true that the work is incomplete and does not present final conclusions. I hesitated somewhat on that account to bring it before this body, but concluded finally, after having found abundant precedent, to do so. I believe it is quite frequently the case that scientific bodies lend an ear to notes of experiments that are preliminary. The criticism which Dr. Talbot passes upon Dr. Younger does not apply to the work under consideration. The resorption of an osseous structure implanted is a probability recognized by histologists fifty years ago. The foreign material implanted in the jaws of these dogs is non-absorbent, hence the interest in this work does not center in the fate of the tooth root implanted, but rather in the degree of toler-

ance exhibited by the osseous tissue of the alveolar process. It has not been proven that the alveolar process in particular, this structure of exceeding vitality, will not tolerate a foreign substance, and no measure of general statement, unless founded upon experiments made directly upon the maxillæ, can be accepted as criticism of undoubted value.

The Second Northern Congress of Internal Medicine.

Held at Christiania, Norway, in August.

This congress gathered a representative assemblage of Scandinavian physicians from the Northland countries, and even one from Scandinavian Chicago.

ORGAN-THERAPY.

REIERSEN reported encouraging results from the use of "testicle extract," especially in tabes, 12 cases rendering morphin unnecessary, but the general trend of opinion seemed to be unfavorable.

SCHJÖTTE of Copenhagen stated that he had been extremely successful with thyroid treatment in obesity, combining it with moderate under-feeding, but plenty of albumin. He declared the profession over-timid in regard to thyroid treatment, and too apt to transfer to obesity the disturbances caused by it in myxedema, which should not be compared with it at all.

FABER called attention to the cutaneous hyperesthesia of certain portions of the abdomen which sometimes accompany gastric troubles, (25 of his cases) but yield to faradization, etc. Others confirmed his experience and warned against the mistake of diagnosing a gastric ulcer from this undoubtedly hysterical symptom.

ARTERIOSCLEROSIS.

Professor EDGREN's address on this subject was based on a study of 124 cases. He found syphilis the most frequent antecedent (age, 40 to 46 years), next alcoholism (age 51 to 53), hereditary, malaria and lead poisoning. No special cause could be discovered in 12 cases, (average age 66) evidently the pure senile form.

Professor RUNEBERG treated the subject from the clinical and therapeutic point of view, classifying arteriosclerosis as: 1, the local or typical syphilitic form, affecting the arteries of the brain or the aorta; 2, granular-atrophy sclerosis of the smaller and medium vessels, with secondary hypertrophy of the heart; and 3, generalized sclerosis of the large and medium arteries—the senile type. He advised prophylactic measures to insure regularity in the functions—diuresis, gymnastics, etc. with potassium iodid continued for several years; tonics, and anti-syphilitic treatment as indicated.

Professor GADE described the anatomic alterations in this affection, which seem to be of a purely degenerative character, suggesting injury to the tissues of a chemist nature.

Professor LAACHE disputed this toxic etiology and attributed the chief rôle to the arterial pressure, citing the rarity of the process in the pulmonary arteries.

MYGGE emphasized the "Importance of Radiography in the Diagnosis of Aneurysm of the Aorta."

RASCH stated that twenty-five aneurysms of the aorta were discovered in the course of 3165 necropsies at Copenhagen. Syphilis was certain in 56 per cent., and probably in 82 per cent. He calls the aneurysm-forming process a chronic fibrous aortitis.

STORM BULL reported two cases in which he had based his diagnosis on the pulsation in the larynx, confirmed by the necropsy.

HANSEN described certain accidental heart sounds, observed that a whistling sound in pericarditis indicates synchia.

Professor MEDIN noted the increasing frequency of "Morbus Barlowi" in Stockholm, among children with syphilitic inheritance, rachitis, etc. He described fifteen observations, with four deaths. Three of his cases had no trace of rachitis. He found fresh lemon juice the most effective treatment.

HALLARGER commented on the comparative temperature in the rectum and axilla as an aid in the "Diagnosis of Hysteria." There is no difference between them, as in normal conditions, or it is reversed; sometimes the axillary temperature is the higher by two to three-tenths of a degree.

Professor GRAM endorsed peronin as a valuable acquisition, to take the place of morphin, using twice the dose. He has found it effective in sixty cases of neuralgia, nervous sleeplessness and tuberculous cough.

USTVEDT reported that Vidal's sero-test failed in over 26 per cent. of the cases in a recent extensive epidemic of typhoid, while it had resulted positively in 100 per cent. during the previous epidemic.

Professor LAACHE closed the scientific communications with

an address on "Paroxysmic Tachycardia," which he considers a neurosis.

The Christiania physicians own a commodious building for their local gatherings, which was the envy of many visitors, and the excursions to the sanatoria, etc., in the neighborhood, aroused much enthusiasm for the beautiful scenery and general appointments. The Congress will meet at Copenhagen next year.

SELECTIONS.

The Rabietic Bacillus.—Foll, Rivolta and Spinelli claimed to have detected a bacillus the specific character of which was made highly probable by Sanfelice, who, employing a special staining process, demonstrated its presence in large numbers in the spinal cord of a boy who had died from hydrophobia. Memmo of Rome confirmed the observation of Sanfelice and proved the virulent character of the micro-organism, which he detected in several cases of rabies, but quite recently he has succeeded in cultivating it in artificial media, and in reproducing by inoculations with these cultures the disease with its distinctive characters, in dogs, rodents and birds respectively. These experiments and observations, which fulfilling the most stringent demands of bacteriologic criticism, leave no room for doubt, are described in the *Centralblatt für Bakteriologie*. He found the microbe in the cerebro-spinal fluid and the substance of the brain and spinal cord, in the saliva and parotid gland, and in the aqueous humor of four dogs dying from the natural disease, and of rabbits, guinea pigs and pigeons, in which it had been produced by inoculation. It grew better in fluid than in solid media, the best being bouillon with glucose slightly acidulated with tartaric acid. The growth did not become manifest under a week, and was easily arrested by "air infection," as through the access of dust from the laboratory. Inoculated with cultures of the fourth generation, purified by successive plate cultures, guinea-pigs and rabbits developed symptoms of paralysis of the hind limbs, etc., after from eleven to twenty days, and died from the paralytic form of the disease. With dogs the inoculation was prolonged to from thirty to sixty days, when they were attacked with all the symptoms of typical natural rabies. Though Memmo does not suggest the application of his discovery to the prophylaxis of hydrophobia it is not impossible that artificial cultures may be found capable of definite attenuation so as ultimately to simplify the methods adopted by Pasteur.—*London Lancet*, September 17.

Destruction of Locusts by Arsenic.—Physicians are so frequently consulted regarding crop pests, that we reproduce, in part, an account of the means found successful in Natal, South Africa, in combating the locust scourge. It is quoted from the *London Times*, Sept. 23, 1897: The mixture used is prepared by heating four gallons of water to boiling point and then adding one pound of caustic soda. As soon as this is dissolved, one pound of arsenic is added, after which the liquid is well stirred and boiled for a few minutes, care being taken that the fumes are not inhaled. Being poisonous, the mixture is kept under lock and key; but, when required for use, half a gallon of it is added to four gallons of hot or cold water, with ten pounds of brown sugar. A still better preparation is made by adding half a gallon of the poisonous liquid to five gallons of treacle. Maize stalks, grass, etc., dipped in the mixture, are placed along the roads and in the fields, and the material can also be splashed with a whitewash brush upon anything which the locusts are known to have a liking for. Attracted by the odor of the sugar or treacle over a distance of as much as 100 yards, the locusts will eat of the mixture and die. These are eaten by other locusts, and in a few days' time the ground may become strewn with the dead bodies of the insects. With ordinary care, no risk of poisoning any human being is incurred, while the small quantities of the material on a piece of grass or maize stalk is said to be insufficient to injure stock of any kind.

Fowls have been known to feed without injury on the arsenic-destroyed locust. The evidence adduced indicates that "hoppers," however numerous, can be destroyed in a few days, and the crops thus saved from their ravages. Should the winged locusts swoop down later in the season, the crops, in virtue of the vigor acquired from their early unchecked growth, will be in a far better condition to withstand attack. Arsenic is quite effective in destroying flying locust; but, as they come and go very suddenly, it is difficult to have the poison in readiness at the critical moment, and hence the most deadly blow can be dealt at the pest when it is in the hopper stage. One Natal cultivator cleared his farm, occupying 700 acres, of locusts in ten days by means of the arsenical mixture. As is well known, arsenic forms the basis of most of the sheep dips in common use, and it may be that the efficacy of arsenic as an insecticide in the fleece of the sheep will find a parallel in its application as a locust destroyer in the vast wheat fields of the Argentine and elsewhere.

PRACTICAL NOTES.

Radiography of Fetal Lungs.—Atelectasis is readily distinguished in a radiograph of a fetal lung, and can thus be demonstrated in court in doubtful cases.—*Gazz. d. Osp.*, September 4.

Potion for Whooping-Cough.—Koplik recommends the following in the dose of half a teaspoonful three times a day: Tincture of digitalis 1 gm.; antipyrin 2 gm.; elixir paregoric 4 gm.; syrup of tolu 60 gm.—*Semaine Méd.*, October 19.

Extraction of an Incarcerated Pessary.—With the Gigli saw, the accessible portion of the pessary is sawed off, and the pessary can then be revolved until the plane left by the excision is brought opposite the projection that opposes its exit, when it will easily slip out.—*Semaine Méd.*, October 19.

Carbolic Gangrene.—Ponzo claims that gangrene following the use of a phenicated solution is due to the compression of the bandage arresting the circulation. If a standard solution is used and non-compressing bandages ordered, neither the druggist nor the surgeon are responsible for the gangrene, which, if it occurs under these conditions, must be caused by some idiosyncrasy.—*Gazz. degli Osp.* September 11.

Potassium Permanganate in Lupus.—Kaczanowski has cured thirty-four cases by dusting the surface with 2 to 5 milligrams of potassium permanganate, after removing the crusts with vaselin and warm soapy water. One application proves sufficient; the scab falls in fifteen days and the patch heals. A nitrate of silver salve hastens the cicatrization. The application of the permanganate is painful, but bearable, and no worse than other caustic remedies.—*Semaine Méd.*, October 19.

Non-toxicity of Orthoform.—Two cases are reported in the *Munich Med. Woch.* of October 18; one an extensive cancer of the mamma and the other decubitus sores (morphinomaniac), in which orthoform was used every day for months to relieve the pain, with complete success and without the slightest symptom of intoxication. In the first case 4266 gm. were used in five months, and in the second 5600 gm. since last March, or 15 gm. a day.

Suprarenal Extract.—Von Cyon states, in a preliminary communication in regard to the physiologic significance of the effective substance in the suprarenals, that the extract has a highly stimulating effect on the sympathetic nervous system of the heart and the vessels (accelerants and vasomotors), while it has a paralyzing effect upon the regulator nerves of these organs, the vagus and depressor. Suprarenal extract is consequently a powerful antagonist to iodothyron and the hypophysis.—*Deutsche Med. Woch.*, from *Pflügers Archiv für Phys.*, p. 370.

Dry Treatment of Pus Pockets.—Del Vecchio urges the abolition of the practice of washing out cavities with antiseptic or sterile fluids after evacuating pus. He claims it is directly injurious, and cites a large number of cases he has treated "dry," in which the cure was much more prompt than usual. Even in case of a fistula he merely wipes it dry with gauze and applies a compressing bandage, without drainage or irrigation, occasionally instilling a few drops of some modifying liquid through the mouth of the fistula, left open.—*Gazzetta degli Osp.*, September 11.

Conservative Treatment of Wounded Hand.—The main point is to cleanse the hand thoroughly, best accomplished with alcohol and ether, followed with copious irrigation with a stream of hot water, at 50 to 55 degrees C., which has the threefold advantage of being hemostatic, aseptic and warming, thus counteracting the coldness that follows the traumatic shock. It may be necessary to use an anesthetic to make the cleansing as perfect as necessary. Once completed, the wound is dressed with iodoform, or simply sterile gauze, and left untouched for four days, with the hand and forearm immobilized. A wound thus treated heals without a trace of suppuration.—*Martin: Jour. des Pract.*, No. 30.

Strangulated Umbilical Hernia.—Dr. R. Fowler has been enabled to present before the Brooklyn Pathological Society a case of successful operation for the resection of a portion of the small intestine for the above-named condition. The history of the case is not unusual—the ordinary history of vomiting and acute onset, with hardly any rise in temperature, and the strangulated intestine was not situated through the umbilicus, but right along side, as is usual in these cases of acquired hernia. The Murphy button was used and came away on the ninth day. The case calls to mind an earlier one operated on by Dr. S. McGuire of Richmond, in October, 1895. It was a case of strangulated umbilical hernia of forty-eight hours standing, with fecal vomiting, etc. He removed fifteen inches of gangrenous ileum. The patient recovered, the Murphy button coming away on the twentieth day, and the button showed a ring of the intestine at the site where it was placed. In the discussion following the report, Dr. H. B. Delatour offered the following observations regarding the obstacles to recovery after strangulation of hernia of this type. He said: "I think the trouble in strangulated umbilical hernia is, first, that we have the strangulation occurring high up in the intestine, with early appearance of fecal vomiting; second, that we have umbilical hernia occurring most frequently in people who are immensely fat, and in addition to having fat in the abdomen they have fatty degeneration of the heart. Those two points I think enter very materially into the prognosis of the cases—the fecal vomiting occurring early; the retrostalsis pours fecal matter into the stomach when the patient is under the anesthetic, and vomiting occurs; the fecal matter gets into the pharynx, and very frequently portions are inhaled, and may set up either an acute edema of the lungs or be followed by septic pneumonia. I have seen that in a number of cases. In one case upon which it was my fortune to operate, the patient died about ten days or two weeks after operation from the heart conditions solely. The abdominal condition was perfect; the wound had healed by primary union, and the patient died simply from the weakened heart condition." I think the heart was influenced by the anesthetic, and it was the result of the action of the anesthetic on the fatty heart that caused death in that case. Three times before she finally died, within a week, at intervals of twenty four to forty-eight hours, she became absolutely blue from head to foot, and it did not seem possible she could ever recover from the condition, although she did. I have forgotten just what attack she died in, but it was after she had had several. I have operated on quite a number of cases of strangulated umbilical hernia and I recall only one case that permanently recovered.—*Brooklyn Medical Journal*, October.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

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Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, NOVEMBER 19, 1898.

CHRISTIAN SCIENCE AND THE LAW.

"Christian science," which may have been prophetically referred to by St. Paul when he wrote to Timothy about "science falsely so called," has apparently made itself amenable to the criminal law in England by the proceedings that preceded and it would seem safe to say directly caused or insured the death of an eminent litterateur. The sacrifice of one valuable life has at last called the attention of the public to the delusions which might perhaps have worked disaster to many more obscure individuals without such effect.

It seems strange that a man of culture, of such penetrative judgment, as some of his writings would imply, as HAROLD FREDERIC should have been a willing victim to what ought to seem to any practically minded man a very transparent delusion. While the fact is hard to account for, assuming him to have been in mental health, something may be allowed for the common and, as it were, very natural affection of the judgment in even any form of bodily disorder. We are all of us apt to be hardly our normal selves under the influence of sickness, and even an educated and thoroughly well-balanced physician, to assume an extreme case, might, under certain circumstances and with certain surroundings, allow himself to be treated by altogether unorthodox and unscientific methods. There is, moreover, a remnant of superstition in all of us, and irrational prejudices and beliefs crop out in the most unexpected quarters. As a scientific investigator who has been amongst the foremost in discussing and developing some of the most important biologic questions, Mr. A. R. WALLACE ought, it would

seem, to be qualified to express a correct opinion on sanitary subjects, but we find him raving against vaccination, a preventive measure that has stood the test of one hundred years since JENNER'S announcement of his discovery, and which has rendered comparatively harmless one of the greatest scourges of our race. With such examples as this, one need not be surprised at any vagaries on the part of the public or of less prominent individuals.

So far as known, there has not been a conviction for manslaughter of a Christian scientist in this country, though occasions for such an event have certainly not been wanting. In so far as the devotees of this delusion actively interfere to prevent the necessary remedial measures and the patient dies in consequence of this, it is hard to see how, with any reasonable interpretation of the law, they can escape its penalties. They certainly in some cases, like that of Mr. FREDERIC, prevented what might and probably would have saved life. The case may be different as regards the standing of Christian science where life is not involved, and we do not see the correctness of the conclusion in a recent editorial in the New York Sun, that, because a court held that contracts for such treatment are valid, the same court would necessarily hold that a charge of neglect and of manslaughter would not lie if death occurred under the care of a Christian scientist who, it could be proven, excluded rational measures that presumably would have saved life. The civil and the criminal sides of the question may differ to some extent, but where the charge of criminal negligence or worse is raised, it would necessarily have to be seriously considered by any court, and it is not easy to see how well-proven evidence of this character could be managed so as to evade the penalty of the law. Judges and juries are fallible, however; some of them may be ardent advocates of Christian science, and it is difficult to say how these facts may distort judicial views and verdicts in special cases.

It will be interesting to follow the proceedings in the FREDERIC case and to see how British justice deals with the matter; the prominence of the victim and the special issues involved will tend to make it a *cause célèbre*. If conviction follows, the status of the delusion in English jurisdiction will be materially affected and it would seem improbable that it could derive any benefit under the plea of persecution if the facts were fairly published and understood. The results of a similar prosecution which has just been instituted in Cincinnati will also be followed with interest by the medical profession and the public generally.

THE CARIBBEAN CLIMATE IN ITS MEDICO
HYGIENIC RELATIONS.

Where so much good, bad, and indifferent has been written about the medical conduct of our late war, it is to be regretted that so little trustworthy informa-

tion is to be found in a short, codified form regarding the climate of the West Indies and the nature of diseases peculiar to Army life.

Excepting the work of LAVERAN on Army diseases and the condensed but comprehensive articles in "Reference Hand-Book of the Medical Sciences," by Dr. IRVING C. ROSSE, on this subject and on the medical topography of the West Indies, but little appears to be written. Even this little, known to comparatively few readers, would not be referred to here but for the present and prospective interest among our people—civil and military—in all that pertains to the Caribbean climate. Outside of the armed forces, the principal element to be affected by the climatic influences of the Antilles are the large number of business men either permanently or temporarily sojourning in our new possessions; the tourist in search of winter sunbeams, and the invalid suffering from pulmonary or other chronic disease.

The physical surroundings of war are anything but conducive to seeing with judicial clearness, and such adynamic concomitants as a diet of salt pork amid stifling heat, diluvial rain, and malaria are assuredly not calculated to give a soldier that rosy view of the radiant skies of immaculate serenity, the flamboyant vegetation, and tropic loveliness of islands that seem lotus-bearing and Eden-like to the well fed and comfortably placed voyager on sudden arrival from the March winds of our bleak New England coast.

The West Indies, usually associated in our minds with rum, molasses, yellow fever, hurricanes, negroes, and general economic, moral and political relaxation are reported to be, and in fact are, very unhealthy, although the islands differ greatly in this respect, the general mortality being influenced by season and altitude, and by the fact of the decedents being indigenes or strangers. The Caribbean summer is a season always attended by mortal maladies to man, beasts, and plants, and by disorder of the elements, which are upset in a frightful manner. With the advent of the hurricane season thunder groans from one end of the horizon to the other, with seismic convulsions, tidal waves, and pathologic phenomena, chief of which is yellow fever. In addition the gravest epidemics of the tropics manifest themselves in the form of malarial fevers, dysentery, and hepatic diseases, which prevail at all the islands at all seasons, and are common to all races. But a compensating factor is the salubrity of the mountain regions—more particularly that of the volcanic mountains. What is known as a climate of impression may be found at a small height. Above 1000 feet yellow fever scarcely ever occurs, the lower sugar-cane lands being its natural abode. At about 2000 feet cooler temperature with more marked delimitation of the seasons is found, along with thermometric and barometric variations of such absolute regularity as to attract attention. A very small number of nycthermal observations suffices to show

the regularity of these movements in an atmosphere free from ochlitic or zymotic contamination.

The mountainous and highly picturesque aspect of the volcanic Antilles, with their blue pyramidal outlines on the horizon, and conical peaks losing thin summits to the clouds, owes this physical configuration to the fact of the islands being nothing more nor less than vast mountains resting on the ocean bed. Bathymetric observations show the deepest water of the Atlantic in their vicinity, being about 5.6 statute miles at "Bronson's Hole," a little north of Porto Rico.

To give systematically the medical topography of most of the islands, particularly those of volcanic formation, would be to repeat many details already familiar to newspaper readers. The characteristics of an active *soufrière*; numerous hot springs; an indescribable richness and variety of bird, insect, and fish life, beautiful scenery; magical and marvelous sunset effects; lovely climate at certain seasons, and botanical remarkableness are so common and striking as to have led DARWIN to speak of Jamaica as "a great, wild, untidy, luxurious hothouse."

The principal climatic observations being likewise more or less matters of common knowledge, it suffices to say that meteorologically there is nothing excessive in the character of the Caribbean climate, which, instead of our four seasons, consists of but two, known to climatologists as *diorique*. Rains, during the season of stifling heat, are the peculiarity of the West Indian region. It is, in fact, the combination of humidity with long-continued heat, rather than its intensity, that marks the climate of the Antilles and causes its insalubrity. Not only does this combination corrupt all kinds of food with great rapidity but hatches out myriads of insects of all species to such an extent as to become repugnant and destructive. Besides, the climate relaxes and impairs the fibers in men and animals, renders them lazy, inert, and phlegmatic, and reduces them promptly to a state of complete atony. In these islands of indolence even mosquitoes are lazy and appear supremely indifferent; fish are not game; imported quadrupeds weaken and degenerate rapidly, the hog alone flourishing. The African negro, transplanted to a sky but little different from his own, has scarcely any physical or moral modification. Flourishing in the Antilles like the green bay-tree, nature is there so much in his favor that after successive generations of mulattoes, children revert to the negro type. More than one-half of the entire population of the West Indies (4,000,000) are negroes, the remainder chiefly mulattoes. Frenchmen do not acclimate and flourish here as they do in Canada under the same isotherm as Denmark, and it is an undisputed fact that families who are not recruited from time to time become extinct in the third or fourth generation. And so we may ascend the zoölogical scale to the Anglo-Saxon, who does not

flourish in an *diorique* climate made tolerable only by the influence of trade winds. Many of our people have seen repeated object-lessons of this fact in the weazen-faced cachectic soldiers who, aside from other unmentionable privations, the criticism of which is outside our province, owe their lowered vitality mainly to such atmospheric vicissitudes as the mid-day sun, the chill of night, and the morning dew of the Caribbean climate.

The question of the disorganizing effect of this climate is therefore one of a highly practical nature, which at present greatly concerns not only our soldiers obliged to serve in the Antilles, but others who may visit them for business and pleasure.

As a matter of fact the subjective bodily effects of the climate are more agreeable than is imagined by persons who have never visited the Antilles. It is well borne by strangers during a temporary winter sojourn; the danger and annoyance therefrom may be much diminished by hygienic measures, and there are healthy and attractive spots where invalids may obtain the advantages that the climate affords.

Notwithstanding the great mortality among our soldiers in the West Indies, it is a notorious fact that much of it was unnecessary and might have been avoided by proper attention to sanitary measures. British regiments have had sad experience in this part of the world, the Twenty-ninth Foot being almost annihilated in Barbadoes by mortal disease in the early part of the present century. However, during a recent service of three years, it is said that none has ever served the same time in the West Indies with so little fatality. The extraordinary good health of the battalion of U. S. Marines lately returned from Guantanamo without the loss of a man from disease, is another striking example of what may be done by proper hygiene.

Doubtless the surgeons of our Army will learn and practice the hygiene of hot climates when they have become emancipated from the thralldom of circumlocution and red-tape, and the narrow ideas engendered by long service at small army posts.

The death-rate of armies has decreased within the last few years, and the general health has greatly improved, but this improvement did not originate with the medical officers. It was brought about by outside influence. In most armies we find the average medical officer about as apathetic and unprogressive as the line officer, who in former days made strenuous objections to the innovation of fire-arms for bows and arrows, and still later, even up to the time of General SCOTT, to the introduction of the percussion-cap in the place of the old flint-lock, and the substitution of breech-loaders for smooth-bores and muzzle-loaders. In saying this it is far from our intention to arraign or criticise a body among whom are many honorable exceptions—men who have advocated the principles upon which sanitary ameliorations are founded. But

it is a matter of history that sanitary reform in the army has been brought about by outside influence. Just as advance in psychiatry, neurology and improved treatment of the insane since the days of PINEL have come from persons unconnected with insane asylums, so have the acts of citizen organizations been of the greatest benefit in removing existing evils and suggesting remedies. This is no less true than the fact that it is impossible to point to any great medical or surgical discovery made by persons connected with armies.

The British army owes its redemption from special sickness and undue mortality to Lord HERBERT, Lord GRAY and FLORENCE NIGHTINGALE, who did so much to relieve the sick and wounded in the Crimea. The sanitary commission of the Civil War contributed much to the comfort of the well and the relief of the wounded; and many poor, fever-stricken patients, whose presence was a scourge and an encumbrance to the Army during our late war, will remember with lasting gratitude the humanizing efforts of the Red Cross.

In spite of the introduction of many reforms and the decreased death-rate of armies, as shown by statistics of the last few years, comparison places army mortality and loss from sickness at a figure still in excess of that of the civil population of the same age living under analogous conditions. Since it would be manifestly out of place to discuss at this present the causes that brought about a mortality of 66.6 per cent. from disease in our Civil War, and the enormous percentage of 88.1 in the Spanish War, it may suffice to say that the diseases influencing the operations of war are mainly those of civil life modified by mesologic circumstances, as typified by the accidents arising from atmospheric or telluric influences, the manner of life and the food consumed. The prevailing diseases of the West Indies, whether among soldiers or civilians, are mostly acute, and at least two-thirds of them being zymotic, are consequently preventable by hygienic or other conditions.

To describe the peculiarity of these diseases and their mode of action would require a repetition of what may be better found elsewhere in works devoted to the maladies of hot climates. It is rather their prevention that most concerns the intending voyager, whether soldier, merchant, or invalid; and in the existing conditions, owing to the absence of sanitary police, it follows that on visiting the Antilles a certain amount of care and circumspection are imperative. The Caribbean climate, at its best, from November to May, is well borne by strangers; and despite the drawbacks of warm latitudes and bad sanitation, one may find Englishmen and other Europeans who have lived many years in the West Indies without sickness. From such old residents many hints of useful nature may be had, which go to corroborate one of the clearly demonstrated facts of preventive medicine, namely,

that with properly enforced hygiene, both public and personal, whether among soldiers or civilians, sickness and mortality in the Caribbean climate may be not only minimized, but reduced to almost that of more favored spots.

THE RELATION OF DISEASE OF THE ACCESSORY CAVITIES TO OPHTHALMOLOGY.

The general practitioner, no less than the specialist, is often puzzled as to the exact cause or causes underlying headaches and neuralgias. While the one is inclined to refer them to the gastro-intestinal or genital tract, the other hastens to ascribe them to alterations from the normal of the various organs that come under his care. Only when both have tried their skill and after apparently righting all existing difficulties in either direction with no relief forthcoming, is there, as a rule, any attention paid to those prolific factors in the etiology of intense cranial pain, disease of the frontal, maxillary, ethmoidal or sphenoidal sinuses. Even the splendid monograph of ZUCKERKINDL on "The Normal and Pathological Anatomy of the Nasal Cavity and its Pneumatic Accessories" directed little attention to these important structures aside from the interest of his immediate followers. In these later times, when the eye surgeon pure and simple is practically an unknown quantity, and the former specialist in eye affections now devotes additional attention to the ear, nose and throat, the surgery of the accessory sinuses falls into the latter's hands as a matter of course.

The cellular spaces contained in the temporal bones have long been recognized as common areas of disease usually secondary to trouble of the middle ear; sometimes the condition is acute, when symptoms of the greatest intensity and danger rapidly develop; more often the process is of slow development, and accompanied by caries of the temporal bone; in both instances a most characteristic symptomatology has been elaborated. In either case operative interference of the most radical kind is indicated and is usually followed by the most brilliant results. The next of the pneumatic sinuses to receive attention was the maxillary, and the scientific work done in this field must ever remain a lasting monument to dental surgery. Of late the remaining accessory cavities, the frontal sphenoid and ethmoid cells, are receiving a prominent place in head surgery. SATTLER (*Medical News*, Sept. 10, 1898) in this connection makes the following interesting statement: "The lesions of the pneumatic spaces of the frontal, ethmoidal and sphenoidal bones are disclosed by the almost uniform presence of characteristic symptoms on the part of the walls of the orbit, its margins or contents, and even if these uncommon cases have not attracted more general attention they, nevertheless, belong to the province of ophthalmic surgery. Unfortunately these cases have not received, even from the majority

of ophthalmic surgeons, the attention they deserve, and only in those unmistakable examples of disease in which these sinuses become the retention-cavities of pus, larvæ, micro-organisms, or tumors, were the indications for rational surgery looked upon as imperative, and even in such cases, unnecessary delay was oftentimes resorted to." It will be noted that "characteristic symptoms" are referred to "on the part of the orbit, its margins or contents;" that is to say, we may have as the result of extension of disease and destructive pressure of contained products, lesions appearing at a distance from the original site of the disease. Under such lesions SATTLER mentions periorbitis and caries of the orbital margin, both following sinus disease. Displacement of the eyeball to either side or forward, producing pronounced exophthalmos, is a not uncommon symptom. As a result of periorbitis or caries we may have fistulous tracts formed which empty themselves, usually externally, far from the diseased origin. "With less frequency we meet with chronic empyema, hyperostosis, exostosis, periostosis, and the growth of osteophytes and exostoses; rarefaction of the cavities with dilatation, in exceptional cases, to enormous proportions; contraction of these spaces either confined to one or several, or as observed in these rare cases, of leontiasis ossea affecting all alike." Surgical treatment dealing with the apparent disease frequently relieves the symptoms but does not cure. It is only by getting at the primary foci and thoroughly eradicating them that we can hope for a permanent beneficial result. It might also be mentioned that it would be wise in the treatment of supra- and infra-orbital neuralgias before resecting the respective nerves to explore with great care the accessory cavities, for these neuralgic affections are not at all uncommon complications of the pathologic process under consideration.

What is the nature of the disease involving these sinuses? In the beginning doubtless streptococcus infection in many cases, either by the blood or more often from extension of nasal diseases, or in the maxillary sinus carious teeth. The pneumococcus is also present at times. In the chronic cases, where caries is a prominent symptom, cases without great pain and in which very little purulent material is formed, are frequently tuberculous from the outset; though indeed acute cases may be accompanied by caries and necrosis as the result of closure of all avenues of exit and a resulting harmful pressure.

Not infrequently we find no signs localizing the disease to any particular cavity, the only symptom indeed being intractable headache usually located in the frontal region, but may be radiating. In such patients the frontal sinus may be the one at fault; on opening the sinus everything at first glance appears normal, and it may be only by the careful use of the probe or curette that granulation tissue of uncovered bone is detected. That this apparent trivial condi-

tion has produced the symptoms is evidenced by the fact that drain of the cavity is followed by a disappearance of the terrible pain. Nor can these people be said to have been afflicted with hysteria and that any operation would have cured them: the large majority were by no means strangers to the operating table. SATTLER, by his timely article, written as it is by one of vast experience, can not but direct even more attention to this line of work than it is now receiving, and that is not inconsiderable. With the progress made of late doubtless the subject will receive deserved notice, which is sure to bring about a rational and scientific treatment.

THE LIMITATION OF OPERATIVE TREATMENT OF EPILEPSY.

In the discussion of the operative procedure of epilepsy, one very important fact has failed to command the attention it deserves. Because an epileptic seizure is localized in its onset and course, it by no means argues that the epileptic lesion is a gross one or one to be benefited by operative procedure. We may have non-traumatic partial epilepsy, or what has been described by FERE as parcellar epilepsy or monospasm. These partial epilepsies may, and generally do, tally with grand mal fits in all other respects aside from their peculiar muscular spasm.

Again, because the epileptic fit has a leisurely and well-marked order of invasion in the convulsion, it does not necessarily prove that a focal disease is at the beginning of the fit. Many grand mal epileptics, apparently idiopathics, come to autopsy with no visible local cause for this systematic order of invasion. Even various forms of localized paralytic phenomena, motor and sensory, may occur in such cases without discoverable lesion in the brain. Facts like these should deter operative procedure in such cases. Further tests are necessary before we trephine them, as only harm can come from meddling in an operative way with such an epileptic's brain.

What, then, does the order of invasion prove to us? Simply that one part of the cortex requires less irritation to provoke a discharge, or has less power of internal resistance in maintaining its normal status, and takes the lead in the epileptic fit. Frequently we see one of these seizures delayed by mechanical means, until another part, usually secondarily involved, begins the muscular spasm. We are inclined to think a much narrower limitation of operative work among epileptics would result if the above facts were borne in mind.

The hereditary instability of the cerebral cortex of epileptics has not been given the attention of late years that it really demands. We can not refrain from placing ourselves on record as opposed to the radicalism in the present-day studies of the etiology of epilepsy. Some of the studies devoted to eye-strain and its correction, satirically referred to by one of our

prominent neurologists as "tampering with eye muscles," is too absurd to call for special comment. GOWERS, one of the greatest living English authorities in nervous diseases, has said that the so-called reflex epilepsies are exceedingly rare.

To this same category may be assigned similar reflex disturbances in nasopharyngeal, urethral and many gastro-intestinal cases. In regard to this latter class of cases, which have probably given more aid to the upbuilding of the toxic, autotoxic and dynamic causes of epilepsy than any other phenomena in the disease, we notice that CLARK of the Craig colony, in his studies of the aura of epilepsy, has recently called our attention anew to the important fact that such symptoms from the digestive tract are most frequently due to a nerve disturbance originating primarily in the brain, and like any other aura or warning, referred to the periphery along sensory paths. Frequently such sensations may precede, follow or take the place of an attack. In this latter instance it exists as an aborted attack of epilepsy, common to the experience of many epileptologists.

Again, malassimilation, constipation and chronic intestinal catarrh may equally be caused by defective tone of the cerebral nervous system. We do not doubt that visceral symptoms most frequently accompany epilepsy as an effect of the disease and not as the cause. In such cases we should not consider toxicities as the one great thing to be studied and possibly eliminated, but the hereditary instability of the cerebral cortex of the epileptic. In our minute examination of the organism of the epileptic by the aid of chemistry and pathology, we are liable to overlook the autonomy of the nervous system as a whole. How often does the clinical observer declare on paper, in examination of a case of epilepsy, that there is "no cause in hereditary factors," and yet in looking at the case in a critical manner is able to see little indefinable and intangible frayed ends of inherited factors which come under the cognomen of no well-marked condition or disease.

At best, the study of the excitant of an epileptic attack will give us the degree of instability only and can not help to solve the far greater problem as to what that instability really consists of. The real chemico-psychologic change in the nerve-cell during an epileptic fit may never be known; at least by methods at present in use it seems impossible. As we have before remarked editorially in these columns, the necessity of approaching the pathologic physiology of epilepsy by means at present in use for the study of the brain in experimental psychologic laboratories can not be too urgently insisted upon. But it must not be studied in a psychologic light alone. Although we have received a rebuke from the great VIRCHOW in referring to a man as a "biologic unit," yet we can refer to it in this manner when we wish to express that the whole organism is to be studied,

and not a single apparatus. We must endeavor to bring to our aid in epileptic studies the accumulating facts of cytology in development and inheritance to further the study of the multitude of "biologic units" in man, and especially upon the units of the cerebral cortex.

INTERNATIONAL MEDICAL STATISTICS.

In 1894 an international committee of military medical men of which Dr. JOHN S. BILLINGS, then lieutenant-colonel and deputy surgeon-general on the active list of our army, was chairman, met at Budapest, Hungary, and formulated a series of international statistical tables with the view of enabling a ready comparison of the prevalence and fatality of disease in the various armies to be made. These tables were formally adopted, and since 1895 Surgeon-General STERNBERG has embodied them in his annual reports. Chiefs of the medical departments of other countries have not been so prompt in getting up their statistics in this comparable form. In the JOURNAL of May 21, 1898, we noted the publication of the first tables of this kind issued by the British Government, for the year 1896. We have now to record the publication of similar tables from the Netherlands for the year 1897 in the form of an octavo pamphlet from the *Imprimerie Nationale* at La Haye.

A few items taken from these tables will show the facility with which points of interest requiring investigation or explanation may be detected. The bracketed figures given below are those of our own army for 1897, obtained from the office of the surgeon-general. The recklessness of the United States soldier is manifested by the excessive number of accidental and violent deaths, as well as by the ruptures and the cases of alcoholism.

The mean strength of the Army of the Netherlands was 27,458 [23,843] during the year, and the admissions to sick report 1450.7 [1186.6] for every thousand men present. A total of 85 [86] deaths occurred among these, or 3.09 [3.14] per thousand living; but these deaths do not include 8 [10] suicides nor 6 [54] deaths by accident or violence. The amount of sickness was equivalent to 10.8 [13.1] days for each man in the army, and the average duration of each case was 13.9 [11.07] days. Arranged by months, September had the lowest admission rate, 73.6 [December 90.57]; March the highest, 177.2 [October 106.87]; August the lowest death-rate, .07 [July 0]; May the highest, .42 [June .46]. Of special maladies and groups of maladies skin diseases occasioned the largest number of admissions to sick report, 87.8 [75.37] per thousand men for the year, the cases having an average duration of 9.1 [8.3] days. Acute bronchitis came second with 52.7 [58.55] per thousand. The malarial fever rate was only 8.9 [80.69], notwithstanding the malarial reputation of the "Low Countries," sustained historically by the breakdown of the

Walcheren Expedition. Forty-six [80] ruptures were reported during the year, the patients in 28 [65] cases having been cured and returned to duty. No case of acute alcoholism nor of delirium tremens [666 cases, or 27.93 per thousand men, with 2 deaths] was reported during the year; but there were 29.3 [55.49] admissions per thousand for gonorrhoea, with an average duration of 32.7 [22.19] days, and 6.7 [12.79] for syphilis with an average duration of 34.5 [36.7] days. Only 16 [174] cases of typhoid fever were reported, but of this small number 7 [8] were fatal; 193 [65] cases of pneumonia of which 14 [4] ended fatally and 122 [59] cases of consumption, 16 [7] fatal. The advantages of these International Tables are obvious.

CORRESPONDENCE.

The Vital Statistics of the War.

WASHINGTON, D. C., Nov. 12, 1898.

To the Editor:—In a communication in the JOURNAL of October 29 I directed attention to the unsubstantial basis on which an editorial writer in the *Philadelphia Medical Journal* made a demand, on behalf of the medical profession, for an explanation of the fact that the ratio of death from disease to death from all causes was greater in the Spanish War than in the Civil War. The pressure of official business was so heavy that I was unable to discuss the conclusion admissible from the figures given by the journal cited, or to give some statistics which I am confident would have been regarded with interest by the members of the AMERICAN MEDICAL ASSOCIATION, but this I propose now to do.

The statement was made that death from disease formed 66.6 per cent. of the total mortality in the War of the Rebellion and 88.1 per cent. in the Spanish War. Accepting these figures at their face value, for I have not considered it worth while to verify them, we learn simply that more men were killed and fatally wounded out of every hundred who died in the service of their country a third of a century ago than in the recent war. This we can readily understand, when we recall the fact that on July 21, 1861, when the first serious clash of arms took place between the North and South at Bull Run, Va., nearly as many men were wounded and nearly twice as many killed as in the whole Spanish-American War. This one fight was but the beginning of a series which ran the list of battle fatalities up to the terrible total of more than ninety thousand deaths. It may, however, be claimed that the difference between the ratios in question was due, not to a greater prevalence of battle casualties in the former war, but to a greater prevalence of fatal disease in the late war. This can not so readily be accepted as an explanation, although a great deal has been said, written and printed about the sickness at Santiago, Chickamauga, Alger and other camps where our volunteer troops were aggregated. We may not assume that the sickness which affected our young men was more extensively disseminated or more deadly than that from which their fathers suffered in the earlier war, because, as a matter of fact, we know that it was not so. Time has dulled the National memory of what happened in the days of the Civil War. Perhaps the remembrance of those times remains fresher with myself than with most others, not because I was with the troops in the field until the end came at Appomattox, for many others had as full an experience of army life in the field, but because it afterward became my duty and my high privilege to spend over three years of my life in studying the records of sickness, while compiling the third part of the medical volume of

the "Medical and Surgical History of the War." That history is on our shelves, and by referring to it we may at any time find out how diarrhea and dysentery, typhoid fever and malarial diseases swept through our camps and sent their thousands to the hospitals and to their graves. We may also compare the deaths recorded by the medical officers of those days with the deaths recorded by the medical officers of the present time, and should we do so we would find overwhelming testimony to the effect that any differences discovered in the percentage of deaths from battle, casualties, and from disease, are not due to the greater prevalence and fatalities of disease in the recent struggle, but to the number of sanguinary battlefields of the Civil War.

In April, 1861, President Lincoln called for 75,000 volunteers, but it was not until after July 22, when his call for 500,000 was made, that we had armies comparable in size with those recently in existence. Beginning, then, with July, 1861, when we had medical reports from regiments aggregating only 69,118 men, and including August, September, October and November, five months, we find recorded a loss by death of 3075 men in the reports sent in by medical officers, from an average strength present of 177,690 men, or 17.31 deaths out of every thousand men during that period of five months. More deaths occurred than were reported, for some surgeons failed to send in reports; but the probabilities are that, had the missing reports been forthcoming, the deaths would have continued to have the same proportion to the reported strength.

In April, 1898, President McKinley called for 125,000 men and later for 75,000, which, with an increase in the regular Army and the immune and other special regiments, made a total of over 270,000 men. Beginning with May, 1898, for which month we have medical reports in the office of the Surgeon-General of the Army from regiments aggregating 151,685 men, and including June, July, August and September, five months, we find on file a loss by death of only 1715 men reported by medical officers, in an average strength of 167,168 men, or 10.21 deaths out of every thousand men during that period of five months. More deaths occurred than were reported, for some surgeons have failed so far to send in reports, but the probabilities are that were the missing reports forthcoming, the additional deaths would be associated with a proportionate increase of the strength. This proportion of deaths to a strength of 270,000 men would give 27.70 as the total of reported and unreported deaths.

According, then, to the testimony of every medical officer who has placed himself on record then and now, we lost in the five months of the war with Spain 10.21 men out of every thousand reported present by medical officers serving with them, and in the first five months of the War of the Rebellion, 17.31 out of every thousand similarly reported present. This is interesting, but it is still more so, if we look a little more into the details of these reports. During the month of May last the death-rate was low, .46; it was somewhat higher in June, .70, or the equivalent of an annual rate of 8.4 per thousand. In July it rose to 2.15 for the month or the equivalent of an annual rate of 25.8 per thousand. In August, owing to the rapid spread of typhoid fever in the camps, and to the broken down condition of General Shafter's Corps, it reached 4.08, equal to an annual rate of 48.96, such as was common in cities before the era of municipal sanitation. The War Department immediately put forth its energies to remedy this condition of affairs and with such efficacy that the death-rate in September fell to 2.45. If it be claimed that this falling off was due to the fact that the typhoid infection had done its worst and that, irrespective of all sanitary measures, the death-rate would have fallen owing to the exhaustion of susceptible material, we have merely to consider what was the history of our Civil War camps subsequent to November, 1861, when, as I have stated, the number of deaths had already

amounted to 17.31 per thousand of the strength present. In that month of November the rate was 4.27, or somewhat more than our recent maximum of August last; but the next month, December, showed no sign of decrease, for 1578 men died, or 4.69 per thousand. During January, 1862, the ravages of disease continued, 1664 men having been swept away by death, or 4.84 out of every thousand of those present. In February the rate was 4.79 and in March 6.08. In April the culmination was reached when 3331 deaths were reported, constituting a death-rate for the month of 8.42 per thousand, a rate twice as high as that reported from our camps in August last.

This is a startling record. Mortality from disease reached its maximum in the camps of our Civil War only at the end of ten months, if we count from July, 1861, or at the end of twelve months, if we count from May, 1861, when 47.56 men had been buried out of every thousand of strength present, or, to put it otherwise, the maximum monthly mortality was reached only after ten or twelve months of suffering, during six of which the mortality was greater than that of the disease which did so much harm in August last. In that month the country became excited over the hysteric utterances of yellow journalism, with 4.08 deaths per thousand, and the morale of the Army became broken by making the volunteer believe that never in the history of armies had men suffered from disease as he and his companions had suffered. Yet thirty-seven years ago the flower of the manhood of this country, after months of deadly losses, suffered in April, 1862, more than twice the loss incurred in August last, and instead of going home on sick furlough they girded up their loins for the attack on Richmond, by way of the Peninsula.

Respectfully,
CHARLES SMART,
Deputy Surgeon-General, U. S. A.

Bicycling.

SEATTLE, WASH., Nov. 5, 1898.

To the Editor:—In the JOURNAL of October 29, you have something to say about the ill effects of bicycle riding, and among other things is mentioned the long-since prophesied ill effects on the female pelvis, by way of distorting or contracting the same, and rendering childbirth more difficult. A little further on you say: "We are not aware that the obstetricians are having any greater difficulty in delivery than formerly." And why should they? The gentleman who had prophesied that the bicycle would have a serious effect on childbirth had a mistaken idea of the entire proposition. While bicycle riding may deform the pelvis, it will have little or no effect as regards the ease of childbirth. And why? For the simple reason that "bike" riders do not have babies. Where or who is the physician that has attended a "bike" rider in confinement? Will the female rider throw aside her wheel long enough to have a baby, let alone to rear a respectable sized family? The bicycle is a nuisance and a curse instead of a blessing. While it may have a beneficial effect physically upon a few, yet the ill effects upon the many ten thousand times overbalance it. The deaths and the maiming from wheel accidents—almost equal perpetual war. The injury to heart and kidneys of thousands must be added. Then what of the nuisance of the machines on street and sidewalk everywhere? In the public thoroughfare they are a constant menace to teams and footmen, and as there is no bounds to the impudence and effrontery of these wobblers, they presume also to usurp the sidewalks in most cities, whether permitted or not by law? Think of such ungovernable vehicles approaching foot-people on sidewalks every few rods as they proceed, at a speed of twelve to fifteen miles an hour, jingling their little bells, warning you to jump aside or be run over or maimed! And when one steps aside there is no telling but the cranky thing will make a dive for his solar plexus or coccyx, since all sorts of wobblers presume to usurp the walks that were in

times past, before we became so civilized, supposed to be for footmen only.

The advent of this horrid means of locomotion is an instance in which the inventive genius of man has overtopped itself, or at least he has invented a machine that causes a great many individuals to be overtopped. Here in Seattle, bicycle riders pay a license and are permitted by law to ride on the sidewalks, so footmen step aside as they whiz by or take the chances of suddenly converting the momentum of one of these machines and its rider into heat, light and electricity.

A. C. SIMONTON, M.D.

Conservative Treatment of Intestinal Occlusion by Inter-nal Electricity.

OAK PARK, ILL., NOV. 15, 1898.

To the Editor:—A criticism of an article under the above caption, credited to the able pen of Dr. J. R. Pennington of Chicago, appears in the *JOURNAL* of November 5. As the author of said article I respectfully request that you publish my answer in your columns.

1. The critic calls me to account for not giving Dr. Boudet credit for his original work and untiring effort. However, I did state in quotation from Dr. Larat that Boudet had treated fifty cases with 75 per cent. of cures, a better percentage of cures than is shown by any other practitioner, even including surgery.

2. As to electrolysis: He says to use the author's electrode, the oxychlorid of the metal used may have an indescribable effect on the tissues, and attempts to overcome this difficulty by using a disc of soluble "copper, carbon, zinc, gold or platinum." Of course he does not mean a solid disc of gold or platinum. The expense is prohibitive. Consequently I fail to see his advantage over me, as it is as easy to plate my electrode as it is his disc. His deductions on electrolysis, however, are overdrawn. With the current used in this treatment it would be so slight as to be harmless, unless the treatment was carried on indefinitely.

3. The Doctor criticises me, in very poor taste, on the "Code," for in the same breath he describes minutely, with an accompanying cut, an instrument that is named "Dr. J. R. Pennington's Colon Electrode." As to the merits of his instrument I am doubtful. The coil (which he is pleased to call a flexible cable), covered with vulcanized India rubber, is no better as a conductor than an ordinary copper wire, and of no more use as a mechanical device for introducing the rectal tube. This deduction is from the fact that the coil is smaller than the internal diameter of the soft-rubber colon tube, and does not support the caliber. Consequently, the tube will kink and double up, and is no better than the soft-rubber rectal tube, and can not generally be introduced into the sigmoid flexure. As to the general similarity of the two rectal tubes under discussion (his and mine), I will simply refer you to the cut in his article, and the description of my tube which I give in my original article. From this comparison the reader may draw some very interesting conclusions as to Dr. Pennington's general source of information on the subject.

R. P. JOHNSON, M.D.

Rush Monument.

PHILADELPHIA, NOV. 4, 1898.

To the Editor:—As the committee on Rush monument are desirous of having a thorough organization of the profession in the States and Territories, will you please urge immediate attention to the request for the appointment of a committee-man for each State and Territory? Thus far very few have notified me of any selection of a representative.

Yours very truly,

W. B. ATKINSON, M.D.

Foreign Body in the Ear.

CINCINNATI, OHIO, NOV. 6, 1898.

To the Editor:—Mrs. H. brought her son, 9 years of age, to consult me in regard to his left ear. He had been treated for earache, deafness and ringing in the ear by a physician for the past month, but could not get any relief. Good illumination showed the auditory canal to be normal, but what at first sight I supposed to be the membrana tympanum, showing as it did the cone, or pyramid of light, did not present the outlines of the ossicles. Instead of probing I used the politzer inflation on that side, and again examined the ear and found that I had dislodged the supposed drum, which was a foreign body tightly impacted against the membrana tympanum. A syringe full of warm sterilized water brought away a circular concavo convex piece of mother of pearl (the larger end of a small button). When in the ear it presented the concave surface.

CUNDELL JULER, M.D.

PUBLIC HEALTH.

Hay Fever in Switzerland.—A collective investigation of the etiology and therapeutics of hay fever has been commenced in Switzerland by Dr. A. Wyss of Geneva, according to the *Schweiz. Corr. bl.*, No. 19.

Hygiene in Schools.—The recent French Congress for the Advancement of Science passed resolutions urging the teaching of hygiene by a physician in all the schools above the primary grades.

Sanatoria for Convalescents.—The city of Paris has recently entered into possession of a much-needed asylum for convalescents, a chateau at Mary-sur-Marne, which, with its large grounds, was bequeathed by its late proprietor for the use of women who have undergone surgical operations in the Paris Hospitals. There is already room for forty.

Quarantine Convention Delegates.—Dr. A. J. A. Egan, secretary of the Illinois State Board of Health, and Dr. John B. Hamilton of Chicago, are delegates for Illinois to the Quarantine Convention at Memphis, November 17, 18 and 19. Dr. A. R. Reynolds of the Chicago Department of Health is the delegate for Chicago, and Dr. J. C. Sullivan of Cairo the delegate for that city.

Sanitation in Mexico.—Information from Mexico City, November 5, is to the effect that the government is taking measures for carrying out the sanitation of Mexican Gulf ports. It is believed there that when the American Government completes the reconstruction of the sewerage system of Havana and cleans out the bay, with moderate care in Mexican Gulf ports yellow fever can be stamped out.

The Bubonic Plague.—United States Consul Hurst, at Vienna, dispatches to Washington, D. C., that three deaths have occurred from bubonic plague, and that there are now only six cases in the entire city, and these are all hospital attendants. Mr. Hurst adds that the infection of immigrants is improbable, ample protection against possible infection of suspects, or in fact any who have been in contact with infection, being provided.

Support of Illegitimate Children.—The new Code to go into operation throughout the German Empire in 1900, provides that the man who has had relations with the mother of an illegitimate child between the 182d and the 302d day before the birth of the child, is to be summoned before the justice of the peace and compelled to assume the pecuniary obligation of paying a certain small amount annually for its support until it is fourteen. If there are several men they must raise the amount collectively. There is no question of paternity. The relations are merely those of debtor and creditor, and the proceedings in the court are private. The child belongs to its mother, but

the certainty of its support prevents infanticide and desertion, and places the burden where it belongs. The man can also adopt the child if he wishes, even without marriage with the mother, and confer upon it all the legal rights of a legitimate child. Somewhat similar legislation has proved very effective in Great Britain, and the *Semaine Méd.* is urging its introduction into France.

Yellow Fever.—The increase of yellow fever at Havana has caused the United States Government to seriously consider the problem of landing an army of unacclimated volunteers to take possession of that city a few weeks hence. Nothing toward cleaning and disinfecting can be done until the American troops are in complete control. The original occupants are less capable and less disposed than ever to be sanitarians, now that their departure is so near. The few weeks of delay may prove a sacrifice of many lives.

Santiago Healthful.—Gen. Leonard Wood, governor of the military department of Santiago, under date of November 1, authorizes the statement that during the last sixty days there has not been a case of yellow fever. With warm commendations of the Red Cross Society for their continuous help and for their supplies, which have been effectively distributed by officers of his own appointment, he warns against fictitious tales of suffering and asks that hereafter all the applications be referred to him for endorsement. It is now expected that much before the close of the month the staff of the yellow fever hospital will be abolished. It has been maintained merely to care for a few suspected cases, and with the cooler weather its further services are not needed.

Military Sanitaria for West African Troops.—The King of Belgium has evinced an alert attention to the sanitary well-being of his Congo State troops. One of the greatest drawbacks to the expansion of European rule in West Africa is the deadly climate and the difficulty of dealing satisfactorily with fever-stricken troops. If they remain at their posts they run every risk of succumbing; if they are brought back to Northern Europe the sudden transition from a tropic temperature to the chills and damps of their own countries may also prove disastrous. King Leopold, therefore, has in view the establishment of a sanitarium within reasonable touch of the Congo territories, which shall be at once genial and free from malaria. Northwest Morocco was at first suggested, but a second and decidedly better scheme has presented itself and is in a fair way of being carried through. The Canary Islands are considerably nearer the west coast than is Morocco, and lie in the direct route of the Congo steamers. Their climatic conditions are too well known to medical men to need any remarks. A medical commission has left Antwerp for Las Palmas to choose the site for the sanitarium and the King has placed 25,000 francs at the head of the subscription list by which the necessary funds are to be raised. It has always been the custom of our military medical service to provide hospital steamers for the reception of fever cases among our troops whenever large numbers have been on active service in malarial districts, but the establishment of a permanent sanitarium in a climate such as that of the Canaries, within easy reach of our West African dependencies, is certainly a plan well worthy the consideration of the authorities of the Royal Army Medical Corps. English troops are constantly quartered in those districts, and many valuable lives might be saved to our army by such an institution.—London *Lancet*, October 22.

Local Inspection of Water-Supplies.—Dr. Thresh holds the opinion that it is the exception to find either public or private water-supplies adequately protected. In fact, he would take a still more serious view of the situation, and say that it is the exception to find such supplies protected at all, except in the crudest manner. Dr. Thresh's remedy is legislation and education. Both are powerful agents, and to the latter unquali-

fied support may be given. There is room for discussion as to the best legislative means to be adopted, as was recognized by the parliament when it refused to insert the clauses introduced by the local government board in certain private water bills, as being of the nature of limited legislation on an important subject. Dr. Thresh suggests, as a basis for future legislation: 1. That sanitary authorities should have power to close any shallow well which can be proved to be liable to pollution. 2. That no shallow wells shall in future be made until the site selected has been approved by the medical health officer for the district. 3. That sanitary authorities should be empowered to make by laws having reference to the construction of such wells. That control of water supplies by an authority is necessary, all will admit, and that such control should rest to a large extent with the sanitary authority, is doubtless desirable for many local reasons; but that it would be wise to vest in that officer the ultimate control of the water supplies in his district we venture to doubt. The water supply of a district is ultimately a physiographic question; and geologic formations are not coterminous with administrative districts. A central water authority is the only solution of the control question. On it should rest the responsibility of opening wells, while the local sanitary authority might wisely be entrusted with their enforced closure. Most hygienists will agree with Dr. Thresh when he says, "I am strongly inclined to think that all public supplies, whether owned by sanitary authorities or water companies, should be under the supervision of some higher authority."—*British Medical Journal*.

SOCIETY NEWS.

Washington Microscopic Society.—At the regular meeting of this society, held November 8, the program was "Abstract of Foster Lecture on the Physical Bases of Psychic Events."

Columbia Historical Society.—At the meeting of the society held in Washington, November 1, Dr. Samuel C. Busey read a very interesting paper on the history of daguerrotypy in Washington.

Southern Kentucky Medical Association.—The semi annual meeting of this Association was held at Russellville on November 2. Dr. M. E. Alderson of Russellville was elected president and Franklin chosen as the next place of meeting.

Wyoming State Medical Society.—The second regular meeting of the society convened in Rock Springs, November 1, under the presidency of Dr. R. Harvey Reed. The program was full and the papers elicited a good discussion. The society passed resolutions condemning the Anti-vivisection Bill now pending in the Senate, also the granting of a patent on diphtheria antitoxin to Behring, and recommending the establishment of a National department of public health, with a physician as cabinet officer at its head. The society was entertained by Drs. Reed and Freeman and the citizens of Rock Springs, and the meeting will do much to organize and unify the medical profession of Wyoming. The following officers were elected for the ensuing year: President, Dr. R. Harvey Reed; first vice-president, H. J. Maynard; second vice-president, G. G. Verbruyck; third vice-president, E. E. Levers; secretary and editor, E. Stuver; treasurer, C. H. Solier. The next meeting will be held in Laramie City on the second Tuesday of October, 1899.

Washington Obstetrical and Gynecological Society.—The two hundred and eighty-seventh meeting of this Society was held November 4, at the residence of Dr. Van Rensselaer. Dr. H. B. Deale read the essay of the evening, entitled "Constipation in Infants." He limited his remarks to young breast-fed infants, and recommended the cure of the infant through hygienic and dietetic treatment of the mother. An interesting discussion followed, participated in by Drs. Acker, Sprague,

Smith, Winter, H. L. E. Johnson, Balloch and S. S. Adams. Dr. Stone reported a case of death from sepsis, after an operation for ventral fixation. He also presented the specimen and gave the history of a case resembling abdominal pregnancy. The Fallopian tube and tumor were referred to the microscopic committee.

Philadelphia Pathological Society.—At a meeting of this society, held November 10, Dr. George E. de Schweinitz presented several mounted specimens of sarcoma of the choroid and sectional drawings, together with micro-photographs and stained specimens of metastatic carcinoma of the choroid. Glioma of the retina was also spoken of. Dr. de Schweinitz thought his specimens of metastatic carcinoma of the choroid the twenty-seventh on record. Dr. J. H. Jopson read a paper, and presented a specimen showing epithelioma of the penis. He stated that a superficial section, obtained previous to operation only, showed the growth to be papillomatous, but deeper sections obtained afterward revealed its malignancy. Dr. Joseph Sailer read a paper, and presented specimens of a species of worm he had discovered and identified as being the louse of *strongylus pneumonia* in sheep, an epidemic disease which has proven to be very malignant in certain regions of the State. Dr. John M. Swan presented a case of anomalous position of the cecum, showing that its position had been maintained in the epigastric region during the life of the patient.

Third Pan-American Medical Congress—Postponement.

INTERNATIONAL EXECUTIVE COMMISSION OF THE
PAN-AMERICAN MEDICAL CONGRESS.

OFFICE OF THE SECRETARY, CINCINNATI, NOV. 5, 1898.

My Dear Sir:—I have the honor to announce that in April, 1898, I received from Dr. José Manuel de los Ríos, chairman of the Committee on Organization of the Third Pan-American Medical Congress, a request that, in consequence of the then existing rebellion in Venezuela, no definite arrangements be made at that time relative to the meeting of the Congress previously appointed to be held in Caracas in December, 1899.

The following communication relative to the same subject is just at hand:

CARACAS, Sept. 25, 1898.

DR. CHARLES A. L. REED, Secretary of the International Executive Commission, Cincinnati, Ohio:

Dear Sir:—After having sent my communication dated April last, I find it to be my duty to notify you, that although the considerations pointed out in it have already ended, our country has been scourged by smallpox, which has taken up all our physicians' activities and time, depriving them of going into scientific works. And, as that state of mind of our people and government after such calamities as war and epidemic, would greatly interfere with the good success of our next meeting, I beg leave to tell you, in order that you will convey it to the International Executive Committee, that our government and this commission would be grateful to have the meeting which was to take place in Caracas in December, 1899, adjourned for one year later. I am, dear Doctor, yours respectfully,

THE PRESIDENT,

(Signed)

DR. JOSÉ MANUEL DE LOS RÍOS.

In accordance with the request of the Government of Venezuela and of the Committee on Organization, the Third Pan-American Medical Congress is hereby postponed to meet in Caracas in December, 1900.

For the International Executive Commission.

CHARLES L. REED, Secretary.

Medical Society of Kings County.—The appellate division of the supreme court of New York has reversed the mandamus procured by the oldest medical society having its headquarters in Brooklyn, by which it was relieved from the payment of taxes on real property. The mandamus having been appealed by the Board of Assessors, the latest ruling will require that the society shall pay the bills for taxes, amounting to several hundred dollars. Judge Woodward, who wrote the decision for the appellate division, said that the theory of the law disfavored exemptions from taxation, except in that class of cases

where the property is to be put to some use calculated to minimize the expense of government. The society grounded its petition for exemption on the establishment by it of an organization for mental improvement and for certain educational and charitable purposes. This, according to the decision of the court, is most commendable in the physicians making up the medical society, but it does not entitle them to exemption from taxation under the laws of this State. There is no allegation that the society is organized for the exclusive purpose of carrying out any of these objects, and if there was it would still fall short of the requirements. There is no claim that the purpose of the society is to improve the morals of either men or women, or that it is for religious, missionary, hospital, patriotic or historic purposes. In other words, the society is performing no service of a character calculated to relieve the burdens of government more than a thousand other mutual associations or corporations designed for the promotion of the individual development of its members. It is in effect a medical club house, where the members of a single profession meet for "mental improvement" and such incidental benefits as flow from association and co-operation of effort.

Washington Medical Society.—At the meeting held November 9 Dr. D. S. Lamb presented the heart from a 13-year-old boy, and gave the following history: While climbing a fence the child accidentally thrust a needle into the heart. In extracting the needle a portion remained. For two days the patient suffered no evil effects; at the end of that period he fainted and suddenly died. Autopsy showed a portion of the needle in the heart just below the pulmonary valve. Death was caused by hemorrhage and pressure. He also presented a case of ulcerated carditis with abscess of spleen. The heart showed vegetations in the aortic and mitral valves. Organism causing disease not known. Dr. J. Taber Johnson presented a calcified myoma of the uterus, which he removed from a patient aged 61 years; she had had the tumor for twenty years. Three years ago she had a sudden abdominal enlargement with febrile symptoms; several gallons of fluid were drawn off and the mass connected with the uterus removed. The mass had undergone calcareous degeneration and resembled a fetal head. Dr. Fry presented a dermoid cyst in the right ovary. The patient was 38 years of age, and was supposed to have suffered from floating kidney in its normal position. The left ovary was also found to be cystic. The dermoid contained hair, teeth and bones. The other ovary contained a similar kind of fluid, and was supposed also to be dermoid. Dr. Fry read a paper entitled "Antistreptococci Serum in Puerperal Sepsis." Dr. Fry was one of a committee appointed at the last meeting of the American Gynecological Society to investigate the use of serum in the treatment of puerperal sepsis. He referred to the Paris Maternity, where in a case 8 c.c. of serum were used on the first day, with no effects. The second day 8 c.c. better, and the third day 25 c.c. was used, followed by improvement and convalescence. Of 119 cases reported 77 were cured, 42 died—35 per cent. mortality—consequently this mortality is higher than the modern antiseptic treatment. He considered the treatment indicated only in cases of streptococci infection, and bacteriologic investigation necessary. Of 46 inquiries, 14 were favorable and 35 unfavorable. Barton Cook Hurst has no faith in it. R. C. Norris uses it in all cases, and considers his life saved by it. Munde, three cases, is pleased. E. P. Davis, total failure in many cases, but great success in others. It is called for when free flushing fails. E. P. Reynolds says it controls chills. Dr. Fry thinks it has a limited field: 1, the cases must be of streptococcus infection; 2, stage of disease is important—too late when streptococcus is in the blood, consequently should be given early. If local, the patient suffers most from ptomaine poison. Serum is of benefit when given in doses of 5 to 10 c.c.; bad cases require larger doses. Fatal cases have rapid pulse, low temperature and uncontrollable vomiting. He thinks curetting harmful in streptococcus in-

fection, except when necessary to remove diseased tissue. Curette valuable only in sapremia. He cited two cases: In one, abortion, patient had delirium, cough, temperature 105; serum given and transfused; grew worse and died; laparotomy showed necrosis of uterine wall, supposed to have been punctured with an instrument. Concerning the use of thyroid extract in uterine fibromata, he claimed it reduces tumor and controls hemorrhages. He reported four cases: two young women with hemorrhage and two after menopause; all improved. Long-continued use of drug causes anemia and palpitation.

NECROLOGY.

LOUIS BOWER, M.D., St. Louis, Mo., died in New York City, November 5, aged 84 years. Born in Stettin, Germany, of poor parents, he put himself through school by teaching, and soon after his graduation was appointed district surgeon to look after the poor and needy. The district of Stolb sent him to the lower house of the Prussian Reichstag, and there he championed the cause of the democrats to such an extent that he was sent to prison, but while in jail was re-elected. Before he took his seat he discovered that the Government feeling was such as to necessitate his flight, and he settled in London. After his flight the German Government passed sentence on him and decreed that he should spend eleven years in prison. This sentence was in force until 1870, when a general amnesty was extended to all political refugees. In 1854 he settled in Brooklyn, N. Y., and there helped found the Long Island College Hospital. In 1869 he located in St. Louis, and there founded the College of Physicians and Surgeons, but after three years gave it up. Shortly after, he again started it and was its Dean until three years ago. Probably his best known work is "Orthopedic Surgery." He also translated many German works into English.

A. M. MILES, M.D., Harvieland, Ky., died on the 2d inst. of consumption, after a long illness. He had recently removed to that place from Shelby County.

PERRY H. BENSOTER, M.D. of Peely, Pa., died at Lexington, Ky., of typhoid fever, November 4, on duty as contract surgeon at Camp Hamilton. He was a graduate of Jefferson Medical College, and 30 years of age.

E. L. BETTERLY, M.D., Wilkesbarre, Pa., died November 3, aged 67 years. During the Civil War he was surgeon of the One Hundred and Sixty-fifth N. Y. Infantry, and later major of the same regiment.

D. R. DEWEY, M.D., North Adams, Mass., died November 5 from disease contracted at Chickamauga, while on duty as an army physician.

JOHN HELM, M.D., N. Y. University, 1861, died November 7 at his home in New Brunswick, N. J., after a long illness. He was a veteran of the Civil War and had been a member of the Board of Education for eleven years.

CARL ENGLEHARD, M. D., Chicago, November 6, aged 64 years.—J. St. Pierre Gibson, M.D., October 31, aged 66 years.—F. S. C. Grayston, M.D., Huntington, Ind., November 6.—John H. Kappel, M.D., Fort Wayne, Ind., coroner of Allen County, October 31, aged 28 years.—J. M. Marsh, M.D., Delphos, Ohio, November 2, aged 35 years.—Fred. Merrick, M.D., Barclay, Md., November 4, aged 36 years.—J. H. Mullens, M.D., Waco, Texas, October 30.—Abraham H. Robinson, M.D., Concord, N. H., October 31, aged 85 years.—G. Rutz, M.D., Port Townsend, Wash., November 1, aged 68 years.—Christopher C. Sharp, M.D., New York City, November 5, aged 77 years.—Frank P. Thompson, M.D., St. Louis, Mo., November 5.

MISCELLANY.

Tabetic Atrophy of Optic Nerve.—Silex found forty-four syphilitics out of fifty-four cases of tabetic atrophy of the optic nerve. Twelve had undergone a thorough specific treatment; eight had been treated for years; fourteen with inunction cures and the rest with pills. He concludes that even the most thorough treatment is not always able to prevent the development of this affection. He found all treatment of the atrophy ineffectual; electric, potassium iodid, strychnin, argentum,

etc., administered in all kinds of ways. The only possible means to retard the development of the affection is with strengthening therapeutics to tone up the organism, especially the nervous system.—*Vienna klin. Rund.*, October 30.

Gasserian Ganglion.—In the *Am. Jour. of the Med. Sci.* for November, Keen and Spiller present "Remarks on Resection of the Gasserian Ganglion," with the following method for the preservation of the eye in that operation: Either immediately before or at the close of the operation disinfect the eye and sew the two eyelids together by two or three stitches, near the margins, drawing together only the middle of the lids. This leaves the two ends open sufficiently, first, for washing the space between the lids and the eyeball with a warm boric acid solution, to wash away any mucus, and also leaves enough space to observe the cornea when the patient looks strongly to one side. This occlusion of the lids should last not less than four or five days, when the stitches may be cut and the eye immediately covered with a Buller shield, i. e., a watch-glass held in place by means of either a circular fenestrated disc of rubber plaster or by four separate pieces of plaster. The shield should be used from ten days to a months after the operation.

Large Excision of the Omentum.—Montini describes, in the *Gazz. d. Osp.* of September 11, a case of strangulated hernia with threatening symptoms, in which the hernia only contained a small normal intestinal loop, with a very large amount of gangrenous omentum, which he was compelled to excise. The patient made a good recovery, and has shown no disturbances from adhesions to date, although the excised portion of the omentum was about 40 cm. square.

Adherent Retroposed Uteri.—Pryor (*Med. News*, October 29) enters the pelvis at its lowest point, through the posterior cul-de-sac, in three cases, and finds suturing necessary only when large portions of the ovary are removed, opening small sprouting vessels. He considers that this method allows conservatism as in no other method of operation. Following thorough preparation of the vagina the uterus is curetted and then, selecting the fold behind the cervix which marks the reflection of the vagina, he enters Douglas's cul-de-sac. After digital exploration the incision is spread laterally until the posterior retractor can be introduced. The uterus is then "lifted up into the abdomen by the curved trowel and several gauze pads are inserted into the pelvis." The patient is then put in Trendelenburg's position, when the operator is enabled to see and treat the adnexa as desired. Drying the pelvis, after the operation, iodoform gauze is introduced just within the incision and "these and the uterus replaced *en masse*, the cervix being forced as high as the vagina will permit," and gauze packed lightly around the cervix "until that portion of the vagina which is above the levator ani muscle is almost filled. A stout roll of gauze is then made, varying in thickness and length to suit the width of the vagina" and inserted above the levator ani fibers; in front of the cervix, its ends in the lateral pelvic cavities; the cervix is thus kept anchored.

Rupture of Symphysis Pubis During Labor.—In the *Am. Jour. of Obstet.* for October, De Lee reports two cases, one where the child was delivered spontaneously, the other after prolonged and difficult extraction. Later, in the latter, operation revealed a large abscess around the pubic joint, which was ruptured, the ends of the symphysis being three-quarters of an inch apart and much evoked.

Anthrax of the Lungs.—Schottmuller observed two cases in persons employed in sorting rags and wools, in which infection had evidently occurred by inhalation of the germs. The diagnosis is difficult, but is indicated by severe cyanosis such as only accompanies pronounced disturbances in compensation, and also by severe collapse after slight exertion. There is usually a pleural effusion but no certain indications of pneumonia.

The very high temperature at first falls below normal in the course of two or three days. The prognosis is very grave.—*Munich Med. Woch.*, No. 39.

Composition of Diphtheria Toxin.—P. Ehrlich states that besides the essential toxin in diphtheria poison there are other substances very much less toxic, "toxoids," which are important, however, as they bind the antibodies the same as the essential toxin. As a diphtheria bouillon culture stands, the toxin diminishes while the toxoids increase. He classifies the toxoids as: protoxoids, which have a stronger affinity for the antitoxin than the genuine toxin; syntoxoids, which have the same affinity as the toxin; and epitoxoids, which have less affinity. He considers the latter a primary product of the bacillus and not a transformation product of the diphtheria toxin, and calls them "toxones." These toxoids and toxones are not simple substances, but can be subdivided into what he calls proto, deuterio and tritoxins. His research proves that in the diphtheria toxin molecule there are two independent atom-complexes. One is haptophorous, that is, it binds the antitoxin; the other is toxophorous, the cause of the specific toxic effect. Experiments on frogs disclosed that the first exert their effect even when cold, but that the toxophorous require warmth before they can affect the cells. This difference in time explains the incubation period. There seems to be a further possibility that the protoxoids are able in certain circumstances to effect a direct cure by forcing the toxin out of its combination with the elements of the tissues, by means of their stronger affinity for it.—*Deutsche Med. Woch.*, No. 38.

Army Medical Examining Boards.—Several boards of army medical officers are or have been recently in session for the examination of medical men for position or promotion. One board, convened at the Army Medical Museum, examined medical officers of the army for promotion in accordance with the requirements of the existing law. Another board for the same purpose was convened in Santiago, Cuba, to obviate the necessity of sending the officers concerned home for examination. A third board, to which greater interest attaches, is examining candidates for appointment as assistant-surgeons at the Army Medical Museum Building. This Board consists of Colonel Dallas Bache, assistant surgeon-general; Majors J. C. Merrill and Louis A. La Goode, surgeons U. S. A.; Major Geo. E. Bushnell, surgeon U. S. Vols., and Captain E. L. Munson, assistant surgeon U. S. A. There are fifteen actual and also some prospective vacancies to be filled, but it is said that the Board will probably succeed in filling them, as the professional qualifications of the candidates are above the average. Another board was convened in the same building, November 2, consisting of Major Walter Reed, surgeon U. S. A., Major Victor C. Vaughan, division surgeon U. S. Vols., and Captain George D. De Shon, assistant-surgeon U. S. A., for the examination of acting assistant-surgeons. Until recently the current work of the Army Medical Department was so great and the need for assistance so pressing that contracts were made with medical men on the strength of the letters of recommendation which they had filed with their applications for position. Now, however, it appears that candidates for these positions will have to demonstrate their professional qualifications before getting an assignment to duty.

For Female Contract Nurses in the Army.—Surgeon-General Sternberg has issued a Circular defining the status, duties, and privileges of contract female nurses as follows:

Contract and Duties.—The contract which is made by the Surgeon-General with a female nurse for Army service is for an unlimited period. In signing this contract and taking the oath of office a nurse is understood to promise that she will perform the important duties entrusted to her with unwavering devotion to the welfare of her patients and with the dignity of demeanor which is essential for Army service. Reports of each nurse are sent to the Surgeon-General, and on these reports action is based.

Pay.—While under contract a nurse receives \$30 a month salary; payable either on pay rolls or vouchers. While nursing at a hospital she receives also her lodging, board and laundry of uniforms. Expenses incurred for these things by a nurse will not be refunded.

Uniform.—No uniform for nurses has as yet been prescribed, but for the present a nurse is expected to furnish and wear such dresses, aprons and caps as are usually considered equitable.

Chief Nurse.—If the surgeon of a hospital so requests, the Surgeon-General may appoint a chief nurse, whose duty it shall be to look after the welfare of all of the nurses in the hospital; to see that they are comfortable and that they receive attention when ill; to assign each to her specific duty and see that the hours of such duty are strictly kept. She is also expected to have supervision of the general department of the nurses and to perform such other duties as the surgeon may direct, but not to undertake nursing herself.

Traveling Under Orders.—After signing the contract a nurse is subject to military discipline and must promptly obey any order given her. When traveling under orders she must not stop on the way. She must not, under any circumstances, leave her post or take any journey without written authority from the Surgeon-General or from the surgeon under whom she is serving. When traveling under orders she will be furnished in advance with transportation. This means an order for her railway ticket and sleeping-car berth, which are exchanged by her at the station for regular tickets.

Leaves.—A nurse will not receive pay for time absent from duty unless given by the surgeon—in writing—a sick leave or leave of absence "with pay." This must be for a specified time, one week before the expiration of which the nurse must report in writing to the Surgeon-General for orders, unless she already has orders to return to her former place of duty. Should her services not be needed at that time the Surgeon-General may annul her contract. While on leave with pay the nurse is entitled to commutation of rations at the rate of 25 cents per day. To obtain this she must, when she returns to duty, apply to the surgeon, who will endorse her papers of leave and forward them to the nearest commissary.

Leave of Absence.—When a nurse is granted leave of absence at her own request, she does not receive pay for the time absent, unless the surgeon grants—in writing—a "leave with pay," which can not exceed ten days or be allowed soon after entering the service. As she is not traveling under orders she does not receive transportation.

Sick Leave.—In case of sickness contracted in the line of duty, a nurse is entitled to medical attendance either in her quarters or at the nearest available army hospital. But if she prefers to return home, or to some other hospital, the surgeon may grant a sick leave with pay (for thirty days). If the surgeon also gives her written orders to proceed to her destination, she will then be entitled to transportation, as explained above. In such a case another nurse may, if necessary, be ordered to accompany her, and transportation furnished her also. If unable to return to duty at the end of the sick leave, a certificate from the attending physician stating this fact, and the probable date when the nurse will be fit for duty, must be forwarded to the surgeon granting the sick leave or to the Surgeon-General, if she has no station. This certificate is sufficient to cover absence for the term specified therein. Bills for medical attendance can not, under the regulations, be allowed.

Transfer.—Transfers from one hospital to another are ordered only when the necessities of the service require it. The preference of a nurse is consulted whenever possible, but she is expected to remain at the hospital to which she is assigned so long as her services are needed there. Nurses who go to Porto Rico or Cuba are expected to remain at least six months, if their services are satisfactory.

Annulment of Contract.—The contract of a nurse may be annulled at any time by the Surgeon-General or by his direction. A nurse is not expected to request such annulment before the expiration of two months, unless able to give satisfactory reason therefor.

Transportation, as above defined, is given on annulment of contract, except when "for misconduct or neglect of duty."

Transportation will be to place of making the contract, except that when made at the place of duty it will be furnished to the place designated in the contract as her residence.

The War Investigating Committee.—The following is the testimony of the volunteer medical officers of the army before the Committee of Investigation, at the sessions held in Chicago, Nov. 7-10, as reported in the daily press:

Dr. Lewis Schooler of Des Moines, Iowa, was the first wit-

ness. From June 7 to July 17 Dr. Schooler was stationed at Camp Thomas as chief surgeon of the Second Division, Third Corps. Questioned by Dr. Conner, he said that during the time he was there the sanitary conditions in the hospital were not very good; that the sinks in the whole division were bad, owing, principally, to the character of the ground, and that the discipline was rather lax.

"At the opening," said Dr. Schooler, "there were practically no facilities for the care of the sick; we were short of medicines and had no apparatus by which the stewards could prepare the medicines we had. The regimental hospitals, all but one or two, were as poorly supplied with medicines as the division hospitals. Requisitions were made for more, but they were generally disapproved at the camp headquarters. I do not know that the requisitions were absolutely turned down, but they were frequently reduced. It was in reference to the quantity rather than to the articles themselves that difficulties arose. I think the supply department issued stores according to its ability, but not always with promptness. It had certain hours for issuing supplies, and at other times nothing could be obtained.

"There was a scarcity of beds in the hospital, but I never saw a man lying on the ground. I went through the hospitals every morning and inquired of every man able to speak if he had been neglected in any way. Very seldom was there a complaint from a man who was really sick. Sometimes they complained about the lack of medicines. Occasionally patients recovering from typhoid fever complained about the diet, just as any convalescent fever patient would do at home. So far as I know there was never any patient neglected to such an extent that his chances of recovery were materially reduced. At one time practically half our nursing force was sick or in the guardhouse for insubordination."

Dr. Conner—Why was not a demand made by somebody that better or more nurses should be sent to that place?

Dr. Schooler I don't know. I wrote the surgeon general once, protesting against the difficulties of securing supplies. Part of the blame rested upon the quartermaster's department.

Asked to give, in as few words as possible, his opinion about the general conditions at Camp Thomas during the time he was stationed there, Dr. Schooler said:

"In the first place, the quartermasters and surgeons could not agree as to the number of tents we should have. Colonel Lee contended that we were limited to a certain number of tents, seventeen I think it was in the beginning. We afterward prevailed upon him to give us twenty-one. His contention was that he could not issue tents beyond the prescribed number. I think he based the number of tents upon 150 patients, and when the number of patients became greater we could not make him understand that we had to have more tents. It was his refusal to increase the number of tents that made the overcrowding.

"The lack of medicine, the lack of trained nurses and the lack of a sufficient number of surgeons was a material difficulty. One cause of the prevalence of sickness in the camp was that we had three regiments who came there with a great deal of sickness—the First Mississippi and the First and Second Arkansas. There was much typhoid and dysentery in these regiments. I think the quartermaster's department was largely responsible for the great sickness; the medical department (that is the supply department) was also responsible for some things. Then we lacked facilities to make reports on—did not even have stationery. We were told all the time that reports must be made."

Dr. Conner—So far as you know, was there on the part of any medical officer or surgeon any wilful neglect in the care of the sick?

Dr. Schooler—No sir. The great difficulty was in obtaining supplies, and I think the hitch came between Colonel Hartsuff and the medical supply department.

Dr. Schooler said he never knew Dr. Hubbard to force medicine down a patient's throat, as had been charged, although he thought that might sometimes have been necessary if the patient were delirious. He said he never knew of patients in any considerable numbers being kept in regimental hospitals until they were moribund and then sent to division hospitals. For the successful care of the sick, Dr. Schooler considered the division hospital far superior to regimental hospitals.

"I left July 17," he said, "before any epidemic had set in. In my judgment the responsibility for the continuance of the conditions there does not rest upon the division surgeons. If there is any responsibility it rests somewhere else. The surgeons in our division were hard working and faithful."

In regard to the water-supply at the camp, Dr. Schooler stated that he did not think any of the surgeons in his division considered the water fit to drink. There were not enough

teams at the disposal of the officers to enable them to bring sufficient water. When asked for his reasons why he considered the water unfit to use the doctor said that upon several occasions he had visited the ground around where the supply was taken from the river and felt convinced from what he saw that much of the prevailing disease was caused by the negligence of the policing department in allowing the soldiers to go at will through the woods situated along the banks of the stream. He gave this as a reason for many of the cases of typhoid fever existing in the camp.

Another feature which contributed largely to the sick list in the opinion of the Doctor was the laxity shown in issuing passes to the men and allowing them to visit other camps. "Fifty per cent. of the sickness," said the Doctor, "would not have been in existence had the men not been allowed to leave Chickamauga Park on passes." He gave as his opinion that the medical officers were hampered too much by officers of higher rank, but who had no medical training. In regard to division hospitals the Doctor said:

"I think there should have been a hospital at Chattanooga where patients could have been taken who were going to be sick any length of time. The division hospital was never intended for this class of patients." When questioned as to the lack of nurses, the Doctor said he thought both the nurses as well as the officers were overworked.

In many cases one nurse was compelled to take charge of twenty, thirty and sometimes forty patients during the night, which was too much to expect of one person. No blame could be attached to the doctors, as they would start out in the morning on their rounds of duty and would be on duty until late at night. When questioned as to the complaints about starvation, the Doctor said that a great many of these were entirely unwarranted. As to the general conditions surrounding the patients in the hospital, the Doctor gave it as his opinion that the average soldier was just as well treated there as he would have been at home, excepting, perhaps, in the line of bathing. In this direction he possibly might have received more attention, but this only affected the comfort of the soldier and did not necessarily affect the mortality in camp.

Dr. Nicholas Senn said:

"When I reached Chickamauga there were 40,000 soldiers encamped there. There were already a good many cases of typhoid fever and the disease was spreading rather rapidly. I do not believe it would have been possible to isolate the patients so as to keep it from spreading. Chickamauga was an ideal camp for a short period, but for a prolonged camp I considered it dangerous. The typhoid fever was brought there, it was spread by flies, and the sewerage and sanitary arrangements were imperfect. These conditions made disease inevitable. The sinks were properly dug, but they were not properly policed. The hospital arrangements were as good as could be expected."

Dr. Senn was next questioned about conditions at Santiago and Siboney. He said hospital supplies were scarce and the medical force was small; yet the materials at hand were so well utilized that the number of deaths was comparatively small. The supplies, he said, could not be landed for want of lighters. Speaking of the treatment of sick soldiers brought North on the *Relief*, he said:

"The *Relief* was a model hospital ship. I came North on her, and there was space for 250 passengers, while she carried only 147. The men were well cared for. We had six female nurses and eighteen male nurses, and the nursing arrangements were as perfect as possible. The sick had the best care it was possible to receive on a ship. When the *Relief* went back to Porto Rico I went with her. She carried everything needful in the way of hospital supplies, and indeed was a relief ship. At Porto Rico the sick had better care than those in Cuba, as the supplies were more generous. I accompanied the ship North again when the sick she carried were landed at Montauk Point.

"Do you know whether any transport left Porto Rico carrying 170 sick men, with no medical supplies?" asked Dr. Conner.

"If such was the case I never heard of it."

Speaking of the conditions of Montauk Point, Dr. Senn said for a short camp it would have been all right, but the location was such as would foster disease where it was occupied for a long time. Regarding hospital arrangements he said:

"The hospital construction at Montauk was the marvel of this short war. I don't believe any war, recent or remote, can furnish an example of such perfect hospital accommodations furnished in such a short time. The equipment was luxurious. The government gave us everything we asked for in the way of delicacies, and the Red Cross spent \$2000 a day there. The sick soldiers lived in luxury. Of course there were times

when there was congestion, but this could hardly be avoided, as ships were landing men nearly every day."

Dr. Senn said the only criticisms he had to make were a lack of co-operation between the quartermaster's and the medical departments, which delayed supplies, and the detailing of medical officers to executive work, when their attention would have been better directed to surgical work.

Dr. Milo B. Ward of Kansas City, Mo., who was a brigade surgeon at Camp Thomas from July 12 to September 10, when asked as to the condition of the hospitals, said that there was a great lack of medicine, only some of the simplest being on hand. He said that the food would have been all right had it been properly cooked. He said he knew of several cases where the patient was allowed to lie on the ground the whole day and also during the night before taken to the hospital.

Seventy-five per cent. of the patients were on cots and the other 25 per cent. were on stretchers on the ground. Sometimes at first some of the men were put on the bare ground, but within a few hours they were always put on cots or stretchers.

Dr. Conner—"What was the reason that the Second Division Hospital of the Third Army Corps had the worst reputation of any hospital during the war?"

Dr. Ward—"The first reason, in my judgment, is that the hospital had for its corps surgeon a man who never paid any attention to it whatever. His name was Hoff. The next reason is that the man in charge of the hospital, the division surgeon, seldom visited the hospital or paid any attention to it. His name was Jenney. The next reason is that there were not enough doctors at any time to take care of the patients without overworking the doctors and making them too ill to get out of bed.

"The stores that were necessary were not available from the army supplies. Milk and ice were obtained from other sources. Had it not been for the Red Cross some of the soldiers would have starved."

Dr. Connor—"Who was responsible for this?"

Dr. Ward—"For the condition of the camp, first, the man who insisted that the camp was perfect, and that the hospital was well run. That man was General Boynton. He was responsible for keeping the army there when that army ought not to have been kept there. The want of supplies was due to the fact that the quartermaster's and commissary's department were not hounded enough."

"What was your opinion of the location of the hospital?" was then asked the Doctor.

"The location of the hospital was extremely bad, in my judgment," he replied.

Dr. Wm. Cuthbertson of Chicago was then called to the stand.

"After locating our camp," he said, "we immediately made details to provide for sanitary conditions. The surface soil was shallow, and on digging three or four feet we would strike water. The ground was perfectly non-absorbent and the sinks being used by the men would become in a filthy condition in a short time."

He then went on to show how that, whenever a rain occurred, these sinks would become flooded and thus result in an unsanitary condition. This was the beginning of the trouble. When a requisition was sent in for quicklime with which to disinfect the camp there was no supply of that material. The Doctor then went into details to show how the medical department was handicapped by the lack of many necessary articles for the perfect sanitation of a camp. The question of regimental hospitals as compared with division hospitals was then brought up. It was the opinion of Dr. Cuthbertson that in theory the division hospital was superior, although from his experience he thought that in many cases the regimental hospital was better for the men, as they were then under the charge of physicians who were more liable to take a personal interest in the patient.

Dr. G. A. Smith of Clinton, Iowa, was appointed a brigade surgeon and served from July 14 to September 10. He was in charge of the hospital of the Second Division of the Third Army Corps at Chickamauga. He was questioned at considerable length.

Dr. Smith—When I assumed my duties at the second division hospital on the 14th day of July I found a shortage of tents and cots. The patients in the hospital were crowded on account of shortage in tents, and some of them were lying on the ground on account of lack of cots. There was no provision made for feeding the sick other than the rations issued to the soldiers in the regular service, except such as were brought in by charitable organizations, principal of which were the Red Cross Society and the National Relief. In the pharmacy there were at that time no intestinal antiseptics, although the commanding officer informed me when I made a requisition for these that he had made repeated efforts to get them. The

pharmacy at that time—and, indeed, until it was ordered closed and I turned the stores over to the Government on the 9th of September—never had any proper equipment for doing pharmaceutical work. There were no scales to weigh with and the hospital stewards used a board for a tile and an ordinary jack knife for a spatula. There were no pill-boxes or powder-boxes. The stewards dispensed tablets and pills in any paper they could secure, and they were carried to the wards in that shape, and owing to the prevalence of dampness at night they would become by morning a sticky mass not fit for use.

The medical supplies did improve after the 1st of August, he said, but up to that time there had been a great scarcity of supplies. The water was bad too.

General Dodge—How about the water?

Dr. Smith—The water that was furnished for the use of these hospitals up to August 1 was that taken from the pipe line from Chickamauga creek, and it was so full of sediment that it was simply slush and was not water.

There were no floors in any of the hospital tents at the time I reported for duty at that hospital. The first tent was floored soon after the middle of July, although some were not floored until long after that. The floors in the tents of the Fifty-second Iowa, the First Maine and the Fifth Missouri were all laid after the troops had left the park and were never occupied by the soldiers, and never had cots placed in them. In fact, I might state that the floors were laid after orders had been received to pack goods preparatory to leaving for Anniston.

In regard to nursing in that hospital, we had no trained nurses. All the nursing was done by orderlies, and many of them were densely ignorant, and when I was in charge of the wards of the Second brigade I had two men who could neither read nor write, and three men who did not know the meaning of "A.M." or "P.M." when written.

In regard to the sinks, disinfection and drainage: right back of the tents of the Second brigade there was a cesspool which contained most of the water from the camp, and that remained a stagnant pool until some time in August.

In speaking of the infection of the camp, Dr. Smith said a large part of the typhoid germs was carried around by the flies which invaded the grounds. The water supply, he said, was not contaminated by sewage carried into it from the camp, but mainly by an inorganic sediment which acted as an irritant on the men's digestive organs and caused, in many cases, dysentery and other intestinal diseases.

Dr. Smith said he regarded Dr. Milo B. Ward, who testified the day before, as a very competent and a very conscientious man, and would not doubt any statements Dr. Ward might make as to conditions at Camp Thomas.

Dr. Smith—I once wrote a report to the Surgeon-General, but I think it never got any farther than General Boynton's office. I was asked by General Boynton and Major Jenney to withdraw it, as it might get me into disfavor personally, but I told them there was nothing in it that I wished to withdraw.

Cleanings.—Acute infection, simulating a cerebro-spinal meningitis in a woman of 61, no syphilis, probably of intestinal origin, causing an abscess of the liver and extensive thrombosis in the vessels of the pia mater of the spinal cord.—*Nordiskt Med. Ark.*, xxi, 2.—Ernest has succeeded in cultivating a bacillus from a case of pseudo-melanosis, affecting the liver, spleen, aorta and kidneys, which reproduced the disease and is evidently the etiologic factor. The bacillus is straight or slightly wavy, from 2 to 16 μ in length, slightly enlarged at one or both ends, motile, liquefies medium and generates an abundance of hydrosulphuric acid. This fact tends to confirm an old theory that attributed the production of pseudo-melanosis to the presence of free iron sulphid in the organs affected.—*Arch. f. Path. Anat.*, clii, 3.—Success of creosote carbonate in children's pulmonary infections, non-caustic and not disagreeable to take.—Cure of large angioma of the lower lip with four treatments with bipolar electrolysis.—*Presse Méd.*, October 29.—Case of complete dislocation of the foot without fracture (except of the bicycle), exclusively on the talocrural joint, the tip of the foot turned inward, the sole outward, the outer edge of the foot in front. Easy reposition in narcosis.—Extirpation of the spleen on account of traumatic rupture, in sixth month of pregnancy, which continued undisturbed to normal delivery.—*Vienna Klin. Woch.*, October 27.—Jonnesco reports 23 splenectomies, all but one for malarial hypertrophy. One died during the operation; seven since from

various causes. The rest much benefited. He agrees with Laveran that the spleen is the receptacle of the hematoozon. Leukemia is the only contraindication to the operation.—*Bulletin de l'Acad. de Méd.*, October 25.—Case of nasal secretions streaked with blue, reported by Molinić.—*Rev. de Laryng.*, October 29.

Washington.

COLUMBIAN UNIVERSITY HOSPITAL.—The college hospital was formally opened for the reception of patients November 1, on which day the dedication ceremonies were conducted. The college building is located within one hundred feet of the medical department and will accommodate thirty patients. Beds have been endowed by Drs. W. W. Johnston, Middleton F. Cuthbert, Gardner G. Hubbard and the First Baptist Church. The following constitute the hospital and dispensary staff: Surgery, Drs. J. Ford Thompson, W. P. Carr, John Van Rensselaer, John Wellington and Frank R. Hagner; medicine, Drs. W. W. Johnston, D. W. Prentiss, G. N. Acker, G. Wythe Cook, T. A. Claytor, B. L. Hardin, Thomas Dowling; obstetrics and gynecology, Drs. A. F. A. King, H. L. E. Johnson, J. W. Bovey, H. S. Medford, V. B. Jackson, J. E. Jones and E. E. Morse; diseases of the eye, Drs. D. K. Shute, W. K. Butler, F. K. Newell; diseases of the throat and ear, Drs. C. W. Richardson, F. P. Morgan; diseases of the skin, Drs. H. C. Yarrow, R. B. Carmichael; diseases of children, Drs. T. E. McArdle, Frank Loech; orthopedics, Dr. A. R. Shands; diseases of the nervous system, Drs. D. W. Prentiss, E. L. Tompkins, Sterling Ruffin, A. L. Lawrence; genito-urinary, Drs. T. R. Stone, W. T. Birch; clinical laboratory, E. A. de Schweinitz and J. E. Carrol; pathology, Drs. Walter Reed, U. S. A., and L. W. Glazebrook; superintendent, Miss A. G. Odell; resident physician, C. S. White. Donations are earnestly solicited from Baptists.

ASSOCIATED CHARITIES.—The report of the Associated Charities for the past month shows that fifty-three investigations were made of applicants for free medical treatment; forty one were applicants for treatment at the Central Dispensary and Emergency Hospital, and of this number thirty-one were approved, eight were refused and two were found to have given false addresses. Twelve applicants for treatment at the Woman's Clinic were investigated, all of which were found worthy of free treatment.

REPORT OF MEDICAL SUPERVISORS.—The first annual report of the Board of Medical Supervisors of the District, organized under the Act of 1896, has been submitted to the District Commissioners, and shows that 1047 licenses were issued to physicians who were registered previous to the operation of the act; 86 were examined by the board for license, of which number 42 succeeded, 12 failed and 26 were recommended for future examination. Ninety-five licenses were issued to midwives, under the law exempt from examination, and the board remarks, "most of these were given under protest, as the ignorance of the applicants made it impossible for them to comply with the regulations regarding report and registration of diseases." The board recommends that provision be made at one of the hospitals for the education of midwives, as, in the present state of social development, the services of midwives are necessary, but an unskilled midwife is dangerous and her ignorance a menace to public health. The board recommends that a special officer be detailed to investigate alleged violations of the law by midwives and physicians. Six applicants applied for license to practice and were examined; E. L. Lemerle, Wm. H. Hughes, Jr., and Frederick H. Mohart passed successfully and three failed.

HONORABLY DISCHARGED.—Drs. Auther Snowden and John W. Bayne, majors and surgeons of volunteers, have been honorably discharged from the service. Acting Asst.-Surgeon James R. Church, the hero of the Rough Riders, has returned on furlough and will probably enter the medical service of the regular army. Dr. Church has earned his promotion, and is one of the best equipped surgeons of Washington. He was formerly one of the surgeons of the Central Dispensary and Emergency Hospital, and filled his position with marked distinction.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward for the week ended November 5 shows the total number of deaths to have been 126, of which number 83 were white and 43 were colored. The principal causes of death were: Nervous diseases, 20; circulatory, 16; respiratory, 26; intestinal, 1. There were 6 fatal cases of typhoid fever and 5 of diphtheria. At the close of the week there were 148 cases of diphtheria and 119 cases of scarlat fever under treatment. There were 245 births, of which 115 were white and 130 colored.

PHYSICIAN TO THE POOR.—On the recommendation of the health officer, the District Commissioners appointed Dr. Vergil B. Jackson physician to the poor, to serve during the absence of Dr. Battle.

WOMAN'S CLINIC.—At the annual meeting of the Woman's Clinic, held November 5, the following officers were elected: President, Mrs. Emily Sherwood; vice-presidents, Dr. D. S. Lamb and Miss Eva Simonton; secretary, Mrs. M. F. Case. The old board of directors, the consulting staff and standing committee were re-elected. Drs. Heiberger and Norris were appointed drug committee for the ensuing quarter. The annual report shows 562 new cases treated, 4866 visits made and 6500 prescriptions compounded.

CIVIC CENTER.—At the annual meeting of the Civic Center, held November 7, Dr. W. W. Johnston read an interesting paper on the bad effects of school life on the hygiene of children. Dr. Nordhoff-Jung addressed the society on the effect of school-life on teachers. Dr. Samuel S. Adams spoke on some of the so-called school diseases. Dr. George M. Kober read an address entitled "Many of the Causes of So-called School Diseases."

Cincinnati.

APPOINTMENT.—Dr. Otto Geir has accepted the position of junior assistant physician at the Worcester Insane Asylum, Worcester, Mass.

LAURA MEMORIAL HOSPITAL.—This gift of Mr. Alex. McDonald of this city to the Presbyterian Hospital, was formally opened November 1; patients were admitted the next day.

ACADEMY OF MEDICINE.—At the regular meeting, November 7, Dr. Joseph Eichberg exhibited a number of irregular, greenish, non-faceted concretions which had been sent to him under the supposition that they were gall stones. The patient by whom they were passed was supposed to have been suffering from gall-stones and had been given a pint of olive oil; these concretions were the result. By chemic and microscopic means he had succeeded in proving that they were composed entirely of fatty matters. He also thought that these fatty concretions so often passed after the exhibition of a large amount of olive oil, were frequently mistaken for gall-stones. Dr. Henry Battman read a paper entitled "Some Suggestions as to Diet in Diseases of the Stomach." The principal argument insisted upon by the author was that patients afflicted with stomach trouble, or supposed to be so afflicted, were habitually put upon a too restricted diet. Many of them were being practically starved to death, and the lessening of nutrition only aggravated the condition of the stomach. No dietary could be put down for any one class of patients; every patient is a law unto himself. He believed in the old saw "that one man's meat is another man's poison," and thought that the diet should be restricted only in that which the patient is unable to digest. Those who took part in the discussion were Drs. Zinke, C. R. Holmes, Kiely, Fackler, Oliver, Jones, Eichberg, Johnston, Langdon, J. Louis Brown, Marcus, and M. Brown.

Louisville.

QUARANTINE COMMISSIONERS.—Governor Bradley has appointed Dr. J. M. Mathews of Louisville and Dr. J. B. Kinaird of Lancaster as delegates to the National Quarantine Convention, in Memphis, Tenn.

MEDICAL STAFF.—The medical staff of the Home for Friendless Women has just been organized as follows: Ewing Marshall, chairman; Henry E. Tuley, secretary; Louis Frank and Frank C. Simpson, visiting physicians; Wm. Bailey and Preston B. Scott, consulting physicians; S. G. Dabney in charge of eye, ear and throat department.

GODSHAW.—Dr. C. C. Godshaw, on October 31, was shot by a colored man-servant, the ball entering the abdomen and penetrating the stomach and duodenum. He was able to walk into his house, was shortly removed in an ambulance to St. Joseph's Infirmary, where a laparotomy was done by Dr. A. M. Vance, within fifty minutes of receiving the wound. His condition the next morning was excellent.

BELL.—Capt. Austin Bell of Hopkinsville has been appointed surgeon-major of the Third Kentucky regiment.

ORPHANS' HOME.—A meeting of the board of managers of the Louisville Baptist Orphans' Home was held November 2. Dr. J. B. Marvin is president of the board and physician to the Home. In the past twenty-nine years the Home has cared for 1059 children, of whom one-third came from Louisville. There have been only seventeen deaths in the history of the institution and no fatal accident has ever occurred.

MORTALITY REPORT.—The health officer's report shows a total of 215 deaths during October, against 222 deaths for the corresponding month last year. Consumption caused 19, pneumonia 15, inanition 14 and old age 10. There were 332 births and 58 marriages.

BOWERS.—Dr. Henry Bowers, the physician from this city who is seeking fortune in the Klondike, has written a friend that his prospects are very bright for amassing a fortune. He is practicing medicine, has opened a drug store, and in connection with this is operating a vapor-bath house, which is prospering. He states that the miners are suffering largely from scurvy.

Hospitals.

By the will of R. M. Raab of Burlington, Iowa, who died recently, the Michael Reese Hospital, Chicago, will receive \$1000 and the Old Folks' Home \$500. Other bequests are: Burlington Hospital, \$1000; Mercy and St. Francis Hospitals, also of Burlington, \$500 each; Orphans' Home of Atlanta, Ga., \$1000; Orphans' Home and Hospital of Baltimore, \$1000; Philadelphia Hospital, \$1000; Old Folks' Home, Richmond, Va., \$500; two other benevolent institutions, same place, \$250 each. —Flushing Hospital, Flushing, L. I., has been voted \$10,000 by the Board of Estimate and Apportionment, provided, however, that the amount be earned by the institution before it can be received. The Hospital will receive \$1 a day for all surgical patients and 70 cents a day for all medical patients. —Fire destroyed the hospital of the Wisconsin Veterans' Home, Waupaca, Wis., November 9. Loss \$15,000; insured for \$10,000. —The formal opening of the new Samaritan Hospital, Troy, N. Y., occurred October 22.

Societies.

The following recent meetings are noted:

- Connecticut.*—New Britain Medical Society, November 3.
- Illinois.*—Chicago Medical Society, November 9; Chicago Medical Examiners' Association and Chicago Medical Society—joint session—November 16; McLean County Medical Society, Bloomington, November 3.
- Maryland.*—Washington County Medical Society, Hagerstown, November 9.
- Michigan.*—Barry and Eaton County Medical Association, Hastings, October 27.
- Missouri.*—St. Louis Medical Society of Missouri, November 12.
- New York.*—Canandaigua Society of Physicians, Ontario, November 3.
- Ohio.*—Crawford County Medical Society, Bucyrus, November 4; Union District Medical Society, Hamilton, October 27.
- Pennsylvania.*—Lancaster County Medical Society, Lancaster, November 2; Luzerne County Medical Society, Wilkesbarre, November 2; York County Medical Society, York City, November 3.
- Texas.*—Corsicana District Medical Association, Corsicana, October 31.
- Wisconsin.*—Rock County Medical Society, Janesville, November 4.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To Santiago, Cuba, Majors Wm. Dolz and Wm. Stephenson, brigade surgeons, to report to the Commanding General, and Acting Asst.-Surgeon Wm. C. Warmsley from Washington, D.C., via New York City. To Havana: Major Ezequiel de la Calle, brigade surgeon, as sanitary inspector, from duty with the Seventh Army Corps. To Ponce, Porto Rico: Capt. Geo. M. Wells, assistant-surgeon, U. S. A., for duty in the General Hospital. To Manila, P. I.: Lieut. Irving W. Rand, assistant-surgeon, U. S. A., from post duty at Fort DuChesne, Utah.

To Camps in the South—To the First Army Corps: Major Oscar C. Seure, brigade surgeon, from the Sternberg Hospital to report to the Commanding General; Major James D. Glennan, brigade surgeon, to Lexington, Ky., to the First Brigade, Second Division. To the Second Army Corps: To Camp Meade, Pa., Acting-Asst.-Surgeon John S. Schaub,

from Leechburg, Pa. To Camp at Augusta, Ga., Acting Asst.-Surgeon B. C. Leonardi, from Fort Huachuca, Arizona, and Major Lewis Balch, brigade surgeon, to the Second Brigade, Second Division. To the Fourth Army Corps: Majors Wm. J. Kernachan and Wm. B. Winn, brigade surgeons, to report to the Commanding General at Huntsville, Ala.; Major John L. Macumber, brigade surgeon, to the First Brigade, First Division, and Acting Asst.-Surgeon Rafael Echeverria to duty with the Eighth Cavalry. To the Seventh Army Corps: Major Geo. R. Fowler, chief surgeon Vols., relieved from duty with the Second Division, to report to the Commanding General; Major Paul Clendenin, brigade surgeon, assigned as Chief Surgeon Second Division; Capt. W. F. Lewis, assistant-surgeon, U. S. A., to the Cavalry Brigade; Major Samuel T. Armstrong, brigade surgeon, to report to the Commanding General at Savannah, Ga., and Acting Asst.-Surgeon Frank E. Artaud to Savannah, Ga., to the Fifteenth U. S. Infantry.

To post duty: Capt. Chas. F. Kieffer, assistant-surgeon, U. S. A., to Fort Meade, S. D.; Lieut. Basil H. Dutcher, assistant-surgeon, U. S. A., to Fort DuChesne, Utah, and Acting Asst.-Surgeon Francis A. Holliday to Willets' Point, N. Y., from Huntsville, Ala.

To General Hospitals, etc.: To the Josiah Simpson Hospital, Fort Monroe, Va., Acting-Asst.-Surgeon Charles F. Craig from the Sternberg Hospital, Ga., to the General Hospital, Fort Thomas, Ky.; Acting Asst.-Surgeon James L. Bevans. To the General Hospital, Fort Myer, Va.: Capt. Wm. F. Lippitt, Jr., assistant-surgeon, U. S. A. To the charge of sick soldiers in Washington, D.C., hospitals: Major John W. Bayne, brigade surgeon.

Sick leave granted: Lieut. B. K. Ashford, assistant-surgeon, U. S. A., and acting asst.-surgeons Henry R. Carter, Jr., John Horn, Ray A. Wilson, Isaac W. Brewer and Wm. E. West.

Honorably discharged—the following Majors and brigade surgeons: Arthur Snowden, John W. Bayne, James M. Jennic and Joseph K. Weaver; Major Jefferson D. Griffith, chief surgeon, Vols., and the following officers of the regular Army (their volunteer commissions only): Lieutenant-Colonels John Van R. Hoff and Valery Harvard, chief surgeons; Majors Adrian S. Polhemus, Charles B. Ewing, R. W. Johnson, Paul Shillock, Ogden Rafferty, Chas. T. Newkirk and Walter D. McCaw, brigade surgeons, Vols.

Resigned: Major Frank Boyd, surgeon Third Ky. Infantry; Lieut. H. M. Smith, assistant-surgeon First Territorial Vol. Inf.; Lieut. D. S. Humphreys, assistant-surgeon Third Miss. Inf. and Lieut. Otway W. Rush, assistant-surgeon, U. S. A.

Annulment of contract: Acting Asst.-Surgeons Frank T. Disbrow and George G. Morris ordered home from Porto Rico.

CHANGE OF ADDRESS.

- Bell, S. D., from Phoenix to Fort Apache Indian Agency, White River, Ariz.
- Borst, H., from Chicago, Ill., to Oelwein, Iowa.
- Beem, E. D., from Kansas City, Kan., to 1117 Holmes St., Kansas City, Mo.
- Birkofer, W. J., from Dickens to Bradgate, Iowa.
- Campbell, T. F., from Blunt, S. Dak., to Benkelman, Neb.
- Dickinson, J. W., from Keswick to Boone, Iowa.
- Dwire, D., from Burbank to Wilmington, Cal.
- Fowler, W. S., from Chicago, Ill., to Nordhoff, Cal.
- Fitzpatrick, G. W., from Temple Building to 409 Garfield Ave., Kansas City, Mo.
- Gamble, W. E., from Blue Island Ave. and Harrison to 400 Reliance Bldg., Chicago, Ill.
- Huecker, J., from Denver, Colo., to Waupon, Iowa.
- Holleman, P. W., from Roseland, Ill., to 255 E. 111th, Pullman, Ill.
- Moe, A. J., from La Crosse to Chaseburg, Wis.
- McMurchie, from 116 Lysander to Emergency Hospital, Detroit, Mich.
- McCurry, I. L., from Hartwell to Toccoa, Ga.
- Nichols, C. L., from Omaha, Neb., to 35th and Wabash, Chicago, Ill.
- Pinto, A. S., from Panama Park, Fla., to Savannah, Ga.
- Parker, D. L., from 835 to 397 Jefferson Ave., Detroit, Mich.
- Stockton, S., from 413 N. Delaware to Insane Hospital, Indianapolis.
- Soule, C. E., from Chicago to Sheridan, Ill.
- Stover, E. E., from Essex to Lacelle, Iowa.
- Thomas, F. W., from Marion, Ohio, to Pueblo, Cal.

LETTERS RECEIVED.

- Adams, W. A., Little Rock, Ark.; Ammon Chemical Co., New York, N. Y.; Allen & Hanburys Ltd., New York, N. Y.; Alma Sanitarium Co., Alma, Mich.
- Banks, J. N., Indiana, Pa.; Beck, Carl, Chicago, Ill.; Becker, E. C., Chicago, Ill.; Bishop, L. E., New York, N. Y.; Boston Gore and Web Mfg. Co., Chelsea, Mass.; Bouton, W. C., Waukegan, Ill.; Black, W. D., St. Louis, Mo.; Brobeck, A. L., Wellington, Ill.
- Chicago Oxygen Gas Co., Chicago, Ill.; Clough, J. A., Pepin, Wis.; Cook, W. E., Geneva, N. Y.; Curry, E. M., St. Louis, Mo.
- Derrick, Paul E., Advertising Agency, New York, N. Y.; De Young, R. J., Columbus, Ohio; Durlam, Chas. E., Galveston, Texas.
- Egan, J. A., Springfield, Ohio; Eshner, A. A., Philadelphia, Pa.; Everett, A. S., Brooklyn, N. Y.
- Fletcher, W. B., Indianapolis, Ind.; Fischer, Louis, New York, N. Y.
- Gillespie, T. W., Lestant, Ill.
- Hare, H. A., Philadelphia, Pa.; Hunter, G. T., Denver, Colo.; Hilts, F., Kansas City, Mo.; Hall, H. L., Toledo, Ohio.
- Inglis, David, Detroit, Mich.
- Jarrett, H. S., Towson, Md.; Jones, P. M., San Francisco, Cal.
- Keener, W. T., (2) Chicago, Ill.
- Lukens, A., New York, N. Y.; Luttenberger, J. G. M., Dorchester, Ill.
- Merrell Chemical Co., The Wm. S., Cincinnati, Ohio; Manitou Mineral Water Co., Manitou, Colo.; McKnight, W. B., Mansfield, Texas; Mellin's Food Co., Boston, Mass.
- Nind, J. N., Chicago, Ill.
- Paquin Laboratories, The Paul, St. Louis, Mo.; Parke, Davis & Co., Detroit, Mich.; Pasteur Vaccine Co., Chicago, Ill.; Platt, H. B., New York, N. Y.
- Reed, C. A. L., Cincinnati, Ohio; Rixa, Alex., New York, N. Y.; Rosenthal, E., Philadelphia, Pa.
- Smith, Kline & French Co., (2) Philadelphia, Pa.; Sharp & Dolme, New York, N. Y.; Senn, N., Chicago, Ill.; Stearns, F., & Co., Detroit, Mich.; Scott & Bowne, New York, N. Y.
- Trout, E. H., Chicago, Ill.; Trader, E. J., Council, O. T.; Townsend, W. R., New York, N. Y.; Thurston, John, Louisville, Ky.
- Willard, James Lovettsville, Va.; Whitehead, E. J., Columbiana, Ohio; Wine, R. E., Quicksburg, Va.; Wingate, U. O. B., Milwaukee, Wis.; Whittemore, C. A., Grand Rapids, Mich.; Wherry, J. W., Chicago, Ill.; Warner, L. H., Brooklyn, N. Y.; Weaver, W. H., Chicago, Ill.; Williams, C. C., Los Angeles, Cal.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, NOVEMBER 26, 1898.

No. 22.

ADDRESS.

INTRODUCTORY TO THE ANNUAL COURSE OF INSTRUCTION.

Delivered before the Woman's Medical School, Northwestern University,
Oct. 5, 1898.

BY I. N. DANFORTH, A.M., M.D.

DEAN OF THE SCHOOL AND PROFESSOR OF THE PRACTICE OF MEDICINE AND
OF CLINICAL MEDICINE.
CHICAGO.

A custom which has the force of an unwritten law has ordained that a course of instruction in a medical school shall be opened by a more or less formal address to be given by some member of the Faculty or by some one who shall be designated by the Faculty. This year the choice has fallen upon me, and I therefore take my place on the program in obedience to the dictates of my colleagues. While my remarks will be specifically directed to the class, they ought to have quite as much interest for our guests who have honored us with their presence this evening, since whatever interests our profession concerns our friends of the laity to an equal degree.

It is now almost fifty years since a woman first forced her way into the medical profession, against the judgment of the great majority of the laity of both sexes, and in spite of the opposition of an overwhelming majority of medical men. One can not read the simple story of Elizabeth Blackwell, narrating her early experiences as medical student and physician without being profoundly impressed with the fact that she paid very dearly for her triumphs and her honors. Yet she *did* triumph and she *did* achieve undying honor; but more than that, she *did* open to her successors—to you, students of the present class—the doors to professional preferment so wide that they will never be closed again.

But, notwithstanding the fact that woman has been fifty years in medicine, her position is not yet quite assured; her claims to professional equality with men are not yet quite admitted; her place in the ranks of citizenship not yet quite settled; and, in fact, the woman physician is still by many people—otherwise sensible and self-poised—regarded as a kind of curiosity or freak of nature.

I therefore ask your attention for a short time, to a consideration of a few of these questions.

1. How shall the woman physician establish her claim to professional equality with men? I answer: First, by simply being a *physician*. If woman is to practice medicine at all, she must practice *all* medicine; she must be an "*all-round*" physician; she must be the family physician, subject to calls from all members of the family—the father, the mother and the children; she must treat all diseases in all sorts of persons, at all times and seasons, without regard to age, sex or social position. In this way—and in this way only—can she establish and maintain her equality

with man as a physician. The very moment the woman physician attempts to draw the line and treat only women, or only children, or only certain diseases, she abandons her claims to equality. She erects a barrier as high as the Chinese wall, which separates her from association with physicians on terms of equality. I have very many times heard the criticism from medical men that women were only "half" physicians, because they only practice in a limited way. All this must be changed if the woman physician aims at professional equality; she should be satisfied with nothing less. Just as soon as the woman physician voluntarily limits the sphere of her practice, and thus admits, in an undeniable manner, her inability to maintain her parity with men, just as soon will she begin to lag behind in the race for professional distinction. And then will begin the process of professional degeneration in women, which can only end in her ultimate professional extinction.

I answer, in the second place, that women must show their capability for original investigation in the various departments of medicine, and especially in laboratory work; must, in fact, demonstrate that they are capable of doing quite as good work as men, if they expect to reach the scientific altitude which men occupy. I have always maintained that women ought to do better research work than men, because they are endowed with capabilities for such work of the very highest order. More than that, I believe that there are women in the classes before me, who can hardly excuse themselves if they do not do original scientific work which shall redound to the honor of themselves and of their alma mater. I have more than once urged upon the ladies of our classes the necessity for a "forward movement" in this matter of patient, painstaking, toilsome, and especially thoughtful, original research work; in fact, upon one or two occasions I fear I have pressed my views with almost unwelcome emphasis. But I feel that my long service in the cause of medical education for women gives me the right to some positive convictions; and it is my positive conviction that we hardworking medical men have the right to expect more efficient help from medical women in the solution of the dark problems in pathology and bacteriology yet unsolved than we have yet had; and that this very graduating class before me ought to enrich the field of pathology by the addition of some facts now hidden in the dark portals of the future. It is by such work as I now indicate, ladies, that you shall gain admission to the profession as the peers and equals of Sternberg and Klein and Ziegler, and other princes who now occupy the field to which you should aspire. Some women have achieved such distinction; we need not go far from home to find at least one; but we should have more, and this Woman's Medical School hungers for daughters who will honor her by painstaking original research, with test-tube and microscope.

2. What position shall the woman physician occupy as a citizen, or in her relations to the body politic. To this I answer, without a particle of hesitation, that the woman physician should be a large-brained, large-hearted citizen, with a definite and positive work to do—a work which she may not delegate or neglect without incurring serious personal blame. And just here I wish to say—in parenthesis—that physicians of the sterner sex are too often recreant to their duties in this respect. When a hard and a close battle is to be fought against any current evil, the leaders are hardly ever physicians, and it is frequently hard work to get them to lift their voices or use their pens, or even go to the polls when a great moral or political question is at issue. I always have had a measure of contempt for Nélaton, who declined to serve in the French Assembly because it would damage his professional dignity; but who does not honor the great Virchow all the more because of his long and eminent services in the German House of Deputies as a statesman and lawmaker? Away with the nonsense that because a man is a physician he must therefore be a cloistered monk, unfit for political responsibilities or duties. But what relation shall the woman physician sustain to community, to society, to her neighbors? She can not vote—not yet. The time may come; *will* come, I believe, when women can vote on all political and economic questions. Personally, I do not care a farthing whether women vote or not. I certainly have no objection to their voting, and if the responsibility of deciding the question were left to me, I should confer the ballot upon women and, then, with profound interest, I should watch the result. But a woman physician should not sit and do nothing because she can not vote. There is plenty of work for her to do—plenty of opportunities for practical usefulness.

She can be a practical teacher of sanitary science in the community where she lives, and this is a sadly-needed work. Every physician ought to be an educator—a teacher—from whom should radiate knowledge which the laity need, which they will gladly receive and which they can not get elsewhere. But the woman physician has special facilities for teaching mothers and nurses the essentials of sanitary science as applied to the home, and therefore she has a special responsibility in that direction. How frequently it happens in practical life, that a few words spoken to a mother may save her child from sickness—perhaps death. How easily the woman physician, with her woman's tact and sympathy, can reach the ear of a nurse or mother, when a male physician who tried to do the same thing would only incur the charge of impertinence or meddlesomeness. And so in other matters, the woman physician can, if she will, exercise an educating, elevating, indeed an almost evangelizing influence in the homes of her *clientèle*. In matters of dress, diet, ventilation, exercise—in all things which relate to healthy homes, healthy mothers and healthy children—the woman skilled in medical science can exert an influence for good for which she must be held responsible in the final reckoning. And as her opportunities are greater than those of the male physician, so is her responsibility greater. A woman can enter where we can not; a woman can utter what we can not; a woman can do what we can not; therefore, she can exercise an influence and accomplish much that we can not.

Remember this, young ladies when you begin your lifework; and remember also that when you are

teaching the people the essentials of practical sanitary science, you are likewise preventing disease, which is an infinitely higher function than curing disease. We are no idle dreamers when we say that, when all the people become practical sanitarians disease will be robbed of half its terrors; and we must add in the same breath that the principles of sanitation must be taught to the people nine times out of ten by their medical advisers. And you—lady students whom I now address—must have a hand in this most beneficial work.

Again: Many of you will be so situated that you can take a practical and active interest in the common schools of your neighborhood. The chief glory of our Republic is the common school. Indeed, so long as the common school—the “district” school, the “little red schoolhouse”—is open to the children of our majestic country, liberty is safe, the people can never be enslaved, and government “by the people, for the people, and of the people” can never cease. But the citizen has duties toward the common school, and the woman physician is a citizen, and that means you. What can you do for the common schools? First, you can take a loving and living interest in it, and thus, by the force of your example, you can arouse interest in others. You can visit the common school, seek the acquaintance of the teacher, if the teacher is a woman, and help her in her work. Some of you have been teachers; you can help some youthful and inexperienced teacher over the rough places that beset her way and thus lend a helping hand to one who is in real perplexity. If you are a good politician, you can get elected as a member of the school board and thus enable yourself to speak and act with authority. The first and only political office for which I was ever a candidate, was Superintendent of Schools in a little New England village. As party lines were strictly drawn, and my party was in the minority, I was promptly defeated, and grievously disappointed, because, among other reasons, I was in rather acute need of the salary, which was \$25 a year. I hope that you will have better success. I hope you will become winning candidates for positions on school boards, with salaries as munificent as the one I missed, and opportunities for usefulness infinitely greater than the one to which I aspired in vain. There is no higher or more imperative duty devolving upon the citizen than the care of the common school, and there is no edifice so important as the schoolhouse, no spot of ground more sacred or more hallowed than the dry and verdureless patch, on which the children of the common school expend their pent-up vitality. You should make this priceless institution your care. You can lecture on hygiene; you can instruct the children, and through them their parents, concerning the laws of health; you can exercise a mighty influence in the improvement of the school buildings, in improving methods of teaching; and in many ways which I can not suggest, but which you can see, as the occasion arises, you can exercise the influence with which you are endowed by reason of your position and education for the improvement and elevation of the common school.

In that beautiful old story, “Locke Amsden or the School Master”—which I read so many times in my boyhood—there occurs an incident which illustrates the precept that I am trying to impress upon you. The “district school” in the little Vermont town, commenced its winter's work under an enthusi-

astic sophomore, and in a bran' new schoolhouse. The frigid weather came, the old "box stove" in the center of the schoolroom buzzed cheerfully as it got hotter and hotter day after day, the new windows fitted so tightly that they could not be opened, and the air became foul from accumulation of "carbonic dioxid"; but the sophomore communicated his own enthusiasm to the scholars, and for a time all things went swimmingly, and everybody was delighted. But by and by a strange languor began to creep over the school; the children sickened and dragged themselves about, listless and forlorn; one of them broke forth in his sleep and repeated the whole multiplication table without dropping a stitch, while another arose from his bed, solved a problem in arithmetic which he could not solve when awake, and went back to bed utterly unconscious of his exploit until he awakened next morning. Meantime the schoolmaster had several times broken forth in school hours, and recited Latin quotations which were all "Greek" to the scholars—and probably to the teacher—and passages from Shakespeare, with wild and frantic gestures, and various facial contortions, in truly sophomoric style; indeed, on one occasion, when an uncommon apathy had stolen over the scholars, he wildly shouted that his name was "Norval," and that his father fed his flocks "on yon Grampian hills," when every scholar knew his name was Jeremiah Jenkins, and that the "hills" were only the Green mountains; and hence it began to be darkly whispered that the schoolmaster had formed a league with the evil one, and was practising the "black art" and "bewitching" the children. So on a cold dreary winter's night, a school meeting was called in the schoolhouse for the purpose of "investigating" the schoolmaster, and riding the excited community of his baleful presence; but while the people were solemnly discussing the awful situation in the close and heated room, the village doctor came in, sniffed the tainted air, and calmly informed the anxious group of citizens that ventilation was the cure needed for the form of witchcraft which they were fighting, and after the carpenter had lowered the upper window sash, and thus allowed the evil air to escape, the people sheepishly went home in a happier frame of mind—and the bright young sophomore became, of course, an apostle of sanitary science. It is useless to add that he married the beautiful daughter of the richest man in town, that he went to Congress, and after a glorious and useful career, was gathered to his fathers. Whether the story is true, or not, its lessons are true so far as they relate to the schoolhouse and its occupants, and the timely service of the village doctor, who did not confine his practice merely to administering Dover's powder and boneset tea to the sick, but who stepped out into a larger sphere, and became the guardian of the health and lives of the children of the common school. Similar opportunities will come to you; not that you will encounter such superstitions as lead to belief in witchcraft and the "black art," but you will find plenty of schoolrooms, churches, halls, and even houses, where you can confer a real blessing by pointing out the necessity for fresh air and ventilation. May I hope that you will improve the opportunities as they arise, and thus prove yourselves good citizens, as well as good physicians.

I have pointed out a few of the duties which will legitimately devolve upon you, both in your relation to the profession and to society or the body politic.

Other duties or other opportunities for usefulness will arise as you accumulate experience and acquire influence. I fully believe that you will make the most of your opportunities, and as a necessary corollary, that you will make the most of your lives.

Let me in conclusion glance for a moment at the past, and then for a moment at the future. In an earlier part of this address I have said that about fifty years have elapsed since a woman made her entrance into the medical profession in this country. At first glance one is inclined to think these fifty years have been rather barren of results; that too few women have reached professional eminence and made themselves felt in the medical world. It is indeed true that the number of women who have distinguished themselves, either in practical or theoretic medicine; either in the hospital ward, the lecture-room or the laboratory, is small in comparison with the number who have graduated. Nay, I will go a step further, and say that the ratio of distinguished medical women is smaller than the ratio of distinguished medical men, in comparison with the number of graduates. Let us inquire briefly into the reason for this. I do not think we will have far to seek.

In the first place, twenty-five of these fifty years were spent in battering down the walls of opposition and prejudice on the part of both physicians and laity, which barred the way of the woman aspirant for medical honors. Twenty-five years ago the woman who announced herself as a medical student had to encounter opposition, ridicule and not infrequently absolute insult, as she made her weary way toward a medical degree, which brought her few privileges and less honors. She was not welcomed in the lecture-room, in the clinical amphitheater or the hospital ward. It was not uncommon for the clinical professors to indulge in remarks which would bring the blush of shame to the cheeks of the lady students, and arouse indignation on the part of male students who were gentlemen as well. It would be impossible for a woman to do her best work under such dispiriting circumstances, and it is no wonder that but few reached the goal of their ambition. But again, at the time of which I am speaking, after the female student graduated, she generally met with a very frigid welcome on the part of the profession, and hence she was alone in her glory. She lacked that inspiration which a community of effort engenders; it is impossible for one to permanently keep the fires of enthusiasm alive in complete isolation. Interchange of thought, interchange of counsel, comparison of efforts and comparison of results are necessary for the professional mind of woman as well as man; but these all-important aids were frequently denied to the woman physician.

Pardon me, ladies, if I mention one other fact which militates against the greatest success of women. It is the fact that a majority of young medical women do not settle down to months and even years of hard, and often unrequited, labor, as the indispensable prerequisite of success. There is no other road to success. You must work incessantly—pay or no pay. You must work in your libraries, in dispensary service, among the poor, anywhere, everywhere, night or day, so that you acquire experience, dexterity and knowledge. Young medical women often shrink from the trying ordeal that awaits every young physician who seeks success in a large city, where competition is hot, and every desirable position is fought for

by a hundred applicants. And especially is this true, if our young graduate happens to be in a condition of financial anemia, as is too often the case. Alonzo Clark—the greatest physician New York has ever produced—a man who stood as the acknowledged head of the profession in the field of pathology and practice, whose consultation practice became so enormous that at last he had to refuse as many calls as he answered, spent his early years in dire poverty, haunting the hospitals, clinics and morgues of New York like a spectre—frequently lacking the means to buy a dinner—but always at work—at work—at work. “Go thou and do likewise;” go hungry if you must; dress plainly if you must; endure neglect from society if you must; but study, observe, experiment, think, write—work hard and constantly, and success is sure to come. I know; I have been through the same hard school myself, and so have some of my colleagues now here present.

The position of woman in medicine is assured. She has come to stay. The past fifty years have been years of pioneer work; all honor to the noble women who have cleared away the obstacles and opened up a great highway for you. Their work was necessary; see to it that you appreciate it at its just value, and render unto them the honor that is their due.

Meantime a new woman is being slowly evolved. For twenty-one years I have watched the evolution of the medical woman myself. Fifty years more, or three generations from Elizabeth Blackwell, will be required to complete the work. The medical woman,—the woman with the scientific cast of mind,—the hard-working, patient, self-denying, plodding student is almost here. Her representative, her *avant courier*, is here—is in this very class, in the plural number—an earnest, a promise, a prophecy of the host yet to follow. I shall not see the fruition of the promise; but, as I look back on my career as a medical teacher, now drawing to its close, I glory chiefly in the fact that I have had something to do in the work of opening the doors of medical advancement to American women.

ORIGINAL ARTICLES.

CHILDREN'S DISEASES.

Presented to the Section on State Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Our purpose in this paper is to enforce the efficacy of heat in the treatment of the ills of infancy and childhood, as well as to illustrate the pleasing and peculiar adaptability of the Turkish bath, which is the most perfect form of using heat in all cases of disease. What we have to say is based on experience in raising a large family, as well as some considerable practice with patients during a period of thirty-five years.

While a vast amount of disease and suffering that occur in early life is produced by errors in diet, clothing and exercise, a large portion of it comes from want of cleanliness, added to by impure air, unwholesome dwellings, etc. Lack of knowledge is responsible for many pernicious practices that lead to debility, and too frequently an untimely end. Impure air, of

whatever nature, has the most deleterious influence upon infantile life, producing a startling mortality in all our large cities, and a want of cleanliness is equally well known to be many times more injurious. Never was the old adage: “Heat is Life and Cold is Death,” more true than in the treatment of children's diseases. The simplest and most desirable form of heat is that derived from the one indispensable source of all heat—sunshine. We well know that all vigor comes from the sun, both to the animal and vegetable world, that it vitalizes the nervous system, develops the red discs of the blood, and also that it is the most powerful foe to contagion. The International College of Physicians which lately met in Italy declared sunlight to be the most practical of all antiseptics. A sun bath is the only remedy needed in some cases. Like the action of the sun's rays—gentle, yet all-powerful in quickening life—so does heat, in its proper administration, renew and vivify every function of the body, while at the same time it is so simple and available that none need suffer for the want of it.

Whenever cleanliness with infants is neglected, disgusting, painful and obstinate cutaneous eruptions are likely to occur, or the foundation may be laid for derangement of function, or serious disease of some internal organ. At no period of life is injury more liable to be produced, for at such time the vital resistance is at a low ebb, therefore repeated ablutions of the surface are most important. Again, the skin and the mucous membrane of the digestive canal and of the respiratory organs in an infant, are the principal surfaces upon which morbid impressions are received, consequently they are those in which disease usually first shows itself and the exhalent function of the skin is extremely active, while calorification is feeble. We are also to recollect that very frequently the cerebral symptoms which occur during infancy and childhood are altogether independent of disease of the brain or spinal marrow, being due solely to functional disturbance of the nervous centers, the result of reflex irritation. At this period, when the functions of life are confined to nutrition and development, it is important that we obtain the most favorable conditions for children; not alone to promote their normal growth and activity, but also to prevent any predisposition to particular forms of morbid action, as well as to give strength to overcome whatever prevailing disorder to which they may at times be exposed, whether it may be sympathetic irritation or the ordinary crises through which they usually pass.

In the treatment of children, much more than with the adult, is the cheerful and what may be called the hypnotic influence to be exhibited. Many times the dread of a disease is worse than the disease itself. A cheerful and relying faith in the efficacy of the treatment to be administered is of the greatest value. When the ablest physicians confess to a feeling of helplessness, it is time to give Nature an opportunity to recover herself, and instead of initiating measures that make a draft upon the vital powers, the part of wisdom is to remove, in the gentlest manner possible, all obstructions to the harmonious working of the functions, and encourage every effort the system is making to throw off morbid conditions.

Most of us believe that the death of young children is not a necessary or inevitable result of any disease from which they are suffering, but rather that it is an accident that may often be foreseen by any one who will cultivate the habit of minute observation. Many

an infant life has been saved or sacrificed by the observance or the neglect of things which are too apt to be lost sight of as utterly beneath the dignity of science. When we stop to consider how much benefit is to be derived from the simple use of heat, whether it be the internal use of hot water or the external use of hot compresses, or the primitive forms of a hot bath, it may reasonably be supposed that the scientific application of heat in the form of hot air, familiarly known as the Turkish bath, would be productive of a more uniform and certain result, and this has proved to be the case, to the surprise and delight of many an anxious parent.

To illustrate the action of the Turkish bath in infantile diseases, the following cases are related:

A male child, about six weeks old, was so nearly starved by the ignorant management of his nurse, that a complete case of marasmus was developed. The most important part of the child's treatment, after inaugurating a new régime, was a daily Turkish bath, supplemented by a gentle oil rubbing, which was continued for the succeeding twelve months. He was taken into the hot room and placed on his back, on a bench covered with several thicknesses of blanket, there he would lie and play with his toes and sweat freely, then he would be taken to the shampooing room and gently rubbed with soap and warm water, then a delicate spray of warm water would wash him off, after which he would be wrapped in a sheet and blanket and invariably drop off to sleep. All these processes gave him delight, and his improvement dated almost from the commencement of this course. He is now over 21 years of age, and an active member of the National Guard.

Another case was that of a boy $3\frac{1}{2}$ years old, who was taken late at night with the harsh ringing cough of croup, together with labored breathing. He was carried to the hot room of the Turkish bath. At first the heat did not seem to give relief; on the contrary, the symptoms were apparently aggravated. Hand-rubbing of the arms and legs was then begun, which was pleasant to the child. An expression of enjoyment, which was his first spoken word, encouraged perseverance. Very soon perspiration began, and then the unpleasant symptoms gradually vanished. He was kept in the hot room about an hour, until his breathing was perfectly normal and the perspiration most abundant, when he was washed off and put back to bed. He went directly to sleep, had no more coughing, nor was he heard from again until after daylight the next morning. That was the last of the croup.

Another case was that of a male child stricken with infantile paralysis, as a sequæ from an attack of eruptive fever. Both the lower limbs seemed deprived of the power of motion. The entire treatment consisted of a daily Turkish bath, followed by oil rubbing, and the result was that in a few weeks his activity was regained and his restoration was complete. Today he is a stalwart man, over six feet in height.

The internal administration of hot water and the use of the Turkish bath in diarrhœa and even dysentery, has proved most salutary, both with children and adults. The use of hot water in the hands of Dr. Elmer Lee, during the last cholera plague in Hamburg, was crowned with the best results. The first stage of cholera is at once arrested by a Turkish bath. Children liable to colds and catarrhal processes in general are rendered less susceptible by the bath, and it is also a valuable tonic to the vascular and nervous system, from the agreeable impression made on the peripheral nerves. In all fevers and inflammations the Turkish bath has proved a highly important therapeutic measure. Its antipyretic effect is enhanced by the rapidity with which morbid material is eliminated from the body, and thus the cause of the fever is removed. This also includes such cases as those of erysipelas, measles, scarlet fever, together with pneumonia and malaria.

The Turkish bath has produced the most happy results in all cases of rheumatism in children, whether from hereditary predisposition, which is well known to have a remarkable influence, or as a resultant of

septic poisoning from other disease, such as scarlatina. While rheumatism may be developed from a chill, yet it would not appear except from a lowered tone of the system, produced by exhaustion from some excess. Even excess of food may bring about such a result. The most reasonable theory in regard to the method in which chill acts in producing rheumatism is that the chill disturbs the nervous system, and nutrition is disturbed thereby, and that the lactic acid, or some other acid of an irritant character, is retained and acts as a poison, which produces the phenomena of acute rheumatism. While chronic rheumatism is rare in children, it is acknowledged by many of the best authorities that the means productive of the most good are hot baths.

Rheumatism in children is often followed by a large class of ailments, some of which result in veritable heart disease. All of these may be avoided or aborted by an early resort to the use of the hot air baths. Instead of being followed by an embarrassed and weakened heart, the purification of the blood renders the circulation perfect and the heart's action stronger.

Many of the drugs advocated for the treatment of rheumatism have been found useless, and some harmful and even dangerous. The fact that they are heart depressants of dangerous power negatives their use, especially with children. The use of anodynes can not be too strongly deprecated. Their action is simply to benumb or deaden nerve action, whereas the patient, at such times more than ever, needs the full integrity of the entire nervous system. Then it is that nature seems to loathe everything in the way of alimentation, plainly indicating that the digestive apparatus is in no condition for the work of appropriation. If the food is not relished or retained, it should be taken as a loud and natural protest against its being forced upon the patient. To force food then is like adding insult to injury. A copious use of hot water at such times gives wonderful relief in mitigating pain and aids materially in washing out poison from the system.

Heat, in the treatment of the diseases of infancy and childhood, is an agent so universally applicable and so readily at hand, from the tenement to the villa, that it deserves to be placed at the head of the physician's armamentarium. Among the readiest means of applying heat, where the Turkish bath is not available, is the hot compress, a simple device composed of four or more thicknesses of flannel wrung out of water as hot as can be borne. This may be placed next the body, covered by a dry one of the same material and thickness, but made a little larger—the size to depend upon the object to be attained and the age of the patient to be operated upon. One large enough to cover the entire front of the body, from the neck to the pubis, has been known to bring about a profound change in many a little sufferer, who could not tell what was the matter with him, and it has to all appearances saved the lives of many who were suffering from scarlet fever and other eruptive diseases. Cold water will dissolve most substances, but its power is greatly increased by using it at the temperature of the body, and it will dissolve most waste material that may collect in the intestinal tract and remove it by the various methods which the body possesses for getting rid of waste products. The waste substances, if not actually poisonous, are at least mechanically injurious to the body. They can either be got rid of, or allowed to get fixed in the

body, with resulting pains and headache. A sufficient supply of boiled water, drunk at the body's temperature, will remove many a source of danger. The internal use of hot water is invaluable to the infant suffering with colic, as well as to the adult suffering with sick headache. Another convenient and ever-ready form of applying heat to suffering children is by means of a hot sitz-bath, for which a common washtub may be utilized, providing that the water is as near 110 degrees as may be. Should the patient be too nervous to be introduced at that heat, it may be made several degrees cooler at first and gradually increased until the desired temperature is attained. To utilize as much of the heat as possible, a sheet should be first placed over the child and tub, followed by one or two blankets, reserving the head for the free access of air and an occasional sip of cold water. When the perspiration begins to show itself freely on the face, a successful result may be predicated. It is well to finish by washing off with cool or cold water, in order to tone up the skin and prevent what is called "taking cold" afterward. This device is capable of being utilized in an infinite variety of conditions, and when in intelligent hands has never been known to do harm, but on the contrary has brought about beneficial results in thousands of cases. With the addition of a foot-bath of the same temperature this same arrangement has produced wonderful results in children of much larger growth. W. H. Wooster, of Australia, relates the following:

A little girl about 4 years of age was bitten on the foot by a poisonous black snake. Symptoms of poisoning quickly followed, such as swelling, coldness and stiffness, the lips as thick as one's thumb, and the hollows on each side of the nose filled up level, and of a steel-blue and sea-green color. The arms, lower limbs and body were becoming blotched with irregular raised parts. The pulse became exceedingly feeble. I hesitated, as no physician was nearer than eight miles, but concluded to try the "hydropathic sweating pack," to produce perspiration. The child was placed in a tub of hot water, and blankets thrown over her, leaving the head out. This was followed by a hot wet sheet and wrapping in two blankets, closely tucked in. The heart action had almost ceased. In fifteen minutes an improvement was apparent. The dark rings around the eyes became less marked, the blue green tints less ghastly. She became conscious. In an hour she was taken out of the pack. The swelling, blotches, stiffness, had disappeared, and the patient was washed off with cold water, rubbed, and next morning she was at the breakfast table.

What is called a corn sweat has been utilized in some sections of the country. This consists of a number of ears of freshly boiled green corn, with the husks on, wrapped in cloths and placed around the body of the invalid and then the patient covered with blankets. The heat and steam from the hot corn soon brings on a profuse sweat and has relieved many cases of congestion. To give a lime sweat, take a piece of quicklime half the size of the fist and rub it over a bed-sheet well dampened, but not so wet that water will drip from it; wrap this sheet in a dry one and fold it several doubles; place two bundles prepared in this way, one on each side of the patient, in his bed; an abundant steam will come from the damp sheets and the lime, which will keep warm for over an hour; by that time the lime is reduced to a powder and can easily be removed from the sheets without injuring them. In using this method it is not necessary to give the patient warm drinks, nor to overload the bed with blankets. A balsam sweat can be given by placing a few branches of balsam in a pail of hot water and then placing in the water one or two hot flat irons—hot stones would answer the pur-

pose—to create a plentiful supply of hot steam. This is to be placed under a chair in which the patient is seated and covered with a sheet first, followed by two or more blankets to retain the heat and moisture. Twenty minutes of this bath, though sometimes it has been used much longer, has proved most effectual to secure a thorough sweat, and the empyreumatic oil from the balsams contributes to the pleasantness if not the utility of the bath.

Where there is a bathtub in the house a very good sweat can be produced by running into the tub about two inches of water as hot as can be comfortably borne. Let the patient sit in this and lave the hot water over his body, at the same time allowing hotter water to flow into the tub, continuing the process until a profuse perspiration is established, then pull out the plug to allow the hot water to run off and turn on the cold water to wash off the body and secure a good reaction. An alcohol sweat has been successfully used by many mothers. It consists of an alcohol lamp placed under a pan of warm water, with the child seated on a cane-bottomed chair, and then all but the head covered with blankets. This is an effectual manner of breaking up a cold. A sulphur bath consists of a box arrangement wherein the patient can sit with the head out. The attendant burns a sufficient amount of sulphur in the lower and rear part of this box. This produces a profuse sweat in a short time, and has been used with great success in cases of rheumatism. It is a sure cure for the itch. The makers of portable Turkish baths are advertising very freely in the papers, arrangements costing from five dollars up that are capable of doing very effective work and will be found useful in many places.

All the aforementioned are but rude and primitive efforts to accomplish what is so easily, promptly, and thoroughly brought about by that most complete of all baths—the Turkish bath. The great beauty and utility of the use of this bath in the treatment of children's diseases consists in the ability to quickly abort what would otherwise prove a serious disturbance. Many such difficulties begin with what is called a cold, which is otherwise a condition of repletion. The Turkish bath, by its eliminating power, breaks up this condition and quickly relieves the pressure. Resort to the bath in such cases constantly tends to the better growth and development of the child. We know that every period of sickness through which a child passes, interferes with its growth and development, and sometimes leaves deformities in its track. For this reason the Turkish bath is to be considered one of the best friends of childhood. The pleasure with which its processes are enjoyed is a most marked contrast to that of the ordinary treatment. The delightful feeling of being more thoroughly clean than is possible under any other process is most satisfactory and enduring. It is also invaluable in all infectious diseases, as heat destroys the germs, and renders the soil barren, thus producing unfavorable conditions for any disease to progress.

The readiness with which the Turkish bath can be accommodated to the necessities of any case, renders it most admirably adapted for such work. It promotes the natural action of all the functions of the body, bringing to every organ its equal and appropriate nutriment. It thus aids the development of all the functions which may be deficient in activity, and secures a harmonious working of the forces through which physical life is perfected and enjoyed. Thereby

we have a better opportunity to attain the full measure of social, intellectual and spiritual life. Those who desire for their children the greatest physical good—and what parent does not?—should provide for them the privilege of at least one Turkish bath every week. No one thing would tend more to promote their growth and development. All who would hasten on the good time, and honor themselves, can scarce find a better field of work than that of popularizing these baths, for unless all signs fail, they will yet prove one of the greatest blessings to mankind. In order that their complete benefits may be realized, there should be large public Turkish baths established by the people, that would be readily available to every child in the land, as well as to the parents. Every city or town securing for itself this grand privilege, would find itself many times remunerated in lessened taxes for the sustenance of its paupers and criminal classes, better health and a longer term of life for its children, as well as in the general refinement of its people.

81 Columbia Heights.

CONTROL OF DIPHTHERIA.

Presented to the Section on State Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY W. K. JAKUES, M.D.

CHICAGO.

The knowledge which careful investigation has given the medical world has placed within our hands the means of controlling diphtheria—the most fatal disease of childhood—as it has never been controlled before. Just in proportion as this knowledge is made available when needed, will be the success with which the disease may be held in check. In the past, diphtheria has been in the hands of the family physician, the health official taking little or no part in the treatment, except to warn the public by a placard and insist upon isolation. But our present knowledge of the disease demands a greater participation than heretofore by municipal as well as State officials.

Diphtheria is influenced by every factor that affects the physiologic resistance of the human system. History shows that in every large city, in periods varying from seven to ten years, the disease becomes epidemic, probably due to racial and climatic conditions which cause an increased predisposition, as well as favorable conditions for the virulence and spread of germs. During the summer, or the seasons of least susceptibility, the Klebs-Löffler bacilli are preserved in dark tenement and basement houses, and other favorable places where sunlight can not destroy them. During seasons of increased predisposition, they spread from one susceptible individual to another. The Klebs-Löffler bacilli, inoculated on the mucous membrane, grow with a rapidity proportionate to the susceptibility of the individual. The bacilli, in their growth, produce a ptomain, very destructive in its nature, which causes necrosis at the point of invasion, and a general cell-destruction, corresponding to the degree of virulence and cell-resistance.

The symptoms caused by the invasion of the Klebs-Löffler bacillus are simulated by several other germs, with which it is often associated. When this is the case, the symptoms of the Klebs-Löffler bacillus may be so obscured by those of the associate germs, that its presence can not be discovered in the early stages except by the microscope. Mucus taken from the site of the invasion contains the germs exciting the

inflammation, and they may be clearly identified through the microscope, after a few hours' cultivation, before the production of membrane or other clinical evidence of diphtheria.

Antitoxin is a specific in the early stages of the invasion of the Klebs-Löffler bacilli, and the mortality increases in direct ratio as the diagnosis and administration of the serum are delayed. Then the first necessity in the control of diphtheria is an early bacteriologic diagnosis; the next, the proper use of antitoxin. Here begins the responsibility of the family physician, and upon his conduct rests the subsequent results. He must first appreciate the danger that lurks in a simple sore throat, and realize that bacteriologic as well as clinical evidence is necessary for an accurate diagnosis. Laboratory work of any extended nature is seldom possible for the general practitioner, because of the necessary time and equipment; hence this work should be supplied by those whose interests are most involved, and who are best prepared to do it. These are the officials of the health department, who are the guardians of the public welfare, and whose duty it is to help suppress anything which threatens the health of the body politic. Any contagious disease which manifests itself in the form of an epidemic is directly within the jurisdiction of municipal health officers, not for individual treatment, unless it is clearly beyond the scope of the physician, but for the provision of such measures as will enable the physician to best control the disease.

A remedy is only a remedy when applied to the particular disease it is adapted to cure. Antitoxin is a by-product of the Klebs-Löffler bacilli, and is just what its name implies—a remedy against or opposed to the toxin produced by these bacilli. Having been made possible by the revelations of the microscope, it should be applied as scientifically as it was discovered. Following the first reluctance to use antitoxin at all, has come the tendency among some physicians to administer it indiscriminately in any and all cases of sore throat. This is not as serious in its consequences as the total omission of the remedy, for one is likely, by chance, to cure a case of real diphtheria; but it is unscientific and renders unreliable the record of its results. Given a remedy and its specific action, based upon a certain condition, and the means of discovering that condition, and the physician of today is master of a disease which for centuries has been an unconquered foe of the race.

It may be questioned as to whether or not municipal or State authorities have the right to demand certain treatment of a disease from physicians whom they have licensed to practice, after having been convinced of their ability to do so. But the majority of physicians now practicing received their medical training before the existence of much of the knowledge upon which our present experience is based. It is not pleasant to admit that some doctors who boast an experience of a quarter of a century, or even a decade, are prone to prefer this experience to "new-fangled" theories. Nothing makes a physician feel so helpless as a consultation with an old physician, who declines antitoxin with the remark that he has used iron and sulphur, and similar remedies, for thirty years, and never lost but one or two cases of diphtheria. There is no argument which will convince such a man that some of the cases may not have been diphtheria. He knows it when he sees it, though he

sees it but seldom; and the expert who treats it all the time dares make no such assertion without the confirmation of his microscope. It is this class of physicians who keep up the death-rate in diphtheria, and who make it absolutely necessary that health officers shall demand the use of such methods as have been demonstrated as most efficient in protecting the public and the individual. If the foregoing were not sufficient reason for action on the part of health authorities, there would still remain the fact that diphtheria is a disease of the poor people, and as such, requires protection and aid.

In the individual who is protected against diphtheria, there is a constant amount of antitoxin present. It is one of the products of cell-life, under favorable physiologic environment, and is carried to all parts of the body. When the mucous membrane becomes congested, the functional activity of the cells is arrested and their resistance to the invasion of hostile germs is weakened. The toxin of the invaders acts as a stimulant to the other cells throughout the body, causing an increase in the production of antitoxin. This is carried to the site of the invasion by the blood and so fortifies the surrounding tissues that the invasion is stopped. With this explanation one can understand how the Klebs-Löffler bacilli may be present in the mucus of the mouth for weeks without producing an invasion; but when vital resistance is lowered by cold, hunger, loss of sleep, anxiety, menstrual period, or other debilitating factors, the disease manifests itself.

A high degree of physiologic resistance is the surest safeguard against all disease. This condition is only possible with hygienic surroundings; hence it is obviously the first step toward the suppression of disease, particularly of a contagious nature, to demand of the filthy man that he shall keep himself and his surroundings clean. It is a very fine line which separates the duties of the health official from those of the family physician, and the highest degree of success can only be attained by their harmonious cooperation. Health officials are dependent upon doctors for much statistic information involving time and labor, for which they are not compensated. Not only in return for this, but as a means of guarding the welfare of the public, the authorities should provide such facilities for physicians as will render the treatment of contagious diseases as efficacious as possible.

The expense of a laboratory to a community is small compared with its benefits, and when properly equipped, with an experienced bacteriologist, will prove a very important factor in the hygienic government of a city or town. The culture medium should be properly prepared or the examinations will be confusing and misleading. The change in the forms of the Klebs-Löffler bacillus, and the modifications in cultural developments, owing to associate germs, make the identification of the bacillus sometimes difficult. Diphtheria work in all its phases is greatly facilitated by experience, and all the cultures of a community are no more than sufficient to give a bacteriologist a knowledge of the varying forms.

From a legal standpoint, it may be a serious matter to placard a house or place of business, and it should not be done unless the department fortifies itself with evidence of the contagious nature of the disease. This it can best do by making its own cultures, or by doing the work for physicians.

Antitoxin is a product which should be subjected

as little as possible to the vicissitudes of commercial exchange. It deteriorates with age, and the irregular demand often leaves it on the druggist's shelf for months. When it is needed, it is usually in an emergency, when the life of a patient is depending upon the quality of the first dose of serum. Owing to the large profits accruing from the sale of antitoxin, irresponsible firms have been tempted to place an unreliable grade of the serum on the market. Foreign governments have taken measures to protect their cities by restricting the manufacture of the article. If State officials are not able to do this, they are at least in a position to investigate and satisfy themselves of the best grades on the market to be supplied. No greater service can health officials perform than to arrange for a fresh supply of a reliable grade of antitoxin, throwing careful restrictions about the distribution of that intended for purposes of charity. Delayed treatment means increased infection, and the control of the disease in the tenement districts means fewer funerals on the boulevards.

These facts furnish the basis for the plans now used in cities to reduce the death-rate in diphtheria. The predisposition to this disease is as great in Chicago as in any city of its size in the world. Its geographical situation makes it the commercial center of the United States; while the immense system of railways radiating from and through it, make it a rendezvous for all classes of foreigners, as well as an incalculable means for the distribution of contagion. Added to this are its crowded districts and its raw lake winds, which have together made the city a shining mark for diphtheria. By furnishing convenient culture media, microscopic examinations, the best obtainable grade of antitoxin, and the services of expert physicians as inspectors and operators, Chicago now points with pride to a death-rate which has been reduced from 37.5 to 6.7 per cent.

In the rural districts, where these means of controlling diphtheria do not exist, the mortality is almost as high as ever. If such a reduction can be accomplished in a large city, under circumstances most favorable to the existence of diphtheria, a similar plan ought to be even more effective in country towns where hygienic conditions are most favorable to health. The methods used in Chicago can be applied and carried out, with some modifications, by the health department of any city or town. Where such an office does not exist in country places, the work can be carried on by direction of State officials with very little expense. The equipment for diphtheria work would represent but a small outlay compared to the advantages to be reaped from its protection. There is no disease of childhood which finds an unprepared country doctor quite as helpless as the malignant form of diphtheria. Without bacteriologic facilities, it usually takes several deaths to convince a physician what he has to deal with and provide for. That part of the control of diphtheria to be performed by health officials is largely by direction of effort. Previous preparation is very important and should occupy the summer months, when a physician's work is light, and he can devote time to the acquirement of knowledge concerning the morphology of the Klebs-Löffler bacillus, and the best method of doing the work.

The fear of cholera or an epidemic of yellow fever has caused State officials to spend thousands of dollars in questionable methods for the protection of the

people; but a disease which is absolutely preventable has received little or no attention from these officials. The best authorities on the subject believe that if children were given the highest scientific protection, there need not be a single death from Klebs-Löffler diphtheria. We have the knowledge and the remedy; all we lack are the individuals in official life to apply them for the protection of the public.

4316 Greenwood Ave.

ALCOHOL ON TISSUE AND CELL GROWTH.

WHAT RECENT INVESTIGATIONS SHOW OF ITS DESTRUCTIVE ACTION.

Presented to the Section on State Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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I can only hope to point out some general facts which have been confirmed by repeated observations of many persons. Within five years an increasing interest in alcohol has begun in the laboratories, and the question of how alcohol acts on the body is recognized as the great coming theme. The theories of the past are called in question, and a large number of scientific men are trying to solve the problems of alcohol, only to find how complex and difficult they are. Our familiarity with the effects of alcohol are far beyond all knowledge of its chemistry and pathology. We interpret the symptoms and theorize from them without any knowledge of the actual conditions present. A change has come and the question is "Why should alcohol cause exhilaration or stupor, delirium and delusion? Why should profound changes follow its use with intense degeneration and destruction of both body and mind? These questions are to be answered in the future by exact chemic and laboratory research confirmed by clinical observations.

The new physiology of modern research shows that the body is an association of cells. Each cell is a physiologic unit, and consists of a large quantity of minute structural elements which have the form of granules. These are not alike, but assume a number of different forms, differing in regard to irritability also with regard to external stimuli. Under specific stimuli some of them grow and divide, while others remain undisturbed. It is from a predominance of one or other of these sets of cells that the specific character of a cell is determined. The sum total of these granular energies makes the life of the cell. These are the ultimate organic units of life. In all these cells there are specific functions, capable of acting along certain lines. All cells have functions of assimilation, growth and sensibility. All have stimulus and force, both chemic and physical.

The influence of surroundings is the stimulus which calls out certain functions and activities. The perfection of life is the perfect balance of these cells in function and growth. Any substance which interferes with their specific action, changing their direction and movement, which disturbs their assimilation, growth and sensibility; or which breaks up their stimulus, force and chemic and physical relations, is serious and of vital influence to the integrity of the body. Cells may be injured, poisoned, impoverished, and diverted from healthy growth, and be repaired. When the injury passes a certain limit, death takes place and no recovery follows. With

these physiologic facts in mind, we are able to understand how poisons may affect the cells and tissues.

One of the prominent effects from the ingestion of alcohol in the stomach is the increased action of the heart and rapidity of the blood-current. Dr. Berkley has shown that the circulatory apparatus is damaged both by the presence of a poisonous irritant circulating in the blood-current, and the deteriorating action of alcohol on the leucocytes. These bodies are palsied and swept by the blood-stream into the cerebral circulation, and from the atonic condition of the heart muscle and the muscular walls of the arterial system not being able to force them through the capillaries equally with the red-blood corpuscles, by reason of their larger size, they accumulate in the finer capillaries which surround the cells, plugging them up partially with backward pressure on the arteries. These retain the irritant poison, increase the danger to the walls of the capillaries, and add new sources of irritation.

The leucocytes degenerate and disintegrate, and ruptures of the walls of the finer capillaries are frequent. The practical destruction of the leucocytes and driving them in masses in the meshes of the brain, together with the alcohol irritant has two specific influences on the cell: one on its nutrition and the other on its dynamic force. The nerve-cell, as we now understand, is composed of numerous dendrites or filaments, which project out from the cell body, in contiguity but not in contact, with filaments of other cells and nerves. These are altered, retracted and shrunken from the influence of alcohol.

Dr. Berkley, in describing the lessons from the action from alcohol, showing the shrunken cells, says: "One striking fact of the degenerative process is that a number of the cerebral and cerebellar cells remain apparently intact unless the use of alcohol is excessive. About every third or fourth cell shows pronounced alterations. This part does not militate against the conception of the degeneration as a pathologic entity from the standpoint of numerous forms of dementias, and chronic alcoholic psychoses, for the nerve elements of the cerebrum are intricately connected one with the other by means of their conductor endings and the knob-ended gemmulæ, between which the dynamic forces originating in the cell body, pass from one cell to the other over the almost imperceptible space that is present between the two; and thus the death of a single cell may destroy the normal relations between dozens of other cells, and in this way induce an inco-ordination of thought and action, while the majority of cellular elements retain their histologic normal characteristics."

Dr. Andriesen found that alcohol acted on the cell body, causing changes of the granules, eroding them, as it were, breaking up the normal distribution, and causing them to gather in masses like ruins. In some cases changes would start from several points in the cell body and be followed with local excavations and breaking down into little débris. The external changes of the form would be shrunken and depressed like a battered hat. The dendrites and fibrils would be shrunken and wrinkled, with small irregular swellings. These changes begin in the nutrition of the cell and its dynamic activity. Alcohol breaks up nutrition and its power of generating force or regularity, when generated. In fatigue, the form of the nerve-cell is changed, and its filaments re-

tracted, so from alcohol the same condition in a pronounced degree follows. Dr. Andriesen shows that the functional activity of the nerve-cell is suddenly increased by the action of alcohol, and its nutrition equally depressed; that both the dynamic and nutritive powers are degraded, broken up and paralyzed. The sudden absorption of the water of the cell and the intrusion of the alcohol toxins, cutting off nutrition and diverting the dynamic force, are depressant and degenerative. The result is most clearly seen in the symptoms which follow, which are so uniform as to be almost the same in all cases. These may be stated thus: diminished power of resolution, of concentration of muscular and mental energy; lowering of the moral and ethical sense; failure to get rest from sleep; nutritive derangements, and finally mental disturbances with emotional changes, delusions, sensorial failures, and so on into inanities, at first slight, then profound and grave.

The fact is well attested that alcohol even in small quantities affects protoplasm, diminishing the vital phenomena therein; this, in addition to the palsy and cessation of movement of the leucocytes in the blood, taking away the resisting power to disease, and imperfect oxygenation with consequent retention of waste material, are groups of facts well established. Prout, Smith, Harley and others, proved conclusively that alcohol lessens the absorption of oxygen by the blood corpuscles and the exhalation of carbon dioxide. Alcohol has a peculiar affinity for, at least manifests itself in changes of, the minute nerve terminations of the periphery. First, there seems to be swelling, infiltration, with leucocytes and fatty granules of debris, then thickening and inflammation, followed by degeneration and wasting of the nerve and muscle fibers. In optic neuritis, the interstitial tissue is first affected. Dr. Wilkes shows that alcohol affects the tubular and vesicular neurins by dissolving the phosphorus and protagen, and shrinking and hardening the nerve fibers. These conditions are alcoholic neuritis, and the impression prevails that it is largely due to retained products of metabolism and atheromatous degeneration of the walls of the vessels. The continued use of alcohol is followed by profound degeneration of the cells and nerve-trunks. The brain as a whole is shrunken and contracted, and serous effusions fill the spaces. The cells are also shrunken and wasted, and the nerve fibers and cells are atrophied and mixed up with connective tissue, which grows enormously.

The stomach is eroded, and contains patches of inflammation with increase of connective tissue and atrophy of the gland-cells. The liver also shows inflammation of the parenchyma and proliferation of cells and leucocytes blocking up the spaces. The kidneys show the same accumulations of the products of metabolism. Dr. Glaser proves that alcohol in moderate quantities irritates the kidneys and the augmented leucocytes, cylinders and crystals, being due to the increased metabolism of the tissues or to the alteration by alcohol of the relations of the solubility of the urine salts. The heart becomes fatty and its power enfeebled; the muscular fibers degenerate and lose their uniformity, becoming swollen and atrophied; the walls of the blood-vessels are thickened or thinned, become atheromatous and lose their resiliency; the lungs suffer atrophy and the tissue degenerates; local inflammation and irritation are present. In all cases, the use of alcohol in any form is followed

by a diminution of the white-blood corpuscles or leucocytes and a diminished resistance to every condition of strain, drain, fatigue, and every form of environment which taxes the organs to adjust itself to the new conditions. Alcohol given to animals in small doses, and under various conditions has the same effect. The study of the cells and nerve fibers shows identical changes, confirming the facts mentioned. Dr. Van Gieson of the New York State Pathological Institute has pointed out the action of alcohol on the cells as erosive, breaking up the normal relation of the granular or protoplasmic matter, and corrugating the fibula dentrites. He concludes that this is dynamic and nutritive, and is cell-disturbance and cell-starvation. The function is changed and its nourishment is lessened.

A great variety of facts have been accumulated relating to the immediate action of alcohol on the body. The following may be stated as the most reliable, and generally accepted as proven: The rapidity of the absorption of alcohol is shown to be such that within a minute and a half from the time alcohol is taken in the stomach it can be detected in the blood by chemic analysis. This rapid absorption is followed by a sense of warmth, which is not clearly explained, but in all cases it is due to both vasomotor and vasoconstrictor paralysis, also to the rapid absorption of water from every tissue it comes in contact with. The capillaries are dilated, and the heart action is increased but lessened in power. The blood is changed, the white corpuscles being lessened both in number and rapidity. Careful analyses show a marked diminution of carbon dioxide after alcohol is used. The most pronounced effect from the use of alcohol is sensorial palsy. Careful measurements of the senses before and after the use of alcohol show diminution of the acuteness and the activity of the senses. This goes on to full paralysis. The mental operations are slowed and diminished and can be measured exactly. Memory, reason, perception, and all the higher qualities are enfeebled according to the amount of alcohol used. In some cases one or two drams of alcohol will show marked effects; in others a large amount is required to show this by instruments of precision. But in all cases a degree of paralysis is present which may center on some part of the body more than the other. The conclusion which is sustained by all these and many other observations is that alcohol is a poison and a paralyzant in its effects on the body. This latter action is an explanation of its peculiar fascination to all persons in all circles of society. It is an anesthetic, stopping pain, discomfort, and psychic unrest, and creating a false impression by covering up the cries of distress and the protests of nature. The defects of growth, nutrition, disease, and every stage of living, find a seductive narcotic in alcohol. Later, the degeneration becomes fixed and settled. The demand for alcohol is often a symptom of some central defect in the brain and nervous system—the same want or desire for relief, as after the body is saturated with poison, only varying in degree. The ethers of alcohol are the most wonderful sleep and pain-numbing forces known. This same anesthesia is a property of all alcohols, with the addition of other pronounced effects. It is a startling fact that all the theories current of the food, tonic, stimulant and medicinal powers of alcohol have no support from modern research. On the contrary, it is found to be poison of equal virulence

to syphilis and other poisons. Recently alcoholic toxins are beginning to be studied, and the new facts appearing in this field promise some startling discoveries. A grouping of some of these facts may be stated as follows:

1. Alcohol acts primarily on the nerve-cells, changing their granular matter, breaking up their nutrition and changing their dynamic force.

2. This action is followed by contraction of the dendrites, swelling and atrophy of these fibers, also shrinking of cell walls, as in fatigue, and coalescing and disappearance of the granular matter of protoplasm.

3. The special injury from alcohol seems to be on protoplasm and terminal fibers of nerve trunks. The irritation and inflammation of the nerve walls and fibers ending in sclerosis are common.

4. Alcohol acts on the leucocytes of the blood, checking their activity, and destroying their function. These are driven in masses by the increasing rapidity of the heart, and become blocked up in the capillaries, forming centers of obstruction and injury.

5. The use of alcohol is found to be followed by diminution of the carbon dioxid and all waste elimination, with a marked sensorial palsy of the senses, and a slowing up of all the mental operations. These are the results of measurements with instruments of precision, and cannot be mistaken.

6. The action of alcohol in the light of modern research differs widely from the theories and current beliefs of the day.

HEREDITY AS A CAUSATIVE FACTOR OF INEBRIETY.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY F. C. MYERS, M.D.

KALAMAZOO.

That heredity is a common cause of alcoholism, and that alcoholism is a disease, is becoming apparent to many medical men of the present day.

In that good old book, the Bible, we are told that "The sins of the parents are visited upon the children to the third and fourth generations." That has been proven to be a fact, in the evil effects produced upon the system by the use of alcohol; the person whose brain and nervous system have been injured, and whose moral and will powers have been weakened, and whose stomach, liver, and other organs have become deranged by the use of alcohol, will transmit some of these derangements to his offspring.

The modern study of the therapeutics of alcohol has proven, without a doubt, that it is not a stimulant or tonic, but an anesthetic and a narcotic, and that it should be classed, in our works on therapeutics, as one or the other of these; and it has also been proven that it is a remedy of but little therapeutic value and one that could be dispensed with, even for medicinal purposes, with universal benefit to mankind. It is not my purpose in this paper to discuss the therapeutics of alcohol, but to prove, if possible, that the influences produced by alcohol are handed down from generation to generation.

The principles of heredity must have been known in ancient times, and undoubtedly gave rise to family names among the Romans, and in the present age the Bourbon nose and the Hapsburg upper lip are well-

known family characteristics; while some families are characterized for such virtues as business integrity, truthfulness, temperance and frugality, others are as equally marked for dishonesty, mendacity and drunkenness. A marked physiognomy and proneness for commercial pursuits have been Hebrew characteristics from time immemorial. The transmissibility of an alcoholic inheritance has been very generally admitted by many writers, among whom are Aristotle, Darwin, Rush, Morel, Grenier, Carpenter, Richardson-Thompson and Forel. The number of cases in which an ancestral history of alcoholism has been traced is probably much below the actual amount, as it is difficult to get relatives to admit the existence of an alcoholic taint. It has been found by studying the subject, that the proportion of hereditary cases has increased 5 per cent. over the acquired during the past twelve or fifteen years. Norman Kerr says: "In over 3000 cases of chronic alcoholism I have found fully one-half with an inebriate ancestry," and about the same proportion has been the experience of others who have studied the subject in America and Europe. Kerr again says: "I have observed children born more than a year after the father had been attacked by a brain disease or inebriety, exhibit from their earliest years propensity for intoxication, and in more than one family the children could, only by constant supervision, be kept from strong drink as soon as they began to crawl." And he says also: "Nearly two-thirds of the cases of inherited alcoholism are due to the alcoholism of one or both parents." I believe it has been fully proven that the child of an inebriate, born after the lesion has been established, inherits some nervous diathesis, and that the only security is by life-long abstinence on the part of the child. Beran Lewis attributed 64 per cent. of cases of chronic alcoholism to parental inebriety, some form of transmittal neurosis, or insanity. Piper puts the proportion of hereditary to acquired cases as 2 to 1.

In the examination of two groups of ten families each, in a children's hospital of London, one group of 57 was affected more or less by alcohol, the other of 61 was unaffected, or slightly so. Of the first group 20 had inebriate fathers, the mothers and grandparents being moderate drinkers; only 45 per cent. of these had healthy constitutions; 31 had inebriate fathers and grandfathers, but temperate mothers and grandmothers; only 2 of these, or a little over 6 per cent., were healthy. Of the 61 children belonging to the temperate families 82 per cent. were in good health.

The customary drinking of light wines and champagne at banquets and public dinners has been thought by many worthy people in the past, to be perfectly harmless, but as more light is thrown upon the subject of heredity and the therapeutic action of alcohol, that custom will gradually be abandoned; in fact, it is becoming less customary at the present time. There has never been a time in America when every indication pointed so strongly to a decrease in intemperance as at present. There has never been so little drinking as at present, and never such a strong tendency toward moderation in quarters where alcoholic indulgence is general. The most careful figures bear out this statement, That hereditary craving for strong drink can be transmitted by parents who have not that craving, but who drink very moderately, has been proven. Forel says (*Medical Pioneer* of December, 1893): "Hereditary crav-

ing for alcohol may proceed from parents neither of whom possessed this craving, but were drinkers only by custom or sociability."

Not being connected with any inebriate institution my experience is limited to that of a general practitioner, but a typical case came under my observation a few years ago. A man, born and educated in Edinburgh, Scotland, whose parents were wealthy people, but who had been in the habit of using light alcoholic drinks in the form of wines—as many Scotch families do—came to this country, entered business, and was a very bright business man and honest in all his ways, but from every month to three months—never going over three months—he would leave everything and enter upon a drunken spree. It made no difference how much was involved in business interests. As he was under my observation for two or three years, I know that it was against his will and purpose, and that he made every effort to overcome the hereditary power that was controlling him. It was usually from two to three weeks before he was ready for business again. He was a person of much moral purpose and great business integrity when himself, and has told me many times that he always had a periodic craving for alcohol ever since he could remember; he had one daughter born to him who is a nervous uncontrollable child.

Another case of a bright young lady was under my observation for a year, who, every few weeks, from her earliest memory, had such a craving for alcohol that it seemed impossible to resist it. After taking a few swallows of diluted whisky she was satisfied, the craving for it ceased and her nerves became quiet. As she was a person who never had been in the habit of drinking, only in this way, the craving was undoubtedly from a hereditary source. Many other cases might be referred to, but as there are those here who have made that subject a special study and who would naturally see many more cases of the kind than a general practitioner, that part of the subject will be left for their consideration.

In conclusion I would ask: If one of the principal causes of inebriety is heredity, how is this form of inebriety to be cured and our future generations saved? I know of but one way, and that is to stop the drinking habit at once. As it has been proven that: 1, alcohol is not a food; 2, it does not promote digestion; 3, it does cause gastric disturbances; 4, it does not increase muscular strength; 5, it is not a tonic or stimulant, therefore I believe medical men ought to do all in their power to educate the rising generation in regard to these facts, and that alcohol should be classed in its proper place—with anesthetics or narcotics—and everything possible done to prevent its universal use as a common beverage in social and political life. By so doing inebriety may be practically wiped out of existence in one generation, and a blot removed from this fair earth of ours, which would be an untold blessing to thousands of families.

Rest in Chorea.—Van Bibrer reports twenty-five children cured of chorea during the last year by keeping them in bed, the muscles arranged in the manner most conducive to repose, with conscientious massage three times a day; the diet nutritious and abundant. Medicines can be given if desired, as the patient is in the best condition to take them. Rarely was he obliged to keep the child in bed over a month.—*Journ. de Méd. de Paris*, October 20.

ISOLATION IN A GREAT CITY, HOW BEST ACCOMPLISHED.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY SAMUEL P. DUFFIELD, M.D.

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Subsequent to the fourteenth century, when the plague passed that gate of quarantine between infected districts and the civilized nations, *the world began to think*. Physicians and chemists turned their attention to *causes* of disease, and from the advanced knowledge obtained boards of health were developed. It was found that pecuniary loss from sickness and pestilence was so great that steps were taken to guard against the spread of contagious disease, and the laws of the land in regard to public health have gradually and surely developed into a system which has been successful in warding off these diseases and preventing serious epidemics. This was the first tree, tender and young, which, planted in the gloom and despair of a plague-stricken people, bears fruit today, "for the healing of the nations."

Our health laws and ordinances, pestilences and plagues have been great reformers. Old Pharaoh was no believer in bacteriology. He was like the third-class criminal lawyers, who like a *Bombastes furioso* in their pseudo-eloquent appeals "about the inalienable rights of the American citizen" to a jury that do not know what a bacillus or a bacterium is, and who can not see the use of such things in everyday life, because they are "practical men" and believe in "common sense," and see no reason why they should adopt every fad the doctors choose to "force upon the public." For his neglect of studying the laws of nature, Pharaoh's kingdom was overrun with pestilences of various kinds, and finally preserved for future reference in brine, to which, metaphorically, we would also consign the ignorant third-rate criminal lawyer who sometimes manages to be appointed as health commissioner, claiming he is a practical man.

Contending with such difficulties as have been foreshadowed, the local health officer finds it difficult to even enforce the municipal ordinances, as the sympathy of the jury is usually in favor of the "poor man, who did not know any better," and who has, in their opinion, "suffered enough already," even if he has brought it upon himself by gross carelessness. But in spite of the above obstacles there has been an advance along the line, by local health officers. Since the introduction of antitoxin we have reduced the mortality of diphtheria, as the following statements will show: Diphtheria is most prevalent in cities. During the last twenty-five years it has become epidemic in most of the larger cities in the Northern and Western States, from the Atlantic to the Pacific coast, following the lines of travel. The permanent establishment of diphtheria in the centers of trade, and the fact that many grown people have this disease in so mild a form that they are not aware of it, and innocently mingle with others in places of amusement, inevitably tend to disseminate this disease throughout the country.

In Europe it has boldly established itself, even in centers of medical education. In Paris, London, and Vienna it has been of late the subject of much discussion and investigation. In Europe and America the literature of diphtheria has greatly increased dur-

ing the past ten years, by reports of cases, histories of epidemics and statistics of results of different modes of treatment.

The fact that diphtheria virus can be carried in clothing long distances without losing its virulence is now generally admitted by those who have made many and careful observations. Trousseau has said that diphtheria does not spare any age, but it is most common between the ages of two and six years. Observations which I have made during the years 1895-1896, and cases and deaths which I give in tabular form below, show that up to the age of 9 years in the year 1896, 90 per cent died, while from 10 years on to 74, there were only 10 per cent. of the total deaths of diphtheria. According to M. Barthez, in St. Eugenie Hospital, during twenty years, the ages of diphtheria patients were as follows:

AGE.	CASES.
Under one year	81
1 to 2 years	314
2 to 3 years	319
3 to 4 years	292
4 to 5 years	200
5 to 6 years	103
6 to 7 years	59
7 to 8 years	36
8 to 9 years	59
9 to 15 years	82
15 to 17 years	2
Total	1547

The total number of cases from under 1 year to 17 years, inclusive, is 1547. From under 1 year to 8 years we have 1404 cases, and from 8 to 17 years, inclusive, there were 143 cases. Hence,

$$1547 : 1404 :: 100 : x = \frac{140400}{1547} = 90.7$$

90.7 per cent. of the cases occurred from under 1 year to 8 years, while

$$1547 : 143 :: 100 : x = \frac{14300}{1547} = 9.24$$

Only 9.24 per cent. occurred from the eighth year upward to the seventeenth year, inclusive.

Now take the death-rate as it appears in the city of Detroit and you will find that it follows closely the same rates.

MARCH, 1896, TO FEBRUARY 28, 1897.

AGE.	DEATHS.
Under 1 year	11
1 year	28
2 years	54
3 years	29
4 years	35
5 years	31
6 years	22
7 years	12
8 years	12

From under 1 to 8 years 234

$$260 : 234 :: 100 : x = \frac{23400}{260} = 90 \text{ per cent.}$$

9 years	4
10 years	4
11 years	4
12 years	2
13 years	1
14 years	2
15 years	1
16 years	1
24 years	1
25 years	1
26 years	1
30 years	1
37 years	1

43 years	1
74 years	1
From 9 to 74 years	26
260 : 26 :: 100 : x = $\frac{2600}{260}$ = 10 per cent.	
Total deaths from diphtheria	260

It will be seen that out of 260 deaths which occurred from March 1, 1896, to Feb. 28, 1897, 90 per cent. of the deaths properly chargeable to diphtheria were below 9 years of age; while from 9 years upward to 74 years the rate was only 10 per cent. You will perceive what havoc the contagion makes in the earlier years of childhood. The figures given above teach a peculiarly sad lesson. They show how carefully children of ages ranging from 1 year up to 9 years should be guarded. How sedulously gatherings of children, when coming from homes whose surroundings are not known, should be avoided. It would be well for ladies who send their children to kindergartens to weigh well these figures.

The home of every pupil of the kindergarten should be visited by a ladies' committee, composed of mothers, that they may know positively what influences may be at work from the individual scholar. The teacher of these tender little ones should be subjected to a scrutiny far more searching than the teacher of the higher grades. She should, in her mode of life and circle of acquaintance, be above all suspicion of coming from or visiting any house in which there is a case of sore throat, or any child suffering from a rash, or in fact, any sick child. Such a percentage of death should warn all mothers who can afford to do so, to teach their children at the mother's knee. I am aware from personal observation that there are many poor laboring women who have no time to devote to their children. It is unfortunate that this is so, as the mortality rate plainly indicates that the danger to children of 5 and 6 years is very great. This danger is not confined alone to diphtheria, but is apparent also in cases of scarlet fever. You will notice from the figures on that disease, which I give below, how nearly the same percentage runs through the years from 1 to 8:

AGE.	DEATHS.
Under 1 year	1
1 year	2
2 years	9
3 "	2
4 "	6
5 "	4
6 "	3
7 "	2
8 "	1

From under 1 to 8 inclusive 30

$$33 : 30 :: 100 : x = \frac{3000}{33} = 90.9 \text{ per cent.}$$

That is, from 1 year to 8 years, inclusive, the death rate is 90.9 per cent.

AGE.	DEATHS.
12 years	2
13 "	1
9 years upward	3

$$33 : 3 :: 100 : x = \frac{300}{33} = 9.09 \text{ per cent.}$$

From 9 years to 13 years and upward only 9.09 per cent. of the total death-rate for scarlet fever died.

During the year 1896 antitoxin was used as a remedy, and through observation and tabulation of the cases and deaths in the city of Detroit we find a death-

rate of 12.58 per cent. where antitoxin was used. May 1, 1896, the Board of Health of the city of Detroit began furnishing antitoxin free to those patients too poor to pay for it. This included poor patients under charge of the city physician; poor patients at Harper Hospital, sent there by the Board of Health; at the Women's Hospital and Protestant Orphan Asylum. Total diphtheria patients treated with antitoxin were 374, with 47 deaths. Total doses for immunizing, 119. Failure to immunize, 25. There were dispensed 643 doses, representing 493 patients, a seeming discrepancy of 150 doses. This is accounted for by the fact that in many cases two and sometimes more doses were given to one patient.

	CASES.	DEATHS.	MORTALITY RATE.
Antitoxin	374	47	12.56 per cent.
Other treatment			
Without antitoxin	467	163	34.90 per cent.
Percentage in favor of antitoxin, 23.34.			

The total cost of antitoxin for these cases was \$1,234.45.

TENEMENT HOUSES.

I would call attention to the fact that in building tenement houses, they are constructed in such a way as to defeat any efforts in attempting effectual isolation. Ordinary houses are rented and occupied by several families, sometimes as many as four. There should be some remedy. Whenever a case of contagious disease develops in such a building it becomes our duty to placard and place in quarantine the family in which the disease occurs. This may seem a very easy problem to solve, but it is in reality one of the hardest that the Health Board has to grapple with, for several reasons. *Isolation can not be perfectly maintained.* More than one family occupies the house. Those families in which there is no sickness can not be quarantined; and all we can do is to seal all entrances to a common hall, so as to prevent them from mingling with those not in quarantine. An economic council or board of aldermen consider it too expensive to have guards or inspectors. It costs the people too much.

Our inspectors are asked, by those who realize the fearful danger from diphtheria, why the health officer does not order the case to the hospital. They are informed that if the patients are willing, the health officer will send the patient to the hospital, at the expense of the health department. It may be that the patient is a little child, a mere babe, and the mother inquires if she can accompany her babe. On being informed she can not, as the hospital authorities will not allow it, she refuses point-blank to allow the child to be taken. She will stay at home with the child and nurse it, endangering the other children, simply because she will not allow the child to go to the hospital. It must be apparent that for the tenement-house patient, the Board of Health should make an arrangement by which we could have cottages of refuge for diphtheria, and also for scarlet fever cases. I find by conversation with mechanics and their wives that they would gladly avail themselves of such a place, were they assured that one of the parents, preferably the mother, could accompany the child. The father, in case the mother refuses to let the child go to the hospital, must have his house quarantined, and if he wishes to continue work he must board away from his infected house. Under the "Cottage of Refuge" system he could come home to the remainder of the family at night, to a home which has no infection

in it, and from which he goes on the morrow to work, without danger of infecting other people. There is no germ to be carried in his clothing.

I have often been met with the remark, "Why not force the father and mother to give up their child and take it to the hospital for the benefit of the community?" The sanitarian who says that on paper would feel differently if he were to individually put it to a test. There is nothing in the world so strong, so clinging, so self-sacrificing, so self-denying, so beautiful in its freedom from selfishness, so bold and courageous in the defense of her babe, as the love of an anxious mother. Fearful sometimes themselves, of the terrible pestilence which swept Detroit city only two years ago, when told that the child had it and must go to the contagious disease hospital, they refused to allow it to be taken to the ambulance unless they could accompany it. I took always one of the parents, sometimes it was the mother and sometimes the father. I usually let them decide that question between themselves, husband and wife, as to who should go with the child to the smallpox hospital. My experience with these people has led me to realize that unless we allow the mother to go with the child, we will fail in the majority of cases, for the reasons given above.

What is true of smallpox is equally true of diphtheria. Tenement houses are the hotbeds where virulent forms of diphtheria are cultivated, and from these culture-beds the poison is spread through the city. It reaches the homes of splendor and luxury from just such places, from cases which are not known until the death certificate comes in, signed by the physician, "Called in just before the child died." The cottage refuge system would relieve this state of affairs materially. In order to carry out this system satisfactorily, the Board of Health should be untrammelled by *political* appointments, either on the board itself or among its employes.

THE RIGHTS OF THE PUBLIC IN DEALING WITH THE DEFECTIVE CLASSES.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY ALFRED WILMARTH, M.D.

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The care of the dependent classes has been a matter actively before the public for many years, and in its rapid evolution has now assumed such proportions and carries with it such enormous expenditures that its growth and possible curtailment are questions of grave importance. We can justly pride ourselves on the admirable system and vast extent of our charities, but we can not but realize that they constitute a tax of no small importance on the income-earning portion of our population.

The last census states the number of blind in the United States as 50,411, of deaf and dumb as 80,616, of feeble-minded 95,571, and of insane as 106,254. The two first-named classes are not wholly dependent, and are very often entirely self-sustaining, and money spent in their education is well spent. The classes who nearly or entirely live on the public are the insane and imbecile, the pauper, habitual criminal and the tramp.

The treatment of the pauper and the tramp belong more properly to the sociologist and local magistrate

than to the physician, although they merge into the other classes in such a way that there is no sharp dividing line. It is to those dependents whose condition is due to physical degeneracy or diseases that I wish to particularly call your attention.

The census report on the insane gave the total in round numbers for the country at 92,000 in 1880, and 106,000 in 1890; for the feeble-minded at 76,000 in 1880, and 96,000 in 1890. It is probable that the enumeration of the insane may be far more accurate than that of the feeble-minded, as the higher grades of imbecility are often not recognized or at least not acknowledged by relations, and past investigations have shown that a large proportion of these are not acknowledged to census officers. Even with these figures we have over 200,000 in these two classes. At an average weekly cost of \$2.50 a week, which is probably an underestimate, the actual money cost of their care amounts to over \$2,000,000 each month. To this must be added the cost of the care of the habitual criminal, the dependent children, the vagabond and the habitual drunkard. So varied are the demands for the support and relief of all the dependent that we find that the New York State Board of Charities expended nearly eight and a half millions of dollars in 1880, and nearly sixteen and a half millions in 1890, although the population of the State increased less than 20 per cent. in that decade. And this startling amount represents the expenditure in one State only. These few figures demonstrate, as well as many pages could, not only the burden which rests on the more thrifty and stronger members of our community but also its constant increase. Carry these figures through the many States of the Union and realize their enormous total.

If we look closely into the lines along which this army grows we will begin to see at once that certain families contribute very largely to the total. The history of the "Juke" family has been often quoted. I took occasion two years ago to call your attention to the history of "Margaret, the Mother of Criminals," whose progeny of paupers, beggars, prostitutes and criminals reached 700, their family vigor being preserved by intermarriage with vigorous families of ruffians, some of the women bearing as high as twenty children. I also referred to the "Tribe of Ishmael," where the offspring of one neurotic man intensified by consanguineous marriages numbers some 5000 individuals "whose continued criminal record has poured over the Northwest a flood of imbecility and crime." I want to add to this a family recorded by Prof. Belman of the University of Bonn. They are the offspring of a notorious drunkard who died in 1800. His descendants number 834, of whom 709 were traced from their youth. Seven of these were convicted of murder; 76 of other crimes; 142 were professional beggars; 64 lived on charity, and 181 of the women of the family lived disreputable lives. The family cost the German government for maintenance and costs in public institutions \$1,250,000—in other words, \$1,500 each. These are extreme instances, but instances on a smaller scale may be found by any one who cares to look for them. I now have a family in mind where there are seven children, all feeble-minded, and the daughters are bearing illegitimate children to form a third generation of weakness, perhaps crime.

The vast majority of authorities testify to the truth of the transmission of ancestral characteristics as

shown in these examples. Through the channels of transmitted nervous weakness and inherited moral taint the vicious stream flows and multiplies. Checked somewhat in its course at times, but not fully eradicated, it will resume its flow whenever conditions are favorable. To show the persistency of the degeneration, it sometimes happens that a feeble-minded woman will bear children by several different fathers, and all will present the mother's weakness, sometimes intensified. With such proof that neurotic weakness is directly transmitted in all its forms; with the knowledge that this heritage has been accumulating for perhaps several generations, we can hardly expect it to disappear in a brief period of education, or a sound mental and moral condition to be created from a weak one in any limited time. Education may do much for them in the way of increasing their power of self-support, but can never eradicate the characteristics which are their birthright and which are bound to pass from them to their children, to lie dormant if their surroundings be fortunate, or to readily spring into activity under the stimulus of unhealthy surroundings or example. Now, is it not wise that such individuals should die without increase, allowing healthier stock to perpetuate our race?

I have dealt at some length on the money cost in their support, but that is not the only evil incident to their existence. Their evil example is always before the children of the community. The insane man or woman is, furthermore, a constant menace to the safety and even the lives of our citizens. Look up for one month the number of assaults and murders committed by the insane and his near relative, the drunkard. The murder of whole families is not so infrequent, and the awful murder of Terriss, the actor, by the eccentric Prince is only one of many crimes which come like the lightning-stroke from those who have been regarded as amusing subjects for sport or avoided as bores from their inordinate egotism.

The family whose members have not sufficient intellect to establish a decent support for themselves and not sufficient moral strength to refrain from petty crime is a neighborhood nuisance, as any one can testify who has lived neighbor in their vicinity. How shall the rights of the public be sustained in this matter? For the little ones, the numerous child-saving institutions are at present doing a great work, placing the children among good surroundings and giving them every advantage of development. A certain proportion of these waifs can not develop, and they come back upon the public for care. For such persons as are definitely determined to be permanently defective we have three radical methods to prevent further increase: 1, sequestration; 2, prevention of marriage; 3, surgical interference. In many ways the public has taken the ground that the welfare of the many shall take precedence over the liberty of the few. The man who unlawfully takes his neighbor's property, even in small amount, is promptly imprisoned. The insane man becomes dangerous to his neighbor or himself, and is confined until danger from his being at large is supposed to be removed.

The man who wilfully inflicts bodily injury on his neighbor is taken in hand by the law, and conditions placed over him to prevent his doing so again, either by a money fine or imprisonment; or he may be placed under bonds, or imprisoned, if it is known that he intends to repeat his offense. On the other hand, a neurotic man may marry a neurotic woman and

bring into the world nine beings, as I have stated, to live a lifetime of suffering. An insane man may go home to his family during his better periods from a hospital and resume his family relations and cause the birth of other beings, who stand much more than a chance of a miserable life. And in very few States is this discouraged.

The imbecile may marry, and marry pretty often, and the taxpayer supports the fruits of such a union, often with money that represents much self-denial, and perhaps should be spent in the better education of his own promising offspring. A woman recently wrote me, "My husband died, and as I had *no other means of getting a living*, I married again. That man left me and I have married another!" She wished to dispose of her imbecile boy.

As I have already said, there are three methods of meeting this evil. 1. The woman may be sequestered. The question of "personal liberty" may come up here. But personal liberty is not desirable when it can bring nothing but harm to its possessor. Let the imbecile woman gratify her maternal instinct of caring for the little ones in caring for the little children in an institution. The bearing of children, when it is only the fruit of passion, without any adequate sense of the responsibilities entailed, should never be. It is no especial hardship for any defective woman to spend her life in a modern institution with every comfort furnished her and with congenial companionship. She loses only responsibilities she is unfitted to assume, and escapes dangers of which she has no adequate conception. Such a step ends her danger as a multiplier of her own weakness, and the present rapid increase in our dependent population would at once diminish.

2. The passage and enforcement of more stringent marriage laws. Laws have been passed in several States to this end, imposing a large fine on those who will, for a larger or smaller fee, perform the marriage ceremony in such cases. With the State caring for the women who have not the mental or moral strength to care for themselves, and the law preventing the marriage of those known to be insane, epileptic or habitually criminal, the production of the unfit will surely be greatly controlled and the public far less alarmed when the great number and cost of support of the dependent is brought to light.

3. The adoption of surgical measures for the prevention of the further increase of such defectives as threaten to be a life burden is coming more and more into prominence. It has been boldly advocated by some prominent in the work. Few men, when their attention is earnestly called to the matter, can urge any very strong objections against it. It would not be necessary, if it were possible to fully carry out the idea of sequestration and prevention of improper marriages to complete success, but neither of these provisions are so surely effective as this radical measure.

The farmer knows that he can exterminate the weeds most thoroughly from the ground, which should bear only life-supporting grain, by seeing that they do not seed. For those who with no right to have offspring, yet will offend against both morality and law, the surgeon may yet be called upon to follow the example of the farmer, and by operating, guard society from the contamination and burden of the increasing number of those whose lives should never be begun, and by a comparatively safe operation make parentage impossible. The public are not thoroughly

alive to this matter, simply because they are unable to see the evil in its aggregate importance, and when they do awake to its magnitude much sentiment will be replaced by earnest, business-like methods of suppression and control. The time may even come when continuous births of defective children in one family may be thought of sufficient gravity for a forced separation of the parents. The idea of nine helpless ones being born into a community does not seem consistent with modern civilization. Yet I know of two families where such a tragedy has occurred, and many more where from three to seven have been born.

I have ventured to bring this subject before you again because it is one of the great social problems which lie largely in our province to solve, and to which it is our duty to give our most earnest thought, and I ask for it your aid, if on mature thought you find that the views here advanced lie in the line of true reform.

THE WATER-SUPPLY OF CITIES.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. F. ULRICH, A.M., M.D.

WHEELING, W. VA.

This is one of the burning questions of the hour. It is not because there is a lack of water. We have an abundance of streams, from the smallest brook that rushes down the mountain side, meanders through the fields and meadows, between flowery banks, over gravelly beds or through rich soil in cultivated bottom lands to the great Father of Waters, fed by the hundreds of streams permeating the immense territory spread out in magnificence between the Alleghenies on the east and the Rocky Mountains, rearing their lofty summits to the sky on the west. This vast system of streams carries the almost unlimited supply of water that falls from the clouds, by day and by night, down to the boundless ocean, rendering the magnificent valley of the Mississippi the fairest, loveliest and most productive portion of the surface of our terrestrial sphere. We have that immense chain of lakes from Superior to Ontario—that beautiful system of inland seas that divides the "Land of the Free and the Home of the Brave" from the British Possessions on the American Continent.

We can not, therefore, complain that, in a general way, there is a scarcity of the aqueous fluid; although when the burning summer sun pours down his scorching rays upon the thirsty surface of the earth, the rains cease to fall, the brooks dry up, the creeks diminish in volume, the rivers grow narrow and shallow, not permitting boats to navigate them, and in places even becoming fordable. Yet, in the main, there is water enough in the streams to supply the wants of the population living upon or near their banks.

What is it, then, that makes the question of the water-supply such an urgent one, causing so much complaint, so much anxiety; giving rise to so much contradictory legislation? Sixty years ago we heard nothing about the water troubles. People had their springs or wells, from which they procured water for drinking and cooking, while for washing and cleaning they would catch rain-water in barrels and cisterns, or they would haul water from neighboring streams, leave the barrel standing near the house until the supply was exhausted, and then make another trip to

the stream. Even now, in some antiquated cities of Southern Europe, Asia and Africa, there are water-carriers, who supply the population with water, hauling it in a cart, carrying it on the back of a mule or donkey, or even on their own backs. With the modern ideas of comfort, convenience, cleanliness and health such primitive means of supplying water would be absurd. The population of the earth has increased at an enormous rate during the last century, and the general tendency has been to congregate in cities; so that now a city numbering less than 100,000 inhabitants is counted little better than a village, and several cities number their inhabitants by the millions. Now the problem of furnishing such immense accumulations of people with a sufficiency of water for all uses becomes much more difficult than a superficial observer would imagine.

There are conditions essential to make the water-supply of a large city what it should be, and in many places, one, or even two, of these are wanting, while in some even all three are deficient. These conditions are: a sufficient quantity for all possible emergencies; clearness, i. e., apparent purity; and healthfulness, i. e., freedom from disease germs.

Let us first consider the question of quantity. There is a vast increase in the amount of water used now over that used fifty years ago by the same number of people. Why is this? Do they drink more? No. Do they wash more? Probably; because they have made some progress in cleanliness. Have they more cattle and horses to water? No; for steam and electricity have diminished the demand for horses; and the number of cattle, in proportion to the population, has not been increased.

Let us see what has caused this great demand for water in excess of what was formerly required. In every densely populated city the sources of disease are necessarily increased. The air is contaminated where people are closely crowded together. How that can be corrected by the copious use of water will be explained farther on. The excreta of men and animals contain much that is unhealthy, even when not charged with disease germs. This necessitates much water to remove them and clear away their traces from the places where they were deposited. The streets want to be cleaned, the alleys and stable-yards cleaned out, the sewers flushed. A variety of apparatus must be employed to remove filth, which either contains the disease-producing bacteria or forms a good nidus for their propagation; all of which requires large quantities of water. But there are other causes for the increased demands for water, as, for instance, machinery. Half a century ago, much of the manufacturing was done by hand, which required but little water. Now we have steam-engines for driving all sorts of machinery, and for putting electric dynamos in motion, also water-motors; all of which use up great quantities of water.

The water-motor especially, in which class is included the thousands of elevators found in every city, consumes enormous quantities of water. Formerly the merchants had buildings two or three stories high, and when they wanted to go to the upper part of the house they walked. Now their buildings are from six to ten stories high; and the sky-scrapers, built principally for offices, reach the enormous height of twenty to thirty stories. Now, how do the occupants ascend to these dizzy heights? It is by means of elevators or lifts, which are run mostly by water-

power, and some by electric motors. Every restaurant and saloon has a motor to bring provisions from the kitchen, beer, ale and wine from the cellar, to run the fan in the summer to enable the customer to keep cool, while being heated up with the drinks they take, and for many other uses.

The average citizen knows very little of how much water is required for such purposes. I never had the least idea of the enormous quantities of water that are consumed until I became a member of the water board. Then there are the fires that occur in large cities, where whole blocks and sections would be destroyed if the fire department with its vast consumption of water did not come to the rescue. In order to preserve the health of the city, frequent cleaning of the streets and flushing of the sewers are necessary. The sprinkling of the streets done by individuals in front of their houses, although consuming a good deal of water, does not contribute much to the cleansing of the city. This work, in order to be effective, should be done on a large scale by means of the fire-hose, which prevents the dust, charged with disease germs, from rising and exposing all who breathe the dust-laden air to the danger of contracting disease.

In order to meet all these wants it is essential to have reservoirs large enough to hold a sufficiency of water to supply the city for at least a week. For, if any accident should happen to the machinery to disable it for several days, and the reservoir is too small, great suffering would be entailed on the city. When the citizens of Wheeling, W. Va., my home, were informed that our reservoir, which they had always believed to be ample for our wants, had to be filled from two to three times in twenty-four hours to keep the city in water they were thunderstruck, requiring a sight of the daily records of the waterworks to be convinced. If the waterworks are owned by the city, as is the case in Wheeling, the city fathers would see to it that a sufficiency of water is provided to meet any such emergency. In our case, the city council, not seeing their way clear to spend the large sum necessary to build a new reservoir, sixteen or seventeen times as large as the one we now have, did the best they could under the circumstances, giving the water board permission to establish a new pump of sufficient power to keep the city from a water famine in case of accident; kindly permitting the board to pay for it out of the receipts from the water rents. Should a stock company own the waterworks, the city government would either compel the company to provide for all contingencies or would annul their charter and establish a pumping station of its own, unless they had been foolish enough to grant a perpetual charter.

Another advantage of a large reservoir is, that it affords facilities for connecting a filtering apparatus, which brings us to the second part of our subject—clearness of the water. Although filtering does not clear the water entirely of disease germs, it does so to a great extent; for they are more apt to attach themselves to the solid material that is found in the water. Besides, filtered water has a decided advantage over that pumped directly out of the stream. It is more palatable and more pleasant to drink; it does not nauseate you when you raise the glass to your lips and make you wish you had a glass of beer instead; it is better for washing clothes and cleansing of every kind. Besides, the filth that is found in the water during and immediately after a rise in the river brings

disease as well as disgust. I will not here enter into a discussion of the relative merits of the two great systems—the English or sand-bed filter, and the American or mechanical filter—that being a subject for an association of water boards rather than a medical association. Each one has its peculiar advantages and disadvantages. From the very limited investigation I have been able to make, I prefer the sand-bed filter, where a suitable location can be had, where the right kind of sand is easily accessible, and where money is not too scarce, because in this system no foreign substance is required, such as alum or similar substances, which are indispensable with a mechanical filter, for the purpose of coagulating albuminoids.

I will incidentally mention that a filtering apparatus, improperly cared for, is worse than useless. It would act simply as a store-house for filth and bacteria of every kind, which would remain in the filter. Then, when clear water passes through, it will be itself contaminated by the filth left in the filter from former masses of impure water that had passed through. Therefore, whenever a filtering apparatus is established in connection with a reservoir, ample provision should be made for cleaning it regularly, with special care after the occurrence of high water. When the plant is owned by the city, all these things can be attended to by the proper authorities, among whom the health officer, with his staff of assistants, should always be included; because a great many questions come up, in the management of filtering apparatus, that affect the health of the inhabitants. From the experience our little city of Wheeling has had, I would very strenuously advocate the city ownership of all the works pertaining to the water-supply; so that the city authorities may have entire control of the whole business. There is, however, one disadvantage in this arrangement. I mean the political favoritism that is shown in the selection of officials and operatives, which works harm to the service by handicapping them in the performance of their duty, they being to some extent subject to the caprice of the voters. Or, if they adhere rigidly to their idea of what is right, they are subject to being turned out on a change of administration, perhaps just in the midst of some important improvement they are about to carry into effect. Notwithstanding this drawback, which should not be permitted to exist and which could easily be prevented by establishing a civil service list of all officials and operatives whose frequent change would be detrimental to the service, the city ownership of waterworks, gasworks, electric street-lighting, etc., should, in my opinion, be insisted upon in every municipality.

There is one question arising here, which seems to me to be of considerable importance. I said, in the beginning of this paper, that only a small part of the water furnished to a city is consumed by families for drinking, cooking, washing, and other domestic uses. The great bulk of it is used for street cleaning, quenching fires, flushing sewers, running machinery; all sorts of motors, lifts, elevators, etc., which are propelled by water-power. It would seem to be a great waste of labor and money to filter water used for such purposes as that, from which no benefit whatever would be derived. My suggestion would be to filter only such an amount of water as is consumed for domestic purposes—drinking, cooking and washing—besides any fine mechanical work in the prosecution of which clear water is essential. This would

make a very great reduction of the expense of filtering, without invalidating its utility. But here the objector will come in and say: "How can that be done? Can you send filtered and unfiltered water through the same pipes?" Certainly not. You would have to establish two reservoirs and two separate systems of pipes: both to be supplied from the same pumping station. This would entail considerable expense at the beginning. But the great saving in the cost of filtering would, in a few years, wipe out the additional cost of reservoir and pipes. I throw out these ideas simply as suggestions to induce reflection and study on the subject, leaving it to specially trained minds to make the necessary calculations, and decide on the feasibility of the plan. The proportion of bacteria that can be removed from the water by filtering I am not prepared to determine, but I know that from 75 to 90 per cent. are claimed by various contractors. I believe that one firm has gone so far as to guarantee 97 per cent. If this is the case, which I am not prepared to assert, having made no microscopic examination of water before and after filtering, there would be very little more necessary to bring about the third condition; i. e., the purity of the water, or its freedom from disease germs.

So far as I can see, nothing more can be done by public works, and, if private consumers want a greater degree of purity, they must boil it in their homes after receiving it filtered from the waterworks. Many families have been boiling their drinking water for a number of years. But to boil unfiltered water renders it unpalatable, and generates disgust in the one drinking it; so that an unwillingness to drink water ensues, and many persons resort to beverages that are injurious, damaging the consumer both in body and mind. In connection with a filtering apparatus, an arrangement for aerating the water would be of great service. When water is entirely devoid of air, it tastes flat, lacking that exhilarating quality that makes water so pleasant a beverage, enlivening the tired laborer and making him prefer a cool draught of fresh, aerated, ozonized water to beer, or any other of the customary drinks consumed by the masses of laboring men, while it promotes the health and liveliness of children, improving their digestion, assisting in the assimilation of their food and causing them to grow up to be strong, healthy and happy men and women. The method of aerating the water in connection with the filtering process I am not prepared to discuss at present. I am, however, giving the subject some attention, and may possibly be able to furnish a paper on it and kindred topics on a future occasion.

How to prevent the pollution of streams from which the water-supply is taken, thus obviating and making unnecessary much of the labor and expense of which I have given you an imperfect description, is a subject of such vast importance and such almost limitless extent that I would not venture to bring it into this paper; having already reached the limit of time allowed. Should I ever feel within myself the ability to cope with that momentous question, I will come out with an essay on it at some future meeting. "Water: Its Uses, Benefits, Indispensableness and Purity" constitutes an inexhaustible topic for the medical writer, the sanitarian, the statesman; yea, for every father of a family, and for every housekeeper. An abundant supply of clear, pure, sparkling water, will contribute more to the health, comfort and hap-

piness of the human race than any other single article that could be mentioned. Every health board—National, State, city or town—every public official, whose position gives him authority in questions of that kind; every man of influence, who can prevail with those in authority, should strive with all his might to bring about a condition of things that would make good, pure water accessible to every one. The benefits to be derived from that state of things can scarcely be calculated. Water—the best and cheapest of all medicines, the promoter of comfort and happiness—should be supplied to every human being in abundance, in the best possible condition of purity, for the lowest available price that is compatible with the cost of procuring and furnishing it. The city authorities should not be penurious in providing this great promoter of health and happiness to all who live within their jurisdiction. For in spending money for this laudable purpose, they would be casting their bread upon the waters, which would return to them after many days, since the increased health and happiness of the inhabitants would add largely to the wealth of the city, and all would contribute to the general prosperity.

THE IMPORTANCE OF BACTERIOLOGY IN THE PROGRESS OF PREVEN- TIVE MEDICINE.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY FRANKLIN STAPLES, M.D.

WINONA, MINN.

An English scientist has designated the present time as the "bacteriologic era." It has also been properly called "the period of preventive medicine." The reason and propriety of these appellations as together applied to the times, appear in the fact, that the more important advances made in medicine and surgery in late years have been dependent upon, or more or less connected with, discoveries and practical work in bacteriology. The names of scientists who have been and are now engaged in this work of advancement in different countries require no mention. It has been claimed that different characteristics in scientific and practical work have national or provincial origins and belongings; that, for instance, it was for German scientists, by patient investigation, to discover and furnish the foundation-material, to be utilized largely by practical workmen of other nations. In this country it is remembered when in medicine and surgery the making of books and scholars was accredited largely to Philadelphia, while New York and other places were given importance in the work of practical application. Whatever may have been true in the distant past, in the present outlook geographical limitations in science seem to be unknown.

STATE MEDICINE AT THE PRESENT TIME.

In the United States, as in other countries at the present time, preventive medicine is supported largely by the State. Aside from a humanitarian view, the value of human life to the State is considered, as well as that of property, and means are provided for the better protection and development of both.

The beginning of State preventive medicine proper antedates by a little time the coming of bacteriology as a science; but the growth of the former in the few years of its existence has been phenomenal. State

medicine began in England in 1844, and in the United States properly in 1889. Since then nearly every State in the Union has established health departments, each State having its local boards and officers, acting under laws more or less complete for the maintenance of public sanitation.

Various property interests have conspired to extend the limits of the domain of State medicine. The discovery of the identity of many diseases in man and animals, and the liability of the passage of infection in either direction, have given increased importance to veterinary medicine; and this, with the financial importance of loss from disease of animals, has largely increased the extent and importance of State sanitary control.

What has appeared concerning the existence and character of disease germs, their conditions of life, means of propagation, and behavior as specific disease causes, in other words, the pathology of germ diseases, has come to be the foundation of a large part of modern scientific medicine. Moreover, work in bacteriology in the last decade has not only widened the field of pathology, bringing into the possession of the world of science a new territory of vast extent and great value, but has pointed to possibilities in the future of preventive medicine, the extent of which may now be imagined but not fully estimated.

Concerning living organisms as causative agents in what are now known as infectious diseases, it has been aptly said: "It matters not whether the organism is large or small; whether it belongs to the animal or vegetable kingdom; whether it is located in the skin, as in scabies, in the muscles, as in trichinosis, in the lymphatics, as in erysipelas, in the solid viscera, as in amebic abscess of the liver, in the intestine, as in relapsing fever, the introduction and multiplication of the living infectious agent constitute infection." (Sternberg.)

The distinction as understood between infectious and contagious disease relates principally to the nature and method of introduction of the disease germ in different affections, and has its importance in the matter of treatment, the kind of isolation required, and other preventive measures. The passage of contagion in diseases of the first class may be, and ordinarily is, through the air to susceptible individuals coming within its reach; the less volatile germs of diseases of the second general variety are themselves more tenacious of life, find lodgment in clothing, may infect houses, are liable to be taken in the ingesta, and require different treatment and management in exclusion. What has come to light in the study of bacteriology has not only largely increased our knowledge of the means of preventive medicine, but has made this appear a legitimate field for work under the control and with the support of State and municipal government, and has given direction therefor.

Already in several of the States, in many of the larger cities, and in the Canadian Provinces, as well as in countries and cities abroad, bacteriologic laboratories are established and supported by National and State health authorities. In some instances examinations for diagnosis, analyses of water and food products, and other works are done for State and local health departments in college and private laboratories. The importance of this work in the domain of State preventive medicine is now generally understood and appreciated. As exceptional, however, to this, and seemingly below the general average of intelligence

and good judgment in the country, is the fact that a certain class of persons, even in the present year, has tried to secure the passage of a national law for the District of Columbia, forbidding the use of guinea-pigs, rabbits, rats, mice, and a few other animals, in the practical study of the great art of preventive medicine. These mistaken would-be-philanthropists have little knowledge of the saving of human life and the prevention of disease and suffering already accomplished by discoveries in science due to these means of study.

THE PROVINCE OF BACTERIA.

Not all bacteria are necessarily pathogenic when existing within the body, but are controlled in their action by circumstances and conditions. Besides, they may not be wholly without advantage to the natural world. Scientists have shown in various ways the importance of bacteria in their relation to the existence of organic life on the earth. Placing man at the head of the scale of living beings and the unicellular organisms known as bacteria at the foot, Dr. Sternberg gives the general view as follows: "The relations of these microbes to the lord of creation are more important and complex than those which exist between man and any other group of living organisms. "In the absence of bacteria or of some other organisms to perform their function, the continuous existence of man would be impossible; for it is due to their activity in decomposition of animal and vegetable substances that organic material, stored up as a result of the vital activities of higher plants and animals, is returned to the soil and atmosphere after the death of these. Without such a provision of nature, organic life would long since have come to a standstill from the storing up of those essential elements which go to make up the structure of animal and vegetable tissues. But as a result of the decomposition of such tissues after death, through the agency of bacteria, these elements are released from the complex combinations in which they exist, and again become available for the nutrition of living plants and animals."

Various kinds of bacteria have an important part in the etiology of disease. Certain disease germs are necessarily pathogenic in themselves, and others may become so when lodged in a soil the condition of which is suitable for their development.

CONCERNING IMMUNITY.

Among the problems made prominent, and concerning which much has appeared in aid of their solution, is that concerning susceptibility on the one hand, and power of resistance on the other, to the encroachment of disease in the various organs of the body. In this, marked difference in different animals and man have been found; and the practical advantages of knowledge gained by experiments in this direction appear in the more accurate and complete knowledge afforded in the choice and application of protective means.

Immunity to disease infection may be natural to a body under certain conditions, or it may be induced by artificial means. The first is shown in cases in which disease germs are known to remain harmless in the body, while vigorous and healthy action is maintained in the tissues, but when this is reduced they at once begin their work of destruction. The micrococcus of croupous pneumonia has been found in the salivary secretions in quite a percentage of healthy individuals examined. During the prevalence of diphtheria

in a household, diphtheria bacilli have been found in the mouths of individuals who presented no evidence of diphtheria infection. Here the germs were in no way taken into the tissues, and were without even local effect. Diphtheria is especially a disease of childhood, for the reason that the tissues of the child's body are more susceptible to its infection than are adults. When the disease is fatal to the younger members of the family, the older members often escape with a slight throat infection which shows the specific germ, but which works its own cure by the production of its own antitoxin in the infected parts, and fails to result in a general disease. It is found, however, that fatal infection may be given from these otherwise unimportant cases, hence the necessity of careful isolation in these cases as well as in others, as a means of preventing extension of the disease. This is further illustrated in a case reported by Rosenbach² and mentioned by Senn, in which an apparently healthy mother gave birth to a child suffering, when born, from acute osteomyelitis. The infection here must have been transmitted to the fetus from the blood of the mother, whose body was itself immune to the action of germs of this disease.

Pathogenic bacteria affect the animal organisms in two principal ways: First, by depriving the cells of different animal tissues of oxygen and nitrogen and appropriating the same to themselves in their multiplication and growth; and second, by infecting the solids and fluids of the body by certain toxic substances which they secrete. Aside from the toxic substances secreted by bacteria, which are in a greater or less degree injurious to the tissues and may cause death, there are other substances resulting from the action of bacteria, which affect the tissues of the animal so as to prevent further infection of the same disease germ. In this fact appears the explanation of immunity, as it results from an attack of infectious disease thus acquired. The length of time that it holds in the body varies greatly in different diseases and in different animals, races, climates and conditions. It must be said, however, that the exact nature of the change or changes which take place in the body resulting from the introduction of disease virus, the action of which causes immunity to a future attack of the specific disease, has been a matter of question. Some have considered it to be the neutralization of certain substances existing in the tissues or fluids of the body, which are necessary to the development of the specific bacteria; others, that the action of the disease germ in an attack is productive of certain substances which, remaining in the system, prevent the further action of the particular germ. Other theories have obtained, but what is now known seems to be only, that by an attack of the disease, the tissues are in some way rendered wholly or in a great measure unsuitable soil for the future development of the specific germ. As expressed by Prof. F. F. Wesbrook, bacteriologist to the Minnesota State Board of Health: "We must admit that no one factor observed in the production or acquirement of immunity explains all the phenomena of the process. The blood or tissues of an immune animal will kill off either in test-tubes or *in vivo* only a certain number of microbes (to which the animal is immunized), after which the others (if above a certain number be introduced) will grow, since it is neither exhaustion of the food material nor increase alone of the metabolic products of the bac-

¹ Immunity and Serum Therapy, p. 12.

² Surgical Bacteriology, p. 21.

teria themselves, but an anti- (bacterial or toxic) substance which is capable of being overcome by a large dose of microbes."

Among the more important diseases affecting either man or the lower animals, or both, in which different forms of bacteria are found to exist either as specific causes or as necessary concomitants of disease actions, are acute pneumonia, tuberculosis, glanders, leprosy, anthrax, actinomycosis, variola, typhoid fever, yellow fever, cholera, diphtheria, tetanus, such affections as have been called plague, venereal diseases and other diseases generally of minor importance, including the contagious diseases of childhood. There is now a history of discoveries made and facts demonstrated concerning the character and modes of action of the different specific bacteria in disease. These discoveries for the most part have been the result of continued labor on the part of scientists, and have not come from fortunate accident. The practical advantages which have resulted or may result from these advances vary in extent and importance in different cases, but all afford evidence of the coming of a more complete knowledge in pathology, looking to more complete means of cure and prevention.

Concerning the present practical advantage of a knowledge of bacteriologic pathology, Dr. Sternberg remarks, in the preface of his late work³: "At the present moment we are in possession of experimental facts and data which open to us a vista of possibilities in specific treatment unsuspected a year or two ago." He then speaks of the pathogenic action of specific bacteria in the etiology of disease, and of the methods of experimental work employed in researches leading to the discoveries. In this study appears the explanation of what is meant by natural and acquired immunity, and of the latter, the ways and means of its production.

In the latter part of the eighteenth century, Jenner, seemingly by accident, discovered the means of immunizing the body to the infection of variola by the introduction of the germ of the milder disease, vaccina. This discovery marked the beginning of an epoch in the history of medicine. It remained, however, for men of science in the latter part of the nineteenth century to discover the physiologic character of artificially induced immunity, and this, not by accident nor by outward observations alone, but by continued experimental study in biology, done in the light of modern anatomy, physiology and chemistry.

A brief mention of the history of a few late discoveries and the procedures in securing immunity to the infection of two or three of the diseases mentioned, will serve to illustrate the character of work in this important department of preventive medicine.

MEANS AND METHODS.

There are three principal directions in which the means of preventive medicine have been employed especially against the advance of communicable diseases: 1. In reducing the source of infection propagation to the minimum by means of sanitation, shown in the sanitary care of houses and house surroundings, the purity of the air of dwellings, schoolrooms and places of public gathering, by correct ventilation; the improvements in sewerage and house plumbing, under authoritative inspection and direction; the examination of food products and water-supply, and concerning the condition of public conveyances, the method

of disposing of the dead, etc. 2. In preventing the passing of contagion, by authoritative isolation of the infected. 3. By securing immunity to disease in the individual, when necessary, by artificial means. In each of these departments of work a practical knowledge of bacteriology, of the character, behavior and the possible management and destruction of disease germs, has come to have an important place.

1. In the first department of sanitary work here noticed, the knowledge of what constitutes a means of propagation—the germs of various diseases—such as filth on persons and in and around dwellings, decaying animal and vegetable matter, and the want of pure air and sunlight in basements, as aids in the production and growth of the bacillus of diphtheria and other infectious diseases, has laid the foundation and led to the enactment of laws authorizing and compelling sanitary inspection, with provisions for correcting and improving unsanitary conditions by State and municipal authority. Besides this, it is seen that the authoritative cleansing of private houses, public places, persons, animals and things has an important result for good in the educational influence which necessarily attends the same.

2. The importance of effort in the above mentioned second department of sanitary protection from disease, is seen in what now exists in international, State and municipal quarantine, with the amount of governmental expenditures for this purpose. The financial view is that the loss of life and property incidental to the existence of pestilential disease is greater to the State than the cost of defense.

3. What is now known and practiced by way of rendering the body incapable of contracting infectious disease merits a somewhat extended notice. Only a brief mention may be attempted here.

Animals may be rendered immune to specific infection by the injection of the attenuated virus of the particular disease germ. The discovery of this is given to Pasteur, who in 1880 experimented with fowls in the disease known as "chicken cholera." Having learned that this disease is due to a specific germ which could be cultivated in artificial media, the further discovery was made, that the virulence of the germ became diminished in the process of culture. It was accidentally noticed that certain fowls injected with old cultures did not die, and later were immune to fresh cultures which killed other chickens. The attenuation in the old cultures is supposed to be due to exposure to oxygen. The germs having been thus reduced in their pathogenic power, when injected into healthy fowls were found to produce a comparatively mild attack of the disease, which resulted in immunity to further infection.

Pneumonia.—Another illustration of the method of securing immunity is seen in the treatment of pneumonia in man. A bit of history may have place here. The pathogenic germ of this acute disease of the lungs was discovered by Surgeon-General George M. Sternberg in 1880. He is said to have first detected it in his own saliva. Not then being aware of its connection with pneumonia, he named it "micrococcus Pasteuri." Pasteur discovered the same thing independently in the saliva of a child suffering from rabies in December, 1880. It was described by Sternberg in a paper to the Pathological Society of Philadelphia, in April, 1885, and was published on July 1 of that year in the *American Journal of Medical Science*. Here is a case, the like of which has not been uncom-

³ Written in 1892.

mon, where a question arises as to the priority of discovery because of the nearness of the dates of the first public announcement. The German scientist, Fraenkel, published his discovery of the same micrococcus only thirteen days after the published announcement of Sternberg; and the germ has been called "Fraenkel's diplococcus of pneumonia;" this for the reason that he appeared to have first shown the relation of the microbe to this acute disease of the lungs. Dr. Sternberg gives credit not only to Fraenkel, but to Weichselbaum, Netter, Gameleia and other experimenters, for discoveries and improvements in bringing the knowledge obtained into practical use.⁴

It has been determined by experiment on susceptible animals, that immunity for pneumonia may be had by inoculation with an attenuated culture of the disease germ; and that the completeness and duration of immunity thus produced bear relation to the degree of immunity caused by a natural attack of the disease.

For details in the work of preparation of cultures and their use in treatment, reference is made to the practical works of bacteriologists now available.

Anthrax.—Another disease that may be noticed in this connection is anthrax. This disease occurs epidemically among herbivorous animals—sheep, oxen and others—and may be communicated to man. A historic summary is given in the practical work of Muir and Ritchie,⁵ in which is shown the discoveries made in the bacteriology of the disease, which have led to a knowledge of its pathology and rational management. First, in 1840, Pollender discovered rod-shaped bodies in the blood of anthrax animals; in 1863 Davaine named these bodies the bacillus anthracis. Koch, in 1876, made his first contribution to bacteriology, in which he confirmed the view that the bodies were bacteria, and made discoveries concerning the formation of spores on these bacilli, their multiplication by division both in animal tissues and in cultures outside the body, and, by inoculating animals with them, produced the disease artificially. Pasteur disagreed with Koch in some minor points, but in the main confirmed his observations. The existence of spores on this bacillus, and the fact that these may be cast off and distributed outside the body, and that the vitality of these germs may remain for considerable time in spite of desiccation and great changes in temperature, appear as an explanation of the natural spread of the disease. The author here quoted sums up concerning the advantage of the study of this particular disease germ as follows: "Not only is bacillus anthracis easy of growth and recognition, but in its growth illustrates many of the general morphologic characters of the whole group of bacilli, and is therefore of the greatest use to the student. Further, its behavior when inoculated in animals illustrates many of the points raised in connection with such difficult questions as the general pathogenic effects of bacteria, immunity, etc. Hence an enormous amount of work has been done in investigating it in all its aspects.

Glanders.—This well-known infectious disease, which principally affects the horse, is sometimes found in other animals, and may be communicated to man. It is generally believed that in glanders no means of communicating the infection exists, other than that of direct contact with the affected parts of the diseased animal, or with some substance

on which the infection has been lodged. The following illustrative case has been published: A young lady while traveling fondled and kissed a small dog belonging to a traveling companion. The dog had been noticed to sneeze frequently. After arriving at her destination the young lady was first affected with a redness of the tip of the nose, which did not yield to any remedy; then the nose became inflamed and painful, and began to secrete mucus, and a diagnosis of influenza was made. But the case grew worse, ulceration occurred and increased, and the microscope revealed a case of glanders. In this case the disease germ may have passed from a horse to the dog and then to the human being. The practical lesson concerning prevention is obvious.

In Diagnosis.—Not the least important use of various cultures of disease germs is that in diagnosis. The use of mallein, tuberculin and cultures of the typhoid bacillus in diagnosing the affections of which these substances are the attenuated germs, may serve to illustrate. Mallein is a fluid obtained from cultures of the glanders bacillus. This was first discovered by Schultz and Loeffler in 1882. Schultz, as late as 1894, first taught concerning the difference in reaction in horses which were or were not infected when inoculated with mallein. It was found that after the inoculation in glandered animals there occurs a decided rise in temperature, and around the point of inoculation is seen a circumscribed swelling. In animals free from glanders, less febrile reaction occurs upon inoculation.

The similar use of tuberculin in the diagnosis of tuberculosis both in animals and man has recently received attention. Analogous to this is the serum (Widal) test for typhoid fever. What has come to light as a result of study in this disease is mentioned by Pepper and Stengle⁶ as the most important contribution to the progress of internal medicine during the year. Concerning its value, it is remarked by these authors, that in the year investigators in every part of the world have tested its value, and with remarkable consonance declare it a diagnostic method of the very greatest importance. Dissenting voices have been heard, but these for the most part represent no considerable authority or following.

The diseases and methods of investigation and treatment here mentioned are given only as illustrations of the few for the many. What shall be the changes and developments in means, methods and results, remains to be determined in the future. Great progress has been made, but not without labor and self-sacrifice. Besides, it is true that no advancement in medicine and science has ever been made without opposition. Objectors and critics, both within and without the medical profession, have never been lacking. Intelligent criticism is advantageous and helpful in the discovery of truth; but objection which comes from ignorance, and for this reason is more assertive, may be troublesome for a time, but in the end is harmless. The intelligent student of science has no time to spare with such would-be-instructionists. His work concerns great and important means of progress, the present outlook concerning which gives promise of most valuable results.

⁶ Year Book of Med. and Surg., 1898.

⁴ Sternberg: Immunity and Serum Therapy, p. 216.

⁵ Manual of Bacteriology, p. 275.

THALASSIC SUBMERSION A MEANS FOR DISPOSAL OF OUR DEAD.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY D. LICHTY, M.D.

ROCKFORD, ILL.

The question most intimately following a *useful* existence here is a *harmless* absence after we are through. It is evident that some suggestion for the disposal of our dead, other than earth-burial or cremation, is needed, from the unsanitary character of the former and the natural repulsiveness of the latter.

To show that ocean burial is practical, sanitary, and will meet most of the requirements of sentiment and religion, and *all* those of sanitation, will be the endeavor of this argument. That the beautiful fealty of genealogy and consanguinity and the sacred associations of religion are factors to be considered in this as well as any other method for the disposal of the dead is recognized; but above and beyond these is the unpurchaseable boon of health and its attendant uses and beauty.

Every expedient that human thought could devise has been resorted to in all times past to conceal the human dead and escape their disagreeable, decaying presence and evade their naturally dreaded and noxious effluvia. The nomad's village was removed to fresher and more remote territory; the ancestral cave was promptly deserted and relinquished to the grim destroyer; the rare and desiccating air of the plains did well preserve the body until disintegrated and distributed to the sands and dust; birds and beasts of prey were invited to devour the softer tissues while the bones bleached in the sun and the mists. Chemistry has been invoked to offer an element that would preserve our form or else dissolve it quickly away; and modern electricity has been asked to envelop the loved ones in impermeable garbs of metal to preserve their cherished form and substance. Aqueation or sea-burial, except in accidental death *at sea*, was only practical when navigation was so primitive that the hardiest mariner dared not go beyond the shallows or out of sight of his native land, and when bathymetry and geodesy of the ocean were unknown. The embalmers, from the Egyptians to the present, exhausted every resource of their art, then and now, to prevent the decay of the body; but Rameses' and Cleopatra's crumbling and repulsive features, held together with spiced pitch and rags, as seen in modern metropolitan museums, attest its grewsome failure.

All these have failed to satisfy the longings of devotion to our dead, or meet the present rigid sanitary requirements of our rapidly multiplying and dying population, and we seem to have still nothing left but to "inhume the natives in their native plains."

Earth-burial remains an unsatisfactory and unsanitary presence as well as relic. Incineration continues repulsive to all the finer feelings of nature, and we seek relief from all these in the truly *sanitary*, beautifully sentimental, and forever efficient disposal of our dead in the depth and vastness of the abyssal area of old ocean—illimitable and itself symbolic of the infinite in time and space—bride of the sun and vassal of the moon! "Nothing in Nature renders back to man the full and instant sympathy which is accorded by the mighty seas," who thus repose mildly in the generous grandeur of their glorious power.

Sentiment must have a place in this presentation, and in this every department of this subject can have a diversion and division as remote as *mythology*, as exact as *history* and *science*, and as generous as poetry aided by the imagination can plan, from Charon with the obolus, to pay passage, to Tennyson's "Crossing the Bar;" from "Jordan's Stormy Banks" to "Canaan's Happy Shores."

As we emerge from the eras of superstition and shallow thought, and realize that the organic individual is but a transient here, and that disintegration and resolution of the body into its primitive elements is but an arc in the circle of perpetuation; that care for the living, hope for the future and memory for the dead is our aim and object, so does it become forcibly apparent through every channel of study that the now well-acknowledged bane of earth-burial must somewhere, somehow, cease. The catacombs everywhere, instead of being monuments of skilled subearth engineering, are rather persistent evidences of a civilization so remote and crude that, without implements of excavation, they could only follow the sand strata and rock seams in their meanderings toward "points of least resistance" for repositories for their dead. An afterthought, with the then generally entertained idea of immortality of the material body, led to the attempts at decoration and barbarous body-ornamentation which the dry sand chambers and corridors favored by desiccating the bodies, absorbing the gases and preserving the then sacred and esthetic attempts at color ornamentation for the amusement of modern sightseers.

The deception that proximity to graveyards is harmless can not longer be maintained by corporations who own them, or municipalities that are supposed to control them. The study of bacteriology and the toxins, their secretions and their persistent life in all conditions; the penetrability of their gases to remote distances through pervious qualities and strata of soil; their escape and ascent into the atmosphere, all impress the danger of such acres (though sacredly and sentimentally named) on chosen picturesque hillsides, near ravines draining the water-courses, or inclining to wells from which the inhabitants of villages and cities derive their water-supplies and inhale the poison-charged air.

Every aggregation of population is confronted with this menace. London has its finest cemetery—Kensal Green—of 18 acres, containing 70,000 recent bodies, an equivalent of 3-1/5 bodies to the space allotted an ordinary grave. Paris has its Pere la Chaise, equally crowded; in 1871 the communists made their last stand amid its tombs and 900 fell in its defense and were buried where they fell, in two long trenches, their bodies mingled with quick-lime to hasten their dissolution. Other cities are struggling with this problem, owing to limit and contiguity of territory; building tombs above the earth; leasing the ground for brief periods only, and employing the chemistry of absorbents and deodorants and destructive acids to hasten disintegration, tossing the resultant dust to the garbage pile and fertilizing field.

A perusal of the daily lay papers furnishes a surfeit of ghastly recitals of graveyard desecration, of resurrection and demolition, of skeletons ruthlessly thrown about by workmen's pick and shovel within, or adjoining, hamlet or city, to make way for cable or conduit of commerce, or deep foundation for towering tenement. The category of horrors associated with our

crude plan of earth inhumation and attempted body concealment, despite all precautions, is neither in harmony with wholesome sentiment, economy nor in any sense approximate modern sanitary requirements. Every other phase of economics has advanced along progressive lines; ancient and modern plagues have been stopped; pain has been robbed of its terrors; time and distance have been annihilated; but a suitable and sanitary repository for our dead has not yet been secured. The "abyssal province" of the ocean, embracing 140,000,000 square miles, more than three times that of the earth's surface, and one hundred times that of the available area of earth, unfolds her limitless and aseptic bosom to envelop us; no actual bounds of length, breadth, height, or depth circumscribe her receptive capacity; the diversion of her shore lines are insignificant when compared with her area, and her perturbations are only on the surface; her deeper strata are scarcely moved in ages.

The wave

Unbroken in its tranquil aspect sleeps
Serene as Beauty in her sunless grave;
Nor moves a tide, unless its silent flow
Be through the graves and coral halls below.

Ocean cables lie secure in their beds and swerve not though pulsating with war's weighty messages or love's tender tidings.

The antiseptic chlorin solution of the seas is as stable as air; dissipation and augmentation by affluents are compensatory and preserve a constancy of specific gravity. Its temperature at 400 to 1000 fathoms, in all latitudes in all seasons, day and night, is unvarying and on the verge of freezing. Decomposition, putrescence—the dread of the surviving and the bane of the air and the earth—do not take place in ocean burial.

Imagination naturally revolts at the inexorable chemistry of decay that must take place in vault and subsoil burial; putrescence at the bottom of the sea is unknown; ferruginous matter does not find its way beyond the extreme three-hundred-mile shore line, but here and beyond all is carpeted with pelagic deposits, crumbling remains of the inhabitants of the upper strata, feeding bathybius and the diatom, medusæ and the crinoideæ. Here disintegration will some time, sooner or later, proceed by an alchemy unknown to the present denizens of the earth. Ships go down along the paths of commerce, but deep-sea dredgings find no relic of the myriads that have sunk in her tracks; iron ships soon corrode and wooden ships are easily comminuted; ocean cables enveloped in heavy vulcanite remain long untarnished; gold, glass and heavy porcelain survive; all else soon disintegrates and sleeps forever—a slow accretion to the solid diameter of the globe. Over all is constantly descending through the waters like a snow-cloud, showers of microscopic shells, product of the higher strata. At these depths there are no real or chimerical "sea monsters;" animal life diminishes in the sea as the depths become extreme. The investigations of Professor Agassiz in the Pacific Ocean show conclusively that there are but few *living* forms below a depth of 1800 or 2000 feet; only minute and peculiarly formed and encrusted animal life can survive at this pressure.

Thus a body deposited on its "watery plains" or in its ferny cliffs, and marked on chart by degrees and minutes of latitude and longitude would be as definitely located, as if sepulchered in mausoleums of granite on mountain side or village vale amid earth's shifting scenes.

Compare the area of the stable and abyssal seas with that of the earth, and its limitless boundaries invite undisturbed repose; subtract from the earth's surface lakes, mountains, marshes, rivers and inaccessible territory, tillable lands for the sustenance of the living, and it leaves but a handful of earth for the myriads that already slumber in its bosom, or the unknown millions that shall live and die hereafter.

That change must come in the matter of the disposal of the dead is certain; that cremation during a third of a century of education and argument is far from acceptance and adoption is patent. Fire is the natural foe and dread of man, incineration can not by any force or play of the imagination surround itself with as pleasing sentiment as ocean burial can. Resolution by *fire* is repulsive to all our nature; no one can come near a natural-gas or fuel-oil furnace, much less look into its glowing, roaring caverns without being terrorized in its presence, and no persuasion could urge one to remain while the body of their friend dissolved and disappeared in its fury, or even while preparation was going on therefor. Besides this, it is too expensive for general adoption, and its hygiene and utility are still doubtful. The expense of a *single* Sieman's retort in working order, without necessary buildings, is approximately \$2000. Sir Henry Thompson's process is more expensive, and Polle's but little less, in the experiments thus far made use of. By Polle's method two hours were required to reduce a body. Sieman's process required fifty-five minutes after the retorts had been brought to their required degree of heat. At the cremation of the body of the late Frances Willard the body was left in the retort *all night* that the "ashes" might cool. This, in part, realizes the expense and impracticability of cremation when it should be applied beyond the experimental stage, and for those few only who, through persistent indoctrination, signified their willingness before death to submit to this form of dissolution. Witnesses to a cremation do not usually become advocates of the process. I asked a mother, three months after she had complied with her son's request to be cremated, and she had carried his body across three States to fulfil the promise, what she thought of it? She quickly dropped her head and an expression of horror was on her face when she looked up to ask me not to refer to it. The complaint of crematory managers is that parties do not even return for the "ashes," and their vaults are overcrowded.

Admitting that the expense of transportation to a suitable wharf and a distant crematory are equal, the further consummation by ocean burial would be far less expensive and less repulsive than cremation. The bidding adieu at the "Gates ajar" on a cleanly wharf, as a clean boat sailed away over the waters, would be far less trying and have a pleasanter memory than such a leave-taking at the sooty door of a crematory, or to hear the final rumble of the clods on the coffin-lid six feet in the cold ground below. Further, the presence of a large crematory plant of say ten or twenty retorts would soon prove a nuisance in a neighborhood, and its location be as difficult to secure as that of a powder factory.

Consider an aggregation of population like New York and vicinity, numbering nearly five millions, and its death-rate of 15 per 1000 or 75,000 deaths per annum—over two thousand per day to be consumed; who could say that retorts, flues and stacks would not

soon be clogged? Imperfect combustion would result and noxious vapors therefrom fill the surrounding atmosphere. What a battery of furnaces and retorts this would require. No pleasing memories could cluster around such a place. No wonder that even material Germany shrinks from adopting the experiment, and of its dense population gave only a little over two hundred bodies to the experiment last year.

This subject has been presented to marines, travelers, landsmen; to Christian and infidel; and while with all, naturally, death is dreaded and the first suggestion of disappearance by submersion or by any means from the ken of men, is startling and dreaded; at a renewal of the subject after a time for thoughtful reflection they would invariably, as between earth-burial, cremation or ocean submersion favor a thalassic grave. As to *incineration* and urn and mantel preservation, fifty years after its revival from barbarous methods, aided by all the modern methods of propagating and advancing an innovation, its *non-acceptance attests its failure*. The proverbial dread of fire does not apply to water; submersion and disappearance beneath the wave can not have associated with it the horror of disappearance by fire. Watery submersion as *immersion* is both a pleasant and a sacred symbol of burial and a new birth or *resurrection* to a large body of Christian believers to whom ocean burial should be a sure surcease from dreaded earth-burial or incineration. A large percentage of suicides choose drowning rather than any other form of extinguishment, and prove their preference for a watery grave to plunging into a fiery retort at rolling-mills or Bessemer converters.

There can be no very loving sentiment that may cluster around a bowlful of incinerated, gluey bones called "ashes" and summoning to memory a beloved face and form of which they were wont to form a part. Thoughts of the positive putrefaction of the loved ones, or how "the small cold worm fretteth the enshrouded form," can not be realized; or how beneath the coffin lid and its "six feet two" of weight of cold clods, rest can not be more sweet, and the form more secure than to be buried in the deep,

Where the sea flower spreads its leaves of blue;
That never are wet with falling dew.

Religion and sentiment combine to explain why there is no more ready and favorable movement in favor of *burning* the dead.

Immortality that is to be had only by preserving a handful of bones or mourning over a mound of clay in God's Acre is indeed nothing much to be coveted. "We must be found in the register of God, not in the record of man." The memory of the child or parent can not be less profound for the ancestral body that sleeps somewhere in fatherland, across the broader waters, the site of which they can never hope again to visit. Are the 150,000 brave sons, brothers and husbands of our late Civil War, who sleep in *unknown graves* less cherished than those who sleep in "God's Acre" beneath the graven cenotaph? The white-capped emerald ripples in our national cemeteries marking the "unknown" indicate just as specifically *where* sleeps a hero and loved one as if they were buried beneath the green of Saragossa or the billows of the Atlantic.

We would not be retrograding either in sentiment or sanitation if our seaboard population were not so

dense, if we could revive the solitary, stately customs of the Viking chief, whose glory in defeat by death and in departure was to float outward to sea with the tide, reclining, surrounded by his trophies, in his crude but gorgeous craft until he was lost in the majesty of the sea, and sank to rest. The Columbia River Indians buried their dead by setting them adrift in their canoes with a lighted taper in the bow and watched the light and form go out on the broad sea and down together. Thus we are not advocating a custom that is without the sanction of precedent, or one that would conflict with the finer sensibilities of the surviving friends of those who at first *voluntarily* selected this method of burial, as has been done in cremation in the past.

It would seem that when ocean-burial is rightly studied, when the abyssal area is considered, the aseptic fluid that will envelop the form, the quiet that rests in ocean's depths,

When winds were raging over the upper ocean,
And billows wild contend with angry roar,
'Tis said far down beneath the wild commotion
That peaceful stillness reigneth evermore.

Far, far beneath, the tempest dieth,
And silver waves glide ever peacefully,
And no rude storm, how fierce soe'er it fieth,
Disturbs the Sabbath of that deeper sea.

Comparing the accessibility for all the seaboard area and the economy with other methods of final disposal of the dead, municipalities or may be corporations, would agree to add to the "white-winged fleets of commerce," and the "white squadron of war," the pearly palaces of peace, that would at stated intervals, near enough together to meet the requirements of the district's mortality, sail away with their sacred cargo to deposit it on the watery plains of the abyssal seas, when with Byron we would say:

Ours are the tears though few sincerely shed
When Ocean shrouds and sepulchres our dead.

Such steamers should be especially fitted for their work; they should have complete refrigerating apparatus and chambers fitted to receive all the bodies to be carried; these chambers could also be hermetically sealed as "bulkheads," or salt-water compartments, for the conveyance of contagious disease cases; they should be under the supervision and espionage of the municipal or State board of health. The wharves should be selected for their accessibility; should be capacious and scrupulously clean; fitting enclosure should secure the sacredness of the area, and within or adjoining might be a small, neat chapel. To those who still cherished the exclusiveness of the caste of wealth, rank or family—if death recognized such division—an area might be set aside in the abyssal field by the Geodetic Bureau, and they could be transported in their own or friend's private yachts, with such selected company as they chose, to share the sacred rite and private grief at the watery grave, where

The free waves kissed her with their cold blue lips
And then put her to sleep;
She has a sand pillow and a water sheet,
And never turns her head or knows 'tis morning.

The caskets or containers might be wicker-wrought as has been suggested for earth-burial, though fastened on a heavy iron or stone base; they might have fenestrated or latticed sides; or ornamental open-work to admit water and favor deep submersion: a suitable weight could be enclosed in or near the foot

of the coffin; if desired this might be of any heavy non-corrosive material, with which might be a graven or moulded number or merited motto, corresponding to a record kept in the family or State archives for the information of future antiquarians, should islands some time rise "unusherred from the seas"; where no provision had been made, a heavy concrete of water-lime might fill the lower interspaces and insure descent and submersion. If volunteers were not offered, the "Potter's Field" might surely spare its inmates for the early experimental stage and no breach of sentiment could arise to offend the fastidious.

That bodies would rise again from the formation of gases, as they do in fresh water, is not to be anticipated, from the fact that the lowered temperature and aseptic medium of submersion would both prevent and lessen further formation of gases. It is of record that during the earthquake at Lisbon in 1775, sixty thousand people sank into the sea at once and not one of the dead bodies ever floated to the surface; the water there *now* is only six hundred feet deep, whatever it was at the time of the cataclysm.

That funeral obsequies and ostentation are becoming more and more a burden is an economic fact from which many would escape did not the thralldom of conventionalism prevent. Church funerals are becoming less frequent; the gorgeous hearse, the solemn, nodding plumes and the slow and stately tread of somber comparisoned horses is giving way to the hurry trolley that ends at the gates to God's Acre. The money that is expended for the obelisk and the slab had better provide an endowment and a bed in a hospital for the unfortunate sick, crippled, or defective living. The fund that builds a mausoleum for the dead had better build a school or hospital; and the green cemetery-field that is polluted with decay, could in truth be made "God's Acre," when it was given up for park purposes in which could be beautiful *memorial* plats and avenues, fountains, restful grottoes, inscribed settees, chapels with capacious corridors, with limited spaces assigned or purchased, on which might be inscribed in brief the record and memorium of the dead; libraries and art galleries might award or sell similar spaces.

Thus there would be no territorial encroachment in hamlet or city, and the forsaken and haunted cemetery would become a place of recreation, retrospection and education for the living. Old Ocean would never become crowded, earth would be freer, water would be better, air purer. Life and health—the greatest boons of the Giver—would be strengthened and lengthened, and no harm have been done the dead.

SOME EXPERIMENTS ON THE VALUE OF CARBID OF CALCIUM IN THE TREATMENT OF CANCER.

Demonstrated to the Chicago Medical Society, Nov. 2, 1898.

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In the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, July 2, 1898, an article appeared entitled "A Note on the Treatment of Carcinoma of the Uterus," by J. H. Etheridge, A.M., M.D., Professor, etc. At the start the author states that the idea of curing cancer by means of remedial agents has never found lodgment in his mind, while the improvement in the

condition of several cases of uterine cancer under the treatment described in the article seems to him worthy of record. Then follows a review of the opinions of various authors on the pathology of cancer. Next a description is given of the agent used in the treatment of the cases reported—the carbid of calcium—and the product of dissociation of carbid of calcium with water—the acetylene gas—is dwelt upon at some length, and the question of its toxicity discussed. The author then reports that in 1896 he first saw reference made to the carbid of calcium in the treatment of uterine cancer in some medical journal, which reported that some German physician used it in treating cancer of the uterus, and the author disclaims all pretense to originality in its use. He has forgotten the name of the German physician, and I have been unable to find his article or a report of it in any German publication now accessible to me. Now follows a description of the treatment as carried out in the cases reported. It consists in first curetting under anesthesia, then cauterization with the Paquelin cautery, irrigation with very hot water if necessary. After all this, the carbid of calcium is placed into the cavity thus created and the remaining space is packed firmly with iodoform gauze. The use of the carbid is repeated every three days. The results of the cases treated in this way are then reported, whereof more later.

The conclusions arrived at are the following: As to the *modus medendi* of the carbid of calcium the author has no opinion. Bacteriologic experiments were made with the carbid and with the acetylene gas with absolutely negative results. In a few cases an erysipelatous redness of the sound mucous membrane seemed to follow the use of the carbid, which would suggest that it resulted from an escharotic action of the acetylene gas. Now comes the, to me, incomprehensible statement: "Whether the acetylene gas destroys the cancer cell by annihilative action or by chemically changing it remains to be seen." And the article closes with the words: "One thing seems to be certain, and that is that the carbid of calcium at least postpones death and makes carcinoma patients vastly more comfortable while they do live than any treatment known to the writer."

So far this article. With the pathology of the author I am not concerned tonight any farther than to mention merely that as long as carcinoma is not proven to be a bacterial disease experiments on bacteria with carbid or with acetylene gas are, to say the least, premature in this connection. The rest of the article however, aroused my interest and after having given it the attention which the subject and the position of the author so fully deserve, I am forced to the statement that I disagree with him and believe myself able to make you disagree with him in practically every principal item of his article.

To specify I shall try to prove:

1. That the acetylene has no escharotic action.
2. That the *modus medendi* of the carbid of calcium is simple and easily understood.
3. That the author has utterly and absolutely failed to prove that carbid of calcium postpones death.
4. That the carbid does not make cancer patients more comfortable than any other treatment, even if we consider only those known to the writer or those which must be known to him.
5. That the carbid of calcium treatment not only is not superior to other methods of treatment of inoper-

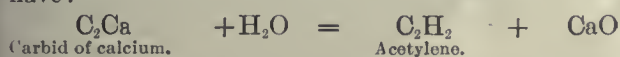
able cancer but exposes the patient to some quite unnecessary dangers.

In order to prove these five points we have to look both at the chemic and the clinical sides of the question. To begin with the chemic part, I shall produce here a quantity of acetylene gas by dropping carbid of calcium into a test-tube with water, and I will expose one of my mucous membranes—my conjunctiva—to it. The effect is *nil* and remains *nil*, if I continue the exposure indefinitely. The same experience has been made by the authors who exposed various animals to more or less pure streams of the gas for considerable length of time—several hours—(see Rosemann *Arch. f. exp. Pathol.* 1895). A number of other experiments with the gas injected under the skin or into the circulatory system prove that the absorption of large quantities is an entirely indifferent affair.

To prove that I am dealing here with acetylene gas, I will light it and you see it burn. Even without lighting it, we notice one thing which is important and is entirely omitted from the article mentioned, viz., the production of heat during the dissociation of the carbid. This development of heat I can demonstrate best by dropping small quantities of water on the carbid. You see the water almost instantly turns into steam. In other words you can, by adding water in small quantities to the carbid, produce the temperature of boiling water. The same conditions prevail exactly in the cancerous cavity of the uterus, where the serum gains access to the carbid by slowly oozing out of the wounded organ. If you take the vessel in which you make this experiment in your hand you will feel that it becomes hot, and if you continue you will prefer not to hold it any longer in your hand. If however you throw the carbid into a larger quantity of water, the heat is much less noticeable, and you can place your hand in the water without noticing any escharotic effect from the acetylene gas developing all around your hand.

In order to get some idea how a patient would feel under this treatment, and in order to find out how high the temperature would rise on trying the dissociation of the carbid on the surface of the body, I place some carbid on my hand without water. No effect. The minute quantities of moisture adherent to the surface of the body are not sufficient to produce dissociation. So on September 4, I tried adding a drop of water on my left upper arm, where you still see the scar and the pigmentation. Immediately I noticed a smarting pain which stopped soon after all the water had been used up in the dissociation. When I then removed the remnants of the carbid I expected to find a simple burn, an erythema or a blister. But I found something else. Instead of the expected blister I found a soft grayish slough surrounded by a red area. That was evidently not due to the heat but to something else, and this something is more important, though it is entirely omitted from consideration in the article mentioned.

Let us look for a moment at the chemic formula which represents the changes discussed here. We have:



Now CaO is an old acquaintance—quicklime—and what effect quicklime has on human tissues is known to the bricklayer as well as to the fake cancer specialist who advertises "cancer cured without knife." The

medical profession generally has abandoned the use of this substance, be it in its original condition or in the various disguises in which it was put up, as Vienna paste, etc. Most deservedly so, because quicklime forms a soft slough; because it does not limit its own action by producing a firm impermeable layer, as for instance the strong acids do. Therefore its effect is uncertain as to the depth of the slough produced. The same reason exists why the carbid of calcium can not be used for checking an active hemorrhage. I sacrificed two dogs before I had gained the experience that the heat produced by the dissociation of the carbid with the blood from the cut surface of the lung or of the liver was a less prominent feature than the softness of the slough which allowed the blood to well out again and again. In one case the dog succumbed to the hemorrhage from the lung, and in the other case the hemorrhage from the cut surface of the liver had to be checked by the actual cautery to save the dog from immediate death. Let us keep this in mind when we turn to the clinical side of the question.

To sum up the chemic part of the question: carbid of calcium brought in contact with water is dissociated under the production of considerable heat into the indifferent acetylene and into quicklime, which in its turn immediately becomes slaked lime. This process again is accompanied by a lively development of heat. The therapeutic effect of carbid of calcium brought in contact with any moist surface of the body is nothing but the well-known effect of quicklime—a remedy long abandoned and for good reasons.

But—and now we turn to the clinical side—how about the clinical facts? Do they not prove the treatment superior to any other? By no means gentlemen: The first case reported has been under observation from December, 1896, till May, 1898. The patient first noticed her symptoms six months before she came for treatment, say June, 1896. She has, therefore, been living with her cancer 23 months. Case 2 has had symptoms since February, 1897. The last report of her condition is dated May, 1898. Total 15 months.

Do these two cases prove that carbid of calcium postpones death? I fail to see that such a conclusion would be warranted, for the very simple reason that a great many cases of cancer of the uterus live that long and much longer without any treatment or after other palliative methods of treatment have been followed. I have picked out at random from my small collection of inaugural theses of German universities a pamphlet by Ditges, which reports a number of cases of cancer of the uterus which refused treatment or were treated with the curette or the Paquelin alone, and the time of death of which was ascertained from the official records kept by the authorities. This little book shows numerous cases where death did not occur until three or more years after the first symptoms developed. And this is not the only book which contains such records. A. Martin, for instance (*Pathol. und Ther. d. Frauenkr.*, 1895), records a case which lived five years without radical operation. In fact, every surgeon who has had some experience with cancer of the uterus is most willing to acknowledge that the prognosis as to the duration of the disease is extremely uncertain. The two cases in the article mentioned do not present any extraordinary length of life after the first symptoms, and therefore do not prove that carbid of calcium postponed death.

The article fails to prove that the carbid of calcium

treatment makes cancer patients more comfortable than any other treatment. First, it is a very common experience that after incomplete operations or after simple curettement or use of Paquelin cautery with various powders or ichthyol or chlorid of zinc treatment the patients are very comfortable for months, many so much so that they consider themselves cured. It must be remarkably bad luck on the side of the author of the article mentioned, if he has never seen such results after treatment with the curette and cautery. I refer to this treatment specially, because it certainly is one known to the author of the paper mentioned as is shown by his report of the treatment of those two cases which included the curette and cautery. And this is the second reason why I can not accept his paper as conclusive evidence in favor of the carbid of calcium.

The cases described have not been treated with the carbid exclusively, but in addition to it with methods which, in the hands of other surgeons, have given fully as good results as those described in the article mentioned. If we combine treatments in this way, conclusions from the results can not be relied upon in a scientific discussion. A third point is to be mentioned—the age of the patients. One is 69 years old, the other 53. It is by no means uncommon to find a very slow progress of cancer in women of that age. A fourth point and a very important one is that, according to the author's own report, both cases give very palpable evidence of a progress of the disease. Case 1 reports May, 1898, that she was "having an occasional bloody grumous discharge from the vagina coming with a sort of gush as though the pent up fluid—about a dram in amount—was suddenly released, that it had an odor like old fish, not like cancer, that it had been going on at intervals for a few days, for about a month." It takes only a very limited experience with cancer to understand what is going on here. The cauterized cervix has contracted, the uterine canal has been strictured, carcinoma is spreading, and the discharge from it accumulates above the stricture. No report of a bimanual examination is furnished. The report that the vagina shows no solution of continuity does not prove anything as to the condition higher up. It is a very old experience that cancer of the cervix frequently spreads upward and outward, leaving vagina and external os almost intact. In Case 2, the treatment was begun July 30, 1897. In February, 1898, patient became ill with a chill and pelvic pains. On the eleventh day an abscess suddenly discharged through the small opening in the vault of the vagina. What has happened? Either a pyometra or an extrauterine abscess has formed, as is seen so frequently in the course of carcinomatous disease, and the report that the vagina shows no solution of continuity affords no certainty whatever as to the spreading of the disease, especially as again no bimanual examination is recorded. Are these the superior results which form the pride of the article? In the first case hemorrhage and odor are present; in the second a septic condition somewhere around the uterus. So the carbid of calcium has not prevented either of them.

We have to say a few words concerning the dangers lurking in the carbid. There is first the danger of the slough extending to an undesirable depth, producing perforations which make the patient's condition worse than before. Secondly, it is possible that some of the quicklime gets to points where it is not

wanted and produces unnecessary injuries—a danger which is not very great in the hands of a manipulator of any experience. Thirdly, it must be mentioned that acetylene gas mixed with air in a pretty wide range of proportions is highly explosive and that copper or brass instruments, as sounds, etc., must not be used in this treatment, because copper forms an explosive combination with the acetylene gas.

To conclude, I wish to state why I read this paper here; why I make these demonstrations. It is a constantly recurring complaint of the gynecologists that the cases of cancer come into their hands when it is too late, when no operation, be it ever so extensive, can save them. It is also a constantly recurring complaint that the cases which are sent for operation have been under internal or topical medication for a number of weeks or months before the medical adviser comes to see that his treatment availeth naught, and that not until then he hurries the patient off to the surgeon—who then gets the blame if the recurrence follows his radical endeavors all too rapidly. Now I fear, and from the questions which have been put to me from the ranks of the general practitioners, I have good reason to fear that a report like the one in the July number of the JOURNAL, which I have tried to refute here, is only too apt to create new confusion, to lead to more tinkering on the cancerous cervix, and to jeopardize numbers of lives which could be saved if they were subjected to the only proper treatment we know of at present—the extensive radical operation. It is not the fault of the author of the article in the July number if the opinion has gained ground that the carbid of calcium promises to effect a radical cure. He disclaims that expressly. Nevertheless, I know that this opinion is spreading among practitioners.

As to the use of quicklime in the shape of the carbid of calcium in cases of inoperable cancer, centuries of surgical experience have given a verdict which does not encourage new experimentation. The carbid of calcium will henceforth assume its place among the worthless and dangerous remedies for carcinoma.

100 State Street.

SOME CAUSES OF WRY-NECK.

Presented to the Section on Neurology and Medical Jurisprudence at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. M. HOBBY, M.D.

IOWA CITY, IOWA.

The object of this paper is to report facts, leaving the consideration of their bearing upon the condition commonly known as wry-neck, for the future. The writer does not believe that disturbances of the nervous equilibrium, which in a few isolated cases are relieved by successful treatment of peripheral irritation, are to be considered as the result of that special irritation. As in epilepsy we occasionally have apparent cure, by correction of the refraction, or by some form of treatment of so-called muscular imbalance, as well as by operating for phimosis, and as the same measures have frequently been followed by the cessation of chorea, so in the following instances torticollis has recovered, after the removal of ocular conditions, apparently little more likely to have exerted a causative influence in its production. That there is nothing original in this suggestion, is shown by a remark in Vol. vii, p. 557, of the "International Encyclopedia of Surgery," edited by Ashhurst. "Young, Lovett

and others have shown that there is sometimes a curious relation between ocular defects and torticollis." (Referring to Trans. Amer. Orthopedic Association, 1891, Vol. i, p. 46; Vol. ii, p. 230.) I have not access to these reports.

The first instance in which I was able eventually to predicate ocular influence in the cause, occurred in 1893, in a boy of 15, whose deformity had existed for several years, and in whom the muscular contraction was apparently structural. There was no spasmodic element; the abnormal position was constant, the head drawn well toward the right shoulder. Finding that any forcible correction was attended with diplopia, I was led to the discovery that paresis of the left inferior rectus existed, and a subsequent tenotomy of the superior rectus led to a gradual but eventually complete recovery from torticollis.

The second case, P. N., male, age 12, was seen in June, 1896, and gave a history of impaired vision, and asthenopic symptoms existing for more than a year preceding. Three weeks before examination, he had severe headaches, followed by nausea and vomiting, coincidentally with diplopia. As he got better the head became twisted and drawn toward the right shoulder. Examination showed 8 degrees of esophoria, each eye, also a low grade of hypermetropic astigmatism with squint apparent at times. In this case correction of the refraction and "ocular gymnastics" brought about recovery in two months.

DISCUSSION.

Dr. D. R. BROWER of Chicago—I would like to ask Dr. Hobby one or two questions about his wry-neck cases in regard to this matter of a possible reflex origin in connection with these several conditions that have been mentioned here. I would like to know something about the neurotic condition of these cases that Dr. Hobby has described, and in which his treatment seems to have been so remarkably successful. It is my impression that in the care of these and of similar cases, the condition of every peripheral end-organ should, if possible, be ascertained, and the errors, if any be found, corrected; but I wish to emphasize what Dr. Norbury has said, and what my friend, Dr. Gradle, has also emphasized in his paper: that after all it is the constitutional condition that demands our most careful attention. End-organs that are out of order must be put in order. I care not whether it is a defect in the eye or in the nose, wherever there is a peripheral end-organ out of order, the derangement of which can be corrected, it should be corrected. But I think there are very few cases of wry-neck, of headache, or any other condition of the nervous system similar in kind, that are altogether and entirely due to some such disturbance of the peripheral nervous system as has been so ably described in those two interesting and valuable papers. I desire to emphasize the necessity of finding out the constitutional state; and herein lies the difficulty in the treatment of these cases of headache.

Dr. C. C. HERSMAN of Pittsburg—With reference to Dr. Hobby's paper, the author has had better success in treating wry-necks than I have. Sometimes these wry-necks will continue for months, however greatly improved. Occasionally we may make a mistake in the diagnosis of wry-neck. A patient of mine, a child of three years, I diagnosed as suffering from meningitis. Another physician however, a week later diagnosed the condition as wry-neck. I was not much relieved by the other doctor's opinion. The trouble continued until about the thirteenth day, when the child was very much better, but I still told her mother not to be hopeful. On the fourteenth day the child took suddenly worse, and a very severe meningitis developed, followed by death.

Dr. HOBBY—I especially disclaim the belief that peripheral irritation was the fundamental cause in the great majority of those cases which were relieved by the removal of the peripheral irritation, such as the occasional relief of epilepsy by treatment of ocular conditions and matters of that kind, the operation of phimosia, etc. We used to be taught concerning the immediate cause and the remote cause; and we used to think that sometimes the peripheral irritation, added to the constitutional condition, would produce the given difficulty. It was as exceptional instances that I reported these two cases

of wry-neck in which the ocular cause seems to have been extreme. I do not believe that many others of these cases will be relieved in the same manner. I simply wished to bring the attention of the Section to the fact that wry-neck was due to ocular diseases in some cases.

DO WE DRAIN TOO FREQUENTLY IN PELVIC SURGERY?

Presented to the Section on Obstetrics and Diseases of Women at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY W. H. HUMISTON, M.D.

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CLEVELAND, OHIO.

Since the publication of a few cases in the February, 1898, number of the *Medical Council*, I have had a series of pus cases, some of which were of such a serious nature, and of such a virulent infection, that a most thorough test of non-drainage of these cases has been made, and the results in all have been satisfactory and beyond my expectation.

I am fully alive to the fact that there must be a certain (small) percentage of our cases in which death can not be averted whatever the technique may be, but on the other hand I am assured from the careful study of my own, and the cases of other surgeons, during the past five years, that the mortality in pelvic surgery has been kept too high, *partly* by the indiscriminate use of some form of drainage. Lawson Tait says, "That there is an inevitable mortality in abdominal section I think is certain." He bases this "inevitable mortality" rate between 3.5 and 5.5 per cent. upon a series of 1350 consecutive operations.

For years I had relied upon the glass drain as one of the most necessary adjuncts to my technique in pelvic surgery. In all cases where there have been extensive adhesions separated, and large areas of oozing peritoneal surfaces left, I have been most careful to thoroughly wash the peritoneal cavity free from all debris, and held it especially important to use a glass drainage-tube for twenty-four or forty-eight hours. However, my records show that during the past four years only one case outside of my own private hospital was drained in this manner.

It was not that the cases were of a less serious nature, but they were not drained because I feared a subsequent infection of the peritoneum through unskillful handling and dressing of the tube. In such cases, then, it was a choosing of the lesser evil when I closed the belly without supplying an artificial drain. I have reached this confidence in the closing of the abdomen without drainage through a long series of cases.

A widow, aged 23 years, had one child, and had had one miscarriage. Tubercular tendencies inherited from both father and mother. Contracted gonorrhoea one year previous to her admittance in City Hospital. Operation December 21, 1894. Double pyosalpinx with general pelvic adhesions. Uterus held in retroversion by inflammatory products. Pelvic organs and intestines were covered by miliary bodies, closely resembling, in macroscopic appearance, tubercular areas (pathologist failed to report his examination). Considerable oozing. The peritoneal cavity was carefully cleaned and dried and the belly was closed without drainage. This is only one example of a number of early cases in which I felt compelled, on account of unfavorable surroundings and conditions, to close

the peritoneal cavity without the use of a drain, a measure inconsistent with my teaching and usual practice of that time. The uniformly happy result in each successive undrained case in the 1894 series was very unexpected.

My mortality rate has been decreased almost *pari passu* with the declination of the rate of drained cases: In 1894, 71 per cent. drained, 14 per cent. mortality; in 1895, 36 per cent. drained, 7 per cent. mortality; in 1896, 33 per cent. drained, 6 per cent. mortality; in 1897, 4.33 per cent. drained, 4.66 per cent. mortality. And so far in 1898 I have drained no case, and the mortality rate is as low as 3 per cent.; in fact, to be exact, 2.8 per cent.

During the year of 1896 the glass tube was supplemented by gauze in almost every case in which the glass was used. In these cases the dressings would not be disturbed until the expiration of the first twenty-four hours. The tube would then be removed, and the gauze would remain undisturbed for three or more days. This was merely an expedient to avoid frequent dressings and so lessen the danger of infection. During the past year, however, I not only discarded the glass tube, but also any former conception of the values of all drains in the ordinary cases of pelvic surgery, so that the 4.5 per cent. of cases which are counted as drained during 1897, really only represent the cases in which gauze was used—either in the form of the Mikulicz apron, or of simple strips—for the purpose of controlling such oozings which I feared would be too copious for the peritoneum to care for. I feel that this is yet too high a percentage of open wounds, and confidently hope to almost minimize the number during this present year.

In those cases in which I know the peritoneal cavity is contaminated, I thoroughly wash out the pelvis with a saline solution, using it for the purpose of dilution of infection rather than with any idea of antiseptic worth, and close the wound, leaving within the peritoneal cavity as much of a fresh salt solution as it will contain. This radical change of opinion in the management of my cases has been slowly brought about by close observation and study of my clinical cases. I have been reassured, however, in my position by the reports of different bacteriologic researches, such as that from Dr. John Clark of Johns Hopkins Hospital, wherein particularly the dangers of drainage are well defined. This report was published in the *American Journal of Obstetrics*, in April and May, 1897, and should be carefully considered by every abdominal surgeon. I append a few illustrative cases:

GENERAL AND PELVIC PERITONITIS.

Suspension of the uterus was performed upon Mrs. S. in December, 1895, in Philadelphia, and in January, 1896, a second operation was performed for a ventral hernia.

In February, 1897, when she had been seven months pregnant, she began with severe labor pains. The doctor in attendance removed per force, a dead and macerated child. She developed thereafter a very severe form of puerperal fever.

On May 11, 1897, when I first saw her, the exudate extended midway to the umbilicus. No areas of softening could be found. She was very much reduced in general health.

On July 12 she was operated upon at the City Hospital. Throughout the upper two-thirds of the old scar were found very dense omental adhesions; and about the lower angle, the anterior uterine wall, near the fundus, was adherent over a space of nearly three inches square. The uterus was exceedingly large and very dense. The pelvic organs were matted together with inflammatory exudate. The uterus and its appendages were removed and an effort was made to cover as much surface as was possible with the remnants of peritoneum left in the pelvis. The belly was closed, and the patient passed through to a rapid convalescence.

RUPTURED TUBAL PREGNANCY.

On July, 27, 1897, at my hospital, Mrs. H. was operated upon. The right half of the pelvis was completely shut off from the general peritoneal cavity by adhesions between omentum, intestines and belly walls. This formed a pocket which was filled with partially organized blood and lymph, and in the bottom was found a large hematoma of the ovary and the ruptured tube. The left appendage was normal. Adhesions were carefully separated, the vessels were tied, the pelvic cavity was thoroughly cleaned, and the belly was closed. She left the hospital on the twenty-fifth day in good local and general condition.

GONORRHEAL PYOSALPINX.

At Akron City Hospital, on July 31, 1897, I operated upon a case for Dr. Cleaver. Case had had recurring attacks of pelvic peritonitis until she was very much reduced. The pelvic organs were closely matted together by adhesions of both old and recent date. Bleeding and also general oozing was free. Both tubes contained pus, and the ovaries showed evidences of chronic inflammation. After the pelvic cavity was wiped dry and clean by strips of plain gauze, three pints of salt solution were poured into the belly, and the wound was closed. Dr. Cleaver reported that her progress was rapid and favorable.

Mrs. K. conceived in June, 1897, miscarried in October, and was admitted to the City Hospital in the first week in December. A diagnosis of double pyosalpinx was made, and the operation was performed on December 11, 1897. During an examination by several of my students, just immediately preceding the operation, the left tube was ruptured. On opening the belly it was found that the pus had escaped into the pelvic cavity, but had been hindered from contaminating the general peritoneum by a wall of adhesions. The appendages were removed, and the pelvis was cleaned by mopping the cavity out with gauze strips and irrigating with saline solution. Just before closing the belly $2\frac{1}{2}$ quarts of salt solution were poured into the peritoneal cavity. From cover-slips a staphylococcus was found, together with what was thought to be the gonococcus. A culture in bouillon was obtained, but unfortunately no differentiation was made.

In this case the temperature after operation never reached a point above 101%, and after the tenth day was noted as normal both at morning and evening. She was dismissed on Jan. 3, 1898—twenty-three days after operation.

AN OVARIAN CYSTOMA (SUPPURATING).

Mrs. P., a widow, aged 50 years, has borne two children, the youngest of whom is 17 years of age. Her first menstrual period occurred when she was 18 years old. They recurred regularly and lasted usually five days; they were unattended by pain, and the quantity of the flow was small.

Since the birth of her last child, however, she has suffered severely with dysmenorrhea, and her general condition has been much impaired. The labor was long and difficult, and shortly after the puerperium, she noticed a prolapse of the uterus which eventually became complete. Her family history is good, and there is nothing in her general previous history which bears upon the case. On May 20, 1895, she first noticed an enlargement of the belly in the left iliac region. It continued to increase, making unusual gains at irregular intervals, until the latter part of March, 1897, when the tumor steadily and rapidly increased. About this time she began to have repeated attacks of chills followed by fever, great tenderness throughout the entire abdomen, and emaciation with loss of strength. The diagnosis of an abdominal tumor was made a year ago, but the patient refused then to permit an operation to be made. I first saw the case on June 13, 1897, in consultation. We found the patient in great distress because of the interference with the respiration and the heart's action. Her temperature was 103, and pulse 130. She was anemic and greatly emaciated. Edema of the lower extremities extended above the knees. The tumor completely filled the abdominal cavity, pressing the xiphoid outward at a right angle to the sternum and widely flaring the lower ribs. The circumference of the belly at the umbilicus was forty-five inches, from the xiphoid to the symphysis pubis twenty-three inches, and from the free end of the twelfth rib to the middle of Poupart's ligament of the opposite side thirty and one-half inches. A complete prolapse of the uterus was found. Her general condition was very poor. Her temperature when she was admitted to my hospital, June 16, 1897, was 100 degrees, pulse 130 and very weak. Examination of the urine showed a very small daily quantity, with a large amount of albumin, renal cells, and granular casts. The case was not a promising one for radical operative measures. She had reached such a point in her suffering that she was willing to submit to an operation, preferring death to an existence accompanied by such extreme discomfort.

We operated after five days of preparation, in which laxative baths, restricted diet, drinking of hot water, and strychnin were used. On June, 13, through an incision in the linea alba, I tapped the cyst and removed its walls. Sixty-four pounds of fluid were drawn off. There were no adhesions to the anterior wall, nor to the small intestines. The posterior wall of the cyst was intimately adherent to the omentum. To both sides, but particularly the right side, the adhesions to the lateral abdominal walls were both dense and vascular. A great deal of organized lymph was found between the stomach and the apex of the cyst. All adhesions were broken, and immediately the bleeding points were ligated. It became necessary to remove the entire omentum. A great surface of the lower curvature of the stomach was adherent to the fundus of the cyst, and a mass of inflammatory exudate was removed between the cyst and the lower surface of the liver. The pedicle was three inches in length and about the size of the little finger. The patient's condition was very precarious. The pulsations in the radial arteries had ceased for a time, but quickly responded to the application of a large quantity of hot saline solution into the belly cavity. After thorough washing, four quarts of the normal physiologic salt solution, at a temperature of 114 degrees F., were left in the peritoneal cavity, and the incision was closed *without drainage*. The pulse steadily gained in strength and fulness, and became less rapid as the fluid was absorbed, and contrary to expectations there was no interruption to a very rapid convalescence. Her condition did not even warrant an attempt at suspension of the uterus. In truth, we made haste to get her off the table alive. She was dismissed in four and one half weeks from the day of operation. We found a prolapsed right kidney and an attempt to replace the prolapsed organs was made. Failure to reduce them was evidently caused by adhesive bands.

On September 13 the family physician reported that he found the patient working hard at the family washing. She had gained twenty-five pounds, and was free from all aches and pains, excepting at times a dragging in the region of the prolapsed liver. Microscopic examination of the mass bounded by the liver, stomach, and fundus of the cyst showed simply a mass of organized lymph, although macroscopic appearance was that of malignant degeneration. The weight of the tumor and its contents was seventy-two pounds, and the patient after its removal weighed not more than eighty-five pounds. The tumor was a simple glandular ovarian cyst with suppuration.

DOUBLE TUBO-OVARIAN ABSCESS (GONORRHEAL).

Miss A., aged 18 years, gave the usual history of gonorrhoea and its sequelae. On March 8, 1898, with great difficulty I removed both uterine appendages—they were tubo-ovarian abscesses. The pelvis was roofed in by inflammatory exudate, and the appendages were deeply imbedded. In their removal pus was spilled. Much of it was caught on the gauze strips with which I always protect the general peritoneal cavity, but the structures in the pelvis were thoroughly covered. The pelvis was irrigated with hot saline solution and the belly was closed with two quarts of salt solution remaining.

In the bacteriologic examination of the contents of the tubes and ovaries, a *virid* staphylococcus was found. A severe form of ether pneumonia was first noticed eighteen hours after operation. Complete hepatization of the two lower lobes of the right lung followed. Barring this accident the convalescence was normal. The patient was dismissed in four weeks. Later she reported herself in good general health.

In conclusion I would again affirm the opinion that almost, if not every case of pelvic surgery requires no drainage. That even those cases in which there is a general infection (the cases which make up largely the totality of those designated by Tait as the "inevitables") can not be benefited by drainage.

Let us then recognize more fully both the expediency and the dangerous factors in the use of the drain, and so lower to a minimum the present high rate of mortality, that even the best of our operators yet attain.

122 Euclid Ave.

From the Little Red Schoolhouse.—A school teacher at Port Allegheny, N. Y., the other day received the following note: "My boy tells me that ven I trink beer der overcoat vrom my stumack gets to thick. Blease be so kind and don't interfere in my family affairs."—*Life*.

THE IMPORTANCE OF THE STERILIZATION OF FOODS AND DRINKS BEFORE THEIR INGESTION.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY AUGUSTUS P. CLARKE, A.M., M.D.

CAMBRIDGE, MASS.

In presenting this subject for consideration it has not been so much my aim to cover all the phases which the question involves as it has been to bring before the Section that portion of the theme on which I have some definite conclusions. All will admit the importance of bacteriology and will not fail to appreciate the wonderful results achieved.

Professor Virchow, in his address on "The Continuity of Life," before the general session of the Twelfth International Medical Congress at Moscow, spoke of the gradual progress that had been made by the use of the microscope, and said that its evolution had given rise to a new impulse in the march of medical science toward the development of biology. He attributed our indebtedness for the marvelous working of that instrument to Ehrenberg of Berlin. Prior to the achievements, the results of the study of Ehrenberg, as published in his "Über die Infusionsthierchen als vollkommene Organismen," all the ultimate aspects relating to the nature and character of the various histologic elements and bacterial agents were shrouded in the deepest mystery.

One of the most striking illustrations of disregard by the public of proper precautions that should have been taken for protection in the use of milk, which is subject to infection, occurred in Cambridge in the summer of 1896. Though typhoid fever is a disease that has been more or less endemic in the metropolitan district, the cases are usually sporadic, and in their manifestation are for the most part of the milder type. During the months of August, September, and October of 1896, an epidemic of that disease raged with unusual severity. For the month of July of that year the number of cases reported by the various physicians in practice was 19, the number in August was 84, in September 56, in October 43, in November 23, and in December 14. The number of cases reported for the six months immediately preceding was as follows: in June 4, in May 3, in April 0, in March 3, in February 3, and in January 3. The local board of health, aided by an agent of the State board, in endeavoring to ascertain the cause of increase in the number of cases that occurred, succeeded in tracing their appearance for the most part to families supplied with milk by one particular dealer. Careful inspection of the dairies did not reveal any irregularity in the conduct of the business. There was, however, evidence tending to show that a workman who had been indisposed with what seemed to be a mild attack of typhoid fever, had been allowed to wash the cans. The total number of deaths from typhoid fever in Cambridge during the year of 1896, omitting the non-residents, was 30, while the number in 1897 was only 11, a fraction over a third of the number in 1896. The number of cases of typhoid fever reported in 1897 was as follows: in January 5, in February 5, in March 1, in April 1, in May 7, in June 6, in July 5, in August 10, in September 15, in October 24, in November 12, and in December 14—making a total of 105 cases, or 150 cases less than in 1896.

In this connection there were some personal obser-

vations worthy of note. In a number of families no attacks of typhoid fever occurred, though the members of the families were free users of milk. For a long time I have endeavored to impress the importance of sterilization of milk before using it. In some few instances I have succeeded in bringing about a reform.

In one family of six persons the only one who suffered from an attack of typhoid was a lad of 16 years, who insisted upon taking cold and unsterilized milk. He was accustomed to indulge freely in the use of uncooked milk while the rest of the family, receiving the milk from the same source, though not using it until after it had been properly prepared, escaped altogether. In my own family during the year of the typhoid epidemic above referred to (1896), the milk supply was from the source ascribed as the cause of the increased number of cases, though none of the family suffered except the domestic, who preferred cold uncooked milk. She frequently drank a glassful at a place of retail, whose supply, it is said was obtained from the same dealer, as was that supplied to our own household. She suffered from clearly defined symptoms of typhoid. A son and a domestic of a physician not far from my residence were among those who during the epidemic partook of the milk before it was sterilized and were sufferers from typhoid. The milk was from the same milkman.

In 1894 eight cases occurred in rapid succession among persons taking milk from the same milkman. The trouble originated at a farm in Bedford whence some of the milk was brought. Some time previous to these attacks of typhoid, a number of cases occurred in which the trouble was traced to another dealer's milk. Milk is often an almost indispensable article of diet in the treatment of many forms of disease and in the after-treatment or management of surgical cases. For this reason I have frequently relied upon the advantages of a milk diet.

In 1893 the number of cases of typhoid reported in this city was 92, an increase of 12 from the previous year. Males seemed to have furnished the larger number (53). It may be, says the reporter, that in taking meals away from home more frequently than females they have exposed themselves to the danger of introducing into their systems the morbid germs. This statement as touching upon our duties as medical advisers should be regarded as most significant.

There can be now no question intelligently raised as to the infectious nature of typhoid fever. The agency of the bacillus of Eberth is undoubtedly the cause. Water for domestic purposes may become contaminated by the presence of typhoid germs, as was well illustrated in the outbreak which occurred in the Borough of Newport, Isle of Wight, in 1894, when some 436 cases out of a population of 10,512 were observed.

Some writers have regarded Pasteurization as sufficient for protection against micro-organisms. This method of proceeding is effected by subjecting liquids for about half an hour to a temperature of 160 degrees F. before their introduction into the system. Such a limited treatment will not always prove adequate for complete protection against the ingress of bacterial elements.

The temperature should be carried to the boiling point, and maintained there for some minutes lest the spores of many of the pathogenic organisms escape destruction. A convenient process of sterilizing

drinking water is found in the use of bromin. Ammonia will serve to neutralize this chemin agent. Schumburg uses 0.2 c.c. in a solution as follows: water, 100; bromin, 20; potassium bromid, 20, for each litre, and then neutralizes it with an equal amount of 9 per cent. ammonia.

Some waters require an increased amount of bromin to overcome the ammonia which it contains. I have tried this and have been pleased with the results, especially when it has been necessary to use water very freely in a case of prolonged illness and when objection is raised on the part of the patient to the use of boiled water. The taste is not disagreeable from the presence of the slight amount of bromin salts.

Mention of this formula is made in *THE JOURNAL*, vol. xxviii, page 655. Professor Vaughan, in his communication to the Congress of Demography, in London, 1891, stated substantially that milk had often been diluted with water containing germs of typhoid fever, and that the prevalence of the disease had been traced to milkmen's supply. The same author makes mention of 138 epidemics of typhoid fever, 50 tabulated by the late Mr. Ernest Hart of London, 88 collected by himself. All these outbreaks were due to a specific pollution of milk. Mr. Hart had made record of fifteen epidemics of scarlet fever, and Professor Vaughan had found data of 59 others, making a total of 74 epidemics that had occurred through the medium of contaminated milk. Reference again to Dr. Kennedy's paper read before the American Public Health Association, 1896, shows that of 138 epidemics of milk typhoid, 74 of scarlet fever and 28 of diphtheria—a total of 240 epidemics—187 have been noted by English writers and 31 have been described by American observers. The English and the Americans have been much behind the nations of the continent of Europe in the use of the means for protection against contaminated foods and milk. In the hotels and restaurants of Mexico I found that hot or boiled milk, either through custom or for sanitary purposes, was freely used. The freshly prepared tortillas and the hot tomales impregnated with pepper could be partaken of at any time with the least possible danger from infection.

The contraction of tuberculosis from milk supply is another subject that has engaged the attention of state authorities. The reaction to the test of tuberculin in cattle showing suspicious symptoms of the disease has proved most helpful to the government in taking measures against the use of contaminated meat and milk. Cases have been reported in which a cow, apparently in good condition, reacted to the test of tuberculin; and after being slaughtered showed evidence that one or more portions of the lungs were in an advanced state of tubercular degeneration. A cow that is well fed and housed and has had but little exercise may prove to be affected with tuberculosis without presenting any manifest symptoms of such disease.

In my own practice a number of interesting facts have been noted. Some years since, before the public authorities had become aroused to the possible dangers of milk and meat supply, a young man of good family history was taken ill with tuberculosis. He had been very fond of raw or fresh milk. Some few years after his marriage his symptoms became worse, from which he succumbed. The younger of his two children was the next victim. His wife

whose parents and ancestors on both sides were of good health and of long life, was the third to be attacked. In the same house and mingling with the same family, her brother's child was seized with a fatal attack of tubercular meningitis. The next patient was the mother of this last child (living in the same family). The ancestors of this last patient were noted for their unusual vigor and longevity. I should state that the older of the two young children of the father who died was not nursed by the mother, but was fed from the bottle. Until the child grew to a considerable size she continued the use of milk, and seemed to insist, as her grandmother said, upon her food being of a temperature that would almost scald any ordinary child to take. This desire on the part of the child, according to our present understanding was her salvation. Her growth was rapid and her physique became most excellent. The distinguished consultant called in at the time of the occurrence of the various cases, remarked that the contagionists would claim in these cases that they were the result of the communicability of infection, though he at that time, thought it best to wait until more facts were brought out before an expression of opinion should be made. Attacks of scarlet fever and diphtheria should be especially guarded against. Milk is no doubt often the medium for the transmission of the germs.

There are some well-recognized articles of food whose treatment should be most carefully studied. Everyone knows how frequently are seen bread, and other foods or eatables, that have been more or less exposed to dust laden with germs and to various forms of exhalations, sold to customers and consumed by them without the slightest regard being paid to the dangers incident to such contamination. All such articles should be subjected to the purifying action of heat at varying degrees of temperature and at intervals according to the length of their exposure, their susceptibility of becoming the vehicle for transmission of germs and the uncertainty of the sources from which they have been derived. This should be especially observed whenever a zymotic or contagious disease appears among children or occurs in a family of several persons.

The boards governing the public water-supply may be attentive to duty, they may use all reasonable means to guard against its pollution and may resort to the best methods for its filtration still this great commodity when thus treated will at times be far from innocuous, as the records of repeated epidemics have shown. The application of heat at 170 degrees, or at the boiling point for some minutes, until all germs or micro-organisms and their spores have been destroyed, will overcome the dangers from imbibing such waters and will preclude the necessity of having to resort to the use of spirituous liquors as a substitute.

Examination of facts in regard to the manner in which the meat-supply may be secured leads to the conclusion that all such articles of diet should be thoroughly sterilized before they should be ingested. (*Boston Med. and Surg. Jour.*, vol. cxxxviii, p. 282.) It is too much, says a writer, to expect that when only one or a little more of the thoracic lymph-glands of an animal which has been slaughtered for food has been found affected with disease, the entire portion of the meat should be thrown away. Disease, as it has often been shown, may be restricted to areas or foci

near the stomach, to a small part of the liver, or to a limited section of a lung; in such cases the inspectors may not condemn the meat as unfit for food. The question will no doubt be soon brought before some of the State governments for determining what should be the proper course to pursue in dealing with such cases. It has been reported that the flesh of at least one-half of the animals which have reacted to tuberculin has been found on postmortem to be affected only to a limited extent.

To enforce rigid inspection of animals and then to prevent the use of all meats as food when in any way affected, without regard to the extent of the disease would result in an unnecessary loss to a State and in an unwarranted waste to its inhabitants. Persons are not infrequently appointed as inspectors who have no practical knowledge of the duties of such a trust. If the races are to continue to be consumers of meat as heretofore the safest course for a family or person to pursue is to see to it that all meats, in whatever form they may be presented or from whatever source they may be delivered, are so sterilized as to destroy all bacilli or other micro-organisms.

THE SURGERY OF CAMP WIKOFF.

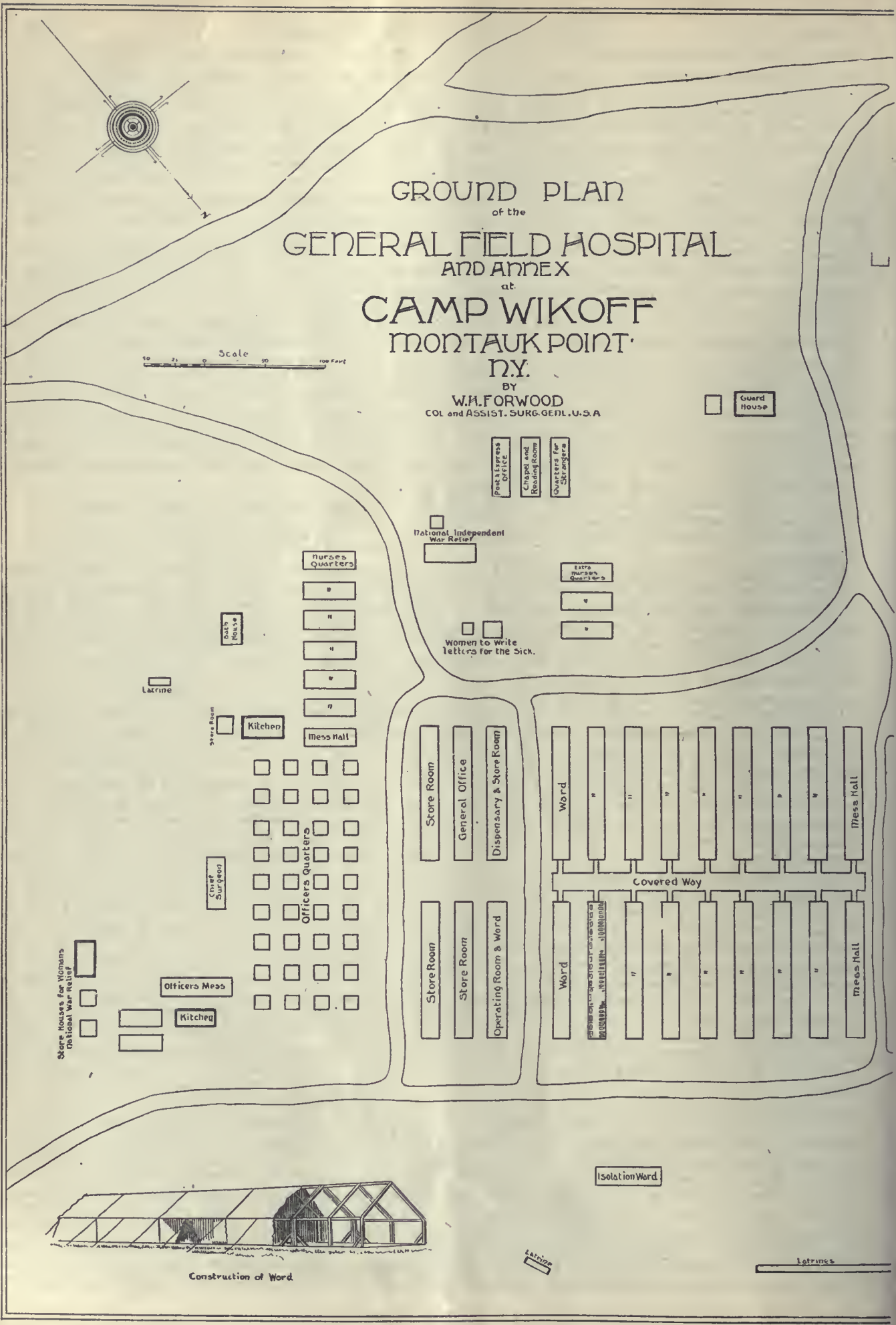
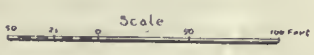
BY N. SENN, LIEUT.-COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

The great national Camp Wikoff has been made the recipient of the returning army of Cuba. Three months ago the invasion of Cuba was ordered. Our troops left the different camps in excellent condition and good cheer to meet the Spanish army in the neighboring island, fully informed and impressed with the events that awaited them. The army of invasion considered it a privilege to be called to the front to represent the military prowess and power of this country. The outside world had no conception of what our army could accomplish at such short notice in a distant tropical country. The authorities, and particularly the medical department, were fully aware of the fact that the invasion of Cuba meant more a battle with climate and disease than the weakened, sickly, half-starved Spanish forces. The invasion was planned on the spur of the moment, and the corps were rushed to the front with a haste that appeared all out of proportion to the conditions of things as they presented themselves at the seat of war. It was decided that our flag should float over the city of Santiago on the Fourth of July regardless of consequences. The army of invasion was packed on transports days before the final order was given to sail. Here was one of the many causes that impaired the health of our troops. The lack of harbor facilities on the coast of Cuba, where our army landed, made disembarkment and the landing of supplies exceedingly difficult. Most of the barges intended for this purpose were wrecked during the voyage, a serious loss which could not be remedied in time. Much suffering was caused by the lack of efficient landing and transportation facilities. Our troops were supplied with rations calculated for our climate, but not adapted for a tropical country. Our soldiers were exposed at once to malarial infection in all of the camps. Occupation of the buildings in which yellow fever had full sway for years, and the free intermingling of the filthy Cuban refugees and soldiers with our troops could not fail in starting and disseminating this disease among our soldiers soon after landing on Cuban soil. Typhoid fever, which prevailed in all of our large camps before the army sailed for Cuba, soon gained a firm foothold at the seat of war and did its share in increasing the mortality and in shattering the efficiency of the service. Amebic dysentery and diarrhea, the two greatest enemies of the Spanish army, thinned out our ranks and crowded our imperfectly

GROUND PLAN
of the
GENERAL FIELD HOSPITAL
AND ANNEX
at
CAMP WIKOFF
MONTAUK POINT
N.Y.

BY
W.H. FORWOOD
COL and ASSIST. SURG. GENL. U.S.A.



Construction of Ward

Latrines

ROAD TO STATION ONE AND ONE-HALF MILES

Officers Quarters

Latrine

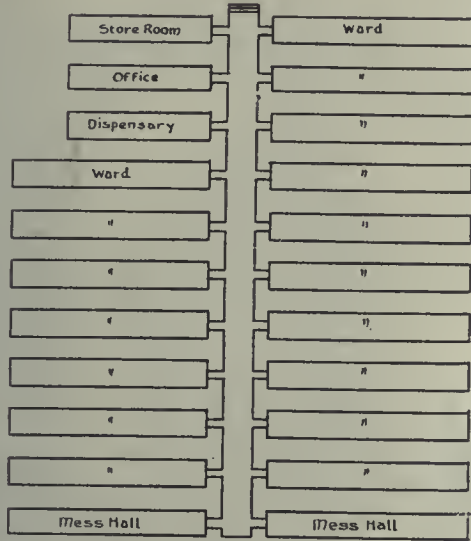
Latrine

Bath house

priests

Sisters of Charity

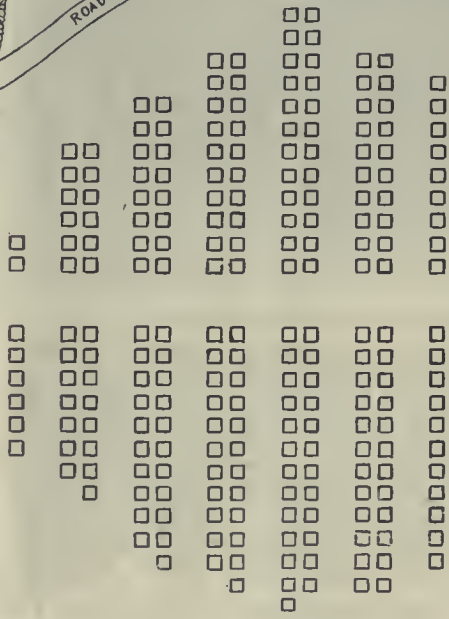
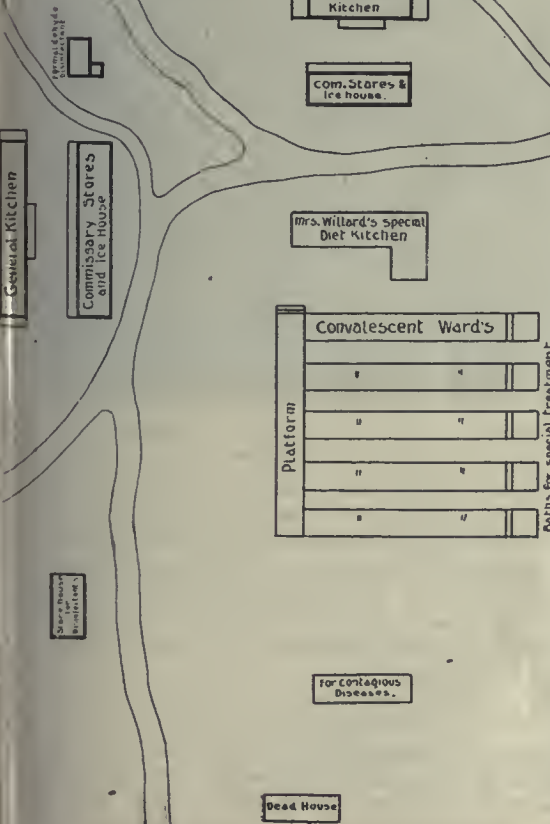
Officers Quarters



Latrines

Camp of the 2^d U.S. Vol. Engr. Batt'n

ROAD TO DETENTION HOSPITAL AND CAMP ONE MILE.



Camp of Hospital Corps and Employees.

To ambulance and wagon corral

equipped hospitals. It was fortunate that the enemy yielded to our arms so early, and made it possible for our troops to return so soon to the invigorating climate of the North for proper care and speedy recuperation. Those who saw the different regiments leave our State and national camps would find it difficult to recognize and identify the soldiers of the Cuban campaign. The men left in excellent spirits. Most of them return as mere shadows of their former selves. The pale faces, the sunken eyes, the staggering gait and the emaciated forms show only too plainly the effects of climate and disease. Many of them are wrecks for life, others are candidates for a premature grave, and hundreds will require the most careful attention and treatment before they regain the vigor they lost in Cuba. The surgery of Camp Wikoff represents cases and pathologic conditions which we would expect to occur in men suffering from the effects of disease, exposure and the debilitating effects of a tropical climate. Our work has consisted

iron frame and top. Sterilized dressings, gauze sponges, ligatures, etc., are kept in sterilized towels in readiness for use at any moment. The shelves and tables are covered with white rubber cloth, which is kept scrupulously clean. The instruments, after sterilization, are kept in trays containing a 2 per cent. solution of carbolic acid. Saline and antiseptic solutions are kept ready for use in four-gallon bottles. All surgical paraphernalia not in use are covered by clean white sheets. The second tent, open at the sides for free ventilation and coolness, is used for the office of the surgeon in charge. It is supplied with a field desk, table and chairs. Section No. 3 is the preparation room. The instruments are kept here under lock



MAJOR HEITZMANN, SURGEON U.S.A.

largely in the treatment of abscesses and operations for fistulae and hemorrhoids. I was ordered to Camp Wikoff on my return from Porto Rico, and reported for duty August 22. The field operating tent and surgical wards, already in construction, were completed in two days. I have been assisted in my surgical work by Major Charles Adams, U. S. V., and Acting Assistant-Surgeon Henry Greenleaf. The Sisters of Charity have charge of the surgical wards, and two of them make the necessary preparations for operation and assist in the operating tent.

SURGICAL HOSPITAL.

The surgical hospital at Camp Wikoff is a part of the general hospital. It consists of nine wall tents, placed end-to-end and supported by a substantial wooden frame and floored throughout, constituting a pavilion of 126 x 14 feet in extent. The front tent, No. 1, facing southeast, boarded at the sides, with a broad table shelf on either hand, is used as an operating tent. It is equipped with a regulation operating table,



MAJOR BROWER, SURGEON U.S.A., IN HIS OFFICE, GENERAL HOSPITAL, CAMP WIKOFF.

and key. Two sterilizers, basins, buckets, pitchers and a table constitute the equipment of this room. A glass irrigator and a number of fountain syringes furnish the facilities for irrigation. A field operating case, a Paquelin cautery, a full set of dental forceps, a complete set of urethral instruments, a case of eye and ear instruments and aspirator have furnished all the instruments required. The instruments are sterilized by boiling, the dressings by dry heat.

Hand disinfection consists in scrubbing for at least five minutes in hot water and potash soap, washing in absolute alcohol followed by prolonged immersion in a 1-1000 solution of bichlorid. Just before the operation is commenced the hands are washed once more in alcohol. The field of operation is disinfected in the same manner as the hands. Section 5 answers the

purpose of a pantry and kitchen for special diet. From here the distribution of food takes place as it is received from the main kitchen of the hospital. Between the supply tent and the pantry is an open passage-way four feet wide, through which the patients and nurses enter and leave the hospital. The four tents remaining are used for wards, having a capacity of 32 beds. This hospital in the course of a few days was filled, when ward A, adjacent, occupied by medical cases, was evacuated to make room for surgical cases. The present arrangements affords room for seventy-five surgical patients. At the present time, September 10, every bed is occupied. The six Sisters of Charity in charge are assisted by three orderlies from the Hospital corps. Patients are prepared for operations with proper antiseptic precautions, and no pains are spared to give them the benefit of modern surgical methods in every detail, during their stay in the hospital. The nursing and care of the sick are faultless, and the diet is not only ample in quantity and quality, but often luxurious, far exceeding what is served on the table of the officers' mess tent. The patients much reduced in flesh and strength by fever or suppurative affections, are furnished with a liberal supply of stimulants including champagne and port wine. With very few exceptions indeed, prompt improvement has followed the operative interventions, more especially in the cases of large phlegmonous and ischio-rectal abscesses. It is my intention in writing this paper to give the profession a general idea of the surgical work done in Camp Wikoff since I took charge of this branch of the hospital work August 22. Nothing had been done up to that time in caring for the surgical cases. The hospital was overcrowded, and the available physicians were extremely busy in looking after the welfare and accommodation of the fever patients. In two days I had the surgical ward in a condition to receive patients, and on the third day the first operations were performed. At first a pocket case did sole duty in the operating room. The hospital outfit and supplies were picked up here and there, and in a few days we were ready to begin systematic, efficient work. Many of the patients were so weak and anæmic that the administration of an anæsthetic was deemed dangerous. In such cases the patients were given strychnia subcutaneously and a liberal dose of whisky by the mouth. Patients considerably enfeebled by disease were given ether in preference to chloroform. Chloroform by the drop method was the anæsthetic of choice in all cases where the general conditions of the patient did not contraindicate its use. Operations were performed during the forenoon, beginning at 9 o'clock.

TOOTHACHE.

Of the organs frequently affected among the returning soldiers were the teeth. Patients suffering from carious aching teeth were numerous. In most instances they presented evidences of serious malnutrition following disease and exposure; suppurative alveolitis was less frequent. Infection of many oral cavities showed that teeth had been sadly neglected during the campaign. In Cuba and Porto Rico I saw occasionally a soldier with a tooth brush under the hat band, but I have reason to believe that most of the tooth brushes were either left at home or thrown away on the march, as unnecessary articles of the limited toilet outfit. I did all I could in the way of conservative dentistry by cleaning out cavities and packing with cotton saturated with carbolic acid, but in the majority of cases the patients returned and insisted on having the painful tooth extracted. Tooth extraction was a conspicuous and grateful part of the surgery of Camp Wikoff. Hardly a day passed without two or three such operations. A very complete set of tooth forceps furnished by the government did good service in relieving the victims of toothache of their agonizing suffering. Much has been said in favor of attaching a dentist to each regiment to look after the teeth of the men, and the observations made in Camp Wykoff tend to support the propriety

of such a much-needed addition to the medical service. It is interesting to know that among these patients there was not a single officer, undoubtedly because the officers were more particular in the care of their teeth than the privates.

HERNIA.

The number of hernias that presented themselves in Camp Wikoff astonished us all. In every case the statements of the patients were to the effect that the hernia appeared since the enlistment. It might be surmised that at least in some of the cases this physical defect was overlooked during the examination. This might have been so in isolated instances, in the case of volunteers, but such a view would not hold good in men belonging to the regular army. I saw more cases of hernia in men belonging to the latter, than the former branch of the military service. Our army in Cuba was not subjected for any length of time to hard marching or violent exertions of any kind, consequently the causes which led to hernia must be sought outside of such mechanical influences. Careful examination appeared to prove that in most, if not in all cases, the hernia was of recent origin. I attribute the hernia-formation principally to the relaxation of tissue, caused by disease and its effects, aided undoubtedly by the prevalence of intestinal affections which must have often resulted in increased abnormal intra abdominal tension. The uncertainty of the duration of the encampment induced me to advise against operative interference, and in most cases the general condition of the patients was such as to constitute in itself a strong contraindication to the performance of a radical operation. The patients were fitted with a truss and advised to have a radical operation performed after their general health was restored, after leaving the service or obtaining a furlough.

VARICOCELE.

The frequency with which varicocele is met with in men from 18 to 45 years was shown in the examination of 9901 volunteers in Camp Tanner, Illinois. As a member of the board of examiners, I was very anxious to obtain accurate information regarding this subject, and accurate notes were kept at the time. We found varicocele, slight, 992; medium, 692; large, 295. Of the slight cases 10 were double, 7 of the right side only; of the medium cases, 7 were double, and 4 of the right side only; of the large cases 4 were of the right side only. The percentage of varicoceles to total number examined was 21.17. Only six were regarded as physical disabilities, and those on account of size and pain. At that time I wrote a paper calling attention to the great frequency of varicocele in men of the age for military service, and claimed that ordinary varicocele was no valid objection to the enlistment of men for military duty. Of the more than 15000 men who returned from Cuba and were landed at Montauk, only five cases of varicocele applied for treatment at the surgical ward. In all of these cases the local symptoms were such as to warrant an operation. The operation was performed by excising through a straight incision, directly over the cord, the enlarged veins between double ligatures. The veins were carefully isolated by dissection from the spermatic cord and the accompanying artery. After excision the two stumps were brought together by a single catgut suture, and by tying over this a thread of one of the ligatures left long from each side. The stumps were buried by several fine catgut sutures with which the deep layers of the tissues were united. The external wound was always closed with horsehair sutures. Elongation of the scrotum sufficient in degree to require attention was corrected by transverse suturing of the external wound. The wound was sealed with collodium, a few narrow strips of iodoform gauze, and a pledget of absorbent cotton over which the usual dressing and bandage were applied.

Case 1.—John D. Deboer, aged 24, colored; Troop B, First Cavalry; has had varicocele for the last eighteen months. Enlisted five weeks ago. Marked ectasia of the spermatic veins on the left side with corresponding elongation of scrotum on

same side. He has had no pain, but much discomfort in hot weather from relaxation and dragging sensation. Operation under chloroform narcosis August 31. General health not much impaired.

Case 2.—William Cantwell, age 31, Company B, Sixteenth Infantry; has been in the service fourteen years. Varicocele appeared eighteen months ago. Since he entered the active service the swelling has often been painful, especially during forced marches and in hot weather. He is much concerned about his condition, and submitted willingly to the operation, which was performed under ether anesthesia September 3. On exposing the varicose veins it was found that the tunica vaginalis had remained patent from the external inguinal ring to the testicle, but contained no fluid. The veins were isolated with some difficulty from the cord and the spermatic artery. After disposing of the vein stumps in the usual way the tunica vaginalis was closed with fine catgut sutures over the cord. The scrotum was shortened by transverse suturing of the wound.

Case 3.—Wm. Reed, age 23, colored; Troop H, Ninth Cavalry. Made its appearance soon after his enlistment two months ago. The varicocele is of large size and gives rise to much pain on riding or walking any distance. Operation under chloroform narcosis September 3.

Case 4.—Robert Duseman, age 21, Second Volunteer Engineers. Entered the service two months ago. Six weeks ago, during drill, he bruised the left side of the scrotum, and attributes the varicocele to this cause. He complains of a dragging sensation in the testicle on the left side, the seat of the varicocele of medium size. Usual operation under ether, September 11.

In all of these cases the general health of the patients was not much impaired, and the wounds healed rapidly by primary intention.

HYDROCELE.

Hydrocele from puberty to the age of 45 occurs much less frequently than varicocele. Of the 9901 cases examined in Camp Tanner, we found only 49 cases of hydrocele of the tunica vaginalis and 18 of the cord. Only one case of hydrocele of the tunica vaginalis came for treatment to the surgical ward of Camp Wikoff.

Case 5.—John Craigie, Company E, First Artillery, a young soldier whose health had become greatly undermined by malaria, was sent from the medical to the surgical ward, for a painful affection of the left testicle of a few days' duration. Patient very anemic and emaciated. A few days ago, on recovering from his illness for which he had been sent to the hospital, the left testicle became painful and tender, accompanied by a gradually increasing swelling. He came under surgical treatment August 27. Careful examination revealed an acute hydrocele of the tunica vaginalis on the left side, without any palpable visceral lesions of the testicle or epididymis. The fluid, straw colored, was evacuated by tapping with a small trocar. One dram of equal parts of alcohol and carbolic acid was injected. The reaction was moderate and the patient left a few days later, the swelling gradually diminishing in size.

BONES AND JOINTS.

Only a few cases of injury and disease of bones and joints came under observation in the surgical department of the general hospital, but these isolated cases present features of interest sufficient to justify mention in connection with the subject of this communication.

Case 6.—*Gunshot fracture of femur.* S. M. Westmore, age 25, trumpeter, Troop D, First Volunteer Cavalry, was shot through the right thigh at the junction of the lower with the middle third, the bullet passing in the antero-posterior direction, the wound of exit being on a higher level than the wound of entrance. The wounds were dressed with iodoform and healed by primary intention. Just before he was transferred from the hospital at Siboney to the *Relief* he became very much debilitated and manifested other and more characteristic symptoms of iodoform intoxication. A plaster cast was applied, and he was sent to the fever camp as a case of yellow fever—a diagnosis which was never confirmed by the physicians in charge of the hospital. He suffered from malaria, and his present condition indicates to what extent the malarial intoxication has advanced. He is extremely anemic, and emaciated to a skeleton. The spleen is much enlarged. The fractured limb is shortened two inches and a half; marked overlapping of fragments; union fibrous. Plaster of Paris bandage reapplied. Tonic and stimulating treatment.

Case 7.—R. Whittington, aged 25, First Volunteer Cavalry,

on August 14 was riding bareback, when his horse made a quick turn and in tumbling over an embankment the horse fell upon his left leg, producing an oblique fracture of the tibia about two inches above the base of the malleolus, and of the fibula about four inches higher. For some days the limb was placed in a fracture box, but it was found impossible to immobilize the fragments properly. During this time the patient suffered from pain and loss of sleep. August 27 he was placed under the influence of chloroform, the fragments were properly adjusted and the limb immobilized in a plaster of Paris splint extending from the base of the toes to the knee. Since that time he has been free from pain and has slept without the use of anodynes.

Case 8.—Maj.-Gen. S. B. M. Young injured his ankylosed elbow-joint, September 2, and received first aid at the surgical ward the next morning. During the War of the Rebellion he received two gunshot wounds of the right arm. One shattered the lower third of the humerus, the other perforated the elbow joint. After a prolonged siege of suppuration he finally recovered with ankylosis of the elbow-joint, in flexion at an angle of about 110 degrees, and in a position of marked pronation. September 1 he stumbled and fell, striking upon the hand and elbow. He complains of severe pain in and about the joint. The elbow-joint is swollen and very painful on pressure and manipulation. Ecchymosis over both condyles. There is some motion but no crepitation, indicating the existence of ruptured intra and periarticular adhesions. The patient states that this is the fourth time since the ankylosis occurred that it has been broken by injury of some sort. The limb was padded with a thick layer of cotton from the base of the fingers to the shoulder-joint, over which a light plaster of Paris bandage was applied. The patient was placed in charge of Major Nancrede, his attending physician, who a few days later substituted for the plaster dressing an angular wire splint. In less than a week he reported for duty at Camp Meade.

Case 9.—Thomas A. McDonald, age 24, Second Infantry. While in action before Santiago the stock of his gun was struck by the fragment of a shell, the arm was violently twisted and the radius fractured. The forearm now presents the characteristic "silver fork" deformity of an imperfectly reduced Colles' fracture. There is swelling of the wrist, inability to use fingers, and pain on attempted pronation and supination. Massage, manipulation and electricity advised.

Case 10.—Preston Guthrie, aged 34, Company F, Twentieth Infantry, re-enlisted three and one-half months ago. States that he cut his left arm two years ago. The wound was slow in healing and left a scar adherent to the underlying ulna. Nothing in the clinical history would indicate that the bone was affected at that time. A contusion of same region occurred while loading a transport in Cuba, which was followed by a complexus of symptoms pointing to the existence of a central osteomyelitis. An abscess which formed later ruptured through the old scar, an occurrence which was followed by prompt relief. A moderate discharge has continued since. Examination made August 26 disclosed two fistulous openings over the posterior surface and center of the ulna, leading into a central osteomyelitic cavity. Ulna at the seat of disease considerably enlarged. Through a straight incision the fistulous openings in the involucrum were exposed and the cavity freely laid open by chiselling. A sequestrum lying loosely in the bone cavity was removed and the granulations lining the cavity scraped out by a vigorous use of the sharp spoon. After thorough disinfection of the cavity the periosteum was sutured carefully, over which the wound was closed in the usual manner, leaving only a small space for gauze drainage. The wound remained aseptic and healed rapidly by primary intention.

Case 11.—George Oppel, aged 21, enlisted in the Second Infantry one month ago. He was admitted to the surgical ward with a fluctuating swelling over the inner aspect and a little above the left knee joint. Ten years ago he was struck in this region with a brick and suffered from an acute bursitis. The bursa has been enlarged ever since, but has not been painful until recently. There is no tubercular history in his family. The swelling is flat and in circumference is as large as a medium-sized orange. On palpation no fluctuations can be felt, the sensation imparted being of a semi-elastic nature. The swelling is somewhat tender to touch and is painful when he attempts to walk. August 31, the patient being under the influence of a general anesthetic, the bursa was punctured with a small trocar in three different directions through the same opening in the skin and was thoroughly injected with a 5 per cent. solution of carbolic acid. Pressure was applied over the bursa and the limb immobilized upon a posterior splint. In the course of a week the swelling had almost entirely disappeared and the patient returned to his command for duty.

REMOVAL OF FOREIGN BODIES.

Two interesting cases of removal of a foreign body lodged in the tissues presented themselves for operative treatment.

Case 12.—Benjamin Nelson, age 23, Company F, Third Infantry. Came under observation and treatment September 6. Three years ago he fell backward against a window and sustained several cuts of the scalp by fragments of broken glass. The wounds healed rapidly without suppuration. After his recovery he was aware of the presence of a piece of glass which had remained encysted in the pericranial tissues ever since, without giving rise to any inconvenience until recently. A few weeks ago the scalp over the embedded foreign body was bruised, and since that time it has caused irritation and pain. The piece of glass could be readily outlined by palpation. On the day mentioned, without anesthesia, a straight incision parallel to the long axis of the foreign body was made. No suppuration within or outside of the capsule. The piece of glass was found surrounded by a firm capsule of fibrous tissue and measured two centimeters in length and two-tenths of a centimeter square at the end. The broken surface was irregular in outline. The wound was sutured with horsehair and union was found complete at the time of his discharge, September 11.

Case 13.—Sergt. Oscar F. Winter, age 52, Company F, Ninth Infantry, seventeen years in service. On July 2, while in the act of rising just behind the trenches, he was wounded by the bursting of a shell near him. He was confident at the time, from the sensation experienced, that he had received a blow from a large fragment of shell on the crest of the left ilium. He says a large ecchymosis formed at once and he could see no evidence of penetration. He was assured by a medical officer that he had suffered a contusion only, that there had been no penetration. He says, however, on being questioned, that a small rent existed in the clothing over the supposed contusion, but is very positive that he must have been struck by the convex side of a large piece of the bursting shell. An abscess developed soon after the injury was received and has discharged at a point near the anterior superior spine of the ilium and the resulting sinus has remained since. The patient has done duty without missing a day since he received the wound, until reaching Camp Wikoff. The existence of an abscess cavity and the history of an opening in the clothing led to exploration for a foreign body. The existing opening was slightly enlarged, under chloroform anesthesia, and exploration of the cavity with the finger located a shrapnell ball at about $3\frac{1}{2}$ inches downward from the opening of the sinus. Counter-opening was made at this point and the ball extracted. Tubular drainage, irrigation with peroxid of hydrogen and $2\frac{1}{2}$ per cent. carbolic solutions and moist carbolic dressing. Speedy healing of the wounds.

(To be continued.)

SOCIETY PROCEEDINGS.

Chicago Medical Society.

Regular Meeting, Nov. 2, 1898.

Dr. ARTHUR D. BEVAN, the president, occupied the chair.

Dr. E. J. SENN exhibited a patient upon whom he had performed a plastic operation following recurrent carcinoma of the breast.

Dr. A. R. SMALL reported a case of comminuted fracture of the patella. The patient was a victim of the Wabash Avenue fire on March 16, 1898. The left patella was broken into several pieces. The leg was put up in splints, and the result was excellent. It was not found necessary to wire the fragments.

Dr. ARTHUR D. BEVAN has demonstrated beyond doubt, by means of the X-ray, within the last two or three years, that bony union occurs in fractures of the patella treated by the conservative method, consequently it is not necessary to wire the fragments in many cases.

Dr. JOHN RIDLON exhibited a case of infantile paralysis affecting only the shoulder muscles. The child is 3 years of age. The case is undoubtedly one of anterior poliomyelitis, which came on when the child was a little less than 3 years of age, with the ordinary symptoms, but involving only the shoulder muscles. He said that Dr. Archibald Church has a photograph of a similar case affecting the arm muscles, but not the forearm and hand muscles.

EXTENSIVE FISTULA IN ANO.

Dr. J. R. PENNINGTON reported a case and exhibited the patient. She was referred to him by her physician, about eighteen months ago, then suffering from what is commonly

called a "horseshoe fistula." He said that this fistula is frequently, though not always, preceded by an abscess situated between the rectum and coccyx and beneath the raphe. In a typical case the pus burrows on both sides of the rectum and into the bowel dorsally between the sphincters. Cripps says "the matter originally collects in one or other of the ischio-rectal fossa, then makes its way behind the howel to the fossa of the opposite side." From inspection and examination it is often impossible to measure the gravity of a case of fistula in ano. One may not suspect its complexity and extent until after the first incision has been made. The presence of only one external opening does not necessarily signify a simple fistula. He has seen some very extensive and complex fistulae with only one external opening. That was the condition of affairs in this case. In operating upon these cases it is important to recognize their conformation—especially is this true when there is one or more external openings on each side of the anus—and to bear in mind that these tracks have a home in common. Otherwise the operator is apt to proceed as though he had two separate and distinct fistulae with which to deal, and by following the advice given in some text books, slit up first one sinus, then the other, and, when too late to remedy, recognize that he has divided the sphincter in two or more places; that his patient has incontinence of feces and a remaining fistula—a very undesirable result, because to operate and not cure the patient is to bring disrepute on rectal surgery, and for the operation to be followed by incontinence of feces is to leave the patient in a most mortifying and loathsome condition, which is not apt to redound to the surgeon's credit.

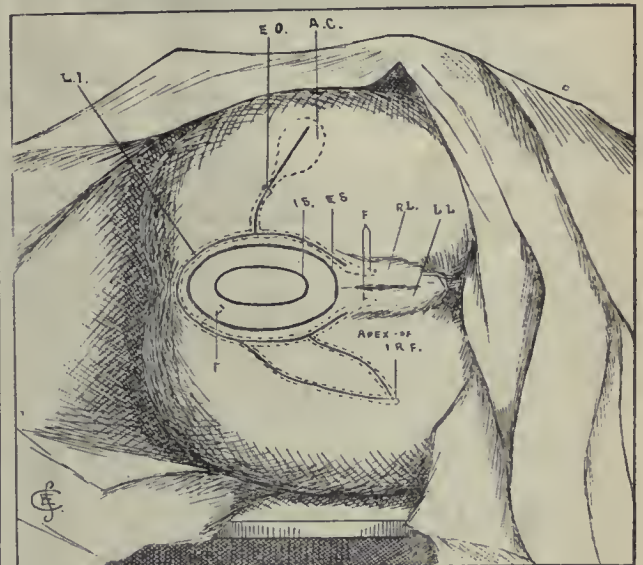


Figure 1.

In this patient there was an external opening in the right buttock and an internal one on the left aspect of the bowel.

With reference to finding the internal opening when operating, Mathews says: "What this has to do with the operation for fistula, I must confess, I can not understand." Then he continues by saying that "if during the operation I introduce my grooved director and fail to find any internal opening, when one really exists, I push the instrument through the mucous membrane, then divide the tissues upon it, and search up the bowel from the cut, allowing the director to go as high as it will. Then, dividing again, we, of course, include any internal opening that may exist." Had Dr. Pennington followed this advice and pushed the director through the mucous membrane and divided the structures over it, incontinence would certainly have followed and the internal opening remained undivided. Beginning at the external opening he divided the fistulous tracks, as indicated by the heavy lines in the right buttock, to a point just beyond the track running into the bowel. He then discovered this latter fistula, which he thoroughly curetted and irrigated with a bichlorid solution. He purposely, at this seance, did not continue the division farther on the left side, but thought to try to close the canal extending on to the left labia by means of injections. This failed. In about three weeks after the first operation he opened this track, and to his surprise, found the two tracks leading off from this one to the very apex of the left ischio-rectal fossa. This necessitated a complete division of the

fossa. The dotted lines in Fig. 1 show fistulous tracks, and heavy lines, incisions made. The tuberosity of the ischium extended almost an inch above the base of the incision on the right side. The photograph, which was taken seven months after the operation, shows the great atrophy of the buttock, and gives only a meager idea of the destructiveness of this fistula.



Figure 2.

The Doctor called attention to the fact that the sphincter was not divided; there is no incontinence, and that the patient made an uneventful recovery; also, that by operating in this manner feces do not come in contact with the wound during defecation.

RECTAL INCONTINENCE.

The second case he reported was one of incontinence of feces following an operation for a simple fistula, while in the first case no incontinence followed operation for extensive and complete fistula. This patient says that she was operated upon two years ago by a good surgeon. She had been sent to him to have the function of the divided sphincter restored. Why an operation for fistula is followed by incontinence in some cases and not in others, it is difficult to say. Smith believes it to be due, not so much to the division of the sphincters as to the severing of the muscular fibers of the lower part of the rectum. Esmarch thinks it due to the division of the nerves supplying the muscles more than the division of the muscular fibers; while Kelsey holds to the theory that it is due to the vicious cicatrization, by which the divided ends of the muscles are not brought into apposition. The Doctor's own belief is that it is due as much to a want of technic in operating and inefficient after-treatment as to any other one cause. In bad cases flatulence is passed without treatment as to any other one cause. In bad cases flatus is passed without the slightest warning, and the contents of the rectum may be discharged into the clothing before the sufferer can reach the toilet room. This condition is often so mortifying that patients express a desire to die rather than to live. It is very gratifying, however, to know that most of these cases can be cured or at least made comparatively comfortable. In the less severe cases, much benefit may be derived from the use of drugs and from regulating the diet. It must be remembered, however, that in directing palliative treatment there is a great variation in peristaltic action; some persons defecating two or three times in twenty-four hours, other only once in forty-eight to seventy-two hours. In the former the stools are semi-solid, while in the latter they are hard and scybalous-like. Hence the control of the feces in a patient with a weakened sphincter may be easy or difficult. In the more severe cases, where operative interference is indicated, the surgeon has ample opportunity to exercise all his surgical ingenuity in devising an operation for relieving this condition. In those cases where the remaining segments show signs of contractility, measures looking to their union and restoration of the muscle will be more or less successful. Among the measures may be mentioned: 1, Tait's operation upon the perineum; 2, application of the cautery; 3, exposing the cut ends of the divided sphincter, and their reunion by sutures. But when the nerve supply has been destroyed, the muscular segments greatly atrophied and displaced by cicatricial tissue, restoration becomes impossible. In such cases the operation devised and successfully performed by R. Gersuny of Vienna, and subsequently by A. P. Gerster of New York, which consists

in separating all the coats for two and a half inches up the bowel, then securing the gut and twisting it upon itself in an arc of 360 degrees, and stitching it to the skin by sutures, will perhaps give the best result.

Dr. ALEXANDER HUGH FERGUSON reported a case of floating kidney, tubal pregnancy and gall-stones, in one patient, all treated surgically on two different occasions. The extra-uterine pregnancy occurred in the right tube. The patient was a private case, 30 years of age, and was referred to him by Drs. Franklin and Bergeron. She presented herself, complaining of pain in the umbilic region and of a tumor in the right lumbar region, which was movable. A diagnosis of floating kidney was apparent. The diagnosis of gall-stones was more difficult. In May last she had her first attack. She retired, after a hard day's work, and about three o'clock in the morning was seized with a sudden pain in the region of the umbilicus which woke her up. Vomiting was present. Hot fomentations were applied and the pain subsided as suddenly as it appeared. This was a point he wished to particularly emphasize as diagnostic of gall-stones attempting to leave the gall-bladder and falling back again. Two or three days after that she had a second attack. Pain came on suddenly, again about three o'clock in the morning, and was referred to the umbilic region, with vomiting. There was tenderness, on pressure, over the region of the gall-bladder. She had slight pyrexia, and a physician was called, who gave morphin. One dose of morphin and the application of hot fomentations sufficed to relieve her second attack. Five days later she had a third attack. The pain came on suddenly, and was again referred to the umbilic region, accompanied by vomiting. There was more tenderness over the region of the gall-bladder than during the other attacks. In the second day of the attack slight jaundice appeared and persisted for a week. This attack disabled her for about ten days. From the first week in June until July 31, when he saw her, she had had six or eight attacks. After this attack, a tumor was felt for the first time in the lumbar region. This was correctly diagnosed as a floating kidney. A rubber bag inflated with air was bandaged over it; when she would have attacks of colic they would be relieved by the inflated bag pressing the kidney upward and backward, but the pain would not completely disappear. Upon manipulation it was found that the kidney could be pushed upon the brim of the pelvis over to the median line, and could be swept back to its place with that characteristic slip that is found in floating kidneys. Manipulations over the gall bladder at this time elicited very little tenderness, except when he gave a deep prod. If stones are present in the gall-bladder, patients usually complain of a pain when a deep prod is given them. From the above-mentioned data he made the double diagnosis of floating kidney and gall-stones.

An incision was made on the side to fix the floating kidney, through which the gall-bladder was explored and 114 gall-stones removed by the lumbar route. He believes it unwise to anchor the gall-bladder in the lumbar region because we would surely have a fistula; therefore, he made a button-hole incision in front, opposite the cartilage of the ninth rib, and the gall-bladder was sutured to its internal aspect and drained. He drains almost all gall-bladder cases. The woman made an uninterrupted recovery, left the hospital at the end of three weeks, and two days after had an attack of biliary colic. This attack came on suddenly; was accompanied by tympanites and tenderness which lasted for several days, when a second attack came on. This attack was more severe, was accompanied by vomiting and slight jaundice. A third attack was still more severe. The pain during these attacks was always referred to the umbilicus as in the previous attacks, and this is of importance from a diagnostic standpoint. Pain began in the region of the right ovary during the third attack. This new complication predominated during a fourth attack of biliary colic, with the greatest amount of pain in the right pelvis, and symptoms of internal hemorrhage. All the time jaundice was intermittent. Her husband wrote to him about her condition, and he told him to send her back to the hospital, where Dr. Ferguson made an examination, found tenderness in the region of the cystic duct, and a great deal of tenderness in the right ovarian region. Upon vaginal examination he found a large, soft, boggy mass. She had menstruated just a week before entering the hospital the first time. He found milk in the breasts, and made a rather bold diagnosis of stone plying between the cystic and common ducts and extrauterine pregnancy. She was placed upon the operating table, and an incision made through the right rectus muscle low down, so as to deal with the mass in the right pelvis. The abdomen being opened, clotted and liquid blood was noticed. The pelvis was full of it. A mass was seen in the right pelvis; this was covered with a gauze pad for the time being. Going on the

left side of the patient, entering the abdominal cavity, passing two forefingers of his left hand through the foramen of Winslow at the junction of the cystic and common ducts, he felt an irregularly-shaped stone. In trying to force it up into the gall-bladder, it slipped away and went in the direction of the common duct. He went after it again and pushed it into the gall-bladder; then incising the gall-bladder at the site of the former wound, which had closed, he slipped the stone out. He then demonstrated that the ducts were pervious, by forcing water through them into the duodenum. He exhibited the fetus, which measured three inches and a half from vertex to nates. Both fetus and placenta were found in the tube. The last operation was performed six weeks ago. He exhibited the patient and specimens.

Dr. ARTHUR D. BEVAN, in the discussion, narrated a case in which a diagnosis of gall-stones, floating kidney and appendicitis was made, an operation successfully performed and the diagnosis verified.

Dr. JAMES B. HERRICK contributed a paper on

THE TREATMENT OF ULCER OF THE STOMACH BY REST IN BED AND RECTAL FEEDING.

He regarded the writing of a paper on this old subject as warranted by the fact that many modern text-books make no mention whatever of rectal feeding in the treatment of ulcer; others recommend its use only in severe or exceptional cases, while a relatively small number advocate its employment in all cases. Physicians, too, often oppose the treatment or give it a half-hearted approval. By rest in bed and rectal feeding, the natural tendency of the ulcer toward recovery is encouraged by the removal of all mechanical and chemic irritation, so far as this is possible.

He said that several objections have been made to rectal feeding. The objection that the rectum will not submit to repeated enemata, but will give out, is answered by the fact that when suitable enemata are properly administered, the rectum will tolerate this method of treatment for many days or many weeks. Some contend that the nourishment is not absorbed, but its absorption is proven by experiment as well as by clinical observation. The argument against this method, that the patient can not stand it, that he will become too weak, can not endure the thirst, hunger, and weakness, is answered by the fact that patients do stand it and without complaining, and that when the matter is clearly set before them they submit to this method willingly. The objection that the treatment is inefficient and unsuccessful is answered by the successful results in the hands of physicians who have tried the method carefully, and by the fact that the trend of medical opinion is setting in toward rectal alimentation in all cases of ulcer of the stomach.

In carrying out the treatment it is important to secure the consent of the patient by a clear explanation of the reasons for the treatment, the method of carrying it out, the probable length of time required, etc. This relieves worry and restlessness on the part of the patient. The bowels should be emptied by a preliminary laxative and cleansing enema. Absolute rest in bed should be required for from two to six weeks. Nothing should be given by the mouth, not even water, for from three days to three weeks. Nourishing enemata should be given at regular intervals, say of four hours, by means of a soft rubber tube inserted high into the rectum. Enemata can be given once in twenty-four hours, a period of eight hours' rest, as, for example, from midnight to 8 o'clock in the morning, being desirable. The quantity and kind of food, as well as the hours, can be varied in individual cases. A simple enema of water is to be given every morning. This may be retained, in which case it quenches thirst; it may be rejected, acting as a cleansing enema. As pain, tenderness and vomiting cease, the enemata can be gradually withdrawn, and peptonized milk or other light diet carefully substituted by the mouth. The patient should be allowed to get out of bed only after rectal alimentation has been entirely stopped. It is best to keep the patient in bed for at least four weeks. Iron may be necessary for the chlorosis so commonly present. This should only be given when a light diet is tolerated. The results are an almost immediate lessening of pain, vomiting and nausea. There may be emaciation and weakness; that will disappear quickly when stomach feeding is resumed. A cure is the result in the larger number of recent cases. In old cases a cure, or at least improvement, will follow. Deep ulcers, very extensive ulcers, large amounts of scar tissue or adhesions may interfere with a perfect recovery. This rational method of treatment, allowing nature to work the cure, deserves the warmer endorsement of text-books and physicians, particularly as medicinal treatment is so unsatisfactory. It should be employed in every case, either mild or severe.

Dr. HENRY GRADLE read a paper on

PHLYCTENULAR OR SCROFULOUS OPHTHALMIA.

After referring to the frequency of this affection and its preponderance in girls, he described it as a disease of childhood, seen rarely after puberty and then only in patients who had been subject to it since early childhood. The characteristic lesion is the phlyctenule, not a vesicle but a translucent papule (of leucocytes), which in typical cases disappears by absorption in five to eight days. The serious aspect of the disease, however, is the liability to relapses, often in multiple form, the frequent delays in the disappearance of the phlyctenules, and particularly their transformation into larger papules; into corneal infiltrates, which often ulcerate; or into diffuse patches of superficial keratitis with new formation of blood vessels. All these manifestations are but metamorphoses or sequelæ of phlyctenules.

The causes of such an unfavorable course are often associated with adjoining lesions, the proof of which is furnished both by the coexistence and by the influence of treatment of these associated lesions upon the phlyctenular process. Among these injurious conditions are catarrhal conjunctivitis, and especially the transient smooth hypertrophy of the superior retrolarsal fold, called by the Germans *Schwellungskatarrh*. For the latter condition the author recommends nitrate of silver (if necessary, in the strength of 10 per cent. solution), to be applied strictly to the swollen fold of the conjunctiva. Important, likewise, is ulcerative blepharitis, to be treated with the stick of nitrate of silver and the yellow oxid salve.

Eczema is so frequent a coincidence that the disease has been termed "eczematous kerato-conjunctivitis," a name which the writer considers inappropriate, as the eye affection is neither clinically nor anatomically analogous to cutaneous eczema. Eczema of or near the eyelids exerts a distinctly injurious influence upon the eye lesions. Whether eczema at a distance is of equal importance is doubtful.

Purulent rhinitis is often, but by no means always, associated with phlyctenular disease. With it there is nearly always hypertrophy of the pharyngeal tonsil—adenoid vegetations. The latter condition requires surgical removal from intrinsic indication, but how much the nasal disease predisposes the eye to relapses, or to persistence of the phlyctenular lesions is an open question.

The direct cause of phlyctenular eruption is as yet unknown. The search for constant or characteristic microbes has been unsuccessful, and the most extensive researches by Axenfeld led to negative results. It is certain, however, that the exceptions to this rule are merely apparent, not real, for scrofulosis is at present a vague term, and not recognizable. The researches of Koch, and especially his disciple Petruschky, have made it almost certain that scrofulosis is identical with mild chronic poisoning of the juvenile organism by the toxine of the tubercle bacillus, usually hidden in some lymphatic gland. But some of the manifestations of scrofula—the tendency to eczema and the enlargement of the pharyngeal tonsil—are not themselves tubercular lesions, or due to the presence of the tubercle bacillus in the diseased locality, but they are evidently local chances due to other causes, favored, however, by the undermining of the resisting power of tubercular poisoning. The author regards phlyctenular ophthalmia in the same light, namely, as a lesion occurring mainly—if not exclusively—in a soil predisposed by poisoning from some forms of "latent" tuberculosis—in the lymph-glands. This view was supported by the characteristic reaction of some diagnostic injections of tuberculin in four cases.

On the basis of this view, and from extensive experience, he endorses the hygienic treatment generally adopted in tuberculosis, namely, an out-door life, proper feeding, baths, and, if indicated, cod-liver oil. These measures seem to protect fairly well against relapses, but their influence requires too long a time to be of immediate benefit as far as the attack at the time is concerned. In the local treatment he recognizes the influence of calomel dusted into the eye, especially when used two or three times daily. Atropin is of decided influence when there is pronounced ciliary irritability, and especially when the pupil is narrowed or resists the dilating influence of the drug. But whenever the process is not accompanied by much irritation, or when the pupil yields at once, atropin seems to exert no influence of any kind.

Dr. WELLER VAN HOOK described a hernia operation designed to do away with the need of splitting the aponeurosis of the external oblique muscle, in order that, in case of suppurative, the state of the patient need not be aggravated by the enlargement of the external ring. After treating the sac by partial amputation and drawing the stump back up the canal by means of a curved artery forceps and fastening it, after

Kocher's plan, to the tissues above the cord, he dissects up the aponeurosis of the external oblique from its muscle and frees Poupart's ligament by the finger introduced into the canal. A handled curved needle, unarmed, is then passed under Poupart's ligament at a point sufficiently below the cord to prevent the pinching of the cord at the internal ring. The point of the needle is received under the finger in the inguinal canal and is carried under the cord (raised by an assistant) to a point behind the inner pillar. The needle is then passed through the internal pillar and its point appears projecting through the aponeurosis of the external oblique. The needle is then threaded and withdrawn. The forefinger is next passed up the canal behind the cord until the inner portion of the thread is felt between the external oblique muscle and its aponeurosis. The finger is hooked around the thread in order to pull it out of the external ring along with the finger. Then the needle is introduced at a point about one-fourth of an inch inside the first point of introduction through the aponeurosis of the external oblique into the canal; it is guided with the finger down the canal to the external ring and is there again threaded with the suture end which was brought out by the finger. It will be seen that when the needle is withdrawn we have a suture by which we can draw together the internal pillar and the most posterior portion of Poupart's ligament. As many such sutures as may be desired are thus introduced and the external ring is closed by sutures in the usual way.

This operation would be impossible only in those rare cases in which Kocher's and McEwen's operations could not be performed, viz., when an inspection of the internal ring is imperative. There is no risk of injury to important structures, and the amount of time required for the operation is scarcely more than would be needed for an ordinary Bassini.

San Francisco County Medical Society.

November Meeting.

Dr. JELLINEC presented a paper, with a demonstration of a case, on

SPORADIC CRETINISM.

The first case reported was that of a female child, 4 years and 2 months old when first seen. The parents were Jews, but there was neither any family history nor any particular taint that could be ascertained. Up to the age of 9 months the child had developed normally, but after that time she began to exhibit the various indications of the disease. When first seen, about the middle of August, she weighed 25½ pounds and presented a perfect picture of cretinism. The could not be found the slightest trace of thyroid gland, and its absence was declared by the Doctor. Constipation was very marked, the bowels moving only every fifth to sixth day, and then only under cathartics. Treatment by tablets of thyroid extract was commenced, August 26. The dose at first was one-half a tablet per day, or the equivalent of .15 gm. of the gland. No effect was observed from this dose, at the end of a few days, so the quantity was increased to .3 gm., or one tablet per day. This had a very decided effect, for it produced copious stools and the child began to lose flesh very rapidly. The dose was therefore reduced to the former amount, one-half tablet. October 11, the child had lost two and one-half pounds, and was quite perceptibly improved. It was still a very well-marked case of the disease, and the Doctor expressed his intention of continuing the thyroid treatment and reporting the case to the Society from time to time.

The second case reported was much the same as the first, only it had been under treatment for some thirteen months, and consequently showed very marked improvement. When first seen the child was 5½ years old, 61 cm. in height, and weighed 19 pounds; its vocabulary consisted of nine words, most of them being so poorly articulated that they were unintelligible to any one unacquainted with it. The fontanelles were still as much unclosed as at the time of birth; there was no apparent thyroid, and there was every indication of cretinism. July 26, 1897, the treatment by thyroid gland tablets was commenced by the employment of one-half tablet per day, being equal to .15 gm.; this small dose had a very marked effect on the first day, producing four copious stools. The dose was therefore reduced to one quarter tablet, and then gradually increased to three tablets a day; at the end of a year the child was taking nine tablets a day, had grown 9.4 cm. in height and weighed 27 pounds. A look of intelligence had made its appearance, and the vocabulary was quite considerable; the fontanelles had closed. The child at this time could run about and play. The Doctor said that the size and nature of the dose would depend upon the individual case under treatment, but that the thyroid tablets would have to be taken throughout life.

Dr. W. M. FITCH McCHENEY said, in discussion, that the name "cretinism," by custom, is applied to those cases in which there is a congenital deficiency in the thyroid gland, and the name "myxedema" is confined to those cases in which the deficient secretion of the thyroid is an acquired characteristic. Where cretinism occurred only occasionally in a community, the term "sporadic" was applied. As to the pathology, three principal theories have been advanced to explain the conditions we find; a total absence of the thyroid gland; atrophy of the gland; goiter, in which cases we find a cystic or tumorous growth in the thyroid, the foreign growth limiting the physiologic activity of the gland, and thus preventing the proper amount of its secretion. He did not believe that there was often a total absence of the gland, for the reason that so many cases which before death had been pronounced to be without the thyroid, showed on postmortem examination that there was really a rudimentary gland present. He thought that atrophy or neoplastic growth would explain almost all of the cases encountered. He said that, as Dr. Jellinec had mentioned seeing seven cases of this disease, and as Osler had some short time ago given a résumé of all the cases reported in the American press, which amounted to sixty in all, Dr. Jellinec had been very fortunate. As to the question of administering the thyroid gland tablets all through life, he did not agree with Dr. Jellinec. In his opinion, this was not necessary; experience seemed to have shown that if the gland was employed for a time, a certain improvement would result, but that improvement was noticed only up to a certain point, and that beyond that point the further administration of the gland had no effect whatever.

Dr. JOHN WAGNER asked as to the details of administration; when the tablets were given and how; whether with meals, before, or after eating, and whether dry or in what form. He had had no experience with the thyroid treatment, but he had hoped to get some information from the paper of Dr. Jellinec.

Dr. JELLINEC said, in reply to the discussion, that he had simply intended to demonstrate a case which he would again show to the Society after it had been under treatment for some time. He considered the terms "sporadic cretinism" and "myxedema" as synonymous terms. There could be no rule as to the method of giving the thyroid extract; circumstances must determine the method in each case. In some cases he gave it in one dose, in the morning dissolved in milk or soup, say of two or more tablets; he gave it in two or three doses in the same solutions. He had seen but two of the cases in this country, the others he had met with abroad, where they are very common, so common in fact, that nothing more is now written on the subject. Where there was total absence of the thyroid gland, as he thought was often the case, the tablets would have to be taken throughout life, though they could be suspended from time to time, for such periods as the patient could stand without the medicine. If the individual was not himself the possessor of a thyroid gland that could secrete, he would have to be artificially provided with this very necessary secretion.

Dr. A. MILES TAYLOR presented a paper on, and a report of a number of cases of

VAGINAL HYSTERECTOMY.

There were forty cases in all, with one death, and as the cases were very mixed, many of them being pus cases, the results were good. He claimed that they were much better results than could have been obtained in the same cases if abdominal operations had been undertaken in the same circumstances. Vaginal section for pelvic diseases was in every way, in his opinion, far superior to abdominal section, except in very rare cases. The patient is carefully prepared, when circumstances permit and placed in the lithotomy position; the uterus is then curetted and the instrument put aside and not again used during the operation; the posterior cul-de-sac is the most convenient point of entrance, generally, and the opening here is easily made. The cervix can then be drawn up and the opening dilated; with the patient then changed to the Trendelenburg position an ocular examination can be made that will be fully as satisfactory as the ocular examination by the abdominal incision, for with the use of the proper retractors the vaginal opening may be made as large as the abdominal, and the distance to the parts within is about the same in the two cases. The technic of the operation in its various phases was then gone over by the Doctor, and a number of cases reported. Some of the cases mentioned are abstracted as follows:

Case 1.—Pelvic disease following a miscarriage. There had been great pain for a year, and for six months previous to the operation she had been delirious during her menstrual periods. When seen she had a temperature of 104, pulse of 120, and

great tympanites and tenderness. The finger was introduced into the vagina, the posterior cul-de-sac ruptured, and a great quantity of pus poured forth. The pelvic cavity was well irrigated with salt solution, and one tube removed; the other tube had sloughed off and was washed out. The opening was packed with gauze, and the patient did well till the fifth day, when her temperature suddenly went up to 105, again rose to 106 at eight o'clock at night, and she died in a few hours. Postmortem examination showed the cause of death to be septic cerebral meningitis.

Case 2.—Woman of 26 years; married; pain and discharge almost continuously since marriage, three years before; one month before seen, had been operated on for a lacerated cervix and perineum, but with only trifling benefit. Operation was performed per vaginam, and on the incision being made a large amount of pus was evacuated; the pelvic cavity was irrigated and a large mass appeared which proved to be the left tube in the guise of a huge pus sac. Both tubes were removed and the pelvis irrigated with bichlorid solution, 1 to 8000, followed by salt solution. The wound was then packed and the patient made an uninterrupted recovery at the end of the third week. She has since remained well and has no pain nor discomfort.

Case 3.—Woman of 18 years, married for four months; for two months had not menstruated; had been pronounced pregnant; severe pain came on suddenly when arising from the table. The diagnosis of ruptured extra-uterine pregnancy was made and operation decided upon at once. Incision in posterior cul-de-sac was followed by free hemorrhage. The fetal mass was found, and the bleeding point located and tied off; the pelvis was then irrigated and packed and the patient made a good recovery.

A number of other cases were reported, and the Doctor then summed up his conclusions as follows: The vaginal route is to be preferred for the reasons that there is less shock, less danger, no danger of hernia, it is easier to work on any of the pelvic organs, the incisions are easier, the examination of the pelvis more complete, drainage can be perfect, and it leaves the patient much more comfortable than the abdominal operation, for movement in bed is not prevented after the operation. Conservative surgery on the ovaries and uterus was the great desideratum of modern surgery, and it is far easier to make plastic operations on these organs per vaginam than by the incision through the abdominal walls.

Dr. F. B. CARPENTER said that the vaginal operation was not to be preferred in the majority of cases, but in some it was undoubtedly the best. There was certainly less shock in the vaginal operation, but when many adhesions had to be broken up the abdominal route was preferable. He did not consider that irrigation was a good measure in most cases, and indeed in many cases where there was pus in the tubes, it had been so long retained that it had ceased to be septic pus and, if liberated into the pelvis, could not and did not do any damage. He considered the operation per vaginam much more difficult than the abdominal operation, and thought its advantages more than counterbalanced by its disadvantages.

Dr. J. HENRY BARBAT thought that the results of the forty cases reported could not have been better, for the cases were almost all very grave ones, and the occurrence of a single death showed that great skill had been employed. He was of the opinion that the special method followed by any operator who had the requisite ability was the best for that man, but was not the best necessarily for all men; some men could get better results by the vaginal method, and others found the abdominal method more satisfactory in their hands. It was largely a matter of the personal equation. In some cases the vaginal operation had much the advantage over the abdominal, but this was not always the case.

The officers of the society for the ensuing year were then elected. Wm. H. Davis was elected president, E. F. Kelly, vice-president, Philip King Brown, treasurer, and Geo. H. Evans, secretary.

SELECTIONS.

Toxins and Antitoxins.—The proceedings of the Royal Society for July 29 contain a communication by Drs. C. J. Martin and T. Cherry, on the nature of the antagonism between toxins and antitoxins. The authors refer to the discussions of this subject by Behring, Buchner and others beginning in 1894. They refer to Calmette's experiments in 1895 with cobra poison and its antitoxin, which seemed to prove that the toxin of snake venom does not interact with its antitoxin *in vitro*, but only *in corpore*, and therefore its action can not be explained

as a simple chemic operation between the two. The sum of these and other experiments was that certain measures being found which destroyed either the toxin or the antitoxin, when these measures were applied to a mixture of the two *in vitro*, the one not affected remained active while the other became inert. The inference was that the interaction did not take place *in vitro*. The authors, however, point out that the absence of any account of the time during which the interaction should be permitted to continue, as a factor in the experiments, vitiates their results; and, while admitting that the same results can be repeated, they consider the conclusions founded on them unjustified, and assert that by modification of the factors—time, temperature and active masses—exactly opposite results may also be obtained. Their experiments tend to prove that since the toxin of diphtheria will pass through a gelatin filter, while the antitoxin will not, a mixture of the two *in vitro* would become separated by filtration and the filtered toxin would be active, unless it were previously neutralized by contact with the antitoxin *in vitro*. They found that a mixture of the proper neutralizing amounts, when left in contact at 30 degrees C. for two hours, was not active after filtration, proving thus that the antitoxin had neutralized the toxin. They say: "As the experiments are so simple as not to leave any possibility of experimental error, we turn our attention to our existing difference in the conditions under which Calmette and ourselves worked. As previously pointed out, Calmette absolutely neglected the possible influence of time, temperature and the relative proportions of the active masses of the toxin and antitoxin present in his mixture. Up to the present we have investigated the value of the factors, time and proportion of active masses, and have shown that these are most important. Indeed, by altering either the one or the other, we can produce results which, if these factors be neglected, would lead to diametrically opposite conclusions.

We have not yet determined the influence of temperature upon the rapidity of the reaction, but our results so far seem sufficiently conclusive to decide the question and leave no room for doubt that the antagonism between the toxins of diphtheria and snake venom and their relative antitoxin is due to a direct chemic action which takes place between them, and further, that the opposite conclusion come to by Calmette, and presumably those of Wassermann, Nikanarow and Marengi, were due to their disregard of the value of time as a factor in such chemic action." It may be remarked, in conclusion, that these experiments, of undoubted scientific value, of Drs. Martin and Cherry were conducted in the laboratories of the University of Melbourne, Australia, with the teaching staff of which institution both these young pathologists are connected. —*N. Y. Med. Jour.*, September 10.

Located by Skiagraphy.—Dr. de Schweinitz has recently reported a case of a piece of steel imbedded in the sclera for two and one-half years, localized by the Roentgen rays, according to Dr. W. M. Sweet's method. In November, 1895, a piece of steel entered the eye, probably near the corneal margin at the inner side. In March, 1896, a radiograph of the eye indicated that a foreign body was located in the orbit at the upper nasal side. It was deemed expedient to make search for it. In February, 1898, when Dr. de Schweinitz first saw the case, V. = 6/20; eye quiet; marks of a previous iritis; capsule and lens partly opaque; floating opacities in the vitreous. With undilated pupil no foreign body could be detected in the vitreous or in the coats of the eye. A series of skiagraphs located it 11 mm. below the center of the cornea, 3 mm. to the nasal side, and 10 mm. back of the cornea. A second series taken while the eye was rotated as far as possible downward shows a movement of the body practically equal to the extent of the rotation of the eyeball downward. This would seem to determine the sclera as the site of the body. With wide pupil dilation a small patch of choroidal atrophy streaked with pigment, and

with a black center, exactly in the position indicated by the radiographs, could be seen. Just over this location the sclera was sensitive to the touch of the probe. The field of vision was markedly contracted, and there was uncertain limitation opposite where the body was supposed to lie. The patient refused to permit an exploratory operation. Dr. Sweet has had an interesting experience in the localization of foreign bodies in the eyeball by his apparatus. The various methods that have been employed resolve themselves into a determination of the angle of the X ray tube with the foreign body and with one or more dense objects situated near the eyeball. Approximate results have been obtained from a study of the shadow of the foreign body in relation to the shadows of the orbital bones, but owing to the variations in the position of the eyeball, which have been shown by the investigations of Cohen to amount in healthy individuals to as much as 10 mm. behind the edge of the orbit and 12 mm. in front of the same, this method does not equal the accuracy possible by other means. Whatever form of indicating objects is used in working out the position of the foreign body, certain factors are essential to accurate results: 1. A tube should be used which may be run at high vacuum, in order that the rays readily penetrate the bones of the head. 2. The patient should be in the recumbent posture to ensure steadiness of the head and body. 3. The visual axis should be parallel with the plane of the plate at the side of the head, or if it deviates, the angle should be measured and allowed for in the determinations. 4. The situation of the indicating objects with respect to the center of the cornea in each individual case should be known, otherwise the determination of the location of the foreign body will vary with the varying situation of the eyeball in the orbit in different persons. 5. The angle of the tube with the indicating object must be accurately measured. The two indicators being parallel with each other and with the plate, the distance the shadow of one of the balls is posterior to that of the other is the measure of the distance that the source of the X-ray is carried to the front. The method has been employed in a number of cases of suspected foreign bodies in the eyeball and orbit, in seven of which the shadows of the bodies were obtained on the plate and their position indicated. Three of the cases were gunshot injuries, in which the findings were not verified by subsequent operation.—*Maryland Medical Journal*.

PRACTICAL NOTES.

Telelectro-Therapeutics.—Gerest of Lyons cures hysteric paralysis by a series of electric discharges in the neighborhood of the patient, without contact. The effect is evidently similar to that of suggestion.—*Munich Med. Woch.*, November 1.

Dry Treatment of Prurigo.—The parts are dusted with a powder of zinc, salicylic acid and talcum, and covered lightly with a protecting bandage changed every forty-eight hours. In two weeks there is no trace of the affection.—A. Monti: *Semaine Méd.*, November 2.

Orthoform for the Larynx.—Kassel prevents the coughing that usually follows the insufflation of the dry powder in anesthetizing the larynx, by injecting it in an emulsion of 25 parts orthoform to 100 parts olive oil, with the ordinary laryngeal syringe.—*Munich Med. Woch.*, November 1.

Danger Signal in Chloroform.—R. Lehmann states that if the patient keeps his eyes completely or partially open during the narcosis, and opens them whenever you try to close them, you can expect some accident, more or less severe. This phenomenon was noted 21 times in 329 anesthetics, and in each one there were either continuous vomiting, arrested respiration, peculiarly protracted agitation, or asphyxia and syncope, requiring artificial respiration.—*Semaine Méd.*, November 2.

Insomola in Advanced Arteriosclerosis.—Professor Edgren of Stockholm has been very successful in inducing refreshing sleep without morphin, with rectal injections at night of antipyrin, 1 gm., diuretin 1 to 2 gm., or chloral 2 to 3 gm., in the advanced stages of arteriosclerosis when the heart suffers and insomnia is frequent, with more or less dyspnea, vertigo, restlessness, even delirium and hallucinations.—*Semaine Méd.*, October 26.

Sero-therapeutics of Tuberculosis.—Maksutow has obtained a serum from the juice extracted from a tuberculous abscess on a cow, chopped fine, in a aqueous, alcohol-glycerin solution. Injected after filtering, into guinea-pigs and goats, it prevented infection and arrested lesions already under way. Every test was successful.—*St. Petersb. Med. Woch.*, October 29.

Accidental Nervous Enteritis.—When, in consequence of exposure, violent emotion, insomnia, excesses, or other causes affecting the alimentary canal, there is distress and pain in the epigastrium and more or less diarrhea, the following prescription will be found agreeable and promptly effective: Tincture of opium x gtt., orange flower water 20 gm., old rum and simple syrup \bar{a} 40 gm. Mix in a glass of water and drink rapidly.—*Journ. de Méd. Paris*, October 30.

Ankle Clonus in Tabes.—Babinski considers the partial or total abolition of the ankle clonus an indication as important in the diagnosis of tabes as Westphal's sign. In most cases of tabes there is more or less disturbance in both the knee jerk and ankle clonus, and in the rare cases in which a single reflex is affected, it is as liable to be the one as the other. He also differentiates true sciatica by the abolition of the ankle clonus, the patient kneeling on a seat.—*Progrès Méd.* October 29.

Gelatin in Aneurysms.—This treatment, described in the *JOURNAL*, page 1180, has caused two deaths; one patient dying from fresh tuberculosis a few months later, probably caused by compression of the pulmonary artery by coagulations. The death of the second patient is more directly to be attributed to the treatment, as it produced coagulations in the neck and the rapid ischemia of encephalus. Huchard, therefore, advises weak concentrations, 8 to 10 days intervals and the patients in absolute repose. "With these precautions, gelatin is a rational and valuable means of assisting nature in her curative processes."—*Bulletin de l' Acad. de Méd.*, October 25.

The Migrainator.—It is proved by experience that headache may sometimes be relieved by compression of the head; persons suffering from headache instinctively put their hands on their temples and feel great benefit therefrom. To make this compression more efficacious, Dr. Sarason has suggested an instrument, which he describes in the *Deutsche Med. Woch.* It consists of two plates, which are firmly pressed on the temples by a spring, and the device looks very like a double truss. By the compression of the temporal arteries the circulation of the blood in the head is regulated and pain is relieved, especially in angiopathic hemiparesis. The apparatus is termed a "migrainator." It is made in Munich.—*London Lancet*, October 8.

Ringworm of the Scalp Treated by Sodium Chlorid.—Dr. Perkins writes to the *London Lancet*, that for fifteen years he has treated every case of ringworm which has come under his care with chlorid of sodium, and with complete success in every case. The first case in which he used this treatment was a chronic one of five years' standing. The child was well in three weeks and had no return. Many of the cases which have been attended since have been of chronic character. His method is the following: Have some chlorid of sodium finely powdered and then mix with a little vaselin to make an ointment. The affected part having been shaved, rub this ointment in well night and morning until the place is sore; this takes from two to four days. Then use some simple application to aid the healing of the part. When well from the soreness, the hairs will be found growing healthily and the tinea trichophyton destroyed.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, NOVEMBER 26, 1898.

ON THE BACTERICIDAL FUNCTION OF THE LIVER
AND THE ETIOLOGY OF PROGRESSIVE
HEPATIC CIRRHOSIS.

Some time ago an editorial summary of recent investigations into the micrococcal origin of common cirrhosis of the liver, by ADAMI of Montreal, appeared in the JOURNAL. Since then ADAMI has continued to faithfully study the subject, and from a communication to the *British Medical Journal*, Oct. 22, 1898, it is seen that the results which he has obtained modify to a certain extent his earlier conclusions and throw a new light upon a hitherto but little recognized function of the liver, namely, the bactericidal. It will be recalled that he demonstrated the presence in cirrhotic livers of certain diplococci and peculiar degenerated bacterial forms. Subcultures from an organism isolated from a cirrhotic liver showed that it concerned an attenuated form or a variety of the colon bacillus.

ADAMI is not able, after weighing all the facts to be taken into consideration, to separate the micro-organisms of cirrhosis from the main group of colon bacilli. Inoculating broth cultures of the attenuated, as well as the ordinary form, into the circulation, he found that in twenty-four hours the liver cells were crowded with diplococcal organisms. They were present in greater numbers in the liver than in the spleen, kidneys, or other organs, and yet when cultures were made within a few hours after inoculation but few colonies were obtained from the liver, the cells of which were crowded with bacteria, whereas abundant growths resulted in the cultures made from

the spleen, heart's blood and kidney. In these early cases he found the bile to be sterile.

From these observations it is clear that the liver cells do not act merely as excretory agents for the bacilli, but have pronounced bactericidal properties. The bacilli or diplococci seen in the liver were clearly, if not dead, at least incapable of proliferating to any great extent outside the body. The diplococcal forms, as well as other peculiar bodies, are looked upon as a result of degenerative changes. In certain cultures outside of the body, ADAMI also found that the bacillus took on the form of diplococci of fair size; strings of spheric bodies surrounded by a common substance can also form. These bodies are most easily demonstrable when the bacillus is grown under conditions unfavorable for active proliferation.

ADAMI then examined sections from the livers of a large number of postmortems, in which there were no changes characteristic of cirrhosis, and he was greatly surprised to find that these livers also contained, with scarcely an exception, these shadows of the colon or allied bacilli and, furthermore, that some of the fine brown pigment commonly seen in apparently healthy liver cells is undoubtedly to a certain extent the result of destruction of colon bacilli or other organisms. Hence, he concludes that the colon bacilli in healthy individuals frequently find their way into the liver cells from the portal circulation, and that one of the functions of the liver is to destroy these organisms through the action of the liver cells.

In cirrhosis of the liver the number of bacillary remnants and corpses is much greater than in the healthy liver, and this fact must be considered as pointing to a more or less direct connection between the microbes and the cirrhotic process. The facts obtained from the study of Pictou cattle disease in which, as alluded to in our former editorial, there is a marked cirrhosis of the liver, also favors the relationship between the microbes and the cirrhosis. ADAMI has not yet been able, however, to produce cirrhotic changes in laboratory animals on simple inoculation of the colon bacillus, so that if there is any connection between the organisms found in the liver and the interstitial proliferation, there must be other factors at work. ADAMI suggests that when the liver cells are lowered in their vitality, as for instance by the use of alcohol, then the bacilli, finding their entrance into the liver in larger numbers than usual, perhaps on account of the existence of chronic inflammatory changes in the digestive tract, which is a very familiar feature in the clinical history of cirrhosis in man, may produce the progressive proliferative changes characteristic of cirrhosis of the liver. ADAMI has undertaken experiments in which he is employing cultures of the colon bacillus alternately with alcohol, for the purpose of showing whether or not this condition of pathogenic agents may throw any further light upon the cirrhosis problem.

Leaving out of consideration, for the time being, the bearing which ADAMI's observations have upon the cirrhosis problem, it would seem that a very important result of his faithful labors is the demonstration of the bactericidal function of the liver above alluded to. It will be recalled that FUTTERER of Chicago has recently published the results of certain investigations¹ which show that bacteria introduced into the general or portal circulation, are eliminated largely through the liver by way of the bile in an almost incredibly short time after their introduction. From his results it would appear that the liver exercised an excretory function principally, whereas from ADAMI's results the bactericidal properties of the liver cells were brought forward quite clearly. In FUTTERER's experiments the colon bacillus, however, was not used, and it may be it will be found that the bactericidal functions of the liver are concerned more particularly with ridding the organism of this microbe.

TYPHOID FEVER IN MILITARY CAMPS.

There is an undercurrent of belief among our older medical men that the mortality from disease during the War with Spain was not relatively so great as that from which our volunteer troops suffered during the Civil War, and this belief is very generally shown by the veterans of the Grand Army, who recall the rapidity with which the original strength of their regiments melted away under the hardships and exposures of life in camps long before they had an opportunity of coming in contact with the enemy. The letter published in our last issue from Deputy Surgeon-General SMART, gave a solid groundwork for this belief by defining very clearly the want of parallelism in the monthly lines of mortality in the two wars. Now that we have followed the labors of our army medical men in caring for the sick of the past few months, the figures which Dr. SMART presents from the old records have a deeper significance to us than they would have had prior to this recent experience.

We have all along had a realizing sense of the danger to which our troops would be exposed from the infection of typhoid fever. In our issue of June 4, when the public was viewing with alarm the possible ravages of yellow fever in the ranks of the volunteers, we took the position that the camp fever which was to be feared was typhoid and not yellow fever. The events of the succeeding months, both at Santiago and in the large camps in this country, have demonstrated the accuracy of our prognosis, which was the certain spread of the disease among the hastily raised and undisciplined regiments unless medical and line officers of every grade devoted themselves earnestly and intelligently to perfect the sanitary conditions of their camps. This was not done. In June and July typhoid fever appeared sporadically in certain of the

regiments in these large camps. In some instances the disease was recognized as having been imported from State camps and in others to have been due to infection from outside the regimental lines. One fact is prominent: that it was not the result of an infection of the general water-supply, because had it been so the outbreak would have been fulminant, as in the epidemic some years ago at Bethlehem, Pa., when its water-supply became infected. The care given to the water-supply of the camps by the Quartermaster's Department at the instance of Surgeon-General STERNBERG may therefore be credited with the preservation of the troops from such an epidemic attack. But in August the prevalence of the disease became so increased as to call for a removal of the causes. Investigation by qualified inspectors determined that the increased prevalence had its origin in the general infection of the camp sites from the sporadic cases which had occurred, this general infection having become possible owing to overcrowding in the camps and the neglect of sanitary precautions in the care of the sinks; and the charge against the ordinarily insignificant house-fly of being an active agent in the propagation of the disease appears to have been accepted by those who had most experience of the conditions. Removal from the infected sites was immediately recommended and adopted as the best means of lessening the prevalence and ultimately subduing the outbreak. In September a marked diminution in the number of cases was observed.

Up to this time it has not been possible to obtain any data for a comparison with the spread of this fever among the young men who volunteered in 1861, because reports have come slowly into the office of the Surgeon-General, owing to the difficulties encountered by volunteer surgeons in making out official papers. The published records show that from May, 1861, to May, 1862, in which period are included both the maximum of prevalence and the maximum of fatality of typhoid fever, there were 30,550 cases and 5171 deaths reported from an average strength of about 236,000 men or less than one-half of the 500,000 three-years' men then in the service. Among these cases are included those lighter febrile attacks which were recorded by the surgeons as simple or common continued fever, but which would now be regarded and reported as mild cases of typhoid fever. From the Surgeon-General of the Army we learn that up to September 30, 1898, there were reported 12,125 cases of typhoid fever, 640 of which were fatal, among commands aggregating about 167,000 men, or somewhat over 60 per cent. of the troops in service. Now if we calculate the number of cases and deaths which would have occurred in 167,000 men in five months if the rates of 1861-62 had prevailed in 1898, we would find that instead of having 12,125 cases, we would have had only 8308, and that instead of having only 640 deaths we would have had 1402 deaths. From this

¹ *Medicine*, 1897 and 1898.

we find that during the recent experience of our armies the prevalence of typhoid fever was greater by one-third and the deaths less by 55 per cent. than during the Civil War.

The fatality of typhoid fever, including the common continued cases aforesaid, during the first thirteen months of the Civil War was 1 in 6 cases or about 17 per cent. The fatality of the typhoid fever in our military camps and hospitals during the present year was 1 in 19 cases or a little over 5 per cent. This is certainly a most remarkable rate for typhoid fever, especially when consideration is given to the want of suitable medicines, food, nurses and shelter which, according to newspaper reports, characterized the service of the military hospitals—regimental, division and general. This low mortality rate is in itself sufficient to throw doubt upon all the general charges of neglect of the sick soldier and inadequate provision for his treatment. It is indeed so low as to leave a broad margin of doubt to overlap the reported cases and to suggest the inquiry whether every case reported as typhoid was in reality a case of that grave disease. We know that during epidemics of yellow fever, cases of remittent fever frequently increase the number of those reported as smitten by the prevailing disease. Something analogous may have taken place during the recent excitement concerning camp typhoid.

Our military brethren have learned much recently regarding the propagation of typhoid fever in the camps of newly raised troops. They have demonstrated the importance of strict discipline and military sanitation in the preservation of the strength of their commands. The typhoid epidemic of August last has been checked by radical measures involving the reorganization of practically all the troops in the service; but as the susceptibility of these troops to the typhoid infection has not been exhausted, the task of preserving them from such losses as were incurred during the Civil War yet remains before the Medical Department of the Army. Many months will have to elapse before we can gauge accurately the result of their efforts to protect the men from the infection of camp typhoid.

TIME AND MANNER OF THE ADMINISTRATION OF DRUGS.

Search for the causation of disease has so engrossed the attention of the medical profession that but little time is devoted to the proper manner of the restoration of the equilibrium to the normal. Surely to properly diagnose a case is not all of a physician's duty, for then the patient may die. What the patient desires most is to get well as quickly as possible. Those who practice irregular medicine have not been slow in learning this prejudice of the people, and have turned it into a financial gain to themselves.

Good-tasting medicine is a great catchpenny to homeopaths, for if it does no good it pleases the

parents and thereby diverts money from the hands of physicians to the pockets of the irregulars. This practice is common and is most appreciated by those physicians who live in cities. How often do we hear it said that the reason so-and-so were "converted" was because they did not like to take the bad-tasting medicine of the "old-school" doctors. Those who carry out this line of thought logically and naturally think: If the weak or good-tasting medicine of the homeopaths cures as many people as the other, then why take any medicine at all? And from these premises it would not be far to believe the tenets of Christian scientists, because, forsooth, it is a matter of faith anyway.

An art that is yet to be learned is the time for the administration of drugs. What good will it do a patient to give a highly nutritive diet, if asafetida, cod-liver oil, guaiac or quinin is to be given immediately before meals? What good will a saline purgative do when given immediately after a meal? If the patient is awakened during the night to take nourishment and medicine at the same time, what good will he derive from either? Our sense of taste and smell must at least serve some purpose, for our appetite craves for that which is good. In disease, the appetite is held in abeyance, perverted and most uncertain. Drugs do not furnish nourishment; they simply act upon the force generated by the nourishment taken. Then why destroy this force? There then must be a proper time, and there must be a proper manner of giving medicine.

Elegance in pharmacy should be encouraged. The art of prescription-writing should be learned. In this respect we should copy after the French, who are noted for their elegance in pharmacy. Gelatin capsules serve a most valuable purpose to the regular physician; for unpalatable drugs may thus be taken without being tasted.—Compressed triturates should be received with great joy, for they demonstrate the energy and enterprise of the "old school" doctors. All drugs, however, can not be put in tablet form. Some drugs are volatile and others hygroscopic; therefore solutions must always have a place. The art of disguising the taste of unpalatable drugs so that the patient can or *will* take them is one not easily acquired by the profession, because it is largely governed by manufacturers of patent medicines. With the child, a solution of magnesium sulphate or an emulsion of castor oil causes disobedience, and frequently the mother will not give them. Some children will vomit when given too sweet drugs, while the adult loses his appetite. Half an ounce of myrrh to a four-ounce mixture is usually sufficient.

Alcoholic extracts, such as cannabis indica, cubebs, or eucalyptus, precipitate on the addition of water, and therefore should be given in capsules. Solutions of quinin, bromids, and prescriptions containing fluid extracts may be rendered palatable by the addition of

a syrup containing aromatics, such as the elixir curacao of the National Formulary. Oleorins are unsavory and frequently render a patient most rebellious. The taste of copaiba, cubebs and sandalwood remains in the mouth for hours. There is a little art required in dispensing these substances in gelatin capsules, as follows: Place the oil in the capsule by means of a pipette and seal with an alcoholic-ethereal solution of balsam of tolu. Rochelle or epsom salts are very soluble and should be dissolved in a small quantity of water and taken, and subsequently a large amount of water given if desired. Guaiac has come down to us from former times as a valuable remedy in rheumatism, gout, lithemia, etc., but there are few textbooks which tell of its proper administration. Here again the manufacturers of patent medicines pervert legitimate pharmacy from its proper channels, because it is easier to give something else than to combine the guaiac in lozenge form by means of the confection of rose and flavored with oil of lemon and cloves. In cod liver oil we have one of the best known tonics, yet how often do we find that it can not be borne by the patient. To disguise its taste and render it palatable frequently baffles the physician, so that if one of the proprietary emulsions is not used the remedy may be abandoned. Cod liver oil that has become rancid can never be disguised, and will in nearly every case disturb the stomach, so its character should always be under the surveillance of the attending physician. In most cases an emulsion that is borne well can be prepared by taking the yolks of three eggs, triturating in a mortar for *at least* fifteen minutes, and then adding the oil teaspoonful by teaspoonful until the whole has been incorporated. The yolks of three eggs will suffice for a quart of finished emulsion. Probably the best ingredient to disguise its taste is bitter almond water, usually an ounce being required for a quart of emulsion.

While these few remedies are not all that might receive attention, it is hoped that a few hints may be thrown out which will benefit the general practitioner and keep legitimate pharmacy within proper bounds.

THE DANGER OF CHLOROFORM ANESTHESIA IN OPERATIONS UPON THE THROAT.

It has become the habit of many surgeons, even among those opposed to the drug, to administer chloroform in operations upon children requiring an anesthetic. The ease of administration, the quickness with which the child becomes unconscious, the small quantity of chloroform necessary to procure unconsciousness, the rapidity with which they emerge from under the influence of the drug, the inconsequent after-effect, have all held us to this view. Of the surgeons who have made diseases of the throat their chief study, many no doubt have been worried not infrequently over the dangerous symptoms developed by the child during the administration of chloroform,

even if they have not been so unfortunate as to have had a fatal accident. Especially have these alarming symptoms been noted in children afflicted with enlarged tonsils or adenoid vegetations in the vault of the pharynx. The writer has given chloroform to a fair number of children suffering with adenoids, but never without great anxiety and with more than usual caution, so badly do these children act. Probably not one out of ten takes the anesthetic in a manner that might be called normal. The writer has noticed often at the very marked outset, pallor of the face and a rapidly progressing diminishing frequency of the pulse-rate, so much so, indeed, that it sometimes seems to the palpating finger that the heart is never to beat again; and this in spite of the fact that the chloroform is given drop by drop and very slowly. The pupils remain well contracted. If the anesthetic is continued serious symptoms usually develop; if discontinued, as the patient comes from under, the pulse gradually regains its normal rate and the pallor disappears. It may be that this same misfortune will again happen if the drug is readministered. Frequently the operator becomes desperate and, disregarding the old law of never beginning an operation when chloroform is the anesthetic, before the patient is completely under, proceeds with curettement, adding to the danger of the child.

HINKEL, in the *New York Medical Journal* for October 29, reports a death after the operation for adenoids with chloroform as the anesthetic, and has collected from the literature seventeen more cases during the past five years. His case was an anemic boy of six years with a lymphatic constitution. The anesthetic had been given by a skilled man, one who had had experience in just this class of cases and was consequently more than usually careful. The operation had been successfully terminated, "when suddenly the boy gave a few hurried shallow gasps and respiration ceased. The pulse had disappeared and no cardiac impulse could be felt or heard; the pupils were dilated." Everything was done that could be done to restore the heart and respiration, but without success.

The discovery of eighteen authentic fatalities (and who knows how many other deaths have occurred from the same cause, not reported?) is a most valuable contribution to laryngology; showing, as it does, that the administration of chloroform to this class of cases is dangerous and should be entered into with the greatest care and with all appliances for restoration close at hand. Two of the eighteen died before the operation commenced; this, combined with the fact above mentioned, that most of the patients take the drug badly from the start, would seem to lead to the belief that there is some condition of the constitution that makes it intolerant of chloroform vapor even in small doses. HINKEL, who has looked up the literature of the subject very closely, makes the following

statement compiled from the writings of KOLISKO, PALTAUF, and others: "It has been found postmortem in a number of cases of sudden death from slight causes that there was present hypertrophy of the lymphoid tissue throughout the body, including the tonsils, the lymphoid structure at the root of the tongue and the nasopharyngeal adenoids for which we so frequently operate. The thymus gland was persistent and often very large, and the intestinal follicles were markedly hypertrophied. In addition there were frequently present a dilated heart not dependent on valvular lesions, and at times a narrowing of the aorta with small size of the peripheral vessels. This condition, which has been called *habitus lymphaticus*, was found among others in a number of cases of death during chloroform administration. People so constituted seem to have little power of resistance to comparatively slight shocks. Nevertheless they may be of robust physique, though usually there are evidences of developmental retardation." All throat specialists are familiar with this very common patient. In addition to the adenoids, there is usually hypertrophy of the faucial tonsil; the glands of the neck are readily palpable; the complexion, though usually exquisite, may be marred by excoriations around the nostrils, the result of chronic nasal discharge; there is frequently an eczematous eruption behind the ears; blepharitis marginalis is by no means uncommon.

Another point of considerable importance has been worked out by HINKEL: that during the last five years, the period covered by his eighteen cases of chloroform death, but six deaths have occurred from the operation itself, and all these as a result of hemorrhage, usually secondary, almost always in patients the subjects of hemophilia.

The practical lesson we must learn from this careful study is that patients of the so-called lymphatic temperament should not as a rule be anesthetized with chloroform for any operation; and that in operations upon the throat this rule becomes imperative.

THE STRUGGLE FOR EXISTENCE BETWEEN THE HUMAN ORGANS.

One of the problems actively discussed in biology is the origin of the atrophies and hypertrophies which mark both evolution and its reverse phase, degeneracy. The fact was early recognized by biologists that man is a compound animal in whom certain structures are endowed with their own nervous system, which is under control of the central nervous system. As has been pointed out by E. S. TALBOT ("Degeneracy: Its Scope, Causes and Effects"), every vertebrate is an aggregate whose internal actions are adapted to counterbalance its external actions. Hence preservation of its movable equilibrium depends upon its development and the proper number of these actions. The movable equilibrium may be ruined when one of these actions is too great or too small, and through

deficiency or need of some organic or inorganic cause in its surroundings. Every individual can adapt itself to these changeable influences in two ways: either directly, or by producing new individuals who will take the place of those in whom the equilibrium has been destroyed. Therefore, there exist forces preservative and destructive of the race. Since it is impossible that these two varieties of force should counterbalance each other, it is necessary that the equilibrium should re-establish itself in an orderly way. As there are two preservative forces of every animal group—the impulse of every individual to self-preservation and the impulse to the production of other individuals—these faculties must vary in an inverse ratio; the former must diminish when the second augments. Degeneration constitutes a process of disintegration. Hence if the term "individuation" be applied to all the processes which complete and sustain the life of the individual and that of generation, to those which aid the formation and development of new individuals, individuation and generation are necessarily antagonistic, as HERBERT SPENCER has shown.

Vertebrate embryos, which are all of a common type at their origin, assume, as VON BAER has demonstrated successively, a number of common forms before definitely differentiating. Supernumerary organs exist, as DARESTE points out, in these common forms at one phase of embryonic life. This community of embryonic types and this last fact, explains repetition of teratologic types in vertebrates. This community of origin, moreover, indicates that the higher vertebrate embryo contains in essence the organs and potentialities of all the lower vertebrates, and that, under the influence of heredity or accidental defect, an organ or structure or function constant in a species may be lacking in an individual without the necessity of explaining the immediate effects by distant atavism.

Varying conditions must stimulate these embryologic potentialities at the expense of the later acquired and more typical human organs. The COHNHEIM theory of cancer, for example, is an illustration of the application of this principle. From this results a struggle for existence on the part of organs and structures which, early observed by ARISTOTLE, GOETHE and ST. HILAIRE, was forcibly shown by ROUX two decades ago. ROUX ("Der Kampf der Theile in Organismus"), while also admitting determination by heredity, points out that there are surrounding forces always necessary, not simply the condition of activity by an essential element of the final product. He thus harmonizes the extremes of WEISSMANN and GOETHE by the fact of an internal or physiologic struggle for existence between the organs, the cells and the protoplasmic molecules of the organism. This unsimilarity of parts makes it impossible to establish laws of heredity which shall govern details of function as to the last cell or molecule, as in any army, the commander-in-chief does not give special orders beforehand affecting every

private in the ranks. There must be a possibility of adaptation to surroundings, especially in details which, too, are more easily changed than events on a larger scale.

How is this freedom of organs and of adaptation obtained? The principle that lies back of all development of tissues and organs is over-compensation of what is used, a quality which permits self-regulation and is really a necessary pre-condition of life. Living matter, unlike inorganic matter, presents an external continuity in spite of change of conditions. To effect this, assimilation must always be in excess (over-compensation) for if less than consumption, the organism comes to an end of itself. If equal conditions result, change and nourishment will fail or injurious events will cause destruction. Continuance can only be assured when more is assimilated than is consumed. Fire, for example, assimilates more than it uses, i.e., it always has energy left over to kindle new material. Fire would (like life) become eternal if it did not use up material quicker than other processes can make them. In the same way organisms assimilate more than they can consume, but they do not turn all they use to assimilation; energy remains over by which the process performs something. This work-product controls the excessive assimilation which otherwise would come to an end by not having sufficient material to assimilate. The more complex processes of life are, hence, essentially, as COLIN A. SCOTT remarks (*American Psychological Journal*, 1888), a radiation of assimilation which, although not identical with combustion, is similar to it; the load which it carries favoring its continuity. This radiation, load or work-product becomes directed by natural selection to keep up a supply of food primarily by moving the assimilating mass. Performance of function over and above assimilation is just as much a condition of continuous assimilation as assimilation is of performance. On the other hand, there comes to be an inverse relationship between growth and production (within limits), and capacities result which, although they use up material, do not in themselves increase assimilation. The course of development consists in properly directing this work-product. This so far represents merely a continuous productibility of function in connection with assimilation. But a productibility which is stored up and discharged by an outer stimulus of environment will be much more economic and will give rise to what we find as reflex excitability. When this reflex work-product dominates, according to circumstances, function will sometimes be greater and sometimes less. If, under these conditions, assimilation keeps on continuously, there must sometimes be an overplus, sometimes a balance and sometimes an excessive function, death, and thus elimination. To avoid this last, it is necessary that assimilation should depend upon use or upon a stimulus which use calls forth.

From the psychic side stimulus is recognized as hunger.

This kind of process, where stimulus is an indispensable factor, is more special and limited than the more general process of assimilation plus movement, etc., but has characteristics which favor it greatly in the struggle for existence. Connected with the most complete self-regulation of functioning is the greatest saving of material. While those parts, according to their use, are strengthened and grow, the unused degenerate, and the material for their substance is saved. This kind of process unites the greatest economy with the highest functioning of the whole, but at the cost of the independence of the parts. Senescence becomes thus a result in differentiation in which the parts exist merely on account of the function which they perform for the whole. The senescing organs wither up like State officials after pensioning, and may even descend in this condition from generation to generation, a fact which often allows a fresh start in development. During the course of a lifetime the organism moves from a more general, more easily impressible condition to one more perfectly mechanized. Through a long period it becomes, through the continuous working of a given stimulus, more completely adapted to itself and also more differentiated, and thereby more stable, so that an always increasing opposition is formed to the additional development of new forms and characteristics. This principle, known as the law of economy of growth, governs the relations of the organs to each other, the operation of the principle whereby one structure is sacrificed for the development of another. This, as already stated, was pointed out first by ARISTOTLE, as OSBORN has shown ("From the Greeks to Darwin"). GOETHE first clearly enunciated it in 1807, and it was urged with additional emphasis by ST. HILAIRE in 1818. In a general way, therefore, as DOHRN has shown, this principle holds good of man not only as an organic unit, but as a compound organism.

Degeneracy, according to RAY LANKESTER, is a gradual change of structures by which the organism becomes adapted to less varied and less complex conditions of life. The opposite progressive process of elaboration is a gradual change of structure by which the organism becomes adapted to more varied and complex conditions of existence. In elaboration, there is a new expression of form corresponding to new perfection of work in the animal machine. In degeneracy, there is a suppression of form corresponding to the cessation of work. Elaboration of some one organ may be a necessary accompaniment of degeneracy in all the others. This is very generally the case. Only when the total result of the elaboration of some organs and the degeneracy of others, is such as to leave the whole mass in a lower condition, that is fitted to less complex action and reaction in regard

to its surroundings than is the type, can the individual be regarded as an instance of degeneracy. These degeneracies appear at varying periods, since struggles for existence on the part of the different organs and systems of the body are most ardent during periods of body evolution and involution. During fetal life, during the first dentition, during the second dentition (often as late as the thirteenth year), during puberty and adolescence (14 to 25 years), during the climacteric (40 to 60 years), when uterine involution occurs in woman and prostate involution to man, and finally, during senility (60 years and upward), during all these periods degeneracy may be shown by mental or physical defect, a congenital tendency to which has remained dormant until the period of stress. These defects may be such biochemic alterations (undemonstrable by existing methods) as lead to diminished inhibitory power or other altered function or to secondary pathologic or teratologic change of decidedly demonstrable nature. Organs and structures checked at a certain phase of development may pursue a course of development differing from that indicated in man, but further outlined in other vertebrates.

Are the results of this contest for existence always malign? According to the accepted principle of natural selection this should not be so, since the struggle creates variations of value or not according to the environment.

As HARRIET ALEXANDER points out (*Medicine*, 1896), since degeneracy is a process of evolution, leading to alteration of form because of cessation of inhibitions in certain directions resultant on diminished work, it logically follows that since diminished functioning precedes change of structure, increased functioning must check the change of structure in its biochemic stage. Nay, more, it is evident that the structural elaboration due to degeneracy may be retained while the degenerate structures resume their higher functions. Hence the degenerate race ranks higher in evolution because of the utilization of the beneficial variations due to degeneracy. The influence of this principle is increased by the fact that the majority of the children of degenerates inherit a tendency to degeneracy rather than degeneracy itself. This is also the view of HUXLEY, who expresses the opinion that genius is innate capacity of any kind above the average mental level. From a biologic point of view a genius among men stands in the same position as a "sport" among animals and plants, and is a product of that variability which is the postulate of selection, both natural and artificial. On the general ground that a strong and, therefore, markedly abnormal variety is, *ipse facto*, not likely to be so well in harmony with existing conditions as the normal standard (which has been brought to what it is largely by the operation of those conditions), a large proportion of "genius sports" are likely to come to grief physically and socially, and the intensity of feeling which is one

of the conditions of genius, is especially liable to run into insanity. This position of HUXLEY contains the principle which has become of late years so dominant in researches as to the origin of genius. In newspaper science, the theory of the degeneracy origin of genius is credited to NORDAU's investigations. This newspaper claim for NORDAU (repudiated by himself) is supported even by medical journalists. The editor of the *Medical Record* gives the following rather emphatic endorsement of the newspaper theory as to genius:

"MAX NORDAU'S startling theory that genius is only a form of degeneracy, although not accepted in its entirety, is yet regarded by many as worthy of some consideration." With all his newspaper medical lore, or perhaps because of it, the editor of the *Record* exhibits an astonishing forgetfulness as to the origin and antiquity of the theory of genius being a degeneracy.

This theory is a very old favorite with mediocre intellects. As KIERNAN has shown (*Alienist and Neurologist*, 1892), this doctrine, early in the history of the race, obtained dominance through a natural evolution of arts, sciences and religions from fetichism. Phenomena manifested by fetich priests (of the SHAMAN type) so closely resembled epileptic insanity in its frenzies and visions, that the two states were long regarded as identical, whence the term *morbus sacer*. The supernatural influences, which in current belief underlie epilepsy, were at the outset malign or benign as they were offended or placated. They became benign, and the insane were under special protection of a deity, as in Mussulman countries. Later still, the demon possessions theory gained dominance and at length the demon sank into the disease. Throughout all this evolution the belief in an inherent affinity between insanity and genius persisted. In ARISTOTLE'S day the disease notion was becoming dominant, yet he says that under the influence of head congestion persons sometimes become prophets, sybils, and poets. Thus, MARK, the Syracusan, was a pretty fair poet during a maniac attack, but could not compose when sane. Men illustrious in poetry, arts and statesmanship are often insane like AJAX or misanthropic like BELLEROPHON. Even in a recent epoch similar dispositions are evident in PLATO, SOCRATES, EMPEDOCLES and many others; above all, the poets. According to PLATO "Delirium is by no means evil, but when it comes by gift of the gods a very great credit. In delirium the sybils of DELPHI and DODONA were of great service to Greece, but when of cold blood were of little or no value. Frequently, when the gods afflicted men with epidemics, a sacred delirium inspired some men with a remedy for these. The muses excite some souls to delirium, to glory with poetry heroes, or to instruct future generations."

DEMOCRITUS, whose biologic [researches are well-

known, was also of opinion that genius was associated with insanity when manifested in poetry. HORACE compressed the sentiment of his day, as to genius, into lines later paraphrased by DRYDEN:

Great wit to madness nearly is allied,
And thin partitions do their bounds divide.

This Horatian doctrine long had wide-spread vogue among Philistinish mediocrities (from envy of any superiority) and among morally defective geniuses from a desire to excuse faults and vices.

The superficial resemblances which the misnomer of mediocrity found to exist between the emotional enthusiasm of the intellectual stir of the poet and the opposite state of hypomaniac emotional exaltation, as well as that seeming to exist between the rapid finely graded logic of the sage and disjointed saltatorial reasoning of the paranoiac, may have helped to fix more strongly the doctrine on the minds of these who accepted it. SENECA expresses the opinion that no genius exists without an admixture of madness. MONTAIGNE and BURTON (the "Anatomy of Melancholy") advance similar views. SWIFT seriously makes, with grim irony ("Tale of a Tub," dissertation on madness), the proposal that the world shall choose its geniuses from Bedlam. PASCAL accepts HORACE'S view anent the kinship of genius and insanity. According to FELIX PLATER ("Observations in Hom. Affect., 1641), madness and genius are very near, an opinion which was later reiterated by DIDEROT ("Dictionnaire Encyclopedique"). In the late eighteenth and early nineteenth century a certain amount of reaction occurred against the doctrine. TISSOT, the great psychologist, one of the earliest writers to point out the effect of the psychio disturbances from fear and shock in the production of *delirium acutum nervosum*, as the older surgeons called post-operative insanity, wrote a work ("Maladies des Hommes de Lettres," 1796) intended to prove that most of the afflictions of literary genius were occupation disorders, not inherited degeneracies.

With the impetus given the evolution doctrine during the first half of the nineteenth century, the degeneracy phase of genius was again strongly urged. Mr. MADDEN began the work "Infirmities of Genius" (1833) later supplemented by the magnificent epoch-making treatise of MOREAU DE TOURS, "La Psychologic Morbide" (1859) on the subject. In many respects this work, considered from the standpoint of logical analysis and arrangement of facts, surpasses most later treatises on the subject. It certainly compares favorably with MAUDSLEY'S vaticinations on genius, with the researches of J. A. SCHILLING (*Psychiatrisches Briefe*, 1863), with the work of HAGEN ("Verwandschaft des Genie mit dem Irsinn," 1877), with JURGEN-MEYERS' researches (*Zeitschrift f. Tolker-Psychologie*, 1879), with LOMBROSO'S work ("L'Uomo de Genie," 1883), with that of RADE-

STOCK ("Genie und Wahnsinn," 1884), with that of TEBALDI (*Ragione e Pazzia*, 1884), with the researches of TARNOWSKI and TCHUKINOV, who translated into Russian, with additions, LOMBROSO'S work in 1885, and with the work of NISBET ("Insanity of Genius," 1892). NORDAU, as he admits, merely popularized pessimistically the views LOMBROSO expanded from MOREAU DE TOURS, who had a quarter of a century previously characterized genius as a neurosis. According to LOMBROSO it is a degenerative epileptoid neurosis.

Notwithstanding the *Medical Record's* learned opinion, the degeneracy theory of genius has not as yet reached that stage where it fulfills scientific requirements, since it not only does not as yet explain all the facts, but it fails to exclude all other explanations.

However, not even those who, like KIERNAN, claim that where neuropathy and genius coexist (*Alienist and Neurologist*, 1887) the genius is an expression of healthy atavism, will deny that the struggle for existence between organs and structures, already outlined, may produce variations which, when the organism secures the balance between its warring structures, must elevate the race in the scale of evolution. The principle thus enunciated lights up, as HARRIET ALEXANDER remarks, the gloom of the ordinary pessimistic view of degeneracy with a well-defined hope that the functionally defective neurons of the degenerate may be trained

Till within
The twilight mazes of his brain
(Like embryos within the womb)
Thought pushes feelers through the gloom.

It also points out optimistic possibilities of that future when man shall have learned to adjust the struggle for existence between his structures for the greatest benefit of the organism as a whole.

CORRESPONDENCE.

The Commission Evil.

NEW YORK, Nov. 14, 1898.

To the Editor:—In the JOURNAL of Nov. 13, 1898, I find an editorial under the caption of "The Commission Evil" which reads almost like a slander upon the profession, and which leads me to ask if the editor actually has knowledge of specific instances in which a commission or rebate has been paid by the general practitioner to the specialist?

My own work is almost wholly with physicians, and among the hundreds with whom I come in contact not one has ever intimated that he would like to have a commission or rebate. Sometimes when I have done work for a poor patient whose friends have collected a small fee for me and none at all for the family physician, who has much work to do for the patient, I have insisted that the physician should take a part of the fee, and even in such cases have usually found him unwilling to take any part thereof. Possibly the report that specialists claim commissions has come from some one who feared that he was not getting his share of work because he did not give commissions, but the acquaintances of such a man could probably in-

form him of the real reason why he had failed to engage the confidence of physicians. Not long ago a truss-maker offered a 10 per cent. commission on all cases referred to him, and all my cases for trusses have since then been directed to go elsewhere. Every responsible physician knows how patients trust him and he selects with great care the specialist who is to do work for any of his clientele. He must be instinctively repelled by the idea of receiving a commission for doing the right thing by a patient who has put confidence in him.

Physicians in my circle of acquaintance present two well-marked attitudes. In one class the physician persuades me to do work for small fees, hoping thereby to gain personal prestige with the patient. In the other class the physician says, "I want to be fair to you and to my patient. My patient can not pay you \$5000 for his operation without depriving himself a good deal, but he can pay you \$2500. A third class in which the physician asks for or would accept a commission is not met with in my practice at all, and I believe that my practice is representative, and that other surgeons who are held to be responsible men will give precisely the same testimony.

ROBERT T. MORRIS, M.D.

"A Physiologic Question of Practical Importance."

OWATONNA, MINN., Nov. 18, 1898.

To the Editor:—I was interested in your editorial in the JOURNAL of November 12, under the above caption, but wish to correct an erroneous impression you have conveyed to your readers in it.

The fact is, that the official investigation in the Tryon case showed that the Admiral was so thoroughly under the influence of alcoholic intoxicants as to render him incompetent for the performance of almost any intelligent function.

There is but little doubt that many of the cases to which you refer originate in the same manner, though perhaps not from this identical cause. It is well known that there are various drugs which produce such results, and there is but little doubt that the excessive use of tea, coffee and tobacco may be responsible. However, the fact still remains that we often do have the phenomena to which you refer resulting from a perversion of some one or more of the cerebral or nervous functions. I think the trouble is fully as likely to be in some of the special senses as anywhere, though doubtless it is often located in some of the higher cerebral centers which connect us with our environment. It is certainly a fascinating study, though one in which the omnipresent microbe may for once probably be eliminated, and one which should yield profitable results to him who follows it.

Very truly yours,

THEO. L. HATCH, M.D.

Vital Statistics of the War.

CAMDEN, N. J., Nov. 16, 1898.

To the Editor:—Dr. Charles Smart of the U. S. A., in a letter directed to you, of the date of October 22, complains of an editorial which appeared in the *Philadelphia Medical Journal* relative to the mortality in the Spanish war, and causes of the mortality.

What he says is all very well for the most part; but will he explain why so many soldiers not exposed to the hardships of war, but quartered in a country rich and resourceful in every way, died of disease. When we consider that these same soldiers had all undergone strict physical examination and been pronounced of excellent resisting power, the mortality among them seems to indicate gross incapacity somewhere.

Suppose that during the Civil War proportionately as large a number of soldiers had been isolated from the scene of actual warfare and that the same percentage of deaths had occurred among them, would not the mortality have seemed frightful?

Respectfully yours,

J. F. WALSH, M.D.

PUBLIC HEALTH.

The National Quarantine Convention at Memphis. Pursuant to call, the National quarantine convention assembled in Germania Hall, Memphis, Tenn., November 17. Chairman J. S. Menken of the committee on organization called the meeting to order. After addresses of welcome by Mayor J. J. Williams and Mr. Menken, Gen. Luke E. Wright was unanimously chosen as permanent chairman. He spoke of the objects of the convention and the benefit to be derived from National control of quarantine matters. The organization was completed by the election of Mr. Phil. A. Rusk of Senatobia, Miss., as secretary, and Mr. Fred Orgill of Memphis as assistant secretary. The balance of the morning session was consumed in the discussion regarding the equitable representation of the States and in the completion of the different committees. The afternoon session was devoted to the reading of various resolutions presented for consideration. By order they were respectively referred to the committee on resolutions without debate.

At the evening session the first paper was by Dr. John B. Hamilton of Chicago. He prefaced his remarks by stating that it was fortunate for this convention to be held in Memphis, because it was twenty years ago in the throes of agony from a fever epidemic, while it was, on account of its present excellent sanitary conditions, free from this and other diseases and therefore an object lesson to show the results of applied sanitary science.

He passed the origin of yellow fever with the statement that it was exotic, a living organism, but whether vegetable or animal it mattered not. As the fever organism traveled only by the ordinary vehicles of conveyance, its spread could be stopped by stopping these vehicles, as was done during the Civil War by blockade. Its spread from Brownsville, Texas, was prevented during 1883, while without these precautions it spread greatly in Mexico. In the same year an epidemic of fever was prevented from spreading from Warrington to Pensacola, Fla., only two miles distant. Proper measures also prevented its spread from Decatur, Ala., in 1888. Mentioning other similar instances he said that whenever commerce had been bound and epidemics had spread since 1891 it was due to maladministration, in failure to apply rules of sanitary science.

In regard to panic and its prevention, the only way he knew of preventing panic was to teach the people that the death-rate from yellow fever had been greatly reduced; that tuberculosis annually destroyed one hundred times as many lives; and that typhoid fever had a higher and a greater death-rate than yellow fever. With proper sanitation and isolation of the first case, he said, there was little chance for it to spread in cities.

Today, more than at any previous period in the history of this country, America is in a position to press the matter of sanitation in cities not formerly under our control, from which have emanated, for the last two centuries, a steady stream of death dealing microbes. The duty of the government is clear, that, at whatever cost, the foul plague spot which the providence of God has placed in our hands, shall be made clean and healthful. These beautiful isles of the sea, so favorably situated by nature, should be purged of contamination.

Already we see the admirable result of the cleansing of Santiago, and in that city, for the last seventy days, there has not been a single case of yellow fever, a condition which that city has not been able to report for a hundred years, so far as known. Our sister republic of Mexico, which now has an excellent national board of health, has, in view of the probable improvements about to take place in the islands of Cuba and Porto Rico, undertaken the sanitary regeneration of Vera Cruz, hitherto almost continuously infected with yellow fever for a period of over three hundred years. Shall we not take into consideration this bright outlook as to exemption from exotics, in discussing plans for the sanitary future of the United States?

I believe all have arrived at the conclusion that the present condition of things in this country is unsatisfactory, and that the situation has narrowed down to the presentation of two bills now pending in congress—one known as the Caffery Bill, and the other the Spooner Bill, which has been adopted by the AMERICAN MEDICAL ASSOCIATION and the American Public Health Association. The Caffery Bill, which has incorporated many of the features of the law of 1890, which was formerly superseded by the law of 1893, but in addition contains drastic clauses singularly inappropriate for the purposes of a free country, has been passed upon adversely by the sanitary bodies of this country, but its advo-

cates continue to contemptuously flaunt it in the faces and eyes of all of a public that wants none of it. The central idea of the Caffery Bill is force, power and control, not co-operation. Besides that it is the narrow one idea of quarantine, no great system of general hygiene is provided. On the other hand, contrast the broad, wise provisions of the Spooner Bill, framed after seven years of labor by professional committees of the American Medical and American Public Health Associations. The New York Board of Trade and Transportation, through a quarantine committee, spent many months by correspondence, by hearings and otherwise, in endeavoring to arrive at a conclusion in regard to this matter, and their recommendation is in favor of "legislation which shall organize in the United States a national system of coast and interstate disinfection."

"We use the word 'disinfection' as distinguished from 'quarantine,'" said Mr. Frank S. Gardiner, secretary of the board, when questioned, "because we are led to believe that with the adoption of a proper and general system of sanitation and disinfection throughout the country, guided and controlled by one general head in thorough harmony and sympathy with every local State board, every such board can be brought in touch and co-operation with every other local and State board, and what we have hitherto known as quarantine will practically disappear as being unnecessary, barbarous and obsolete."

The question before this convention is, will you recommend to congress the adoption of the AMERICAN MEDICAL ASSOCIATION Bill, providing for general sanitation, as well as quarantine, which provides for full co-operation with every State Board of Health, and through this full local representation with its executive officer elected by this representative council, or will you rather choose the Caffery Bill, devoted to the single subject of quarantine, more suitable for the empire of the czar or of the sultan than that of free America? I can foreshadow your choice.

Dr. S. D. Robbins, acting asst.-surgeon, M. H. S., Vicksburg, Miss., in the paper which he read, strongly advocated the annexation of Cuba as probably the best way to deal with the question. He thought the government ought to take charge of Cuba and thoroughly renovate the island.

Dr. F. M. Rogers read a paper in which he traced the history of the fever from early times on down to the present time, and he went far into the details of a correct diagnosis and treatment of the disease. He concluded by advocating national control of quarantine matters.

The convention then adjourned until 9 o'clock November 17.

The second day's session was commenced with the reading of the paper of Dr. H. B. Horlbeck.

I unhesitatingly and without doubt express the conviction that the national laws as to quarantine that may be enacted by the Congress of the United States should be placed for execution in the hands of a separate and distinct representative bureau of health, to be organized at the seat of government at Washington.

Laws and regulations and rules framed under this organization should have the hearty co-operation of the people of the different States.

The laws of health in all the communities of these United States are practically expected to be enforced under the guidance of the members of the medical profession of such places.

The matter of the delegation of the conduct of national sanitation, quarantine and hygiene has engaged the close attention of the medical fraternity for a number of years in the recent past, culminating about eight years since in a distinct and decided act by the AMERICAN MEDICAL ASSOCIATION of the United States.

The AMERICAN MEDICAL ASSOCIATION possesses a membership of nearly ten thousand medical men, a roll of membership characterized by aspirations of the noblest endeavors that actuate mankind, and fulfilled by untiring and unselfish devotion. The committee of the AMERICAN MEDICAL ASSOCIATION appointed by them for this purpose, has been carrying out the wishes of that body in using every possible effort to have Congress enact a law creating a commission for the protection of the general health of the United States. The American Public Health Association, comprised of the members whose daily occupation is the practical solving of questions of hygiene in their respective States and municipalities, has spoken with no uncertain method in confirming the action of the AMERICAN MEDICAL ASSOCIATION. Thus we have the largest distinct sanitary body in the world and the largest medical association (far outnumbering any other organization of a similar character) in this country, who have given serious thought to these vital and all-absorbing questions, in an overwhelming majority expressing their judgment that all matters pertaining

to the national issues of health should be placed in the control of a representative commission, who shall organize a working bureau or department of health—a bureau in which every State should be represented.

These matters have been before the country for many years—the present systems have been unsatisfactory in their results.

Year after year, not only yellow fever but other contagious or infectious diseases are spread abroad between and among our States. The Marine-Hospital Service should confine its work and labors to the welfare of the sick sailors or seamen of the merchant marine of the United States. It was never entertained when this service was organized that the internal or external quarantine should be placed under its control. Nor is it proper that it should remain there any longer than a proper representative bureau can be organized for the purpose.

It is my conviction that as far as is possible the care of the health interests of each municipality and State should be under their respective boards of health, and it is my further conviction that all interstate matters of health quarantine, sanitation and hygiene should be under the control of a national bureau organized as above indicated.

The powers now granted by the quarantine act of Congress, passed and approved Feb. 15, 1893, are today most full and sweeping. With a strong, well-equipped and vigorous administration they would seem entirely sufficient. This law gives to the President the fullest powers possible to be granted, and no other power, marine hospital or national board should have more. This law gives power to the Secretary of the Treasury (that is, practically, the Marine Hospital Service) to make additional rules and regulations beyond the rules and regulations of States and municipalities that may be necessary, and on the failure of these States and municipalities to execute the additional rules and regulations, to carry them out, to enforce them. Why should an additional law be enacted, giving supreme and arbitrary power to the Marine-Hospital Service to force any and every community to carry out their mandates as to certification of persons or merchandise, under penalty of the hated and degrading stripe and ruinous penalty? When dealing with the organized municipalities of the United States, education and not force should be the compelling power. Men resort to extreme measures of the shotgun under great pressure of concealed peril. An enlightened and able organization, showing capacity for protection, would cause the rude interference of the shotgun to vanish as the melting snowflake in the flowing river.

The opportunity presents itself to this convention, composed of enlightened citizens representing not only the legally constituted guardians of the public health, but also the representatives of the various interests of many communities and States, to place upon record their demand upon Congress that they should organize a national bureau of health—to whom not alone the matters of national quarantine (which at best is an arbitrary necessity, only to be used under extreme occasion) should be given, but to whom the immense and all pervading questions affecting every home and homestead in the land should be referred for instruction and assistance when required as to betterment.

Scarlet fever, diphtheria, typhoid fever and the great white plague, consumption, year by year and month by month and day by day claim their tens and hundreds of thousands of victims. Of many, we have mentioned these few preventable diseases, which would be looked on with horror except for their constant and daily presence.

The duty and province of a bureau of health would be to enlighten the nation in all its walks, among the mighty and among the lowly; to prevent these diseases; to spread information by widely-circulated publications of the dangers from improper food and drink and surroundings; to gather information from all progressive and enlightened foreign lands, and to verify and develop all possible knowledge and give it to the country; to organize a biologic laboratory, where the problems of the dangers to life and well-being and happiness may be studied and the results made known, to collect vital statistics; to learn what places are unhealthy, and to say why they are not suitable for human habitation; to keep disease out of the country, and when it passes the confines to hinder its progress.

What an example England gives us! Quarantine is hardly known, but enlightened sanitation is practiced. Disease is prevented.

There is not a home in these States that can not be bettered, however well appointed it may be, and knowledge and information should be continually furnished for the guidance of the people by weekly bulletins that should be widely distributed.

For these and many other duties a national bureau of health should be established and equipped and maintained.

When the great people of these United States shall be educated as to their own duties, and it shall be made plain to them that their very lives depend on the observance of proper rules for their guidance and protection, there will be no necessity for such coercive and drastic penalties as have been contemplated.

The bureau of health should have control of all interstate and national questions of health matters, and should be co-operative and always be ready to render assistance in information or material.

This convention, should it earnestly, with no uncertain cadence, give its support to such an organization as a national department of health, will not have been without avail in the eternal progress of our advancing civilization made possible under the benign and never-to-be dimmed Star of Bethlehem.

Dr. Saunders deprecated the idea of centralization of power as being contrary to the spirit of the institutions of this country. He advocated a broad system of public health, rooted in the people from whom its support should be drawn.

At the close of Dr. Saunders' address the report of the committee on resolutions was called for and presented by Chairman G. D. Shande, who prefaced the report by stating that it had been unanimously adopted by the committee, after mature reflection and deliberation. The written report was read as follows:

The committee on resolutions, after careful consideration of the many valuable resolutions offered by the various members of the convention, have decided upon the following as embodying the ideas expressed in the majority of the said resolutions:

Therefore, that for the purpose of protecting and improving the general health of the people of the United States, co-ordinating and harmonizing the action of the State and National sanitary authorities; framing regulations for the treatment of infected vessels and material at all infected or suspected foreign ports of shipment; preventing unnecessary interference with commerce, the United States, mail, or through traffic by land or water, and for adopting a uniform system of quarantine for all ports in this country; be it

Resolved, That there be established on a broad and comprehensive basis a National Bureau of Public Health in the Department of the Treasury of the United States, that the administration of all the public health functions now exercised by authority of the United States be placed in the hands of this Bureau.

2. That the sanitary authorities and commercial interests of the several States of the Union be brought into immediate relations with the Bureau and be given a due share in the power and responsibilities of the central board through the agency of an advisory council consisting of one member from each State, to be appointed by the authorities of the several States.

After the reading of the report its adoption was before the house for debate. Dr. Maury, of the Tennessee delegation, took the floor. As there was objection to the immediate passage of the resolution, an adjournment was taken until 3 P.M.

An executive committee was appointed, as follows, and they were instructed to use every effort to secure the passage of a law in accordance with the resolutions. The committee will themselves agree on a bill which meets the views of the Convention as thus expressed: Gen. Luke E. Wright of Tennessee, Dr. Ruhart of Maryland, Fred Orgill of Memphis, Dr. U. O. B. Wingate of Wisconsin, Dr. W. B. Horlbeck of South Carolina, W. H. Dwyer of New Orleans, J. T. Harahan of Illinois, and Dr. Samuel Durgin of Massachusetts.

At the opening of the afternoon session many amendments were offered, but were promptly voted down, and the original resolution was passed by an overwhelming majority. After the passage of the resolution and vote of thanks to the local committee, the convention adjourned.

The Plague in Russian Turkestan.—The public has been much alarmed at the few cases of plague in Vienna, but all danger seems to be over from this source. There is more to be feared, perhaps, from an epidemic of a disease supposed to be the plague, reported by the governor of Samarkand at the village of Kishlak, Ansord. The strictest measures were taken at once to prevent the spread of the disease; the chief of the Plague Bureau, Prince Alexander von Oldenburg, hastened to the spot; the village was disinfected, clothes burnt, etc., and a cordon of inhabitants of neighboring towns drawn around the place.

A New Institute of Hygiene.—The South Australian Institute of Hygiene and Bacteriology has been brought into active operation within the last two months. Its objects, among others, are to afford facilities for the study of bacteriology and hygiene, the encouragement of original research, the giving of lectures on sanitary subjects to sanitary inspectors, nurses and others. A very moderate scale of fees for bacteriologic examinations has been adopted. Dr. Borthwick, medical officer of health, Kensington and Norwood, has, we under-

stand, been very largely instrumental in founding the Institute, of which he is the honorary general secretary. We trust that the Institute will enjoy a successful and useful career.

Sanitary Operations at Santiago.—Gen. Wood is indefatigable, in sun and rain alike. The result of his labors is apparent in every branch of the service—civil and military. The patients are reaping the result in better attendance and improved food and cooking. People who have lived here a lifetime are unable to understand the extraordinarily low death-rate, averaging for October, up to date, ten a day. During the same period of last year the deaths averaged 183 a day. The 300 prisoners in Santiago prison will in future be made to work on building roads for the city. The rock will be hauled over the railroad from the Songo quarries. It will be delivered at the rate of forty cents a ton, and the railroad officials have offered to deliver 500 tons of rock free as their share of the work of improving the city.—*New York World*.

Typhoid Fever the Scourge of the Armies.—The lessons of some of our recent wars ought to be instructive to those who have the responsibility of placing a number of armed citizens in the field. Hitherto the lessons of war have been disregarded, though the teachings have been most emphatic. Disease kills more than the sword. This appears to be the inevitable course of wars. It was written in large letters in the Franco-Prussian War, and more fearfully still in the Crimean War. Since then in the Spanish-American War the ravages of yellow fever have been appalling, and now we learn that a telegram from Alexandria states that the men who have returned from the Nile continue to die like flies, from enteric fever, contracted possibly through the use of tinned beef, and certainly aggravated by immoderate indulgence in cheap, nasty spirits at fifteen-pence a bottle, the men having accumulated money in their pockets. The return states that every bed in the great hospital at Raseltin is occupied, besides which dozens of deaths occur weekly, and it is believed that ten per hundred of the British troops on the Nile are already affected. The disease is, moreover, following the troops into Crete. When tinned beef is fresh it is all right, but big tins rapidly spoil before the contents are consumed. The mortality during the whole campaign is probably less than the subsequent deaths from enteric fever.—*The Scalpel*, October.

Defective Hospital Arrangements in the Soudan.—The approaching home-coming of many hundred sick soldiers from the Soudan has revealed grave defects in the military hospital organization here. The fact is that at the present moment all these hospitals are already overcrowded, and the only way in which room can be made for the poor fellows now returning from the East is by driving out an equal number of men long before they are honestly cured. A few more weeks, or even days, of treatment would have saved such sufferers as future defenders of their country; but, as a matter of fact, the authorities, who expel still ailing men for want of room, satisfy their own consciences by labeling them invalids, and clearing them out of the service altogether. It is difficult to overestimate the number of soldiers England loses each year by this almost inhuman economy; and if the critics who have been lifting up their hands in holy horror at the shortcomings of our war surgery will now but look at home, they will find conditions—absolutely inadequate in a time of comparative peace—which would constitute the gravest scandal in a time of war. But the modern average Britisher, even the jingo, says in his heart, "There will be no war," and keeps his very hospitals on a scanty peace footing.—*The Outlook*.

The Seasons at Manila.—The seasons at Manila are described by the Spaniards as six months of mud, six months of dust and six months of everything. There is much confusion in the public mind just now as to the question of the health of

North American troops during a temporary sojourn in the Philippines, and also as to the larger question of possible acclimatization of our people in those islands, in case of permanent occupation. No definite answers can be given to these two questions, but in their consideration three things may well be borne in mind: 1. By means of strict observance of hygienic principles, the death-rate among foreigners in a tropic country can be very much reduced. This has been nowhere shown except in the case of the British troops in India and of the French troops in Cochin-China. 2. The great majority of the best authorities are agreed that complete acclimatization of Europeans—and hence, we may add, of North Americans—in the tropics is impossible. By exercising the greatest care, they may live in tropic countries, but, as has been well said by a recent writer, to tolerate a climate is one thing; to be independent of it is quite another. 3. The Anglo-Saxons are universally acknowledged to be the least fitted, the Mediterranean nations the best fitted, to colonize in the tropics.—*Science*.

Pulmonary Tuberculosis.—Otis (*Am. Jour. of the Med. Sci.*, November) believes it problematic whether we shall ever be able to cure any large number of these cases by antitubercle serum, "for when the disease is once thoroughly established the infection becomes a mixed one, and various other microorganisms are brought into play, and the whole system becomes involved." He considers prevention the most hopeful outlook—prevention by eliminating the bacillus and by establishing immunity to it through a normal standard of health. Properly conducted, compulsory registration of the sufferers need not work great hardship to the consumptives or their friends, but would be less necessary if physicians could be depended on to see that proper precautions were taken as to the disposal of the sputum and disinfection. Where preventive and disinfectant measures are difficult or impossible of execution, among the consumptive poor, especial hospitals should be provided. He gives the following instructions concerning the disinfection of a room that has been occupied by a consumptive: "Carpets, curtains and bedcoverings should be exposed to superheated steam under high pressure, or where facilities for this do not exist, they, with all stuffed furniture, should be thoroughly shaken and brushed, and exposed to the open air and sunlight for several hours. The floor and walls of the room should be rubbed with new bread, followed by the application of a 1 per cent. solution of chlorid of lime, or a corrosive sublimate solution (1 to 500); ceilings should be thoroughly dusted and white washed. Every corner wherever dust is likely to lodge should be carefully cleaned. The windows should be left open for twenty-four hours." Further, in dispensaries, etc., circulars with plain directions as to the avoidance of tuberculosis should be given each patient, and to the tuberculous ones, in addition, rules for disposing of the sputum.

Local Infiltration in Infections.—E. Centanni of Bologna announces, as the result of extensive study of the serotherapy of pneumonia (rabbits), that Behring's methods are ineffectual in this disease; the products are rarely active, and too uncertain to be depended upon when the disease is actively developing. But he found that he was able to extract from the cultures outside the body, harmless, rapid and concentrated vaccines which produced favorable results even when the disease was actively developing. He also found that this effect was due to the participation of the organism which they induced, and finally established the important fact that the organism possesses an extremely powerful immunizer in the local infiltration, which acts at the same time on the germs and on the products of their action on the tissues. Reabsorption of this infiltration or inoculation with the small amount of .5 to .2 centigram, confers upon the rabbit at one stroke, without any other preparation, a serum that arrests the pneumonic infec-

tion even at the moment of its highest activity, with a natural crisis. The action of the antipneumonia serum combined with the local infiltration proved so satisfactory that he extended his research to diphtheria. He found that while the infiltrate is powerless in this disease to prevent the action of the toxins upon the tissues, yet it succeeds in paralyzing the secondary products, and thus exerts its curative power at a period of the disease when the specific serum has ceased to be effective. He divides the infection into two stages: 1, the alterations produced in the tissues by the direct action of the germs or their toxins; 2, the products that are developed secondarily in the altered tissues. Immunity therefore must depend upon two factors: one to arrest the development of the primary germs and render their toxins harmless to the tissues, and another to promote the limitation and harmless reabsorption of the altered tissues at the local focus. The first immunizing factor is to be derived from cultures, either directly or by transformation, but the second factor is evolved by the elements of the body at the point of local reaction, and the moment to obtain it for use on others is when the infiltration is being absorbed into the circulation. The *Gazzeta d. Osp.*, xix, No. 103, contains the detailed report of his investigations.

A Decline in Birth-Rate.—At the Birmingham Congress of the British Sanitary Institute in September, Dr. Dawson Williams read a paper on the subject of "Decline in the Birth-rate of England and Wales," and said that when the census was taken in 1891 it was discovered that we had been making an overestimation of our population in England and Wales, and that, whereas the estimate expected an increase since 1881 of, in round numbers, three and three-quarter millions, yet the actual increase, as ascertained by enumeration, was only just over three millions. The growth of the population was determined by two factors—the balance between births and deaths, and the balance between immigration and emigration. The decline in our rate of growth has been due to a disturbance of both these balances. The births were 290,000 below expectation; emigration was 412,000 above expectations. The death-rate was lower, so that in fact, the natural increase on the balance of births and deaths ought to have been larger. He commented upon the diminished birth-rate, and ascribed it to a progressive decrease in the number of children born to married English and Welsh women, and thought this might be due to the fact that the average age at which women married was now somewhat later than formerly. It was a rather curious fact that the proportion of bachelors in a given number of males decreased steadily, not only during early adult life and maturity, but afterward also. The registrar-general concluded that "married life must in itself be more favorable to longevity than the condition of celibacy." Death or marriage appeared to be the alternative. The last census showed that both the urban and the rural population had increased, though not in the ratio expected; but the increase had been much less in the latter than in the former. In certain counties in which agriculture was the main industry, the rural population had actually declined. There were more infants born in towns than in the country in proportion to the population, but the infant mortality in towns was so much higher than in the country that the town excess of births failed to maintain an excess in proportion to the total population. The great improvements brought about by public health legislation had affected persons in adolescence and in early maturity. The decrease in the birth-rate would appear to be progressive, and by far the greater proportion of deaths in infancy were preventable.—*The Scalpel*, October.

Sanitation of an Oriental City.—The *New York Times* describes the radical measures adopted by the Japanese in Formosa, for the reclamation of a fifth saturated city. Japan has, in the Island of Formosa, a possession that duplicates, on a small

scale, many of the administrative, economic and political problems which Cuba presents to her would-be regenerators, American and native. In Formosa, as in Cuba, the centers of population have for centuries been breeding-places of pestilence, aggregations of people rather than cities, and unprovided with even the rudiments of a sanitary system. On assuming control of the island, the Japanese first turned their attention, naturally, to the remedying of conditions from which their own soldiers and officials were sure to suffer severely. This task, everywhere difficult, they seem to have found impossible of accomplishment in at least one instance, for they have just decided that it will be cheaper and easier to remove the inhabitants of Teukcham, an important seat of trade, to a new site than it would be to make the present one even moderately healthful. So they have ordered 40,000 people to prepare for immediate removal from the infected and swampy ground on which the town now stands, and to take up their residence on a hillside several miles away. Here streets have been laid out like, but better than, the old town, and to every property owner there has been assigned a plot of land corresponding in position and size with that which he formerly occupied. Sewers, railroads, sidewalks, public buildings, water-works and many other improvements have been provided at Government expense, and, with further assistance, which the people will receive, it is expected that within twelve months the transfer will have been effected with an amount of individual loss and hardship not worth considering in comparison with the benefits secured. A Formosan town is a very different thing from a Cuban city like Havana or Santiago, and what is practicable enough in the one case could hardly be attempted in the other, but there is none the less a valuable suggestion in this Japanese "short cut" to health and safety. Cuba has many good harbors, occupied now by only small and easily handled villages. By judicious selection among these it would not be impossible gradually to attract population, especially newcomers, and so start even with the microbes and bacteria.

SOCIETY NEWS.

Cincinnati Academy.—At the regular meeting of the Academy of Medicine, November 14, Dr. C. D. Palmer read a paper entitled "What is the Proper Field of Salpingo-oophorectomy?"

Society for Original Research.—At the regular meeting, held in Cincinnati, November 10, the program was: Two brain tumors, by Dr. F. W. Langdon; histologic specimens, by Drs. Freiberg and Rowe; "The Anatomic Basis of Neuralgia of the Temporal Bone," by Dr. Robert Sattler.

American Humane Society.—At a meeting of the Joint Committee on Vivisection of scientific societies of Washington, D. C., November 12, the following resolution was passed:

Resolved, That the Secretary be authorized to call the attention of the prominent medical and scientific journals of the country to the importance of the meeting of the American Humane Society to be held in this city in December proximo, and to request that editorial notice be taken of the danger that the influence likely to be exerted at that meeting may cause the Vivisection Bill now pending in the Senate to be called up and passed.

It is also requested that our readers write to their respective senators and representatives in regard to the matter.

Washington Medical Society.—At the meeting of the society held November 16, Dr. Shands presented skiagraphs illustrating the value of X-rays in the treatment of fractures of the long bones. He showed a number of cases of deformity from old fractures which he had subsequently cured by wiring. One skiagraph showed the entire pelvis and both legs. Dr. Carr reported a case of ruptured spleen. The case was that of a child 10 years of age, who had been kicked by a mule and brought to the Emergency Hospital for treatment. On the

second day he opened the abdomen, found a ruptured spleen, which he removed, the child making an uneventful recovery. Dr. Galzebrook presented a dentigerous cyst which he removed at an autopsy; the growth was about the size of a small apple and contained two well-formed teeth; he presented two kidneys, each of which showed an anomalous arterial supply, each having three renal arteries. The ureter entered the pelvis of the kidney by three or four openings in each specimen. He also presented a tubercular abscess of the lung with the abscess covered with hard, chalky deposit. The pleura was also studded with chalky deposits.

Washington Medical Association.—An adjourned meeting of the Medical Association of the District of Columbia was held November 15, to receive the report from the Standing Committee on Hospital Dispensary Regulation. The committee reported that the staffs of the following institutions had presented satisfactory proofs that they were enforcing the recent regulation of the association regulating the admission of free patients: Central Dispensary and Emergency Hospital, Dorothea Dix Dispensary, Eastern Dispensary, Woman's Dispensary, Children's Hospital, Columbian Hospital, Garfield Memorial Hospital, Lutheran Eye, Ear and Throat Dispensary South Washington Dispensary, Columbian and Georgetown University Hospitals. The committee said: "We find that the Dorothea Dix Dispensary has on its attending staff others than members of the association, but those who are members expressed their determination to comply with the regulations." In the opinion of the committee the system in vogue to a certain extent, in the Providence Hospital, by which the resident physician, who is not a member of the Association, but renders service to private patients in pay-rooms, is reprehensible, and calculated to deprive members of the attending staff and the profession at large of proper remuneration for their services. The committee was instructed to report the names of physicians connected with hospitals of the District who are not members of the association, and to recommend a plan for correcting the abuse cited in their report.

NECROLOGY.

PHILANDER VIRGIL BENSON, M.D., Baltimore, Md., November 10, aged 60 years.—**Herman A. Borger, M.D.**, Chicago, November 18, aged 38 years.—**C. J. Heckert, M.D.**, Harrisburg, Pa., November 13, aged 50 years.—**H. S. Howell, M.D.**, Kansas City, Mo., November 13, aged 40 years.—**James M. Smith, M.D.**, Cheswold, Del., November 12, aged 62 years.

JAMES D. MONCURE, M.D., superintendent of the Eastern State Hospital, died at Williamsburg, Va., November 9. The Doctor was born in 1842 and began his study of medicine in Heidelberg University, Germany, after being a student at Bernhardt, Austraeli, Meindirgen, Germany, and in College Rollin, Paris. After the Civil War he was graduated from the University of Maryland and, in 1884, was elected superintendent of the above asylum.

JOSEPH UNDERWOOD HALL, M.D., Jefferson, 1859, died at his home in San Jose, Cal., November 14, aged 85 years. He was a native of Kentucky, and during the Civil War had charge of the Union Hospital in Glasgow, Ky.

B. ABBOTT LINDSAY, M.D., College of Physicians and Surgeons, New York, 1881, died at his residence in New York City, November 13. He was born in Lancaster, N. H., forty-two years ago.

CHARLES C. EDWARDS, M.D., Jefferson, 1875, born in Gibson, Pa., seventy-three years ago, died at his home in Binghams, N. Y., November 16.

EMIL SCHOPEN, M.D., University of Berne, Switzerland, 1884, of Yonkers, N. Y., fell dead in his office November 17. He was well known for his feats in plastic surgery.

BARBOUR.—Dr. Philip Stanhope Barbour, for the past eight years the efficient superintendent of the Louisville City Hospital, died there on the 14th inst., after a lingering illness. He was born in Jefferson County, in September, 1847, of an old and honored family. At that time his parents resided eight miles from Louisville. He attended such schools as were in the neighborhood for several years, and later took a course at a college at Bedford, Ind. In 1867 he went to Philadelphia, where he attended the Jefferson Medical College. After receiving his diploma from this college he returned to Louisville and began the practice of his profession. He soon attained prominence and acquired a splendid practice. About twelve years ago his hard work began to tell on him and his physicians advised him to seek a colder and more settled climate. He then sought and secured a position under the United States Government as physician to the Indians at the Cheyenne Agency in Northern Dakota. After a brief stay at home in Louisville he found he would have to leave again, and secured the appointment as physician to the Kaw Indians in the Indian Territory, where he remained sixteen months. In 1890 Dr. Barbour returned to Louisville and soon after was appointed superintendent of the City Hospital, which place he has held ever since. Dr. Barbour married Miss Rebecca Tarlton in 1869; she and two children survive him: Mr. Philip D. Barbour and Mrs. Dr. Ellis Duncan. The Doctor made a great record as superintendent at the City Hospital. Many changes have taken place in the hospital during his incumbency, as when he first assumed charge the place was a disgrace to the city, the buildings reeking with vermin, without repair since they were used during the war as a military hospital. Suggestions from Dr. Barbour were largely the cause of the improvements which have taken place. He saw the building enlarged, thoroughly renovated, a new laundry building added, fire escapes erected, a change of system in the training-school for nurses, the installation of the ambulance service, the erection of a pathologic department and postmortem room and amphitheater, and the beautifying of the grounds. He has been able to work amicably with a number of changes in the mayoralty, under a board of charity commissioners and later under a board of safety. During the eight years that he had been connected with the hospital he took but three weeks' vacation, he was up early and late, and no one had more warm personal friends.

PRACTICAL NOTES.

(Continued from page 1306).

Chronic Suppurations of the Middle Ear.—E. Schmiegelow describes 96 cases he has operated and gives tabulated details, in the *Nordiskt Med. Arkiv*, 1898, No. 17. He has operated over 300 in all. In 23 cases the affection had lasted eleven to twenty years; in 17, from one to five years, and in one case between forty and fifty years. The mastoid apophysis was alone opened in 20 cases, with 55 per cent. cured; in the rest, the otitis was not arrested. The attic was opened in 14 cases; 7 were cured, 3 improved; 1 relapsed and in 2 the result is unknown. In 53 cases the entire middle ear was opened and 70 per cent. cured. In 7 cases the operation was not completed. In 9 cases there was improvement; 3 cases died—miliary tuberculosis, or meningitis. The transverse sinus was opened once. In 4 cases the operation was followed by traumatic facial paralysis. He states that the patient must be prepared for the tediousness of the after-treatment. In one of his cases it required a year and a half; in several six to nine months, but the average limit was two to four. In 58 cases nothing could be learned as to the etiology. In 10 it commenced as an acute suppuration after influenza. In 3 it was evidently a carious process due to the presence of adenoid vegetations. In 4 cases the suppuration was tuberculous. In 2

it was the result of whooping-cough, in 11 of scarlet fever, in 2 of measles, in 5 of trauma and in 1 case there was a carcinomatous growth. The hearing was unaltered after the complete operation in 8; more or less improved in 27.

Meta-Cresol-Anytol in Erysipelas.—Anytin, the new substance that renders insoluble substances soluble, was described in the *JOURNAL*, xxx, p. 887, and the promising results attained with it in combinations, especially meta-cresol-anytol, in diphtheritic and other bacterial processes. The *Deutsche Med. Woch.* of October 27 contains the report of extensive tests at Loeffler's Hyg. Institute, which show that painting the erysipelatous patch with it will check its development and arrest the infection. The results are so encouraging that further tests are now being made in other bacterial and parasitic affections.

Albuminuria in Malarial Fever.—Thayer presents an analysis of 758 cases of malarial fever occurring in the Johns Hopkins Hospital during eight years, in the *Am. Jour. of the Med. Sci.* for November. Albumin was present in 321 instances, i. e., 46.44 per cent., in the majority of the cases there being but a small trace of albumin. In 121 cases, or 17.5 per cent., casts of the urinary tubules were found. In the regularly intermittent fevers, tertian and quartan, the proportion of cases of albuminuria was 38.6 per cent., while in the estivo-autumnal infections, the majority of all cases—58.3 per cent.—showed albumin in the urine."

Bactericidal Properties of the Becquerel Rays.—Becquerel established that phosphorescent bodies, especially the salts of uranium, absorb the most refrangible and the ultra-violet rays, and emit rays that will pass through certain substances opaque to the sunlight. They will even pass through several substances opaque to the Roentgen ray and can be refracted and polarized. Pacinotti and Porcelli have been studying their bactericidal properties, using for the purpose freshly pulverized metallic uranium, exposed to the sunlight, and then kept at a temperature of 44 to 55 degrees C., without contact with the air. Various germs exposed to the action of the rays thus generated were all killed in the space of three to twenty-four hours, and the microscope showed alterations in their shape, indicating some chemic effect on the protoplasm (staphyl.; strept.; pyocyanus; proteus; germs of cholera, tuberculosis, diphtheria and typhus.). They also injected 5 cm. of a very virulent bouillon culture of the streptococcus under the skin of the ears of a rabbit, and exposed one ear to the action of the Becquerel rays, which prevented the evolution of any inflammation, while the non-exposed ear ran the usual course of a streptococcus invasion. The *Gazette degli Osp.* of September 25 observes that the "experience and skill of the investigators, the precision of their work and the innumerable control tests, render this announcement extremely interesting and encouraging."

Typic Osteomalacia in Children.—F. Siegert reports a personal case and adds three from literature, in which all the bones were macro- and microscopically affected with typic osteomalacia. Three were girls of 13, and the fourth a boy, dying at 18 years. All were of infantile habitus. The disease lasted three years in three cases, six in one. All had spontaneous fractures of the lower extremities, decrease in size, assisted by the curvature of the spine and limbs. In three cases there had been a slight, soon outgrown rachitis in early childhood. As phosphorus treatment is a direct specific for osteomalacia of the growing or developed skeleton, the importance of an early recognition of the affection is evident.—*Munich Med. Woch.*, November 1.

Nasal Discharge of Liquor Cerebrospinalis.—Körner has collected nine cases, one personal, in which there was a discharge of a clear aqueous fluid through the nose, about 15 c.c. an hour, with disturbances in walking and bilateral atrophy of the

optic nerve. The similarity of the cases inclines him to group them all as a special syndrome caused by a tumor of the glandula pituitaria breaking through into the sphenoidal sinus.—*Munich Med. Woch.*, October 25.

Cicatrization of Wounds of the Liver.—Cornil and Carnot report experimentation with dogs, from which they apply the conclusions to man that in case of a simple, not very extensive wound, the hemorrhage can be arrested after opening up the organ with laparotomy, by pouring 10 per cent. gelatin on it. If the wound is more extensive, the lips are brought together with a ligature in Glisson's capsule. A little fibrin or blood-clot between the two surfaces of the wound will not interfere with the cicatrization, but will provide nutritive material for the cells of connective tissue and endothelial cells of the vessels, which are to form the cicatrix and serve as a support for them. More or less extensive pieces of the liver substance can be removed to make the wound more even. If the loss of substance is superficial, a layer of the great omentum can be sutured with a stitch or two to Glisson's capsule. When there is much loss of substance it can be replaced by human fibrin or a piece of sterilized sponge, impregnated with the yolk of an egg, or not. The sponge offers more resistance and fills the cavity better, but the organization of fibrous tissues is less rapid with it. Their article in the *Semaine Méd.* of November 2, is profusely illustrated.

Actinomycosis of the Umbilicus.—A farm-hand working naked to the waist became infected through the navel. The actinomycosis yielded to potassium iodid, but the case suggests the danger of working naked while harvesting, and the necessity of extra cleanliness (*Bull. de l'Acad. de Méd.*, October 18). A farmer with actinomycosis of the neck was also recently observed by Lucas. Besides the actinomycetes in the pus they were also found in the apparently normal portions of the omohyoideus muscle.—*Munich Med. Woch.*, November 1.

Schwenlager's Cure for Obesity.—Prof. H. Cohn, the Breslau ophthalmologist, recently visited the Schweninger establishment and witnessed such remarkable cures that he describes his experiences at length. One woman has lost fifty pounds in eight weeks; another twenty in five weeks, and another who weighed 240 pounds when she arrived had reduced her weight to 145 when she left. From exhaustion at the slightest effort, the patients could take long walks and climb hills without fatigue, with the heart working normally. The treatment is threefold: massage, hot baths and diet. The massage is done by the physician, for fifteen minutes, before meals. The patient is instructed to breathe deep, which is considered one of the most important factors of the results attained with the massage. The abdomen is kneaded and finally large pieces of the derma are taken up and squeezed energetically between the hands to crush the subcutaneous adipose lobules. In conclusion the masseur gets on the patient on his knees and digs them into the epigastrium while the patient takes several deep breaths. Cohn describes his consternation at this sight, but the patients did not seem to mind it much, although they frequently drop to sleep afterward from exhaustion, and the abdomen is covered with ecchymoses. The twenty-minute hot baths are given to the arms, feet or a sitz bath, on separate days, never the entire body at once. The water flows in and out of the tub at a temperature increasing from 30 to 40 degrees R. The food is served in tiny doll dishes and only a pint of liquid is allowed during the entire day (Gerolstein sprudel water). Bread, cake, butter, fat, sugar, coffee, tea, milk, wine, beer and brandy are rigorously excluded from the diet, but eggs, ham, roast meats, fruits, vegetables, etc., all in small amounts, afford a varied menu for the four meals. The patients gradually become accustomed to the dry diet. Constipation is controlled by aloes pills at night or an injection of five grams of glycerin in the morning. The Sunday is a day

of rest for all, and the rules are suspended. Six to eight weeks are required for the cure, and the patient, to retain the benefits, must not return at once to his former habits of life.—*Presse Méd.*, October 28.

Mud Baths.—Thiroux summarized the general action of mud baths at the International Congress of Hydrology, etc., at Liège, as accelerating the number, while diminishing the amplitude, of the respiratory movements, increasing the arterial tension and the pulsation, stimulating the central nervous system and the peripheral nerve terminals, increasing muscular excitability, compressing the articular surfaces, stimulating nutrition of the bones, increasing the electrocutaneous sensibility and the central and peripheral temperature, exaggerating the perspiration and increasing oxidation processes and the elimination of organic waste. The local action is emollient, owing to the vegetable substances they contain. They progressively relieve congestion and stimulate the circulation in the skin and muscles, while they have a special thermic action owing to the extreme heat possible to be endured without inconvenience by the subject, and for long periods. They buoy up the body with a peculiarly sedative effect, and stimulate the general nutrition and nerve terminals, with a subsinapiem of the skin, indicated by the "mud false eczema." He described the fine results attained at Saint Amand in the cure of phlebitis, and chronic troubles induced by a defective venous circulation in the lower members, also in gynecologic cases, concluding with the statement: "Mud baths are therefore the thermal medication par excellence on account of the general stimulation of the organism and the local effects. They stand at the head of modifying and altering measures. Chronic torpid affections, gout, chronic rheumatism, hydrarthrosis and various forms of arthritis, ataxia, etc., are especially amenable to their action."

Prolapsus of Urethra in the Female.—B. Singer has had occasion to observe eight cases at Chrobak's clinic, generally children or women in the menopause. It is caused by an angioma, by relaxation of the tissues or the introduction of foreign bodies. The symptoms are pain in urinating, tenesmus, occasionally inflammation and hemorrhage; sometimes there are no appreciable symptoms. Treatment can only be surgical in a pronounced case.—*Monatssch. f. Geb. u. Gyn.*, October.

Recurrence of Measles.—Vergely reports a case of recurrence two weeks after the initial attack, the first in thirty-one years' experience. The average interval of the cases on record was from the sixth to the sixtieth day.—*Munich Med. Woch.*, November 1.

Alcohologenic Cardiac Epilepsy.—A. Smith applies this term to an epileptoid condition accompanied or preceded by dilatation of the heart. As the state of the heart improves, the epilepsy disappears also. The dilatation of the heart is purely alcohologenic and subsides completely with abstinence from alcohol in some cases, or partially in others, with slight recurrences for a while. In the first group, a slight excess of alcohol above very moderate amounts will induce the attack. In the second group the intolerance to alcohol is not so pronounced. Complete abstinence is the only cure, combined with medication to strengthen the musculature of the heart.—*Munich Med. Woch.*, October 25.

After-Care of the Insane.—Germany was really the originator of the excellent plan of taking oversight of the recovered insane, as of so many others by which mankind have benefited. Its first practical promoter was the Hofrath Lindpaintner of the Duchy of Nassau (born 1793, died 1848), whom Dr. Damerow of the Nettleben Asylum described at his death as "perhaps the last non-medical director of a German institution for the insane," and who himself published in 1844, at Wiesbaden, his useful "Nachrichten ueber die herzogliche Nassauische Irrenheilanstalt zu Eberbach, im Rheingau, von ihrer Begrü-

endung (1815) an bis zum Schlusse des Jahres 1842." Midway of this period, Herr Lindpaintner founded the first patronage society. Dr. Earle, who visited Eberbach in 1849, just before its patients were removed to their present asylum on the Eichberg, said in his "German Asylums," published in 1852-53: "In 1829 a Society of Patronage was originated by Mr. Lindpaintner, who became distinguished for the energy and ability with which, as director, he managed the asylum. This society was probably the first of the kind. To the poor who are cured it extends its care and assistance during a period of two years after they leave Eberbach. Up to the year 1844 it had assisted 81 persons, at an expense of 1349 florins." It was then in quiet but successful operation a dozen years or more before a similar move was made at Paris. It seems to me that this statement is due to the memory of one of the early reformers of insane care, in a country of which we hear much less on this subject than of France and England, especially in the period preceding Dr. Earle's very useful book. But I may also call attention to a matter which Dr. Stedman and his colleagues overlook—that the boarding-out system for the insane of Scotland, Belgium and some parts of Germany, gives one of the best opportunities for "after-care," and is so used in those countries to some extent, as it was by me during the three years (1885-88) in which I introduced and managed the Scotch system in Massachusetts. Some very striking examples of virtual recovery and self-support occurred among the 180 patients whom I placed in families, in consequence of the after-care which the State then exercised in such cases; and I doubt not more have occurred in the ten years since I ceased officially to exercise such after-care.—F. B. Sanborn, in *Boston Med. and Surg. Journal*, March 24.

MISCELLANY.

The "Medical Record" Agala.—Our attention has been called to an article in the *Medical Record*, entitled "Recent Experiences in Military Surgery after the Battle of Santiago." The *Record* says: "THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION of November 12 publishes an article with the above title, suppressing the name of the author, which article is lifted bodily from the *Medical Record* of July 30, 1898, its aspect, however, being altered by the insertion of illustrations. A clear case of kleptomania." The truth about the matter is that Professor Senn wrote his article in duplicate. One article, with the illustrations, was sent to this office, which, by the way, is in his own hand-writing. The other was sent to the *Medical Record*. In the fullness of time the *JOURNAL* published the article, which was as much its property as any other article which has come into the *JOURNAL* office. The *Record* having published it first, however, we would not have republished the article but for the imperfect manner in which it appeared in the *Record*, as without the illustrations this report was almost valueless. Still, however, we presume it was good enough for the *Record*. In regard to suppressing the name; this is a prevarication, as the name of Professor Senn appears in the contents and title page of the *JOURNAL* in its proper position, and also first in the "Miscellany" of the same number, the error having been discovered after the article in question had been passed through the press. An error so seldom appears in the *JOURNAL* that it is naturally an object of mark by our esteemed contemporary.

Black Excretions in Hystero-Epilepsy.—The *Gazz. degli Osp.* of September 13 relates the case of a lad of 13 years, a hystero-epileptic, through whose skin exuded a black substance, while the urine was also blackish and the feces covered with a black layer. When the lad was sent up to Naples, the phenomenon seemed to be arrested, but returned again after his return home to Calabritto, when he also vomited the black substance.

Zuccarelli personally saw the black substance oozing from the skin. It looked like coffee grounds, and left inky tracks on the skin as it slid down. The substance contained some mineral elements, but he could not discover any hematoxin or any other organic substance. He is inclined to connect it with the antitoxic theory of epilepsy, but in a discussion at the Naples Accademia Med.-Chir., others attributed it to the hysteria. Galozzi also described a case, a relative of a Neapolitan physician, a classic hysteric, in whom intestinal occlusion suddenly appeared, with stercoral vomiting and exudation of stercoral matter through the mammae and axillae. She recovered after two months of complete occlusion.

New York State Hospital for the Insane.—The recent propositions for the construction of colony buildings for 2260 patients at Central Islip, New York, is an exemplification of what can be done with limited means, and well done. The buildings are largely fireproofed; that is, the central buildings, all connecting corridors and two floors, beside fire-proof party-walls. The building specifications call for the best quality of construction, and provide for the completion of the group in every detail, ready for occupancy, including water-supply, heating, lighting, plumbing, and fire protection. The aggregate for the whole work is less than \$500 per patient. This furnishes a marked contrast with former palatial designs that have cost more than \$3,000 per capita, and which will not compare in efficiency to the Central Islip group.—*Charities Review*, November.

Effect of Altitude on the Blood.—The increased number of red corpuscles noted in high altitudes has been found to be due almost entirely to errors in the Thoma-Reies apparatus, caused by the differences in the atmospheric pressure, as has been confirmed by Gottstein's tests with it in the pneumatic cabinet. Schröder and Meissen have corrected this defect by making a deep groove around the edge, into which the glass cover fits air-tight and excludes the outside air completely. The question is now ready to be investigated anew, eliminating this cause of error.—*Munich Med. Woch.*, Nos. 4 and 42.

Left-Handedness.—A. Rothechild attributes this condition to lack of proper training in childhood, and relates a case of a 4-year-old girl whom he cured permanently by hypnotic suggestion.—*Vienna klin. Rund.*, October 23.

Puberty.—A. Marro, who is with Lombroso, the founder of the new school of criminal anthropology, has been studying the subject of puberty in its relations to anthropology, psychiatry, pedagogics and sociology, and asserts that marriage between two healthy persons after they have both attained their full development—beard, muscular and skeletal development, habits of work and money-saving in the man; and bosom, adipose tissue and grace of outline in the woman, is the ideal from every point of view. Before this period sexual intercourse is directly injurious to the development of mind, body and character. It favors a return to savagery; the abnormal development of one function at the expense of the growing organism as a whole, the strife with rivals, the efforts to win the favor of the other sex, leading to thefts and other crimes, the degenerate offspring that are born to immature parents, etc. From every point of view therefore, the efforts of educators and social conventionalities should be exerted to delay the precocious gratification of the sexual instincts. But arrived at nubility, it is equally important that the sexual instinct be legitimately gratified, and this can not be accomplished by masturbation, promiscuous intercourse or free love. Besides the dangers of disease and excesses, they incite to sexual strife; activity is diverted from the wholesome field of social virtues, and the character warped, rendering it deceitful, combative and cruel. He is heartily in favor of forbidding marriage to degenerates, and denounces the marriage of an old man to a still menstruating woman, on account of the degen-

eracy of the offspring in both cases, affecting the second generation if not the first.—From abstract in the *Journal de Méd. de Paris*, October 30.

Congenital Syphilis.—R. Hecker has been studying the variations from normal in over a hundred children born dead or dying soon after birth, with congenital syphilis, and publishes his conclusions in the *Deutsches Arch. f. Klin. Med.*, 61, No. 1. He notes that the vessels of the umbilic cord are always affected with specific lesions, which can aid the diagnosis in living children. Typic osteochondritis of the long bones is frequent, but not invariably present. The spleen was found swollen in every case. The kidneys also are always diseased in congenital syphilis, evidenced by albuminuria in children that survive. The liver is invariably swollen and with syphilitic manifestations.—*Munich Med. Woch.*, October 25.

Exophthalmic Goiter.—A theory is proposed by C. Scherwdt of Gotha, in a long communication to the *Munich Med. Woch.*, concluding in No. 44, which explains exophthalmic goiter as a disease of the lymph and blood caused by nervous influences, in which the etiologic factors are an abnormal assimilation of chyle, an abnormal circulation of lymph and an abnormal activity on the part of the thyroid gland. There is also an abnormal circulation in the collateral routes, manifested by intermittent edema, which should rank with the triad: exophthalmus, tachycardia and struma. The variations depend upon the individual or inherited predisposition of the organism or its parts. In persons with strong muscles, instead of compensation in the line of atrophy of the hollow organs, it takes the form of hypertrophy of the muscular wall and there is enteroptosis. In others, with rudimentary enteroptosis, the atony of the lymphatic system leads to typic morbus Basedowii. Still others drift into myxedema or scleroderma as they enter life, and theoretically must have passed through morbus Basedowii during their embryonal existence. These facts explain why neurasthenia, general atony and enteroptosis are becoming more frequent, while cases of exophthalmic goiter are rarer, and myxedema and scleroderma still more seldom seen. An alteration of the nervous system, of the psyche is the fundamental cause, and in the strengthening of the psychic forces lies the road to recovery, so that the physician, whatever means he adopts, is after all a psychotherapeutist.

Askanazy states in the *Deutsches Arch. f. Klin. Med.*, 61, 2, that in four cases examined, he found in each one an extensive and well-defined affection of the striped muscles; the muscles grown through with fat, interstitial lipomatis. The patients were emaciated. This hitherto unnoticed lesion explains the muscular weakness, the trembling, the insufficiency of the ocular muscles, etc. The nervous system was found intact to its finest ramifications in the muscles in each case. The thyroid had the usual characteristic alterations.—*Munich Med. Woch.*

Laryngitis Rheumatica Circumscripta.—Uchermann describes a form of primary acute laryngitis, occurring where there is a rheumatic predisposition, without catarrh, but with solid infiltrates which rapidly disappear under salicylic acid.—*Munich Med. Woch.*, October 25, from *Cbl. f. In. Med.*, No. 39.

Laparotomies at Home.—Professor Rydygier has become convinced that the dangers of infection are less in a private residence than a hospital; the germs encountered are not pathogenic or have not acquired virulence by "passages." He therefore advises patients with a well-lighted room and means sufficient to pay for the more expensive home after-treatment, to be operated on in their own residences. He does not consider it necessary to remove more than the curtains, portieres and carpets from the room.—*Vienna klin. Woch.*, November 3.

Cerebratome and Aspirator.—Radojewski describes a new instrument for very small pelvis which is manipulated entirely outside of the genital parts, thus reducing the danger of infec-

tion and injury. After the trunk is born the spine is cut at the second or third dorsal vertebrae, and the brain chopped fine through the foramen spinosum and aspirated out, when the empty skull can be easily extracted.—*Deutsche Med. Woch.*, 1898, No. 42.

Sail-Cloth Operating-Table.—Professor Rydygier attributes the pneumonia that so frequently follows operations, to the chill from the glass or metal table top, and obviates this by having a sail-cloth top made to fit over the iron frame, and removed and washed after each operation. If a solid top is indispensable he uses one of hard wood. The last thing before operating, he washes his face, wets his beard and hair, rinses his mouth and gargles with some antiseptic fluid, which he confesses produces rather a sensation among the spectators. He never uses gloves, mask or cap, but has a couple of basins beside him to rinse his hands frequently during the operation, to mechanically remove any germs that alight after his preliminary painstaking disinfection. He rejects brushes and sponges on account of the difficulty in sterilizing.—*Vienna Klin. Woch.*, November 3.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about \$180, will be made on July 14, 1899, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but can not have been published, and must be received by the secretary of the college on or before May 1, 1899. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. The prize for 1898 has been awarded to Dr. S. A. Knopf of New York city, for his essay entitled: "Modern Prophylaxis of Pulmonary Tuberculosis and its Treatment in Special Institutions and at Home."

Calmette's Gift.—Dr. Calmette has presented to the Pasteur Institute at Lille, of which he is superintendent, 250,000 francs, which represent the profits realized in the distilleries at Seclin by one of his inventions.—*Progrès Méd.*, October 29.

International Memorial Honors.—The monument erected by international subscription at Copenhagen, to Meyer, the author of the first works on adenoid vegetations, was recently unveiled, with an address by Sir Felix Semon, the distinguished English laryngologist.

Co-operative Surgery and Medicine.—Legendre is trying to organize an association in Paris to be composed of both physicians and surgeons, meeting from time to time to study important questions together from their different points of view, each benefiting by the experience of the other.—*Progrès Méd.*, October 29.

Responsibility of the Surgeon.—A woman died recently from sepsis, at Lyons, France, after an operation by a prominent surgeon, and the husband sued for damages. The court decreed that it "would be excessive to hold the surgeon responsible for the unforeseen, extraordinary, sometimes even improbable complications, that may occur in any surgical intervention, even the most inoffensive. Such responsibilities would render the practice of medicine impossible in many cases." The plaintiff was condemned to pay the surgeon's fee of 200 francs and the costs of the suit, as the "death was merely a much-to-be-regretted misfortune, escaping all the provisions of science, as occurs at times, in spite of all the precautions suggested by human wisdom."

Not Responsible for Acts of Physician.—On the appeal of the Louisville & Nashville Railroad Company vs. Foard, a personal injury case brought by Foard against the company, the company insisted that the trial court had erred in permitting the plaintiff below to prove by himself that the attending physician and surgeon, who was furnished by the Company to treat his injuries, sustained in its service, was negligent in his treatment of the wounds, and that he was rough in his treatment of him, witness going into detail, and that by reason of this bad treatment his leg had to be amputated the third time. With this contention of the Company the court of appeals of Kentucky agrees, holding, Oct. 7, 1898, that the admission of this testimony was improper. It says that the Railroad Company was in no way responsible for the acts of the physician, or for his neglect of the plaintiff, unless it were shown that the Company was careless and negligent in his selection and that he was incompetent. It maintains that in the employment by a railroad company of its surgeons to attend the persons injured by its trains, the relation of master and servant and principal and agent does not exist; and that if the railroad company is careful, and selects suitable surgeons, it is not responsible for their neglect or malpractice. In this case there was no pretense that the Company was careless or negligent in the selection of this physician and surgeon, or that he was in any way incompetent, and, consequently, for the reasons stated, the court insists that the plaintiff should not have been permitted to prove the misconduct, neglect, or maltreatment of the physician, in this action against the Railroad Company.

Need Not Submit Blindly.—A man 56 years old stumbled over a large flat stone which was near the middle of, and several inches higher than, the sidewalk. There was evidence tending to show that he fell violently and sustained, among other injuries, a rupture. But when he sued the city for damages, it set up, as one of its defenses, that the next morning after the accident the plaintiff was advised by the hospital surgeon to have an operation for hernia performed, and that he obstinately and unreasonably refused to do so. The plaintiff admitted that he was advised to undergo the operation, and made a mistake in not accepting the advice. When it came to charging the jury, the trial judge said that the plaintiff was bound to use ordinary care to cure and restore himself, and to use such methods reasonably within his reach as would make his damage as small as possible; that he could not recklessly enhance his injury, and charge it to the defendant; and that, if the jury believed that the plaintiff declined to act upon the advice of the house-surgeon and declined to submit to an operation for the radical cure of his hernia, the defendant was not chargeable with the consequence of his refusal. But the second appellate division of the supreme court of New York says, *Williams vs. City of Brooklyn*, Oct. 18, 1898 (53 New York Supplement 1007), that this was a statement of the law more favorable to the defendant than was needed. It holds that the plaintiff was not required to submit blindly to professional advice. He was entitled and bound, it insists, to exercise reasonable judgment, and if his conduct was that of a reasonably prudent man he was within his rights in refusing to submit to an operation, and could not be charged with negligence in that respect. It may be added that on this question the jury found in the plaintiff's favor, and the appellate division affirms a judgment in his behalf.

Admission of Expert Witness.—Two things, the supreme court of Pennsylvania says, must concur to justify the admission of an expert witness: 1. The subject under examination must be one that requires that the court and jury have the aid of knowledge or experience such as men not specially skilled do not have, and such, therefore, as can not be obtained from ordinary witnesses; 2. The witness called as an expert must possess the knowledge, skill or experience needed to inform and

guide the court and jury in the particular case. Upon such a question such a witness may be called, and may testify not merely to facts, but to his conclusions from the facts, because the court and jury are without the knowledge necessary to enable them to draw the conclusions for themselves without aid. Thus, the court holds, Oct. 17, 1898, in the homicide case of *Commonwealth vs. Farrell*, that the question about the length of time after death when rigor mortis may be expected to set in was a question for expert medical testimony, though long experience and observation might stand in lieu of the study of books, and qualify one to speak as an expert upon this subject. But the witness called in this case as an expert upon this question had no medical knowledge, had read nothing on the subject, and had no experience except as an undertaker's assistant in preparing dead bodies for burial, and his attention as an undertaker did not seem to have been specially directed to this question, while he frankly stated that he was not an expert upon the particular subject. For the reasons stated, the court holds that he was not competent to testify as an expert upon that question.

Marriage no Defense.—In a prosecution for ravishing a female who was under 18 years, the fact that she has forgiven the accused, or has subsequently entered into the marriage relation with him, the supreme court of Kansas holds, *State vs. Newcomer*, Oct. 8, 1898, will not constitute a defense, nor relieve him from the consequences of the crime. The explanation vouchsafed by the court is that, the female being under the age of consent, her consent to the sexual act constitutes no defense, and neither her forgiveness nor anything which either or both may do will take away the criminal quality of the act, or relieve the defendant from the consequences of the same. The principle of condonation, which obtains in divorce cases, where civil rights are involved, has no application in prosecutions brought at the instance of the State for the protection of the public, and to punish a violation of the law. It is true, continues the court, that society approves the act of the defendant when he endeavors to make amends for the wrong done to the injured female by marrying her; and usually a good-faith marriage between the parties to the wrong prevents or terminates a prosecution, but the statute which defines the offense, and declares punishment therefor, makes no such provision. Finally, the court says, if the defendant has acted in good faith in marrying the injured one, and honestly desires to perform the marital obligations resting upon him, and is prevented from doing so by the influence and interference of persons other than his wife, it may constitute a strong appeal to the prosecution to discontinue the same, or to the governor for the exercise of executive clemency; but, as the law stands, it furnishes no defense to the charge brought against the defendant.

Indiana Dentistry Law.—Section 5596 of the Revised Statutes of Indiana of 1894, provides for the appointment of a board of examiners consisting of five members, three of whom are to be chosen by the Indiana State Dental Association. This section, it was contended, in *Ferner vs. State*, was unconstitutional, as in violation of a clause in the State constitution forbidding the granting of privileges which shall not, upon the same terms, equally belong to all citizens. It was argued that by said section a special privilege was given to the Indiana State Dental Association of naming members of the Board of Examiners, and prescribing the standard of qualification. But the supreme court of Indiana holds, Oct. 12, 1898, that said section 5596 does not contravene the constitution. It says that it is not necessary that members of the Association shall be appointed upon the Board. And it looks at the power to appoint as in the nature of a duty, rather than a privilege, insisting that it may not be said to be a special privilege any more than that conferred upon circuit judges to appoint city

commissioners or a drainage commissioner, or that the governor, the president of the State University, and superintendents of common schools shall be members of the State Board of Education, or in many other instances where non-judicial functions are imposed upon judicial officers, or non-executive functions are cast upon the executive, or where men, by reason of their learning, are designated to perform a service to the public. Taking up the suggestion that the act in question does not afford due process of law, in that it fails to extend the right of appeal from decisions by the board, the court says that it may be seriously doubted if one who does not seek a decision of the Board may complain that he could not appeal from its action, and that it may be suggested, also, that the general rule is that appeals are recognized as allowable from judicial decisions only, and that boards of the character of that in question do not render judicial decisions. Moreover, the party here charged with unlawfully practicing dentistry, and convicted, objected that the evidence did not support the verdict that he engaged in the practice of dentistry. It showed that he leased and occupied rooms for several months for the declared purpose of practicing dentistry; that he had done dental work for three or more persons; that at times he engaged in filling teeth, and at other times did dental work at the bench. This, the supreme court regards as sufficient to require the inference that he engaged in the practice. It also thinks it quite clear that it is made a crime to practice dentistry "without being registered," registry, within the purpose of the law, relating to the permanent authority to practice dentistry, and that the temporary permit issued by any member of the Board of Examiners is a protection only until the Board shall meet to make the registry.

Our Cuban Exchange.—We are glad to welcome once more the *Revista de la Medicina y Cirurgia de la Habana*, which we have missed from our mail since last spring. The *Revista* is a fortnightly journal, but the numbers we have just received, Nos. 7 and 8, bear date of April 10 and October 10. They contain no reference to any events in the interim, but calmly resume their scientific communications with the description of a case of putrefied placenta with a living child.

Artificial Assistants.—The burlesque number of the *Munich Med. Woch.*, issued on the sixty-fifth anniversary of the local medical society, is an exact reproduction of the regular make-up, but sparkling with fun in every line. The rear outer cover is a display ad. of artificial assistants for surgeons, etc. "The disadvantages of the living assistants hitherto in use are familiar to all. They assist, but have too many annoying 'secondary effects.' Some are unable to keep their mouth shut, some have 'exaggerated reflex excitability,' some have opinions that differ from those of their chief and criticise him, some leave matches around and the gas burning, some shock spectators by their lack of gentleness. These drawbacks are all entirely obviated with our new patent glass and iron assistants, transparent, sterilizable, to connect with either electric or steam power. They are supplied in two grades, smooth or rough finish, for private practice or general hospital work. They are adjusted for only one or two specialties each, but extra specialty appliances can be screwed on as desired. Assistants for surgeons: Say 'sponge' and 'gauze': Style A. Wipes 10 times a minute, 1200 Marks; B. Wipes 20 times a minute, 1300 M.; C. No hinge in back, 1100 M.; D. Without buttocks (an important improvement, allowing spectators complete oversight of the operation) 2000 M. For internal medicine: Do percussion, and find albumin in urine: A. Once an hour, 100 M.; B. Three times an hour, 150 M.; C. Stain bacilli, 200 M. For obstetrics and gynecology: Style A. Automatically perform vaginofixation on every uterus, 10 M.; B. Ditto vesicofixation (new), 20 M.; C. Antefixation according to indications, 200 M.; D. Abhor all therapeutic treat-

ment of retroflexion, 600 M., etc." The leading article is a report of successful experimentation to secure asexual propagation of the human species by fission, accomplished by administering an extract, Tolstoidin, thus named from the idea having been suggested by the disapproval of the sexual methods expressed in Tolstoi's "Kreutzer Sonata."

Contributions to the Army Medical Museum.—The officer in charge of the Army Medical Museum has invited attention to the possibility of enriching the Museum by contributions from general hospitals and hospital ships, and the Surgeon-General of the Army has published the communication in the form of a circular from his office. The contributions referred to in paragraph 147, "Manual of the Medical Department," are rare pathologic specimens from animals, including monstrosities; typic crania of Indian tribes, specimens of their arms, dress, implements, rare articles of their diet, medicines, etc., and specimens of poisonous insects and reptiles and of their effects on animals. The communication is as follows: The contributions to this Museum from the active theater of the recent war with Spain and from the extensive field of subsidiary operations, have been so few and unimportant that it seems desirable to renew the attention of medical officers to this important subject. The hurry and peculiar military conditions of the Santiago campaign, and amount of work imposed upon the medical officers in our large camps of instruction would naturally obscure the more remote interests of the Museum; but from our large general hospitals and hospital ships and the more deliberate methods of our forces of occupation may well be demanded a return to the systematic collection of specimens illustrating the bone and tissue injuries produced by modern firearms and explosives, and a careful preservation of such illustrations of disease as may be obtained upon cadaveric examination. As it will be necessary to add a guide to the preservation of specimens, the following suggestions have been prepared: Soft tissues are preferably placed in a 20 per cent. solution of commercial formaldehyde (or formalin), the specimen being completely covered by the solution. The fluid on very soft tissue, or large masses of tissue, such as the liver, spleen, etc., should be changed after two or three days. When formalin is not obtainable, commercial alcohol may be used. Bones and joints, after having been roughly cleaned, may be simply wrapped in a cloth wet with the preservative solution, and then again wrapped in oiled paper or silk. Since glass and earthenware vessels are liable to be broken in transit, with escape of their fluid contents and damage to the specimens, the use of tin vessels is recommended, the covers to be tightly soldered on. Whatever vessel is used should be packed in sawdust, excelsior packing, stiff paper, or equivalent substitute, in a wooden box. Small dry specimens may be sent by mail; and wet specimens also, if enclosed in the boxes which have been approved by the Post-Office Department. Specimens should be carefully numbered, and a letter of information forwarded to the Museum when the specimen is shipped; the letter to contain the number of the specimen, a description of its nature, and if possible, its history. In addition to the contributions specified, those enumerated in paragraph 147, "Manual for the Medical Department," are especially worthy of consideration, in view of the opportunities offered in our new territory. Although paragraph 1130, A. R., provides for the transportation of all such contributions through the Quartermaster's Department, it should be known that if the importance of the object, or security demands a more prompt delivery, the package may be shipped to the Curator of the Museum by express, the charges to be paid here. The receipt of any package will be duly acknowledged, and credit given for the contribution.

Expensive Charity.—The *Bulletin Méd.* of Paris relates that a woman recently applied to the free dispensary at the "Quinze

Vingt" for treatment, but had the thoughtfulness to remove a pair of diamond ear-rings from her ears and put them in her pocket before entering the room. When she received her consultation ticket she found that the solitaires, worth 4000 francs, had disappeared from her pocket, and in spite of a large reward offered were never recovered.

Societies.

The following recent meetings are noted:

Illinois.—Chicago Society of Internal Medicine, November 22; Fox River Valley Medical Society, Aurora, November 15.

Indiana.—Allen County Medical Society, Fort Wayne, November 15.

Iowa.—Eastern Iowa District Medical Association, Keokuk, November 17.

Kansas.—Topeka Academy of Medicine, November 14.

Michigan.—Saginaw County Medical Association, Saginaw, November 11.

Missouri.—St. Louis Academy of Medical and Surgical Sciences, November 22; St. Louis Medical Society of Missouri, November 19.

New York.—Binghamton Academy of Medicine, November 15; Kings County Medical Society, New York City, November 10.

Ohio.—Muskingum County Medical Society, Zanesville, November 10.

Tennessee.—Maury County Medical Society, Columbia, November 15.

Philadelphia.

REQUESTS TO CHARITY.—Through the death of William W. Whitehead, a bequest of \$500 has been received by the Samaritan Hospital of this city, and through the death of Abraham McGarry, \$1000 to St. Joseph's Hospital.

LAST HOSPITAL TRAIN.—Recently the last hospital train was dispatched to Camp Meade by the relief commission, returning with sixty patients, who were distributed to the Woman's, St. Joseph's and St. Agnes Hospitals.

DR. JOHN BLAIR GIBBS.—Many have been the honors conferred upon this distinguished physician, who lost his life upon Cuban soil, but the latest one is that of his academic alma mater, Rutgers College, which recently unveiled a memorial tablet in Kirkpatrick Chapel at that institution.

MORTALITY STATISTICS.—During the week just closed there have been reported to the Bureau of Health a total of 414 deaths, an increase of 17 over last week and of 75 over the corresponding week of last year. Of the total number of deaths, 116 occurred in children under the age of 5 years.

PERSONAL MENTION.—Among the Pennsylvania soldiers being mustered out of service may be mentioned Battery A of Philadelphia. In order to establish the condition of the men upon their discharge, competent examiners have been commissioned to make a thorough physical examination of the men. The names of the physicians who are conducting this work are: C. F. M. Leidy, Joseph Shellisey, Ward Brinton and Walter Roberts.

DEATH AMONG SOLDIERS.—Within the past two weeks two deaths from typhoid fever have occurred among soldiers at the hospitals. The first death was that of John M. Warner, Company M, Fourth Pennsylvania, who contracted the disease in Porto Rico and was subsequently brought to this city on the hospital ship *Relief*. The second case was that of Samuel Pemberton of Company A, First Delaware, who contracted typhoid fever in Camp Meade and was brought here October 22.

LECTURES ON X-RAY.—Dr. Charles I. Leonard is giving a series of lectures at the University Hospital on the subject of skiagraphy, describing the method and apparatus used, as well as the theory on which the subject is based. In the lecture of Saturday it was proposed to describe the method of taking the photographs of different organs and different parts of the body, as well as to draw conclusions from the study of the plates, so that a diagnosis could be made of diseased conditions.

QUARANTINE AGAINST HYDROPHOBIA.—Whether it be true or not that hydrophobia is an acute infectious, contagious or inoculable disease, the State Board of Health has seen fit to quarantine against all dogs in a village near the northern border of the State, for a period of ninety days. This action has been taken on account of an epidemic of hydrophobia there for some time among cattle, horses and swine.

IMPROVEMENTS AT GERMANTOWN HOSPITAL.—This busy hospital will soon have proper accommodations for an isolation ward for the treatment of cases who can not cared for in the other departments. The addition is to contain three rooms for patients, one room for nurses, and one for a sick-diet kitchen. The addition is one story in height, with basement, built of brick and tile and will cost several thousand dollars. The ward is the gift of Mr. Stephen Green, and was given as a memorial to a member of his family. The building will have all the latest improvements.

WAR INVESTIGATING COMMITTEE.—It is reported that this committee will visit Philadelphia within the next ten days. Just the object of the visit is not fully known, but it is thought to be in connection with the offices of deputy quartermasters and office of Chief Medical Inspector Peyton. Several are mentioned who, it is thought, will be summoned to go before the Board and testify as to what they have witnessed during the course of the war. The officers of the different departments feel confident that no exception will be taken to the method in which the business of these departments have been conducted. So far no complaint has been made against either official in charge of the officers stationed at this place.

RELIEF TO SICK SOLDIERS.—The Hospital Committee of the Woman's Sanitary League, which has been associated in the relief of soldiers at the Polyclinic, Medico-Chirurgical, St. Agnes, Jefferson, University and Women's Hospitals, recently held another meeting and elected officers. The Executive Board consists of five principal officers, with chairmen of standing committees and other members. Committees are also appointed on education, hospitals, legislation, sanitary science and municipal questions. The Hospital Committee was instrumental in furnishing money, supplies and delicacies for the sick during the summer months just closed.

DR. CHARLES H. FRAZIER.—Owing to the resignation of Dr. J. William White, from the surgical staff of Blockley, some weeks ago, in order to assume charge of the clinical work at the University of Pennsylvania, the Board of Charities and Corrections, at a recent meeting elected Dr. Charles Harrison Frazier as successor to Dr. White. Dr. Frazier is a graduate of the University of Pennsylvania, 1889 (College) and 1892 (Medical). He was resident physician to the University and Episcopal Hospitals and subsequently resumed his studies in the University of Berlin and is a member of the surgical staff of Howard Hospital and assistant-surgeon at the University Hospital and to the Out-patient Department of the Episcopal Hospital, and also a member of the editorial staff of the *Philadelphia Medical Journal*.

MARINE SOLDIERS.—During jubilee week in Philadelphia, there were a number of sick soldiers removed from several vessels at anchor in the harbor, and transferred to the Marine Hospital. Eleven of them were removed from the *Texas*, ten from the *Topeka*, one from the *Minneapolis* and one from the *Richmond*. In many instances the disease subsequently proved to be typhoid fever. It is reported that it is the opinion of the medical officers stationed on the *Texas*, that, as there has been no means of contact with infected men, the disease in the present instances has resulted from bad food or impure water on board the vessel. In the Marine Hospital there are at present eighty-eight cases, a great increase over the usual average. This state of affairs has doubtless been brought about by the fact that there are more vessels here at present than have been in Philadelphia for many years.

NATIONAL RELIEF COMMISSION.—Mr. George C. Thomas, treasurer of the National Relief Commission, makes the following statement through the banking firm of Drexel & Company: Cash previously acknowledged, \$78,405.40; various donations, \$68.17; value of supplies received to date, \$40,345.00; grand total, cash and supplies, \$118,808.57. From this report it is observed that the total amount of money is increased but little from week to week, while the work with which it is engaged necessarily goes on, from the fact that sick soldiers are transferred from army corps by money provided by the Commission. Up to the present time most of the sick soldiers have been brought to Philadelphia, but it is thought that hereafter the majority will be taken to Baltimore and other cities. The outcome of the trip of President John H. Converse and Secretary French of the National Commission, to Washington, where they went to confer with the War Department, regarding the future action to be taken by the Commission, has not been made public, but it is believed that the visit was not altogether encouraging to the Commission. Having carried on work which it was thought should have been done by the Government, the Commission had a right to expect support from that source, but up to the present time it may be said that the prospects are discouraging.

Dr. BENJAMIN LEE.—At the forty-first regular meeting of the State Board of Health, recently held, the secretary, Dr. Benjamin Lee of Philadelphia, made his report, dealing largely with cases of communicable diseases that have occurred in various portions of the State, including inspections made and sources of pollution.

A CASE OF SUPPOSED LEPROSY.—Last week a Russian sailor was taken to the Municipal Hospital, thought to be suffering from leprosy. It is stated that the man gives his nativity as Aensburg, in the Island of Oesel in the Baltic Sea, where the disease is quite prevalent.

HOSPITALS WILL BE REIMBURSED.—It is reported that it is the intention of the Government to reimburse all hospitals for the expense incurred in caring for the soldiers brought to those institutions. It is a source of some gratification also to state that while the hospitals of Philadelphia were first to volunteer their facilities to the Government that in no instance (*Press*) has a bill been sent in, as has been done by hospitals of two near by cities. The Government now volunteers to pay to all such hospitals sixty cents a day for each soldier so treated, and, furthermore, to reimburse all institutions who have been instrumental in sending out hospital trains to the different army camps.

REDUKE FOR PHYSICIANS.—A complaint has been lodged against the profession by a resident of Germantown, who states that cases of diphtheria are not properly reported and thereby the disease becomes more common.

POISONING BY CASTOR BEANS.—Recently, while playing near a vacant lot, three children ate of castor beans which had been thoughtlessly thrown from a neighbor's garden. Soon afterward all these children became violently ill, but in one case death resulted from acute nephritis. While the other two children were also suffering from the same disease it appears milder, and hopes are entertained for their recovery. The cases have been reported to the Board of Health by the coroner's jury, who thought the owner of the lot should be thoroughly censured for not complying with the city ordinance requiring that all vacant lots be enclosed.

PROCEEDS OF CHARITY BALL.—The hospitals which have already applied for proceeds of Charity ball to be given soon are: Children's department of the University Hospital, Free Hospital for Consumptives, Samaritan Hospital, St. Christopher's Hospital, St. Timothy's Hospital, Children's Hospital.

LECTURE ON SICK DIET.—At the Food Exposition now being held in this city, Mrs. Rorer, who has obtained a national reputation in the art of cooking, gave a lecture on Doctor's day, on

the preparation of foods for the sick. The lecture was largely devoted to the albuminoids, and formulæ were given for such articles of diet as albuminized whey, frozen junket, chicken, panada, and beef paste. The lecturer also dwelt largely upon the subject of infant feeding, especially regarding milk, taking the view commonly held by the medical profession, and the subject in this way may be presented so that much good may arise from the lecture.

DIPHTHERIA AGAIN RAMPANT.—Diphtheria has spread rapidly in the northern section of the city, and for the week just closed four deaths from the disease have occurred in that section. The disease exists in both public and parochial schools, and the principals of those institutions state that owing to the prevalence of the disease there are many absentees, and as no one has been detailed to look after these students it is not known whether they remain away for fear of contracting it or whether they have already been affected.

DR. WILLIAM ASHHURST, who has for several years been practicing medicine in Mexico, has returned to the city and has established offices at his father's residence, 2000 West DeLancey Place.

DR. AND MRS. S. WEIR MITCHELL will leave shortly for Europe, and subsequently, Egypt, where they go for the benefit of the health of Mrs. Mitchell, who has been slowly convalescing from the serious illness of last winter.

DISLOCATION OF ENSIFORM CARTILAGE.—A man weighing 200 pounds has been admitted to St. Mary's Hospital for a dislocation of the ensiform cartilage. The patient is an employe of a large mill, and it is supposed that the injury was received while performing his usual duties in lifting several heavy gates about the premises.

Washington.

HEALTH OF THE DISTRICT.—The report of the health officer for the week ended November 12, shows the total number of deaths to have been 98: 69 white, and 29 colored. The principal causes of death were: Nervous diseases 11, circulatory 7, genito-urinary 6, consumption 15. There were 5 fatal cases of typhoid fever, 4 of diphtheria, 1 each from whooping cough and scarlet fever. At the close of the week there were 130 cases of diphtheria and 120 of scarlet fever. There were 124 births, of which 61 were white and 63 colored.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—At the meeting of the Hospital Board, November 11, the report of the attending staff showed a steady increase in the work of the hospital. The board has decided to make extensive improvements in the building. The operating and the emergency rooms are to be remodeled and new tile floors and steel ceilings placed throughout the building. The Ladies' Auxiliary Board has offered to appropriate \$800 to assist in the improvements.

CONTAGIOUS HOSPITAL FUND.—At the special meeting recently held by the Daisy Chain Hospital Promoters, it was decided to donate the \$12,000 to the Garfield Memorial Hospital to assist in building the contagious disease hospital, now in course of erection. The funds are available immediately.

FOR REMOVAL OF WEEDS.—Health Officer Woodward has prepared a bill enforcing the removal of weeds from building lots in the district. The Bill provides that whenever there are weeds four or more inches in height within the district, the owner or occupant of the premises shall remove the same after seven days' notice. A penalty of \$10 fine is provided.

PURE FOOD LAW ENFORCED.—Three grocers were recently fined \$15 each for violating the Pure Food Law. It was shown in court that they exposed for sale and sold a commodity called lard, which, after examination by the district chemist, proved to contain no lard whatever, and which was a mixture of beef tallow and cottonseed oil. The health department is rigidly enforcing this law and, as a result, many of the adulterated foods are disappearing from the shops.

WILL OF DR. HARRISON.—The will of the late Dr. George

Byrd Harrison has been filed for probate with the registrar of wills. The instrument was made in 1883, and bequeaths all his immense estate to his wife.

ANOTHER SURGEON SUED.—One Forest has recently entered suit against Dr. Thomas P. Mallon of the Providence Hospital, seeking to recover damages in the sum of \$10,000. The usual declaration is set forth, "incompetent doctor, short leg, subsequent pain and suffering, and a need of money to soothe the woe." This is the second suit of its kind recently entered in the District, and the doctors may expect an epidemic of such suits. It is rumored that a son who was born with a short leg is about to enter a suit for damages against his mother.

MILITARY SURGEONS ASSIGNED.—Major John W. Bayne, brigade-surgeon, U. S. V., has been ordered to Washington and placed in charge of all sick men of the Army arriving here. Acting-Asst.-Surgeons Chas. G. Marbery and George D. Morris have been ordered to return from Chickamauga and Porto Rico, respectively, and report in person to the Surgeon-General.

Louisville.

KENTUCKY UNIVERSITY.—The announcement of the Medical Department of Kentucky University has just been issued, with the following faculty: T. C. Evans, dean, professor of ophthalmology, otology and laryngology; Henry E. Tuley, secretary, professor of principles and practice of medicine and diseases of children; Leon L. Solomon, professor of materia medica and therapeutics and of pathology; Carl Weidner, professor of physiology and histology; W. Ed. Grant, professor of chemistry and cutaneous and genito-urinary diseases; J. Garland Sherrill, professor of surgery; Henry L. Stone, A.M., professor of medical jurisprudence; and the following clinical professors: T. E. Evans, ophthalmology, otology and laryngology; Henry E. Tuley, diseases of children; Leon L. Solomon, medicine; Carl Weidner, medicine and diseases of the chest; Henry R. Koehler, cutaneous and genito-urinary diseases; Louis Frank, gynecology and abdominal surgery; J. Garland Sherrill, surgery. The following are of the corps of instructors and laboratory directors: Sam. Holloway, surgery; Geo. C. Leachman, anatomy; John E. Hays, histology and bacteriology; Louis Rominger, histology. Kentucky University is the result of the coalition of Bacon College and Transylvania University in 1799, since which time it has been known as Kentucky University. The University comprises four colleges, each under the government of its own faculty, and an academy or preparatory department, in charge of a principal and assistants. The four departments are located at Lexington, Ky., but the curators of the University, desiring to establish the Medical Department, have chosen Louisville for the location of it. The College has adopted the requirements of the Association of American Medical Colleges and the teaching will be upon the broadest and most enlightened line of medical teaching. It has obtained quarters in the building formerly occupied by the Louisville College of Pharmacy and has fitted up elaborate laboratories and clinics, there being already adequate lecture-rooms.

CONTAGIOUS DISEASES.—A change has been made in the law governing the reporting of contagious diseases, to include typhoid fever, consumption and whooping cough. The list already includes scarlet fever, diphtheria, smallpox and cholera.

Detroit.

WAYNE COUNTY MEDICAL SOCIETY.—At the regular meeting held November 17, Dr. J. A. Weitz read a paper on "Infantile Paralysis." He said that the prophylaxis and management of infantile paralysis were not given the attention that they should have by the medical profession generally. The belief was too common that it is beyond our power to prevent in any measure the occurrence of the evil or mitigate the results. He divided the cerebral palsies of infancy into three classes: fetal, natal and post-natal. The fetal cases, he said, are evi-

dently the result of prenatal influence, due mainly to errors in development, with occasionally a case dependent upon traumatism or infection in utero. As to post-natal cases, all evidences point to vascular obstruction as the lesion, whether thrombosis or embolism, is not definite. Toxemia in childhood often produces convulsions and temporary loss of power, but these are not included in the class of post-natal infantile paralysis or hemiplegia. Convulsions in young children, from apparently trivial causes, are so frequent, without serious result, that the profession are not sufficiently awake to the grave possibilities surrounding a case of this kind. We are thus frequently taken by surprise. In the class of cases mentioned as natal palsies the pathology is quite definitely settled, although investigations have been comparatively recent. The cause is probably always meningeal hemorrhage. In the prenatal cases our duty consists largely in the proper care and management of the prospective mother. In post-natal cases we have a similar office to perform in the management of the children among our clients, with the additional duty of directing the training of the residue of brain after an injury of this kind, besides conducting the case through the attack of acute symptoms. As the cases of cerebral hemorrhage are nearly always due to traumatism at the time of labor, we have a more active duty to perform in the matter of prophylaxis and in the active interference for the relief of the lesion. The cases are always due to difficult labor, where instrumental delivery is called for, so it behooves the physician to make vigorous efforts to prevent the condition which would give rise to a difficult labor. Where the lesion has occurred surgical interference should be tried for the relief of the condition.

CHANGE OF ADDRESS.

Anderson, J. A., from 8042 Edwards Av. to 151 Cheltenham Pl., Chicago.
Blue, W. R., from 1807 4th St., to 2205 3d St., Louisville, Ky.
Catlin, G. E., from Lake Geneva to L. B. 532 Marshfield, Wis.
Cummings, Wm., from 5th and E Sts. to 820 5th St., San Diego, Cal.
Davison, J. A., from Eldorado to 715 Washington St., Dayton, Ohio.
Earl, R. W., from Columbus, to 2211 Cedar St., Milwaukee.
Gale, M. G., from Rowena to 1940 Washington Av., Denver, Colo.
Gibben, J. H., from Jefferson Barracks, Mo., to 324 S. 19th St., Philadelphia, Pa.
Greenley, T. W., from Leon Lake to Lake Placid, N. Y.
Hagopian, S. M., from Boston, Mass., to Exeter Hall, The Strand, London, W., Eng.
Haw, U. P., from Farmington to Commerce, Mo.
Hazelwood, A., from Shepherd to Aldrich Blk., Grand Rapids, Mich.
Hulen, A. H., from Galveston, Texas, to 71 W. 49th St., New York City.
Lisle, J. B., from Georgeville, N. C., to 97 W. High St., Springfield, Ohio.
Ransom, C. C., from Richfield Springs to 152 W. 48th St., New York.
Schoofs, J. Z., from Remsen, Iowa, to Johnsburg, Wis.
Shoemaker, S. E., from Reiffsburg to Poneto, Ind.
Smith, W. O., from New Castle, Pa., to Toledo, Ohio.
Westledge, R. B., from Dubuque, Iowa, to 576 Jackson Boul., Chicago.
Wright, J. C., from Chicago, Ill., to Clear Lake, Iowa.

LETTERS RECEIVED.

Alton, C. D., Hartford, Conn.; Ammonol Chem. Co., New York City; American Therapeutic Co., New York City.
Baldwin, J. F., Columbus, Ohio; Barto, F. C., Plainview, Ill.; Behl, W. H., Salt Lake City, Utah; Bracken, H. M., Minneapolis, Minn.; Bulson, A. E., Jr., Fort Wayne, Ind.
Cantwell, B. F., Earleville, Mo.; Chandler, A. W., Compton, Ill.; Chicago Medical Book Co., Chicago; Cokenower, J. W., Des Moines, Iowa; Conkey, E. R., Waterbury, Conn.
Daniel, F. E., Austin, Texas; Dennis, F. S., New York City.
Earl, G. W., Hermansville, Mich.; Eshner, Augustus A., Philadelphia.
Gahn, J. P., Ellisville, Ill.
Haist, E. A., Brimley, Mich.; Haw, U. P., Commerce, Mo.; Hertzler, A. E., Halstead, Kans.; Huhell, A. A., Buffalo, N. Y.; Hummel Adv. Agency, A. L., New York City.
Kempson, J. F. & Co., New York City; Kierman, J. G., Chicago; Kress & Owen Co., New York City.
Long, J. D., Chicago.
Maker, L. E., Sac City, Iowa; Malsbary, G. E., Cincinnati, Ohio; Mathews, J. M., Louisville, Ky.; Memminger, A., Charleston, S. C.; Merck & Co., New York City; Merrick, M. B., Passaic, N. J.; Milliken & Co., J. T., St. Louis, Mo.; Medical and Surgical Review of Reviews, Ltd., London, Eng.; Moe, A. J., Chaseburg, Wis.; Morse Adv. Agency, L. D., New York City; Morini, Vincense, Rome, Italy; Morris, Wm., Lebanon, Ill.; Moss, R. H., Niagara, Ky.; Mulford Co., H. K., (2), Philadelphia, Pa.
Otterson, W. D., Hillsboro Bridge, N. H.
Palatable Water Still Co., Chicago; Phelps, A. M., New York City; Platt, H. B., New York City.
Ralston, C. D., Arcola, Texas; Richardson, S. W., Cleveland, Ohio; Robinson, R. R., Wakefield, R. I.
Stroburg, J. A., Burlington, Iowa.
Thruslon, John, Louisville, Ky.
Wells, W. A., Washington, D. C.; Wheeler, C. T., Lexington, Ky.; Willson & Co., H. B., Washington, D. C.; Wine, R. E., Sewanee, Tenn.; Wingate, U. O. B., Milwaukee, Wis.; Woldert, E. A., Philadelphia, Pa.
Young, J. P., Empire, Ohio.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, DECEMBER 3, 1898.

No. 23.

ORIGINAL ARTICLES.

PRINCIPLES OF THE DIETETIC TREATMENT OF DIABETES MELLITUS.

Read before the Chicago Society of Internal Medicine, Nov. 22, 1898.

BY C. W. PURDY, M.D., LL.D.

CHICAGO, ILL.

I have been greatly honored by this society in an invitation to present before its members some of my views upon diabetes. While such a task is by no means an unpleasant one, in view of the great intrinsic interest of the subject, the importance of the class of cases in clinical practice and, lastly, the familiarity of the picture to my mind, in consequence of having with considerable care and thought gone over this field with special interest for a number of years. I must, however, confess some hesitation in the undertaking, since very divergent views have been held upon the subject by so many eminent observers, not only as to the etiology and pathology of the disease, but also as regards its proper management. In addition to this the literature of the disease—which is prodigious in volume—is yet so inharmonious and even contradictory, as a whole, that it is exceedingly difficult to glean from it any very uniform or systematic basis of knowledge of the true nature or pathology of the disease. But while our knowledge of the nature and pathology of diabetes at present rests very largely upon theory and speculation, experience has taught us much that is valuable in the management of the disease, and therefore, it has seemed to me that the present discussion might prove most valuable and useful if confined largely within the limits of management. I have consequently chosen as the subject for present consideration the principles of the dietetic management of the disease, to which has been added a request that I make some special reference to the disease as it appears in the aged.

The dietetic management of diabetes has been a somewhat stereotyped matter for very nearly a hundred years, the old diet lists and forms having been perpetuated both in clinics and in text-books with comparatively few alterations since the days of John Rollo. This is the more regrettable in view of the fact that very decided advances have been made upon this subject within a comparatively recent period, so that our power of controlling the disease and of conserving the lives of these patients has been very distinctly advanced.

As regards the disease in the aged. So far as my own individual experience and observations are concerned, I have come to look upon diabetes after middle life as one of the most manageable diseases with which the physician has to do, if he only has entire control of the patient. So strong, indeed, has become my conviction of this fact as it appears to me, that I am in the habit of meeting the issue squarely with my

patients in the assurance that if they fall victims to the disease it will be the result either of their own or my neglect. I refer here especially to primary cases in people over 50 years of age, who have not already been neglected to the extent that the disease has made serious inroads upon the strength, and especially upon the body weight, of the patient. On the other hand, the compact between the physician and patient must be of the most solemn and vigilant order if the concerted assault upon the disease is to prove successful, because no other disease demands more detailed observation and closer watchfulness in all details of management, and the reasons therefor will be considered subsequently.

The diet of diabetic patients should be so ordered as to maintain and, if possible, increase the body weight and strength of the patient, as these are the first to be undermined by the disease. Now, in order to compass these primary objects, a systematic series of frequently recorded observations must be made of the quantity and quality of the food actually ingested; of the quantity and quality of the waste excreted, especially by the kidneys; and of the actual body weight. By this means only is it possible to detect those disturbances of metabolism caused by the disease and to refer directly to their cause. We shall be in a position still better to estimate these if we first take a brief survey of the relative and actual values of the various food products at our command. By comparing these with the known physiologic requirements in health, we shall be enabled the most readily to supply those deficiencies caused by the disease, and thus maintain that equilibrium of metabolism upon which all successful management depends.

In physiologic observations it has become the custom to adopt Rubner's suggestion of measuring body energy or force, which results from oxidation changes in the economy, by the unit value of the calorie—or the heat unit. We understand by the word "calorie" the amount of heat necessary to raise one kilogram of water one degree Centigrade. It has been ascertained after careful and repeated investigations that all our food products, through their consumption in the body, produce definite amounts of heat, or the equivalent of this measure in the form of force. By grouping together the various food products in their several chemic groups we shall be able readily to glance at the calorie value of each, and thereby adjust our diet list so as to cover the actual requirements of the economy. For example, it has been found that one gram of albumin, through its conversion into urea, water and carbonic acid, yields approximately four calories of heat or force; that one gram of carbohydrate, through its conversion into water and carbonic acid, yields approximately the same, i. e., four calories; that one gram of fat, by its conversion into water and carbonic acid, yields a little over nine calories; and that one gram of alcohol yields about

seven calories. With these data before us it is easy enough to establish a diet-ration that will readily maintain the equilibrium of metabolism in a healthy individual, since all we have to do is to furnish him food in quantity and quality such as will represent 2500 to 3000 calories. Thus from 100 to 120 grams of albumin, 55 to 70 grams of fat and from 400 to 500 grams of carbohydrate would cover the requirements, and these are about the average proportions of each naturally used in health.

In the case of the diabetic patient the problem is not so simple, because the carbohydrate foods in such cases are rendered more or less inefficient for the reason that they are more or less—indeed, sometimes totally—excreted in the urine as unused or waste material. We can very readily perceive what a serious obstacle is placed in the way of supplying the normal amount of nutritive material by the withdrawal of the whole or even a considerable proportion of the carbohydrate group, constituting as it does normally at least 60 per cent. by weight of the whole daily ration. Fortunately, however, in many cases of diabetes—in fact, in most cases after middle life—a very considerable capacity of utilizing carbohydrates remains. In such cases we may, therefore, give more or less carbohydrates, and the deficiency in heat or force units remaining may usually be made good by increasing the proteids. I have frequently in such cases been able to give from four to six ounces of ordinary table bread daily without causing sugar to appear in the urine, and this represents a calorie value of from 400 to 500 units.

As previously indicated, there exists among diabetic patients the greatest differences in individual capacity for utilizing the carbohydrates. Some can take and utilize comparatively large amounts, as has just been shown; others very much smaller amounts, while a few can not take carbohydrates in the smallest quantity without their immediate escape by the urine in the form of sugar. Not only this, but also very wide oscillations of the tolerance for carbohydrates occur in the same case at different, and sometimes, very briefly separated periods. We are not always able to fix upon the precise cause of these oscillations, because we are not entirely familiar with all the influences which lead to them, but they furnish us one of the strongest reasons for constant vigilance over the balance of metabolism. Again, some cases may ingest 200 grams of carbohydrate food and lose 45 or 50 grams by the urine, leaving available for the system 150 grams, nearly 450 units. In such case it is clearly good policy to allow a moderate proportion of carbohydrate food, both for its value as a strengthening and building material and for the variety it offers the patient in his daily ration.

Unfortunately, in some cases of diabetes, comprising chiefly spare subjects in the aged, and at some time all young subjects of the disease, carbohydrates can not be used without their total escape in the urine. In such cases the use of carbohydrate foods in any considerable quantity is distinctly injurious to the patient in more ways than one. In the first place, if these cases are put upon carbohydrates, in time they develop a decidedly decreased capacity for assimilating starch and sugar in all forms, because the cells concerned in sugar consumption are functionally weak and impaired, and their overwork leads with certainty to total impairment of function. In addition to this, the increased percentage of sugar in

the circulation—hyperglycemia—which always occurs under such circumstances, can not but be responsible for at least some of the many secondary complications of the disease; and in the aged especially, I might mention the damage so often resulting to the cardiac muscle, which so suddenly terminates the lives of so many aged diabetics. Again, if carbohydrates be liberally supplied in severe cases, they are not only of little or no use to the patient, but they take the place of other foods which would be valuable in sustaining nutrition. The picture must be familiar to all of you, to see diabetics who tell you that they can not get enough to eat, and are weak and spare. They eat and stuff themselves, yet grow daily weaker and more emaciated because their food largely escapes as waste unutilized by the organism. While the stomach is overloaded the tissues are starved. We may, therefore, safely accept the proposition that the use of carbohydrate foods in the severe grades of diabetes surely proves injurious if, indeed, not dangerous, and hence we must look to other sources to supply the deficiency made necessary by the withdrawal of this class of foods.

If we turn to the proteid group with the view of making this the exclusive source of supply, we are met by the serious fact that it is an absolute impossibility to introduce enough nutritive value in proteid to compensate the daily loss of material and force in the economy. Noorden points out that "1000 grams of meat and six eggs furnish at most but 1500 calories; a deficit of at least 1000 calories remains with its injurious consequences," if we attempt to diet these cases exclusively on proteids, and yet an exclusive meat diet has among us enthusiastic advocates. It is clear, however, that we can only increase the ratio of proteids with safety to certain limits, after which we must look to other sources to supply the deficiency resulting from withdrawal of the carbohydrates. It is precisely in this direction that the greatest advance has been made in the dietetic treatment of diabetes in recent times. By the substitution largely of fat we obtain a closely allied group of foods, chemically speaking, which represent a value in units nearly three times greater, and eminently suitable for our purposes. The French school was the first to recognize the value of the use of fats in these cases, and this principle has been incorporated in the French practice for a considerable time past. More recently it has been adopted in Germany and with much success. It has already been shown that the calorie value of fats is over 9 units per gram, while that of proteid and carbohydrates is only 4 units. It so happens in diabetes, for the most part, that there is a remarkable tolerance for fats; indeed, many of these patients have a special liking for fatty foods. In moderate grades of diabetes no difficulty will be encountered in substituting fats for a partial withdrawal of carbohydrates. These cases will, under such management, lose their glycosuria, gain in weight and strength, and progress most satisfactorily. The only question in this connection calling for serious consideration is that of the entire substitution of proteid and fats for carbohydrates in those graver forms of the disease in which all the carbohydrates taken into the system are immediately eliminated, or still more serious when even larger amounts of carbohydrates are excreted than are taken into the organism, as is sometimes the case. The argument that diabetic patients will not assimilate large quantities of fats has been repeatedly disproved, both experimentally and in actual practice.

so that the converse of this may be accepted as a rule to which there are few exceptions. Indeed, as much as 150 grams of fat have been given—representing 1350 calories—and with results most satisfactory. It has been demonstrated through Weintraud's experiments and observations upon metabolism, that the entire substitution of fats for carbohydrates effectually prevents the wasting of the body albumin and conserves the weight and strength of the patient.

There has existed a somewhat prevalent idea—although an entirely theoretic one—that large amounts of flesh foods predispose to diabetic coma. Now what little we think we know of the nature and cause of diabetic coma at present rests upon pure theory. In actual practice we certainly find that diabetic coma usually arises in those cases attended by a high percentage of sugar in the urine, and moreover, usually at the period or soon after the sugar excretion reaches its maximum. Furthermore, we are taught to believe and, I think, properly so, that the lower we are able to reduce the sugar percentage in the urine, the further shall we remove the patient from the danger of the appearance of coma. It should be borne in mind that an exclusive proteid diet is not here advocated, but rather the discussion is in favor of a proteid and fat diet in certain cases. I can not perhaps more tersely express the advanced views upon this question in conclusion than in the words of Noorden, to whom we owe so much for his classic digest of our knowledge on the subject. He says: "From what I have been able to glean from the literature, from what I myself have seen, and from what has been related to me by other judicious partisans of the fat-and-flesh diet, it appears to me that the dread of coma so produced is wholly unfounded. I believe, therefore, that for every really grave case of diabetic glycosuria, the fat-and-flesh diet to the exclusion of carbohydrates is to be regarded as the ideal regimen, against which no serious objection can be raised."

It remains in this connection to speak of the place that alcohol should occupy in the regimen of the diabetic, or if its use be advisable at all, and this question should receive careful and sincere consideration. We must, in the first place, keep in mind the well-known dangers of the use of alcohol to the nervous system, especially when employed in considerable quantities; and, moreover, we must not lose sight of the fact that the majority of diabetic patients are decidedly neurotic. So thoroughly has this been recognized, that many observers have claimed for the disease a nervous origin. Without admitting the latter as true, but recognizing the undoubted neurotic tendencies of these patients, it is clear that the use of alcohol has its dangers, especially if allowed in any large amounts, and therefore, if admissible it must be with due caution and only within strictly moderate limits. On the other hand, we can not ignore the fact previously alluded to, viz., that alcohol is an agent of considerable value as a food, possessing, indeed, about 7 units per gram, or nearly double that of proteid and carbohydrates. Now, in the more serious cases, where the range of diet is so limited, any change whatever comes as a decided relief both to the palate and stomach. The sense of relief to a full stomach by the post-prandial swallow of cognac is well known. We are also aware of the stimulus to the appetite and digestion afforded by the use of a glass or two of good wine, especially when served with the meat course, and particularly is this the case

if much fat is served. It is precisely here that alcohol may be made valuable to diabetic patients as an adjunct food. By serving alcohol in proper quantity with the fatty foods, it enables the patient more readily to increase his fat ration, while at the same time, by furnishing in itself considerable potential force—about 70 calories to the average drink of spirits as whisky—it reduces the actual amount of fat required by an equal number of units. This is important where so much fat is to be consumed, but especially so in the more limited class of cases in which fats are not very well tolerated. Noorden lays down the rule that the average daily allowance of alcohol in ordinary cases of diabetes should not exceed 60 grams. This in itself represents a value of 420 units. This quantity of alcohol (60 grams) is contained in about 4 ounces of whisky; in brandy it would be about 3½ ounces; in white table wine, as Moselle, it would be 30 ounces; in medium grades of claret it would be 23 ounces; in good Burgundy it would be 24 ounces. In prescribing alcoholics each case should be studied upon its individual merits. In some cases the amount should be more moderate than above indicated, especially in those who are unaccustomed to its use, in very young subjects, and in the very pronouncedly neurotic. On the other hand, exceptional cases are met with in which 60 grams of alcohol may with benefit be considerably exceeded, notably in those long accustomed to its use.

Having now somewhat broadly reviewed the essential principles upon which the dietetic treatment of diabetes mellitus should rest; I shall, in conclusion, briefly outline what seems to me the most desirable method of their application in practice. In beginning the treatment it is generally conceded that a gradual enforcement of dietary restriction is safer than an abrupt change from a liberal to a strict diet. Aside from the more serious accidents—such as coma—which some authors fear from abrupt changes, we shall certainly meet with pronounced digestive disorders if we change a liberal mixed regimen for one containing, say 650 grams of meat per day. I usually, therefore, in the beginning furnish the patient the following list of articles allowed:

All meats, including beef, mutton, veal, ham, bacon, poultry and game of all kinds—roasted, boiled, potted, smoked or preserved in any way except with sugar. Sweetbreads, kidneys, heart, tongue, tripe, brain, giblets and marrow-bones, American canned meats and meat extracts, Australian corned beef.

All kinds of fresh fish, including oysters, crabs and lobsters. Dried, cured or smoked fish, including codfish, haddock, herring, mackerel, eels, sturgeon, salmon, sardines, anchovies, shrimps, caviar, frogs and turtles. Fats, oils (animal or vegetable), butter, gelatine. Eggs, raw or cooked any way except with flour. Fresh vegetables, including spinach, lettuce, cucumbers, green string beans, asparagus, cauliflower, red and white cabbage, Brussels sprouts, soft green corn on the cob, mushrooms, onions, cress, leeks, celery, radishes, oyster plant.

Preserved vegetables, including tinned asparagus, French beans, cucumbers pickled in brine or vinegar, mixed pickles, chow chow, olives, sauerkraut, tinned French peas. Eggs, cheese, cream, butter, gelatin and all fats and oils. Spices, including salt, pepper, mustard, curry, cloves, nutmeg, parsley, capers, etc. Soups and broths, if clear and unmixed with bread crumbs, flour, barley, rice or cereals. Nuts, as almonds, walnuts, Brazil nuts and filberts. Tart, apples, strawberries, lemons, gooseberries, currants and tomatoes, in moderation, if prepared without sugar; — ounces of table bread a day.

Beverages.—Pure water, all table mineral waters, coffee and tea with or without cream, Rhine wine, Burgundy, claret.

You will observe that a blank space is reserved for bread allowance, which is usually filled in at three

ounces per day. Under the head of special instruction to the patient, directions are usually given to aim at the daily use of from 300 to 400 grams of butcher's meat, about 70 grams of fats, after which the balance of the daily ration may be filled in from the list *ad libitum*. On the third day, careful observations should be made and recorded of the following leading features: The weight of the patient as compared with that recorded three days before; the quantity of the urine; the total output of urea and sugar for the last twenty-four hours. The patient should now be kept upon practically the same lines of diet for from ten days to two weeks, observations being made and recorded of the weight, the excretion of urea and sugar every second or, at most, third day, and no specific medication whatever should be employed. Should, however, the twenty-four hours mixed urine at any time be found sugar free, the allowance of bread may be slightly increased—say to four or five ounces daily. At the end of two weeks, if the urine be not free from sugar, the above diet list is substituted by the following more strict one.

• All meats, including beef, mutton, ham, bacon, poultry and game of all kinds; roasted, broiled, smoked, potted or preserved in any way except with sugar or prohibited vegetables. Sweetbreads, kidneys, heart, gizzards, tongue, brain and marrowbones. Fresh fish of all kinds, except oysters. Dried, cured or smoked fish, including codfish, haddock, herring, mackerel, salmon, crabs, lobsters, sardines, anchovies, shrimps, eels, caviar, frogs and turtles. Fats, oils (vegetable or animal), butter.

Fresh vegetables, including spinach, lettuce, cucumbers, green string beans, asparagus, cauliflower, red and white cabbage, Brussels sprouts, mushrooms, onions, cress, leeks. Preserved vegetables, including tinned asparagus, French beans, cucumbers pickled in brine or vinegar, mixed pickles, sauerkraut, chow-chow and olives.

Spices, including pepper, salt, curry, cloves, nutmeg, English mustard, parsley, dill, capers, caraway seed, laurel. Soups and broths, if clear and unmixd with bread crumbs, flour, barley, rice or cereals. Cheese, such as Neufchatel, Gorgonzola, Stilton, Brie, and so called cream cheeses. Eggs, raw or cooked in any way without admixture of flour. Nuts, such as almonds, walnuts, Brazil nuts and filberts.

Beverages.—Pure drinking water, all table mineral waters, plain or carbonated, clear or mixed with lemon or lime juice, coffee and tea with or without cream. Rhine wine, claret, Burgundy.

It will be observed that in this list bread is omitted altogether and that carbohydrates are practically eliminated from the ration. The patient is now instructed to increase the consumption of butcher's meat to from 400 to 500 grams per day; to increase his daily fat ration to 100 grams; and to take from 20 to 40 grams of alcohol daily. The same systematic series of recorded observations should be continued every second or third day, i. e., of the weight of the patient; the quantity of the urine; the output of urea and sugar.

The majority of diabetic patients will upon this course lose their glycosuria, and begin to gain in weight and strength. In such cases the further management of the case consists in readjustment of the diet, from time to time, so as to offer the patient as much variety as possible. Thus at intervals a slight increase of carbohydrates may be tried—as an ounce of bread—in order to test the toleration point for this class of foods, but in so doing constant watch must be kept over the output of urea and the presence or absence of sugar in the urine.

In the most serious form of the disease the above lines of management will often be found inadequate to totally eliminate the sugar from the urine, and

moreover the patient still slowly loses weight. In such cases the diet must be practically restricted to flesh, fat and alcohol, with perhaps some green salad, as lettuce or cucumber. The daily ration should be made to conform approximately to the following features: 500 to 650 grams of butcher's meat, a pint of broth, 3 to 6 eggs, 130 to 140 grams of fat, and 40 to 60 grams of alcohol. This will furnish fully 2500 units, or calories, or slightly more. The large proportion of fats to be consumed presents, perhaps, the most difficult part of the dietary problem to be solved. This, however, becomes less difficult in most cases, if alcohol be served with the larger meals of fat. Then, too, if every opportunity be improved of working into the ration some form of fat that is found agreeable to the patient, the required amount is often very easily reached. With the view of facilitating this object I furnish my patients of this class the following list of highly fatty foods from which they can select the most agreeable forms for use:

Butter, fats and oils, cream, marrow-bones, bacon, fat part of ham, beef, mutton, pork; beef tongue, fat goose, mackerel, salmon, white fish, eels, sturgeon, sardines in oil, yolk of eggs, German sausage (Cervelatwurst), Cheddar cheese; also cream cheeses, as Stilton, Neufchatel, Stracchino, Gorgonzola, Brie. Green salads, as lettuce and cucumber, with French dressing.

The greatest skill in the management of these cases consists chiefly in the adjustment of the diet to the individual case; in other words, in so varying the proportions of proteid and fat as to suit the variable individual tolerance for each in each special case. We must in all cases aim to supply in fat and meat combined a food value equivalent to rather more than 2000 units. The average case will probably tolerate about 600 grams of meat and about 135 grams of fat, which covers the value in units aimed at. In the beginning it will frequently be found difficult to exceed 100 grams of fat, and in such cases we must try a proportionate increase of proteids until we can increase the toleration limit of fats. The latter is to be attained by judicious use of alcohol, up to 50 or 60 grams per day, served with the fat ration, and by experimenting with different forms of fatty foods until those are found that agree best with the case. The evidences of non-toleration, in other words, excess of proteids and fats, is marked by loss of appetite, sometimes vomiting, attacks of diarrhea, with gastro-intestinal catarrh. Upon the appearance of such symptoms the quantity of food must be reduced for a time and astringent alcoholics, such as claret or cognac, should be employed. Sometimes a very large supply of proteid food may seem to be tolerated, at least it does not cause any material disturbance of the stomach or bowels, but upon careful observation of the urine, a distinct augmentation of sugar excretion is noted as a consequence. In other words, it is not uncommon to find that in pushing the proteid ration to say 700 grams of meat per day, that considerable sugar appears in the urine and that if the meat be reduced to 500 grams per day, the sugar totally disappears from the urine. The explanation of this phenomenon is as follows: In the decomposition of the albumin molecule of the food in the process of digestion, a very considerable amount of carbohydrate is liberated therefrom—at least 35 per cent. of the albumin by weight. So long as the system is able to utilize all the carbohydrate resulting from the cleavage of the albumin ingested, the proteid ration is below the metabolic toleration point and the urine remains free from sugar; but so soon

as this is exceeded the toleration point is passed, even though the stomach may be able to retain more with comfort, and sugar appears in the urine.

It is impossible within the necessary limits of this paper to do more than outline the main features of this subject. The details, if more minutely followed, would occupy altogether more time and space than are at my present disposal. It may, however, be stated in conclusion, that the careful adjustment of the foregoing ration to the daily life of the diabetic patient with comfort and complete toleration, in accordance with the principles laid down, so as to maintain a perfect balance of metabolism, constitutes the highest skill attainable in the dietetic treatment of diabetes. It also probably marks the present zenith line of our dietetic resources in this disease.

SUGGESTIONS ON THE LIMITATIONS AND TREATMENT OF JUVENILE CRIMINALS.

Presented to the Section on State Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The growth of the criminal class is nearly three times greater than the growth of the population. Such is a reasonable deduction from the publication of the Eleventh Census of the United States, and this blot on our civilization demands treatment.

It is a great question—one that can not be settled by the courts and the church. It contains within it many problems that can only be solved by the wise physician. Crime has a physical basis; biologic conditions are directly and indirectly important factors in determining human action. Conditions more or less pathologic exercise a most important rôle in the production of crime. It requires but a glance at the inmates of a reformatory or penitentiary to satisfy oneself that criminals are physically inferior, exhibiting on every side stigmata of degeneracy. They have features that differentiate them from their more fortunate brethren. They come into the world—at least 30 per cent. of them—with an inheritance that they could no more overcome than they could the course of the sun, and, combined with this vicious inheritance, there has been a no less bad development in the midst of ignorance, poverty, and crime. Our jails are the nurseries of crime. The juvenile offenders here receive valuable lessons in crime; how to do it most skillfully and with the least danger of detection; and when their time of release comes they go out much better equipped to follow their occupation successfully.

Morrison, in his admirable work on "Juvenile Offenders," establishes, beyond contradiction, the following four important propositions: 1, that the death-rate among juvenile offenders is higher than among the general population; 2, that they have sprung from short-lived parents; 3, that their average stature is three to four inches lower, and their weight 30 per cent. less than children of the same age in the general population; 4, that their mental capacity is much below normal. These propositions establish the fact that the juvenile offenders are degenerates, and, if so, the repressive agencies in the shape of

prisons and police are altogether inadequate to cure them.

In order to limit those criminals, society must stop their propagation. Dougdale found in the "Juke" family 1,200 criminals and paupers as the output of one vicious ancestor in seven generations. McCulloch found 1,750 criminals and paupers in six generations as the progeny of "Ben Ishmael," and these cases are by no means exceptional. We must have, therefore, laws regulating marriages, and, in formulating such laws, we must remember the close relation between alcoholism, other forms of inebriety, venereal diseases, and degeneracy. We must, however, bear in mind the fact that the subjects of insanity, epilepsy, and tuberculosis are all alike accompanied by such marked involvement of the nervous system that their progeny are usually inferior physically, and hence liable to drift into this large and rapidly growing class.

The marriage license, in addition to present requirements, should demand evidence that both parties are in good health, that they are not inebriates, not epileptic, not tuberculous, not insane, not criminals, not paupers, and that they have no active venereal disease. The limitation, moreover, demands that the children of vicious parentage be speedily identified and taken from their bad environments before they become criminals; placed in charge of suitable custodians, to be appointed by the courts; and when properly educated and trained in some useful employment, they be given a reasonable capital with which to begin life, unless it shall be found by competent medical authority that they are incorrigible—and then they should be permanently secluded.

The juvenile criminal should not be placed in a common jail when arrested, for in this nursery of crime his malevolent tendency will simply be more fully developed, and, if he is an accidental transgressor, it is most reprehensible to brand him as a "jail bird," for, with this added stigma, his reformation will be made more difficult. Special provision should be made for him while waiting trial, so that the good, rather than evil, that is in him may be developed. If convicted, he should be sent to a reform school, where his physical, normal, and intellectual powers will receive proper development, where he will be taught some useful occupation that will, in after life, give him a reasonable means of livelihood; where he will receive such attention from a physician versed in criminal anthropology as his condition requires, and who will assist ultimately in determining the question of his curability, or incorrigibility. When he has been cured, he should be discharged and given a reasonable sum of money, as a capital with which to maintain himself until he can make a start in his legitimate life work. This scheme for the treatment of juvenile offenders is no dream, but is a realization in "Darkest Russia."

This plan is now, and has been, in successful use for many years in Moscow, and our reformatories at Pontiac, Ill., and Elmira, N.Y., are steps in the same direction. The treatment of criminals is just as illogical today as was the treatment of the insane one hundred years ago, and the reform must come through the beneficent influence of the self-sacrificing and philanthropic members of this great medical association.

Let us have a Department of Public Health!

STATE REGULATION OF MARRIAGE FOR THE PREVENTION OF COMMUNICABLE AND HEREDITARY DISEASES.

Presented to the Section on State Medicine at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Society as constituted under whatever form of government is more or less incomplete in its organization. Evolution, here as elsewhere, is working out the destiny of social affairs. New sociologic problems arise with every advance in our commercial relations, our manufacturing interests and our knowledge of the useful arts and sciences. Especially is this true as it relates to the causes and prevention of diseases. A fundamental principle, recognized by the earliest patriarchal, tribal and feudal forms of society, up to the highest development of representative governments, is the right of the individual to protection against physical harm from his enemies. It is only an elaboration of this principle which makes it the business of the State to do for the mass of individuals, for the good of society, what can not be done or so well done by the individuals themselves.

In return for this protection and share in the general prosperity of the whole, the individual is called upon to make many personal sacrifices. He must "keep off the grass," *pro bono publico*, in many localities as he travels through the experiences of life. Although their operations may work hardships at times to particular individuals, nevertheless sanitary, hygienic and quarantine regulations for the protection of the public health are widely acknowledged to be measures of the highest wisdom. The public is easily aroused to the dangers of epidemics like cholera, yellow fever and smallpox, and submits to wise regulations for the prevention or stamping out of these fearful scourges. The sudden onset, rapid spread and swift destruction to life invest these diseases with a tragic interest that on occasion alarms the public, paralyzes local industry and commerce, and engages public attention often beyond the gravity of the situation. No expenditure of means or measures is counted too great on the part of governments in order to protect their subjects from such diseases. Happily, the frequency and force of these scourges have been greatly reduced in civilized countries, for they have been almost shorn of their terrors through vaccination, quarantine and hygienic regulations.

Alive to these great dangers, as we should be, vigilant for their suppression with the financial, legislative and executive resources of the State, as we are, what is our attitude toward other infectious diseases, whose sources are equally well or better known, and whose methods of contamination are constantly demonstrated on every hand—diseases whose endemic presence is perennial, whose ravages are greater because of their constant, silent and concealed operations? If the epidemics we have just mentioned may slay their hundreds or thousands on occasional outbreaks, the preventable diseases like gonorrhoea, syphilis and tuberculosis are slaying annually their hundreds of thousands. The State is opposing the ravages of this class of diseases with feeble barriers, or none at all. The public is obtuse and indifferent, because their devastations are not matters of sensa-

tional newspaper reports and do not come with the tragic effect of sudden onset and swift destruction. The masses are ignorant concerning the gravity of these diseases, or any adequate means of limiting or preventing their transmission.

Every measure in this direction which is wise in its provisions should have the hearty support of the medical profession. Indeed, it is through our profession alone that a knowledge of the extent and ravages of these diseases can be imparted and means for their prevention pointed out. In this paper we wish to discuss but one of many prophylactic measures which we believe would prevent much injury and death, and would protect many innocent wives and children who suffer most cruelly from communicable diseases by direct contact or by heredity.

We earnestly advocate more stringent laws regulating matrimony. We believe the public good demands that every candidate presenting himself or herself for license to marry should be required to file a certificate of health from a legally qualified examining physician, showing freedom from hereditary diseases, like insanity or epilepsy, from all active tubercular infections, and from communicable venereal diseases.

All individuals entering the bonds of wedlock have a right to know that their own bodies shall not be contaminated through this relation by reason of already existing disease or taint. They have a right to know that their progeny shall not be the victims of hereditary diseases or direct contamination from the same source. Every child has the inalienable right to be well-born, at least, if not born a thoroughbred. Who can safeguard these rights but the State? In these days of physical degeneracy among the highly civilized nations matrimony is governed more by questions of mere sentiment, finance or expediency than by a consideration of physical, mental or moral fitness. If in human breeding we ignore the simplest rules of those who breed physical perfection in horses, cattle, pigs and poultry, it should, at any rate, be obligatory on the part of the State, to protect the lives and health of those who are helpless to protect themselves. The least it can do is to prevent the diseased from contaminating the healthy and innocent through the license to marry.

Legal restrictions placed on our statute books with this end in view would work hardship to no one who has a moral right to marry. Such legislation would be of immense benefit as a means of public education concerning the prevalence of these dangerous maladies and the frequency of their distribution to innocent, unsuspecting wives and their helpless babes. They would become topics for discussion in every home where a marriage was prospective. The public would very soon inquire into the reasons for such legislation. It would learn the truths concerning evils which the profession knows full well, but upon which it is powerless to give public instruction, and against which, unaided by law, it is powerless to enforce protective measures.

The laity would soon come to know what Noeggerath and Ricord taught many years ago: that the majority of all males become gonorrhoeic usually *before* matrimony, and that a large proportion of these remain in uncured chronic or latent stages for indefinite periods, during which they can impart this dangerous disease to others; that 10 to 30 per cent. of all females become gonorrhoeic usually *after* matrimony, and that the results are usually of much graver

importance to women than to men; that gonorrhoea is accountable for most of women's pelvic woes; that it is the greatest cause of sterility in both sexes (Keherer); that it is the greatest single cause of blindness—18.5 to 23.5 per cent. of all the blind in early life being from this cause alone (Magnus, Fuchs and Lucius Howe); that it often kills and that from this cause alone a license to marry may also prove a death-warrant to a confiding bride. The laity would soon come to know that syphilis, of all diseases, is the greatest cause of abortion; that one-third of all syphilitic pregnancies abort or are still-born; that one-third of those born alive die during the first six months (Carpenter and Grassowitz); that the remainder are more or less enfeebled, deformed or short-lived through lowered vital resistance; that locomotor ataxia and certain forms of insanity are almost synonymous with so-called tertiary syphilis. The laity would soon come to know that the great white plague of consumption is the king of death among all diseases, cutting down from one-seventh to one-ninth of the human race; that it is propagated through the marriage of tuberculous individuals; that the progeny of such inherit weak constitutions and a marked tendency to contract the same disease. The laity would soon come to know that persons tainted by mental and nervous derangements, like insanity, chronic alcoholism, dipsomania and epilepsy, are very liable to beget a progeny of physical, mental and moral degenerates through a license to marry. It would learn that all these classes of diseases thrust upon the State a great burden of caring for the diseased, the defectives and the criminals that largely fill our asylums, poorhouses and jails; that the State has not only the right to protect the immediate interests of the individual, but its own interests also by preventing the marriage of those who might be inimical to private and public welfare.

With such widespread knowledge a strong conviction would prevail that the diseased and defectives have no business to marry. It would be regarded as a crime for these classes of individuals to marry, and the demand would be imperative on the part of the public that effective, discriminating laws regarding license to marry must be enforced for the public good.

The vital importance of matrimony to organized society makes it obligatory on the part of the State to impose few barriers to its free exercise. "Matrimony is the restraining power which keeps society decent, to say nothing of the higher blessings which flow from it." (Bishop.) Again, Ayliffe declares, "As the first cause and reason of matrimony ought to be the design of having offspring, so the second reason ought to be the avoidance of fornication." Manifestly the largest exercise of the institution of marriage—so essential to the highest good of society—should be encouraged between all persons qualified for this duty. But it seems to us equally evident that the State is under just as strong obligations to protect its subjects from the dangers of communicable and hereditary diseases on entering marriage, by requiring candidates to pass efficient medical inspection before granting to them the privileges and responsibilities of this important civil relation.

So far, restrictions against marriage in the United States have been confined to questions concerning minority, consanguinity and micidegenation. Attempts have been made to pass bills in some States to regulate the granting of marriage licenses with respect to

the prevention of disease. None have become statutory law so far as we have been able to learn.

Having shown conclusively, as we believe, the urgent need of wise legislation in this matter, the following working model of a bill is submitted by the author, for the drafting of which he is largely indebted to Dr. Frank W. Reilly, assistant health commissioner of Chicago, whose ripe judgment and experience in securing medical and sanitary legislation, and whose long connection with the Illinois State Board of Health eminently qualifies him to pass upon what may reasonably be expected of legislators in this connection. While this bill does not cover all that has been set forth as desirable, it involves the more important considerations, and if attainable will mark an advance which, let us hope, with enlightened public sentiment, may yet reach the higher ideals outlined in this paper:

A BILL

FOR AN ACT TO REVISE THE LAW IN RELATION TO MARRIAGE.

SECTION 1.—*Be it enacted*, by the . . . of the State of . . . That it shall hereafter be unlawful to issue a license to marry to any applicant for such license who fails to present with his application a certificate, as hereinafter provided, setting forth that the applicant is not the subject of acute or latent gonorrhoea, or syphilis in the communicable stages.

SEC. 2.—The certificate required shall be accepted from any reputable physician who is a member in good standing of the National, State, County, City or other similar recognized medical organization of the school of practice to which he or she belongs, and shall be in form and substance as follows, to-wit:

State of . . . }
County of . . . }
I, . . . M.D., a legally qualified physician and member in good standing of the . . . whereof . . . M.D., (Address . . .) is Secretary, do hereby certify that I have examined . . . resident of . . . an intending applicant for license to marry, and that my examination, made with due skill and thoroughness, and during a sufficient period of time, fully satisfied my professional judgment that said intending applicant is not the subject of any of the disqualifications for marriage specified in Sec. 1 of the Act to revise the law in relation to marriages, approved . . . 189 . . . in force . . . 189 . . .

I do, hereby, further certify that this certificate is given with a full realization of the sufferings entailed upon wives and offspring by marriages with the subjects of said disqualifications.

Witness my hand this . . . day of . . . 189 . . .
. . . M.D. Address . . .

SEC. 3.—The physician's certificate shall be dealt with in the same manner, as to registry, endorsement and preservation, as is now prescribed for the certificate of marriage.

SEC. 4.—All acts or parts of acts inconsistent, or in conflict, with this act are hereby repealed, and this act shall take effect and be in force from and after its passage.

ARTIFICIAL RESPIRATION IN RELATION TO STATE MEDICINE.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY EDWARD DAVIES McDANIEL, A.M., MD., LL.D.

MOBILE, ALA.

The purpose of State medicine is the protection of the life of aggregated man from injury and death. This purpose is mainly accomplished by protection from the causes of injury and death by preventing, avoiding or removing such causes and mitigating or curing their effects. As the whole must always include all its parts, so aggregated, nationalized, communized man must include its every constituent individual, and state medicine in its mission must embrace the warding off from each and every individual the causes that may imperil, impair or destroy the life of that individual. Life need not here be defined. Its existence is postulated. It is equally known that life exists in two states—the *latent* and the *manifest*. The latent is a dormant, germinal, quasi-hibernant state, with a capacity of being developed or aroused under proper influences into the manifest state char-

acterized by a display of definite aggregated and correlated processes and phenomena. These processes and phenomena, once developed, become the characteristic properties of life, the manifestations by and through which alone its existence is known and revealed to us. What these processes and manifestations are need not be here mentioned in detail, since they were enumerated in a paper entitled "The Relation of Physiologic Principles to Artificial Respiration," presented to the Section on Physiology and Dietetics, at the meeting in Philadelphia, Pa., June 4, 1897, and since published in the JOURNAL. In the same paper may be found enumerated the leading conditions of depressed life with their causes and treatment. As the leading process of human life after birth is respiration, so the leading measure for restoring life from dangerously interrupted or prolonged depressed conditions is artificial respiration with its appropriate preparations and adjuvants.

Connected with the value and importance of artificial respiration to State medicine, a very interesting practical and important question presents itself, viz.: How long may respiration be interrupted, suppressed or in abeyance and yet a reasonable hope of its restoration still be entertained?

From the most reliable sources of information at command, and covering the period of sixty years are presented the following statements:

Tanner, in his "Clinical Medicine," says: "Death is said to be the result where breathing is interrupted for any more than *three minutes*."

In a report of a committee of the Royal Humane Society of Great Britain with the very distinguished Sir Benjamin Brodie for chairman, in 1840, it is stated that "It is the opinion of the medical members of the committee, that the period, in cases of asphyxia, when artificial respiration might be successful is *very short and scarcely more than momentary*." In 1744 there was published, in Edinburg, a case of a man apparently dead from suffocation in a coal mine. "Mr. Topack used insufflation, mouth to mouth, bled him, caused him to be pushed, pulled and rubbed, as much as he could for *about an hour* when he *began* to come to himself." In the *Medical Gazette* (English), quoted by Dr. Howard of Baltimore, Md., Mr. Terry of Northampton gives "two cases of still-birth in which after nearly two hours he succeeded by breathing into the nostril and alternately compressing the chest." Dr. Howard also gives a case of three days' labor, in a primipara, in which a seven months' fetus was expelled *with every sign of life absent*. After the application of conjoined methods of artificial respiration for about *twenty minutes*, the child *began* to breathe. The cord was then cut and perfect health continued. Another case is given—one of a man who fell from a Staten Island steamboat. "About *twenty minutes* after the man fell from the bulwark rail into the bay, the boat backed and the man was hauled on deck *with no sign of life remaining*. Artificial respiration was commenced and in *about ten minutes* the patient gave a short gasp. The treatment was continued and in *about ten minutes more* he breathed naturally and exhibited consciousness." In this case you observe it was *thirty minutes* from the arrest of breathing to the inception of its return as indicated by the short gasp, and *forty minutes* to its full restoration.

Dr. Hamilton of Falkirk, in the *Monthly Journal of Medicine*, May, 1855, reported the following case, which proves that many infants apparently dead, may

be aroused to manifest life by means of artificial respiration long after the time when the effort is ordinarily abandoned.

About ten minutes before 7 P.M., Mrs. C. was delivered of a large male child. A knee presented, and to effect delivery considerable force was required. Even before one leg had passed from the vagina, meconium was voided very copiously and when the child was born it showed not the slightest trace of movement or of sensibility. The usual appliances of rubbing the breast with spirits, plunging the body alternately into cold and warm water, etc., were had recourse to, but apparently without effect. As a last resource artificial respiration was employed. In a short time a slight pulsation of the heart became perceptible and gradually increased in strength, but this was the only motion that could be observed. After having continued the artificial respiration for *an hour and a half*, a slight tremulous motion of the abdomen was noticed, which at first seemed to be merely the effect of the heart's motion propagated downward, but which after *another half hour* was distinctly seen to be produced by very weak and rapid respiratory movements. Along with this improvement, the color of the lips, previously somewhat livid, became of a red natural hue. In *three hours* the temperature was good, the pulsation of the heart was strong and the respiratory motions extended to the upper part of the chest.

In the London *Lancet* of Feb. 14, 1846, is an account of a case that occurred to Dr. Mackness of Hastings.

On his arrival the doctor was informed that the labor was over and that it had been over *ten or fifteen minutes*. He broke the membranes of an entire ovum which he found, tied the cord and gave the child to an attendant, when to his surprise he found another ovum, also entire, from which he extracted another infant. Both infants appeared to be still-born, but by inflating the lungs, dashing cold water over their bodies, wiping them dry and having their skins well rubbed, in *about fifteen or twenty minutes*, both showed signs of animation and on exposure to warmth, cried out lustily. In each of these cases an interval of probably *not less than twenty-five nor more than thirty-five minutes* transpired from the complete expulsion of the fetus to the first show of signs of animation.

In Camden, Ala., on Feb. 25, 1859, after a copious blood-letting practised on a primipara to prevent convulsions that were imminent, a large male fetus was very tediously passed through a relatively small and rigid outlet. It was apneic and apparently dead. Heart movements were imperceptible, but there was more firmness in the flesh of the fetus than is usually found in that of the dead. After trial and failure of Hall's ready method, persistent insufflations mouth to mouth, with warm cerebro spinal bath, cold sprinklings and dry frictions, were finally followed, *after twenty or more minutes*, by spasmodic contraction of the fetal hands and then a sudden gasp. Life signs improved gradually and in about an hour from the complete expulsion of the fetus, respiration seemed good, the cord was cut, the child dressed and I, with two other physicians in attendance, withdrew to another room. After a few minutes I was hurriedly summoned back with the alarm that the infant had stopped breathing. Insufflation was again practised with very tardy but ultimate apparently complete success. After again retiring and remaining for some time in the other room, I was called again to the breathless infant. Insufflation again succeeded. Apnea again occurred. More forcible insufflation was applied, and breathing once more returned, but with it there came a straining cough which persisted until a sudden copious rush of blood through the mouth and nose terminated the infant's life, *four hours and twenty minutes* after its expulsion from the mother and only a few seconds after the last insufflation.

It is perhaps fair to say that in Great Britain and the United States the most cautious conservative medical men, though once in accord with those who limit the capacity of life in adults to a compass of from two to four minutes after the cessation of breathing, are now converted to a more liberal creed. It is known that breathing may be voluntarily "held" for varying times, that practice may extend the time considerably; and that pearl divers and expert divers may safely reach *four minutes* or even *more*. Newspaper reports of executions by hanging and physicians legally detailed to witness such executions, agree that the pulse continues to beat for from five

to fifteen or more minutes after the rope stops the breathing, the average being about ten minutes.

We have not time to dwell at more length on cases, details and results, but feel warranted in stating: 1. That the length of time that adults may be apparently breathless and yet susceptible of resuscitation is not definitely fixed—that it doubtless varies greatly in different cases, is greater than it is generally supposed to be—perhaps, in certain cases, much greater. 2. That the length of time that a fetus may, on its first passage from the mother, remain without visible pulmonary respiration and yet continue susceptible of being saved is very much greater than the corresponding time in the adult; that it is probably greater in the premature fetus than in the fetus of full term and that in the premature fetus, when kept warm, the heart may continue to act *four hours or more*, without any connection with the mother and without visible pulmonary respiration.

It must now be plain to all that such life-saving organizations as go far off on the high seas or great lakes, on the great ships and fleets, or watch out for the lighthouses and mist-covered shore, are not the ones from which State medicine must expect its greatest good and its greatest gain, but contrarywise, the skilful obstetricians, who cease not by day or by night, in summer or winter, in metropolis or in wilderness, on sea or on land, on the mountains and in the vales, in king's houses or in huts, in calm and in storm, to await the coming of helpless, breathless, speechless ones from the home of a lower life to the danger-beset shores of a higher existence—these are they who must ever furnish to State medicine the greatest and best contributions.

How *many* lives may reasonably be expected to be saved to the State by artificial respiration can never be exactly computed; very much must depend upon the safety, certainty and efficiency of the method used; upon the seasonableness and skilfulness with which it is used, and upon emergencies that vary with times, places, events, enterprises, accidents, etc. But a reasonably approximate estimate can be reached when and where conditions approach uniformity. Say that Alabama has a population of two millions and has two thousand physicians, and that each physician annually resuscitates by artificial respiration, mainly, only two cases, not spontaneously recoverable, the number saved in the State will reach four thousand, and at a like rate the saving to the seventy-five million of the United States would amount to one hundred thousand per year.

But in estimating the worth of artificial respiration to the State or to the world the *number* of the lives saved is a far smaller consideration than their *value*. This value can not be comprehended. It can only be thought of in overpowering amazement. The saving of some lives, as those of the insane, the degenerate and the criminal, would be a calamity to the State, but for the warning thus given against the transgression and the occasions furnished for the exhibition and exercise of humanity, of compassion, of beneficence and of justice. But others of those saved, and no doubt most of them, are reserved for higher and nobler destinies. Moses was saved in a frail ark of bulrushes to become the leader, liberator and law-giver of his own oppressed race, and through them of all civilized races. Noah was floated in an ark, from a deep flood to a lofty mountain top, to become the ancestor of races destined to repeople an inundated, depopulated

world. Alexander Pope was born a weakly, deformed, dwarfed infant. In tender childhood he received, from a vicious cow, injuries from which kindly care restored him; and still later, locked up in a coach that was overturned in a river, he was rescued from otherwise inevitable drowning, by the timely aid of a helping hand. Through such perils, exposures and sufferings was he spared, whose mission it was to translate into English the two greatest epics of Greece and Rome, and otherwise wonderfully to enrich that ever expanding language which many of us now proudly claim as our glorious vernacular. Isaac Newton, when born, was small enough to be placed in a quart cup, yet that diminutive body contained the germ of that wonderful genius who discovered, explained and applied to countless uses and purposes the great law of universal gravitation; who invented and largely developed some of the highest departments and best methods of modern mathematics, and who gave the first great impulse and start to the study and knowledge of light—that great agent that ceaselessly sheds and will shed its bright, beautifying, life-exciting influence through infinite space, boundless stretches and infinite duration's endless years.

Thus to those snatched from the dark valley of the shadow of death by life-saving measures, and especially to the multitudes of apneic infants recoverable only by the aid of artificial respiration and to the descendants of such, the State, through all coming ages, may reasonably look for many of her greatest, brightest, best and most valuable citizens—her astronomers, navigators, discoverers, inventors, educators, patriots, evangelists, prophets, apostles and redeemers.

THE ADMINISTRATION OF SANITARY LAWS.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WM. P. MUNN, M.D.

COMMISSIONER OF HEALTH,
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The complicated relations existing in most municipal governments between the different departments and bureaus seem to make it essential that the health department, bureau or board should have a legal advisor of its own. Take, for example, a city in which, as in Denver, the boards and officers comprising the various divisions and sub-divisions of the executive force are appointed by different officers, and own no allegiance to a single and responsible head. It can readily be seen how it happens, as it often does, that one department seeks to carry out a plan of action, which in some particulars will conflict with the regulations and activities of another department, and there is no ready method of harmonizing and unifying the efforts of the departments. For example, in most, and perhaps in all cities, the construction of sanitary sewers, or of a waterworks system would devolve upon the officers having charge of public works. Having a regard for other essential matters than sanitary features such an officer may go on and construct a sewer system or waterworks in such a manner as to jeopardize the sanitary interests of the community. The responsible officer of health may not be apprised of what is in contemplation, or he may learn of it in some round-about way. But unless he is consulted

and can give the matter the full attention that it deserves from his point of view, conditions may be brought into existence which he may subsequently find it necessary to remedy but will not have the power to act upon.

Under such circumstances a legal adviser who has given especial attention to the right of the sanitary or health board may keep the health officer advised of his opportunities and his duties, and enable him to accomplish much good for the community both before, during and subsequent to the construction of municipal improvements. I take it that such a special counsel would advise the health officer when he can effectually make his objection and formulate his protest against "public improvement" measures that are unsanitary. But in instances where one counsel acts for all city officers, the city attorney is much more likely to look at matters simply from the standpoint of the board that desires to hasten work along and will so frame their advertisements, phrase their stipulations and arrange their contracts that objections made from a sanitary standpoint will not be properly presented, or when considered will not be agreed to.

Let us consider, for example, a proposed system of water-supply for a city. An intelligent head of a public works department would be largely guided by the results of thorough investigations of health officers in determining whether a certain source was, or was not, free from objection. But an unintelligent works official would probably have, under the laws of most cities, a right to proceed without consulting his health officer, and in no instance do I know of any city where the works department is required by law to comply with the recommendations of the health officer upon this important subject.

A majority of cities are sewered by the combined system, and communities must wait until their growth has reached such a point as to enable them to incur the expense of a combined storm and sanitary sewer system before ordinary sanitary drainage can be provided for. This fact accounts for the long existence of the privy pit and cesspool nuisance in cities. The intelligent health officer, backed or assisted by an attorney who is retained by the sanitary officer alone, will be enabled to have separate sanitary sewer systems constructed early in the growth of a city. Thus the sanitary sewer will be laid before a district is closely built up and before many privies or cesspools have been constructed. New residences going up in the completed sewer district can then be required to at once connect with the sewer, and the soil of the city will never be given an opportunity to become saturated with filth and disease-producing materials. This is simply a preliminary point, however. The relation of the sanitary administration to the administration or alleged administration of justice in any community, is a matter of vital import to the earnest health officer.

Prior to bringing any case in court it is the business of the health office to exhaust every effort to persuade the offending citizen to comply with the regulations. It is an old saying that more flies can be caught by sugar than by vinegar. Apply the principle of that wise saw to the enforcement of sanitary regulations. One person can be influenced by an appeal to his reason, another by an appeal to his pride, either in his own property or in the general neighborhood in which he lives; others are led to comply with orders by showing them how much more

desirable their property can be made from a financial or earning standpoint; others can be cajoled into doing a thing in a certain time which they absolutely refuse to do at the immediate date of the order. But when these classes are exhausted there remain two others that must eventually be brought into court. There is the man who thinks he can always beg off and that you will never carry out the threat of court procedures, and there is the man who is a born fighter and will not yield until he has gone through all the courts. Men of the first sub-class usually come into court when summoned and promise to proceed immediately if no penalty is imposed. It may be well to allow them to go without a fine, but in every instance they should be made to pay the costs. Then if the court is a fairly intelligent friend of sanitary measures he should be asked to warn the offender that the next failure to comply with orders will be punished by a full fine. This promise, if made, should be kept.

In dealing with the class which includes the persistent and obstinate fighter, it is well for the health officer to exhaust every peaceful method before going into court. When it is finally determined that prosecution is necessary it is wise to have the preparations made therefor with the greatest care and under the direct instructions of the attorney who will prosecute the case. First, second and third notices should be carefully drawn up in accord with the strictest technical requirements of the law; the exact manner of enactment of the regulation or ordinance should be looked up so as to assure yourself that it has been lawfully adopted; it should be possible to produce the original act, ordinance or regulation in court if a demand is made for its exhibition; copies of the notices as served should be substantiated by more than one witness; the ownership or control of the property in question should be fully established and not taken upon hearsay; the case should, if possible, not rest solely upon the testimony of employes of the sanitary service, but other citizens should be called to substantiate their evidence; a nuisance should be proven by citizens and by a recital of conditions which will satisfy the court, not by the simple statement or order that "such a thing or condition is a nuisance." It has been my experience that judges of minor courts are more ready to accept common-sense definitions, and to brush aside mere technical objections, than are the judges of superior courts. It has also been my experience that it is easier to win a case before a jury in a district or common pleas court than it is to win before a judge. In common with many other officers, it has been my lot to lose important cases as well as to win them. A recital of some causes of failure may be of service to others, as the cases themselves have been to me, in pointing out certain defects of procedure that result in the loss of a case.

In a prosecution for the sale of watered milk, in one instance, the proof of sale of any portion of the milk was carelessly overlooked; its possession, its carriage and its delivery were proven, but not its sale. The case was dismissed for lack of proof, although the guilt of the accused was morally certain both to the judge and myself. In a prosecution for maintaining a nuisance in the shape of a privy vault in a completed-sewer district, action was brought by an attorney unfamiliar with the ordinances under one section which prohibited such vaults in completed-sewer districts as nuisances, but the substantial proof

that the particular vault was a nuisance was not presented and the case was therefore dismissed. In a prosecution for selling impure ice the party was convicted in the police magistrate's court. From this decision and fine he appealed to the county court, where he was again convicted by a jury. In order to hasten matters and avoid long drawn-out litigation an order was then issued, after a hearing, that the complained-of ice would be destroyed if brought into the city for sale. Upon this the culprit managed to have three judges of different courts intervene with orders and injunctions preventing not only the destruction of the ice, but further prosecutions under the ordinance which had secured his previous convictions. These orders were based upon perjured statements of the attorney that no hearing had been given; inasmuch as the previous hearings were not of record, the falsehood could not be disproved, the uninformed judges of appeals made a ridiculous decision to the effect that "a health commissioner had no right to issue an order to destroy property." All of which may be good law but is bad reasoning from the standpoint of a common-sense sanitarian. Judges are not well informed upon matters relating to sanitation which come before them for decision. Worse than this is the fact that from the peculiar bent of mind acquired by long legal training, they seem to have reached a point where they hold that no other consideration is of quite so much importance as the preservation of alleged property rights, even when such alleged rights violate the inherent right of the people to live out their individual lives. It is my firm impression that sanitary laws can never be properly enforced until a more rigorous method of putting intelligent and conscientious men upon the bench can be devised.

MELANCHOLIA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY FRANK PARSONS NORBURY, M.D.

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JACKSONVILLE, ILL.

The physiologic doctrine of the physical basis of mind is now established beyond dispute, although some of the ardent philosophers of the Platonic school still regard mind as an entity, and view it and consider it apart from its habitat—the brain.

This change in physiologic views has been brought about by the advent of physical methods of inquiry, which, under the name of the new psychology, promises to give us a substantial and real basis from which we may proceed in our excursion into the labyrinths of reason. The bearings of psycho-physics upon the study of mind, together with the empiric observations of the past ages, demonstrate that physiologic laws underlie mental phenomena—that mind reposes upon a nervous property sustained, like every other physical power, by nutrition. It shows, further, that the plasticity of the mind may be impaired in its full functioning by innutrition or malnutrition as well as from undue exercise or its reverse—inaction. Again, we have learned that mind, physiologically considered, is dependent upon bodily conditions for its full powers. Bain, in his excellent work on "Education as a Science," in 1878, expressed this one physiologic circumstance in particular in the following words:

"The human body is a great aggregate of organs or interests—digestion, respiration, muscles, senses, brain. When fatigue overtakes it, the organs generally suffer; when renovation has set in, the organs are generally invigorated. This is the first and most obvious consequence, and therefore, in order to increase the plastic property of the mind you must nourish the body."

We who have studied the phenomena of the mind from the standpoint of disease will recognize the physical basis of mind, and to us mind is the consequence of a long line of new nervous growths—the morphologic development of the senses, the intellect, the emotions and the will. The nervous system is the instrument of the mind—this is the belief which the new psychology has demonstrated to be true. Herbert Spencer, before the advent of the new psycho-physics, said; "The evidence, though so indirect, is so extensive, so varied and so congruous, that we may accept the conclusion without hesitation." Now, the phenomena of the nervous system, viz., its mechanism, functions and condition of action, etc., are purely physical phenomena, controlled by physical or physiologic laws, just the same as are the processes of digestion, circulation, etc. Mind, too, is controlled by physical laws, for while we can not demonstrate the substance of mind, in fact, as Weir Mitchell expresses it: "Indeed, we are as yet uncertain as to where within the skull is the nerve matter with which we think or imagine." ("Clinical Lessons in Nerve Disease.") However, it is to be presumed that mind is identical with other evidences of nervous phenomena, as it is closely associated with nervous change.

In my classes, I have taught that mind is made up of an association of feelings—a confederation of units of feelings. This is in line with the teachings of pathology, as our science of cerebral localization demonstrates. Again, it is in keeping with the teachings of the cellular pathology of Virchow, and with the modern concept of the neuron theory.

In the clinical study of mind it has long been recognized that proper nutrition of the brain is the prime essential of recovery. Especially is this true in melancholia, which, viewed in the light of modern neuropathology, in my judgment, gives us a physical basis from which to consider this disease as a nutritive disorder, of which the mental symptoms play the title rôle, while the accompanying physical symptoms are none the less important, though more or less obscured by the greater conspicuity of disordered mind. The mental phenomena should not be regarded as the disease, any more than the sugar in the urine should be considered as the disease, diabetes. Even the transitory or periodical forms of melancholia, some of which are spoken of by Weir Mitchell, I believe, are the results of innutrition and when we know more of neuron metabolism we will have their physical basis known.

Barker of Johns Hopkins has contributed a most excellent series of papers in the study of the neuron (*New York Medical Journal*), and in a recent paper says, in regard to the laws underlying neuron metabolism, that they are just as fixed and constant as are those of astronomy and botany, and he can conceive of a knowledge of their nature and action which would enable one possessed of it to prophesy unerringly of the functional manifestations of a nervous system made of a given set of neurons, which must result

upon exposure to a given environment. Further, he says: "The neurologist has already learned that in the nervous system certain causes produce certain definite effects, almost with mathematical accuracy, and this fact should encourage him to further research with the hope that the intricate laws in question may gradually be rendered less obscure and vague."

Defective metabolism, then, is the foundation of melancholia, and this is further borne out by operation of the impoverished body, the attenuated action of the nerve-currents, the defective blood, and other evidences showing a diminished, weakened, impaired bodily nutrition. The mental alteration is but the result of lowered nutrition of the brain, as the phenomena of conduct, of intellect, of will and of consciousness itself, one and all are dependent upon a high degree of activity in the nerve elements. The adjustment of mind to the material body lies then along the lines of bodily nutrition. Of course, we must consider the hereditary factor, where, because of minute conditions, the natural energy of the mental organization is limited, or is so unstable as to be affected, then because of the lack of nerve or background to counterbalance extraordinary demands on the available energy, we find early exhaustion and consequential mental anarchy. The nerve elements in such a case are essentially weakly-developed or badly nourished, either of which conditions disturbs the organized associations of centers and permits of speedy exhaustion, and loss of power over thought, feeling, conduct and consciousness. The natural motor restraints or inhibitions are impaired or abolished. Thought-circuits are disturbed, broken or so seemingly locked, that in spite of all efforts the patient can not rid himself of the morbid gloom, which such self-centered, grossly exaggerated thought engenders. The true self fights invading insane self and finally gives up the struggle as vain, and soon is swayed by his delusions and imaginings; will is disintegrated and the other ordinary higher psychical impulses encompassed by the darkening and impervious gloom.

To me this picture is one painted by distorted nutrition, more or less aggravated by the inherent factor in the case. Clinically, melancholia is more than Ziehen (*Am. Jour. of Insanity*) states in his trio of etilogic factors, viz.: hereditary taint, stress and mental shock, for malnutrition is decidedly a primary factor more or less prominent in every case, and should be added to make an etilogic quartet.

While it is true that we meet cases of simple melancholia without much physical disorder, yet I regard physical disease as playing more than a subordinate part in the causation of melancholia. And that this physical disease acts, not by virtue of combined emotions of worry, fear, etc., growing out of the disease, as Ziehen would have us believe, but by reason of malnutrition growing out of the physical disease. Herter, in his recent studies of auto-intoxication, has given us the clue to much of this distress. This I know from personal clinical experience, is the cause of mental disease. Take, for example, the cases having diabetes, gout, lithemia or the convalescence from infectious fevers for a background, and we have striking examples of the physical elements in causation.

It has fallen to my lot to meet a number of cases, in consultation, of alleged insanity who were victims simply of the uric acid diathesis, exaggerated to the point of interference with normal metabolism. A case whom I recently saw was sent me for observation

and diagnosis. Careful inquiry and detailed laboratory investigation demonstrated it to be one of lithemia. By observing Haig's dictum, "control the uric acid and you control the mental disease," I sent him home in two weeks, able to resume his work. You all meet with such cases, and I dare say you rejoice in the fact that you are able to speedily return them to their fields of usefulness.

In diabetes there is a psychic element which grows out of the nutritive disorder. The actual psychosis is one of melancholia and hypochondriasis. I have had but four such cases in my practice in the last ten years. Van Noorden (*Twentieth Century Practice*, Vol. ii), remarks in addition to the fact that melancholia may be present in diabetics, that it may be noticed in all grades of severity, from an almost imperceptible degree of hebetude to the most pronounced form of disorder—suicidal and homicidal melancholy aspects being not infrequent.

I will not enlarge upon those nutritive diseases as being factors, as time will not prevent. However, in closing I wish to add that arteriosclerosis is perhaps one of the most frequent factors in the causation of melancholia in patients past the age of 35 years. Again we may meet cases in active business men whose minds are clear and strong, but who are given to dejection, to melancholy and even to acute melancholia. Their disposition shows a tendency to change, and they are easily moved by their emotions. To all external appearances they are well physically, and it is difficult to detect any grave disturbance of nutrition, and yet if such a case should die, say from intercurrent disease, postmortem examination would reveal arteriosclerosis, especially involving the central arteries and perhaps the basilar artery. (It is a fact that the arteries which are exposed to the greatest strain are first affected by the organic change, arteriosclerosis.)

I have met many such cases, and now have under my care a case given to periodic attacks of melancholia marked by delusions, etc., who is a victim to arteriosclerosis involving the kidney and heart as well as the brain. The very nature of arteriosclerosis is such that it induces wide-spread disturbances of nutrition, and while the brain, the kidney or the heart may show the first evidences of disturbed nutrition, it is very probable that ere long the disturbance will be general rather than local. As Meigs says, "Perhaps no one thing is more important for the diagnostician to know than that vascular disease and fibrosis are certain to come in all men if they live to be old enough."

In conclusion then, let me say that:

1. Mind has a physical basis.
2. The brain is the organ of the mind.
3. The activity of the brain is dependent upon its nutrition.
4. When badly nourished, either from poor blood or illy distributed blood, mental depression and melancholia result.
5. Melancholia is a nutritive disorder, characterized by mental symptoms of depression, dejection, delusions, etc., and the physical symptoms of impaired bodily nutrition, which latter symptoms are as essential evidences of disease as the mental irregularities.

DISCUSSION.

Dr. MEYER of New York—The paper suggests to me a few remarks similar to those that I made yesterday with regard to the paper of Dr. Punton. The general impression is natural that we are dealing in melancholia with an entity, just as we have the entity of neurasthenia, with which everybody is familiar. Now, on observation of a large number of admis-

sions (we have had about eight hundred admissions), and from careful examinations during the last eighteen or twenty months, we found a great number of cases which undoubtedly would have, according to the old classification, gone into the group of melancholia; that is to say, in those classifications which are made at the end of the year for purpose of statistics. In our attempts to make a diagnosis the first week or the second week after the admission of the patient, it was naturally our purpose to make a diagnosis which would mean something as to the future of the case, and not simply a general term according as the patient was depressed or not. It was a question as to what possible classes that patient, whom we were at first sight inclined to call a case of melancholia, would belong. While I admit that melancholia is an entity that everyone knows, I myself could not be satisfied with that. It seemed that for our present research it was our absolute duty to try and find out whether, from the appearances and from the symptomatology in the onset and in the first weeks of the disease, we could not make a conclusion as to what form of melancholia we were dealing with and as to what we could expect in the later course of the disease. This line of thought was opened by Goldvon, over thirty years ago; his books have been too difficult to find, it seems, and have been buried under the inclination of the alienist to examine spinal cords and brains and degenerations, instead of attending to psychiatry. The movement has been taken up again by Krebbling, and it now seems fairly certain to me that we have a problem before us about as follows: It seems from the observation of a large number of cases of melancholia, of what everybody would call melancholia, that we are dealing with quite a number of different disease processes. One might instance that disease process which is so difficult to distinguish from neurasthenia and which was yesterday spoken of as having hardly no distinction from neurasthenia. Then melancholia which occurs in the twenties and thirties, and is coming on rarer at intervals during life, perhaps five, six, eight, ten, twenty times, always in individuals with strong hereditary dispositions, and rather distinguished by the fact that the inhibition, which is called one of the cardinal symptoms of melancholia by the German surgeons, is not present there. Then we have melancholias which are undoubtedly general paralysees. Then there are melancholias which belong to the circular insanities, which change into mania, and can be distinguished by the absence of inhibition. The other view, of course, the nutrition view, is a general question, and while it is of great importance in the treatment of the disease, has relatively little to do with this subject.

Dr. LICHTY, Union Springs, N. Y.—A year ago I came to this Section in Philadelphia, and there seemed to be a strong inclination on the part of the members of the Section to refer these cases of melancholia, neurasthenia and hysteria to faults in nutrition, and I went back from that meeting and thought that I would make certain observations from these cases in reference to that, especially in line with the investigations which Haig has made. I must say that I was rather disappointed. I was unable to verify the assertions which Haig has made, as to the examination of the urine and the relation of uric acid to these cases. But one thing has forced itself upon me, and that is that in most of these cases we do find a change in nutrition. It may be that the changes which I found have been rarer because I see the patients earlier. The institution in which I am working does not take any insane cases, but we do take melancholias, and I was impressed with the fact that we find a thick blood—a blood with hemoglobin of 100, 105, 110, and 6,000,000 corpuscles, and also a heavy urine of a high specific gravity. This may be due to the fact that these people were traveling for long distances before reaching the institution, but I have had them drink the same amount of water as they did before they came and the urine remained of high specific gravity. In the stomach contents I would usually find a hyperacidity. Putting these things together, it seems to me that in melancholia especially, and also in hysteria and neurasthenia, there is faulty elimination. The patient has been inactive; he has not been eating properly; he has not been drinking sufficient water; and acting upon this principle, giving the patient employment, putting him out in the open air, having him eat less and food which is more easily assimilated (probably he really takes more food by taking the diet which I give him than the diet which he has heretofore been taking), and by having him take large amounts of plain water I have succeeded in obtaining good results in these cases. I think the paper which was read is in line with what I have found in my experience.

Dr. JOHN PUNTON—I think the subject of melancholia is one that we can well afford to study carefully, and while the disease has been recognized ever since the days of Hippocrates, yet it does seem that there is a great deal for us to learn in

regard to this very common form of insanity. I believe that most forms of insanity are preceded by mental depression; hence, it is certainly the most common of all the varieties of insanity. In addition to that, I believe that it is only curable in its earlier stages. I believe that the cases of melancholia which are out-and-out cures come under observation soon after the onset of the disease.

The first step in successful treatment is isolation from home. The insane asylum is not the best place for incipient cases of melancholia. The environment of an insane asylum is against the recovery of ordinary cases of melancholia in my judgment. The State should provide for detention hospitals—half way hospitals between the patient's home and the insane asylum. Today the moment we find a melancholiac in ordinary practice, recognizing that we may have at any time suicidal impulse, and recognizing the fact that the patient is irresponsible, we are compelled to send him to the insane asylum. Usually he remains and becomes an incurable case. If we had a detention hospital that patient could be given the benefit of the doubt, for say from one to six months, and you would be giving your patient a chance of recovery.

Dr. RIGGS of St. Paul, Minn.—I consider the discussion of melancholia most important. Melancholia sine delirio is one important form of melancholia that in my judgment should receive especial attention at the hands of the alienist and neurologist. I am firmly of the opinion that melancholia, as all forms of insanity, starts as a perversion of the functional nutrition of the cell. I think that is the starting point of the insane condition. Usually the light form of melancholia is more dangerous, as far as suicidal impulse is concerned, than any other. My experience, however, has been entirely different from that of Dr. Punton. These cases almost invariably get well. If they do not kill themselves before they have an opportunity to get well, they recover. I can not feel as Dr. Punton does in reference to our insane asylums. The gentlemen whom I have the honor to be acquainted with and work with along the line of psychiatry are thoroughly alive to these classes of cases; the kind of treatment; their proper care in the institution; their environment, and everything of the kind. Of course, if it is possible to prevent cases of this character from going to a State institution, because of the false idea that stigma rests upon one therefrom, it is better to do so; but that false feeling should pass away. Insanity is nothing more than typhoid fever; it is simply an expression of a physical state.

Dr. W. J. HERDMAN—Like all nervous diseases which we have been dealing with in their chronic form, with their fixed and irrevocable conditions, the tendency is now to get back to the incipient stages; if we are to make any progress at all in the arresting of this class of disease, we must learn more concerning the incipient changes which take place. That is the line of research in all directions at the present time with reference to the insanities. As has been said by Dr. Riggs, very truly, it is a perverted nutrition at the outset; and I have in my mind now three cases of my own in which that perverted nutrition was apparently due to reflex causes. You all heard yesterday a report of an acute case of melancholia, the picture being typical. There were disorders of the pelvic organs, and these being corrected the case immediately made a satisfactory recovery. My first experience with a case of melancholia of a typical character was in a young woman of 19 years of age. In making that general observation or investigation of the system which has been my custom always with patients, I discovered that she had an imperfect hymen, and that she never had menstruated to outward appearance. Her mother knew that there was something wrong, but no investigation had been made by the attending physician. I found that there was a tumor resulting from the retained discharge, and it had largely dilated the uterus. I of course immediately advised that the contents of the uterine canal be removed, and that was done, gradually of course, and she made a complete and perfect recovery, although up to that time she had had a strong tendency to suicide for three or four months, and they had had to restrain her for some time from casting herself out of the window. She was in a pronounced state of acute typical melancholia, and as far as we could discover that was the only physical cause there was present there, and when that was removed she made a very satisfactory recovery, remaining well ever since. She is now the mother of a family, and has been a perfectly well woman ever since that time.

The other case which I have in mind, due to pelvic irritation, was one in which reflexion of the uterus was the apparent cause. The woman had borne several children. She became acutely melancholy, and it was necessary to transfer her to an asylum. She became somewhat better, but pronounced symptoms of melancholia persisted. Allison's operation was performed upon her, after careful investigation of her condition in

all respects, and that having been found to be an apparently serious element in her disease, and she recovered, and has remained well ever since. These are the most pronounced in their apparently reflex cause, but I have several cases which seemed to point in that direction. These disorders, of course, produce reflex disturbance; this reflex disturbance produces a change of metabolism of some sort. Before we can get at these incipient causes of the disorder we must know more physiology; we must know what these reflex disorders produce in the way of change, metabolic disturbance. We must know what are either the produced poisons or the interferences with excretion which put the system in a state of disordered metabolism and bring about these mental changes; and until we make progress in that direction I think there is very little to be expected from the investigations upon the chronic states, which, as Dr. Meyer has well pointed out, may take a variety of courses, depending very largely upon the individual characteristics, upon the peculiarity of physical organisms.

I wish to say one word in favor of what has been suggested by Dr. Punton in regard to a detention hospital. It has been for years in my mind a necessity. It has been our experience, in Michigan at any rate, that we have in connection with our insane hospital staff men who have very little experience in general practice; men who have grown up, as it were, in asylum work; men who have not had an opportunity, for instance, to deal with questions of ophthalmology, of gynecology, of general surgery. Their range of experience has not been sufficiently wide to thoroughly canvass a case of this sort in its incipient stages. It seems to me a detention hospital, where these cases could be taken and dealt with in every aspect of the case, would be very helpful and would result in a great many more of them being saved from chronic melancholia or insanity.

Dr. TOMLINSON of Missouri—I would like first to enter a protest against calling every depressed individual a case of melancholia. My understanding of melancholia is that it is an entity, the principal characteristic of which is that there is no mental reduction; in other words, that the intellectual capacity of the individual is retained, and that if that is not present it is not a case of melancholia. A man may be depressed because he is demented, but it seems to me absurd to call everyone who is depressed a case of melancholia. I am very sorry to see what I might call the syllogistic methods of our clinical friends enter into the discussion of the treatment of insanity; that is, that so-and-so found such and such a state, and that a given result was produced; ergo, that the result was caused by that condition. I do not think it is scientific, and I do not think it proves anything. I think a detention hospital is all right, but it is still a hospital for the insane, and if it were once established, to make it competent to perform its work it would have to have all the surroundings, all the accessories and all the facilities which characterized a hospital for the insane, and then what would it be but a hospital for the insane? If it were a State institution everyone would insist that their insane should be sent to that detention hospital and be kept there as long as possible.

Dr. WOODSON—I think that all alienists are agreed that, taking into consideration the cases of melancholia that come under their treatment, that form of insanity greatly exceeds all others. Again, I think that all alienists will agree that a very large percentage of the ordinary cases of melancholia end in recovery, and there is nothing more beneficial than the improvement of the patient's general health. When you get your cases of melancholia to partake freely of milk and medicine, and take exercise in the open air and sunshine, especially so if they are inclined to take on flesh, they almost invariably recover. In giving advice to the friends of the patient when he is being taken from the institution, the invariable advice is, "Do not permit the patient to run down or decline in health." So far as detention hospitals are concerned, I have this to say: If it is reasonable to presume that a detention hospital will be better equipped or provided with better physicians or men more experienced in gynecology, insanity, general medicine; then there is no reason why it should not be nearly as good as the general institution. But is it not possible to treat melancholia in a general hospital. In regard to the discussion yesterday, some gentleman said that no gynecologists are in favor of performing an operation to restore the insane mind, unless there is a pathologic condition demanding the operation. So far so good. I say if there is a woman who has a pathologic condition which demands an operation, or would demand it in health, it should be performed for the purpose of restoring that part if possible, and if perchance it does further and better the condition of the mind, so much the better. No neurologist is justified in saying to a gynecologist that by removing the appendages of the uterine organs it will cure the mind, because

he does not know that it will. In an experience of eight or ten years I can report twice as many cases of insanity that are attributed to operations from the hands of our distinguished brothers—more cases than they reported as having been restored! They said nothing about the number of cases that had become insane from the operations, but they herald to us the cases that they have restored.

Dr. SEARCY of Alabama—Possibly as good a definition as we can make of that condition of consciousness which we call "melancholia" may be that it is a general sense of disability or inability on the part of the person in his capacity to adjust himself according to what he wishes to do. But there is in melancholia, more or less, an ability to reason. It is not a demented state. There is an ability on the part of the patient to think, and his melancholic condition is one of a sense of disability. What brings that about is largely a natural tendency in the person to take that way to think; it is a hereditary tendency to depression of spirit and of feeling. A large part of our neurology is cerebrology; a large part of neurasthenia is cerebraesthesia; and a great part of the work of neurologists is that which relates to the conscious organ, the brain. The other day I was in the Medical Section when the subject of consumption came up, and yesterday every one was willing to talk about headaches, and today when we speak about melancholia, we find that every one is ready to talk about melancholia, because all those subjects are frequent fields of thought. In those conditions of the system that produce cerebropathic states possibly nothing tends so much to bring about melancholic states as toxic conditions that arise from the alimentary canal. The melancholic patients, as soon as you can get an aseptic state of his digestive apparatus, will generally improve, and as soon as you can put his system in such a state that he is relieved of toxins, whether they come from the pelvic organs or anywhere else, this will tend to relieve his melancholia. In general practice the largest part of our medication is in the direction of rendering the digestive tubes aseptic.

Dr. CHARLES H. HUGHES—The chair would like to express his extreme surprise that Dr. Punton should make the statement that the environment of an insane asylum is against the recovery of ordinary acute melancholia. This, in my judgment and observation, is not true. The best influence that you can bring to bear upon an insane man is a change of environment, and if the insane man is in such a condition as to receive any sort of impression from his environments an insane asylum is the best of all kinds, with its illustrations, its object-lessons of insanity, its object-lessons of melancholia in other persons, its methods of diversion and means of rest, and its removal from home. All this affords the best opportunity for the cure of melancholia. I have seen far more melancholics recover in insane asylums than ever recovered out of them; I have seen a larger percentage of melancholia recover inside of an asylum than of any other form of mental aberration, except acute mania, and I think great injustice is done to the value of insane asylums by a statement of that character. These attacks that are made upon medical men when they get into an asylum are strangely inconsistent to me. A medical man is just as good a medical man after he goes into a lunatic asylum, unless he goes there as a patient, as he was before. He generally has a wider field of observation, and some of the most discerning diagnosticians I have ever encountered were those who had learned to diagnose the insane, who hindered and retarded, instead of helping your diagnosis. The cure of melancholia consists of diversion, of recuperation, and also of rest. It is the changed environment that effects the average cure of the melancholic. As has been stated, if you can save a melancholic from killing himself you can almost always cure him.

Dr. NORBURY—I admit that melancholy is a symptom just as fever is. I believe, however, taking it on the whole, we have a recognized disease of melancholia, without going through the progressive dejection of which the text books speak and which Dr. Tomlinson mentioned. You may have a case of profound melancholia following uric acid poisoning, with classic symptoms. The gentleman from New York State speaks of his so-called failure with the Haig cases. I would say that these cases are cases of short duration, and do not get into insane hospitals. I have in mind two cases which I have seen in the past three months; one case went home just before I came to Colorado, one in a general hospital—not in the insane hospital—following the uric acid condition. By cleaning up the uric acid, you relieved the melancholia and even the delusions, which, in this case, were not profound. The man was not in the hospital more than three weeks; I do not say that he had recovered, but the mental symptoms had cleared up. Another case of renal calculi presented the ordinary classic symptoms of renal calculi, suppressed urine,

intense pain, etc. There was a period of dejection with marked suicidal delusions. With the discharge of the calculi the patient has improved. What we need in the consideration of melancholia is more attention to the internal medicine aspect of the case; we need more attention to the diagnosis, more attention to the study of the case from the basis of internal medicine.

HOW TO LIMIT THE OVER-PRODUCTION OF DEFECTIVES AND CRIMINALS.

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. H. McCASSY, M.A., M.D.

FORMER SUPT. OF KANSAS STATE INSANE ASYLUM AT TOPEKA.
DAYTON, OHIO.

Upon the solution of this problem hangs the fate of home, nation, and civilization. It is the concern of all good citizens to do something to improve posterity. During the past ten years the population of the United States has increased 25 per cent., but during the same period crime increased 60 per cent. The cost to the public for the care of defectives and for the prosecution and support of criminals is enormous, to say nothing about the destruction of life and property, confidence and morality. We go on building asylums, hospitals, reformatories and prisons, and we keep them full. Imbecility, idiocy, insanity, epilepsy, deafness, blindness, incorrigibility, youthful waywardness, adolescent vice, immorality, and adult criminality multiply apace in the land. It is high time to improve the method of preventing over-production of defectives and criminals. We are too prone to assail results or salve over the surface of our social sore, leaving the roots untouched. No one can afford to ignore this subject. It concerns every taxpayer, and every one who makes his own living is a taxpayer, whether he owns real estate or not. The problem consists of prevention, reformation and extinction. The basic causes of crime must be attacked.

The ancient uncivilized nations knocked their old men and old women in the head; strangled the superfluous babes between thumb and finger or left them to perish upon the mountain side; and threw their defectives into the water or fed them on the juice of the poppy as a less brutal means of effecting their exit from this world. Criminals among inferior peoples are comparatively fewer and are not dealt with tenderly. A dose of tomahawk ends their career. They are little or no tax upon the public, and they are very little in evidence. The lower stratum of development in savagery and barbarism produces comparatively fewer defectives than do the enlightened and educated strata. While the highest types of individual and national growth, power, education and excellence are attained in our modern social development, nevertheless, the wayside is strewn with failures; although defectives and criminals are largely bred from the same classes, a great many recruits come from families of high standing. It is not necessary to scan very far along even good family lines until you come to a stray sheep, and often a black one at that. A defective and a genius may be found in the same family.

The Roman and the Greek laws did not bother much with moral improvement. The best test of modern civilization is shown by the way the defectives are treated. Society admits that the criminal has some rights which it is bound to respect; and not the least

of these is the right to reform. The defectives must be cared for in the most humane and conservative manner. Barbarism and brutality are not economical for up-to-date nations.

PSYCHOLOGY OF CRIME.

Although criminal offenses appear to be spontaneous and impulsive, yet if they could be traced they would be found to be due to a variety of causes. Modern science teaches that nothing *happens*. Everything that comes to us is pushed from behind: In society, as organized at present, there are constantly at work forces which germinate crime and disorder. Seven thousand murders take place annually in the United States. Ninety per cent. of the reading matter upon which the community feeds tends to disintegrate character and bring disorder and abnormality into prominence. Our daily and weekly papers are devoted largely to illustrating crime and immorality. The sediment left after the reading of murders, suicides, thefts, and immoralities, poisons the youthful minds and leaves indelible scars upon their tender souls. All pictures thrown upon the mental canvas modify their recipient accordingly as they are good or evil. Persons are swayed by the character of the pictures before which they linger. The scientific way to destroy evil is not to hold up and analyze it in order to make it hateful, but rather to let it pass out of consciousness. If we hope for improvement in the generation unborn we must dull the appetite for "blood-and-thunder" fiction. It is useless to ask the publishers to abandon a paying business. By a crusade of education against vice, we must lift the minds of our generation above the present demand for sensational reading matter.

All education, physical, mental or moral, is primarily a cultivation of powers of resistance. Cares, anxieties, business and social difficulties prey upon the mind; and if they are not repelled insanity is the result. Depraved natural appetites, if unrestricted, result in crime. We guard against physical disease by building up the tissues and selecting healthful environment. We guard against mental disease by educating the mind and avoiding pursuits that bring excessive intellectual strain and dissipation. We may guard against crime by educating the higher ethical sense and by removing the temptations to wrong-doing. Certain mental equipments are suitable for certain occupations. When a person selects proper pursuits in life success and happiness will likely follow, but a wrong selection brings misery and crime. There came to my notice a case which illustrates one phase of this subject. Two brothers, many of whose relatives had gone insane, started to study medicine. The strain on both to keep up with the class was great. When they were nearing the end of the second term, one of them went hopelessly insane. The other studied the literature of his case, and when he found inherited insanity in his family history he concluded to abandon further study of medicine. He went to farming and made a great success in raising cattle and hogs. He said that the nearer he got to the simple ways of living the better he felt. He became a good and prosperous farmer.

The criminal differs from the normal being in the fact that he has less power of resisting crime. We all have the criminal tendency more or less, but it is suppressed by cultivating higher instincts. If the child of the criminal is allowed to grow up under the

tutorage of crime he will be a criminal. If the same child is brought up in a good family, the results will be better. It will not, however, do to depend too much on environment. Favorable environment will overcome inbred propensities to a certain extent, but in many cases, where there is too much to overcome the over-mastering criminal propensities will land the unfortunate victim outside of the pale of good organized society. In this fact lies the great responsibility of childless families in procuring recruits from the Orphans' Home. Years of unremitting toil and loving care may be reduced to naught by the explosion of their inheritance of vice. Take, for example, Bessie Little of Dayton, Ohio, who was taken from the Orphans' Home and reared in a good family. She got along very well until she reached full maturity. Then her born erratic tendencies and insatiable egotism took possession of her. She loved Franz, her slayer, in his presence and hated him in his absence, because her judgment was dethroned by her passions. In this case the best of environment was inadequate to overcome her inheritance of vice; she broke down and became a criminal.

Heredity is nearly everything. "Blood will tell," and blood does tell. A born idiot can never be more than an idiot, but these form only a very small percentage of the defectives. Of all the streams of evil that flow into the national blood none is more virulent than that of imbecility. It is the legitimate offspring of the jail, the infirmary and the insane asylum. What a remarkable lesson there is in the case of Max Jukes of New York State. He was a Dutch settler, born about 1740, a hunter and fisherman. He was a great drunkard, and the progenitor of 1200 persons, nearly all criminals, vagabonds, paupers and prostitutes. In seventy-five years the descendants of Jukes committed 115 criminal offenses. Not more than 20 of them were skilled workmen, and ten of these learned a trade in prison. This family cost the State of New York one million dollars. Crime, imbecility and insanity are due in 60 to 75 per cent. of cases to heredity. We do not expect to entirely eliminate bad blood from the race, but that we can greatly lessen it is both possible and probable.

Insanity is much more prevalent among the Quakers or Friends than any other religious sect, perhaps, because of their sadness and gloom in religious worship. Insanity is less prevalent among the colored people than any other race, because of their simple wants and happy disposition. The general causes of insanity are: heredity, 50 to 60 per cent.; whisky, 12 per cent.; religious perversion, 10 per cent.; disappointment in love, 10 per cent. Eighty per cent. of drunkenness is due to heredity; alcohol causes 33 per cent. of the diseases, 75 per cent. of the crimes, and 50 per cent. of the poverty that afflicts our race. Intemperance of parents causes 34 per cent. of the imbecility in children. Drunkenness in the parent may not be followed by drunkenness in the offspring, but epilepsy or kleptomania, hysteria or apoplexy in the mother may be followed by some form of insanity in the offspring. Parents transmit not alone their inherited tendencies, but their acquired peculiarities as well. There are 100,000 orphans in the United States. One-fourth of these are classed as juvenile delinquents or defectives. It costs ten million dollars a year to care for those orphans. Dr. John S. Billings, in charge of the Census Office, gave us the following figures for the whole United States in 1890:

Insane, 106,254; imbeciles and idiots, 95,571; blind, 50,411; deafmutes 41,283; paupers, 73,045; prisoners, 86,000.

SEX IN RELATION TO CRIME.

Females, being physically weaker than males, are addicted to crime only one-fifth as frequently, and only excel the males in the commission of poisoning and infanticide. Woman's natural form of retrogression is prostitution.

SEASON IN RELATION TO CRIME.

Crimes against property are more prevalent during the cold season of the year and in cold climates, while crimes of passion and against the person are more prevalent in warm climates and during the hot season of the year. Intemperance is prevalent in the temperate zone. The boy asked his father how it happened that people drank so much beer and whisky in the temperate zone.

CAUSE OF CRIMINALITY AND DEFECTIVENESS.

Population has increased too rapidly. More children have been born to poor people than they could rear properly. To raise and educate properly one child requires enormous outlay. To raise properly one child would be a big task for most husbands and wives, to say nothing about six or ten children. Parents of education and means rarely have more than two children. If they have a third child, it is a mistake. This is the cause of a lack of growth of the population at the top and of an excessive growth of the population at the bottom. According to vital statistics it takes on an average about $3\frac{1}{2}$ children to each couple to propagate their kind. Too many people are heedless of all Biblical commands except "multiply and replenish the earth." The next great basic cause of crime and defectiveness is the implied inferiority of women. The idea of woman's inferiority has come down to us from a barbarous past. The man-made laws have, all along the line, accorded the male sex dominion over the female, which has placed millions of girls and women at a disadvantage in the struggle for bread, and which compels thousands of them yearly to accept degradation or starvation. This has kept the moral fabric of society weak. Improvement in our race is an idle dream until woman is accorded perfect justice and placed squarely on equality with man. The helpless slavery of woman, with the attendant evils of enforced motherhood must be relegated to the rear as a crumbling relic of barbaric injustice. If the father be the head and the hands of the family, *the mother is the heart.*

A child has a right to be well born. The man whose destiny is unfavorably formed for him by his ancestors is to be pitied. Many of the rich and poor are alike born into this world with an inheritance of vice and degradation. They are crippled from the very beginning, and have only half a chance for health and prosperity. The end and aim of sex and sex-relation is simply the perpetuation of the species. Sex relation has been diverted from its proper mission. As an example, 40,000 abandoned women are to be found in the city of New York. The *Arena* for January, 1898, gives the following figures for Massachusetts, New York and Illinois: Sixteen per cent. of the married men desert their wives after the birth of the first child, and 28 per cent. after the birth of the second child. The children of such parents are placed at an immense disadvantage. Add to this the work of the wholesale divorce mill and it will be apparent that

marriage to a considerable extent is a failure. Women have opened their eyes to this condition, and as a result 18 per cent. of women of marriageable age in the United States have equipped themselves for earning a living independent of man. She is a worthy competitor of man today in manufacturing, mercantile, professional and other pursuits. When women can completely assert their independence there will be improvement in motherhood. Improved motherhood is the safeguard of the generation unborn.

Our civilization has developed so rapidly that it has retained many of the elements of barbarism and savagery. A relic of savagery is inculcated in this: "He who would not avenge an insult is no man." "Manly dignity can be preserved by executing justice himself, not waiting for the medium of the law." In this way violence comes to be regarded as a virtue, revenge as a duty, and crime as heroic. In this there is a tendency to return to barbarism which blunts the moral sense. The second phase of modern civilization is characterized, not by violence and crimes of blood, but by craft and deceit, as adulterations in commerce, tricks of exchange and official fraud. There is a choice of becoming either hammer or anvil; the person who can not crush another without feeling pain must remain an anvil. Still the weak must serve the strong. The world bows to him who possesses more than others. This is the state of society, notwithstanding the bombastic and hypocritical assurance of brotherly love. Never before in the world's history has a person needed keener wit, greater frugality and prudence to make a living than now. The struggle is fierce and many are falling by the wayside.

Heredity is the great causal factor of crime. Next to this comes intemperance, which depends largely upon the former. It is not encouraging to note that the legal or legislative handling of intemperance has been a failure either in prevention, restriction or cure. The drink habit is still spreading. The greater portion of crime arises out of our social conditions and is amenable to reformatory measures. Only about 20 to 25 per cent. of criminals are born criminals. Three-fourths of the crime in our land is caused by neglected education.

Another source of the multiplication of crime in this country is the almost unrestricted immigration of the lower classes of foreigners from all lands. Our population has 20 per cent. of foreigners in it but they furnish more than half the inmates of our reformatories, one-third of our convicts and three-fifths of the paupers supported in almshouses (F. H. Wines. D.D.; Report in 111th Census).

Another cause of crime and pauperism is the undue flocking of the urban population to the cities. Our jails and prisons are simply high schools of depravity and nurseries of criminals. In the jails our courts husile ravishers, corrupters of youth, murderers, burglars, thieves, drunkards and all the foul members of society, with children convicted of petty larcenies or of incorrigibility, with detained witnesses and people accused of misdemeanors or crimes not yet tried. The inmates of the jail are liberally supplied with tobacco and cards. The junior offenders soon become assimilated to their hardened companions, and join the ranks of crime. The very air about the jail or prison reeks with crime. The criminal serves out his sentence in comparatively comfortable quarters, or he is pardoned out and turned loose upon a long-suffering public, upon which he preys and commits atrocities

with increased skill. It is said that only about one-tenth of the criminal offenses are detected and punished.

In our advanced state of civilization, excessive culture has introduced new forms of crime, such as homicide for life insurance and the abuse of alcohol, cocain, opium and other narcotics. The negro was transplanted on American soil against his will by the whites and kept in slavery 260 years. The negro forms 12 per cent. of the population of the United States; commits 33 per cent. of the crimes; contributes 8 per cent. of the paupers and only 5 per cent of the lunatics.

To sum up the cause of the over-production of defectives and criminals, it can be stated in one sentence, viz.: Disobedience to the laws of nature and of physical hygiene during the present or preceding generation. From the cradle to the grave man is in constant danger from the effects of violated laws.

HOW TO REMEDY THE OVER-PRODUCTION OF CRIMINALS AND DEFECTIVES.

This will involve a removal of the causes just enumerated. Society concerns itself too much with the punishment of crime and not enough with the prevention of it. The lessening of crime is as much a subject for education as for legislation. There is little use in passing laws in advance of public sentiment. Only one person in ten who has an opportunity to steal is restrained by thought of law. His conscience declares that it is wrong and that is enough. Good healthy sentiment needs to be awakened with a view to the suppression of crime. Wholesome laws will follow in the wake of public sentiment. A law without the moral support of the community is useless. If society stamps out crime it will not be the work of one generation, or of any single specific. A great many remedies must be tried. Punishment holds crime in check only, but does not put an end to it. Crime is more formidable than pauperism and is almost as costly. Only a small percentage of the evils afflicting society spring from want. A small number of crimes are due to sheer want of food. But prosperity generates criminal inclinations as well as does adversity, and on the whole the rich are about as much addicted to crime as the poor. Increase of material prosperity may reduce crime against property, but it increases drunkenness and crimes against the person. Increase of wealth must be accompanied by a healthy growth of morals to be a benefit to society. Our educational institutions could accomplish more, if more prominence was given to instruction in conduct and morality, but it is more essential that these should be taught and practiced in the homes; and to this end improvement of motherhood is indispensable. In the proper training of young children lies the best means of the prevention of defectives and criminals. A child at the age of five or six years has imbibed many ideas that cling to him during life. I lay great stress upon the training of the rising generation, because more can be accomplished by preventing the formation of bad habits in the young than by trying to reform confirmed transgressors.

PRISON REFORM.

The treatment of the criminal should fit him rather than the crime. The nature of the criminal should be studied, and suitable chastisement meted out to him. It should be corrective rather than punitive.

A course of instruction in conduct and the duties of citizenship should be part of the prison work. The youthful offender should be dealt with kindly. The efficacy of fines should be well tried before resorting to imprisonment. Junior offenders should not be classed with old offenders. Offenders for the second and third time should be classed as life convicts, and be compelled to "work out their own salvation." There should be rewards for toil and punishment for idleness. Labor organizations are on record that convicts should work, but for thirty years they have protested against convict labor coming into competition with free labor. Convicts should work, but how to employ them judiciously without having their labor come into competition with free labor is difficult to solve. The product of their labor should go in the direction of manufacturing articles for the charitable and penal institutions. No one should object to this. Capital punishment is a crumbling relic of barbarism. The murderer is not put to death as frequently as formerly. In another generation the death penalty will be abolished. Two wrongs do not make a right. It is folly to slander the slanderer or to steal from the thief. The death penalty used to be inflicted in public, but it was found that publicity of crime was detrimental to the suppression of crime. Many people commit crime from imitation by seeing it illustrated in the newspapers. The term sentence for prisoners should be abolished. The curable should be cured and the incurable should be kept for life in seclusion, at self-sustaining labor. It would be ridiculous to sentence a lunatic to an asylum for one or two years. The criminal should be given an immediate sentence and his liberty should be abridged until he proves himself worthy of the confidence of the community. The board of pardons should be made up of the sentencing judges, the warden of the prison and one of the chief justices of the State. This board should meet quarterly, hear evidence and correct mistakes of sentence.

According to sanitary laws, your house may be quarantined and the family prohibited from mingling with the public. According to the school laws your children are taken from you five hours per day, from the age 8 to 14 years, for educational purposes. In view of all this, it seems reasonable that laws could be enforced to keep poison out of the blood of the nation. The State should abridge the liberty of criminals and defectives earlier in their career of destruction. The truest kindness to the defective is to prevent him from being born, because he is his own greatest curse. Often the greatest liberty is the greatest curse and danger. The issuing of marriage license should be restricted by requiring medical and other affidavits to be filed with the probate court showing that the applicants for marriage license are free from insanity, criminality and other hereditary taints. The great majority of defectives and criminals can earn their own living under efficient supervision. There should be more institutions in the land like the Elmira Reformatory, and colonies for the care and keeping of defectives. The outlay now would prove a great saving in the future. Prevention is better than cure. It is better to keep the murderer from coming into existence than to smooth his pathway to the gallows. It cost the State about \$20,000 to try Durant; \$20,000 to try Jackson and Walling; \$25,000 to try Luetgert. The cost to the State for trying an alleged murderer, if put on interest, would keep a person a whole lifetime in comparative luxury.

ASEXUALIZATION.

I have given this subject much thought. I have felt the pulse of the public for a long time in the radical and conservative arteries. I think the treatment would be effectual, but the difficulties lying in the way are at present insurmountable, except for friendless paupers. It would be impossible to follow it out through all the ramifications of heredity when genius and insanity, brilliancy and imbecility are found in the same family. Society, as organized at present, accepts the proposition of reforming the whole man, not part of a man. Amputation of a thief's both legs would incapacitate him from being a successful robber, but society will not accept such treatment. Asexualization of adults often leaves a troublesome amount of sexual desire, and even if it is done in childhood, there is by no means a total absence of it, though it is much lessened. Oriental people, including the Turks, have tried this treatment among the Eastern eunuch and have no confidence in it as an agency for moral reform. The eunuchs were shameless, melancholic and often suicidal, as well as defective in courage, gentleness and remorse. Although the valleys are deep and dark, we must not dwell in an atmosphere of gloom, but must move on and up toward the greater light, realizing that with every step taken vision becomes clearer and more comprehensive, and that positions occupied today with safety were yesterday inaccessible. The hill-tops of science are luminous, and the public sentiment of the future is destined to be more and more informed by science and will eventually adopt its suggestions in matters of statecraft and social economics.

Rape is frequently caused by diseased sexual passions. Surgeons daily remove tumors and limbs for the cure of disease. To asexualize the rapist would protect against repetition of the offense. The punishment would be none too severe. The rapist should take the radical treatment. How many rapists under sentence for five to twenty years would accept this operation as the price of freedom, would be difficult to say. If this class of criminals were given one year after sentence had been pronounced in which to accept this operation as the price of their liberty, only a small percentage of them would remain in prison.

Asexualization of defectives and criminals, both male and female, would speedily limit the dissemination of disease, vice and crime. It would remove their obliquities and transform many of them into useful and productive citizens. By eliminating their productive capacity it would diminish their numbers and permit a rise in the physical, intellectual and moral standard of the race. Owing to the innate repugnance toward this condition, as a penalty for crime, it would be a powerful deterrent and thereby diminish crime, protect against many ravagers, and satisfy the vengeance of the outraged community. Ignorance, intemperance, poverty, disease and defects are symptoms indicating a social state or condition of crime and pauperism rather than the cause of them. Society maintains alive those that would perish without its aid. It is folly to permit the breeding of social gangrene.

The reproductive organs have no function in the human organism except the creation and gratification of desire and the reproduction of the species. Their loss has no effect upon the health and longevity of

man. Their removal would destroy desire and diminish the wants of nature. A want removed is equivalent to a want supplied. It would be a kindness rather than an injury to abnormal persons. The operation is simple, safe and painless. It would confer upon inmates of prisons, reformatories, etc., immunity from evil practices, and give them health and strength, satisfaction and comfort for discontent and insatiable desire. The prevention of reproduction should not be objectionable to this class, because idiotic, insane or criminal children are of no comfort to parents. Such surgery is as wise and merciful as vaccination or the extraction of a decayed and aching tooth.

In the *Cincinnati Lancet-Clinic*, Oct. 3, 1896, will be found a description of an operation invented by the writer for the cure of certain cases of insanity. The operation consists in cutting or exsecting from one-fourth to one-half inch of certain branches of the pudic nerve. This causes a suspension of the sexual activities for a period of from one to four years, with a return of same as soon as the nerves are reunited. This operation has not been in use long enough to judge of its usefulness. The sexual instinct was implanted for the propagation of the race, not for its degeneration and destruction. Humanity sins against the Creator by contributory neglect in this matter. Society arrests and confines the lepers, the victims of smallpox, yellow fever or cholera, and treats them as it sees fit. It shuts up the imbecile, the criminal and the insane for the protection of the public. No one questions its right to do so. Yet it allows the deformed and diseased in mind and body and soul to disseminate social leprosy and cancer. This could be prevented by the adoption of an operation almost as simple and painless as vaccination. It seems strange that the matter should be delayed so long. Asylums, prisons, and jails can not be built fast enough to meet the requirements of social neglect. Society is working at the wrong end of the subject. It should get at the rottenness of the root of the tree of humanity. The upper tenth in society has remained about the same for 3000 years. There used to be no submerged tenth, but today we have a largely increasing submerged tenth. There is a lack of growth at the top. Stature and health are decreasing. Weak nerves and weak stomachs are on the increase, as the result of faulty breeding. The decay of the Republic is due to the degeneracy of the people. It is an outrage that the State and Nation stand idly by and permit the intermarriage of criminals, paupers and defectives, thus becoming a party to the wholesale manufacture of probable criminals. The State has the right and power to prevent the probable from becoming the positive criminal.

History records that many cities have been built on this earth, some of them nearly as large and as rich as any of the present age, yet through internal disease they went down in ruin, and nothing but potsherds and broken brick remain to mark their former existence. It is time to put up the signboard and suggest whither we are drifting.

Let the nation adopt the plan of treatment herein suggested for one generation, and the result would be that all the inherited rottenness and corruption of ages would be purged out of the people. The criminal and pauper class would become extinct. Asylums, prisons and jails would become depopulated. The great burden of taxation would be lifted from the people. Doctor's bills would be less of a drain

upon the family and chronic disease would be diminished. Let the sword of justice cut the knot of bondage and let society take control of its own destiny and regulate reproduction with the wisdom of experience, and the "ills which flesh is heir to" will vanish before the glorious dawn of the day of comfort, hope, peace and promise.

Fifth and Wilkinson Streets.

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A CASE OF ACROMEGALY.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Although acromegaly was first described as a medical entity in 1886, since that time (Woods Hutchinson) two hundred and fifty cases have been reported, of an average of about twenty per year. When it is taken into account that probably at least one-half of these reported cases, like the one herewith submitted, were recognized, although not classified, before Marie brought the subject into prominence, it may not be deemed unreasonable to say that, the world over, ten represents the number of cases annually developing into the malady of acromegaly, and that it is, therefore, one of the rarest diseases known. The subject of acromegaly has been scientifically presented by numerous investigators quite recently, a list of several of the latest of these papers being found at the close of this report, and for the purpose of increasing the number of reported cases and to enhance the value of the more scientific papers on the subject, the following is briefly given:

Case 1.—Mrs. F. B., German extraction, aged 68, married, occupation, farm wife. Father living, in good health, aged 93. Mother, who had always been in good health, died recently at the age of 91. Several brothers and sisters are living, and all are, as far as can be determined, in good health, but each of these has a highly developed nervous system. All the members of the family are above the average in size, but no giantism or acromegaly is elsewhere reported. A negative history presented of tuberculosis, heart or other organic disease elsewhere in the family, while there is no especial history of former serious illness in the patient herself.

Nothing abnormal was discovered in her physical condition until 50 years of age, when the irritability of the nervous system, characteristic of the family, began to be more pronounced, and defect in the exercise of normal will-power more manifest. The normal processes of cerebration declined rapidly, and on Feb. 21, 1893, she became so homicidal that she was committed to the Oregon Insane Asylum at Salem, where she has since remained. To Dr. D. A. Pain, the superintendent of that institution, I am largely indebted for much of the data making up this report. At the time of examination for commitment the physician making the same reported as follows: "This patient is a large, fleshy woman, with the vegetative functions well performed. Her lungs and heart are normal, as are all the organs so far as can be determined. Mentally, all the perceptions are normal. Her emotions are moved to great rage without provocation, or to great affection, although the latter much more rarely. Her intelligence is limited and she is incoherent in speech. Her will controls her only in mani-

festing her physical wants. She is abusive in her language, and sometimes violent with her hands."

No record was made at the asylum at that time of any special deformity of any portion of her body, and as the report of the examining physician of the committing court seems to show that a careful examination was made by him, and as he says that she was physically in a normal condition, we may therefore reasonably presume that acromegalous enlargement and deformity were not at the time present, or if so, in so slight a degree as to be unnoticeable. The incoherence, however, may have been a lingual ataxia from an enlargement of the tongue, already beginning at that time.

Three years later, the hospital reports spoke of the tongue as "large," and also that the "feet and hands are larger than usual." At this time such report also says, "bowels regular." Good pulse. At irregular intervals her face and neck became congested. Coarse, loud, vicious, and profane in speech, which is in a coarse, low-pitched voice. Delusions and hallucinations. Her general condition remained much the same, her mental state showing increased impairment, and on June 6, 1889, we find that she was reported as well-nourished, with bodily functions fairly well performed, and that she had constant delusions, illusions and hallucinations, although she did



not always obtrude them. Occasionally she was noisy, excited, abusive and violent, and her reasoning power and memory were defective.

Five years later, June, 1894, her physical condition was good, all functions being well performed. "Face, hands, feet and body generally enlarged. The tongue being too large to remain ordinarily within the mouth, is always protruded when she sleeps. Excitable and violent. Locomotion somewhat impaired, and no particular desire to move." At the present time she is able to walk only with much difficulty, from general weakness and ataxia. She prefers to, and does, sit in a large arm rocking chair most of the time. She has delusions, one of which has been fixed for many years, that is, that her former "neat, tidy and small body was stolen, and they put me in this big, ugly body." She is well-nourished, eating and sleeping well. Her extremities have shown further growth, and her hair has notably grown coarse during recent time. Most of the joints are normal, although all the metacarpophalangeal articular extremities are enlarged. Soft parts of the fingers enlarged, of sausage-character. The inferior maxilla has grown prominently forward, and the teeth in closing extend beyond the upper three-fourths of an inch. Zygomatic

arches somewhat prominent, and the nose and ears larger than normal. The superciliary arches protrude slightly. The spine is normal. The thyroid is small, the thymus not discernible. The sternum is increased in size, and the whole chest enlarged. The clavicles are thickened. She is strong and vigorous in general appearance, and weighs 202 pounds. Her present height is 5 feet 5½ inches. Length of arm: axillary fold to tip of finger, 24½ inches. Length of middle finger, 3½ inches. The thumbs seem shorter than they should be, relative to the fingers. Finger nails coarse and thick. The circumference of the head is 22 inches.

There is no sugar in the urine, and Dr. J. T. Williamson says that there is no record of any diabetic symptoms having been present since his connection with the case, eleven years ago. Her pulse is usually rapid and her respiration slow. She has a blowing murmur with the second sound of the heart.

A feature of possible etiologic interest in this case is that the father and mother were first cousins.

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THE ARTIFICIAL FEEDING OF INFANTS IN GASTRO-INTESTINAL DISTURBANCES.

Presented to the Section on Diseases of Children, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Careful study of artificial feeding must be made in two classes of patients; 1, infants whose mother's milk does not agree; and 2, whose mothers are unable to nurse them. Some of these cases may be supplied by a wet nurse and perhaps everything pass along satisfactorily; but so much trouble is sometimes experienced with wet nurses and so much success attends artificial feeding by means of cow's milk, that many physicians today have almost entirely abandoned the wet-nurse method of feeding babies, especially in view of the fact that it is often difficult to secure a wet nurse whose constitutional history is entirely satisfactory.

In every case it is necessary to determine the cause of disturbance. Not until this is done is the physician in a position to permit or advise the adoption of an artificial diet. The most common cause of digestive derangements in infants is some fault in the feeding. There are at least four factors in this cause, one or more of which are usually present: 1, the food may be poor in quality; 2, it may be deficient or too abundant in quantity; 3, the interval between feedings may be too short or too long; 4, the food may not be of proper temperature. Rarely, cases of congenital malformation or imperfect development of the secretory apparatus of the stomach may cause trouble, even

when every precaution has been taken in regard to quality and quantity of food, and where proper intervals between feedings are scrupulously observed.

The first inquiry has reference to the source of the food. If it is mother's milk the health and temperament as well as the disposition of the mother must be taken into consideration. If the milk is too acid the administration of a little lime-water after each nursing may correct the difficulty. The mother's milk may contain too great a relative proportion of proteids and because of this constantly give rise to digestive derangements. In such a case, as well as in some others, the use of mother's milk is often necessarily abandoned and some form of artificial food prescribed. If the disturbance has continued until organic lesion of the stomach has supervened, as chronic dyspepsia or gastritis, additional modifications of the food may be required. Partial or complete predigestion or peptonization of cow's milk, especially for older children, may do very well in a few cases. In many cases, however, it is a long and tedious task to find a preparation which will entirely remove the condition and relieve the symptoms.

Next to mother's milk cow's milk is the proper food for infants; but it must be modified in the relative proportion of its elements so as to correspond with human milk. Each case requires special investigation. If there is constipation and a poorly nourished condition of the patient, cream should be given in larger proportion than in cases of well-nourished infants with a tendency to diarrhea. Bearing in mind the fact that normal human milk is alkaline, while cow's milk is neutral or acid, a necessity will be recognized for using a little lime-water with cow's milk. If the milk is not sterile it ought to be sterilized. If proper precautions have been taken in milking the cow, and the milk is passed *at once* into sterilized bottles, a healthy cow's milk is *sterile* and needs no heating except to raise it to proper temperature for feeding the baby—about 98 or 100 F.

It is necessary to analyze the milk before a proper comparison with human milk can be made; but when the exact composition is known, a simple calculation enables one to make the proper modifications. The method of procedure may be illustrated by referring to a case in my practice recently: The baby had considerable digestive disturbance and two or three slight convulsive seizures. The mother was tired and nervous, and anxious, but she had previously nursed two children without any disturbance whatever. This latter fact made it hard to convince her that the food was the cause of the disturbance. An analysis of her milk showed that it contained 2.80 per cent. of proteids, a proportion entirely too large. Otherwise the mother's milk was normal. The simple problem was to prepare a food from cow's milk which should equal human milk. The milk of the cow which belonged to the family was analyzed and found to consist of water 87.3; fat 4; lactose 5.69; proteids 2.80 per cent. Normal human milk contains water 88.4; fat 4; lactose 6.50; proteids 1.80 per cent. To reduce the cow's milk which we were to use in this case to the equivalent of normal human milk the following changes to make 500 c.c. for baby were used: Milk 312 c.c.; water 178 c.c. (water 174, lime-water 4); cream, 9 c.c.; lactose (milk sugar) 10 gm. When it is not convenient to analyze the milk to be used, the following formula for changing dairy cow's milk to the equivalent of human milk is very convenient and

approximately correct: Milk, 300 c.c.; water 166 c.c.; lime-water, 4 c.c.; cream, 30 c.c.; lactose (sugar of milk) 8 gm. If constipation is present and the liver is acting properly the cream should be increased: if diarrhea prevails, the cream may need to be reduced or the lime-water increased. Sometimes colic and even diarrhea result from the proteids present in the milk, in which case it may be found necessary to diminish the proportion of milk and increase that of cream and water. There are few cases which seem to fare badly on milk in any form. Some of these thrive on a mixture of cream, sugar and barley water. Not unfrequently some of the prepared foods serve every purpose, and being convenient and easy of preparation it may be entirely proper to use them; but the child must be observed closely in order to see that it is properly nourished.

If in a given case it is found that the quality of the food is normal, the second point to determine relates to the quantity the baby receives. When the quality is right, a deviation from the normal is usually toward excess. Babies are likely to be fed too much as well as too frequently. A healthy child easily rejects an over-abundance of milk without serious consequences, but if any diseased condition exists in the stomach, the vomiting becomes the symptom of pathologic changes. In a table given below I give the quantity which will meet the requirements of most cases. Variations as indicated in the table, and frequently greater variations than there given, are required. These may depend upon conditions of the stomach and the size and weight of the child. The age of the patient exerts a marked influence and must always be taken into account. It is surprising in many cases that so little attention is bestowed on the age, the weight and the condition of the child's stomach. Particularly is this true in general practice in the hands of too large a proportion of the profession.

TABLE ACCORDING TO AGE.

Age.	Temperature of food.	Intervals, hours.	No. of feedings in 24 hours.	No. of night feedings.	Amount at each feeding.		Total amount in 24 hours.	
					oz.	c.c.	oz.	c.c.
One week	100	2	10	2	1 - 1½	30-45	10 -15	300-450
Two weeks	100	2	10	2	1½-2	45-60	15 -20	450-600
Four weeks	98	2½	10	2	2½-3	75-85	25 -28	750-850
Six weeks	98	3	10	2	3	90	30	900
Eight weeks	98	3½	9	1	3½	105	32	960
Three months	98	4	9	1	4	100-120	32 -36	960-1080
Four months	98	4½	8	1	4½-5	135-150	36	1080
Five months	98	5	7	1	5½	165	38½	1155
Six months	90	5½	7	0	5¾	172	41	1204
Seven months	90	6	7	0	6	180	42	1260
Eight months	90	6	6	0	7 -7½	210-225	42 -45	1260-1350
Nine months	90	6	6	0	7½	225	45	1350
Ten months	90	6	6	0	7¾	233	46¼	1395
Eleven months	90	6	5	0	9½	285	48	1440
Twelve months	90	6	5	0	9½	285	48	1440

The third point of interest in our study is the proper interval between feedings. This is shown in the table for different ages for the first year. It sometimes occurs that pathologic conditions, as acute gastritis, may require deviation from the suggestions here offered; and not only a reduction in amount, but a lengthening of the intervals may be necessary. The necessity frequently arises for rectal alimentation until the stomach has had rest. Frequent feedings with smaller amounts of nourishment, when milk is the diet, are objectionable because of the danger arising from having the stomach functionally engaged in two or three stages of digestion at the same time. In

stomachs with impaired digestive power it is frequently necessary to peptonize the milk or administer it alternately by mouth and rectum, so as to give the stomach time to complete one meal before another is given. Many cases of rachitis are due to too frequent feeding. I have met cases of anemia and subacute and chronic gastritis in children which were due to the habit of feeding at too short intervals. Care exercised in this particular will obviate many of the disturbances of infants in the first year of life. In general practice one of the most frequent vexations of the physician is to find that the mother or nurse girl is careless about the temperature of the baby's milk. If it is warmed at all, it is not warmed to a definite degree; and if it is to be pasteurized, often the matter is overdone and the milk boiled.

Artificial food for babies in the first month ought to have a temperature of 100 degrees F. After that time it may vary between 100 and the figure given in the accompanying table. The food must not be prepared and then allowed to lie about until it is cold before using. The approach to mother's milk should include temperature as distinctly as composition. As the child grows older, after three months, the proportion of water may be gradually reduced and that of milk increased, until at eight or ten months cow's milk unmodified will be borne by many children. The fact that many children survive the almost criminal negligence of their nurses in the particulars here mentioned is not of sufficient weight to justify a departure from rigorous care. The food should be sterilized, it must be of proper quality, of sufficient quantity, administered at proper intervals and be of proper temperature. In pathologic cases additional modifications may be required.

THE SURGERY OF CAMP WIKOFF.

BY N. SENN, LIEUT. COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

(Continued from page 1307).

ABSCESSSES.

We would naturally take it for granted that among the returning soldiers from Cuba, owing to their greatly debilitated condition, suppurative affections in different forms, and affecting various tissues and organs, would furnish a rich and interesting material for the surgical ward of the General Hospital. The sources of infection were many, and the resistance of the tissues to pathogenic microbes in most of the men who returned was at low ebb. A good share of the surgical work consisted in incising and draining abscesses, some of them of enormous size. In the treatment of all of these cases, owing to the pronounced anemia and great weakness, special precautions were resorted to to prevent the loss of even as much as a teaspoonful of blood in performing the operations. In abscesses in the anal region the Paquelin cautery was usually used in preference to the knife, in laying open the abscess cavity. In other regions the abscess was opened by making an incision through the skin and underlying fascia large enough to admit the tip of the little finger, when the remaining tissues were tunneled with a pair of curved, rather sharp pointed forceps, and the tubular wound enlarged to the requisite extent by expanding the blades of the forceps during the withdrawal of the instrument. In most instances a counter-opening was made by plunging the forceps into the abscess cavity, inserted into the first opening, through the tissues from within outward until the tip of the instrument made a cone of the skin which was then incised, not over, but on the side of the instrument, sufficiently to permit the easy escape of the instrument when the

canal was enlarged by expanding the blades, after which the end of the drain was grasped transversely and by withdrawing the instrument through drainage was established. The drains used were freely fenestrated, the openings being numerous, but never larger than to correspond in size to one-fourth of the circumference of the tube. The opening and counter-opening were made in places where drainage and irrigation would prove most efficient. In several cases in which the counter-opening could not be made by the use of the forceps, the abscess was opened in the usual way, and after evacuation of its contents peroxid of hydrogen was injected until the cavity was well distended, when the second opening was made in the same way as the first. After opening and draining the abscess, irrigation with a 2½ per cent. solution of carbolic acid, followed by peroxid of hydrogen, and finally again with the carbolized solution. In all abscess cases the dressing consisted of a compress of gauze wrung out of a 2½ per cent. solution of carbolic acid, over which oiled silk was applied with absorbent cotton around its edges, to act as a filter, and the whole confined in place by a well-applied bandage. In the more serious cases the dressing was removed, the abscess cavity flushed, and a new compress applied twice daily. Whenever it was deemed necessary, the affected limb was immobilized. This treatment proved uniformly successful in preventing profuse suppuration and was always followed by rapid improvement in the general condition of the patient.

In the medical treatment of these cases quinin was used freely, as well as alcoholic stimulants. Iron preparations and a nutritious diet proved most effectual in improving the condition of the impoverished blood and in restoring normal nutrition.

CONNECTIVE TISSUE ABSCESSSES.

The connective tissue was the tissue most frequently the primary or secondary seat of infection. The phlegmonous inflammation which led to connective tissue abscesses occurred almost exclusively in men whose general health was shattered. As a rule the patients suffering from this affection presented an anemic, almost waxy appearance and were greatly emaciated. The deterioration of health was due to antecedent causes, malaria, yellow fever, dysentery, diarrhea, exposure and improper or insufficient food. The phlegmonous inflammation in most instances pursued a rather insidious process and was clinically not characterized by the complexus of symptoms which ordinarily accompany the inflammation preceding an acute abscess. The pain was often slight, tenderness moderate, and the skin seldom showed the inflammatory blush which so constantly is seen during the development of an acute subcutaneous abscess. A tendency to burrowing was manifest in most cases. The induration of the abscess wall, so common in acute abscess, was lacking in most of our cases. There seemed to be a total absence of a tendency to the limitation of the area of abscess formation. The cases that came under our observation resembled in their symptomatology, pathology and clinical course very closely abscess formation as seen during the latter course of any prolonged acute infective disease, or during convalescence from such. In opening these abscesses I was always careful to make the openings some distance from the center of the abscess cavity, in preference at its margins, and the same location was selected in case a counter opening was made. By following this method of incising and draining the abscess the skin over the center of the abscess, damaged to the greatest extent by the underlying phlegmonous process was avoided, and complete evacuation and free drainage secured. The same careful preparations were made for the operation as in cases requiring surgical intervention for aseptic conditions, with a view of guarding against secondary infection.

Under this treatment, the general and local conditions of the patients improved very rapidly. In abscesses of very large di-

mensions from two to four incisions were made and as many points of drainage established. As suppuration ceased and the abscess cavity commenced to shrink, the drains were shortened from time to time to enable the process of healing to proceed without hindrance from mechanical causes.

Case 14.—Robert Bloedel, age 25, Third Infantry Band, enlisted fifteen months ago. Had chills and fever in Cuba for about a month, followed by dysentery. Is still suffering from the diarrhea which followed the dysentery and the patient is much emaciated and very anemic. Before going to Cuba he noticed a small pimple on his neck. Just before leaving Santiago, swelling of the neck began in the connective tissue, at the site of the pimple, and has progressed steadily. Examination of the cavity of the mouth does not reveal a source of infection. There can be but little doubt that the minute furuncle, which proved harmless as long as the patient remained in good health, became the focus of infection of the underlying connective tissue which was made more susceptible to infection by the effects of disease. A large fluctuating swelling in the neck, just below the angle of the jaw, marks the location and extent of the connective tissue abscess. Pain has never been severe. Edema, but no redness of skin. All of the local symptoms indicate a slow, subacute inflammation of the deep connective tissue. The patient was etherized and through drainage was established, the drainage tube being placed in an oblique direction from the floor of the abscess to a point opposite and behind. A large quantity of creamy pus was evacuated and the cavity thoroughly washed out with carbolized solution and peroxid of hydrogen. A large moist antiseptic compress covered with oiled silk was applied and held in place by a bandage. Very little suppuration after operation, speedy healing of the abscess cavity accompanied by a marked improvement in the appearance of the patient.

Case 15.—P. P. Spragus, age 29, Seventh Infantry, Company I, entered the regular service seven months ago. He landed in Cuba July 10. Contracted malaria, lost flesh and strength, but continued to perform his usual duties. About three weeks ago he experienced a sense of soreness in the calf of his right leg in the region of a scar from an injury received during childhood. The soreness increased slowly in severity, and for a number of days he has suffered from a throbbing pain sufficiently severe to prevent sleep. The patient is much enfeebled from the effects of the previous disease, aggravated by the recent attack of phlegmonous inflammation. No local source of infection could be found on the most careful search. It is very probable that the scar tissue furnished the *locus minoris resistencie* which determined localization of pus microbes floating in the general circulation sufficient in number and virulence to give rise to a subacute phlegmonous process. The whole leg is swollen from the ankle to the knee, tense and edematous, a circumscribed inflammatory blush over the lower portion of the gastrocnemius muscle. Fluctuation deep-seated, somewhat obscure and diffuse.

The diagnosis made at the time, was deep-seated phlegmonous abscess, involving the connective tissues between the deep-seated muscles of the leg. August 29, under ether anesthesia the abscess was opened by an incision over the posterior aspect of the leg in the median line, at a point where the muscle terminates in tendon; a large quantity of thin bloody pus escaped. As it was found impossible to make a counter-opening in the upper recess of the abscess cavity by the use of forceps, peroxid of hydrogen was injected through the opening to distend the abscess cavity sufficiently to facilitate incision from without. The second incision was made in the usual way over the upper third of the fibula and a counter opening established on the tibial side, effecting in this manner efficient through drainage below and from side to side. Digital exploration through the three openings located the abscess correctly anatomically. In exploring the interior of the abscess the tibia and fibula could be distinctly felt. The abscess cavity was disinfected in the usual way and after applying the wet antiseptic compress, the patient was returned to his cot and the limb placed in an elevated position. The final recovery of the patient was retarded by several severe attacks of malaria during one of which the mercury reached 106 F. The chills and fever yielded to large doses of quinin.

Case 16.—Henry H. Mix, age 21, Third Infantry, Company F, enlisted three months ago. On June 6 last, while on parade had an attack of heat exhaustion followed by diarrhea for several days. At Tampa, June 8, two days later, he was put on sick list for two furuncles behind the left knee. These healed promptly. July 10 on reaching Cuba, he suffered from furuncles on buttocks, also malarial fever and diarrhea. At this time an abscess formed in the right popliteal space, which pursued an insidious, chronic course. At the time the patient reached Montauk, he was very anemic and almost reduced to a

skeleton, and the abscess had opened at different points. The subcutaneous tissue was extensively undermined, and through the openings the fungous lining of the cavity could be distinctly seen. The abscess cavity discharged profusely and extended from the middle of the thigh to the upper portion of the calf of the leg. August 29, the sinuses were enlarged, a number of counter-openings made and free tubular drainage established. The abscess cavity was thoroughly disinfected and a large moist antiseptic compress applied. As there was some tendency to contraction of the knee joint, the limb was placed in a straight position and immobilized by the use of a well padded anterior wire splint so applied that the abscess could be exposed and treated without disturbing the limb. Malarial fever, which developed on the second day after the operation, retarded the healing process, and for a few days threatened the life of the patient. After the fever was under control by the administration of large doses of quinin, a satisfactory process of repair set in, which soon effected healing of the abscess and restoration of tissues lost by the extensive destructive process.

Case 17.—Joseph McGuire, Ninth Massachusetts Volunteers, Company C, had some febrile attack in Cuba, the nature of which is not known. He was admitted to the surgical department of the General Hospital, September 7, suffering from a superficial connective tissue abscess over left triceps about two inches below the shoulder joint. He has at the same time an alveolar abscess which is discharging through a carious tooth. The infection in this case evidently took place from the blood, as there are no traces of the existence of a local infection atrium to which the phlegmonous process could be attributed. Through drainage and moist carbolized dressing.

Case 18.—James F. Dite, age 21, First Illinois Infantry, Company H, received a severe contusion of anterior surface of right thigh from falling log near Santiago. He was treated by a Cuban doctor for rheumatism, and then sent to the Division Hospital where a swelling which had formed at the site of injury was incised, but no pus escaped. The swelling remained, and gradually increased in size. When admitted to the surgical ward his general health was precarious. Marked anemia and emaciation. The anterior aspect of the affected thigh from near the knee to the inguinal fold was the seat of a fluctuating swelling. The center of the swelling was occupied by a small granulating area marking the place where the incision was made. The abscess was underneath the quadriceps femoris muscle, and evidently the incision had not been made deep enough to reach the pus. As the skin was not broken by the injury, infection was determined by microbes floating in the circulation and their localization and growth in the contused deep connective tissue. Under anesthesia the abscess was opened at the most dependent point and a counter opening made on the opposite side with the aid of distension of the cavity by peroxid of hydrogen injection. Through drainage and thorough disinfection of the interior of the abscess cavity completed the operation. Prompt relief and improvement followed the operative intervention.

Case 19.—Dennis Riley, age 21, First District of Columbia Infantry, Company E, after passing through a rather severe attack of typhoid fever was admitted to the surgical ward suffering from multiple abscesses, varying in size from that of a pea to a walnut, involving the face and the neck. The largest abscess was above the left eyelid. All of these abscesses had their primary starting point in the subcutaneous connective tissue. Treatment by incision and drainage. Convalescence progressed without any further interruption. The location of these abscesses on the exposed part of the body would indicate that the infection had a local source, probably slight abrasions inflicted by the patient himself during the course of the fever.

Case 20.—Edwin Stockwell, aged 28, Second Infantry, Company I, was well until the day before leaving Cuba, August 10; on that day felt very weak and sick. On boarding transport had to lie down, vomited, then felt better for a time, then weak and sick and nausea and vomiting again. He was feverish all the time and slightly jaundiced, but continued on duty with the sick. Some doubt remains as to whether this attack was a mild form of yellow fever or malaria. Since his arrival here he has done duty as a nurse. Five or six days ago a furuncle developed on the middle of the posterior aspect of the right thigh, below the gluteal fold. This opened and discharged slightly, but the swelling has continued to increase in size. On examination, a crater-like defect in the skin marks the site of the primary focus of infection. From this point a red zone of inflammation extends in all directions equally to a distance of two inches. The phlegmonous progressive connective tissue inflammation had its origin from the furuncle. Such a complication would probably not have occurred if the patient's general health and power of resistance to general infection had not been impaired by the antecedent attack of fever. The

skin around the furuncle was extensively undermined. The cavity was freely laid open by a vertical incision and the necrosed tissue and infected granulations scraped out with a sharp spoon, and after thorough disinfection was lightly packed with a strip of iodoform gauze, and a large moist compress applied.

Case 21.—John A. Johnson, aged 24, Third Infantry, Company H, enlisted eight months ago. Phlegmonous inflammation of middle finger of left hand. Three weeks ago had an attack of malarial fever in Cuba, which was complicated by diarrhea. He was treated four days in one of the hospitals, when he returned to his command for duty. The fever left him in a weakened condition. Ten days ago on leaving Santiago, he noticed a soreness over the dorsal side of the middle finger of the left hand directly over the middle joint. Cause of infection not known. An acute superficial abscess formed, attended by great pain until it ruptured. A considerable portion of the overlying skin sloughed, leaving a ragged surface with edematous red margins. On August 27, the patient was placed under an anesthetic, when a thorough examination showed that the infective process did not extend to the joint or the extensor tendon. With sharp spoon, scissors and forceps the infected tissues were removed, the resulting surface disinfected and packed with iodoform gauze and the finger immobilized on a palmar splint. The wound healed promptly and the prospects are that the finger will regain its normal functions.

Case 22.—Richter, aged 23, First Illinois Infantry, Company D, contracted typhoid fever in Cuba five weeks ago. During the fever a copious herpetic eruption made its appearance on the upper lip and about the nasal orifices. The fever left him in a greatly emaciated condition. A swelling formed in the left cheek during the last three or four days and increased rapidly in size. Pain and tenderness not well marked. The patient sought medical treatment at the surgical ward Sunday, September 11. The left cheek was the seat of a large fluctuating swelling. Diagnosis made at the time—abscess of cheek. The abscess was incised from the mouth and a large quantity of very offensive pus was evacuated. The patient was directed to resort to frequent rinsings of the mouth with a saturated solution of boracic acid and was given a furlough to enable him to return as quickly as possible to his home. Infection in this case undoubtedly occurred through the skin defects left by the herpetic eruption.

GLANDULAR ABSCESS.

In the discussion of phlegmonous abscess, infection was traced either to a *portio invasionis* or local conditions, which determined localization from local causes, in cases in which it was reasonable to suppose that the essential cause of infection existed in the general circulation. Without calling attention to the fact, it is reasonable to suppose that in the first class of patients the essential microbic cause reached the tissues through the connective tissue spaces, that is, that a direct anatomic connection existed between the primary essential infection-atrium and the seat of secondary phlegmonous manifestations. In the consideration of glandular infection it is essential to connect the infection-atrium anatomically and physiologically, with the secondary glandular suppurative conditions. We are able from the clinical history and the pathologic condition presented in most of the cases to establish such a direct connection between the primary source of infection and the secondary glandular manifestations. I have reason to believe that in most of these cases the essential cause of infection was the streptococcus pyogenes, because it is well known that this pyogenic agent usually follows either the connective tissue spaces or the lymphatic channels in giving rise to a distant infective suppurative process.

Case 23.—Patrick Collins, age 28, Company C, Eighth Infantry, enlisted one year ago. About the middle of July, while in Cuba, had a malarial chill followed by fever. Has had fever and diarrhea, and has been on the sick list ever since. While returning on transport from Cuba he experienced soreness in the region of the left parotid gland; this symptom has been followed by the usual clinical evidences indicative of the existence of an abscess in that locality. On August 29 he presented himself at the surgical ward, and at that time it was not difficult to diagnose the existence of a large abscess in the region of the parotid gland. At that time, under ether anesthesia, it was easy to recognize a diffuse abscess in the parotid region. It was more difficult to decide whether this abscess

was of malarial or typhoid origin. Two incisions were made, an extensive purulent product was evacuated, and efficient through tubular drainage was established. In this instance the whole gland seemed to be surrounded by the suppurative products and the through drain was passed underneath the gland that was the primary seat of the secondary field of infection. The patient improved rapidly after the operation.

Case 24.—John Williams, age 25, Ninth Cavalry, Troop F., colored, enlisted four months ago. Following a strain in lifting and exposure in rough weather, while on duty in the Camp at Tampa, Fla., he became aware of the enlargement of the inguinal glands on the right side. The glands were very painful when he was on active duty. There are no evidences of general infection of any kind and the most scrutinizing examination failed to detect any tangible source of infection in the distal side of the lymphatic circulation. On palpating, three or four inguinal glands were found distinctly enlarged with plain evidences of beginning perilymphadenitis, but no distinct abscess formation. On August 22 chloroform was administered and a curved incision made, with the convexity directed upward in such a manner as to expose the infected glands freely. The glands, three in number, honeycombed with pus were enucleated. A place for drainage was established, the wound thoroughly disinfected with iodoform, when the external incision was closed with sutures of horsehair. The wound healed promptly by primary intention.

Case 25.—George A. Roberts, Sixteenth Infantry, Company H., colored, was ill eight days with malaria in Cuba, was after that on duty until his arrival in Montauk, when he again had malarial fever. During this attack a furuncle developed on calf of the right leg and opened spontaneously. From this point a lymphadenitis started, which extends to the deep lymphatic glands in Scarpa's triangle and terminated in a lymphadenitis and perilymphadenitis. The lymphatic glands in this region, being in a state of inflammation, resulted in the formation of a tender and painful swelling four inches in length and about three inches in width. No fluctuation and no inflammatory discoloration of the skin. The patient was confined to his cot with the affected limb in an elevated position. A large compress saturated with 2½ per cent. hot solution of carbolic acid. Applied Credé's silver ointment to be rubbed into the skin over the swelling once a day. Under this treatment the inflammatory process subsided and the prospects are, that the swelling will disappear without pus formation.

Case 26.—Frederick Warner, age 37, colored, Ninth Cavalry, Troop L, contracted chancroid about six weeks ago, while on duty at Tampa. The lymphatic glands in the inguinal region became infected and the suppurative lymphadenitis terminated in the formation of three glandular abscesses, which opened spontaneously. At the time the patient was operated upon, September 1, three fistulous openings were found, and the connective tissue was extensively infiltrated. No scars or other evidences of the primary lesion can be detected. It was plainly a case of suppurative lymphadenitis, caused by invasion with pus microbes from the external genitals. Under chloroform anesthesia the sinuses were enlarged, and the remaining broken down gland tissue and infected granulations removed by a vigorous use of the sharp spoon. The resulting wound was thoroughly disinfected, iodoformized and packed with iodoform gauze and covered with a large moist antiseptic compress of gauze, over which was placed an overlapping piece of oiled silk, and the whole dressing held in place by a bandage embracing the pelvis and upper part of thigh. The patient left the hospital a week after the operation, at which time the abscess cavities were much diminished in size and lined by vigorous healthy granulations.

Case 27.—John H. Butler, age 21, Ninth Cavalry, Troop L, colored. Tubercular lymphadenitis of submaxillary gland. Family history negative. Mother and father living; two children died in infancy; rest living and in good health. About two months ago began to have pain in right side of neck and submaxillary region, and then noticed a small, hard swelling below the angle of the jaw. Additional glands in the same region became involved. At the time he entered the surgical ward a large glandular mass, composed of several enlarged lymphatic glands, was found in the right submaxillary region. On palpation the swelling was painful, but no distinct fluctuation could be felt. Inspection of the mouth failed to reveal anything which could be regarded as an infection-atrium. The tubercular nature of the glandular affection was recognized, and a radical operation for the removal of the glands was performed September 6, the patient being under the influence of chloroform. The glandular mass was freely exposed by a semilunar incision with the convexity downward and by reflection of the cutaneous flap in an upward direction. The whole

mass was dissected out in one piece, which included not only the tubercular glands, but likewise the infiltrated connective tissue surrounding them. The submaxillary gland was exposed, and during the latter part of the operation it became necessary to cut and ligate the facial artery. The gland tissue throughout had undergone coagulation necrosis; each gland contained several foci of caseation. The wound was iodiformized and sutured throughout with horse-hair, provision for gauze drainage having been made by making a button-hole near the margin and center of the flap. Healing by primary intention.

Case 28.—Schuyler C. Black, age 31, Ninth Cavalry, Troop I, colored, enlisted four months ago. Chronic balanitis and bilateral plastic lymphadenitis of inguinal glands. In June last noticed enlargement of inguinal glands on both sides, following a small sore on the glans penis near the corona. He was treated for primary syphilis, and was given large doses of potassic iodid. At no time was there any induration at the base of the sore, which always presented the appearance of an abrasion rather than an ulcer. At no time have there been any indications of secondary syphilis. The lymphatic glands in other regions of the body are normal. The patient states that the sore has healed repeatedly, reappearing at varying intervals in the same place. Examination of the penis reveals slight phimosis, chronic balanitis which has resulted in great thickening of the mucosa lining the prepuce. The sore, which has been a source of great mental distress to the patient, appears in the form of a very superficial abrasion not larger than a split pea with ill-defined margins and no induration whatever at its base. Recently the preputial margin became the seat of a herpetic eruption. The lymphatic glands in both groins are hard, not very tender to the touch and vary in size from that of a pea to a hazelnut. September 13, typical circumcision was performed under chloroform narcosis. It is expected that the removal of the direct cause of the lymphadenitis will be followed by a speedy reduction in the size of the glands. The essential cause is to be attributed to the entrance of pus microbes into the lymph channels from the local lesions of the glans penis and prepuce which became arrested in the lymphatic filters, producing an inflammation which came to a standstill short of suppuration.

Case 29.—Robert V. Smith, age 21, Tenth Cavalry, Troop E, colored, enlisted June 20. A month ago while in camp in Florida, he noticed a number of small pimples on the scalp on the right side. These small furuncles still exist, and a week ago gave rise to a deep seated lymphadenitis affecting the lymphatic glands in the superior posterior triangle on the corresponding side of the neck. When the patient came under observation, September 13, a large and somewhat diffuse swelling marked the location of the infected glands; evidently the connective tissue around and between the glands is secondarily implicated in the inflammatory process. The swelling is hard and tender on pressure. No signs of central softening. Evening temperature 102 F., morning temperature 100 F. Directions were given to clip the hair short, and to disinfect the entire scalp. Crede's silver ointment to be rubbed into the skin over the swelling and to apply a hot, moist antiseptic compress. The patient is anemic, for which condition Gude's pepto mangan was prescribed. There is some prospect that the removal of the source of infection and the local applications will succeed in arresting the process and in effecting resorption of the inflammatory product.

This hope was not realized, as a few days later, September 23, distinct fluctuation was felt and the abscess was incised and drained, the patient being under the influence of chloroform. Rapid improvement followed the operation.

ABSCESS FOLLOWING TYPHOID FEVER.

It is somewhat singular that among the hundreds of cases of typhoid fever, that I had an opportunity to see and examine in Porto Rico and in this great national camp, no cases of perforation have come to my notice. I kept myself in readiness to perform laparotomy at a moment's notice, but my services were never requested for this particular purpose. I have no doubt but that some of the deaths from typhoid fever were due to this cause, and that this fatal complication was either overlooked or the general condition of the patient was so grave when it occurred, that the attending physicians did not deem it advisable to send for the surgeon. In this camp we had all the necessary facilities for abdominal operations, and I was hopeful that I should have an opportunity to give surgery a fair trial in such cases, but in this I have been disappointed. The most important, and most frequent complications of our typhoid fever pa-

tients have been bedsores and abscesses. The careful and attentive nursing our patients here have received, has done much in reducing the mortality and suffering from decubitus. Frequent washing with alcohol of the parts exposed to decubitus and the use of rubber pillows, and in the worst cases, of water or air beds, have contributed much in the prevention and successful treatment of this complication. We have had however, an excellent opportunity to study the etiology and pathology of abscesses as a complication of typhoid fever. The material was abundant and interesting. It is a source of regret to me that we did not have at our disposal a well-equipped bacteriologic laboratory to enable us to study in a more satisfactory manner the contents of those abscesses. Acting Assistant-Surgeon Ewing brought his own microscopic outfit, including the different stains, and did good work in the microscopic examination of pus and other pathologic products, but we had no facilities for making cultures. He examined the contents of three abscesses in as many patients, and found as the essential bacteriologic cause the bacillus of typhoid in one and the ordinary pus microbes in the remaining two cases.

The typhoid or so-called metastatic abscesses are caused by the bacillus of typhoid fever or by pus microbes which find their way into the circulation through some infection-atrium, especially the intestinal ulcers, as the result of a mixed infection. I have no doubt that in some cases the colon bacillus finds its way into the general circulation and produces the same results. The only case of bone and joint infection that came under my observation, and that could be brought in connection with the typhoid infection occurred in the case of a young soldier recovering from a severe attack of typhoid fever.

Case 30.—William Fairweather, age 22, Company A, Twelfth Infantry, about one week after the surrender of Santiago, was attacked with fever which continued for three weeks. He reached this camp with his regiment, emaciated to a skeleton, and extremely anemic. A week ago, while moving about, he was attacked rather suddenly with a severe pain in the right sacro-iliac synchondrosis and extending to the leg on the same side. The pain in the leg subsided after a few days but increased in severity at the point where it first commenced. The pain is of a dull, aching, throbbing character. Slight swelling over and in the line of the joint. Evening temperature one degree above normal. No redness or edema of the skin. September 6, the joint was punctured with the largest needle of an exploring syringe and a 5 per cent. solution of carbolic acid was injected in different directions, so as to reach the infected tissues as far as possible. No difficulty was met with in injecting three drachms of the solution. The needle puncture was sealed with collodium and a pledget of cotton. Marked improvement followed the intra articular and parenchymatous injection. The pain and tenderness had nearly disappeared on the third day. Under tonics and stimulants the general condition of the patient improved from day to day. There is no reason to fear at this time that suppuration will take place.

This case represents one of those rare complications of typhoid fever in which a joint becomes the seat of secondary infection during the latter stages of typhoid fever or during convalescence, in which the inflammatory process often results in great destruction of tissue without pus formation. Whether or not the injection should be credited with having brought about the speedy cessation of active symptoms can not be decided, either way with any degree of positiveness. I have learned to value the therapeutic effect of parenchymatous injections of carbolic acid in the treatment of chronic or subacute inflammation of a non tubercular inflammation, and I am inclined to attribute to it in this particular and similar cases positive curative properties, the evidence of which in this case appeared so shortly after it was made.

Case 31.—C. H. Baker, aged 22, Company F, Second Massachusetts Infantry, was sick two months in Cuba with fever, malaria, headache, anorexia, diarrhea, in consequence of which he became very weak. Shortly after boarding the transport, he became delirious and has been sick with typhoid fever for three weeks. A week ago, while convalescent, he was attacked suddenly with violent pain in the right testicle which rapidly increased in size, reaching the dimensions of a small orange in

the course of two days. At that time, the temperature increased two degrees above normal. On the third day after the attack, the swelling was hard, very sensitive to the touch, the skin red and glossy. No chills. Under applications of lead water and opium the pain has been somewhat mitigated and the swelling slightly diminished in size. September 10, a week after the complication had set in, the patient was transferred to the surgical ward. At this time deep-seated fluctuation could be distinctly felt over the center of the swelling. Less discoloration of the skin than a few days ago. Swelling only about twice the size of the normal testicle. The abscess appears to occupy the center of the testicle. Under ether anesthesia the abscess cavity was opened at the most dependent point, and a counter-opening two inches higher up made by tunnelling the tissues from within outward with a curved hemostatic forceps, and through drainage established. The pus was of the consistency of cream and whitish in color. No transudation into the tunica vaginalis. The conditions revealed at the time of operation left no doubt regarding the parenchymatous central origin of the abscess. Microscopic examination of the pus removed showed typhoid bacilli in great abundance as the exclusive bacteriologic cause of the suppurative orchitis. The patient improved very rapidly after the operation, and was transferred in less than a week to one of the Boston city hospitals.

Case 32.—L. Gardner, age 38, Company A, Sixth Infantry, went through the Cuban campaign with two days' slight illness. He lost flesh, but felt well until he came on the transport four weeks ago, when he was attacked with fever which proved to be typhoid complicated by malaria as shown by the erratic temperature curves. Convalescence was preceded by inflammation of the left parotid gland. Emaciation marked. Spleen much enlarged. The liver dullness extends from the sixth rib to an inch below the costal arch. Lungs normal. Heart sounds clear and distinct. Pulse strong and regular. Tongue red and glazed. A week after the beginning of the attack, a large abscess had formed and fluctuation could be distinctly felt, extending from a level with the external meatus to near the angle of the jaw. At that time, September 7, the patient was etherized, the abscess opened at the lowest and highest points, and through drainage established, a large quantity of thick purulent, curdy pus escaped. The cavity was washed out with a 25 per cent. carbolic solution and peroxid of hydrogen, and a large, moist, hot antiseptic compress applied. Improvement followed at once and ended in a slow recovery without any interruptions.

Case 33.—Patrick Collins, age 26, Eighth Infantry, Company C, has been in the service one year. About two weeks after the fight in Cuba was attacked with malaria, which was followed by typhoid. The fever has persisted since, attended by diarrhea and other symptoms indicating its nature. While on the transport on his return he complained of a sense of soreness in the left parotid region, followed by swelling and redness. Patient much emaciated and very feeble. At the time the operation was performed, August 29, the swelling extended from the external ear to near the angle of the jaw, and deep-seated fluctuation was distinct. Incision, drainage, disinfection and after-treatment the same as in the preceding case. Owing to the marked weakness of the heart's action, the patient was given two ounces of whisky before he was placed under the influence of ether. Alcoholic stimulants were administered in large and frequently repeated doses and acted very promptly in increasing the tone of the circulation and in building up the impaired nutrition. The discharge from the abscess in this, as well as the other cases of abscess of the parotid following typhoid fever, was very slight after the evacuation of the abscess contents.

Case 34.—Harold Robinson, age 28, Third Infantry, Company D, contracted typhoid fever in Cuba. He is now in the third week of the fever and has been delirious most of the time. The disease pursued almost from the beginning a very malignant course. About five days ago a swelling was detected in the region of the right parotid gland, which increased very rapidly in size, involving the skin after two or three days. The abscess ruptured on the fourth day into the external meatus, but evacuation was incomplete on account of the existence of several separate compartments in the abscess cavity, which were discovered at the time the operation was performed. The abdomen is intensely tympanitic, the skin of feet, legs and abdomen spotted with dark points of ecchymosis. The condition of the patient was critical when the operation was performed, September 10. The operation had to be performed without an anesthetic and in his ward, as he was too feeble to justify his transfer to the surgical ward. The impoverished condition of the blood made it necessary to make the incision only through the skin, completing the opening with hemostatic

forceps. Free tubular drainage was established and the abscess cavity was treated in the usual way. Strychnia and alcoholic stimulants were administered freely, but the heart failed to respond and the patient died the next day. Notwithstanding that the openings were made largely by the use of blunt instruments, free oozing of blood followed the operation, which may have contributed in hastening the fatal termination.

Case 35.—Giles Potter, age 33, Second Massachusetts Infantry, had chills and fever while in Cuba, but was on duty continuously. Was still weak and ill when he came on board the transport. The parotid abscess began on transport. He is very weak and emaciated, at times delirious; temperature indicates typhoid fever. Conjunctivæ slightly jaundiced. Pulse small and thready. Spleen slightly enlarged. The abscess was incised and drained without the use of an anesthetic, in its stead a large dose of whisky was given. The pus in this case was of a green color. Patient improved rapidly after the operation and is now on the way to convalescence.

Case 36.—John Simpson, age 28, Troop K, First Cavalry, was admitted to the general hospital August 25, suffering from typhoid fever, with a temperature gradually declining until September 4, when it rose suddenly from 99.4 to 102 and 103, dropping on the 8th to 99. On admission patient had very marked roseolar eruption on abdomen and limbs. During the course of the fever numerous furuncles appeared on the forehead and back. Delirium has been a prominent feature in the case almost from the beginning. Directly following the sudden rise of temperature on September 4, soreness and swelling of the right submaxillary gland were noticed. Today, September 10, a fluctuating swelling, the size of a small apple, marks the location and size of the abscess. Operation without anesthetic. Incision, counteropening, tubular drainage, irrigation with peroxid and carbolic solution, wet carbolic dressing. Rapid improvement followed the operation and the patient is now, September 13, fairly convalescent; abscess nearly healed.

The parotid gland, of all glandular organs, is the most frequent seat of secondary infection in typhoid fever. For reasons that remain unexplained the submaxillary is seldom involved, and the sublingual is still more rarely affected. The infective process begins in the parenchyma of the salivary gland but extends rapidly to the capsule and the surrounding connective tissue, leading to a phlegmonous process which in four or five days, as a rule, terminates in a well-marked abscess with the gland as a central point. The physician must be on the alert in such cases, and resort to the use of the knife in a most cautious manner as soon as fluctuation can be detected. It is advisable to establish through drainage for the purpose of securing free evacuation and thorough disinfection of the interior of the abscess cavity. The openings should be made by cutting only the skin and underlying fascia with the knife, completing them by tunnelling the remaining tissues with a curved hemostatic forceps. Dry dressings should not be employed in such cases; nothing is more grateful to the patient and more efficient in the after-treatment than the application of a moist, hot, antiseptic compress covered with oiled silk to retain heat and moisture. The safest and most efficient solution for this purpose is a saturated solution of acetate of aluminium, but when this can not be secured, a 2.5 per cent. solution of carbolic acid or a saturated solution of boracic acid answer as excellent substitutes.

In the next case the clinical history is very defective, and it is impossible to say with any degree of certainty whether or not the parotid abscesses followed in the course of typhoid fever, or whether they were external manifestations of a general septic process that developed independently of that disease.

Case 37.—Austin Dunlap, age 19, Company H, Third Infantry, was taken suddenly ill in Tampa, about July 1, with pain in the back and joints and nausea. The disease was diagnosed at the time as malaria. He was sent to quarters, and after four days returned to duty. On arrival at this camp, August 14, had three severe chills during the first twenty-four hours and has been very sick since. When admitted to the surgical ward with bilateral suppurative parotitis and large bedsores, he was reduced to a skeleton. Extensive herpes labialis which near the left angle of the mouth have caused ulceration; abscess over elbow joint. Pulse rapid and very

small, temperature irregular. When first admitted the case was regarded as a forlorn one and whiskey was given in ounce doses hourly. The swelling in the parotid region, on both sides, was hard and very sensitive to the touch. Crede's silver ointment and hot antiseptic compresses constituted the local treatment. Five days later distinct fluctuation could be detected and one of the parotid abscesses was incised and free tubular drainage effected. Owing to his critical condition the operations had to be performed without an anesthetic. The next day, September 10, the opposite abscess was treated in the same manner. The patient has been placed on a water-bed and was restless and most of the time delirious. No evidences of metastasis in any of the internal organs. Under the stimulating treatment he rallied promptly and at the present time, September 13, his mind is clear and the temperature normal. Discharge from abscess cavities slight. The drains are shortened from time to time to permit early definitive healing of the abscesses.

I am confident that early operative treatment and the heroic employment of alcoholic stimulants have been the principal means in saving the life of this patient.

Case 39.—Corporal George F. Shilling, age 18, Company G, First D. C. Volunteers. Enormous typhoid abscess of arm. Family history negative. Health excellent before he went to Cuba. On August 15 reported sick at the hospital. Had been feeling ill for some days. He has been delirious most of the time since admission to the General Hospital here. The temperature has been on an average 103 degrees F., with daily variation of a degree and a half from August 19 to September 4. Since latter date the temperature at no time has been over 101 degrees F. The pulse is small, rapid and weak, tongue dry, brown and fissured. On arriving here on transport there were five large bedsores on back and numerous small abscesses of the skin. He was placed at once upon a water-bed, but the bedsores continued to still further undermine the skin. Two days ago when the nurse was dressing the bedsores, she discovered a swelling of the right arm on the outer edge of the biceps muscle. This has rapidly increased in size and now presents itself as an enormous abscess extending from the shoulder to the tendon of the biceps muscle. Fluctuation is most distinct over the outer aspect of the arm. On palpation a crackling sensation is felt, and on percussion the swelling was distinctly tympanitic. The presence of gas in the abscess cavity could not be doubted. September 12 the patient was almost pulseless, lips cyanotic, respiration shallow, and marked twitching of the muscles of the upper extremities. In the afternoon the abscess was cautiously opened above and below and a rubber drainage tube drawn through. A large quantity of an offensive gas and creamy pus was evacuated. The abscess cavity was freely irrigated with peroxid of hydrogen and 2.5 per cent. of carbolic solution and the moist, hot antiseptic compress applied. In place of an anesthetic the patient was given an ounce of whiskey, which was to be repeated hourly. Hot water bags were applied to relieve the embarrassed peripheral circulation. Contrary to our expectations, the patient rallied under this treatment and presented a much more encouraging condition the next morning, when it was reported that the temperature was nearly normal, mind clear and the pulse full and strong. Microscopic examination of the pus by Dr. Ewing revealed: 1. many cocci resembling staphylococcus pyogenes; 2, a few large capsulated cocci; 3, a few fine slender bacilli staining faintly with methylene blue. There is nothing that resembles the bacillus aerogenes capsulatus. The patient is in a fair way to recovery (September 17).

Case 40.—Fred Angier, age 23, First Cavalry, Troop I, is under treatment for typhoid fever probably during the third week of his illness. Patient is delirious and it is impossible to obtain reliable information as to duration of his sickness. Very recently the right eye became affected by an acute inflammatory process which appears to involve all of the tissues of the organ. The eyelids are swollen, red and somewhat edematous. The edema extends over the whole malar region. Exophthalmus well marked. Pupil contracted and immovable. Conjunctiva in a state of catarrhal inflammation. Hypopion. Sent to the New York Hospital, August 30, for treatment by specialist of the eye complication. This is the only case of secondary infection of eye of a typhoid character that was observed in the camp. It was a well-marked case of panophthalmitis and if the patient recovers it will be with the loss of the affected organ.

(To be continued.)

THE SANTIAGO CAMPAIGN.

MEDICAL EXPERIENCE WITH THE RETURNED SOLDIERS
OF THE DISTRICT OF COLUMBIA U. S. V.
REGIMENT.

BY LOUIS KOLIPINSKI, M.D.

WASHINGTON, D. C.

The following medical histories of soldiers of the District of Columbia U. S. V. Regiment which were gathered whilst treating these cases after their return to Washington, D. C., may be of interest for several reasons. The testimony shows with uniformity and consistency that the health of these men remained good at Camp Alger, at Chickamauga, at Tampa, on the voyage to Cuba and in the eight days spent in the trenches in front of Santiago; that they first became sick after having been encamped on San Juan hill four or five days or more and that there they were the victims of malarial fever—intermittent or remittent—accompanied or followed by diarrhea; that none of them contracted typhoid fever in Cuba, and that this infection occurred on the transports returning them to the United States or more probably after their arrival at Montauk. The following itinerary—furnished by the commanding officer, Colonel Harries—is necessary for comparison with the records of the cases:

Regiment mustered in May 17, 1898; left Washington (Camp Alger) May 21; left Chickamauga May 23; arrived at Tampa June 1; embarked for Cuba July 2; landed July 10; to the front July 11; in the trenches to July 19; on San Juan hill July 19; embarked for Montauk. Second and third Battalions, August 19; First Battalion, August 23; arrived at Montauk, Second and Third Battalions, August 26; First Battalion, August 28; regiment left for Washington, D. C., September 8; arrived September 9.

Case 1.—A. S., Company B, First Battalion. At Camp Alger, Chickamauga, Tampa, and in the trenches in front of Santiago was in good health. First became sick with a fever on the fourth day of the encampment on San Juan hill. Was not fit for duty whilst remaining there. His fever was accompanied with a severe diarrhea lasting ten days. On the transport returning was very weak for want of food. On the second day of the stay at Montauk had a chill and fever. Has not been sick before since early childhood and has not had typhoid fever.

On examination Sept. 16, 1898, midday temperature 102 degrees F.; exquisite malarial anemia; splenic enlargement. Ten grains of quinin muriate daily. September 17, temperature normal; feels much better. September 23, anemia almost gone.

Case 2.—F., 25 years, Company A, First Battalion. Has not had typhoid fever. Was sick one day only at Tampa on account of diarrhea. Next on the tenth day of the encampment on San Juan hill, fever and diarrhea. Was off duty one day. The diarrhea continued after his fever had disappeared. Drank the unboiled water from the San Juan river. At Montauk diarrhea and fever for three days. Marched in the review of the regiment on its return home. Sept. 20, 1898, E.T., 102 degrees F.; much sweating; diarrhea; spleen enlarged and tender. Appearance: Marked malarial anemia. Ten grains quinin muriate daily. September 21, afternoon, normal temperature; diarrhea continues. He soon recovered.

Case 3.—A. H., Company F, First Battalion, At Tampa drank boiled water; had there a mild diarrhea; at San Juan hill occasionally fever at night. Had from ten to fifteen diarrhetic movements daily; drank muddy, unboiled water. At Montauk remained well except some fever for a single night. H. had typhoid fever under my care in 1893. He came back looking tanned and well—a contrast to the others. He took 10 grains quinin muriate as a prophylactic, beginning this on the fifteenth of August. September 18 and 19, light fever; quinin muriate. September 21, is well, his evening temperature sub-normal.

Case 4.—M. A. G., Company A, First Battalion. At Tampa

fever and diarrhea one week before they left. Gained in weight at Tampa. On the transport and in the trenches his health was good. The fourth or fifth day on San Juan hill had chills; fever and diarrhea for thirteen days. The same symptoms continued on the transport homeward. He ate nothing. Remained at Montauk two days and arrived home September 1. Marked malarial anemia; is starved; diarrhea; undigested stools; intestinal cramps. Spleen enlarged and tender. Morning temperature 102 degrees F.; quinin muriate and copper sulphate. September 3, temperature normal; diarrhea arrested. Had four febrile relapses in September and part of October. In the second relapse severe splenic pain and tenderness simulating pleurisy. With all this, rapid recovery of color and weight. Never has had typhoid fever.

Case 5.—Sergeant L., Company E, Second Battalion, became sick, for the first time, on the seventh day, on San Juan Hill; vomiting, diarrhea, fever—no chill; fever lasted three days; was off duty two days. The diarrhea ceased at the end of one day. Drank unboiled water. At Montauk had fever, headache, and pain in the back. Was sick four days, but not in the hospital. Marched in the review of the regiment on its return.

September 19 comes to be treated for malaria. Limp feeling; headache, loose bowels; had fever yesterday; today, normal temperature. Looks thin; skin brown; not anemic. Original weight 168 pounds; has lost 25 pounds. Spleen not enlarged. Quinin and copper; rapid recovery.

Case 6.—R., Company K, Second Battalion. First taken sick on the third or fourth day, on San Juan Hill. In hospital two days; daily chill for three or four days; symptoms recurring returned to hospital; had chills followed by diarrhea lasting ten days. Drank boiled spring water. At Montauk had a cold in the head. Was too sick to march in the review on account of fever and cold in the head. Did military duty at Montauk. Has not had typhoid fever. Was never sick before entering army.

September 14, heavy chill; temperature, 104F. September 15, temperature normal. Exquisite malarial anemia. Spleen slightly enlarged. Rapid recovery.

Case 7.—Sergeant G. J. M., Second Battalion, Company K, seventh day on San Juan Hill had fever for six or seven days—mostly at night. On the fourth day of the fever, diarrhea, lasting one week; occasional recurrence of fever. Arrived in Washington August 20. Is much reduced; looks like many of the others, sad and pathetic. Has diarrhea. Quinin and copper, regulated diet; rapid recovery. In Cuba drank river water; later, boiled water. Has not had typhoid fever. Did not take quinin as a prophylactic.

Case 8.—Corporal J. A. O'N., Company A, First Battalion. At Tampa some diarrhea. On the transport, outward, was sick one day. On San Juan Hill had malarial fever for three or four days with a mild diarrhea. Drank unboiled water. Marched in the review September 9.

September 10 diagnosis typhoid fever. It ran a mild course; one relapse without symptoms becoming intensified. Recovered in twenty-four days.

Case 9.—A. F. N., Company A, First Battalion. The tenth day on Juan Hill fever for five or six days and diarrhea for three or four days. Second attack two weeks later. Drank unboiled water from the San Juan river and from a spring. Was two days at Montauk; while there had fever. September 5, typhoid fever, mild; one relapse, also mild. Recovered October 7.

Case 10.—W. S., Company A, First Battalion. Tenth day on San Juan Hill, tertian intermittent, alternating with diarrhea, and lasting two or three weeks. Sick with fever and diarrhea on the transport homeward. Was on the sick list at Montauk. Marched in the review September 9.

September 12, typhoid fever; mild form. Recovered October 16.

Case 11.—Corporal B., Company L, Second Battalion. First sick the second day on San Juan Hill. Fever, followed by diarrhea; from four to six movements daily. This continued, but ceased spontaneously the second day on the transport homeward. Drank unboiled spring water. His diarrhea he said was endemic, and also amongst the Cubans. On the transport he was well and did double duty. His present fever developed at Montauk on the fourth or fifth day. Was able to march in the review of the regiment in this city. September 10, evening temperature 99F. Quinin has no effect.

September 12 typhoid fever begins and runs a mild course of three or four weeks. In this time one relapse, but symptoms not accentuated.

Case 12.—Sergeant F. A. C., Company M, Third Battalion. Diarrhea on transport to Cuba and in the trenches; indiosed one day. On San Juan Hill diarrhea returned and lasted

one week. At the end of second week there, fever of five or six days duration. Then returned to duty. On transport home bound, sick two days with intermittent fever. Arrived at Montauk well. Five or six days later, fever and diarrhea, lasting three days. Arriving in Washington, was not able to stand or walk alone. Examined on the second day of his return. Morning temperature 103F. Pronounced picture of starvation and collapse. Fully developed typhoid fever of severe type; no relapse. Recovered second week in October.

THE WORK OF THE ARMY MEDICAL DEPARTMENT DURING THE SPANISH WAR.

Abridged from the Annual Report of the Surgeon-General.

MEDICAL OFFICERS.

The number of medical officers, 192, allowed by law, to the army is inadequate in time of peace. The insufficiency in time of war was met by the assignment of over 650 contract surgeons under the provision of the Act approved May 12, 1898. All volunteer regiments had three medical officers appointed by the Governors of States. Volunteer surgeons to fill the staff positions authorized by the Act approved April 22, 1898, were appointed by the President: Eight corps surgeons with the rank of lieutenant-colonel and 110 division and brigade surgeons with the rank of major; 5 of the former and 46 of the latter positions were filled by the appointment of officers of the Army Medical Department. The President also appointed three medical officers for each of the regiments of U. S. volunteer infantry, cavalry and engineers. The very small proportion of medical officers having experience of a military character impaired the efficiency of the department at the outset, but many of the staff surgeons from civil life showed great aptitude for the service, and speedily became of value as administrative and sanitary officers.

HOSPITAL CORPS.

No provision was made for hospital-corps men for the volunteer troops except that which empowered the Secretary of War (Act March 1, 1897,) to enlist as many privates of the hospital corps as the service may require. To provide this corps with the necessary number of men, recruiting officers were urged to secure suitable medical officers to effect the transfer of men from the line of the Army. General Orders No. 58, Headquarters of the Army, A. G. O., May 31, 1898, authorized the transfer of men from the line of the volunteers to the hospital corps of the regular Army upon the recommendation of the chief surgeon, and suspended the provisions of army regulations governing the hospital corps so far as they were inapplicable in time of war and with troops in the field. Commanders of corps and of independent divisions and brigades were charged with the full control of the transfer from the line, the enlistment and discharge of members of the hospital corps, the detail of acting hospital stewards and the appointment of stewards, the last limited by subsequent orders to ten stewards for an army corps in addition to those authorized for the volunteer regiments. The number of men enlisted and transferred during the war was approximately 6000.

CONTRACT NURSES.

The want of a sufficient body of trained hospital-corps men necessitated the detail of enlisted men from the regiments for hospital duty in several of the camps, and the employment of trained nurses at the general hospitals. Foreseeing the necessity for a large force of the latter I applied to Congress, April 28, 1898, for authority to employ by contract as many nurses as might be required during the war. This was promptly granted. Over 1700 female nurses have been employed, at first at the general hospitals and later at the field division hospitals, when it became evident that the field service purposes for which the latter had been originated would have to give place to the imperative need of caring for the many sick men coming from the regimental camps.

MEDICAL AND HOSPITAL SUPPLIES.

Immediately upon the declaration of war, April 21, steps were taken to obtain medical supplies for the new volunteer army. Orders were given and the manufacture expedited with the utmost dispatch. On May 3, foreseeing that it would be impossible to have ready for issue to the volunteer regiments as soon as they were mustered in, the necessary articles of field equipment, I telegraphed the Governors of the several States for authority to use the medical equipment of the National Guard in the service of the State until the Army medical supplies were ready for issue. Most of the Governors who had field equipment responded promptly and satisfactorily, but unfortunately many of the State medical department had no

such equipment. Meanwhile the officers in charge of the medical supply depots were directed to make arrangements so that supplies could be immediately obtained for 100,000 men for six months.

A field-supply table was prepared and approved by the Secretary of War, May 9, 1898. It was intended to provide for the needs of commands in active service where only a limited supply of articles could be carried, owing to the necessity of restricting transportation. But as soon as it was evident that the troops were likely to be retained in camps of instruction, notification was given that articles on the regular supply table could also be obtained.

To provide temporarily for volunteer regiments, supplies of medicines, instruments, hospital stores, stationery and miscellaneous articles, according to a prescribed list and packed in convenient boxes, were prepared at the supply depots. An important article to be provided was the first-aid packet, containing antiseptic dressings for immediate use in emergencies and intended to be carried by each individual soldier. These were promptly and liberally supplied. Whenever notice was received from the Adjutant General's office that commands were to be moved or camps formed, I endeavored to anticipate the wants of the troops by telegraphing to the officer in charge of the nearest supply depot to forward supplies for the stated number of men according to the field supply table.

Requests from the medical officers for supplies and orders based thereon transmitted to the supply depots were largely by telegraph; and orders were given that when the supplies were needed promptly they should be forwarded by express to their destination. When a medical officer desired to purchase medical and other supplies for use in emergencies authority to do so was always granted.

The medical supply depot in New York supplied the posts in New England, the Middle States and along the Atlantic Coast, including Florida, and the troops that have been sent to and are now serving in Cuba and Porto Rico. The depot at St. Louis, Mo., supplied the States of the Mississippi Valley and the region east of the Rocky Mountains, including Texas, the large camp at Chickamauga and the camps formed at Knoxville, Lexington, Anneton, Huntsville, etc. To provide for the large aggregation of troops at Chickamauga, Ga., a sub-depot, drawing its supplies from St. Louis, was organized. The officers in charge of the depots at New York and St. Louis were directed, July 8, to keep in stock 1000 iron beds or cots with a full supply of bedding ready for immediate use. The distance of San Francisco from the center of the Government was so considerable that the officer in charge of that depot was necessarily given large discretion in the purchase of supplies and the expenditure of funds.

RAILROAD AMBULANCE TRAIN.

On June 16 a railroad ambulance train, consisting of ten tourist sleepers, a dining-car, a private car and a combination car was equipped for service and placed under the command of Major Charles Richard, surgeon, U. S. A. One assistant-surgeon, two stewards, twenty privates of the hospital corps and three civilian employes were assigned to him for service. The train was amply provided with all the medicines, hospital stores and comforts required for the patients to be transported.

HOSPITAL SHIPS.

The Relief.—On April 15, 1898, I applied for a ship to be used as a hospital ship. On May 18, by direction of the President, the *John Englis* was purchased and the quartermaster's department took charge of her to prepare her for the special service required. Major George H. Torney, surgeon, U. S. A., was placed in command of the ship. Specific instructions were sent to him to provide everything needful, so that there might be no delay attributable to the medical department, and these instructions were complied with to the letter. *The Relief*, however, was unable to sail from New York until July 2. She arrived at Siboney July 7, where she received many of the wounded from the attack on Santiago.

The Missouri.—On July 1, 1898, Mr. B. N. Baker, President of the Atlantic Transport Line, Baltimore, Md., tendered the steamship *Missouri*, with her captain and crew to the Government as a hospital ship. Ten days or two weeks was estimated as needful to permit of making the necessary alterations and providing the vessel with a steam laundry, steam sterilizing apparatus and ice and carbonated plants, but it was not until August 23 that the ship was reported ready to sail, and even then a good deal of work had to be done on board during a stormy passage to Santiago.

The Olivette.—This vessel was a steamship which had been doing service as a water-boat for the fleet of transports when Lieutenant-Colonel Pope, chief surgeon of the Fifth Army

corps, selected her for use as a hospital ship during the voyage from Tampa to Santiago. The equipment of one of the field division hospitals of the corps was used in outfitting her. The *Olivette* answered her extemporized purpose excellently.

THE HEALTH OF THE TROOPS.

In my opinion, the reduction of the age limit from 21 to 16 years and the haste with which the volunteer regiments were organized and mustered into the service were responsible for much of the sickness which was reported in the early days of their camp life. All military experience shows that young men under 21 years break down readily under the strain of war service; and every regiment had many of these youths in its ranks. Medical examiners were appointed to testify to the physical qualifications of each man before acceptance, but notwithstanding this, which at the time was characterized in the press as a very rigorous procedure, so many were afterward found on the sick lists of the camps unfit for service, from causes existing prior to election, that special arrangements had to be made for their discharge.

Soon after the newly raised levies were aggregated in large camps sickness began to increase progressively from causes that were so general in their operation that scarcely a regiment escaped from their harmful influence. These causes may largely be referred to ignorance on the part of the officers of the principles of camp sanitation and of their duties and responsibilities as regards the welfare of the enlisted men in their commands. Medical officers, as a rule, were also without experience in the sanitation of camps and the prevention of disease among troops. The few who knew what should be done were insufficient to control the sanitary situation in the large aggregations of men hastily gathered together. Officers and men in these camps were rife for war; and drill, parades, practice marches and military camp duties occupied the whole of their time and energies. Considerations of domestic economy and sanitation in the companies and regiments were not given proper attention, and men who were being taught to meet the enemy in battle succumbed to the hardships and insanitary conditions of life in their camps of instruction.

The sites of certain of the camps have been instanced in the newspapers as the cause of the sickness which was developed in them; but a review of the whole situation shows that it was not the site, but the manner of its occupation which must be held responsible for the general spread of disease among the troops. On April 25, 1898, foreseeing the likelihood of insanitary conditions in the camps of our newly-raised troops and with the view of preventing them, I issued Circular No. 1 from this office, impressing upon the medical officers their responsibility in sanitary matters and the necessity for a strict sanitary police, particularly in the care of the sinks and in the preservation of the camp area from contamination. But the density of the military population on the area of these contracted camps prevented the possibility of good sanitary condition. Camps of this character may be occupied for a week or two without serious results, as in the case of national guardsmen out for ten days' field-practice during the summer, but their continued occupation will inevitably result in the breaking down of the command by diarrhea, dysentery and typhoid fever.

Practically nothing was done to make the men comfortable or to remedy the insanitary conditions until these were brought to the attention of the Secretary of War by inspectors sent out by special orders from the War Department. Then the camps held for so long were abandoned, but not before the manifestations of typhoid infection were rife in them. New sites were carefully selected, regimental camps were expanded, company tentage increased and board flooring provided. Then, for the first time, the troops went into camps suitable for continued occupation.

One prominent cause of the increase of sickness in the early camps has been commented upon by only a few of our medical officers. These cite the prevalence of drunkenness and of venereal diseases due to the facilities and temptations afforded by the proximity of cities to the larger camps. They hold that if the systems of the men had not been weakened by dissipation they would not have succumbed so readily to the other influences which affected them. Malarial fevers added to the sick lists of camps in Florida, and of southern regiments in Georgia and Virginia. It was, however, typhoid fever which broke down the strength of the commands generally, the outbreak becoming distinctly manifest in July. Sporadic cases appeared in most of the cases in May and June, these cases having been brought in many instances from the State camps. In fact, some regiments, as the Fifteenth Minnesota, suffered more from the disease at their State rendezvous than any of the regiments in the large Federal camps. A few of the regi-

mental camps in the latter may be said to have escaped visitation. The sanitary conditions affecting the commands in the various camps have been studied in connection with the prevalence of typhoid fever among the men by a board of medical officers consisting of Majors Reed, Vaughan and Shakespeare, but the results of the investigation of this board have not as yet been reported in full. It appears to me, however, from a general review of the sanitary reports already filed, that the prevalence of the disease was proportioned to the insanitary camp conditions which I have referred to. My Circular No. 1, already cited, was intended to bring the danger from this fever to the notice of medical officers with the view of obviating it. The probability of its communication to soldiers in camp through the agency of flies was pointed out as a reason for insisting on a sanitary police of the strictest character.

It is well known to the medical profession that this fever is propagated by a contaminated water-supply, and it is not recognized that the great prevalence of this disease in an aggravated form in the camps of the Civil War was due to the use of surface and shallow well waters infected by typhoid excreta. To prevent transmission by the water-supply, I recommended the use of boiled and filtered water when a pure spring supply could not be obtained, and to enable an efficient filtration of suspected waters to be made, field filters of approved construction were issued on my recommendation by the quartermaster's department.

CARE OF THE SICK AND WOUNDED.

As soon as the regiments were organized into brigades and divisions preparatory to active service it became the duty of each chief surgeon of an army corps to see that the medical department of his command was organized to meet the casualties of battle. The object of the concentration of the troops was to accustom the regiments to operations in which they constituted the units of a higher organization. The experience of the Civil War demonstrated that for efficient service in an active campaign the medical department also required a higher organization. Circular No. 3, from this office, dated May 18, 1898, in specifying the duties of the various medical officers in an army corps, indicated the character of the organization to be adopted. The seriously sick were to be treated in division field hospitals (unless their transfer to a general hospital was advisable) under the care of the most experienced physicians and able surgeons on duty with each division. Medical officers left on duty with their regiments were to exercise sanitary supervision over the well men and determine whether a soldier reporting himself sick should be sent to hospital or remain as a trivial case under treatment in quarters. This consolidation of the medical force by divisions, involving as it did, the breaking up of the regimental hospitals, met with a strong opposition from regimental medical officers, particularly from those who were not detailed for special service at the division hospitals. Regimental commanders also were in many instances opposed to it, forgetful that the object of the medical department as of the line, was to get into training for field service. Similar objections were raised in 1862 and 1863 to the establishment of the division hospitals, but the Civil War lasted long enough to demonstrate the superiority of this system.

THE FIFTH ARMY CORPS.

Long before this corps embarked for Cuba its field hospitals were in condition for efficient service. Subsequent events, however, rendered valueless these preparations of the medical department. When the command embarked on the transport vessels, the baggage wagons and mules were left behind. The ambulance trains of all the divisions with a large part of the outfit of each of the hospitals were also left behind. Three ambulance wagons were taken apart and stored on one of the vessels. These did excellent service at San Juan and El Caney. Ten of the ambulances of the Third or Reserve Divisional Hospital were subsequently shipped to Cuba, where they arrived July 2, and were of value in moving the sick and wounded to the hospital at Siboney and to the hospital ships and transports. Of the property and supplies carried to Cuba a portion was not available for service at the time it was most needed, to wit: on July 1, 2 and 3, when the wounded from El Caney and San Juan were coming from the front for care and treatment. This was because, in general, no opportunity was afforded to land the medical property. Earnest efforts were made by medical officers to have supplies at the front with troops. Some having succeeded in getting their medicine chests and other articles of medical property ashore, had these carried forward on litters by hospital corps men to the camps near Sevilla, while others turned their private mounts into pack-horses for this purpose. During and after the battle at El Caney and San Juan there was an insufficiency of tents, cots, bedding

and medicines due to the causes stated, but all the hospitals were well equipped for surgical work.

After the capitulation of Santiago, the troops at the front broke down rapidly under the fatigues they had undergone and the malarial influences to which they were exposed; but by this time an ample supply of tents, furniture, bedding, clothing and medical stores had reached Siboney, together with a corps of trained nurses and a force of surgeons, those sent to duty at the yellow fever hospital being immune to that disease. Meanwhile, to relieve the pressure on the field hospitals, such convalescents and sick as could bear the journey home were sent to the United States on transport vessels. This was an emergency measure to relieve the hospitals at Siboney and permit of the transfer to them of the men who were sick in regimental camps.

The transfer of troops from Santiago to Montauk Point was also an emergency measure, and the great responsibility of excluding yellow fever infection from every transport rested on the medical officers who had charge of the embarkation. Had they failed in this duty the effect would have been disastrous during the voyage to the men confined on shipboard, and the risk of importing the disease into this country would have been greatly increased.

In view of the necessity for the return of the troops of the Fifth Army Corps from Santiago, Cuba, preparations were made for encamping them at Montauk Point, Long Island. These included the establishment of temporary tent hospitals, not only for the treatment of the large number of sick brought by each command from Cuba, but for the isolation and treatment of those from transports lying under the suspicion of yellow fever infection.

The difficulties in the way of administering the affairs of the detention hospital were very great, owing to the rapidity with which the transports followed each other in their arrival. As many as four reached the Point on some days from August 13 to 31, most of them bringing sick requiring detention for medical observation; but the sick men were as well cared for and as comfortable in their cots here as afterward, when transferred to the general hospital at Montauk Point. There was an excellent steam disinfecting plant with a formaldehyde chamber attached. The laundry work was done at a steam laundry near the hospital.

The temporary hospital, which was locally known as the general hospital, Montauk Point, consisted of tent pavilions containing 1672 cots. Its personnel consisted of 40 medical men, 8 stewards, 10 acting stewards, 130 privates of the hospital corps, 15 cooks, and 50 male nurses and an average of 200 female nurses, one half of whom were Sisters of Charity. Supplies of all kinds were amply provided.

It is needless to refer at this time to the complaints of starvation which appeared almost daily in the newspapers during the occupation of Camp Wikoff, for it is now generally understood that the weakness, prostration, anemia and emaciation of so many of the troops were the results of malarial, typhoid, and yellow fever, from which the Army suffered as a consequence of its exposure to the climatic influences and local infections of Santiago and its neighborhood, pending and subsequent to the surrender of the city.

TROOPS IN THE HOME CAMPS.

The method of hospital organization in these camps was practically the same; and there was much similarity in the conditions affecting them and correspondingly in their history. Regiments reported in but few instances with the material and supplies for their medical care; but they brought sick men with them and these required immediate care. Provision had to be made for division hospitals in view of the immediate necessity. The difficulties in the way of the contemporaneous accomplishment of these two objects were great, and they were greatly augmented by the inexperience of a majority of the regimental medical officers and of many of the chief surgeons, which prevented them from seeing beyond the immediate necessity. The sick had to be cared for, and to this end medicines and other things had to be procured. Relief societies offered assistance, and this was eagerly accepted by many of these medical officers, not alone for delicacies or luxuries not otherwise provided for, but for supply table articles which could have been had from the medical purveyors in their camps, or by telegraphic requisition on the Surgeon-General. It was easier to accept what was so freely offered than to learn how to obtain the articles from the proper source. To explain their prompt acceptance of this assistance these officers referred to the red tape of the War Department methods, and the insinuation that the said methods were beyond the comprehension of the ordinary intellect was accepted by the sensational press as an explanation in full.

Meanwhile, chief surgeons of corps and divisions began the organization and equipment of their field division hospitals and ambulance companies, but they were met at the outset by the apparent impossibility of securing men for service as cooks, nurses, litter bearers, ambulance drivers, teamsters, etc. The hospital corps of the regular Army could not supply these men, because recruiting for this corps progressed slowly. The popular tendency to volunteer led men away from the regular recruiting offices. When teamsters from the volunteer regiments to the regular hospital corps were authorized, the men did not care to leave their local connections for service in the Army at large, as regular soldiers. The transfers so much desired by the medical department to enable its organization were not regarded favorably by line officers, for although every line officer will probably acknowledge as a general principle that only the most intelligent and capable men should be employed to care for the sick and wounded, he is not likely to act on this general principle when it is a question of withdrawing for such service the most intelligent and capable men of his own company or regiment.

The division hospitals of the army corps were usually established in the immediate neighborhood of the regimental camps of the divisions. The pavilions were arranged in various ways according to the configuration of the area available as a site; but in general there was a tendency to crowd the area. Surgeons in charge recognized that a tent should not be occupied by more than six patients, but sometimes this number was exceeded temporarily while waiting an increase of tentage. As a rule, the hospitals were kept in campaigning condition, that is, the tents were neither framed nor floored, until the increased prevalence of typhoid fever attracted attention to their crowded condition, when the object of their existence became suddenly changed from a school for field service to a hospital for the treatment of a local outbreak of disease.

Special diet kitchens, under the management of capable individuals, were opened at most of the hospitals. Money for this purpose was sent to them by me from funds contributed and placed at my disposal. Money was also sent directly by individuals and representatives of aid societies; and the Red Cross committees supplied ices and milk, chicken, eggs, lemons, etc. Pajamas, night shirts and other articles of hospital clothing were also provided by the Red Cross and other aid societies. Subsequently the order authorizing the commutation of the sick soldiers' ration at 60 cents rendered these hospitals wholly independent of outside assistance.

About July 20 the troops for the invasion of Porto Rico embarked and sailed. The field hospital accommodation with this expeditionary force was ample and the supplies abundant.

TROOPS ON THE PACIFIC COAST.

The troops on the Pacific Coast were concentrated mostly at San Francisco, Cal. Eighteen thousand troops were dispatched to the Philippine Islands. They were carried on twenty transport steamers, the first expedition sailing May 25. Each steamship, before being accepted by the government, was inspected by a board of medical officers, and in each instance the vessel was thoroughly disinfected before the troops went on board. The precautions taken to secure a good sanitary condition of the vessels prior to embarkation and the sanitary supervision exercised over the men during their long voyage must be credited with the excellent condition in which the troops arrived at Manila.

The want of hospital-corps men was the main cause of the failure of chief surgeons to establish their division hospitals promptly. Instead of organizing for field service, their time was occupied and their energies spent in endeavoring to procure the necessary men by enlistment or transfer. After a time, when sickness invaded the camps and the division hospitals became filled, operations for field service had to give place to the immediate necessity of caring for the sick. The division hospitals became expanded, as at Siboney and Tampa, into base hospitals with increased needs and increased responsibilities. To these I sent with the utmost dispatch physicians and surgeons under contract, to relieve the details from the regiments who were temporarily acting as hospital-corps men. At Camp George H. Thomas, Ga., the expansions of the division hospitals, under the conditions brought about by the typhoid invasion of the camps, became officially recognized as general hospitals and were promptly provided by me with the best available medical service, with trained nurses, with all permissible medical and hospital supplies and with funds for special purchases. The altered conditions under which the division hospitals were operating were immediately recognized by the chief surgeon of the Fifth Army Corps at Santiago, on the breakdown of that corps after the surrender of the city, and every effort on the part of his medical officers to care for their sick in

regimental hospitals was encouraged by giving them every available facility. Similarly, in other camps, regimental hospitals were in many instances equipped to meet the necessities of the occasion.

GENERAL HOSPITALS.

Up to September 30, eleven general hospitals were established and fully manned and equipped. These had a capacity of nearly 7000 beds. At the same time certain post hospitals having good accommodations were used for the treatment of army cases generally, without alteration of their official status as post hospitals. Those, for instance, at Forts Columbus, Hamilton and Wadsworth, N. Y., and Vancouver Barracks, Wash., on the Pacific coast, were expanded in this manner. The vacant beds in the hospitals of the marine-hospital service of the Treasury Department were placed at my disposal and the civil hospitals of the country were ready on call to receive and care for the sick and wounded soldiers. These offers of hospital accommodations and medical care were accepted by me in many instances, particularly in New York, Boston, Philadelphia and Providence, to relieve the tent hospitals at Montauk Point, when crowded by the rapid transfer of sick from Santiago.

THE MEDICAL STATISTICS OF THE WAR.

The work of gathering up the records of sickness of the various commands in service during the war has been one of great difficulty. Volunteer medical officers were ignorant of the methods of keeping the records, and many failed to appreciate the importance of what was frequently regarded as "mere paper work," which had no practical bearing on the welfare of their men. Nevertheless their work in this regard must be considered as satisfactory when compared with that of the volunteer medical officers of the War of the Rebellion.

My report presents tabulations compiled from monthly reports of sick and wounded received from May to September, inclusive, and representing a strength present of 167,168 men. These give full particulars of 1715 deaths,¹ of which number 640 were occasioned by typhoid fever; 97 by malarial fevers and 393 by diarrhea and dysentery. The death rates for May and June—.46 and .70—were not in excess of those of the Army in time of peace. In July the rate became somewhat higher than that of an annual rate of 25.80 per thousand living. In August it became excessive, 4.08 for the month, equal to an annual rate of 48.96 per thousand. In September, the influence of the energetic measures taken, in July and August, to improve the health of the Army becomes manifest in the falling of the death-rate to 2.45, or the equivalent of an annual rate of 29.40. The same progression to an acme in August, with a sudden fall in September, is seen in the various ratios given under the specific titles, typhoid fever, malarial fever, and diarrheal diseases. This is exceedingly gratifying and must be credited, as stated, to the sanitary measures adopted, for our experience in the Civil War demonstrates that in the absence of these measures the high ratio of August would have been continued for many months to come.

I submit also tables of absolute numbers and of ratios by which the incidence of sickness and mortality of the regular and volunteer troops may be contrasted. From these it will be seen that the exposures of the regular troops during the Santiago campaign gave them from June to September a higher death-rate than the volunteers, and that the rate of the latter during August, the month of maximum mortality, was 3.62 as compared with 5.83 among the regular troops.

VOLUNTEER RELIEF WORK.

My guiding principle throughout the war has been that relief when needed should be promptly accepted without reference to the source from which it came. The relief afforded by the National Red Cross at Siboney was promptly accepted by the surgeons on the spot, but it is evident that it was entirely inadequate to meet the emergency. This association has had full authority to send agents and supplies to all of our camps since June 9, 1898, and it has contributed supplies of various kinds in a most liberal manner for the use of our field hospitals. Other organizations which have rendered very valuable services are the National Relief Commission, having its headquarters in Philadelphia, and the Massachusetts Volunteer Aid Association, with headquarters in Boston. Both these organizations fitted out hospital ships, which were placed at my service for the transportation of our sick from Porto Rico, and I take pleasure in testifying to the valuable service rendered by the yacht *May*, of the National Relief Commission, and the hospital ship *Bay State*, of the Massachusetts Volunteer Association.

¹ Reports to the Adjutant-General to Sept. 30, 1898, show 345 killed and died of wounds and 2485 died of disease in a mean strength of about 275,000 men.

SPECIAL FUND.

Sums of money varying from 33 cents, sent by Master Oliver S. Whittaker of Detroit, Mich., to \$5000, by Mr. Cleveland H. Dodge, chairman of the Supply Committee, National Red Cross Society, have been sent to me to be used according to my discretion for the benefit of our sick and wounded soldiers. In all I have received \$24,244.94. Among the contributors have been: The Colonial Dames of America, through the treasurer, Miss E. B. Nicholas of Washington, D. C., \$3500; The Red Cross Auxiliary, No. 3, through Mrs. Winthrop Cowdin of New York, \$2000, and the Woman's War Relief Association, through Mrs. Victoria Raymond, treasurer (contributed for Hospital Ship Relief,) \$2275. This money has been sent principally to general hospitals, to chief surgeons of army corps in the field, and to commanding officers of hospital ships, to be used in the purchase of delicacies for the sick.

THE MEDICAL CORPS.

Before concluding my report of the operations of the medical department during our short and glorious war with Spain, I feel it my duty to call special attention to the efficient services rendered by the medical officers of the Army in the various responsible positions which the exigencies of the service have made it necessary for them to fill. The inadequacy in the number of trained and experienced medical officers has been a source of great embarrassment to me in my efforts to meet the demands of the service; but as a rule our medical officers have performed the duties imposed upon them in a most loyal, intelligent and zealous manner. They have shared with line officers the dangers of battle, and they have encountered with unflinching courage the more difficult and protracted combat with the infectious diseases which have invaded our camps and filled our hospitals. Many of them have suffered attacks of typhoid and malarial fevers and at one time no less than 15 per cent. of the corps was disabled by sickness. Of those who accompanied General Shafter's army to Santiago, few escaped serious sickness and two of those who distinguished themselves for their devotion to duty lost their lives as a result of exposure to the malign influences which in so short a time sapped the vitality of the flower of the American Army. Credit is due not alone to those in the field. The labors of those on duty as chief surgeons of military departments, in charge of medical supply depots and in other important positions have been enormously increased and it has required unremitting effort to meet the exigencies of the war.

RECOMMENDATIONS.

The increase of the enlisted strength of the Army to a total of 60,000, and the large number of new stations to be garrisoned in the islands acquired and occupied by the United States, makes an increase in the medical corps absolutely essential. I therefore recommend an addition to the number of medical officers now allowed by law, of two assistant surgeons general, with the rank of colonel, six deputy surgeons-general, with the rank of lieutenant-colonel, thirty surgeons with the rank of major, and fifty assistant surgeons with the rank of first lieutenant. This recommendation is based upon the present organization of the Army. Any increase made by Congress during the coming session will necessitate a further increase of the medical corps.

Very respectfully,

(Signed)

GEO. M. STERNBERG,
Surgeon-General, U. S. A.

SOCIETY PROCEEDINGS.

The British Sanitary Institute.

Seventeenth Congress.

The seventeenth congress of the Sanitary Institute was opened at Birmingham, Eng., September 2, last. About 1500 members were present, including most of the leading lights of sanitary science and many of those engaged in the actual administration of sanitary laws, as medical officers of health, municipal engineers, sanitary inspectors, etc.

The LORD MAYOR delivered the address of welcome to the Institute.

Sir DOUGLAS GALTON, responded, and in the course of his remarks, lamented the action taken by the Government in relaxing the laws relating to vaccination. He was not one of those who held that these laws could not be relaxed but he believed they could not be relaxed under the conditions which the Government had sanctioned. They could be relaxed were

the Leicester system of isolation introduced everywhere, but without that safeguard it was absolutely wrong to have made any change.

Sir JOSEPH FAYRER delivered the presidential address, in which he reviewed the progress of sanitary science and of the Institute. He pointed out the improvement in the vital statistics of the people as shown by the reduced death rate, the enhanced expectation of life, the decline in some of the most potential causes of death and the almost total disappearance of others. The Institute had taken an important part in effecting these improvements. Its object from the outset had been the advancement of sanitary science by the promulgation of sound scientific and practical teaching of those principles on which health depended, by which life was prolonged and the physical, and thereby the moral welfare of the people promoted. It was only comparatively recently that preventive as distinguished from curative medicine had assumed the position of a science; but it was now, from a hygienic point of view, the more important of the two, although the difficulties attending its application were still considerable and largely such as arose from ignorance and incredulity. Half a century ago the great mass of the population lived and died under conditions which violated all the now well known principles on which health depended. Measures which were then regarded as mere facts or theories of no practical value were now accepted as of cardinal importance. Statesmen had learnt to realize that sanitary science came well within the domain of practical politics, and that it was an important part of the duty of executive governments to protect the people from disease which might be prevented or controlled. Acts of Parliament, officers of health and sanitary inspectors had produced a better state of things and the poor were no longer left to be a law unto themselves. When the present state of the country with its thirty one million people was contrasted with that of the Elizabethan era with its four millions, there was ample proof of the ignorance of science in those days and of the great improvements which have taken place in these. Many of the diseases of that time had disappeared and others had been mitigated; but sudden invasions of cholera and other epidemics, even of bubonic plague, gave evidence that vigilance must never be relaxed.

The health exhibit was formally opened in the evening. The Institute all through its history has encouraged improvements in sanitary appliances by having an exhibit in competition, but the main objects of the exhibit are to educate the general public and to disseminate a knowledge of how best to effect sanitary improvements.

On the second day of the meeting the work of the Institute was divided into five conferences or sections.

In the first, or that of municipal representatives, the conditions of Birmingham were especially discussed, and papers were read on the dwellings of the laboring classes and on the desirability of having public abattoirs instead of private slaughter-houses.

In the Section of Medical Officers of Health the chairman's address counseled a cheerful acceptance of the law temporarily abolishing compulsory vaccination. If all artificial pressure were abolished there would still remain the strongest natural pressure toward vaccination in smallpox itself. To prevent the people from paying too dearly for their education by means of smallpox epidemics, medical officers of health were urged to do all in their power to promote the acceptance of vaccinal protection. One paper discussed the bacteriologic and clinical diagnosis of diphtheria, claiming that neither method was conclusive by itself, but that the two together enabled a correct opinion to be formed in the majority of doubtful cases. A paper on hospital reform condemned the practice of congregating large numbers of patients in hospital waiting-rooms as being calculated to spread disease while the medical staff were unable to give them prompt attention.

The Section of Municipal and County Engineers devoted most of its time to dwellings for the working classes. A paper on the ventilation of sewers had nothing new in its recommendation that shafts should be fixed to the tallest buildings, high factories and churches being utilized for this purpose. Another paper somewhat in advance of the times urged the sanitary advantages of motor vehicles over horse drawn vehicles.

In the Section of Sanitary Inspectors a good deal of discussion was raised by a paper which threw doubt on the practical qualifications of those certified by the Institute for appointment as inspectors. The author advocated examination by a council of prominent representatives of the profession.

The Section of Domestic Hygiene was presided over by the Lady Mayoress, who congratulated the women on having been invited to take part in such a congress. It was a sign of the progress of the times, and indicated an appreciation of the public work which women were now doing. She advocated the

election of women as guardians, factory inspectors and sanitary inspectors. The papers read were on the influence of women in household sanitation, or district nursing, its aims and methods; on the need of sanitary knowledge for nurses; on the claims of childhood and on the hygiene of dress.

Dr. ALFRED HILL on the third day delivered an address on food preservatives, in which he discussed methods for effecting preservation as by drying, smoking, salting, the use of sugar and vinegar, the exclusion of air, mineral or organic antiseptics and cold. He concluded that the use of chemically preservatives ought to be condemned altogether because they were harmful in large doses and the quantities added by food manufacturers were uncertain. Besides, their use could be supplanted by refrigeration. During the past year no less than 6,551,280 cwt. of meat had been imported from Australia, the Argentine Republic and the United States of America without the employment of any other means than refrigeration or freezing, the latter method having been employed for the meat sent from the two former countries and the chilling or refrigeration only for that from the United States.

Dr. CHRISTOPHER CHILDS delivered the most important of the addresses of the session, on the prevention of the pollution of river and streams. He instanced various reforms that were necessary and expressed a hope that all concerned in the health and welfare of the nation would urge upon Parliament the necessity of the Rivers Pollution and Prevention Bill.

On the fourth day a large number of papers were presented at the gathering.

Dr. H. SCURFIELD of Sunderland contributed, "Suggestions for the Improvement of the Milk Supply." He considered the Somerset House standard too low. It was, in his opinion, unreasonable to fix upon such a low standard because an occasional cow gave milk of this character. The fat standard should be raised to 3.25 per cent. He suggested that local authorities should draw up model regulations and issue certificates to farmers who complied with them.

Mr. JAMES MANSBERGH presented the paper of the day, however, on the Birmingham water scheme of bringing water to the city from the mountains of Wales. He described the work of damming up the water courses so as to transform the mountain valleys into lakes or storage basins which would hold sufficient for a dry period of nearly half a year. Tunnelling for thirty miles is involved in this scheme.

Professor FRANKLAND opposed the ideas advanced in several papers on the bacteriologic method of disposing of sewage. He said that in his opinion, there was nothing which could surpass the results obtained by intermittent downward filtration and irrigation.

On the social side the Institute was entertained at several lunches and receptions and was treated to excursions to Dudley Castle, the Waterworks and the sewage farms.

Chicago Academy of Medicine.

Meeting of Nov. 21, 1898.

Dr. A. LAGORIO occupied the chair.

Dr. FRANK X. WALLS presented a paper to the meeting on
DIAGNOSIS OF CHRONIC DIFFUSE PERITONITIS.

Chronic diffuse peritonitis from a clinical point of view was classified as simple, tubercular or neoplastic, not considering other infrequent varieties such as, for instance, echinococcus peritonitis, etc. Chronic general peritonitis usually attended with exudation, and in direct proportion to the exudation is the diagnosis involved. The essayist said that much discussion has arisen as to the existence of a simple, non-tubercular, exudative peritonitis, though cases have been described as occurring more frequently in children, by Strumpell, Henoch, Baginsky, Filatoff and others. A priori, there is no reason why we should deny a chronic simple inflammation to the peritoneum, even though we admit the condition to be infrequent. The disease develops insidiously, often after a history of trauma or exposure. Pain and abdominal distension are the most prominent symptoms, attracting attention to the peritoneum. The pain is seldom excessive, arises spontaneously, or is elicited on palpation of the abdomen. The pain is usually diffused over the abdomen, or regions of excessive tenderness may be complained of or revealed on examination. Fluid effusion is usually present, though the quantity varies within very wide limits. The fluid is usually free, but it may be encapsulated, and if examined after aspiration, reveals the characteristics of an exudate. The most characteristic differences as contrasted with ascitic fluid of non-inflammatory origin, are specific gravity above 1016, albumin in considerable quantity and an abundant sediment rich in granular leucocytes. Moderate

elevation of temperature is often present at the onset, but later the disease usually pursues an afebrile course. Other general symptoms may be present, more especially intestinal, cardiac, renal or nervous, and vary much in their kind and degree.

The differential diagnosis should exclude tubercular or cancerous peritonitis and ascites. Osler and Baginsky have reported each a case of chronic peritonitis, in which tubercle bacilli were demonstrated in the lesions during the early stages of the disease, but later, when the cases came to autopsy, careful search for bacilli or characteristic tubercular processes by competent pathologists was negative. The deduction is warranted that the absence of bacilli or tubercles in a chronic peritonitis is no indication that the morbid condition was not initiated by the bacillus of tuberculosis, and also that autoptic negative findings are quite consistent with a previous tubercular infection.

There is no characteristic picture of chronic tubercular peritonitis. At times the diagnosis is evident, while in other cases a laparotomy or postmortem reveals the presence of a tubercular peritonitis that previously had not been suspected or had been excluded. Tubercular peritonitis may arise insidiously, from a latent pulmonary tuberculosis, from a caseous mesenteric or bronchial lymph gland, from an intestinal tubercular ulcer, from a hidden focus in the urogenital apparatus, more especially the testis or Fallopian tube, or from a bone or joint affection. In every case exhaustive examination for a primary focus must be instituted, and its presence or absence is of considerable weight in diagnosis, as tuberculosis of the peritoneum is rarely, if ever, primary. The usual symptoms that draw our thoughts to the peritoneum are pain, distension of the abdomen and symptoms of gastro-intestinal derangement. The pain varies much in its character, constancy and intensity: Usually dull, it may be sharp; frequently intermittent, it may be continuous; as a rule, mild, it is rarely intense. Some tenderness is generally provoked on palpating the abdomen. Vomiting, diarrhea and meteorism are frequently present, though often mild. Palpation or auscultation might elicit peritoneal rub or friction. The inflammatory effusion may be free or encapsulated; it may give rise to physical signs of isolated neoplasms in the peritoneal cavity. The palpation of the curled up omentum has a hard, firm, elongated sausage-like body, lying transversely in the epigastric region, is hardly sufficient to correct such an impression, as it is also present in carcinomatous peritonitis, though more frequent in tubercular. Sometimes the omentum is to be palpated only after evacuation of the exudate, and, instead of being in the epigastric region, it may form a prominent tumor in the right iliac region (Osler). When the effused fluid is free in the peritoneal cavity, the relation of the dullness due to the fluid and the tympany of the bowel, as elicited by percussion, gives rise to a sign described by Thomayer. This sign is a very important aid in the diagnosis of chronic peritonitis. In such cases, with the patient in the dorsal condition, we do not find the area of dullness symmetric on both sides of the abdomen with tympany in the median line, as we find in non-inflammatory ascites; but we notice that the dullness is much more extensive on the left side, and the tympanic area greater on the right side. Thomayer reports eight cases of chronic peritonitis—five tubercular, three cancerous—in which this sign was present, and was of great value in the diagnosis. The essayist reported a case illustrating the sign of Thomayer.

The symptomatology of cancerous peritonitis is very similar to that of chronic peritonitis, and the diagnosis is to be made, as a rule, after determining a primary carcinoma. When the primary tumor is evident, these cases present no difficulty in diagnosis, but when the cancerous peritonitis develops upon a latent cancer of the stomach, bowel or ovary, the diagnosis may be extremely difficult. In every case careful examination of the stomach (physical examination and chemically analysis of the stomach contents), as well as digital exploration of the genital organs and the rectum is to be made. The age, cachexia, determination of multiple tumors in the abdomen, in addition to the other evidences of peritonitis, are the usual criteria of chronic cancerous peritonitis. Chronic peritonitis, simple, tubercular or cancerous, clinically might be simulated by a greatly dilated stomach (Leube) or distended urinary gall-bladder, but in a given case could easily be excluded by aid of a stomach-tube or catheter. Ascites (hydro-peritoneal) and ovarian cyst, perhaps more often than any other conditions, are to be considered in the differential diagnosis, and the not infrequent association of chronic peritonitis with cirrhosis of the liver is to be borne in mind.

Dr. REUBEN PETERSON—I have been much interested in Dr. Walls' paper, because, in my experience, chronic peritonitis is a disease that it is exceedingly difficult to diagnose, especially the tubercular form. I am unfamiliar with the simple chronic per-

itonitis; I have never diagnosed a case, but in quite a number of instances I have made a diagnosis of tubercular peritonitis after I had opened the abdomen. Tubercular peritonitis is of special interest to the gynecologist. The starting point in many cases is from the tube and ovary, yet before operation these organs do not give evidence of a tubercular lesion. We have adhesions and make a diagnosis of chronic salpingitis and ovaritis, and upon operation we find the peritoneum studded with tubercular masses. Williams of Johns Hopkins and Edebohl of New York have written valuable papers on cases of unsuspected tuberculosis. Specimens taken from the appendages, not considered to be tubercular, which have been subjected to microscopic examination reveal them to be of that nature. I was particularly interested in the paper because some few years ago I had a number of cases of tuberculosis of the mesenteric glands. I had three cases, two being in the same family, sisters, and the diagnosis in the first case was made after the abdomen was opened. I found the mesenteric glands enlarged and no other disease present. I operated on the sister, not because I could feel the enlarged mesenteric glands, but because her symptoms were so similar to the first case. I had one other case, the treatment of which simply consisted in opening the peritoneal cavity and draining. That was about two and a half years ago, and the patients have remained well up to this time. Acute tubercular peritonitis is very liable to result from trouble with the mesenteric glands, and this disease, when limited to the glands, is so difficult of diagnosis that it makes it particularly interesting. These three cases had indefinite pains and other symptoms referable to the abdomen, and it would seem that, given a case of somewhat long standing abdominal pain, it would be well for the surgeon to bear in mind that it may be due to a tubercular affection of the mesenteric glands. The Doctor has not gone into the treatment of chronic tubercular peritonitis, hence it can not be brought up in the discussion.

Dr. JAMES G. KIERNAN—I would like to ask Dr. Walls whether he considers ascites in the nature of a true peritonitis.

Dr. WALLS—No. In the conditions in which I have used the word "ascites," I wish it to be understood as a non-inflammatory condition, the ascites representing merely an accumulation of fluid because of some probable circulatory or vascular disturbance: in other words, a dropsy of the peritoneal cavity, depending upon hepatic or portal vein disease either primary or secondary to the heart, or occasionally, as may occur, in renal disease from possibly a hydremic condition of the blood plus increased vascular permeability.

Dr. KIERNAN—You use the word, then, only in the sense of a hydroperitoneum?

Dr. WALLS—Yes, sir.

Dr. CHARLES S. BACON—I would like Dr. Walls to state the manner in which he uses the term simple peritonitis. The use of the term is quite important from a diagnostic standpoint. All of the inflammations of the peritoneum which arise from various sources, such as ulcers of the intestines, inflammation of the pancreas, the liver or gall duct, etc., are very important. They may be chronic in their course and hard to differentiate from tubercular peritonitis. In this connection I wish to relate briefly a case which gave me considerable difficulty in diagnosis and has a direct bearing upon the subject. A woman had long been sick and came of a tubercular family. She had nursed different members of the family who had had tuberculosis. She had a low chronic peritonitis with an abscess of the abdominal wall which naturally would lead us to suspect a tubercular peritonitis. But upon examining the contents of the abdominal abscess as well as the peritoneal exudate, there were no tubercular bacilli. There were, however, stones in the gall-bladder which had first caused a pericholecystitis and later an invasion and infection of the abdominal wall and peritoneum with the colon bacillus. This case has an important bearing upon the diagnosis, and these are practically the cases we have to deal with in the differentiation.

Dr. FREDERICK S. COOLIDGE—I do not feel that we should leave this subject in its present status, and I hope further discussion will bring out some points of interest regarding the pathology of this disease. In the first place, as far as my own experience goes, Dr. Walls has stated that cancerous peritonitis occurs only in the old, whereas tubercular peritonitis occurs in the young. I have seen a good many cases of tuberculosis of the bones and joints in young children, and I must say it is extremely rare to find tubercular peritonitis occurring in these cases. There are a few cases of tuberculosis of the retroperitoneal glands, from which tubercular peritonitis might arise, the involvement of these glands being secondary to the bone or joint tuberculosis, but the condition must be extremely rare. Dr. Walls, in speaking of the diagnosis, said that in tubercular peritonitis the spleen is not enlarged as a rule, but in one

or two cases of tubercular peritonitis, as shown later by autopsy, there was enlargement of the spleen from amyloid degeneration, which occurred not only in the liver, bowels and kidneys, but also in the spleen. I should like Dr. Walls to say something in his closing remarks as to the pathology of the disease before we leave the subject, and also, if he has any explanation why simple paracentesis or opening the abdomen produces a cure in many cases. We were taught years ago that tubercular peritonitis was absolutely fatal; later, when the abdomen was opened and peritonitis was diagnosed, some of the cases got well. Whether the opening of the abdomen is simply a coincidence in these cases, as far as a cure is concerned, I do not know. I do not feel that the subject will have been complete until we hear from the essayist a little more fully.

Dr. WALLS (closing the discussion)—In presenting this subject to the Academy, I stated that I should deal with the differential diagnosis and consider more especially the common varieties of the chronic exudative peritonitis. I specifically stated that I should not deal with the more unusual varieties, such as echinococcus, actinomycosis, and possibly glanders, because it would prolong the discussion. The differential diagnosis of peritonitis from such conditions as pancreatic cysts, hydrops of the gall bladder, or even appendicitis, might possibly be considered clinically, but those cases would be unusual. In cysts of the pancreas, if we consider that phase of the subject, some attempt should be made to examine the digestion of the fats or look for the presence of sugar in the urine, which might be of some aid. But I did not consider the unusual forms of peritonitis, but the commoner forms of the disease. I wished to discuss more in detail the symptom reported by Thomayer, which is an important one, and which apparently has been either overlooked or has not met with favor in the hands of physicians. Indeed, it is hardly mentioned in the literature of the subject. Peritonitis following perforation is usually discussed with acute peritonitis. The disease may extend over a considerable length of time, and the symptoms would be of an acute rather than of a chronic peritonitis. In answer to Dr. Bacon's question as to the definition of simple peritonitis, I can not say any more than I have said, namely, that this name is given to the varieties of peritonitis that occur after a history of injury, sometimes exposure, or some have even considered a rheumatic tendency, in which the peritonitis develops more or less insidiously, rather slowly, and evidences of tuberculosis are absent. Some authors consider that many of those cases are really tubercular, and you will remember that reference was made to a case described by Osler and Baginsky, in which, during the course of the disease, a small portion of peritoneum was removed, carefully examined, and tubercle bacilli were found. The cases continued under observation for some time, and later died from some cachectic condition that developed. The findings were that all evidences of tuberculosis had disappeared; nothing was found that looked like a tubercular product. Cases of tubercular peritonitis may become simple. There is no good reason why we may not have a non-tubercular inflammation of the peritoneum. Possibly there is some variety of bacteria or toxic product that might bring about so called simple peritonitis. Why a case of chronic tubercular peritonitis recovers after operation, I can not answer from a pathologic point of view, other than to suggest that in a general way it may be due to some vascular disturbance, or the removal of pressure, or to the action of the atmospheric air upon the peritoneum. It is difficult to give a satisfactory answer as to why these cases are cured. It seems to be a fact, however, that a greater number of cases of tuberculosis recover after operation than recover without operation.

Dr. COOLIDGE—Will you kindly tell us, Dr. Walls, a little more about the pathology of peritonitis.

Dr. WALLS—The pathology of tubercular peritonitis is the same as that of tuberculosis in general. It depends upon the entrance of the tubercle bacilli by means of the blood channels, lymphatics, etc., and the reactionary product varies in different cases, probably depending upon the number and virulence of the micro organism, resistance of the individual, etc. Too much time would be consumed in a detailed discussion of the pathology of chronic tubercular peritonitis, and in my paper I confined my remarks to the diagnosis.

Dr. L. LOEN read a paper on

THE TRANSPLANTATION OF THE SKIN AND THE ORIGIN OF THE PIGMENT OF THE SKIN.

Experiments were made on the ears of guinea-pigs. White skin was put on a wound in black skin and black skin on a wound in white skin. The results were as follows:

1. Black skin adhered and remained permanently. White skin did not adhere for any length of time, the longest period

of time being four and one half weeks. So we learn of an unexpected factor in transplantation. The different structure of the white and black epithelium of the guinea-pig seems to cause the different result in transplantation.

2. These experiments show that the transplanted white skin is often thrown off after the union with the underlying tissue has become complete and microscopically absolutely normal, and although in the deepest layers the number of mitoses is increased and at the edges of the piece of skin regeneration takes place. So we learn of a secondary disconnection of transplanted skin after it has grown fast and lived for some time.

3. Transplanted black epithelial cells migrate into the neighboring white epithelium, and, if white epithelium is transplanted, the neighboring black epithelial cells infiltrate the white epithelium. In this way the black skin substituted white skin. Microscopically, no signs of degeneration of the neighboring white cells can be seen. Therefore, under these conditions, apparently normal white epithelium is infiltrated and substituted by cells of the black epithelium.

These experiments, in connection with a number of other experiments and observations, prove also that the pigment of the black skin is not carried into the epithelium through cells from the connective tissue, but that it has its origin in the metabolic changes of the epithelial cells alone. This is proven by the following facts:

1. The transplanted black epithelium remained in almost all cases permanently black, and the transplanted white skin remained white as long as it adhered. Therefore, both white and pigmented epithelial cells can live, each on the tissue of the other, and yet one kind of cells will produce pigment, the other not. This shows that the nourishment which the epithelium received from the tissues upon which it is grafted does not influence the production or non-production of pigment in the epithelium. So far it is entirely unknown what food the epithelial cells require to produce pigment. Nothing proves that it must be hemoglobin. But this we know, that the main factor for the production of pigment lies in the structure of the epithelium which must be different in white and black skin. (In these experiments epithelium without any connective tissue, or with only an occasional thin layer, on which no sign of regeneration could be seen, was transplanted.)

2. We can induce black epithelium to regenerate over white connective tissue, and yet the regenerated epithelium remains permanently pigmented.

3. The originally unpigmented cutis on which black epithelium has been transplanted, or on which black epithelium has regenerated, became afterward pigmented, particularly the cells resembling chromatophores appearing only secondarily in the cutis.

4. The study of the regeneration of the black epithelium leads to the same conclusion. The pigmentation in the regenerating black epithelium takes place in a remarkably regular way. Never was the pigment carried from the connective tissue into the epithelium. There is a stage in the pigmentation, when ameboid-like chromatophores appear at the base of the epithelium, no such chromatophores having previously appeared in the cutis.

5. To the regenerating black epithelium the chromatophores behave like the basal epithelial cells. They show mitotic division just at the same places and at the same time as the ordinary basal epithelial cells show an increased number of mitoses. No such mitoses can be seen in the cutis.

6. If we observe the localization of the pigment in the normal black epithelium, we find facts which are very easily explained by this theory, but which would be hard to explain by the supposition that the pigments carried from the connective tissue into the epithelium. The hair glands of the guinea-pig were found always free from pigment. A decrease of the pigment takes place in the upper layers of the epithelium, where the Malpighian layer changes into the granular and horny layers. Chemic processes in the Malpighian layers lead to the formation of pigment. Chemic processes apparently lead to the destruction of the pigment, particularly in those places where new chemic substances arise in the skin, such as eleidia and keralin; that is to say, where chemic transformation takes place. In the hair glands of the guinea pig the chemic processes probably differ from those in the epithelial cells; in these glands, correspondingly, no pigment is produced. That seems to be the most probable explanation. The peculiar distribution of the pigment granules in the normal as well as in the regenerating black epithelium (showing a polarity of the cells) points to the same conclusion.

Dr. WILLIAM L. BAUM—The work of Dr. Loeb is decidedly original in its character. I was exceedingly interested in the paper, for the reason that it corroborates to a great extent

clinical experience in regard to the skin in colored individuals; that is, there are evidently qualities present in the skin of colored individuals different from those in whites. We find this to be true in the greater number of diseases characterized by rapid exfoliation of epidermal cells; they are never so marked in the colored races as in the white. It is also not of the same character as in the white skin. One fact, which has always been of considerable interest to me, and which is explained by these investigations, is that in the colored races the skin pigmentation recovers after stimulation in scar tissue where the scar itself has been devoid for a long period of time of pigmentation. The reason why there could not be this skin pigmented condition present in the follicles of the skin is explained by Dr. Loeb's work. The follicles are after all lined by the stratum granulosum, which, according to his investigations, does not contain epithelial cells, and therefore does not in the beginning have the same chemic conditions present. The pigmentation of skin has been a bone of contention among dermatologists for many years, and no satisfactory conclusion has been reached as to the origin of the pigment. The Doctor's explanation is not only an ingenious one, but is borne out by the results of his own investigations.

Dr. W. X. SUDDUTH—This paper is one of great interest from an embryologic standpoint, although that phase of the question was not dwelt upon to any great extent. It seems to me, that the experiments the Doctor has carried on admirably demonstrate the truth of the old theory of the individuality of cell life; and another point, that pigmentation is a local and transitory condition rather than a permanent one. We know the skin is divided into two layers, the epidermis and the cutis vera, and these two layers arise from two separate layers of the blastoderm, the external and middle layer, and the cells in these two separate layers have separate characteristics. The epidermis has three distinct layers, the stratum Malpighii, stratum granulosum, and stratum corneum. The two outer layers are older stages of development of the stratum Malpighii which is the deeper or infant layer of the epidermis. The pigment is the deepest layer of the epidermis, and it is there that we find pigmentation most marked. As the cells become older and grow toward the surface they lose their pigmentation, until when they reach the surface there is almost no pigmentation present. This would seem to indicate that the protoplasm, as found in the stratum Malpighii, has a selective action upon the coloring matter that may be found in the serum of the blood which is exuded at that point and taken up by the deepest layer or cells and transformed into pigment. The same selective action takes place in the coloring of the red blood corpuscles. It is perfectly reasonable to expect the epidermal cells of the stratum Malpighii to have the same power of selection, and they would get pigment out of the vegetable coloring matter of the serum that is found in contact with them. It is true that there are no blood-vessels which pass through the basement membrane, so-called, into the epidermis itself. It is also true that the cells of the epidermis are permeated by canals in all directions through which the serum of the blood passes. That point has been demonstrated very nicely by quite a number of observers, and I have beautiful photomicrographs showing those canals and the separation of the cells by those canals, so that the process is not necessarily one of osmosis, but of direct channel circulation independent of blood-vessels, no blood corpuscles, however, being found in the epidermis.

In 1885, in connection with Dr. Garretson, now dead, in Philadelphia, I carried on a line of experiments in this direction, following operations for epithelioma and other tumor conditions, to substantiate the theory of Dr. Garretson, that if the scar should be covered over with epidermis there was less possibility of return of the tumor. We made a great many experiments, and in our work we used the cuticle of a horse and scrapings from the cuticle of those students who were willing to submit to it, and among them we had the scrapings of the cuticle from the arm of a colored man, simply taking the epidermal cells, not scraping deep enough to draw any blood, which would indicate that we had not gone through the deeper layer. All these scrapings from the horse and the cuticle of the students tended to take hold and grow, particularly where antiseptic conditions were strictly observed. In the case where the scrapings were taken from the arm of the negro we had in time the development of more or less pigment, but not to the same extent as found on the original subject from which the cuticle was taken. It showed to me at that time a fact which was conclusive, namely, that the epidermal cells had the power of acting upon the fluid nourishment carried to them from the blood and manufacturing their own pigment. They had a selective action, whether they came from the deepest layer of the epidermis, the stratum granulosum or the stratum cor-

neum, and when brought in contact with the serum of the blood on a denuded surface they developed typic skin and pigment to a certain extent. These experiments were interesting to me, because it was the first time my attention had been directed to the selective action of cells, although I had held that theory for a considerable length of time. It was interesting, furthermore, because of the fact that at about that time the theory was advanced of the transmutation of connective tissue cells into epithelial cells; and the theory was also advanced that the pigmentation came from the transformation of these migratory connective tissue cells, which were supposed to enter the epithelium through the basement membrane.

Another point was brought out in my experiments regarding the stratum Malpighii, and the essayist has referred to it in speaking of the location of the pigment. The deepest layer of the stratum Malpighii, which lies in contact with the capillaries of the blood vessels, is composed of undifferentiated cells. That is, as we understand the cell, it is made up of a nucleus, cell body and cell wall, and the cells of the deepest layer of the stratum Malpighii have no cell wall, and there is no differentiation except that which is assumed in the hardening process of these cells. They lie there as a layer of nuclei in the midst of a layer of protoplasm, and differentiation of cell body comes later as the cell crowds toward the surface. As we get up toward the stratum granulosum, we have the cells divided and find a cell body and a cell wall. This division is caused to a certain extent by the channels which form between the cells extending toward the surface, but to a great extent it is mechanical. As we get nearer the surface, we have the differentiation complete. Where we find pigmentation going on there is no marked differentiation of cell body from cell body, although the nuclei are well formed and stand as palisades on the so called basement membrane. Pigmentation is located, as the Doctor has indicated, on the upper side of this basement membrane.

Dr. EMIL RIES—I am not able to say very much about grafted skin and the growth of pigment in the grafts of skin. I have done some work on pathologic skin in the human (white) being. There are a number of processes accompanied by loss of pigment and by a superabundance of pigment. One disease which I studied for a little was psoriasis, which shows very remarkable conditions of change in pigmentation. The psoriasis efflorescence looks white as a rule. This whiteness is not due to loss of pigment, but is due to air getting in between the scales of skin, which scale off from the surface, so that this surface then reflects light more than the original healthy skin does. But when we scrape off these scales we find that the skin underneath looks paler, whiter than the surrounding skin. On microscopic sections we find the pigment contained in the chromatophores, which are visible in the human skin. The chromatophores in the psoriatic efflorescence are quite as frequent and quite as full of pigment bodies as the surrounding skin. The fact is that in some cases the chromatophores are more frequent than in normal skin. In the cell layers of the epidermis itself, there is less pigment in the psoriatic skin than in the surrounding healthy skin. Some interesting observations are to be noted of psoriatic skin when the chrysarobin treatment is used. You doubtless have seen cases treated with chrysarobin where the surrounding skin at first assumes a very dark color, while the psoriatic efflorescence looks white, stands out very pale in comparison with the surrounding skin. If you examine such skin microscopically, you do not notice any further change. The change of color is not due to any change in the pigment in the cell layers of the epidermis or the chromatophores. The discoloration is not due to a change in the pigmentation contained in the cells of the normal epidermis, but it is due to the artificial substance which we apply to the skin, and it is not proven that there are any marked changes in the chromatophores or in the pigment contained in the skin. When the psoriasis heals and the diseased skin returns to its normal condition, we do not notice any difference between the original efflorescence and the surrounding skin as far as pigmentation goes. The greater number of chromatophores, which are present in diseases underneath the efflorescence disappear. I have experimented on pigment in the chromatophores and in the skin, and I have tried to find whether there were any special changes in their micro-chemic reactions, etc., but I was not able to find them. A great many investigators have worked on the pigmentation of the skin in processes which are characterized by loss of pigment, partial albinism, defects of pigment after papular syphilis, the premature turning gray of the hair, and other conditions, but it would take us too far to discuss all of those conditions. But from a pathologic standpoint, the changes in the chromatophores are marked. The presence or absence of pigment in the epidermis is an important point. Among the

skin pathologists the generally accepted theory was that the chromatophores bring the pigment into the epidermal layers. When we learn that the epidermal layers themselves produce this pigment, we will have to look at the chromatophores in an entirely different light. The question arises, what is the function of the chromatophores? Dr. Loeb has found that the epidermal cells begin to migrate into the connective tissue. Now, it is perfectly possible that the chromatophores are originally epithelial cells, although I am not able to make any positive or definite statement regarding that point.

Dr. JAMES G. KIERNAN—I would like to ask Dr. Loeb whether, from an ethnologic standpoint, certain other factors should not be considered in connection with this subject. It is practically accepted by ethnologists, that the negro is developed from a lower phylogeny than the so called Caucasian and Mongolic races. Going down in the scale of evolution one thing is noticeable, as Dr. Sudduth has pointed out, that the cells possess in certain instances greater individualistic functions. In other words, in passing down in the scale of evolution, the individualistic character of the cell increases. As we pass upward in the scale of evolution, we find the cell confined to fewer functions, but losing to a considerable extent, and in many cases altogether, its powers of reproduction. I would like to ask Dr. Loeb whether that biologic fact has not something to do with the fact that he has pointed out, namely, that the pigmented cells have less tendency to degenerate into the connective tissue cells, and also whether it does not explain the fact to some extent, that a very large majority of the wounds received by negroes remain white and not pigmented. That has been my experience in making autopsies among the pauper and degenerate classes. It might explain also why there are numerous exceptions to that. Occasionally, as I have noticed, old wounds in negroes are not only not paler in type than the surrounding skin, but are actually blacker. Furthermore, I would like to know whether the same fact and some other facts that he has pointed out would not have a bearing on vitiligo as it occurs in negroes, secondary to apoplectic conditions, parietic dementia, and secondary to true apoplexy.

Dr. C. F. PINKARD—The point brought out by Dr. Ries in speaking of psoriasis, namely, that the color of the skin is not due to a change in the amount of pigment, corresponds with the condition in the iris. For instance, different colored eyes have practically the same amount of pigment; it is simply the arrangement of the pigment that makes the different colors. In the skin, the depth of the pigment below the surface is the important factor.

Dr. LOEB (closing the discussion)—I can not contribute anything which will satisfactorily answer Dr. Kiernan's questions. The influence of the nervous system upon the chromatophores has given rise to the writing of several papers. Undoubtedly, there is some connection between them, but as this work has not been fully demonstrated, it is a little premature to say anything definite about it. The view that there are channels in the epithelium is, I think, generally accepted. As to the theory or supposition that the epithelial cells select their own food from fluids that they get from the connective tissue meshes, and that this different selective power of different epithelial cells causes their difference in pigmentation, we must regard this simply as a hypothesis. As I stated in my paper, we have no fact that demonstrates that it is just hemoglobin received from the fluids which enables the epithelial cells to produce pigment. So far as my investigations go, there is very little to show that there is such a selective action on the part of the epithelial cells, as has been stated. Indeed, there are some facts entirely against it. If we regard pigmentation of the epithelial cells in the light of regeneration, we see that very often the epithelium is entirely without connection with the underlying tissues. Nevertheless the process of pigmentation takes place just the same. On the whole, we seem to agree in the belief that the epithelial cells themselves produce pigment. Dr. Ries mentioned some interesting facts about pigmentation in psoriasis. It is right that we should collect facts regarding pathologic changes in the skin, but we must consider it often difficult to give a satisfactory explanation from pathologic specimens. We do not know how this comes about. Dr. Ries also mentioned the migration of epithelial cells into connective tissue. This can occasionally be observed in the process of regeneration.

Chicago Ophthalmological and Otological Society.

Regular Meeting, Nov. 8, 1898.

Dr. COLEMAN occupied the chair. After the minutes of the previous meeting had been read and approved, the society voted to become affiliated with the Chicago Medical Society. Dr. CLARK W. HAWLEY reported a case of traumatic catar-

act with dislocation of the lens, as follows: A young man was injured in the left eye from the concussion of a gun, about a year ago, following which cataract was first noticed, and within a few weeks. Two weeks ago needling was done, a small hole being made in the capsule. The next morning, for the first time, it was noticed that the lens was dislocated, being turned upon its vertical axis, the anterior edge touching the cornea, and the anterior surface looking toward the temporal side. It was very much swollen. On consultation with Dr. Starkey, it was decided to let it alone. The lens substance protruded through the pupil, some of it hanging over the lower border of the iris; it slowly became wholly opaque and smaller, without any irritation of the iris or pain. At present the lens is rotated backward, so that the anterior surface points almost directly forward, a little to the temporal side, and the lens is dislocated toward the temporal side. The border of the nucleus can be seen almost at the temporary pupillary edge. Reaction to light and light perception and projection are good.

Dr. BULSON reported a case of mastoiditis and sinus thrombosis with operation and recovery. In conclusion, the following features were brought out: 1. The development of well-marked sinus phlebitis, with probable thrombosis after apparent recovery from abscess of the mastoid antrum, which had been thoroughly evacuated. He attributes this to infection arising from carious bottom and inner aspect of the large cell at the apex of the mastoid process, which was probably overlooked at the time the mastoid operation was performed. This carious process, easily overlooked in the mastoid antrum, owing to small area of presentation in that cavity, undoubtedly involved the inner table at the time of the mastoid operation, and if removed at that time would have obviated the necessity of a second operation. 2. The final disappearance of this phlebitis and probable thrombus without the development of other pyemic manifestations, such as pulmonary infarcts or abscesses in other portions of the body, or a fatal termination. 3. The development of an epidural abscess somewhat remote from the site of the carious process, and not discovered or suspected at the time of the second operation. This was probably occasioned by the burrowing of pus from the original mastoid abscess and subsequently becoming walled off by adhesive inflammation. 4. Demonstrations of the necessity of thoroughness in mastoid operations, which should not only include free opening of the mastoid antrum and obliteration of pneumatic structure, but careful search for and removal of small areas of diseased or carious bone.

Dr. STARKEY—The case is interesting from two standpoints: 1, that of the surgeon; 2, that of the physician. It is instructive as outlining the thorough operation that is necessary in such cases. On the other hand, it shows how some cases that are apparently very desperate will recover without further operative interference. It shows, too, that desperate cases occasionally get well, and that very extensive disease processes can be relieved and restoration follow.

Dr. F. C. HOTZ—There was evidently in Dr. Bulson's case thrombosis of the lateral sinus. I do not remember, in listening to the paper, whether the doctor said in exploring the sinus with a hypodermic syringe he drew any blood or not.

Dr. BULSON—I did not.

Dr. HOTZ—I believe you stated you did not get any pus.

Dr. BULSON—Yes. That is the reason I suspected there might be a fibrinous clot.

Dr. HOTZ—The course of infection may have been from the mastoid or the tympanic cavity. This case calls to my mind a case of thrombosis of the lateral sinus that occurred early in my practice, in which the patient had recovered apparently from an acute otitis media with perforation of the membrana tympani. He had recovered so well that at my last visit to the house, which was on Saturday, I told him that next Monday he could go down to his business. He felt perfectly well; was up and about the house until Sunday night, when he was suddenly taken with a tremendous chill, which was followed by a high temperature, and in a few hours unconsciousness. I was called in the morning (Monday) and found him unconscious, with an icteric color, high temperature, swelling behind the ear, extending downward, following the jugular vein. The patient did not recover. After several chills he died that (Monday) night. I obtained permission to open the skull. A clot was found along the sinus, adhering to the wall, but not obstructing the entire lumen. That accounted for the fact that no evidences of thrombosis had been discovered, although that fibrinous clot had certainly been forming some time; but the blood circulated through the sinus in spite of the clot, and the patient manifested no symptoms of such disturbance. Death was caused by multiple emboli in the small meningeal arteries. The thrombus extended from the sinus into the

jugular vein and was decidedly friable. I saw that a large piece had broken off from the end, and in the circulation it had been split up into numerous little particles, which went from the venous into the arterial current and probably lodged in the cerebral arterioles.

Dr. BULSON (closing the discussion)—I have but few remarks to make. The case reported presented so many interesting features that I could scarcely cover them in the condensed paper presented to you this evening. The results secured were highly satisfactory in consideration of the fact that an unfavorable prognosis had been given to the members of the family prior to the second operation, my belief at that time being that the patient would die from pyemia. In answer to Dr. Hotz' question relative to exploration of the sinus with a hypodermic needle, I will say that the needle was plunged into the sinus twice without obtaining anything that would indicate the character of the vessel. I felt reasonably certain that a thrombus existed, but heeding the advice of a prominent Indiana surgeon who was present at the operation, I concluded not to open the sinus, though I think I should now do so in a similar case if opportunity presented itself. Inasmuch as a large hypodermic or aspirating needle could not be obtained promptly when desired, I could not be certain that pus or blood was not obtained because the needle was so small or because it was thrust into a well-developed fibrinous clot. Judged from the feeling and tenseness, which latter seemed to extend well down into the neck, I feel certain there must have been a thrombus there, doubtless involving the outer lumen of the vessel, if not completely occluding it. Recovery may be attributed largely to good nursing and a strong constitution, the patient being a man weighing fully 190 pounds and the picture of health. The epidural abscess was undoubtedly due to infection, probably from a portion of the carious process overlooked at the time of the original mastoid operation. The operation lends added force to the idea that a mastoid operation should be thorough. I do not believe that it is good policy or surgery to rest easy with simply puncturing a little hole in the mastoid antrum, or, as frequently happens, into a large pneumatic cell, and by the evacuation of a little pus think that the patient is going to get well without complications or further operative procedures. Where carious bone exists, and this is especially true in long-standing cases, the patient will never get thoroughly well until the carious bone is removed, and this can not be done unless the parts are thoroughly exposed so that they can be inspected with the naked eye and the operation done in a thorough and systematic manner as required. It has always been my policy to thoroughly open the mastoid antrum, and to carry the curette in every direction until solid bone is found, and as long as any soft or carious bone is detected to keep on with the operation until the same has been completely removed. Unless great care is exercised small spots or channels of carious processes may be overlooked, as was probably the case in the instance cited. Considering the gravity of the case reported and the extensive operation required for relief, I am very glad to be able to report satisfactory results and the recovery of the patient.

Dr. COLEMAN—With reference to dressings, speaking generally, would you pack the wound for a considerable time or for a short time?

Dr. BULSON—That depends largely upon the nature of the case and the operation. If there is considerable pus being formed I remove the dressings and irrigate. As a rule I do not irrigate. I suppose you refer to mastoid operations?

Dr. COLEMAN—Yer, sir, and I want to know whether you would repack a wound for two or three weeks as a rule. There are exceptions in which you might pack it for two or three days and then allow the wound to heal.

Dr. BULSON—In a simple mastoid operation I aim in the first place to establish a connection between the middle ear and the mastoid antrum, so that an antiseptic solution injected into the fistulous opening will pass out at the meatus. The wound, including mastoid antrum, is then lightly packed with a dry gauze dressing, and unless there is a rise of temperature this dressing is not disturbed for a period of four or five days, when, if the wound is found to be dry, the dressings may be removed and the fistula allowed to close. In some instances, in order to facilitate drainage, the dressings will need to be replaced frequently for several weeks.

Dr. GRADLE presented a new instrument for the removal of the enlarged pharyngeal tonsil in one piece and showed some specimens illustrating its efficiency.

Just Ordinary Substitution.—Customer (in bookstore): I want to look at some bibles. Clerk (formerly with druggist): We're just out of 'em. We have something just as good though.—*N. York Journal.*

Cincinnati Obstetrical Society.

Nov. 10, 1898.

Dr. A. W. JOHNSTONE reported an extirpation of a myomatous uterus. He was unable to find any ovary on the left side. There was only a small left uterine artery and absolutely no vestige of the ovarian artery upon the left side. There was only one ovary and tube. There was no evidence of previous surgery. The cervix was displaced to the left side. In doing the operation, the cervix was split and left. In this way good drainage was secured and the case recovered nicely.

Dr. EDWIN RICKETTS presented a photograph of a tumor weighing sixty-five pounds, removed by total extirpation from a woman 52 years of age. Death occurred after thirty-five hours, the immediate cause of death being unknown.

Dr. RUFUS B. HALL presented a specimen removed from a case of extra-uterine pregnancy. The specimen was a fetus six inches long, with the placenta forming the sac, which was not ruptured in its removal. The fetus had been dead for some time. Convalescence easy.

Dr. A. W. JOHNSTONE believed that the specimen presented by Dr. Hall represented the first step toward the formation of a lithopedion. In this case the specimen showed evidence of infection, which emphasizes the necessity of surgical interference in these cases. During the meeting of the AMERICAN MEDICAL ASSOCIATION in Cincinnati, it was held by some that an operation was unnecessary in these cases, which assertion the case just reported would tend to disprove. Even a lithopedion ought to be removed, for a woman is never safe with the results of an extra-uterine pregnancy in her abdomen.

Dr. S. STARK gave a brief abstract of a report that recently appeared in the *Centralblatt für Gynekologie*. The case was one of tubal pregnancy with the history of repeated ruptures. Abdominal section revealed the child free in the abdominal cavity, among the intestines. There seemed to be no reaction whatever on the part of the peritoneum. There was no amnion, and evidently the fetus had been passing its urine and discharges into the free peritoneal cavity of the mother without doing any damage. The placenta, which was adherent to the remaining portion of the tube and over the surface of the uterus and bladder, was removed with difficulty only at the end of four weeks. It took two weeks longer for the wound to heal. A ventral hernia remained, which was operated upon six or eight months later. At that time all the adhesions formed from the lymph thrown out had disappeared. The child was alive.

Dr. EDWIN RICKETTS reported a case of extra-uterine pregnancy upon which he had operated. The fetus was found out among the intestines. There were no adhesions. The fetus was pale in appearance, apparently blanched. He succeeded in removing the placenta at the time of the operation.

Dr. JOHNSTONE called attention to the fact that in the case of the first living child removed in the way described, the conditions found were exactly similar to those described by Dr. Stark. There were no adhesions, no amnion, and the child was free in the abdominal cavity. We must not forget that the placenta may keep on growing even after the death of the fetus. Septic infection is the greatest risk in these cases.

Dr. HALL, in closing, stated that he believed there had been, in the case he reported, several hemorrhages of considerable size, and that nature had attempted in each instance to absorb the blood. After one of the hemorrhages the woman appeared as large as at the sixth month of pregnancy.

Dr. MAGNUS TATE read the regular paper of the evening,

THE TRANSMISSIBILITY OF MORPHIN.

He gave a brief review of the literature and reported cases of transmissibility of drugs to the child through the mother's milk. The more important drugs affecting the child through the mother's milk are belladonna, effect constant; potassium iodid, effect not uniform; mercury, effect very feeble and only after prolonged administration; saline cathartics, effect not constant; quinin, through the use of which a fatal illness has been reported; arsenic, if given in sufficient quantity; salicylates, if given in sufficient quantity; opium, effect inconstant, but may produce toxic symptoms. A confirmed morphin-user is known by pallor, emaciation and contracted pupils. But none of these symptoms were present in the cases observed by the essayist, nor was there any atrophy of the genital organs. He believes that morphin in small doses will not affect a healthy pregnant woman differently than if she were not pregnant. Such doses constantly repeated will produce a marked effect upon the gastro-intestinal system, and this may be followed by a train of nervous phenomena, which may not only seriously affect the health of the patient but that of the fetus, and an abortion or premature labor may result. The taking of large

doses means danger to life of both the patient and fetus. The essayist noted the effect of morphin, gr. $\frac{1}{8}$ to $\frac{1}{4}$, given hypodermatically to thirty women after labor; pains were good and strong and the os dilated to the size of a quarter. During the first stage pains were reduced in frequency, became lighter, and in eight cases ceased from one to two hours. During the early part of the second stage the effect was not constant; in a few cases the pains were lessened in force and strength, but in no case did they cease. Later on in the second stage, there was no effect whatever. In two cases, in which the cervix was rigid and unyielding, morphin caused relaxation and softening and labor terminated normally. In a normal case of labor, in a healthy patient, morphin does not predispose to postpartum hemorrhage when the drug is administered in ordinary doses, gr. $\frac{1}{8}$ to $\frac{1}{4}$. There were no cases of postpartum hemorrhage in the thirty cases reported. Small doses of morphin taken by the mother may not be and generally are not discovered in the milk, because the clinical evidence is not strong enough to point to the source of the existing evil. Larger doses produce such marked symptoms in the infant, that it seems rational to make the statement that morphin, if taken in sufficient quantity by the nursing woman, will readily be transmitted to the infant. For the detection of morphin in the milk, he used Kalkbrunner's test, consisting of two solutions. The first solution is ferric chlorid, grs. 30, water $\mathfrak{J}\text{iv}$; the second solution, potassium ferricyanid, grs. 2, water $\mathfrak{J}\text{iv}$. Add to the suspected fluid five or six drops of the first solution, then three or four drops of the second solution. If morphia is present, the color will change to a pale green or deep blue, depending upon the amount present. In the absence of morphia the color is a dirty gray.

Dr. EDWIN RICKETTS referred to a case in which the administration of small doses of morphia to the child stopped convulsions that were probably caused by the mother receiving hypodermatic injections of morphia. It was necessary to continue the drug several weeks. The child still lives.

Dr. STARK thought the case indicated that morphin does not pass through the placenta, or the child would have acquired a tolerance to the drug.

Dr. JOHNSTONE thought this could be accounted for by a difference in the rapidity of elimination through the placenta and through the breast. The child might get a much larger dose through the breast than through the placenta. He reported a case in which a child was born of a mother who used morphin. The child never nursed. At times the child had irritable spells, which could only be quieted by the administration of paregoric. The child seemed to have become addicted to the opium habit. In another case morphin was given for severe after-pains. The second or third day the child seemed to go to sleep and died. It seemed likely that she child had been poisoned by morphin excreted in the milk.

Dr. PALMER believes we may affect the child in utero by administering morphia to the mother, but the quantity of morphia must be much larger than would affect the child when taking the mother's breast, later on. Morphia diminishes the activity and painfulness of the contractions in parturition, and is one of the best remedies we can give when the uterine contractions are extremely painful and when there is a want of normal dilatation of the cervix uteri in the first stage of labor, but morphia is not so good as chloroform by inhalation in such cases. Another agent which has a marked influence upon the lacteal secretion is large quantities of whisky and beer. Children at the breast may be made drunk by the nurse taking too large quantities of these beverages.

Cincinnati Academy of Medicine.

Meeting held Oct. 31, 1898.

Dr. C. R. HOLMES reported a case, and showed the patient, whose left eyeball had been injured by a thirty-eight-caliber ball fired at a range of two or three feet. The victim had been leaning over a table at the time, so that the plane of the anterior part of the face was directed almost horizontally backward. The ball struck the orbital plate and without splintering it or causing fracture of any part of the skull, passed downward, injuring both lids, and buried itself in the cheek, from which it was removed. It had not caused a rupture of the skin, but the force of the impaction against the eyeball had injured the inner tunics of the eye, resulting in hemorrhage into the vitreous, and a lenticular opacity. He exhibited the bullet, which was greatly flattened.

Dr. HORACE WHITACRE presented a patient who had been injured some weeks previously by a severe blow on the head, the result of the latter coming in contact with the wheel of a heavy wagon. He was seen a few minutes after his injury,

was not unconscious, but exceedingly restless and irritable. The principal symptom was the slow pulse, about 52, subsequently diminishing to 46. There were no localizing symptoms and no paralysis; some little time after the injury there developed a subconjunctival hemorrhage on the left side; there was a large hematoma present on the back of the head. The symptoms becoming worse and the patient sinking into a condition of unconsciousness, it was decided on consultation with Dr. Frieberg to trephine. The second opening in the temporal region exposed a large clot between the skull and the dura. The opening was enlarged and the bleeding point tied. About two handfuls of clotted blood were taken away. The dura was not opened, as it was thought that the clot found fully accounted for the symptoms. The result, uninterrupted recovery, proved the soundness of this view.

Dr. C. A. J. REED reported three cases of cholelithiasis. In the first case an additional diagnosis of chronic recurring appendicitis was also made. On removing the appendix he found by carrying his hand upward toward the liver that the gall-bladder was greatly distended. The primary wound was sewed up and the regular incision for gall-bladder operation was made; 380 gall-stones, remarkable for their almost uniform size, were removed. In the second case the gall-bladder was greatly distended, but on opening it no stone was found, three pints of fluid, however, exuded from the gall-bladder. Search revealed a large stone in the common duct, which was removed by a linear incision. The patient made a good recovery, but that very day, fully two months after the operation, he had presented himself again with jaundice. The speaker did not believe this to be due to another stone, but that cicatricial contraction in the line of incision of the common duct had caused a stenosis of this duct, and that another operation would be necessary to relieve this condition.

Dr. FREIBERG mentioned some cases, operated on by McBurney, in which an opening was made into the duodenum and the stone lodged in the common duct delivered through the papilla, the object of this operation being to avoid the troublesome stenosis that had occurred in Dr. Reed's case.

Dr. REED said that he had made the operation, but that the difficulty of knowing just what part of the gut to open, and the greater difficulty of finding the mouth of the common duct were serious objections to the operation. The third case reported by Dr. Reed was one of gall-stone colic recurring at frequent intervals for twenty-five years. Operation revealed a stone impacted in the cystic duct, and a large number of smaller stones behind it.

Dr. MEYER HEIDINGSFELD presented a patient whom he had been treating with electrolysis for nevus. Two milliamperes was the current used, conducted by a steel needle attached to the negative pole, the point of the needle reaching into the true skin so as to avoid extensive scarifying, though he admitted that cicatrization proceeded more slowly by this method than if the needle had not sunk so deeply.

Dr. RICKETTS reported a case, and exhibited a specimen, of a large ovarian cyst weighing twenty-five pounds. He also showed a specimen of a large dermoid springing from an ovary.

Dr. B. F. LYLE exhibited a specimen of aneurysm of the thoracic aorta, about the size of a walnut, situated at the junction of the ascending and transverse portions of the arch. The patient had died suddenly, but the aneurysm had not ruptured. A thickened condition of both apices of the lungs was also present (examination of the sputum had proved tubercle bacilli to be present).

Dr. E. W. MITCHELL reported a case of what he believed to be angina pectoris with fatal termination, in a man 58 years of age. He had never been subject to attacks before, nor did his history of the case throw any light on his present illness. His symptoms were sudden, violent, *constricting* pain under the sternum, radiating down both arms. The heart felt like it were being held in a vise. He did not fall or lose consciousness, but was very sick and nauseated. Dr. Mitchell had thought him to be suffering from an anginal attack, but the acute symptoms being over and the circulation somewhat depressed, he thought the nitrates contraindicated and gave the patient 1 30 gr. strychnia by the mouth and 1 50 gr. digitalis by hypodermic injection. The pulse rallied somewhat, but suddenly he noticed a marked blanching of the face and, feeling for the pulse at the wrist, could find none. Respiration continued fully two minutes after the entire cessation of the heart's action. Dr. Mitchell looked upon three causes in the etiology of sudden death: he ruled out the brain in this case, for the patient, after his primary attack, had conversed genially with his friends and was perfectly conscious of his surroundings. He thought that the continuation of respiration for some minutes after the heart had ceased action would rule out any involvement of the respiratory apparatus. In

addition, examination of the lungs had been entirely negative. Examination of the heart had been negative also, as far as the presence of murmurs was concerned. He knew that no diagnosis could be made in this case without a postmortem examination, which he had unfortunately been unable to obtain. He might, indeed, have been suffering from an aneurysm or thrombosis of the coronary arteries. He based his diagnosis of angina pectoris entirely on the history.

Dr. T. LOUIS BROWN reported a case of foreign body (hog's bristle) almost an inch long imbedded in the left tonsil; removed.

Meeting of Nov. 14, 1898.

Dr. C. D. PALMER read the regular paper of the evening,

WHAT IS THE PROPER FIELD OF SALPINGO-OÖPHERECTOMY?

The paper was along the line of conservatism in gynecologic surgery. As to when and to what extent we are to sacrifice the ovaries and tubes, he thought the removal of the ovaries should be done more frequently than that of the Fallopian tubes. Often in an attempt to remove the ovaries, inadvertently the tubes are also taken out. In point of danger, there is little difference whether one or both of these organs are removed. The removal of either organ on either side renders the other of the same side practically useless, in a procreative sense. Of more importance is the extent to which the ovaries are sacrificed. Their removal, as a rule, means an abrupt and immediate cessation of menstruation, an artificial menopause. The menopause of any woman, especially if young, abruptly induced, is attended with phenomena of the nervous system, more pronounced in perturbations, more enduring in results than is the natural cessation of menstruation. The menopause is commonly attended by atrophic anatomic changes in the genital organs. Exceptionally, menstruation continues indefinitely, notwithstanding attempts to completely extirpate both ovaries. Such cases may be attributed to improper ligation of the broad ligament, as to depth or location, and the unintentional leaving of some ovarian structures. The essayist advised the operation: 1, to abrogate the process of ovulation; 2, to check or modify the menstrual discharge; 3, to remove organs incurably diseased.

As to when we are justified in making a Batey operation for certain nervous diseases, the essayist believed the operation indicated only when the nervous phenomena can be traced to or are limited by ovarian action, or when some serious organic ovarian morbid change, in kind or in degree, can be detected by the bimanual touch, with or without anesthesia. He did not advise the Batey operation for dysmenorrhea, except when due to structural disease of the ovary.

As to what extent we ought to disturb the ovaries for uterine disease, he thought such an operation of well-recognized value in the treatment of small interstitial uterine fibroids. In such cases the prevention of a possible pregnancy is another argument in its favor. When a Cæsarian section is made for a seriously contracted pelvis, the essayist would advise tying the tubes and leaving the ovaries. The detection and thorough removal of the ovaries in cases of uterine fibroids of much size, is always difficult and the results very uncertain. Uterine displacements not otherwise remediable may be relieved by surgery. In such cases the appendages should be removed if found to be diseased. The uterine appendages should be removed when seriously and hopelessly involved in disease. A partly diseased tube may recover if well emptied after abdominal section, by aspiration or the passage of a probe into the ampulla followed by finger compression. Purely catarrhal salpingitis, the most frequent form, never needs section; cases of hydrosalpinx usually do; hematosalpinx and pyosalpinx almost always. In the way of medicinal and hygienic treatment, the essayist advised rest in the recumbent posture, purgation early in acute cases, by the use of salines. Daily movements should be secured. Counter-irritation, with small fly blisters, do good in chronic cases. Cold or hot applications are best for acute cases. Sthenic cases may be given minute doses of aconite or veratrum viride. Generally no internal medicine equals quinin. Opium is to be avoided as much as possible, and is best given in rectal suppositories made of the aqueous extract. Specific cases call for the hot sublimate douche, otherwise boric acid is preferable. For chronic cases no medicament is superior to ichthyol diluted with boroglycerid. Churchill's tincture of iodine may be applied to the vaginal vault in such cases. As a rule, minute doses of bichlorid of mercury are preferable to the use of iron. The bromids diminish pelvic congestion and are sexual sedatives. Hemorrhagic states of ovarian origin may call for sodium bromid. In old cases the use of electricity may resolve pelvic exudates, relieve pain and control local neurosis. Salpingitis is almost always an outcropping of an endome-

tritis. In such cases the uterus should be curetted and packed. Follicular ovaritis should not be mistaken for cystic degeneration. In cases of cystic degeneration of the ovary, a simple puncturing of the larger cysts, after section, will answer for not a few cases. Most cases require no surgical treatment. The essayist advocates saving as many and as much ovarian structure as practicable, but believes it rare that the corresponding tube may be saved. The uterus and appendages should be removed when the uterus is so contaminated with disease that it is advisable to cut off the whole septic field and give full drainage. Thus, the operation is called for in post-puerperal cases, next in specific, and least frequently in septic non-puerperal cases.

After all abdominal sections for supposed diseases of the uterine appendages, we should carefully inspect them for macroscopic evidences of disease. Only such parts of the appendages, the ovaries in particular, should be removed as may be hopelessly diseased. The healthy side should not be disturbed unless for good and sufficient reasons. Slight cystic degeneration or cirrhosis of the ovaries is insufficient grounds for their extirpation.

In closing, the essayist inquired: Has as much consideration been given to the salvation of the uterine appendages as is devoted to the preservation of the analogous organs in the male?

Dr. C. L. BONNIFIELD believed that if more attention were paid to the acute inflammations in the beginning the abdominal operators would have less to do. He would not recommend the removal of the ovaries to stop the growth of tumors. Myomectomy and hysterectomy have been so perfected that they are much more safe than formerly, and after such operations the trouble is absolutely cured. The removal of the ovaries will stop these growths only when they can be removed the easiest. The woman never feels completely contented as long as she feels she has a tumor. Whether or not to remove the ovaries when the uterus is removed, is a question that is as yet *sub judice*. He agreed with the essayist that the ovaries should not be removed for nervous diseases, unless we can prove that they are diseased. A few cases have been reported cured by the removal of the ovaries, but such cases would probably have been cured by any extreme method, which would have produced considerable shock upon the nervous system. He had never seen a case of uterine hemorrhage, not attended by fibroid, which could not be controlled in some other way.

Dr. RUFUS C. HALL thought that frequently we erred on the wrong side in our enthusiasm to save one ovary or as much as possible of an ovary. Where we are obliged to remove one ovary for disease that is not infectious, we may often save the opposite ovary or part of an ovary. But such great conservatism is not justifiable in pus cases, either gonorrhoeic or septic. Dr. Hall had, on a number of occasions, left an ovary or part of an ovary with apparently good immediate results, but months or years afterward he had been obliged to remove the ovary left at the first operation, even in non-infectious cases. Five or six of his patients, in whom an ovary or piece of ovary was left, have since borne children. Dr. Hall did not believe it safe to leave the opposite tube in cases of pyosalpinx. He had never seen a pyosalpinx on one side with a perfectly healthy ovary and the tube on the other side. In cases in which there is a prolapsed ovary with a retroverted uterus, the condition should be corrected before the long continued engorgement causes adhesion.

Dr. A. W. JOHNSTONE had recently operated upon two cases in which there was only a papillomatous degeneration of the ovary to account for one to three pints of fluid in the pelvis. He believes that much of the trouble usually ascribed to the menopause is due to American gout. Often there is the history of English gout in the ancestry. If these attacks appear after the production of an artificial menopause, they would appear at any rate a few years later, after the natural menopause. He did not think it prudent to leave a piece of the ovary for the purpose of not bringing on the menopause which only holds out the prospect of holding another ovariectomy to get it out.

Dr. J. M. WITHROW heartily endorsed the conservatism in gynecologic surgery recommended in the paper of the evening, and believed there could be no question as to the utility of the removal of the ovaries for fibroids or bleeding of the uterus. The reported successes following the removal of one or part of one or both ovaries, even in cases of septic infection, certainly justifies a trial. He believes that the artificial menopause is much stormier than the natural menopause, and had never seen a case in which he felt constrained to remove the ovaries for dysmenorrhoea, but he could conceive that such cases might exist.

Dr. EDWIN RICKETTS thought conservatism could be carried too far. He compared the conservatism of the essayist to the wave of conservatism that followed the general adoption of ovariectomy. In no case is the vaginal route to be preferred for the removal of the ovaries and tubes. When there is a hematoma of one ovary, it is better to remove the other even though it may appear healthy at the time. Dr. Ricketts had seen cases of fibroids develop in spite of the removal of the appendages, and total extirpation later became necessary.

Dr. E. GUSTAV ZINKE paid high compliment to the paper of the evening. He objected decidedly to the statement, by the previous speaker, that the ovaries and tubes ought never be removed by the vaginal method. He had operated on a number of so-called pelvic abscesses by the vaginal route entirely. He had a record of at least twelve cases in which he had evacuated the pus through the posterior cul-de-sac. All the patients recovered without any difficulty, and at least one of them has since given birth to a child. Of course, pyosalpinx can not be dealt with readily by the vaginal route.

Dr. PALMER, in closing, stated that he had been prompted to write the paper by the realization that oöphorectomy and salpingo-oöphorectomy are done too frequently. Too many ovaries are now stored in pickling pots, which ought to be where nature first placed them. In some cases Dr. Palmer had secured good results by the curettage of the uterus in old cases of periuterine inflammation.

PRACTICAL NOTES.

Dry Sterilization of Instruments.—Metal cylinders of various lengths and sizes are used at Frankfort to hold the forceps and everything required in obstetrics. They are placed in a dry sterilizer or the oven of the cook stove and sterilized dry. The cylinders are not opened until needed and the instruments are not injured in the least by the process.—*Munich Med. Woch.*, October 25, from *Cbl. f. In. Med.*, No. 40.

Iodin in Gonorrhoea.—The vagina is cleansed with boric acid water, dried and painted with pure tincture of iodine every two or three days with injections of an iodized solution three or four times a day, and the lumbar and lower abdominal regions painted with iodine. After the inflammatory symptoms have subsided, a mixture of one part pure iodine to two parts glycerin is applied to the cervical canal. If the uterine cavity has been invaded, the surface is painted with the iodine after dilation of the neck. He also administers iodide internally.—*Semaine Méd.*, November 9.

Puncturing the Intestines.—Quevado suggests puncturing the intestines through the inguinal canal in case of threatening meteorism, as free from all the objections urged against puncturing in such cases. The idea was derived from observation of the postmortem emphysema in the scrotum and vulva.—*Cronica Méd. Mex.*, November 1.

Phenocoll in Malarial Fever.—Cesare Monduri reports satisfactory results with this drug in febrile conditions diagnosed as malarial. The doses of the hydrochlorate vary from 1.5 grams to 2 grams daily for adults and from $\frac{1}{3}$ to 1 gram daily for children.—*Am. Gyn. and Obstet. Journ.*, November, 1898.

Kil, the Busslan Mineral Soap.—A natural mineral soap is found around the Black Sea which is much used for sea baths, and after calcining, forms an excellent vehicle for salves, etc. It is composed essentially of silica, alum, ferric oxid, chalk and magnesium carbonate. Veliamovitch recommends it for cleansing purposes when ordinary soap is not tolerated, as in acute eczema, etc.—*Semaine Méd.*, October 26.

Peroxid of Hydrogen.—A recent communication based on five years' experience and much experimental work, lauds peroxid of hydrogen for its microbicidal and hemostatic properties, which "entitle it to the front rank in medico-surgical therapeutics, and especially in affections of the mouth and throat." It is absolutely harmless, while more strongly antiseptic than sublimate. As a hemostatic it should be indispensable to surgeons.—*Bull. de l'Acad. de Méd.*, October 31.

Sodium Bicarbonate for Hiccough.—A recent communication to the Paris Académie de Méd. reports that hiccough has always been arrested, in the long experience of the writer, with 5 grams of sodium bicarbonate in half a glass of Vichy water taken at one draught. The hiccough disappears with the eructations.—*Bulletin*, October 31.

Reviving the Apparently Dead.—Tuffier and Hallion suggest opening the thorax and rhythmically compressing the heart with the hand, after all other means of artificial respiration have failed. They have succeeded in this way in reviving dogs chloroformed until all the movements of respiration and heart action had completely ceased. In a few moments the heart commences to contract spontaneously and the respiration becomes re-established.—*Semaine Méd.*, November 2.

Orthoform in Vasomotor Rhinitis.—Lichtwitz and Sabrazès ascribe the different forms of vasomotor coryza: hay-fever, nasal hydrorrhea, etc., to hyperesthesia of the pituitary gland. This can be controlled, temporarily, by cocain, but orthoform is far more effective, its influence lasting, and free from the dangers and inconveniences of cocain. They mention, among other observations, the case of a man 34 years of age, with periodically recurring nasal hydrorrhea, sneezing, etc., for six years. A single insufflation of orthoform with a Kabierski insufflator cured him in the midst of an attack, and when seen last he had had no recurrence. (*Presse Méd.*, October 12). To prevent coughing from the dry powder, *vide* JOURNAL, p. 1306.

The "Block Bed."—The inconvenience of raising a patient to apply a bandage or cast under certain parts of the body is obviated by Professor Folet's device of having the patient lie on a set of blocks of various sizes but all exactly ten centimeters high, packed close together on a table. The idea was suggested by a doll lying on an uncovered box of toy blocks. One or more of the blocks can be removed without disturbing the patient and allow the hand or bandage to be placed around the part without the slightest inconvenience. He has the seventeen blocks in his set made hollow, like drawers turned upside down, being thus light to move, and easily packed away when not in use. The weight of the patient keeps them from slipping around under him.—*L'Echo Méd.*, October 23.

Infantile Meningitis.—Carbajal writes to the *Revista Médica*, October 15, describing his successful results with a blister applied to the occipital region at the commencement of the second or paralytic period in this disease. He uses Autenrieth's salve and croton-oil, 30 to 4 gm., every four to six hours until the surface is blistered and suppurating, after which the suppuration is kept up with some simpler salve. He ascribes to this measure the recovery of all his cases since employing it, combined with the usual therapeutic measures, avoiding narcotics.

Resection of Deformed Nasal Septum.—Escat resects a C-shaped septum without perforating it completely, by injecting, after cocain, enough water to separate and distend the mucous membrane from the cartilage on the convex side (they are easily detached in the young). He then resects the convex side, including the protuberant cartilage and its membrane, at one stroke, leaving the membrane on the concave side intact. Gauze tamponade for twenty-four hours controls hemorrhage, and the operated side is soon regenerated on the membrane support.—*Munich Med. Woch.*, October 25.

Massage for Post-operative Ileus.—Häberlin has found massage through the rectum and even of the entire abdomen, very effective in promoting the passage of gas and feces after celiotomies, etc., preventing adhesences and assisting convalescence. He reports one case in which an intestinal loop was evidently becoming incarcerated in the Douglas pouch, which he released by energetic massage through the rectum. He

considers the fears of hemorrhage, etc., unfounded, but advises as a preliminary the usual therapeutic measures.—*Obl. f. Gyn.*, 42.

Ferric Chlorid in Dermatomycoses.—Martin has found ferric chlorid very effective in curing pityriasis versicolor. Two or three applications of the following suppress every trace of the affection; dry ferric chlorid 5 gm., gutta percha 2 gm., chloroform 20 gm. For external use. Remove the traces of the gutta percha with 10 per cent. alcoholized water. He also cures erythrasma with one part chlorid to 4 parts collodion, and the inflammatory form, with a solution of 30 gm. dry ferric chlorid to 70 gm. glycerin. Cures in ten days. Trichophytiasis is also cured in an average of twenty-five days with salves or collodion applications of ferric chlorid. The stains on the skin can be removed with a solution of sodium carbonate 6 gm., glycerin and water aa 30 gm.—*Semaine Méd.*

Inefficacy of Cerebral Inoculations in Tetanus.—Recent experimentation at Rio Janeiro has confirmed the extreme sensitiveness of the nerve-cell to the action of the toxin and the protoplasm of the cell. If the toxin and antitoxin are injected combined, at the periphery, the stimulating effect of the latter in arousing the organism to defense, is felt before the toxin reaches the brain, and there is no infection; but if the infection has already reached the brain, the antitoxin is powerless to affect the results, whether inoculated at the periphery or in the brain itself.—*Tribuna Méd.*, August 15.

Chronic Nephritis.—Lemoine treats chronic nephritis with the following powders: lithin benzoate 50 cgm., betol 25 cgm., sodium bicarbonate 20 cgm. Make twenty similar powders, and take two or three during the day, between meals. If the urine occasionally becomes scanty and brownish with a few red corpuscles, he resorts to tannin: tannin and pulverized cinchona aa 50 cgm.; for one powder. Make twenty similar powders and take two powders a day with the meals, or, if the patient dislikes to take powders, it can be administered as follows: tannin 250 cgm., glycerin 30 gm., and syrup of bitter orange 120 gm. Take four to six tablespoonfuls at the commencement of the meals. This treatment should be kept up a long while, suspending it one week in four. He sometimes alternates the lithin benzoate and the tannin, a fortnight each.—*Semaine Méd.*, October 26.

Cystorrhaphy by Imbrication.—Juvara suggests suturing the bladder after suprapubic incision, by imbrication, that is, by overlapping stages, like tiles on a roof. The suture heals more rapidly by first intention, owing to the greater surface expanse, and he claims that it responds to every ideal requirement. His tests on dogs, which are exceptionally liable to infection from such a cause, as their bladder is located in the peritoneum, all proved extremely successful, even without the use of the sound. Experiments on cadavers showed that this method is exceptionally simple if the peritoneum is protected by pulling the upper part of the posterior surface of the bladder out through the wound with the fingers.—*Bull. de la Soc. de Chir.*, Bucarest, 1898, 1.

Cutting the Umbilicus.—Schrwald observes that the usual haste to sever the umbilicus results in the loss to the child of a large amount of blood to which it is entitled, sometimes reducing the blood in its circulation from the 158 grams it should have with a weight of six pounds, to 58 grams. He ascribes to this fact many cases of infantile weakness and lack of resistance to disease, congenital valvular insufficiency, etc. The cord should never be cut until all pulsation has ceased, and this applies with extra force to the apparently dead, in whom the circulation should be stimulated with warm compresses on the heart and the centers of heart and respiration action at the back of the neck. When the cord pulsates, proceed to artificial respiration in the usual way, with the arms.—*Deutsche Med. Woch.*, September 8.

Cellordin.—In the *Med. Press and Circular* for August 31, a writer states that the question of abdominal drainage incidentally involves the question of wound-drainage in general and the same arguments apply. If at the moment of operation the wound could be sealed with an air-tight material, which would remain so until healing was complete, primary union might be reckoned upon. With the new dressing, cellordin, described by Mackenzie in 1896, a transparent closely adherent film can be applied which has the advantage of contracting. Stanmore Bishop has reported three cases out of a large number to illustrate its advantages. They are ovariotomy, removal of appendix, and suprapubic lithotomy. Union by first intention was obtained in all, under one dressing. If perfect asepsis has not been secured the transparency of the dressing enables the place where it is faulty to be seen.

Tremor Toxin and Antitoxin.—Adamkiewicz considers that the pyramidal tracts inhibit the action of the muscles and the posterior columns incite it. The decay of the function explains the ataxia in tabes and the rigidity in lateral sclerosis. The attempt to move the rigid muscles results in tremor, which can therefore be considered the result of both anatomic and functional lesions of the pyramidal tracts. The tremor in the chill of commencing infective diseases is induced by the effect of the toxin on the pyramidal tracts. As this chill has a particularly deleterious effect on the organism, some means should be sought to arrest it. He has found that the addition of carbolic acid to neurin (C_5H_3NO) will deprive it of its tremor-producing property while not affecting its other toxic effects, and he suggests that it may be possible to separate the tremor-producing property of the toxin in acute infective diseases from the rest, and paralyze it in a similar manner.—*Berlin Klin. Woch.*, October 3.

Arsenic as an Alterative.—Dr. T. W. Schaeffer, in the *Charlotte Medical Journal*, says that arsenic increases the elimination of nitrogen by the simultaneous diminution in the absorption of oxygen and elimination of carbon dioxide, and causes in this way a fatty degeneration of the organs. It appears that under the influence of this poison fat is formed from the proteids. The nitrogen, with a small proportion of carbon, is dissociated from the proteid molecule, and the nitrogen-free residue is deposited as fat in the tissues. So that the so-called 'alterative' rôle of arsenic in therapy may be described somewhat more modernly and intelligibly: arsenic is, in fact, a carrier of oxygen; it is an oxidizer and a deoxidizer. Hence, we judge, its beneficial effects, when taken internally in small doses, in exerting a tonic effect upon the nervous system, improving the quality of blood, being an excellent hematic, of great value in ague and chronic malarial disorders, promoting digestion, and this explains why it can often be relied upon in the many forms of dyspepsia.—*N. Y. Med. Jour.*

Treatment of Aystole.—Professor Huchard's treatment of heart disease consists of rest in bed, milk diet, and if the heart is much dilated, venesection. After two or three days of this preparation a purgative is administered: scammony 50 cg., calomel, 20 cg., in two powders, taken with half an hour interval. The day following, the patient is ready for digitalis, and all danger of intoxication is avoided by not allowing the drug to accumulate in the system. He insists upon the crystallized digitalin: 40 to 50 drops of the alcoholic solution of the Codex, at $\frac{1}{1000}$ —50 drops corresponds to a milligram of crystallized digitalin. In a few hours the edemas are absorbed and diuresis is established. Three days later, if the improvement is not sufficiently pronounced, 25 to 30 drops are administered, and this dose is repeated at intervals of ten to twenty days, for several months, if necessary, respecting the long intervals. Small doses, closer together, are the reef on which the average practitioner makes shipwreck.—*Gaz. Méd. de Liège*, October 27.

Paradism for Chilblains.—Dr. Forbes Ross of London was led to try the following procedure for the relief of chilblains, and has had invariable success during several winters. Relief has been prompt in every instance. Having ascertained and localized the focus of each chilblain, resort was had to the application of the secondary current of a Faradic battery, increasing the current gradually to high strength. The application must be made directly to the affected part, i. e., both poles must be in contact with the affected area, separated only by the area occupied by the chilblain itself. Having first previously dipped the electrodes in saturated sodium chlorid solution, maintain the application of the current to each chilblain for from five to fifteen minutes. If the chilblains be watched during the application of the current the tissues will be seen to gradually blanch and the anemic area due to the pressure of the electrodes will be seen to creep outward, even though care be taken not to increase the pressure. This blanching begins after about five minutes of the passage of the current. The result of this procedure is that the itching is completely and promptly stopped by the first application, and a second, one or two days afterward, usually suffices to effect a cure. Seldom, if ever, does a third or fourth application become necessary. He has never in a single instance, in an extensive trial of this method, known it to fail to effect a cure in three or four days, to the great delight and gratitude of the victim. The treatment is handy and rapid.—*Lancet*.

Gelatin in Aortic Aneurysm.—Lancereaux of Paris, has made use of a solution of gelatin dissolved in an artificial serum for the hypodermic relief of aneurysm. In a paper before the French Academy of Medicine (*London Lancet* for October 22), he reported the results in several cases. One of his patients had an aortic aneurysm which projected anteriorly. Subcutaneous injection of a solution of gelatin in artificial serum was made, and the patient recovered. Some time previously the blood had escaped from the aneurysm and coagulated just under the skin; the patient's state was very critical, but injections of gelatin promptly brought about coagulation of the extravasated blood. In the second case the patient suffered from aneurysm of the aorta which had not come to the surface. By means of the gelatin injection treatment all the pain disappeared and the dilated superficial veins diminished in volume. Lancereaux has treated by this method many aneurysms of the aorta and one subclavian aneurysm with similar success. Two other patients who suffered from aortitis and dilatation presented, however, no amelioration. They died and the post-mortem examination showed that no coagulation had taken place in the dilated portion of the artery. The operative proceeding was as follows. A solution of 2 gms. of gelatin in 100 of saline solution is made and this is injected under the skin of the thigh into the subcutaneous cellular tissue in a dose of 250 c.c. The injection is renewed at varying intervals of time—every two days to fifteen days. As a rule, 10, 15, or 20 injections are quite enough to obtain a complete cure. The communication of these researches gave rise to a long discussion at the Academy, in which M. Huchard, Professor Hayem and Professor Fournier took part. M. Huchard had employed the method of M. Lancereaux in many cases, one of which was very serious, the pulsation of the aneurysm being very strong. A complete cure was obtained by means of 20 injections, and the sole inconvenience attaching to this treatment was that it was very painful. In a patient suffering from phthisis with constant hemoptysis due to little aneurysms of the kind described by Rosmussen, M. Huchard employed the same treatment and succeeded in stopping the hemoptysis. This, however, did not prevent the patient from dying later from pulmonary tuberculosis. Certain precautions have to be preserved in this method of treatment, for a patient, under the care of Boisset, in whom injections had been made on a very small scale lest the blood should coagulate all at once, died very suddenly from embolism. The injections must never be made in the neighborhood of the aneurysmal sac, and still less into the aneurysmal sac itself.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, DECEMBER 3, 1898.

THE ETIOLOGY AND CLASSIFICATION OF
PERITONITIS.

In the *Philadelphia Medical Journal* of Nov. 12, 1898, Dr. FLEXNER of Baltimore presents certain facts obtained by the postmortem study of a large number of cases of peritonitis in which careful bacteriologic examinations were made.

Among the earlier studies of the experimental peritonitis, that of GRAWITZ in particular, as well as of others, has clearly defined the conditions that result in the development of peritonitis in animals. GRAWITZ has also shown that these results are nearly allied to the natural conditions found in man. He divided peritonitis into primary and secondary forms; the first accords with the so-called idiopathic or rheumatic peritonitis. In accordance with modern ideas GRAWITZ regards all forms of peritonitis as caused by micro-organisms. Among the favoring conditions he mentions wounds communicating with the abdominal cavity and the accumulation of fluids in such quantities that it can not be absorbed in the natural manner. Pathogenic organisms may be introduced directly, or may be brought by the blood or lymphatic current. Secondary peritonitis is more common, occurring under a number of conditions, bacteria being introduced by contiguity. This group includes the peritonitis of puerperal infection, of intestinal gangrene, and perforation.

FLEXNER finds that many of the cases which GRAWITZ regarded as a primary peritonitis were in reality secondary, indeed only those cases in which chronic renal, cardiac, or hepatic disease pre-existed are convincing examples of the primary form.

TAVEL and LANZ, in their exhaustive study of peritonitis from a bacteriologic standpoint, attempted to answer the question whether peritonitis is or is not a multiple infection, and they conclude that the hematogenous forms are mono-infections, while those forms that proceed directly from the diseased organs are generally poly-infections.

The statistics upon which Dr. FLEXNER's report is based include 106 cases of peritonitis. The bacteriologic examination included was made by means of plate cultures. Several classes can be distinguished. Thus, one might divide them into primary and secondary forms. By secondary peritonitis FLEXNER would understand those following operations upon the peritoneum or the organs which it contains, and those in which the infection of the peritoneum takes place from diseased viscera within it. It is preferable to call all infections of the peritoneum in which the micro-organisms are brought by the blood or lymph current, without the intervention of some diseased organ or part, as primary. The organisms may reach the peritoneum by the blood or lymph current; although it is conceivable that they could pass through the intact intestine, yet convincing proof of this possibility has not yet been furnished.

Of the 106 cases, twelve presented the characteristics of a primary peritonitis; in all of these there were previous chronic diseases. In nine instances there was a single infection, in one instance a multiple infection. The most common organism was the streptococcus.

The secondary forms are far more frequent than the primary, and of these at least two classes can be distinguished, dependent upon the mode of infection. The first class may be designated as exogenous peritonitis; here the microbes enter from without. The condition is really one of wound infection. Of the 106 cases, thirty-four belong to this group. Twenty-five were single, nine multiple, infections, and the bacteria concerned were chiefly the pus microbes, showing a striking similarity with the conditions of ordinary surgical infections, the only difference being that the bacillus coli commune was present in a few cases, being alone in two, combined in five.

The second class of secondary peritonitis FLEXNER terms endogenous; in these the bacteria come partly or wholly from the intestinal tract, and they are therefore chiefly multiple infections. This is the common form of infection; it is represented in this series by sixty cases, in only two of which the bacteriologic examination gave negative results. The single infections were relatively more infrequent in this form, and the micro-organisms found differed widely from those in the exogenous variety. The bacillus coli commune assumes a much more important rôle and the streptococcus is much oftener present. FLEXNER believes that one must concede to the colon bacillus the possibility of producing suppuration.

While the examples of primary or idiopathic peritonitis in this series were really instances of terminal infections in connection with chronic diseases, it is also found that in the twenty-five cases of the exogenous peritonitis twenty-six presented pre-existing more or less chronic diseases of familiar varieties. It therefore becomes necessary to recognize that infection of the normal peritoneum may depend not only upon local but also upon general predisposing causes.

FLEXNER does not see his way clear to definitely establish a group of so-called aseptic or chemic peritonitis, as advocated by BUMM, TAVEL and LANZ, and yet he would not deny its occurrence.

From this extensive material it becomes certain that the primary or idiopathic forms of peritonitis are limited to a rather small number of instances that belong to terminal infections; that a second variety of peritonitis conducts itself very much like surgical infections, and that conditions that predispose to infections in general are in operation here also; a third variety is dependent upon disease in an intraperitoneal organ, which brings pathogenic organisms as well as other substances directly or indirectly into the abdominal cavity which becomes infected from within.

THE MODE OF SPREADING OF BUBONIC PEST.

P. L. SIMOND¹ summarizes a careful research concerning the mode of spreading of bubonic pest in the following important conclusions: The study shows that the pest is spread by two principal factors—the rat and man. Man is the ordinary agent of transport for long distances, which could not be attained by the rat; the rat is the carrier from house to house. It is much more important in this respect than man, and plays the essential rôle in the dissemination of the disease in local epidemics.

When pestiferous rats enter a new district there is usually some delay before the disease appears in epidemic form; the arrival of infected human patients into a new territory is not always followed by epidemics of pest. In order that epidemics may be established there must be a circle of favorable circumstances, among which the preliminary transmission of the virus to rats seems to be the most important. The period of incubation represents the time necessary for the development of the disease among rats.

The gravity of a human epidemic stands in close relation with that of the epidemic among rats. The progress of the disease throughout the city follows the route adopted by the migrating rat. Even when the disease is no longer associated with a great mortality among the rats, it may continue to exist in a benign form, and the so-called sporadic human cases, which manifest themselves after the subsidence of an epidemic, may be attributed to this benign form in the rodent.

A second epidemic of the disease usually manifests itself about twelve months after the appearance of the first, from which it is separated by a longer or shorter period of calm. The reason of this periodicity in the epidemics is not determined. It is undoubtedly connected with the re-establishment of the disease in epidemic form among the rats, and depends in part upon the repopulation of the city involved by these animals. Careful experiments have shown that their is but little danger in the spread of the disease from infected organs or food.

In a certain proportion of cases the point of entry of the microbe is marked by local reaction, which is generally situated in a region where the skin is thin and delicate. When this local reaction, as well as the swelling of the regional lymphatic glands, fails to appear, then it is to be attributed to the great virulence of the micro-organism, and not to a different mode of entrance.

The notion that the transmission of the disease depends upon larger parasites is in accordance with the observations made on rats; a few hours after a rat dies from the disease the fleas abandon the cadaver in order to attach themselves to other animals and to human beings. The points here referred to are strengthened: 1. By the presence of the specific micro-organism in the contents of the intestines of the fleas which have absorbed infected blood. 2. By certain facts in connection with the transmission of the disease from the rat to man and from man to rat. In the last instance it is possible also, that other parasites of the same class as the flea may act as carriers. 3. By the possibility of the transmission of the pest to a healthy rat by cohabitation with a rat covered with pestiferous fleas, whereas cohabitation with a rat sick of the disease but deprived of fleas is constantly harmless.

Finally, it may be stated that the mode of spreading of bubonic pest comprises the transport of the micro-organism by the rat and by man; its transmission from rat to rat, from man to man, from man to rat, and from rat to man by parasites. The prophylactic measures should be directed methodically against each of these three factors; the parasites, man and the rat.

EPILEPSY AND INSANITY.

In the *Philadelphia Medical Journal* of November 19, Dr. J. H. McBRIDE, the well-known alienist, criticises a statement made in an earlier issue by Dr. FREDERICK PETERSON, that less than 10 per cent. of ordinary epileptics become insane. He holds that a large proportion of the chronic epileptics suffer from a more or less marked condition of dementia, and still more frequently from temporary mental perversions, often dangerous, and there is further a special mental condition characteristic of those afflicted with this disorder or symptoms that might, it would seem, be

¹ Annales de l'Institut Pasteur, xii, 1898.

reckoned as insanity, since, as he says, it puts the great majority of them so far out of relation to their environment as to render them incapable of self-support. He believes "that, with rare exceptions, habitual epileptics suffer sooner or later from some degree of mental impairment," not always amounting to insanity, but sufficient to incapacitate them for independent self-support, and that a prognosis of mental failure is always justifiable if the fits are not arrested within two or three years. The fits are only indications of a morbid condition that involves the patient's whole mentality and mixes with all he does and is.

These facts are important, if true, and the difference of opinion, or perhaps one should rather say of point of view, of these two eminent specialists renders them the more worthy of consideration. Dr. PETERSON has apparently much the same opinion as his critic as to the disadvantages of the epileptic in the struggle for existence, but he looks upon epilepsy more as a disorder, that, like deafness or blindness or any other disabling defect, often incapacitates its possessor for employment in ordinary occupations without necessarily putting him in the category of the actual insane. A certain degree of mental impairment may even be admitted as a common result of the attacks without rendering it necessary to consider the patient insane, and he probably would admit as much—the difference of the contesting views is therefore somewhat diminished. There is no doubt that habitual epilepsy is dangerous to mental integrity, understanding by the word "habitual" a marked frequency of the attacks, with their very commonly associated temporary mental obscurations or dullness, which of itself in any single fit may be no more marked than that connected with a migraine attack or even an ordinary headache.

This limitation of the meaning of the term, "habitual," however, somewhat alters the case; there is a large proportion of epileptics who would hardly fall under Dr. McBRIDE's definition or conception apparently of the term. There is, first, a considerable number who can hardly be excused from the epileptiform category, in whom only one or two fits may occur in a lifetime—their cerebral instability is so slight that it is only under conditions of special stress that the explosive manifestations can occur. These are perhaps more numerous than is commonly supposed. There is also a second class, in whom the epileptiform manifestations have been confined to special periods of their lives, and while well-marked and frequent at such period, have entirely ceased under proper treatment and removal of the cause. These cases are not numerous, but they exist and have to be considered. One such case was known to the writer, that after having had a number of attacks at one time in his life, afterward rose through his own merits and endeavors to a very high position, one such as few are able to achieve or satisfactorily fill. Such instances are exceptional, it is true, but how far they may be *in posse* amongst

such temporary epileptics no one can say. There is still a third small class of epileptics in whom the fits may be called habitual, though they are not usually very frequent, whose mental failure does not show itself, at least until later in life, and sometimes is never very apparent. While as a class they are seriously handicapped by their affliction, some of them succeed in holding their own in life's competition, and these are they to whom Dr. McBRIDE probably alludes as exceptions so rare as to be hardly worth considering in a discussion of epilepsy. The first two classes are hardly recognized as epileptics at all except by those who know their whole history, and naturally such are few in number.

Taking all these three classes together they must form a considerable percentage of the total number of epileptics. The first two there is reason to believe are more common than is generally realized; they fall for the most part into that great majority which Dr. McBRIDE assumes are probably never seen by specialists. While Dr. PETERSON's estimate of the number that go insane may be too small, it seems equally probable that any very extensive generalizations in the opposite direction are equally liable to be in error.

A word may be said here as to the special mental character credited to epileptics. It is natural to suppose that any such morbid cortical irritability as can produce the phenomena of epilepsy might easily affect the disposition, but it is not a universal fact that all epileptics are abnormal in this respect. Some few of them indeed are very far from it, and the characteristic epileptic character may exist where no genuine symptoms of epilepsy can be discovered. It is hardly a positive criterion of the disease, though in some form or other common enough to be noticeable in perhaps a great majority of pronounced chronic cases.

In conclusion it may be said that it requires a rather broader conception of insanity than is commonly admitted to apply it to epileptics generally, or even to all the chronic cases in their later developments. They are unfortunates, to some extent mentally impaired in a large proportion of cases, but it is as easy to overestimate the frequency of such defect as to underestimate it. In criminal cases this possibility would be very liable to be brought forward, whether rightly or not is not always easy to say, while apart from this contingency their sanity might never be in question.

THE ENGLISH AND AMERICAN ARMIES IN THEIR RECENT CAMPAIGNS.

Without any desire on our part to belittle the sufferings of the United States troops in the recent Spanish War, in the sense that we are desirous of withholding from them the credit for bravery which they deserve, we have felt all along, and have expressed in these pages our belief that much of the

suffering was one of the necessities of the war rather than that due to carelessness or criminal negligence of those who are in authority. This country had been so long blessed with peace, and its people had been for so long unacquainted with the conditions which necessarily arise before, during or after battle, that they had not provided sufficient means for meeting emergencies, and did not at first grasp the impossibility of carrying on an active campaign without the surgical failures which, however much they may be deplored, were to a great extent unavoidable.

Some of our English friends have undertaken to suggest to us that it would be well for American officers to take lessons from their English cousins as to the management of medical and food supplies for an army in the field, and have intimated that much of the suffering of our troops could have been avoided, had our officers been properly equipped in medical details.

Those who have studied the almost simultaneous campaigns of the American troops in Cuba with the British troops in the recent Soudan expedition can not fail to have noticed, notwithstanding the boasted efficiency of the medical arm of the British service, here again the necessities of war resulted in an amount of suffering far in excess of that which was produced by actual wounds. The amount of illness and death which ensued from disease rather than from surgical affections during this British expedition has been large, practically as large as that which has been experienced by our own army, and commanding officers have been unable to provide the wounded with the comforts which humanity would deem desirable. They have seemed to recognize that the object of the war is the speedy conquering of the enemy, and while not ignoring those who have fallen, have continually kept the main object of the expedition in view.

To those who are wont to attack the army administration at Montauk Point or elsewhere, an account which is given by a correspondent in the *British Medical Journal* of November 12, of the recent Soudan expedition, and entitled the "Seamy Side of War," is of interest. In this letter it is shown that in the first advance after the battle of Atbara last spring, indignant protests were made against the insufficient provisions made for the sick and wounded, and not until these protests were made again and again were they heeded in part, and then so late that the relief did not reach the front in time to be of service. Again, we are told that the wounded after this battle were carried so clumsily by native soldiers over rough ground that they frequently slipped and fell, causing torture to the sufferers, and that when English volunteers offered to carry the wounded their services were refused. Again, in the second advance on Omdurman, even greater hardships were suffered. A sudden order to advance, accompanied by one which insisted that hospital tents should be struck

and packed within five minutes, left the surgeons with no place for their sick. Fortunately they found a barge stacked with ammunition, and on this 145 wounded men were hastily carried, with no medical supplies, no food except a few cans of beef extract, and no means of heating this. These wounded men were stumbled over by the Egyptian troops rushing for ammunition in frantic haste, and very shortly additional wounded men had to be squeezed on board until they were "packed like sardines," and the digging of graves being abandoned for lack of time, the dead had to be placed along with the living on the barge to prevent their mutilation, and there they remained, in the words of the correspondent, "emitting effluvia until the following day, when they were buried." Further than this, this barge was left without any military protection, and at any moment every one on board might have been massacred by the enemy. There were only three surgeons to attend to 145 wounded, and operations were done in the sun on piles of ammunition boxes, where the thermometer registered 119 degrees in the shade. We are also told that the Egyptian brigades fared worse than the wounded we have already mentioned.

Either because the English are accustomed to the suffering of their troops and recognize the seriousness of war, or because they are indifferent, which is not likely, their newspapers have not raised the so-called howl of indignation which has characterized the pages of many American newspapers.

THE ARMY MEDICAL DEPARTMENT OF THE FUTURE.

The echoes of our alleged maladministration in military management, and particularly in medicomilitary matters, come to us from afar off. The *Lahore Civil and Military Gazette* of Oct. 6, 1898, gives credit to the Indian medical service for being one of the few departments which escaped scathing criticism during the campaign in Tirah, on the Northwest frontier. It has been generally admitted that the arrangements for the care of the sick and wounded in that campaign were, as a rule, "most complete and efficient," and that nothing was neglected that could relieve suffering or assist recovery, credit for this being given to the Indian Government, which spared no expense, and to the medical officers themselves for the excellence of their organization and their devotion to duty. The only unfavorable criticisms which appeared were some strictures in the English papers because the stretchers were not provided with awnings nor the field hospitals with the Roentgen-ray apparatus.

After inviting us to look on this picture, the *Gazette* presents us with another of the conditions in Cuba during and after the attack on Santiago. The contrast would have been sufficiently marked even if the second picture had been drawn from official state-

ments instead of from the exaggerations and false reports which appeared as news in the extras of our great dailies during the progress of the war. But the *Lahore Gazette* kindly recognizes the difficulties under which this country labored in expanding an establishment which was practically nothing more than a Federal police force into a military organization for immediate war purposes. It recognizes also from some Indian experiences, what we have learned during the past few months: that the lavish expenditure of money after the occasion has arisen is of little value when compared with the possession of an organization which has been prepared with care for just such an emergency.

This country should have an army competent to cope with the possibilities of the future. The Chairman of the Military Committee of the House of Representatives has been cited as suggesting 100,000 men as the strength of the army required. It is useless to say that we can trust to the manhood of the American people when the occasion requires a resort to arms because we have seen how much unnecessary suffering is ordinarily involved in a sudden muster for war service. With an increase of the Army should be associated an increase in the strength of its medical department, for the argument drawn from experience against a hastily organized fighting force applies with equal strength to a hastily organized medical department for the care of that force.

The medical department of the Army at the present time consists of 192 officers. This number did not suffice for the needs of our Army of less than 40,000 men, scattered as it was at many small posts before the outbreak of the recent war. When war was declared, authority was given to raise the strength of the regular regiments, and there is now or soon will be a strength of about 60,000 men. To meet this increase, the SURGEON-GENERAL, at the close of his annual report, recommended the addition of 88 medical officers to the present force, but he added that this recommendation was based upon present needs, and was irrespective of any increase that might be rendered necessary by legislative action during the coming session of Congress.

The white troops of the British Army, 200,000 strong, have a medical force of about 800 officers, but the contingent on duty in India has often to be assisted by officers of the Indian Medical Service, the corps specially organized for duty in native hospitals and with native regiments. The Army of Spain has a medical force of 900 officers to a strength of 100,000 men, this large force being required, probably, by the prevalence of disease among the troops in the Island of Cuba. Russia has about 400 medical officers of all grades for every 100,000 of its army of nearly 900,000 troops. We may consider therefore that a medical force of at least 450 will be necessary for an army such as that suggested by the Chairman

of the House Military Committee, and this appears to have been the view taken by SURGEON-GENERAL STERNBERG in recommending an addition of 88 officers to his present force of 192 for the needs of the present strength of 60,000 men; 280 for 60,000 is in the proportion of 466 for 100,000.

In forming a corps of 450 medical officers having the same proportion of the various grades as the smaller corps now in the service, there should be one major-general, the surgeon-general; 1 brigadier-general, as assistant surgeon-general; 14 colonels, as deputy surgeons-general; 24 lieutenant-colonels, as chief surgeons; 120 surgeons, majors, and 250 assistant-surgeons, captains and lieutenants. The Chief of the Corps, in view of his responsibilities, which are appreciated by the general public only in trying times like those of the recent war, should have the rank of major-general. The criticism has often been made that the best men will not enter the military service because the prizes are so few, the highest rank attainable being that of brigadier-general, and this reached only by the one man appointed as surgeon-general.

It is hardly to be supposed that any difficulty would be experienced in filling up this enlarged corps with medical men having the proper qualifications. With a larger army, a larger number of positions of relatively high rank as the reward for continued service, and a broader stage of existence opening up in the future, as compared with the dull life of the past at small Western posts, competition for position would no doubt be much greater than heretofore. Besides, the taste of military life obtained during the past months by volunteer medical officers would also have its influence in filling up the medical positions of an enlarged army. After the Civil War, little effort was made by volunteer surgeons to enter the regular army. Many of them had, no doubt, got enough of war service during the long-continued struggle, but the main cause was the want of vacancies. Retrenchment and reduction of the military establishment followed the Civil War, instead of the expansion which seems needful to meet the present requirements of the country.

An enlargement of the powers of the medical department is of as great importance to its efficiency as the number and grade of its personnel. The Spanish War demonstrated the inability of medical officers, however willing and energetic, to accomplish their object when dependent on others for essentials. If medical officers are to be held responsible for the sick and wounded, they should be given powers commensurate with their responsibility. Any bill for the enlargement and improvement of the medical corps should provide for its independence of the quartermaster's department. It should have command of its ambulances, hospital tents, wagons and of all the equipment necessary for the transportation and care of the sick and wounded of the army.

We feel sure from the energy displayed at Santiago in trying to overcome the difficulties caused by inefficient quartermaster's management, that were medical officers their own quartermasters the *material* of the field hospitals would always be on hand where it was required unless interdicted for imperative military reasons by the commanding general.

CORRESPONDENCE.

The Jugglery of Statistics.

WASHINGTON, D.C., Nov. 21, 1898.

To the Editor:—I had hoped that after Deputy Surgeon-General Smart's reply to an absurd editorial on the "Jugglery of Statistics," which appeared in the *JOURNAL* of October 29, no one would seriously quote the mortality rates of the Civil and Spanish Wars, adduced by the *Philadelphia Medical Journal* of October 15, and yet the writer of the editorial on the "Caribbean Climate in its Medico-Hygienic Relations" (*JOURNAL*, p. 1249) committed this error.

I cannot refrain, therefore, from referring the writer of the editorial to the article above referred to, and if still unconvinced he may profit by Dr. Smart's letter on the "Vital Statistics of the War," which appeared in the *JOURNAL* of November 19.

Respectfully yours,

GEORGE M. KOBER, M.D.

The Commission Evil.

ST. PAUL, MINN., Nov. 28, 1898.

To the Editor:—In your issue dated November 26 Dr. Robert T. Morris writes to inquire whether your editorial condemning the purchase and sale of cases is founded upon a knowledge of specific instances of this sort.

I can not answer for the *JOURNAL*, but can assure Dr. Morris that I know of at least a half dozen surgeons and physicians of excellent standing in the profession who in a subterranean way carry on this traffic.

As an internalist I can not say that I have ever felt such competition, nor indeed do I know of any stricely medical man who pays commissions, but I have personal knowledge of a score of surgical cases in which fees have been paid or demanded.

It has given me great pleasure to know that my protest against this indefensible practice, contained in a letter to the *N. Y. Medical Journal* of October 29, has resulted in bringing this matter into a prominence which must end in its complete annihilation.

Yours very truly,

CHAS. LYMAN GREENE, M.D.

A Pair of Large Twins.

FORT COLLINS, COLO., Nov. 22, 1898.

To the Editor:—On Nov. 7, 1898, I was called to attend Mrs. C. in confinement. Found the abdomen enormously distended, and from the size and irregular shape I diagnosed probable multiple pregnancy. In five hours I delivered her of a girl baby weighing ten and three-quarter pounds, and four hours later of a boy weighing ten pounds. Both children are strong and healthy. The girl was delivered without assistance, but the boy had to be delivered with forceps. Both were the left occipito-anterior presentation. There was but slight laceration, and aside from some rise in the temperature of the mother, during the first week, everything proceeded normally. The placenta were separate and small. There is no history of twins in the family so far as I can learn. The patient is 20 years of age, married one year and a primipara. Fraternaly,

Respectfully yours,

W. A. KICKLAND, M.D.

BOOK NOTICES.

A Manual of the Practice of Medicine. By FREDERICK TAYLOR, M.D., F.R.C.P. Fifth edition. Pp. 1002. London: J. & A. Churchill, 1898; from P. Blakiston's Sons and Co. Philadelphia. Price \$4.00.

This well-known work is a short yet complete work on the practice of medicine and in the preparation of this fifth edition it has been very carefully revised and some sections rewritten, and notice of many diseases recently recognized or omitted from former editions have been added. Among the former are the introduction of diseases of the nervous system, diseases of the blood and the subject of aphasia and ringworm. In the latter are glandular fever, diver's paralysis, erythromelalgia, aneio-neurotic edema, hypertrophic pulmonary osteo-arthritis, and tubercle of the skin. A special section is devoted to diseases of the mediastinum, and filarial diseases and hemo-globinuria have been transferred to diseases of the lymphatic system and of the blood respectively.

As only a little over eight years have elapsed since the first edition of this work was issued, the fact that five editions have been called for in the eight years attributes to the value and popularity of the work, beyond the powers to review or to increase or diminish the elements of its popularity, as will be seen by a perusal of the work. Its comprehensiveness consists in the fact that no essential detail is omitted, and no superfluous words or phrases included, all excellent characteristics, as our readers will undoubtedly agree.

Traumatic Separation of the Epiphysis. By JOHN POLAND, F.R.C.S. 337 illustrations and skiagrams. Pp. 926. London: Smith, Elder & Co., 1898; New York, G. P. Putman's Sons; Chicago, A. C. McClurg & Co. Price \$18.

The literature of this subject is quite extensive, although widely scattered, and the author has brought together and summarized the records heretofore published. The following is the table of contents: Chapter 1, Historic; 2, Anatomy; 3, Etiology; 4, Frequency of the Various Separations; 5, Experiments in Pathologic Anatomy, and their Histologic Anatomy; 6, Pathologic Anatomy; 7, Symptoms; 8, Prognosis and Results; 9, Treatment. The remainder of the work is devoted to separation of the epiphyses of the upper extremity, separation of the epiphyses of the clavicle, separation of the epiphyses of the scapula, separation of the upper epiphysis of the humerus, separation of the lower end of the humerus before puberty, separation of the lower epiphysis of the humerus in youth, separation of the internal epicondyle of the humerus, separation of the external epicondyle, etc., separation of the upper epiphysis of the radius, thumb, metacarpal bones, phalanges; then follow articles on the separation of the epiphyses of the lower extremities, the pelvic bones, the femur, bones of the leg and of the foot. The work concludes with articles on separation of the epiphyses of the vertebræ and ribs, and an appendix.

There are 299 illustrations in the text, besides a vast number of skiagrams, showing the development of the bones.

Few books have appeared in recent times of more value to the advanced surgeon than this, and the superb dress in which the publishers have presented it makes it a pleasure to peruse. We can not too strongly commend this work, and congratulate the profession on the valuable addition to surgical literature which is here presented.

Clinical Lectures on Mental Diseases. By THOMAS S. CLOUSTON, M.D., Lecturer on Mental Diseases in the University of Edinburgh. New (5th) edition. Crown 8vo, 750 pages, with 19 full-page colored plates. Philadelphia and New York: Lea Brothers & Co. Cloth, \$4.25, net.

As the study of mental diseases has become compulsory on all medical students, good text-books, arranged in a manner which leads to an easy understanding of the subject, are abso-

lutely necessary. These qualifications are possessed by Clouston's work, which is suitable alike for the general physician and the specialist. The advances that have been made in psychiatry in the two years that have elapsed since the presentation of the last edition have been incorporated. There is one thing that always gives a charm to Clouston's works, i. e., his honesty, modesty, and entire candor. It is evident from a perusal of the pages of this edition that Clouston will continue to remain a constant favorite.

A Pocket Medical Dictionary giving the Pronunciation and Definition of the Principal Words used in Medicine and the Collateral Sciences, including very complete tables of the arteries, muscles, nerves, bacteria, bacilli and micrococci, spirilli and thermometric scales and a dose list of drugs and their preparation, in both the English and metric system of weights and measures. By GEORGE M. GOULD, A.M., M.D. A new edition, entirely rewritten and enlarged, including over 21,000 words. Pp. 530, exclusive of dose table. Philadelphia: P. Blakiston's Sons and Co., 1898. Price, \$1.

The confidence of the public in Dr. Gould as a dictionary-maker is such that they are largely ordered in advance, and different editions follow one another with such rapidity that it is difficult to keep track of them. The present dictionary will be found extremely useful.

A Quarterly of Clinical Lectures, Etc. Edited by JUDSON DE LAND, M.D.; J. MITCHELL BRUCE, M.D.; DAVID W. FINLAY, M.D. Volume III, Eighth series, 1898. Philadelphia: J. B. Lippincott Company, 1898.

This volume brings the clinic to the library of the practitioner, and many of the clinics are so literal that without a very great stretch of imagination one can almost see the patient being described by the clinician. The practitioner who wishes to keep in touch with the latest advances in the practice of medicine, surgery and the specialties can do so no easier than by keeping up with the clinics as set forth in this admirable series.

Hartley-Auvard System of Obstetrics. Revised by JOHN D. HARTLEY. Third (1898) edition, 436 pages, 543 illustrations. New York: Flint & Co., 104 Fulton St. Cloth \$4, leather or half morocco \$5.

In this work the author plunges in *medias res* without preface or introduction, and as far as possible diagrams are introduced to illustrate the author's views. In the whole art of obstetrics he has brought it as near as possible to the mechanical basis. The teachings are correct, and all unnecessary and extended discussions are omitted. Practitioners and students will find this work of great value.

A Text-Book of Pathology. By ALFRED STENDEL, M.D. 372 Illustrations. Pp. 848. Philadelphia: W. B. Saunders, 1898; W. T. Keener, 52 Randolph Street, Chicago Agent. Price, cloth, \$4; half morocco, \$5 net.

In this book the author has presented the subject of pathology from the point of view of the clinical pathologist. Prominence is given to pathologic physiology; controversial matters and discussion of methods have been omitted as far as possible. The work is divided into two parts, of which the first is on General Pathology, the chapters of which are as follows: 1. Etiology of Disease. 2. Disorders of Nutrition and Metabolism. 3. Disturbance of the Circulation of the Blood. 4. Retrogressive Process. 5. Inflammation and Regeneration. 6. Progressive Tissue Changes. 7. Bacteria and Diseases due to Bacteria. 8. Animal Parasites and Diseases Caused by Them. Part 2, Special Pathology, is arranged as follows: Chapter 1. Diseases of the Blood. 2. Diseases of the Lymphatic Tissues. 3. Diseases of the Circulatory System. 4. Diseases of the Respiratory System. 5. Diseases of the Gastro-intestinal Tract. 6. Diseases of the Ductless Glands. 7. Diseases of the Urinary Organs. 8. Diseases of the Reproductive Organs. 9. Diseases of the Bones. 10. Diseases of the Joints. 11. Diseases of the Voluntary Muscles. 12. Diseases of the Brain and its Membranes. 13. Diseases of the Spinal

Cord and its Membranes. 14. Diseases of the Peripheral Nervous System.

While not as exhaustive as many works on the subject, it may be said that it fairly covers the ground, and so far as the ground is covered the work is well done and has been brought quite down to date.

We are glad to see that weights and measures used in the book are according to the decimal system.

The illustrations are excellent, and students as well as practitioners will find the work of great value.

NECROLOGY.

D. A. MCTAVISH, M.D., died at West Bay City, Mich., November 17. The Doctor was born in Glencoe, Ont., in 1855, was graduated from Toronto University in 1881, was a licentiate of the Royal College of Physicians and Surgeons of Edinburgh, Scotland, and a member of the Michigan State Medical Society.

CHARLES MASSEY HAMMETT, M.D., formerly health officer and coroner of the District of Columbia, died in Washington, November 22, of chronic interstitial nephritis, aged 63 years.

JAMES S. KELLY, M.D., Archbald, Pa., November 16, aged 27 years.—William R. Straw, M.D., Vinita, Ind. Terr., drowned November 21.—A. E. Sullard, M.D., Franklin, N. Y., November 19, aged 79 years.—Herman Voeller, M.D., Sacramento, Cal., November 14, aged 65 years.—J. T. Webster, M.D., Emporia, Kan., November 12, aged 44 years.—A. E. Willard, M.D., Friendship, N. Y., November 20, aged 67 years.

PUBLIC HEALTH.

Etiology of Dysentery.—A careful study of an epidemic of dysentery affecting 1121 persons in a town of 24,300 inhabitants, has resulted in the conclusions that the meteoric influences, the drinking water, contagion and food, can only be considered as predisposing or secondary causes. Also that the distinct groupings in the quarters where the ground water is the closest to the surface, indicate the predominant rôle to be attributed to the water and the subsoil in the etiology of the affection. There the disease had birth, and thence it was propagated. The writer concludes, therefore, that besides the hydric origin of dysentery and of typhoid fever, we must also ascribe it in certain cases to telluric action.—*Bulletin de l'Acad. de Méd.*, October 31.

Prevention of Insanity Among Adolescents.—A superintendent of a large hospital for the insane, near New York City, states in his annual report that "societies for the prevention of cruelty to children would do well to branch out into the work of prevention of insanity in childhood by insisting on more outdoor physical exercise, and less intellectual over-work, until the body has been developed to a sturdy, healthy frame, checking the emotions and grading study according to the age and physical condition of the child. Physical deterioration, if not actual pathologic conditions, exist in seven-tenths of our cases and act as exciting causes for mental disturbance." He has observed, what is plainly evident, that a larger proportion than formerly of the patients admitted to insane hospitals have the insanity supervening upon a very imperfect constitution, which has been either inherited or, more frequently, acquired through an unwise early management leading to physical deterioration.—*Charities Review*, November.

Laboratory Contagion.—The quarantine physician at Suez comments on the dangers of infection from experimental laboratories, regretting that they are not invariably isolated with as much care as a contagious-diseases ward in a hospital. "I know," he continues, "of a laboratory devoted to the study

of epidemic diseases, which is located on the ground floor of a government building. The corridor leading to it is the single corridor for the use of all the employes and their families, who live in the upper stories. The space containing the cages of the animals involved in the experiments, is only separated from the common yard where the children play by a lattice-work. The least negligence may lead to the most serious consequences." Landouzy observes: "The most insignificant case of animal plague, escaping from a defectively guarded laboratory, threatens to become, more or less readily and rapidly, the occasion of an epidemic that may break out so far from its starting-point as to be practically untraceable."—*Presse Méd.*, November 5.

Unsanitary Management of Cemeteries.—It seems that those who die in Cuba are destined to secure the peace and quiet of sepulture only so long as they have paid for the niche in which they are destined to be deposited. "Rest in peace" depends upon the affection and willingness of the dead person's friends to pay another's rent in advance. When the year expires, unless the yearly rental is forthcoming, the coffin is unceremoniously taken out and dumped on a convenient field without the sacred *compo*. The walls of these niches become masses of germ-laden masonry, alternately warmed by the tropic sunshine and kept moist by tropic dews. In other words, they are most favorable culture-beds, and containing, as they do, the foul germs of yellow fever, become, when disturbed, sources of wide-spread infection. The disinterring of the dead is not allowed in Jamaica. Four years ago in one of the West India Islands belonging to Great Britain, part of an old cemetery was dug up which contained the graves of many yellow fever victims. Yellow fever had been absent from the island for years, but immediately after this it appeared and made many victims.—*Red Cross Notes*.

Transmission of Contagious Diseases by Insects.—P. R. Joly (*Thèse de Bordeaux*), in a monograph on this subject, quotes instances of malignant pustule, Egyptian ophthalmia and Delhi boil conveyed by flies. He has also found that the legs of flies may be covered by staphylococci and many other forms of bacteria. Tubercle is particularly liable to be disseminated by flies. They come in contact with sputa and other media, whereby the tubercle bacilli discharged from the body of the patient becomes ingested, and then alight on food and deposit the tubercle bacilli, and thus easily contaminate milk, meat and other substances. The author quotes Yersin as having noticed that the bodies of dead flies collected in his laboratory often contained numbers of the plague bacillus. The influence of various insects, more particularly the mosquitoes, in carrying the flaria sanguinis is well known. The mosquito has also been suspected as the agent in the conveyance of malaria.—*Medical Review of Reviews*, October.

Tuberculosis and Food.—At the recent meeting of the French Association for the Advancement of Science the section of hygiene, at the suggestion of Professor Nicholas, passed a resolution pointing out that the convection of tuberculosis by inhalation is only one of the modes of infection, and that a larger part of the diffusion of the disease is played by contagion through the alimentary canal, as proved experimentally and clinically, urging the necessity of taking adequate measures to insure the sterilization and harmlessness of articles of food. In this resolution the opinion was expressed that it is desirable in addition to take measures to suppress, or at least diminish the causes of weakening of the constitution, which make it fall an easy prey to the disease—overstrain, confined air, overcrowding and unhealthiness of dwellings. In every dwelling a sufficient cubic space should be allowed in proportion to the number of the inmates, and all apartments must be freely ventilated and exposed to the sunlight; it is also necessary that low-built houses should be furnished with large courts to insure

perfect aération. In this respect the English cottage system represents the ideal which should be aimed at. The section further urged that the widest possible publicity should be given to the modern doctrines as to the contagious nature of tuberculosis and its prophylaxis; this should be done by means of public lectures, and also by the moral influence which medical men can exercise in their own sphere. The curability of the disease should also be insisted upon.—*Nature*.

Chronic Enterocolitis.—It is important, says Dr. McKee in the *Philadelphia Polyclinic*, to recognize the fact that most cases of this disease in infancy and childhood originate in chronic milk infection. Not infrequently another infection may run coincidentally with the infection, and possibly adds its depressing influence. In some cases, the malarial organism has been demonstrated. When the etiology is clear, the treatment becomes quite plain: 1. Withdraw milk from the diet, and do not return to it until the case is well on the road to convalescence; then resume milk cautiously. 2. The affection must be treated locally, and best by enterocolysis. Silver nitrate (1 to 2000 or 4000) is used twice or thrice daily until the stools begin to lose their vile odor (salt solution is used to neutralize each injection of silver). In the last convalescent stage, tannic acid injections, as recommended by Dr. E. Holt, are invaluable. Dr. Wiley of the Children's Clinic has had excellent results with the latter injections, and Dr. McKee can heartily indorse the treatment. 3. Intestinal antiseptics are of signal use, as they are in all cases of milk infection; salol and benzo-naphthol have given best results in the Children's Clinic. 4. Astringents by the mouth are best withheld, for the kidneys are likely to suffer in any case. 5. Ingenuity may be well-nigh exhausted in feeding the youngster, for we have a chronic process with which to deal and nutrition must be maintained. 6. Hygienic details will demand attention for several months, and tonics must be employed over a corresponding period of time.

Morbific Influences of Burial Grounds.—The dwelling places of the dead have, from time immemorial, been the source of dread to civic aggregations, but chiefly within our own memory have they been the occasion of preventive legislation, on the score of their being prejudicial to public health. Until the discovery of pathogenic bacteria, this was not attributed to exhalations from the decomposing bodies of those interred, and to the pollution of the ground-water, which subsequently found its way into wells from which it was drawn for potable purposes. Since the discovery and identification of disease-producing micro-organisms, the tendency of sanitarians has been to regard these as the infecting element. While there have been numerous instances in which cemeteries have apparently been responsible for the spread of disease, still there have always been those who have claimed that the proof has been insufficient, and that other causes have been instrumental in producing the results attributed to the cemeteries. The Imperial Board of Health of Germany has instituted an investigation in this important matter, the result of which is exceedingly reassuring to those who are compelled to live in the neighborhood of places of interment. In the experiments conducted under the Board's direction, dead hogs and dogs, in which had been placed tuberculous material, anthrax and typhoid germs, were buried in boxes in the ground and at various intervals of time thereafter both the ground-water and the soil were examined to determine the presence or absence of living germs. Ninety-six days was the longest time that the typhoid bacillus was found alive, while the cholera spirillum lived but twenty-eight; the tubercle bacillus less than 125, and the bacillus of tetanus less than 361 days. Anthrax was the most persistent, being found capable of communicating infection after one year. It must be borne in mind that these results were obtained by examination of the material inside the boxes, or in immediate proximity thereto. With the exception of the anthrax there were no germs found away from the places in which the bodies were buried.—*Brooklyn Medical Journal*, November.

NEW INSTRUMENTS.

A PRACTICAL OZONE INHALER.

BY W. SCHEPPEGRELL, A.M., M.D.
NEW ORLEANS, LA.

In the October issue of the *JOURNAL* there is described "A Scientific Ozone Inhaler," by Dr. Cyrus Edson of New York City. Ozone is a useful remedial agent, which has been used to advantage in many pathologic conditions, but the apparatus described is not a conservative method of generating this gas, as but a small portion of electric energy is utilized for this purpose. It compares with the *scientific* method of generating ozone very much as the heating capacity of a single steam-pipe does with that of a modern steam radiator.

The most economical and practical method of generating ozone is by means of the ozonizer first described by Siemens, and which I have used in the treatment of diseases of the nose, throat and ear for some years, and described in the *Journal of Laryngology*, London, July, 1897.

This apparatus consists of a kind of Leyden jar, which is prepared by coating the interior of a glass tube with tin foil and passing over this a second wider tube, also coated with tin foil on its outer surface. Between the two tubes a current of air or oxygen is passed which becomes electrified by induction,



the inner and outer coatings of tin foil respectively being connected with the terminals of a strong induction coil or static machine. By this mean it is possible to convert 10 or 15 per cent. of oxygen passed through the tube into ozone, which is more than twenty times the efficacy of the ordinary disruptive discharge, which is the method used in Dr. Edson's apparatus.

In the description of Dr. Edson's apparatus, it is specified that a static machine should be used to generate the electricity. An induction coil with a capacity of a six-inch spark is equally effective and can be used without correcting the hygrometric conditions of the atmosphere, as is usually necessary with the static machine. The method by means of which the ozone is applied in diseases of the maxillary sinuses is shown in the accompanying illustration.

A NEW LIGHT-SCREEN.

BY JAMES THORINGTON, M. D.
PHILADELPHIA, PA.

This is made by attaching an iris diaphragm to an asbestos chimney. The amount of light passing through the opening



in the diaphragm is controlled by an ivory-tipped lever at the left-hand side. An index at the periphery records the diameter of the opening in millimeters, from one to thirty.

When using the Maddox rod for muscle testing, the light streak can be made thread-like, or very broad, by regulating the size of the opening in the diaphragm.

While this screen may be of use in otology, laryngology, and in general ophthalmology, yet it is primarily for retinoscopy; simplicity and great convenience in controlling the amount of light being it points of merit.

To Messrs. Wall & Ochs I am indebted for their careful workmanship and skill in making a diaphragm the leaves of which are not affected by the heat.

120 South Eighteenth Street.

SOCIETY NEWS.

Southern Illinois Medical Association.—This association will hold its next meeting at Carbondale, Ill., the second Tuesday in May, 1899.

The American Medico-Psychological Association, to hold its next annual session in New York, May 23 to 26, 1899, has for officers: Henry M. Hurd, Baltimore, Md., president; Henry A. Gilman, Mt. Pleasant, Iowa, vice-president; C. Bell Burr, Flint, Mich., secretary and treasurer.

Rome (N. Y.) Medical Society.—At the first regular meeting, held October 11, the following officers were elected: John F. Fitzgerald, president; H. D. White, vice-president; Thos. P. Scully, secretary; Jas. H. Whaley, treasurer. The society meets the second and last Tuesday of each month.

American Academy of Railway Surgeons.—This society, which is to meet in October, 1899, at Omaha, Neb., elected officers as follows: William W. Grant, Denver, Col., president; John P. Pritchard, Manitowoc, Wis., and John P. Lord, Omaha, Neb., vice-presidents; Thomas P. Lacey, Council Bluffs, Iowa, secretary; C. P. Kibler, Corry, Pa., treasurer; Frederic J. Hodges, Ashland, Wis., editor.

Des Moines (Iowa) Pathological Society.—This society held its first annual meeting November 8, and elected the following officers for the ensuing year: E. D. Dorr, president; G. E. Currie, vice-president; M. F. Patterson, secretary; D. W. Smouse, treasurer. M. N. Voldeng was offered the presidency for another year, but refused to accept, believing a change of presidents should be made each year. The society was organized a year ago, and has held thirty profitable meetings, with good prospects for the future.

San Francisco Society of Eye, Ear, Nose and Throat Surgeons.—The regular meeting for November was held the 17th, at the office of Dr. Geo. H. Powers. Dr. Powers presented a case of convergent squint in which the fixation point of the left eye was very excentric, and in which the vision of that eye had gone down to $\frac{2}{200}$. He was very loath to operate, deeming the chance of obtaining a betterment of the deformity very small. The patient insisting, however, he did tenotomy on the inner and on the superior tendons. Strange to say, there resulted almost immediate improvement, not only as to the squint, but the fixation point became much more central, though not yet quite at the exact center, and the vision improved to $\frac{2}{400}$, and is yet improving. From a cosmetic standpoint alone, the operation seemed to have been very satisfactory. Dr. Barkan presented a case of arrested development of the left ear in which only a small portion of the external ear was present, and in which the presence or absence of the inner ear, or of the bony meatus, could not be ascertained. The case had first called at the Cooper College Clinic, where the examination record stated that whisper could be heard in the left ear at a distance of eight inches, and a loud whisper at a distance of six feet. When examined by Dr. Barkan at the meeting of the society, it could not be definitely decided that the whisper could be heard at all on that side, and the result from examination with various tuning-forks was also rather negative, though there was some appearance of hearing a high pitched tuning-fork on the mastoid of the affected side. No operative measure had been thought of or was intended; the case was presented simply for its rarity. Dr. Barkan also presented a case of high myopia which he had recently operated upon with gratifying results. He stated that it was the ninth case of the sort on which he had operated, and was the most unpromising of them all. When seen, the patient, a woman of some 45 years, had vision of fingers at two feet, in the right eye, and six feet in the left eye. The apparent refractive error was -20 in the right and -18 in the left; with -19 right, vision was fingers at six feet, and with -20 in the left, vision was fingers

at nine feet. There were numerous floating opacities and retinal changes in both eyes; some atrophic and pigmented spots. The woman could read Snellen 5, at 4 cm. from the eyes. On account of the retinal changes and the extremely bad condition of vision, operation was not advised; but the patient was unremitting in urging that the operation be attempted, stating that she was going blind quite rapidly and could be no worse without any eyes than she was with them in the condition in which they then were. Discussion was made, and nine days later extraction of the lens. All the lens matter was not at the time extracted, but it subsequently cleared up nicely by absorption, leaving a good clear pupil, with but one small iritic adhesion. There was some trouble with the eye following the operation, but the inflammatory condition gradually subsided. The vision, after operation, was fingers at from ten to twelve feet; with a -2 spheric lens, vision was $\frac{1}{200}$; she could read Snellen 1 with a spheric lens of $+9$, or a cylinder of $+2$, axis 180° . The Doctor accentuated the fact that we should not consider all the cases of high myopia in which there are retinal changes, apparently grave, as hopeless and beyond the pale of operation. He had performed the operation nine times, and all were gratifying results. Dr. Powers presented two cases of sympathetic ophthalmia in old men, after a lapse of from thirty to fifty years, and in both of which the lost eye had not received a foreign body, but had been destroyed by a simple traumatism. In both cases the sympathetic trouble came on very slowly and was not at first recognized, for the reason that there was no pain or involvement of the destroyed eye. The true condition was eventually suspected and the atrophied eye removed, when the ophthalmia subsided at once. In both the eyes which he had removed he found a bony plate, but no evidence whatever of any inflammatory trouble.

MISCELLANY.

Differentiation of Bacilli.—Kashida, working under the direction of Professor Ogata in the Hygienic Institute of Tokio University, has confirmed the observation of Petruschky and Wurtz, that the bacillus coli, when grown in whey, gives rise to an acid reaction by the fermentation of lactose, whereas the bacillus typhosus does not. He finds that with the bacillus coli the acid reaction is only temporary, being succeeded by an alkaline. The latter is so strong that the colonies in plate-cultures on litmus-milk-sugar-agar, previously reddened by the addition of rosoelic acid, acquired an intensely blue color. No such production of ammonia could be obtained with the bacillus typhosus. He recommends as a culture-medium a 1.5 per cent. bouillon agar, to which are to be added 2 per cent. of milk-sugar, of urea, and 3 per cent. tincture of litmus.—*Centralbl. f. Bakt.*

Hardly an Accepted Fact.—Mr. Henry Guy Carleton, at the dinner of the New York State Medical Association at the Manhattan Hotel, New York city, October 19, asserted that stammering was due to the presence of the comma bacillus. In his own case he averred that the malady itself was not congenital, but appeared when he began to talk. According to his microscopic slides he said the microbe was abundantly in evidence after every syllable. He freely gave his discovery to the profession without any design of profit from patent or trademark.

Appendicular Liver.—Professor Dieulafoy asserts that any appendicitis, even the most benign, may become the cause of a hepatic infection manifested by the rapid formation of multiple abscesses, by the dozens and hundreds, scattered throughout the liver, transforming it into a sort of purulent sponge, to which he gives the name of appendicular liver. The disproportion is most striking between the tiny closed cavity of the appendix where the toxi-infection is elaborated, and the great organ affected by it, in which the microbes, endowed with incredible virulence, may determine such extensive lesions in the course of a few weeks or even days. The hepatic complications of appendicitis appear abruptly, sometimes in the midst of convalescence, commencing with a terrible attack of fever, followed by others, accompanied by pain in the organ

and its rapid enlargement, icterus, and frequently vomiting and diarrhea. Appendicular hepatic infection is always fatal. The only treatment is prophylactic, which consists in operating during the first days, without allowing this complication on the part of the liver time to develop.—*Semaine Méd.*, November 9.

Chronic Suppurations of the Tonsils.—The surface of the tonsils may appear perfectly normal, and yet there may be unsuspected abscesses below. A case was recently described at the Berlin Society of Internal Medicine, in which, after repeated inflammations of the tonsils, dyspnea and edema of the glottis suddenly appeared, requiring tracheotomy. At the necropsy a purulent infiltration of the latero- and retropharyngeal tissue was found, extending to the mediastinum, with pus also in the pleural sacs. The tonsils were the seat of several abscesses. The infection may have extended locally from them, but there was probably also direct absorption of pathogenic germs from the repeated inflammations. The conclusions were drawn that every angina must be subjected to rigorous treatment and perfect antisepsis of the mouth and throat should be maintained.

—*Deutsche Med. Woch.*

Chorea Minor from Foreign Body in the Ear.—*Memorabilien* (October 21) relates a case of chorea minor, in a girl of 13 years, that has lasted two years, when a physician found a piece of lead from a screw pencil in her ear, resting against the tympanum. The foreign body had never caused any disturbances in the ear, but its removal was followed by complete recovery from the chorea.

Contemporaneous Uterine and Extra-Uterine Pregnancy.—Kiriak reports a case terminating in abortion and the extraction of a fetus from the posterior cul-de-sac. On account of temperature he removed the placenta and uterus later by laparotomy. The patient recovered.—*French Cong. of Gyn. and Obstet.*

Strychnin-like Alkaloid in a Corpse.—During the examination of a partially decomposed body, Mecke met with an alkaloid which chemically might easily be mistaken for strychnin, but which physiologically did not injure frogs, had scarcely a bitter taste, and did not produce the least effect on animals when injected subcutaneously. With picric acid it gave a yellow crystalline precipitate, becoming violet on treatment with sulphuric acid and bichromate. Bichromate alone produced a yellow crystalline precipitate, changing to blue with sulphuric acid. Bichromate and acid together yielded a blue, afterward a reddish, color. Ferrocyanid gave a yellow precipitate, turned violet by acid. On the other hand, chlorin-water gave (as with strychnin) a milky liquid, but when after evaporation the residue was treated with ammonia, it became a dirty green. It dissolved in sulphuric acid to a yellowish liquid, afterward changing to cherry and rose-red. Frohde's reagents dissolved it, giving a dull violet color, which finally became olive, and then green. The substance is not the same as that discovered under similar conditions by Amthor in 1887.—*Phar. Zeit.*

Anesthetics in Scandinavian Countries.—The report presented at the Northern Surgical Congress held at Helsingfors in August, embraced 25,305 anesthetics with chloroform, resulting in 15 deaths, asphyxia in 303 cases, and vomiting in 1789. With ether, 2926; no deaths; asphyxia in 25; vomiting in 309. With chloroform and ether in 3616 anesthetics there were no deaths, but asphyxia in 82, and vomiting in 464. With 794 with ethyl bromid, there were no deaths; asphyxia in 3 and vomiting in 39. The secondary effects noted were: with chloroform 18 cases of death, 54 of heart failure, 46 of pulmonary troubles, 153 of albuminuria, 49 of somnolency, 20 of icterus, and 4338 of vomiting. With ether: 3 deaths, 4 cases of heart failure; 28, pulmonary troubles; 46, albuminuria; no icterus; 585, vomiting. With chloroform-ether, 8 deaths; 13 cases of heart failure; 13, pulmonary troubles; 17, albuminuria; 10, somnolency; 1, icterus; 731, vomiting. No secondary effects

were observed with ethyl bromid except vomiting in 7 cases. The total number of all kinds of anesthesia reported was for the last three years, 32,641. The mortality was therefore: with chloroform, one death in 1687 anesthetics, and one death in 1406 from the after-effects. No deaths from the other narcotics directly, but indirectly one in 975 with ether; one in 452 with chloroform-ether, and none directly or indirectly from the 794 anesthetics with ethyl bromid. The anesthetics are classified and discussed with much detail in the volume of the *Nordiskt Med. Ark.* devoted to the Congress.

The World's Food-Supply.—At the opening of the British Association for the Advancement of Science, President Crookes, in his inaugural address, broached the theory that beyond 1931 the wheat supply would not keep pace with the needs of the population. He said that nitrate of soda was not inexhaustible, but that nitrogen in the atmosphere was unlimited, and suggested the burning of nitrogen in the air by a powerful electric current. Niagara Falls, according to his view, could thus produce fixed nitrogen at a cost of £5 (\$25) per ton, thereby making a yield of wheat equal to thirty bushels an acre. As a saving clause he admitted that the exuberant tropic food stuffs might supply the threatened deficiency of wheat for the benefit of future generations.

Eaters of Human Flesh.—According to a French writer, whose statements appear in the *Medical Presse*, 20 per cent. of all cannibals eat the dead for the purpose of glorifying them; 19 per cent. eat great warriors in order that they may inherit their courage, and eat dead children with a view of renewing their youth; 10 per cent. their near relatives from religious motives, either in connection with initiatory rites or to glorify deities, and about 5 per cent. feast for hatred, expecting in this way to avenge themselves upon their enemies. Those who devour human flesh because of famine are reckoned as 18 per cent. There remains only 24 per cent. who eat such flesh because they prefer it.—*N. Y. Tribune.*

Porcelain Enamel Casts for Filling Teeth.—A new method of filling teeth has been suggested by the author of a communication received by the Paris Académie de Méd. in competition for a prize. He has used it for two years and in 203 decayed teeth, with most satisfactory results in every case. He first prepares the tooth for the filling in the usual aseptic manner, and then takes an impression of the cavity with a thin sheet of platinum which forms a hollow mold. The enamel paste is poured into this mold and a casting made in one piece, identical with the cavity in the tooth. The cavity is then filled with cement; the enamel casting is inserted and carefully fitted into place. The normal color and transparency of the tooth is retained; an important esthetic improvement over gold fillings; the enamel never wears out; the cement is protected on all sides from the air and saliva, does not undergo any alteration and the amount remaining in the crevices is so minute that there is no irritation of the nerves of the tooth, which is one of the drawbacks to cement fillings. He uses porcelain enamel with a melting point of 1200 degrees C., and makes the small casting on the spot and at the moment needed, with a small English steel furnace lined with fire-brick, which attains a temperature of 1600 to 1800 degrees. He is not content with the application of this method to dentistry alone, but suggests its application to surgical operations in which there are bone defects to be remedied. He thinks that a porcelain enamel casting made on the spot, aseptic, never corroding, never wearing out, would answer the purpose perfectly in cases of necrosis, osteomyelitis, etc., although he has no practical experience with it.—*Bulletin*, October 31:

Delirium from Sodium Salicylate.—Two cases of acute delirium lasting about forty-eight hours, with no fever, after the ingestion of twelve grams of the salicylate in a day and a half, have been recently reported.—*Presse Méd.*, November 5.

Trained Workers for the Feeble-minded.—The school for the feeble-minded at Faribault, Minn., has recently celebrated the first graduating exercises of its training school for attendants and nurses. This training school is a new departure in work for the feeble-minded, and its results give satisfaction to the institution and State officials. The course extends over two years, and the pupil attendants take about forty lectures a year. The subjects covered are elementary physiology, hygiene, practical sanitation, and the elements of chemistry; but the chief element in the training is not the knowledge obtained from books. The most important factor is the attendant's relation toward the children—or the purpose of the school is to develop the motherly relation toward the children. The spirit of tenderness and devotion of these foster-mothers is magnified, and they must become proficient in correcting the diet, habits, exercise and cleanliness of their wards.—*Charities' Review*, November.

Hospitals.

The new hospital of the University of Colorado, at Boulder, Colo., was dedicated November 19. It has been erected at a cost of \$15,000, the building, a handsome three-story brick structure, occupying a site adjacent to the campus and near the medical laboratories, on the high bluff overlooking the river and city of Boulder.—Early in November the McDonald Building of the Presbyterian Hospital, Cincinnati, was dedicated. The building was erected at a cost of \$60,000, the entire expense being met by Mr. and Mrs. McDonald, whose contributions to the Hospital and the Laura Memorial College (Medical School for Women) amount to \$130,000.

A Proposed Sanitarium.—The Knights of Pythias have on hand a fund of \$12,000 as a nucleus of the proposed fund of \$500,000 for a sanitarium at Hot Springs, Ark. This may require five years for realization. The members of the organization in the United States are to be assessed one dollar each.

Re-establishment of Regimental Hospitals.—The War Department has recently authorized the establishment of regimental hospitals in the newly formed camps in Alabama, Georgia and South Carolina. According to a formal order the purpose of the regimental hospital in field service is to furnish protection and care to the sick of the command while on a march or in the field, or to those temporarily sick while in camp of instruction. It is an emergency hospital in the one case and a detention hospital in the other, but is not intended for the treatment of the very ill, who in the event of a move would prove to be an incumbrance to the regiment. When cases are found to be serious in nature they should be promptly transferred to brigade or division hospital, except where regiments are isolated, in which event the bed capacity may be increased as necessary, all of the sick being cared for and transfers made to general hospitals when ordered by proper authority. Four hospital tents are allowed to each regiment, two as wards, one as dispensary and storeroom, and one as mess room. The personnel is to consist of three hospital stewards, one acting steward and six privates of the hospital corps as nurses and orderlies, with one private for each ambulance and wagon. Two four-horse wagons are allowed to each hospital. On November 15 a circular from the Surgeon-General's Office announced the outfitting allowance of instruments, disinfectants, furniture, bedding, clothing and miscellaneous articles for these small hospitals. When a regiment is so located that its sick can not be sent to a brigade, division or general hospital the regimental hospital will be expanded to meet the requirements of the case.

X-Ray Apparatus for Military Posts.—According to the *Press and Circular*, November 9, the British War Office, recognizing the advantages of the X-ray in military surgery, has issued a large number of outfits to the home and foreign stations under its charge.

Montauk Not Criticised.—A clipping before us with this cap-

tion, says: "Army men are following with pained interest the details which reach this country of the sickness and suffering at Montauk and the other military camps. I am bound to say that I myself neither hear nor read of any criticism unfavorable to our government in this matter. Discussing the question with a military officer of high rank, he quietly said that any man of sufficient age could tell such stories of Crimean hospital mismanagement and disease as would hardly be believed in these days. The mere memories, ancient as they are, curb any temptation to criticize the misfortunes of others. Yet there is no need to go so far back, for in the late Afridi campaign many of the arrangements for the sick and wounded were as primitive and hopelessly inadequate as if the clock had been put back forty years. On the other hand, the surgical department of the Soudan expedition is almost perfection, as well it might be, when Kitchener has been seeing to it all for many thoughtful months."

Naval Medical Incident.—One of the gunners of Admiral Schley's fleet is said to have lost his reason as a result of the naval battle of July 3, with Cervera's squadron. He is now in St. Elizabeth's Insane Asylum, Washington, D. C., undergoing treatment. The patient's trouble began with concussion of the brain, caused by the detonation of the heavy guns fired during the fight. This is regarded as an unusual case. The report set forth that eight of the ten casualties upon the American ships in the battle of Santiago were ruptures of the ear drums, caused by the terrific cannonading. One of the cases was that of Lieutenant Harrison of the Oregon, who stuck his head out of a turret just as a thirteen-inch rifle was fired. The noise and shock of the explosion lacerated the drum of both ears, and for a time he was totally deaf. Under the careful treatment of the naval surgeons he is gradually recovering his hearing and will in all probability be as well as ever in a few more months. All the other men who were similarly affected have been cured and have returned to their ships for duty. During the fight at Manila there is no record of any of Admiral Dewey's men receiving injuries of this sort. The explanation of this is simple. The gunners on battleships are accustomed to plug their ears with cotton to protect them before firing begins, but at Santiago there was no chance for precautions of this kind. The men were on deck for inspection at the time the enemy was discovered issuing from the harbor, and they simply rushed to their guns and began blazing away without thought of cotton or anything else. At Manila the men were all prepared for the fight, every precaution having been taken to prevent injury to ear drums, etc.

Army Medical Conditions on the Pacific Coast.—Reports from the Division Hospital of the Eighth Army Corps, the command on the Pacific coast from which the strength of the Philippine expedition is kept up, are satisfactory as showing a steady improvement in the medical conditions. The hospital consists of two new brick buildings with hospital and conical wall tents, the whole having a capacity of 320 beds. The tent accommodations are utilized for contagious cases which can not be isolated properly in the permanent buildings, and for the stronger convalescents who are not proper subjects for furlough or discharge. In August, 177 cases of measles were treated—a considerable reduction from July—due in part to prompt isolation and thorough disinfection, and in part to the exhaustion of the susceptibility of the commands. In September, one of the wards for this disease was discontinued. Formaldehyde was used for the disinfection of clothing in these cases. Fifty-nine cases of pneumonia—13 fatal—were reported in August, and 31, with 3 deaths, in September, quite a number of these being sequent to measles. Sixty-four cases of mumps in August and 70 in September were complicated with orchitis in an unusual proportion. Six cases of malignant scarlet fever were admitted in August, in two of which

death resulted from complications. Vigorous sanitary precautions were taken in these cases. All clothing was burned in preference to trusting to disinfection. No case occurred in September. During this month there were, however, 4 cases—2 fatal—of diphtheria. Eight cases—3 fatal—of cerebrospinal meningitis were treated in August, and 9 cases—2 fatal—in September. In August there were 97 cases of typhoid fever, with 6 deaths, and in September 162 cases, with 16 deaths. Hemorrhage from the intestines was the determining cause of death in the fatal cases. Many of the cases were exceedingly mild. Great care was exercised to have typhoid discharges properly and immediately disinfected and promptly disposed of. This division hospital is now competent to take care of all the sick of the command, those formerly treated in the city hospitals having been furloughed or withdrawn. Thirty trained nurses are now on duty at the hospital, which is under the charge of chief-surgeon W. S. H. Matthews, U. S. V.

Colleges.

Harvard is to receive \$10,000 from the estate of the late Edward Austin of Boston, for the laboratory of the medical school.—On November 25, the Indiana Medical School, a department of the University of Indianapolis, was destroyed by fire, caused by a defective furnace. The loss will amount to \$40,000; insurance \$35,000.

Societies.

The following recent meetings are noted:

Arkansas.—Little Rock Medical Society, November 12.

California.—California Northern District Medical Society, Sacramento, November 15.

Illinois.—Champaign County Medical Society, Champaign, November 17; Chicago Medical Society, November 23; Southern Illinois Medical Association, Cairo, November 18.

Indiana.—Tippecanoe County Medical Society, Lafayette, November 21.

Iowa.—Dee Moines County Medical Society, Burlington, November 16.

Maine.—Maine Academy of Medicine, Portland, November 14.

Maryland.—Baltimore County Medical Association, Baltimore, November 23; Medical and Chirurgical Faculty of Maryland, Frederick, November 16 and 17; University of Maryland Medical Society, Baltimore, November 17.

New York.—Albany County Medical Society, Albany, November 16; N. Y. State Association of Railway Surgeons, Manhattan, November 17; Oswego County Medical Association, Oswego, November 16.

Ohio.—Columbus Academy of Medicine, November 21; Union Medical Association of Northwestern Ohio; Akron, November 15.

Tennessee.—Middle Tenn. Medical Association, Nashville, November 17.

Utah.—Salt Lake Medical Society, Salt Lake City, November 14.

Request for Information.—The catalogue committee of the Alumni Society of the Medical Department of the University of Pennsylvania desires a short biography of every medical alumnus, and this appeal is made for aid of graduates of the University in such compilation. The following is the form of biography desired: 1, name in full; 2, father's name and mother's maiden name; 3, date and place of birth; 4, State matriculated from; 5, date of matriculation; 6, date of graduation; 7, title of thesis; 8, place of practice and present address; 9, college attended; 10, titles; 11, publications made and positions held; 12, if ever in the United States service, in what capacity and when and how long; 13, if married give maiden name of wife; 14, children's names, if any; 15, if dead, give date and place. Several thousand biographies have already been catalogued. The Committee especially desires the histories of the graduates between the years 1781 and 1790, names of whom are found in the "Proceedings of the Alumni Society" for 1898, and already widely distributed. Data in reference to medical alumni serving in the "French and Indian," the "Revolutionary," the "War of 1812," the "Mexican," the "Civil War," and the recent Cuban War, it is

hoped will soon be ready for collation. Assistance in this work is earnestly solicited. R. G. CURTIN, M.D., Chairman; F. SAVARY PEARCE, M.D., Secretary.

San Francisco.

COOPER MEDICAL COLLEGE.—The long proposed change in the time of the commencement of the college year of Cooper Medical College has finally become a fact. The next regular course will commence on January 3, and close Aug. 12, 1899. The next following course will commence Oct. 1, 1899, and close May 31, 1900. Thereafter the regular course will commence on August 15 and continue for eight months. This change has been made in order to conform to the general custom of medical colleges throughout the country, of having the regular course in winter instead of the summer months. The change is a very welcome one to both faculty and students.

FACULTY CHANGES.—At the last regular meeting of the faculty of Cooper Medical College Drs. Stanley Stillman and Emmet Rixford were elected professors of surgery, and Dr. William Fitch Cheney was elected professor of the principles and practice of medicine. Drs. Stillman and Rixford have for some time been assistants in the chair of surgery and their promotion was expected. Dr. Cheney has done remarkably good work in the chair of children's diseases for several years past, and has been rapidly making a name for himself not alone within the State of California.

A NEW MEDICAL COLLEGE.—The medical department of the University of California, at the opening exercises of their new home south of Golden Gate Park, San Francisco, October 22, appointed a Committee of Ways and Means to extend their influence. Correspondence with various institutions regarding plans and costs is one of the methods. The new building is well provided with laboratories, but eminent men in various lines of work are necessary to fill the chairs, and supporting salaries are to be given so that entire devotion to their work may be assured.

London.

MEMBRANOUS RHINITIS.—A most suggestive report upon membranous rhinitis was presented before the late Medical and Chirurgical Society by Dr. Lambert Lack. In spite of the mild form and chronic six or eight weeks' course of the disease, the Klebs-Loeffler bacillus was found to be present in every one of the thirty-three cases examined. Although mild, the disease was highly infectious and the bacilli proved fully virulent to animals, to produce abundance of toxins and to grow luxuriantly upon culture media. Hence the problem at once arises, why the toxic symptoms of diphtheria were not produced in at least some of these cases? Dr. Lack himself was inclined to attribute the immunity to the presence of other organisms associated with the Klebs-Loeffler, while in the discussion that followed, both Dr. Allan Macfadyen and Dr. Goodall regarded the resistance of the tissues at the point of invasion as the chief factor. This would seem the more probable explanation, in view of the high bactericidal power of the nasal mucus, and also of the frequency with which the diphtheria bacillus is found in healthy noses without giving rise to any toxic symptoms whatever. Indisputable as is the connection between diphtheria and the Klebs-Loeffler bacillus, evidence is rapidly accumulating to show that its mere presence in the fauces or nose is far from being the only factor, and that the resisting powers of the individual, or of the different regions or tissues, plays an even greater part. Possibly the dangerousness of that old remnant—the tonsil—as a point of entry for infection, may be as great in this disease as we are beginning to regard it in scarlet fever and in tubercle.

CLINICAL LECTURES.—The unique clinical lectures of Mr. Jonathan Hutchinson, held every Wednesday afternoon at his private clinical museum, are becoming one of the best known and attended "medical fixtures" of the London winter session. Among the cases presented at the last meeting was a most typical one of Paget's disease, a raw, red, oozing patch, slightly elevated at its serpiginous edges, of about the size of the palm of the hand, upon the left breast of an old woman of 72. It begins upon the nipple and runs an extremely mild and chronic course, lasting for years and seldom involving the lymphatic

glands or even the deeper layers of the skin itself—"a granulating surface which never heals," as the lecturer tersely described it. Another case was a striking illustration of the fact that the wages of sin and the results of economy are sometimes hardly distinguishable from each other. A man of 40, with an indurated sore upon his upper lip, huge swollen cervical glands, a hoarse voice, a perforated palette, and a superb crop of huge flat-topped condylomata between the nates and in both groins, all from buying in a moment of parsimony a second-hand pipe. The sore upon the lip appeared only ten days after the first use of the pipe and the classic procession followed. The condylomata in the groins were so large, flat and bathed in pus as to give an almost typical picture of the tubercles of Yaws, much of which the lecturer believes to be neglected syphilis. The case was a good illustration of the virulence of syphilis from an extra genital chancre, as the usually tertiary perichondritis of the larynx had occurred before the primary sore had healed or the buboes disappeared and the whole train of symptoms had developed in four months' time.

Craig Colony Prize.—The president of the board of managers of Craig Colony offers a prize of \$100 for the best contribution to the pathology and treatment of epilepsy, originality being the main condition. The prize is open to universal competition, but all manuscripts must be submitted in English. All papers will be passed upon by a committee to consist of three members of the New York Neurological Society, and the award will be made at the annual meeting of the board of managers of Craig Colony, Oct. 10, 1899. Each essay must be sealed in an envelope containing the name and address of the author, and bearing on the outside the motto or device which is inscribed upon the essay. The successful essay becomes the property of the Craig Colony, for publication in its "Annual Medical Report." Manuscripts should be sent to Dr. Frederick Peterson, 4 West Fiftieth Street, New York City, on or before Sept. 1, 1899.—*The Craig Colony Press.*

Gleanings.—Ballaban's new cyclochrome for rapid changes of colors is proving a desirable substitute for the inexact perimter—Loessen has secured exceptionally well-shaped nostrils and tip in rhinoplastics, with a rubber frame the same color as the skin, made by an artificial tooth maker. Israel forms the tip with a piece of the tibia.—Successful resection of the cardia in dogs followed only by ten days of vomiting; probably still easier of performance on man in case of carcinoma of the cardia, diagnosed early by palpation.—Péron reports experiments in which the effusion in spontaneously healing tuberculous pleuritis was found to possess an immunizing power in tuberculous infection in dogs. He queries whether withdrawal of the effusion by puncture is not directly injurious to the patient (*Klin. Therap. Woch.*, November 6).—Case of leukemia reported, evidently due to internal injuries received in a crowd, in which the spleen had been injured.—Case of retinitis in Bright's disease simulating a malignant tumor. Nothing was found after extirpation but hyaline degeneration and glaucomatous phenomena with decollement of the retina. First instance on record of this lesion in Bright's disease (*Wratsch*, August 8).

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To duty in the camps: To the Commanding General First Army Corps at Americus, Ga.: Major Frank J. Ives, brigade surgeon, as chief surgeon Second Brigade, Second Division, relieving Major Frank Brusco from this assignment; also Acting Asst.-Surgeons F. Arthur Zeller and Herbert J. Harris. To the Second Army Corps: Major Lewis Balch, brigade surgeon, for assignment to the Second Brigade, Second Division, subsequently ordered to the First Division, First Army Corps, as sanitary inspector with the first troops embarking for Cienfuegos, Cuba. To the Seventh Army Corps: Major James E. Pilcher, brigade surgeon, for assignment. To the Sixteenth U. S. Infantry: Acting Asst.-Surgeon B. F. Van Meter, at Fort Thomas, Ky. To the Second U. S. Artillery for duty with its batteries, at Savannah, Ga.: Capt. Geo. J. Newgard, Lieut. Clarence J. Manly from Columbus Barracks, Ohio, and Lieut. R. P. Strong from the Fourth Army Corps, at Huntsville, Ala., all assistant-surgeons, U. S. Army; also Acting Asst.-Surgeon Ricardo Gaston, from Fort Crook, Neb.

To Havana, Cuba: Lieut.-Col. R. M. O'Reilly, chief surgeon Vols., on completion of his present duty in Washington, D. C.; Major John J. Archinard, brigade surgeon, from duty at Santiago, and Acting Asst.-Surgeon Joaquin L. Duenas.

To Santiago, Cuba: Major Valery Havard, surgeon, U. S. Army, returning to station; Lieut. Ira A. Shimer, assistant-surgeon, U. S. Army, from U. S. General Hospital, Fort Myer, Va., and Acting Asst.-Surgeon Rupert Norton, on the expiration of his present leave. Acting Asst.-Surgeons Samuel P. Cottrell and James G. McKay.

To Manila, Philippine Islands: Acting Asst.-Surgeon M. A. Robert, from York, Pa.

To Honolulu, Hawaiian Islands: Major M. W. Wood, surgeon, U. S. Army, from Boise Barracks, Idaho.

To Hospital Ships: Lieut. P. C. Fauntleroy, assistant-surgeon, U. S. Army, from the Josiah Simpson General Hospital to the *Missouri*, and

Capt. Alex. N. Stark, assistant-surgeon, U. S. Army, from the *Missouri* to command the *Bay State*.

To the Josiah Simpson General Hospital, Fort Monroe, Va.: Acting Asst.-Surgeons R. B. Westredge, John A. Metzgar, H. A. Barnhardt, Ed. W. Pinkham, John S. Fogg, Ralph L. Taylor and Roy A. Wilson.

To the care of soldiers in civil hospitals: Major David C. Peyton, brigade surgeon, Vols., to assume supervision of the sick in the following hospitals in Pennsylvania: Chester County Hospital, West Chester; St. Joseph's Hospital and Lancaster General Hospital, Lancaster; Reading Hospital and St. Joseph's Hospital, Reading; Good Samaritan Hospital and Lebanon Hospital, Lebanon; Harrisburg Hospital and St. Clare Infirmary, Harrisburg; York Hospital, York; Charity Hospital, Norristown; Pottstown Hospital, Pottstown; Pottsville Hospital, Pottsville; and Columbia Hospital, Columbia. In Baltimore, Md., Major Lewis W. Crampton, surgeon, U. S. Army. In Providence, R. I., Acting Asst.-Surgeon H. P. Abbott.

To duty with the Fourth Army Corps, Huntsville, Ala., Major Rafael Echeverria, brigade surgeon, Vols.

To military posts: Major E. C. Carter, brigade surgeon, Vols., to Washington, D. C., as attending surgeon, on completion of his duties at the Sternberg and Leiter General Hospitals. Capt. Geo. J. Newgard, assistant-surgeon, U. S. Army, to Fort Adams, R. I. At Fort Sam Houston, Texas, Capt. Chas. Lynch, assistant-surgeon U. S. A. At Fort Logan H. Roots, Ark., Lieut. Samuel M. Waterhouse, assistant-surgeon U. S. A. At Fort Sill, Okla., Major Marlborough C. Wyeth, surgeon U. S. A., from duty as medical supply officer at Camp Meade, Pa. At Fort Wayne, Mich., Capt. Merritte W. Ireland, assistant-surgeon U. S. A., from duty at Santiago and Montauk Point. At Fort Hamilton, N. Y., Major A. H. Appel, surgeon U. S. A., his orders to Fort Grant, Ariz., having been rescinded. To Sullivan's Island, S. C., Acting Asst.-Surgeon F. A. Holliday, from Washington, D. C.

Leaves of absence granted: Capt. Francis A. Winter, assistant-surgeon U. S. A., and the following acting assistant surgeons: Rupert Norton, E. A. Southall, Frank Roberts and Randall R. Hunter.

Sick leaves granted or extended: Major W. H. Wakeman, brigade surgeon Vols.; F. D. Bain, surgeon Second Ohio Infantry; Major Hiram B. Thompson, Surgeon Third Connecticut Infantry; Major Murray T. Clements, surgeon Fifth Massachusetts Infantry; Major Chas. T. Polard, surgeon Fifth U. S. Vol. Infantry; Captains Henry C. Fisher and Jefferson D. Poindexter, assistant-surgeons U. S. Army; Captain Ellis Duncan, assistant-surgeon First Kentucky Infantry, and Acting Asst.-Surgeons John Horn, Elbert E. Persons, Roy A. Wilson, H. B. Emerson and Milton D. Norris.

Honorably discharged: Majors Royce D. Fry, Francis T. Metcalf, Frank Brusco, Oscar Le Seure and Lewis Balch, brigade surgeons; and Capt. Herbert W. Cardwell, assistant-surgeon Second Oregon Infantry, to accept commission as chief surgeon U. S. Volunteers.

Resigned: Capt. Chas. S. Jordan, assistant surgeon First North Carolina Infantry, and Lieut. John M. Martin, assistant-surgeon Fifteenth Pennsylvania Infantry.

Contracts annulled: Acting Asst.-Surgeons Benjamin F. Wooding and Lewis M. Walker, Josiah Simpson General Hospital; Roger B. Ames, Huntsville, Ala., Jesse Ramsburgh, Plattsburgh Barracks, N. Y., and Acting Asst.-Surgeon J. A. Dunwoody, of Cripple Creek, Colo.

Retired: Major Norton Strong, U. S. Army.

CHANGE OF ADDRESS.

Becker, B. A., from Dubuque, Iowa, to Silver Lake, Wis.
Barslow, J. M., from 221 S. 6th St. to Merriam Block, Council Bluffs, Iowa.

Budwig, M., from 150 2d Ave. to 226 E. 114th St., New York City.
Bernheim, A., from Paducah, Ky., to 1940 N. 6th St., Philadelphia, Pa.

Burkholder, J. F., from 534 E. 55th St. to Reliance Bldg., Chicago.
Durham, C. O., from 302 to 602½ S. 111. St., Indianapolis, Ind.

Fanning, G. J., from Harlem, Mont., to New Orleans, La.
Gage, M. R., from Sparta, Wis., to Valdosta, Ga.

Gillin, C. W., from Doon to 4th and Jefferson Sts., Waterloo, Iowa.
Harbeck, J. H., from Boulder, Colo., to Cuernavaca, Mexico.

Herr, A. W., from Battle Creek, Mich., to 1826 Wabash Ave., Chicago.
Klohs, E., from Stewart Bldg. to 4419 Indiana Ave., Chicago.

Lemco, R. S., from 1623 to 3526 Washington Ave., St. Louis, Mo.
Prieoleau, W. H., from Charleston, S. C., to 242 W. 43d St., New York City.

Peavy, J. F., from Atmore, Ala., to Asheville, N. C.
Raynor, W. J., from Denver to Fort Logan, Colo.

Rowe, S. B., from 925 Bayard to 3437 Bell Ave., St. Louis, Mo.
Smith, J. W., from Cumberland, Va., to Rowlesburg, W. Va.

Schuster, B. L., from Milwaukee, Wis., to Am. Circus 2, Berlin, Germany.

Siegelslein, L. E., from 299 to 333 Woodland Ave., Cleveland, Ohio.
Terry, M. C., from 628 to 718½ Adams St., Chicago.

Wright, W. J., from Lansing to Gregory, Mich.
Williams, C. C., from 1396 Winfield St. to 716 Westlake Ave., Los Angeles, Cal.

LETTERS RECEIVED.

Arnold, E. F. G., New York City; American Therapeutic Co., New York City.

Bell, Samuel, Newberry, Mich.

Carson, S. L., Velpen, Ind.; Croftan, A. C., Pasadena, Cal.; Corr, A. C., Carlinville, Ill.

Dorr, H. I., Boston, Mass.

Elliott, A. R., New York City.

Fernandez, J. D., Jacksonville, Fla.

Gould, Geo. M., Philadelphia, Pa.; Graham, Douglas, Boston, Mass.;

Gulley & Crawford Adv. Agency, Chicago.

Hulen, V. H., New York City; Hara, H. A., Philadelphia, Pa.; Havard, V., Bridgeport, Conn.

Kidd, J. W., Joliet, Ill.; Kirkland, W. A., Ft. Collins, Colo.

Lehn & Fink, New York City.

Morley, Geo. A., Crookston, Minn.; Morriss, A. W., Mrs., Lebanon, Ill.;

Mendlein, F. A., Buffalo, N. Y.

Norwich Pharmaceutical Co., Norwich, N. Y.

Peacock Chemical Co., New York City; Putnam's Sons, G. P., New York City; Phelps, A. M., New York City.

Robertson, C. M., Davenport, Iowa.

Smith, W. O., Toledo, Ohio; Smart, Chas., Col., Washington, D. C., (2); Spachman, J. P., DuBois, Pa.; Schmidt, E. T., St. Paul, Minn.

Taylor, P. K., New York City; Tindal, E. F., Stone Bluff, Ind.; Thomas, J. W., Phoenix, Ariz.; Thompson, J. A., Cincinnati, Ohio.

Van Hook, W., Chicago.

Wright, W. J., Gregory, Mich.; Warner & Co., W. R., Philadelphia, Pa.;

Will, O. B., Peoria, Ill.; Wooten, Joe S., Austin, Texas; Wilder, W. H., Chicago.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, DECEMBER 10, 1898.

No. 24.

ADDRESS.

CHAIRMAN'S ADDRESS.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY RANDELL HUNT, M.D.

SHREVEPORT, LA.

Welcome, gentlemen of the AMERICAN MEDICAL ASSOCIATION! Welcome to this Section, assigned as a place of instruction and enjoyment, for the communication of knowledge and the circulation of thought! And specially welcome to this hall set apart for the science of physiology and dietetics.

The chief end of all medicine is to secure to humanity the blessings of health, and this can only be attained by the scientific education of the physician. It is accordingly the paramount duty of all medical associations to foster and promote higher education.

The chief cause of disease is ignorance; the foundation of health is knowledge, for knowledge is the parent of science and her natural and only safe guardian. Impressed with these truths, physicians are advocating thorough education—education involving comprehensive knowledge of the laws of Nature and philosophy—a knowledge indispensable to thorough appreciation of the dignity of the science and art of healing.

The Supreme Being, when he made the universe and created matter and all classes of beings, animate or inanimate, gave to every class its conditions and appropriate functions. Order, proportion and fitness pervade the whole. The world around us and the world within us are ruled by immutable law. We see, we feel, we regard with wonder and admiration the rule. Our very spirits, that seem so spiritual, so subtle, so free, are subject to it. The material world, the heavenly bodies, the earth, and the different elements of the universe have their laws, beasts have their laws, man his laws. The celestial as well as the terrestrial world knows, and, without swerving, observes and obeys its prescribed course.

This truth is illustrated in the grandest and most sublime of the works in nature, and in the least and lowliest—in the laws that regulate the planetary motions, the range of planets, suns, and adamantine spheres wheeling unshaken through the void immense, and in those which form a drop of water. The vastness and multitude of the celestial bodies, the laws which astronomy in its higher branches discloses and applies, the distances which it spans, the periods which it estimates, impart a sublimity which lifts the soul to the heavens. The law of gravitation is the most universal law known to us. It prevails apparently through all space, but does not prevail alone, for its function is to balance other forces, of which we

only know that these again are needed to balance the force of gravitation.

Each force, if left to itself would be destructive of the universe, for the force of gravitation prevents the centrifugal force from flinging the planets into space, while centrifugal force prevents gravitation from dashing them against the sun. The orbits, therefore, of the planets, with all that depends upon them, are determined by the adjustment between the law of gravitation and other laws that are less known, so as to produce and maintain the existing solar system. This grand example of the principle of adjustment gives no idea of the extent to which the principle is required and is adopted in the works of nature.

The revolution of the seasons, seed-time and harvest, depend on the law of gravitation, in this sense, that if the law were disturbed, or if it were inconstant, they would be disturbed and inconstant also. But the seasons equally depend on a multitude of other laws—laws of heat, laws of light, laws relating to fluids, to solids, and to gases, and to magnetic attractions and repulsions—each of which laws is invariable in itself, but each of which would produce utter confusion if it were allowed to operate alone, or if it were not balanced against others in the right proportion. The seasons depend not only on the facts and laws which astronomy reveals, but on other sets of laws revealed by other sciences, such as chemistry, electricity and geology.

Chemistry abounds with illustrations of the law of forces in mutual adjustment, for the forces that determine chemic combinations all work under sharp definite rules. Some of the laws which regulate this combination are wonderful and beautiful, of great exactness, having invariable relations to numbers and proportion. Each elementary substance has its own combining proportions with other elements, so that, except in these proportions, no chemic union can take place at all. And when chemic union does take place, the compounds which result have different proportions employed. The same elements combined in one proportion are sometimes a nutritious food or a grateful stimulant, soothing and sustaining the powers of life, while, combining in another proportion, they may be a deadly poison, paralyzing the heart and carrying agony along every nerve and fiber of the animal frame.

The whole progress of plants from the seed to the root, and thence from the root to the seed again, the method of animal nutrition, digestion, and all other branches of vital economy, are not left to chance, but are performed in a wondrous manner, and guided by unerring rules laid down by the great Creator. Thus it is through the whole of nature; laws everywhere—laws in themselves invariable, but so worked and so adjusted as to produce effects of inexhaustible variety, by being pitched against each other and made to hold each other in restraint. Not a tree, not a flower, not a blade of grass, not even a drop of water, not one of

the countless varieties of form in clouds, but is ruled by law, by forces which are free only within the bounds of natural law:

All are but parts of one stupendous whole,
Whose body Nature is, and God the soul;
That changed through all, and yet in all the same,
Great in the earth as in the ethereal frame,
Warm in the sun, refreshes in the breezes,
Glowe in the stars, and blossoms in the trees;
Lives through all life, extends through all extent,
Spreads undivided, operates unsepart;
To him no high, no low, no great, no small;
He fills, he bounds, connects, and equals all.

Advancing knowledge of physical law has been constantly accompanied with advancing power over the physical world, and has enabled us to do a thousand things which a few centuries ago would have been considered supernatural. Physiology shows the structure of man, the superiority of the human organization, its various functions, and all that is connected with the animal life of man, over those of the rest of the animate creation. And even here in man, the highest type of God's creative genius, natural law is paramount and immutable. Disease is a deviation from health; a deviation consisting in the alteration of function, property or structure of some tissue or organ, owing in most part to a disregard or ignorance of natural physiologic, hygienic and dietetic law. Disease is thus an abnormal performance of those processes that constitute life, a knowledge of which must necessarily precede the practice of medicine.

ORIGINAL ARTICLES.

THE MILK-SUPPLY OF CITIES: CAN IT BE IMPROVED?

Presented to the Section on State Medicine, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY HENRY O. MARCY, A.M., M.D., LL.D.
BOSTON, MASS.

Sanitation has made rapid strides in the protection of the public from a great variety of dangers, and more and more each year are emphasized the interdependence and correlation of the entire body politic. This is especially true in urban life, and many of the relations which were thought to be purely personal and individualistic are now accepted as common, and are to be most satisfactorily dealt with under general supervision and control. The development of the water-supply and sewerage of cities is an illustration of common needs, more and more demanding a union of public interests, supervised by men of the highest talent, specially trained for this service.

Modern science has pointed out many dangers to which the individual is exposed, and it is with special satisfaction that we refer to the labors of this generation in having defined the causation and limitation of a large class of the diseases to which the human race is liable.

Ever present—from birth to death—is the daily need of supplying the wants of the system with materials from which the vital economy extracts the products necessary to repair the waste and rebuild the organism. During the first year of life this is furnished almost exclusively by the maternal milk, or that from animals, and nearly every individual incorporates milk daily into his supply of food.

In nursing, this complex animal product is con-

veyed directly, without contamination, into the stomach, and therefore becomes easy of digestion and assimilation. We have learned to know that milk is an excellent culture-medium for certain forms of bacteria, and that, because of these and other contaminations, it rapidly undergoes changes which are deleterious to the animal organism, and may be the means of diffusing disease in a variety of forms. In a very brief period after its production it becomes entirely unfit for food.

It is generally accepted that by far the larger single cause of mortality during the first year of life is owing to improper feeding—"bottle-fed infants." Dr. S. W. Abbott, Secretary of the State Board of Health of Massachusetts, in a recent paper entitled "The Saving of Children," says: "I have carefully examined the list of diseases in which an increased death-rate has occurred in Massachusetts, and have no hesitation in stating that boards of health in our large cities will find a fruitful field of work in the study of the question of infant mortality, its causes and the prevention of its excessive prevalence. Another reason for encouragement in this special direction is the fact that many lives saved in infancy are saved for a long and useful life, and are in fact so much added wealth to the community at large."

Dr. Schlossman says: "The death of every child constitutes a definite loss of national wealth. On the other hand, energy expended in saving the lives of the aged from the inroads of disease at the later periods of life only saves this class at a period when they are most likely to be a burden to the community."

Dr. Abbott quotes statistics to show that the death-rate of children under one year of age, per one thousand and births, in Ireland from 1884-1888, was only 94, which is the lowest figure in foreign countries. In England it was 144, in France 165, in Massachusetts varying from 150 to over 200, and in the large cities often exceeding this latter percentage. It is generally conceded that this abnormally high percentage of death-rate is largely due to improper feeding.

How shall this, perhaps the most important of all our food supplies, be economically and safely furnished the public? is the subject to which I invite your attention and in its solution solicit your earnest co-operation. Manifestly, the first subdivision of the subject will be the source of the product—the animal furnishing the milk. Since man has almost exclusively selected the cow for this purpose, we will limit our inquiry to this animal. The improvement of the breeds of cattle is manifestly important, although the time at my disposal will not permit the discussion of this branch of the subject. It must be accepted that the animal furnishing the milk should be maintained in a state of health. This necessitates a proper feeding, healthy surroundings, a good water-supply, a certain amount of daily exercise out of doors, and protection from exposure and cold. It might be assumed that the interest which the owner of a dairy has in his herd, from an economic standpoint, would be a satisfactory guarantee in the securing of the public protection. Unfortunately, however, this is not true, and from a narrowly selfish standpoint the owner of the cow oftentimes considers her only as a machine from which to realize the largest possible product. Since this is estimated and sold as quantity rather than quality, the attention is often directed to the supplying of food products, accepted by the owners to be in

a certain degree deleterious to the health of the animal, but recognized as stimulating to the milk secretion, as well as not seldom cheapening the keeping expense of the animal. Articles generally known as more especially damaging are the distillery products and certain imperfect forms of ensilage, more or less universally contaminated by various fungoid growths known as moulds, etc.

The owner's self-interest is also oftentimes, if not commonly, brought into collision with the public good in the employment of too little and a low grade of service in the care of the animals. This is at present very generally recognized in careless and dirty methods of milking, especially during the period of housing made necessary by northern winters. The filth incorporated in the milk by the ordinary methods of stable-milking is a source of serious damage to the product, and if observed by the average consumer would be stigmatized as disgustingly filthy.

These interests of the milk-producer, resulting from ignorance, carelessness and worse, so plainly conflict with those of the consumer, that the public has a right to demand that all the sources of milk-supply production shall be constantly kept under public inspection and control, viz., that a healthy animal furnishes a clean and healthy product for public consumption.

The second subdivision of the subject is: Having a good product furnished by the dairy, how can it most safely and economically be distributed to the consumer? By general consensus of opinion the clean milk should be cooled as rapidly as possible, since bacterial decomposition goes on slowly at low temperatures, and immediately put up in sterile receptacles. Since tin is in common use, boiling water and steam furnish safe and economic methods. When glass is selected, and for many reasons it is much to be preferred, after washing, sterilization is easily effected by dry heat. Once put up for the public use, the product should be exposed as little as possible in reaching the consumer. This is the great objection to the large can.

Some years since, as chairman of a committee having public inspection of the milk-supply of the city of Boston, we found the greatest contamination resulted from the dirty methods practiced by small dealers, in recanning in a filthy stable in pints and quarts for family use. This was often labeled as one cow's milk, and especially recommended for the use of children. The cheap corner grocery is another source of milk defilement, which oftentimes is kept in dirty surroundings, even living rooms, and sold in small quantities for the use of neighbors.

Until within a comparatively brief period milk-inspection, although demanded by law, has been a perfunctory and superficial affair. It was deemed of chief importance to prevent dilution and the incorporation of foreign substances. Dilution with pure water may be the least damaging to the consumer, although he does not obtain the full value of his purchase money, while the addition of coloring matter to give the milk a rich, creamy appearance, is not especially injurious.

The real dangers with which the public has to contend lie in the contaminations already referred to. Besides these there is the lack of economy necessitated by the rapid distribution of a product which deteriorates every hour after its production so rapidly that by the third day it becomes a waste product.

We admit that the problem is by no means easy of solution, and that in the aggregate it is of enormous magnitude; and yet modern science seems to be extraordinarily lacking in furnishing better means for supplying a universal want. Other food products are cared for much more satisfactorily, so that the consumer has his table supplied economically and safely from the markets of the world. We cease to marvel at the fresh salmon daily distributed, which comes to us in good condition from Alaska. We find poultry of the autumn, fattened upon the western cornfields, in good preservation during the months that follow; even the mutton from New South Wales vieing in the English market in quality with the Southdowns of the previous day's killing, which has, for its chief rival, Chicago beef, noted for its excellence in the great centers of both continents. Certain cheese and butter products have wide reputation, and deservedly so, because they are prepared from healthy dairies in the pure air of high Alpine fields. The last few years have seen a revolution in the manufacture of butter and cheese from milk brought to a common center from a large surrounding district. The products are so manifestly superior that they bring higher prices in the open markets. These may be called *concentrates* of milk, and, because of their minimizing in bulk and keeping properties, are easily transported long distances to the great centers of consumption. This should pertain equally to the milk-supply, and in the abstract is a problem of comparatively easy solution.

In this paper I purposely avoid even touching upon the important questions of milk composition and the testings of its value, since in a general way, these are not only well understood by the medical profession, but also by the body politic. Sufficient for our present purpose has been the reference already made to the constant contamination to which milk is subject, from the moment of its production until its consumption. It is a well-known scientific fact that aseptically withdrawn from the healthy udder into an aseptic receptacle, and sealed at once without exposure, milk remains indefinitely in a state of preservation. By the present means employed for its abstraction from the animal, protection from contamination is impossible, although to me it seems evidently feasible that machines for milking could be adopted, which, in very large degree at least, would be preventive of this source of infection. Once having occurred, however, some means must be taken for its disinfection. This may be said to be readily done by boiling, but heat thus applied not alone changes the taste of the product, but also its composition, both the fat and casein being affected by it, and rendered far less nutritious and digestible. Heated to a lower temperature, about 170 degrees F—so-called Pasteurization—the cream and caseous products are less changed and the larger portion of the bacteria destroyed. This gives a safer milk and is much more economic in consumption, because it will keep much longer without spoiling.

Milk concentrates, the larger portion of the water having been extracted and condensed by evaporation in vacuo, until a semi-solid is the resultant, have long been familiar to all. They have their advantages and are considered under certain conditions well nigh indispensable articles of food. Their use, however, is comparatively exceptional, because of undesirable changes resulting from the application of heat. By the abstraction of the water from milk, its bulk is les-

sened about 87 per cent. If removed without change of the solids, the addition of this amount of water would again give fresh normal milk. Removal by processes that would destroy deleterious contamination occurring in its production would render the product as permanent as that of butter and cheese, and as easy of transportation. The economic resultant would diminish the cost to the consumer about one-third, and give an article of food of far greater value and safety. How can it be effected?

I am indebted to my friend, William T. Sedgwick, professor of biology in the Institute of Technology, Boston, for much valuable information upon the subject of milk contamination, and the State of Massachusetts may well consider itself fortunate in the services which he has already rendered, in securing a better milk-supply. His publications upon the subject are more or less known to the medical profession. From a large series of bacteriologic investigations the following deductions are drawn:

Normal country milk produced by clean, healthy animals, drawn by hand with great care into sterilized bottles and planted quickly, yielded as an average of several trials 530 bacteria per cubic centimeter—the cubic centimeter roughly estimated as equal to a cube one third of an inch, or to a small thimbleful. When, however, the milkman used the ordinary milk-pail of flaring form, seated himself with more or less disturbance of the bedding, and vigorously shook the udder over the pail during the usual process of milking, we found that the numbers were very much higher, namely, an average of 30,500 per cubic centimeter, at the end of milking. When such milk is found upon the tables of country families a few hours later, it naturally shows still more bacteria, doubtless because those with which it was seeded have had time to multiply. The average of fifteen such samples from the tables of families in Jamaica Plain, Cambridge and Auburndale, was 69,143 per cubic centimeter. In these cases, moreover, the conditions of the cows and of the stables were exceptionally good, while the milkmen were much more than ordinarily clean and careful.

It follows from these results that there are two principal sources of the bacteria in the milk, viz., contamination during the act of milking, and the natural multiplication of the bacteria thus introduced during the interval between milking and the consumption of the milk. The result of these investigations was to show that even under the most favorable conditions cow's milk, as ordinarily drawn becomes, almost necessarily, infected with hosts of putrefactive bacteria at the very outset. Under worse conditions, with unclean stables and dirty milkmen, to say nothing of half-cleaned pails and cans, it is easy to understand why milk swarms with bacteria; and, if we allow time also, the wonder is, not that it contains so many germs, but rather that it is still potable at all.

When we reflect upon the indescribably filthy condition of many cow stables; upon the fact that the cow's udders and flanks are not infrequently covered with flaking excrement; upon the quality of the men employed to do the milking, etc., etc., it becomes a simple matter to understand how this rich animal fluid—sterile at the start, but drawn by unclean hands into half-cleaned pails, and meantime sprinkled from above by the dust of the stable, by hairs, dandruff, dirt, and particles of excrement from the skin and udder of the cow, vigorously shaken by the milker or brushed by his hat—becomes infected with organisms. That these multiply swiftly and enormously in the warm and rich fluid, well aerated by the act of milking, is also a natural consequence of favorable conditions.

Of fifty-seven samples taken directly from the milk wagons and planted at once, the average number of bacteria were 2,355,500 per cubic centimeter. In sixteen samples taken from groceries, usually older milk than that found in the wagons, the average number of bacteria was 4,577,000 per cubic centimeter. Two samples collected from well-to-do families upon the Back Bay showed an average of 1,488,000 per cubic centimeter. Forty-five samples of so-called "railroad" milk, that is produced at a distance from the city and shipped by rail, under favorable conditions even upon its arrival, contained an average of more than 500,000 bacteria per cubic centimeter.

Mr. S. C. Keith, of Boston, a graduate of the institute of technology, who has for two years devoted himself to the special study of milk products and their

contamination, recently gave a most interesting lecture before the Boston Society of Arts upon this subject. He stated that he had made experimental bacteriologic studies during the last summer upon the milk from ninety-seven dairies, examined soon after its arrival in Boston. Twelve per cent. contained less than 100,000 bacteria per cubic centimeter; 51 per cent. from 100,000 to 1,000,000; 25 per cent. from 1,000,000 to 5,000,000; and 12 per cent. over 5,000,000.

Professor Sedgwick quotes the investigations of Professor Renk of Halle, who found that the public milk-supply of that city varied from 6,000,000 to 30,000,000 per cubic centimeter, and he remarks by way of comparison that the sewage of American cities seldom contains, on the average, more than 1,000,000 bacteria per cubic centimeter.

Professor Sedgwick has not been willing to treat the subject from simply the standpoint of abstract science, and at the October quarterly meeting of the Massachusetts Boards of Health in 1897, and published in the JOURNAL, will be found the following rules, suggested by a committee of which Dr. Sedgwick was chairman, for adoption by Boards of Health of the State for the protection of milk supplies from pollution:

ARTICLE I.

SECTION 1. All persons engaged in the production of milk for sale, or in the sale, delivery, or distribution of milk in the city or town of . . . shall annually, on or before May 1, make written application, on forms prescribed by the Board, for a permit or license.

SEC. 2. No person shall engage in the business of producing milk for sale, or in the sale and distribution of milk, in the city or town of . . . after April 30, 189-, without a permit or license to do so signed by said Board of Health, and under such conditions as said Board of Health may impose, revocable at the pleasure of said Board.

SEC. 3. The conditions under which every cow is kept, whose milk is brought into any city or town, or kept, delivered, distributed, sold, or offered for sale, in such city or town, shall be made known to the local Board of Health in such detail as the Board may require, and shall be approved thereby; and no milk except that delivered from such cows shall be brought, kept, delivered, distributed, sold, or offered for sale.

SEC. 4. No milk shall be sold, offered for sale, or distributed in any city or town, unless the cows from which it is delivered have within one year been examined by a competent authority, and shown to the satisfaction of the local board of health to be free from disease.

SEC. 5. All persons having a permit or license to sell, deliver, or distribute milk in any city or town, shall keep a copy of the same constantly posted in a conspicuous place on premises and vehicles from which milk is sold or distributed or in which milk is kept or delivered.

ARTICLE II.

SECTION 1. No milk shall be kept for sale or distribution, or handled, transferred from can, or stored in any stable or similar place, or any room used in whole or part for domestic or sleeping purposes.

SEC. 2. Milk shall be stored or regularly mixed, cooled, or poured from can to can only in a room not directly connected with a stable or stables, provided with a tight floor and kept constantly neat and clean, the walls of the room being of such a nature as to allow easy and thorough cleaning. The room aforesaid shall contain proper appliances for washing and sterilizing all utensils actually employed in the storage, sale, and distribution of milk in said building, and all such apparatus and utensils shall be washed with boiling water or sterilized by steam regularly after being used.

SEC. 3. No animal, water-closet, or privy shall be in the aforesaid room or any room directly connected therewith.

SEC. 4. All milk directly after it is drawn from the cow shall be at once taken to, and be at once filtered, cooled, and stored in a room such as is described in Article II, Sections 1 and 2.

ARTICLE III.

SECTION 1. Milk kept for sale in any store, shop, market, bakery, or other establishment, shall be always kept in a covered cooler, box, or refrigerator, properly drained and

cared for; and while therein shall be tightly corked or closed, and only in such location and under such conditions as shall be approved by the local board of health.

ARTICLE IV.

SECTION 1. All cans, bottles, or vessels of any sort used in the sale, delivery or distribution of milk to the consumer must be cleaned and sterilized by the milk dealer before they are again used for the same purpose.

ARTICLE V.

SECTION 1. Every person engaged in the production, storage, transportation, sale, delivery, or distribution of milk, shall immediately on the occurrence of any case or cases of infectious disease, such as typhoid, scarlet fever, or diphtheria, either in himself or in his family, or among his employes or within the building or premises where milk is stored, produced, sold, or distributed, take care that the local board of health is notified of such case or cases, and at the same time suspend the sale or distribution of milk until authorized to resume the same by the local board of health.

SEC. 2. It shall be unlawful for any person suffering from a contagious or infectious disease, such as typhoid, scarlet fever, or diphtheria, to handle, transport, deliver, mix, taste, work over, or distribute milk, or in and about places where milk is stored, sold, or distributed, or to serve as a milker or milkman. No vessels which have been handled by persons suffering from such diseases shall be used to hold or convey milk.

A long discussion of these rules was entered into by the members of the Massachusetts Boards of Health, which resulted in their adoption, and as a fruitage thereof, I subjoin the following order issued by the Board of Health of the town of Montclair:

BOARD OF HEALTH.

AN ORDINANCE CONCERNING THE PRODUCTION OF MILK AND REGULATING ITS SALE AND EXPOSURE FOR SALE IN THE TOWN OF MONTCLAIR.

Be it ordained by the Board of Health of the Town of Montclair, in the County of Essex, as follows:

SECTION 1. Every person, corporation or association of persons who now is or who hereafter shall be engaged in the sale, or exposure for sale of milk within the Town of Montclair, before selling or exposing the same for sale, shall furnish the Board of Health of the Town of Montclair a true and complete statement as to the locality from which the milk so sold or exposed for sale is produced; also a full and complete list of the names and addresses of persons from whom the said milk was purchased, and the names and addresses of all persons to whom they are regularly selling or delivering milk within said town; said lists shall be furnished to the said Board on the first days of January, April, July and October of each calendar year, and at all other times when requested by the said Board.

SEC. 2. No milk shall be sold or exposed for sale in the Town of Montclair except milk from cows stabled under light, dry and well ventilated conditions, and in all other respects conforming to the requirements hereinafter set forth, viz:

a. Each cow shall have at least three feet in width of floor space when fastened in stanchions, and in all cases where no adequate artificial means for ventilation are provided, each animal shall have an air space of at least five hundred (500) cubic feet.

b. All stables for shelter of said cattle shall be provided with a tight, dry floor. The manure drop shall be water-tight, and if constructed of wood shall be asphalted, tarred or otherwise made non-absorbent.

c. The walls and ceilings of said stables shall be whitewashed whenever it may be deemed necessary by this Board of Health.

d. Manure shall not be allowed to accumulate in large quantities in stable yards, nor near the buildings where the cattle are kept, and when stored temporarily in such places it shall be removed at least once per month. The said stable yards shall be drained and kept in a clean, dry condition, and no accumulation of household garbage, vegetables or other putrescible matter shall be allowed to remain or decay in said stable yards.

e. Cattle shall at all times be kept in a clean condition, and udders shall be washed, hand-rubbed or wiped with a clean, damp cloth before each milking.

f. No milk shall be sold or offered for sale or distributed in the Town of Montclair, unless the cows from which it is obtained have, within one year been examined by a competent veterinarian, and are free from diseases dangerous to the pub-

lic health. But this shall not be construed as forbidding the sale or use of milk from cows not tested with tuberculin.

g. No milk shall be sold or offered for sale or distributed in the Town of Montclair, obtained from any cow that has calved within ten days, or from a cow which will come in or calve within sixty days.

SEC. 3. No milk shall be sold or exposed for sale in the Town of Montclair, except milk produced from cattle fed and watered under the following conditions: All food given to such cattle shall be fresh, sweet and wholesome. The use of either distillery slops or fermented brewer's grains is prohibited, and their presence on any dairy premises will be considered sufficient cause for the exclusion of the milk from such dairy from sale or delivery in said town. Water supplied to cattle shall be pure and free from all contamination by stable or household drainage, and no well or spring in or adjoining any stable yard shall be used for watering said cattle.

SEC. 4. All milkers and other attendants employed in any dairy, the milk from which is to be sold or offered for sale or delivered in said town, shall be personally clean. Before entering upon their duties connected with the dairy, hands shall be washed, and clothes changed or brushed, and no milk shall be delivered or sold or exposed for sale in said town, produced from dairies wherein the foregoing regulations are not enforced.

SEC. 5. Utensils used for the collection and transportation of milk shall, before being used, be thoroughly washed with pure water and soda or soap, and then sterilized by boiling or steaming.

SEC. 6. Milk which is to be delivered or sold or offered for sale in said town shall, immediately upon being drawn from the cow be removed from the stable to a room separate and apart from the said stable, and immediately cooled by submerging the vessel in which the milk is contained in cool water to a depth equal to that of the said milk in the vessel. The above mentioned room shall be properly ventilated and lighted and shall be used for no other purpose than that indicated above, and shall at all times be kept in a clean condition.

SEC. 7. The said milk shall be delivered in bottles unless permission for delivery in another manner shall be granted by said Board. No tickets shall be used in connection with delivery of milk.

SEC. 8. If at any time any person or persons having any connection with a dairy from which milk is delivered or sold or offered for sale in the Town of Montclair, or any resident member of the family of any person so situated, shall be stricken with cholera, smallpox, (including varioloid), diphtheria, membranous croup, yellow, typhus, typhoid or scarlet fever, measles or any other communicable disease that may hereafter be declared by this Board to be dangerous to the public health, notice shall be given to said Board immediately, by the owner or owners of such dairy, and no milk produced from the dairy of any corporation, person or association of persons failing to give the notice herein required, shall hereafter be sold or exposed for sale or delivered in the Town of Montclair, until special permission therefor has been granted by said Board.

SEC. 9. Any person, corporation, or association of persons, violating any of the provisions of this ordinance, shall, on conviction thereof, be liable to a penalty of not less than ten nor more than one hundred dollars.

SEC. 10. All ordinances or parts of ordinances inconsistent with the provisions of this ordinance are hereby repealed.

Passed March 25, 1898.

Attest:

R. P. FRANCIS, Secretary.

D. D. DUNCAN,
President.

My friend, Dr. J. Cheston Morris of Philadelphia, one of the best-known authorities upon the subject of milk-supply and distribution, writes me under recent date and in reply to the question, Where can milk be most satisfactorily produced? "On a farm where the animals can browse contentedly on green grass, near running waters, and can find good shelter, plenty of hay, corn fodder, corn and cob meal in winter, warm, well-lighted and aired stables. Keep animals clean, dry, well-fed and freely exercised. Stimulate them unnaturally and disease may follow. Breed only from healthy animals and avoid unhealthy care-takers. My Devon cows are giving me about five and a half times their weight in milk per annum, which furnishes four quarts of cream or four pounds of butter from twenty-eight quarts of milk. I think a machine that keeps itself in order and produces a new machine

annually, beside five and half times its own weight, without undue urging, a pretty good machine, and I am satisfied. I do not believe we can preserve milk as it comes from the cow and with digestibility undiminished for more than thirty-six to forty-eight hours."

Dr. Morris refers to a very recent discussion having taken place in Philadelphia over the best methods of handling and distributing milk, resulting in the approval by the Board of Health of the glass jar distribution, well known to have been originally introduced by Dr. Morris. The advocates of the large-can process of distribution objected to the glass-can system on the ground that contagious disease might be carried from house to house by imperfectly disinfected jars, but Dr. Morris states, "I showed that I had carried on this method of distribution for more than twenty years without a single case of such carriage, either among customers or at the farm; that for the farmer's own protection, as well as for his profit, absolute practical disinfection for each jar is indispensable."

It is apparent that a rigid supervision under State authority would do much toward the protection of the public, by furnishing milk produced by healthy cattle, kept reasonably clean, sent to market much cleaner and better preserved; in a word, safer for public consumption.

As shown by Professor Sedgwick, to a degree at least, it is necessarily an infected article and consequently must undergo decomposition within a limited period, that placed by such a distinguished authority as Dr. Morris not exceeding forty-eight hours.

Dr. Morris' method of requiring each producer to put up his milk in pints and quarts in glass jars, with the name of the dairy and the date of milking has manifest advantages. Any defect in the supply or cause of disease, as, in illustration, the repeated occurrence of typhoid fever (epidemics disseminated by the milk-supply) can be easily traced. It also stimulates rivalry and fosters a local pride among the farmers. It is noteworthy to observe the much better keeping quality of milk thus prepared for the market.

Illustrative specimens were shown by Dr. Morris, when lecturing upon the subject some time ago in Boston, that were perfectly fresh and sweet when the jars were opened four days after the milking, although subjected to the long journey from Philadelphia.

On a model farm near Boston the process of milk preservation is carried on in the following simple and effective manner: Having been milked as cleanly as possible, the milk is poured into a receptacle and by gravity finds its way through a series of strainers into an adjoining apartment having no other connection with the stable. Here it is quickly refrigerated and put up for market.

To aid in a cleaner process of milking, a pail has been devised called the "climax milkpail." It consists of an ordinary pail with a tightly fitting cover with two openings from which funnels project considerably above the surface of the cover. The bottom of these funnels is covered with close-meshed wire strainers. By its use much of the dirt which ordinarily falls into the pail from the udder is avoided. Pure rubber covers of a size to enclose the entire teat ending in a rubber tube, to conduct the milk into a closely covered pail could be used without much difficulty after a little practice with them on the part of the milker. They would be of the highest service,

cheap, easily cleaned, and with reasonable care, furnish an almost absolutely sterile milk.

Mr. Horlick of Racine, Wis., quite recently described to me a most ingenious device for milking cows by a machine, the power of which is furnished by an electric motor. It is said in many ways to work satisfactorily, and by an ingenious combination may be applied to the milking of even fifty cows at the same time. All these methods are advancements in the right direction, to which may be added what, in a limited degree, has already been carried into effect—the process of sterilization by the application of a low grade of heat, Pasteurization, that is, maintaining the milk for a considerable period at a temperature of about 170 degrees F., not high enough to be detrimental to the albuminoids. Even if sterilization by this method is effected, contamination is sure to follow upon subsequent exposure to bacterial infection.

The secretion of the mammary gland is the product of certain epithelial cells. By their transforming power they manufacture from the blood a mixture of fat, sugar, and salts in a watery solution which we call milk. It is in fact strictly an animal food of unstable composition and is easily decomposed under the action of bacterial development. A pound of very lean beef and a quart of milk each contain about the same quantity of actual nutritious material. The taste which is objectionable in sterilized milk may be modified by pouring the milk from one receptacle to another, thus aerating it. In certain parts of the country Pasteurized cream has become popular. It is more conveniently handled and, freed in large measure from bacteria by the process, will keep for days without souring. It is objected to because of its lack of consistency, being thinner and less viscous. The Wisconsin Agricultural Experiment Station, after a careful study of the subject, recommends the use of lime dissolved in a solution of granulated sugar. This is called "viscogen," on account of its viscous producing properties, and the treated products are called visco-cream, visco-milk, etc. Only one part of viscogen to one hundred and fifty parts of cream is required, and the small quantity of lime added according to this rule only amounts to about four parts in 10,000, which, instead of being detrimental to the health, is rather beneficial.

In several European cities sand filtration of milk is employed at a central depot after its arrival from the country. The filters consist of large cylindrical vessels, divided by horizontal, superposed compartments, of which the middle three are filled with fine, clean sand, sifted into three sizes, the coarsest being placed in the lowest and the finest in the topmost of the three compartments. The milk enters the lowest compartment through a pipe under gravitation pressure and, after having traversed the layers of sand from below upward, is carried by an overflow to a cooler fed with ice water, whence it passes into a cistern, from which it is directly drawn into locked cans for distribution. Milk thus treated is not only free from dirt, but the number of bacteria is reduced to about one-third. In new milk the loss of fat is said to be very slight, but the quantity of mucus and slimy matter retained in the sand is surprising. The sand is renewed each time the filter is used.

The live stock interests of our country are so enormous that it is difficult to form a just appreciation of their value. According to the census of 1890, there were that year in the United States between fifty-one

and fifty-two millions of cattle, calves born over sixteen and one-half millions, and the total number of milch cows were 16,511,950, of an estimated value of over \$4,000,000,000. The milk-supply for 1889 reached the enormous aggregate of 45,210,125,567 gallons, worth on the farm over \$651,000,000.

The census of 1890 gives us the latest reliable data, but there has been a material increase in the value of the milk-supply in excess of the ratio of the increase of population. It is only by comparison that such enormous amounts can be appreciated. The total value of all the mineral and metal products, including coal, of 1896 are given as follows:

Belgium	\$100,000,000
France	110,000,000
Germany	300,000,000
United Kingdom	340,000,000
United States	737,958,761

Some years since Mr. Edward Atkinson of Boston showed that the *hen* was a greater producer of material wealth than the gold mines of the country. From the above figures we note that the *cow*, by her milk product alone, is a source of wealth not far below that of all the mineral products of the United States.

The butter product for 1889 was 1,024,223,468 pounds and the cheese product for the same year was 18,726,818 pounds. The average quantity of milk produced for milch cows during the year 1889 was 315 $\frac{5}{10}$ gallons, and to each individual in the United States for the year was 83 $\frac{1}{2}$ gallons, or nearly one quart per day for every man, woman and child in the entire country. Estimating that six-tenths of the product was canned and shipped for distribution, the amount thus disposed of was 25,008,602,718; analytically 87 per cent. is water, and at least 75 per cent. of the water should be removed before shipment. The amount of *water* thus expensively distributed with only attendant loss, is so enormous that it can be appreciated only by means of comparison—18,756,452,037 pounds equal 9,378,226 tons = 468,911 car loads each of 20 tons = 11,725 train loads, each of forty cars = 2931 miles of continuous trains, reaching nearly from the Atlantic to the Pacific Oceans if thus placed to span the continent!

Were it possible to eliminate this enormous percentage of waste without damage to the resultant product, the gain would be almost beyond comprehension.

G. W. Goddard of Cambridge gives the following figures from New York City Board of Health Report: 1896, pp. 90, 91. Daily average of cows' milk and condensed milk shipped to New York City: Milk 828,612 quarts, cream 16,000 quarts, condensed milk 8600, a total of 853,212 quarts. To give milk equivalent to the cream add 64,000 quarts. To give milk equivalent to the condensed, add 19,800 quarts, making a total of milk-supply 937,212 quarts, condensed 75 per cent. of the whole; 87.7 per cent. of above is produced in New York State; in New York City 2200, in State 1,112,370, in all 1,114,570 cows. Total cost at five cents per quart, over \$60,000,000 per year.

The Agricultural Department at Washington has just issued one of its bulletins, treating of the milk-supply of Boston and other New England cities, and prepared by Mr. George M. Whitaker, executive officer of the Massachusetts State Dairy Bureau. The Greater Boston, namely, within a radius of ten miles from the State house, contains a population of one million, or eighteen per cent. of the population of New England.

About three-fourths of the supply of milk for this section is sent by railroads, the greatest distance for direct shipment is 140 miles. For the most part the milk is conveyed in cans especially constructed for this purpose with refrigerator closets, etc. The milk thus supplied is from eighteen to thirty hours old before it reaches the consumer. Boston was the pioneer city in this country in the transportation of milk by railroad. The first man to engage in this business was Jason Chamberlain, who began operations sixty years ago upon the Boston & Worcester railroad. He sold milk at twenty-five cents per can of nine and a half quarts. In 1843 there was printed in the *New England Farmer* an article upon the subject. It states, "We have learned that one man brings in upon the Worcester railroad 200,000 gallons annually. This is supposed to be one-tenth of all that is sold in the city. This at twenty cents a gallon costs the citizens \$400,000 per year." Today fully three-quarters of the milk supplied to Greater Boston passes through the hands of large wholesalers, locally known as contractors. There is a considerable increase in the consumption of milk in Boston each year. The total for 1895 was about 18,000,000 gallons—in 1897 the supply had increased nearly 700,000 gallons. Within the ten-mile radius there are over 7000 cows.

Mr. B. F. McIntyre, of McKesson & Robbins, New York, has recently published some interesting articles upon the condensing of milk by a process of refrigeration when the milk is in agitation. His more recent publication is found in the *Milk Reporter*, January, 1897. His experimental studies were carried on at Cattaraugus, N. Y., under favorable refrigerating conditions. The product met the approval of dealers from both the commercial and economic standpoint. His process is briefly summarized as follows:

1. Reducing the bulk of the milk by conversions of the water of the milk into ice, instead of vapor or steam.
2. The making of the ice on the surface only of the milk, by elevation of the freezing pans in an atmosphere of zero temperature or thereabouts.
3. Frequent breaking of the surface ice so that fresh liquid is presented to a freezing effect, with gradual submersion of the broken ice as the bulk of ice increases.
4. Standardization of the product.

Considerable difficulty was experienced in the selection of milk free from "cow-odor." Milk with a perceptible taint of animal odor is unfit for condensation by cold processes as thereby these odors are intensified. The fats are removed by a cream separator which should be set to run heavy cream and which should assay not less than fifty per cent. milk fat. Running into the separator is of much value in freeing the milk from dirt and foreign animal products. From the separator the fat-free milk was run over a bank of horizontal copper pipes through which ice water was circulated reducing the temperature of the milk from 80 to 35 per cent. F. By this process of condensing there is no thickening of or chemic change in the albuminoids, such as takes place when the milk is reduced by heat in vacuo. A condensation of five and one-half gallons to one gallon is required to produce a product with the desired consistency. By this freezing process one hundred gallons of skim-milk are reduced to thirteen gallons of very thick milk which represent in milk, sugar, caseine and inorganic salts fully nine gallons of solids.

Eighty-seven gallons of water in the milk are formed into ice. An average sample of the snow-like ice, when melted and evaporated to dryness contained .2 per cent. of residue. A final step in the process was the admixture of the heavy cream in proper proportions with the concentrated fat-free milk. In keeping properties the new form of condensed milk is superior to whole milk, as the freezing temperature at which the milk is held is destructive of some forms of germ life common to milk, and the natural life of the preparation is prolonged by this partial sterilization."

I am in receipt of letters from Mr. McIntyre, of recent date, in which he states, that "unfortunately the plant at Cattaraugus has recently been burned," and in reply to my inquiry as to the expense attendant upon this process of condensation, he states: "The cost of the manufacture of ice *per se* from milk is not so very much greater than making it from water. My process could be designated as a method to produce ice in crystal form, instead of in solid or cake form, and the solids of the milk might be considered as a foreign admixture to the water being subjected to the freezing effect. I claim, and have the judgment of experts, that my process will produce as much ice daily from a given weight of coal, as will be produced in the ordinary ice-making process. Ice made from distilled water is sold in New York in midsummer at \$2.00 per ton."

If the condensation can be carried on by a process by which the water of the milk can be extracted at any such cost as above estimated, it will at once be accepted as of the largest value. It seems feasible and merits a careful consideration, as introducing a possible new factor of the greatest value in furnishing economically a daily product of such an indispensable character as milk.

The condensation of fluids in vacuo has been economically conducted, at a very recent period, at a much lower rate of temperature than was formerly deemed possible. I am advised by two New York chemists that one of our large manufacturers of malt products is successfully carrying out a process with the temperature as low as 110 degrees F., in vacuo and it is believed not improbable that milk can be evaporated to dryness at a temperature of 100 degrees F. This temperature would scarcely affect in any way the albuminoids and would leave a product unchanged except for the abstraction of the water.

It seems thoroughly feasible to treat milk in large quantities by abstracting the great bulk of the water through refrigeration, thus practically sterilizing the resultant product. This product, treated by evaporation, either in vacuo at a low temperature or by a warm air blast, the heat-point of which is regulated so that the resultant product may be in the form of granules, cakes, or of a consistency not unlike that of butter or cheese, all possessing good keeping quality, would, upon the addition to it of the proper percentage of water, furnish fresh milk at will.

In these days of rapid progress the public is accustomed to accept radical changes, when demonstrated for the better, with very little of comment. The immense problem which I have thus all too briefly outlined, viz., furnishing vastly more economically a safe and satisfactory milk-supply is worthy the attention of all sanitary scientists. Clearly formulate the *want* and show the manifold advantages resulting from *better methods*, and science at once steps in

and demonstrates the *way* for their attainment. This, I believe, will early be accomplished. The milk-supply of the world will be economically revolutionized, to the manifest advantage of every individual.

A further study of Mr. McIntire's processes increased my interest in the subject until, after a correspondence of some length, I induced my friend, Mr. George M. Goddard of Cambridge, a well-known expert in the processes of refrigeration, to visit New York and carefully examine the method advocated by Mr. McIntire. The outcome of this, through Professor Sedgwick, has been to secure the active co-operation of Mr. Edward Burnett, who has devoted a large share of his life to the scientific studies relating to agriculture, and especially the better methods of milk production and distribution. Mr. Burnett's large milk-plant at Southboro was placed at Mr. Goddard's disposal and the summer occupied in a careful practical study of the processes. Samples of the concentrate were distributed for experimental use. Those which came under my observation proved in every way satisfactory. The oldest specimen examined, having been kept thirteen days, was perfectly sweet when opened. A careful series of bacteriologic tests, by the request of Professor Sedgwick, were undertaken by Prof. G. M. Holman, of which the following tables furnish brief samples:

TABLE I.—First Series (Aug. 1, 1898.)

Sample.	Bacteria per c.c.	
1 Whole milk	267,400	Numerous liquefiers.
2 Skim milk (pan)	432,600	
3 First condensation	394,200	Odorless plate.
4 Second condensation	175,000	Mouldy cheese odor.
5 Third condensation	24,000	Sweet butter odor; 1100 liquefiers.
6 Fourth condensation	19,400	Sour milk odor; few liquefiers.
7 Pasturized cream prod.	175,000	Mouldy odor.
8 Raw cream product	2,616,100	Many moulds.
9 Raw cream product	2,759,400	
10 Pasteurized cream	0	Plate covered with moulds (mucus).
11 First ice	6,370	Some moulds.
12 Second ice	3,444	Some moulds; badly liquefied.
13 Third ice	1,470	Many moulds; badly liquefied.
14 Fourth ice	17,000	
15 Ice from 19 hours' freeze (July 20-21).	6,035	

TABLE II.—Second Series.

Sample.	Bacteria per c.c.	
1 Skim milk	152,400	
2 First condensation	10,200	
3 Second condensation	7,700	
4 Third condensation	6,100	
5 Fourth condensation	2,000	
6 First ice	300	
7 Second ice	185	
8 Third ice	5,320	
9 Fourth ice	7,300	
10 Raw cream product	612,360	
11 Pasteurized cream product	9,200	
12 Pasteurized cream	11,500	
13 Raw cream	14,742,000	Badly liquefied; bad
14 Borden's evaporated cream	0	[smelling plate.
15 Boston condensed (unsweetened)	1,134,000	

TABLE III.—First Series.

Sample.	Solids, per cent.	Ash, per cent.	Fats, per cent.
Whole milk	13.29	0.87	4.5
Skim milk	9.32	0.7	
Raw cream product	34.73	1.61	15.36
Fourth condensation	17.45	2.02	
Nineteen hours' ice (20-21)	0.49	0.05	
Third ice	1.38	0.07	

Second Series.

Raw cream product	44.1		19.7
First condensation	15.0		
Second condensation	23.39		
Third condensation	35.49		
Fourth condensation	36.18		
First ice	1.15		
Second ice	2.47		
Third ice	5.96		
Fourth ice	21.97		
Borden's condensed	30.2		3.7
Boston condensed	38.5		0.3

No pathogenic germs in "Refrigerated Condensed."

Test from run of Sept. 3, 1898.

Samples.	Bacteria per c.c.	Solids, per cent.
1. Whole milk	90,000	13.43
2. Skim milk	78,500	9.34
3. Raw cream product	17,400	39.88
4. First condensed	17,900	14.28
5. Second condensed	6,800	22.73
6. Third condensed	8,300	24.6
7. First ice	1,382	0.37
8. Second ice	5,700	4.25
9. Third ice	11,250	8.04
10. Third ice, after three extractions	5,100	18.85
11. Raw cream	14,000,000	. . . . .
12. Pasteurized cream	37,000	. . . . .
13. Pasteurized cream product	5,600	. . . . .

Reduction of bacteria from the whole milk to the finished (Pasteurized cream) product, 94.2 per cent.

It will be noted that the bacteria are very greatly diminished by the refrigerating process, although the product is not absolutely sterile. A special plant is now being established, where it is believed that much better work may be accomplished with a great reduction of cost. The daily output will be at the beginning 600 gallons reduced to 100 gallons, the product having already been disposed of. It is confidently believed that the result will assure an abundant reason why the milk distribution may be greatly improved, giving a far more reliable product, of good keeping quality, at a much less cost to the consumer. If, for commercial reasons, it does not prove profitable to carry the process of concentration above the result outlined, the ordinary family supply of milk may be furnished weekly instead of daily and a far better product obtained than that of the present.

I have in my possession a specimen of powdered milk made by Mr. McIntire nearly two years ago, in a state of good preservation; thus demonstrating that the so-called butter fat of milk can be preserved in mixture. Mr. McIntire is of the opinion that it is easy to concentrate the solids of milk to a consistency not unlike butter or soft cheese, which will require only the addition of a proper amount of water to restore it to a sweet, wholesome, fresh milk, containing its proper quantity of normal cream. The keeping quality of this product will be such that it will come into world-wide distribution.

IMPORTANCE OF REGULATING DIETETICS

IN HARMONY WITH THE PHYSIOLOGIC LAWS CONTROLLING DIGESTION, NUTRITION AND WASTE, AND SOME OF THE INCONSISTENCIES IN PREVALENT DIETETIC PRACTICES.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY N. S. DAVIS, M.D.
CHICAGO, ILL.

That the quantity and quality of food for man, and the times for taking it, should be regulated in harmony with the physiologic laws governing the processes of digestion, assimilation, nutrition, disintegration and excretion, is too obvious to the intelligent physician to require argument or illustration.

The fact that all living animal structures are constantly undergoing disintegration atom by atom or cell by cell, renders it necessary that there should be constantly present in the fluids permeating the structures, new atoms or cells or vitalized materials, ready to take the place of materials lost, and thereby maintain the integrity of the tissues.

During childhood or youth, or period of growth, the amount of food assimilated must exceed the amount lost by disintegration or there would be no

progressive development of the various parts of the body. But in adult life the amount of true food or ingests each day should equal as near as possible the amount of loss by the processes of waste. It is not practicable, however, to establish the actual amount of food required daily by any individual in health, by simply determining the average amount of waste he suffers, unless such determinations include the variations produced by different degrees of physical exercise and mental activity. For it is well known that the activity of both nutrition and waste are much influenced by the amount of physical exercise accomplished in a given time, while it is equally true that mental cheerfulness, confidence and activity increase all the physical functions, and that grief, despondency and fear diminish the same. Another factor of great importance, though often omitted when considering the subject of dietetics, is the quantity of oxygen received through the lungs into the blood in a given time, and the conditions of the atmosphere from which it is derived. In the popular mind, diet or food is considered only in reference to the materials received into the stomach in a solid or liquid state, while no thought is given to the quantity or quality of the atmospheric air supplied to the air-cells of the lungs, from which oxygen is being constantly taken up by the blood-currents and distributed to every living structure in the body. When we consider, however, that the oxygen thus derived is nature's excitor of all nerve sensibility and muscular contraction, as well as the active oxidizer of all waste products, we are compelled to recognize it as an essential factor in all the processes of assimilation, tissue metabolism, and excretion. And it becomes as necessary for each individual to secure a sufficient amount of pure air for the lungs, as it is an adequate supply of pure food for the stomach, for universal experience has shown that without a constant supply of the former, the digestive and assimilative organs soon cease to make a healthy and efficient use of the latter. But as nature supplies the air in unlimited quantity at all times without man's labor, his chief ingenuity has been exercised in devising ways and means for either impairing its quality or limiting the quantity to be inhaled, thereby limiting the quantity of its oxygen supplied to the blood. This is seen, not only in the serious interferences with respiratory movements by erroneous habits of dress for the day and the occupancy of small or ill-ventilated rooms for the night, but also in the construction of over-crowded, ill-ventilated and uncleanly houses and workshops, of every kind, for working men and women, by which they are compelled to use both an impure and an inadequate supply of air alike in the shops and the homes.

Nor is this all, for one of the most injurious effects of the enormous quantity of alcoholic drinks and tobacco used in this and other countries, is their influence in lessening the efficiency of respiratory movements and the capacity of the blood to receive and distribute oxygen to the tissues of the body. Experimental therapeutists have fully established the fact that alcohol, by its anesthetic or paralyzing influence on the respiratory nerve center, diminishes the depth of the respiratory movements, thereby lessening the amount of air used, in direct proportion to the quantity taken, and at the same time by its action on the hemoglobin and corpuscular elements of the blood, it lessens the capacity of that fluid to receive oxygen

from the pulmonary air-cells and to carry it to the various tissues of the body. It is by this duplicate interference with the reception and internal distribution of oxygen, that alcohol retards tissue metabolism, encourages the retention of effete products, and lessens the vital resistance to all toxic agents, including pathogenic bacteria, as was so strikingly demonstrated by the recent experiments of Professor A. C. Abbott.

The effects of the use of tobacco on the important functions of the human body have not been demonstrated by as much scientific investigation as those of alcohol, but enough has been done to prove that enough of the active constituent called *nicotine* is imbibed either by smoking, chewing or snuffing to lessen the sensibility of the nervous and muscular structures and to impair the steadiness and efficiency of both the cardiac and respiratory functions. In doing this it necessarily lessens the oxygenation and decarbonization of the blood, and thereby impairs all vital processes in proportion to the quantity used. This has been shown most strikingly by comparing the progress, both physical and mental, of student smokers, in the same classes and subject to the same regulations in other respects, in the schools of France and in some of the colleges in the New England States. These comparisons have uniformly shown that the students who use tobacco, chiefly by smoking, averaged less physical growth and less progress in mental attainments than those who did not use it—the records extending through school periods of three and six years.¹ This effect of tobacco in retarding the physical development and mental progress during childhood and youth has been so fully demonstrated that all investigators agree that its use should be wholly avoided until the commencement of adult age. But if its narcotizing effects upon the cerebrospinal nerve structures and the organized elements of the blood are sufficient to retard both mental and physical growth and activity before the age of twenty years, will not the same narcotizing influence just as certainly lessen the activity of the same structures at any time after the age of twenty years, and thereby lessen the vital resistance to morbid agencies and shorten life?

The use of tobacco not only lessens the efficiency of respiratory movements and the internal distribution of oxygen, but it exerts a special deleterious influence on the heart, often disturbing the uniformity of its rhythm and impairing its force, and not unfrequently causing sudden death by cardiac paralysis.² From the foregoing statements it is evident that a just consideration of dietetics must include all ingesta habitually used, whether solid, liquid or gaseous; through the respiratory as well as through the digestive organs. And such ingesta must not only contain a sufficient quantity and variety of materials to equal the amount of waste from day to day, but they must also be free from such elements as are capable of impairing one or more of the important processes concerned in assimilation, nutrition and secretion.

The ingestion of oxygen and the elimination of carbon dioxid through the lungs is a continuous process, though varying in rapidity during different parts of the day in harmony with the greater or less activity of other functions. Thus oxygen is received and car-

bon dioxid eliminated more rapidly during active muscular exercise than during repose. The same increase takes place during the first two hours after the ingestion of ordinary food into a healthy stomach, and becomes the slowest in the early morning when the stomach and duodenum are most free from food. These variations are accompanied by corresponding changes in the temperature of the body and in tissue metabolism, and being strictly physiologic, they have an important bearing on the proper regulation of diet for the stomach. In all the higher orders of animals the digestive organs and the mental part of the brain are designed for regular diurnal periods of activity and rest. And it is still more true in regard to these organs in men, whose greater mental development and more varied occupations render continuous feeding impracticable. If the stomach, in its capacity and the laws governing its action, render it necessary to take food at stated intervals, it is evident that such intervals should be sufficient to complete the digestion and leave a period of gastric repose before the next meal. As a judicious meal of wholesome foods requires for its complete digestion from three to four hours, and if we add from two to three hours for gastric repose, it would indicate the desirability of not eating in health more frequently than once in six hours during the day, and double that time for the night, when the mind is supposed to rest in sleep. The very general custom of taking three meals per day is, therefore, in harmony with the physiologic laws governing the functions of the body. The amount and variety taken at each meal should be sufficient to supply all the elements necessary for growth and repair, and in such form as to be readily acted upon by the salivary, gastric and pancreatic secretions, and assimilated or vitalized by contact with the oxygen and corpuscular elements of the blood, and thereby fitted to become a part of living organized structures. The rapid progress of organic chemistry during the middle part of the present century, by which both the ultimate and proximate elements entering into the composition of the various structures, organs and secretions of the human body were made known, as well as the composition of all important food products, led physiologists to adopt an almost exclusive chemico theory of digestion, assimilation and nutrition. Finding the salivary, gastric, pancreatic and hepatic secretions each containing active constituents capable of combining with, or modifying some of the proximate elements of the food taken, the chemico-physiologists soon began to manufacture in their laboratories substitutes for, or aids to, the natural secretions, and have continued until the drugstores are filled with an almost endless variety of pepsines, peptones, enzymes, etc., each one of which is guaranteed to digest, or more properly dissolve, a given quantity of fibrin, albumin or protein in a test-tube kept at a proper temperature. Not satisfied with thus furnishing us with artificial aids to our natural digestive fluids, they have undertaken to condense, modify or pre-digest our food products before we eat them, to such an extent that we are at every turn urged to go for food to the apothecary shop, laboratory or the "liquid beef" manufactory, instead of the grocery, the meat-market and the farm. And yet it is probable that disorders of digestion and assimilation were never more prevalent than at the present time, when every such disorder is sought to be corrected by some new food preparation or artifi-

¹ Effects of Nicotine, by J. W. Scaver, A.M., M.D., Quarterly Journal of Nebriety, April, 1897, p. 132.

² Lectures on the Action of Medicines, Lauder Brunton. Pp. 321-323, 1897.

cial food digester, instead of seeking out the causes of the disorder and endeavoring to remove the same. The natural digestive fluids are the products of vital activity in living structures. The salivary glands, the gastric tubules, the pancreatic and hepatic cells and the structures in which they are imbedded, are all endowed with vital properties, and the digestive and assimilative processes are *vitalizing* and not merely chemic changes. The chemist may mix any one or all the elements of food with either artificial or natural digestive fluids in glass tubes or earthen vessels and he may effect their solution, but he would never produce either true chyle, lymph or blood, much less an organized structure. As well might he put an unimpregnated ovum into his incubator, and expect in due time to have a live chicken instead of a decayed and odorous mass within the shell. While it is important that the quantity and quality of our food, and the times for taking it, should be duly proportioned to the amount and kind of retrograde metabolism or loss, it is equally important that we avoid those influences that habitually interfere with the due oxygenation and decarbonization of the blood or depress the functions of the pneumogastric and vasomotor nerves.

The occupancy of overcrowded or ill-ventilated rooms either for sleep or work; the neglect of sufficient open-air exercise during some part of the day; the eating in haste and the indulgence in intense mental activity, anxiety or violent emotions directly after meals or until late hours of the night; and the ordinary use of alcohol and tobacco, are the chief causes of those digestive disorders that have given us the credit of being a nation of "dyspeptics." And an analysis of their mode of action will show that all of them, either directly or indirectly, lessen the efficiency of the respiratory function and the internal distribution of oxygen. That close and persistent mental application in-doors lessens the depth of the respiratory act and consequently lessens the quantity of air used in the lungs and of oxygen imparted to the blood, has long been known.

And mental anxiety and depressing emotions much increase this effect, and sometimes suspend the secretion of gastric juice entirely while the stomach is full of food, while the effect of both alcohol and tobacco have been explained already. If it is an established fact, as previously stated, that oxygen is taken up from the air-cells by the blood-currents much more rapidly during active digestion of food, then certainly all the causes enumerated above should be avoided to the greatest possible extent during the taking of food and for one or two hours thereafter.

Our food should be taken with mental cheerfulness, without haste, and in an atmosphere of fresh, pure air; and for the next hour, at least, only moderate mental or physical labor should be engaged in and all obstructions to full respiratory movements avoided. The general observance of this simple dietetic rule would add immensely to the sum of human happiness, and materially prolong the average duration of human life.

A Valued Friend.—She: Dr. Reaper tells me that he is not only your family physician, but a warm friend of yours. He: Oh, yes indeed, and I can recommend him very highly. She: Has he ever treated you? He: No, not personally. But he was very successful with a wealthy aunt of mine.—*Hartshorn's Roller.*

FUNCTIONAL NERVOUS DISTURBANCES IN PULMONARY INVALIDS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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During a six years' experience with pulmonary tuberculosis in Colorado, with opportunities for continued observation of cases, I have been enabled to note the very frequent association with this disease of the various forms of functional nervous disturbance. The conviction has arisen that there exists a relation more intimate than is perhaps generally recognized between these conditions, which may be justly considered the two most prevalent of American disorders.

A brief review of my clinical observations suggests itself as a means of directing more attention to this relationship, in the hope that ultimately further researches may afford a clearer conception of the subject. Without attempting to introduce any physiologic considerations, I will simply present the result of my own experience with reference to etiologic relations, prognosis, climatic influences and management. It is with much hesitation that I submit this report, realizing only too well the opportunities for error in the compilation of statistical records and the frequently resulting fallacies as to conclusions. I may state that while rather definite impressions as to certain phases of the subject have necessarily been received from daily general experience prior to the present inquiry, the study is here pursued without reference to any preconceived conclusions, with a view to securing more accurate information upon which to base opinions until then held in reserve. I am appreciative of the fact that the value of work of this nature depends entirely upon the authenticity of the records, the degree of intelligent discrimination possessed by the observer, and the most rigid and conscientious attention to detail.

Unfortunately, in a considerable number of the cases my records are incomplete from the standpoint of the neurologist. Some of the histories were imperfectly taken in this respect, and I am unable, therefore, to obtain complete data as regards family history and other etiologic considerations. It is hoped however, that the essential data are sufficiently complete to warrant approximate conclusions. I have preserved a record of 350 selected cases of pulmonary tuberculosis seen in private practice during recent years to Jan. 1, 1898. These cases have been subjected to continuous observation and have been carefully recorded. The list does not embrace those with very extensive infection, and hence with admittedly unfavorable prognosis. Neither are there many included with incipient trouble. The cases, on the whole, may be said to represent fairly the average class of pulmonary invalids in Colorado, exhibiting as a rule upon arrival moderately extensive and rather active infection. I make no effort at this time to classify the cases or report results with sole reference to the tubercular involvement, as this has been done to some extent in a previous paper.¹ It is my object to analyze them simply with respect to the relation between the nervous manifestations and the tuberculous condition. Of the 350 cases, 220, irrespective of any ner-

¹ Boston Medical and Surgical Journal, Sept. 16, 1897.

vous complications, are found to have shown improvement in Colorado. By improvement, without any further explanation, I allude to the varying degrees secured of partial arrestment. About two-thirds of the cases, taken as they come, have done well through a fairly extended period of observation, not including those who improved temporarily and later failed through intercurrent disease, accident or individual indiscretions.

I have divided the entire list into five classes with distinct reference to the nervous condition:

Class 1 numbers 164, or nearly half of all the cases, and represents those who may be considered to be free from any nervous manifestation whatever. Of these, 111, or nearly 68 per cent., have shown pulmonary improvement in Colorado.

Class 2 numbers 98, or nearly one-fifth of the entire list, and comprises those possessing distinctly nervous temperaments, but not presenting definite neuroses. Sixty-four of these have done well. Percentage of improvement, 65.

Class 3 contains 39, or rather more than one-tenth of the whole, and embraces those exhibiting slight neuroses. Twenty-four, or 61 per cent., have improved. Nearly all of this class were subjects of mild neurasthenia.

Class 4 has 33, or less than one-tenth of the whole, and includes those presenting *well-marked* neurotic disturbances. Thirteen, or 39 per cent., have improved. These cases manifested the severer forms of neurasthenia, chiefly of the depressed type, and moderate degrees of hysteria.

Class 5, numbering 16, comprises those individuals with pronounced neuroses, not included in Classes 3 or 4, but in whom the pulmonary involvement was very slight or insignificant. Eight, or 50 per cent., have improved with reference to the tuberculosis. All of this class were markedly hysterical.

In commenting upon these results it is interesting to note that the percentage of improvement in those with distinct nervous temperaments without neuroses, is nearly equal to that obtained in those devoid of all nervous tendencies, and is slightly above the average of the cases as a whole. A rational explanation of this would appear to be that such persons are usually more keenly alive to the importance of their condition, and are therefore more susceptible to advice, and more conscientious in following instructions as to the details of their mode of life. While, speaking broadly, the phlegmatic temperament in tuberculosis, is more conducive to good results than the irritable or nervous. I have repeatedly observed the greater ease with which the active co-operation and obedience of the patient could be secured in those with moderately nervous tendencies. With such there is usually no occasion for argument or explanation. A simple statement of directions is frequently sufficient to entail implicit compliance. As the nervous disturbances increase to some extent, however, the balance is at once thrown to the disadvantage of the individual, and in case of marked neuroses, is exerted powerfully in preventing or retarding improvement. Such influence is well illustrated in Class 5, where the pulmonary involvement *per se* in each instance was so slight as to almost insure recovery.

The further consideration of these cases is limited to Classes 3, 4 and 5, as being the only ones concerning which it is profitable to enumerate statistics. In these three classes out of a total of 88, 45 are shown

to have improved, and 43 to have done badly. Of the latter number, however, 12 had gained for a time in Colorado, but subsequently failed for reasons not to be attributed properly to climate. In Class 3 a history of neurotic inheritance could be traced in 18 instances, or nearly half the cases. Of these 11 have shown pulmonary improvement. In Class 4, 21, or nearly two-thirds, have shown evidence of hereditary nervous influence. Ten of this number have gained in Colorado with respect to the tuberculosis. In Class 5 hereditary taint was strong in 12, or two-thirds of the entire class. Six have shown slight pulmonary or general improvement.

Of the 88 cases in these three classes, 51 present a history of an inherited nervous tendency, 13 may be fairly considered to be acquired, and 24 are in doubt, with no tangible means of ascertaining the facts.

Somewhat to my surprise the relative number of cases improved appears to be not materially different in those with inherited tendencies from the proportion obtained for the entire list, or for those without neurotic taint. It is important to note, however, that there has been a decided difference observed as to the *degree* of improvement, the gain usually being much slower and frequently more unsatisfactory in those with a history of nervous inheritance. I have occasionally recognized the pure acquirement of the nervous disturbance, or at least, its conspicuous aggravation to be developed from an intimate association with others afflicted with pronounced neurotic conditions. This has not been unusual in the case of husband and wife. I have not infrequently seen the development of nervous phenomena among several patients at the same resort attributable to the influence of a single subject of marked hysteria.

Thirty of the 88 cases with functional disturbance presented a history of inherited predisposition to tuberculosis. Of these 17 are also classed as subject to hereditary nervous influence. Fourteen of the 30 cases have done well in Colorado, despite the tubercular predisposition. Of the 17 cases, however, subject to *both* tubercular and neurotic hereditary influence, but 5 have shown improvement. The combination of the neurotic with the tubercular taint is apparently a factor of great prognostic moment.

The cases may be divided, irrespective of the degree of nervous disturbance, into three classes, with reference to the extent of pulmonary involvement. Without entering into a detailed explanation of the method of classification it is perhaps sufficient for present purposes to state that the first division includes those with comparative slight infection, the second those with moderate involvement, and the third those with extensive tubercular invasion.

Class A numbers 30, of whom 23 have shown pulmonary improvement.

Class B also contains 30, with 19 showing improvement.

Class C includes 28, of whom 3 have done well.

Attention is called to the fact that all the first class have gained except those with severe nervous complications; that more than half of the second class have improved, regardless of the degree or character of the nervous disturbance; and that, as illustrated in the third class, an extensive tubercular infection in neurotic individuals presents but slight hope of improvement.

As regards sex, there are 50 males and 38 females: The relative number of males is small in proportion

to the number in the entire list, from which these cases are selected. Of the 350 cases, 243 are males and 107 females. Thus only about one-fifth of the males are found to be subject to functional nervous disturbances, as compared with a little over one-third of the females. Twenty-two of the males with nervous disturbances, or 44 per cent. have gained, while 23, or over 60 per cent. of the females have improved. It is interesting to compare these figures with percentage of improvement obtained for males and females in the entire list. In the latter case the results are nearly equal, the female having a trifle over and the males a little under 63 per cent. These results as to the relative improvement in the sexes, singularly correspond with those obtained in a previous analysis of 200 cases in which the percentage for each sex was 69. The relatively greater gain made by the females with nervous tendencies over the males, is, I think, a striking confirmation of my former deductions concerning the influence of sex upon prognosis and management. I will quote briefly from my conclusions at that time:²

Despite obvious adverse conditions, and contrary to established conclusions, the female has responded to the favorable influence of the climate equally with the male.

Lest this be regarded purely as an instance of the strange fallacies of statistics, I offer several possible explanations in support of my results.

In Colorado, the question of success or failure in the effort to secure arrestment depends largely upon the ability of the individual to conform to a proper regimen of daily life, entailing for its greater perfection certain physical and mental requirements. These, I believe, are possessed to a greater extent by the female.

I can not see that the separation from family is essentially harder for her to bear than for the male. On the contrary, she seems to adapt herself to strange conditions quite as quickly and as comfortably. While, in general, less opportunity is afforded for an existence in the open air, with judicious exercise, a life of more complete rest is assured, with perhaps many hours of sunshine. There is less chafing under restraint, less of the cares and responsibilities of life, less tendency to acts of imprudence, and, from my experience, more implicit obedience to detailed instructions.

It is but fair to add that the financial circumstances of the females in Colorado are in general relatively superior to those of the male. She does not usually seek change of climate unless proper provision has been made for her support.

If these premises are correct it is easy to understand how the female, although obviously more subject to neurotic conditions and more susceptible to nervous influences, nevertheless, in the face of the tubercular infection, is better equipped by virtue of her inherent and acquired tendencies, to withstand their unfavorable influences upon the course of the pulmonary disease.

It may be mentioned further that the improvement was more frequent in those who were relieved from domestic cares and responsibilities of children. As regards previous occupation it is enough to state that the gain in Colorado was decidedly more pronounced in those who had led sedentary lives. Two-thirds of these cases were Americans, the Irish and Hebrew races also showing a comparatively large number with nervous derangements.

With reference to the *character* of the *nervous* disturbance I am unable to effect a satisfactory classification. As the cases have been observed purely from a clinical standpoint, I will only allude briefly to the general nature of the neurotic manifestations, recognizing the difficulties of elaborating an arbitrary analysis. The cases are divided in a general way into

three classes, without reference to special symptoms.

The first includes thirty-four cases, presenting upon arrival evidences of considerable general restlessness with apparent exaltation of nerve forces. Twenty-one, or 64 per cent., have improved with respect to the lungs, while none have shown any perceptible increase of the nervous condition.

The second embraces twenty-eight cases exhibiting marked irritability of temperament with pronounced instability of nervous equilibrium. Ten, or 36 per cent., have shown pulmonary improvement.

The third includes twenty-six cases showing varying degrees of depression and hypochondriasis. Fourteen, or nearly 64 per cent., have improved.

A considerable number of the two latter classes have suffered aggravation of the nervous disturbances in Colorado, as will be considered later, either temporarily or corresponding to a coincident loss in the tubercular disease, or from purely external and easily attributable reasons. Three of each of these latter classes, however, are conspicuous examples of more or less continued exacerbation of the functional derangement from no well-defined cause.

These results are not incompatible with my general observations to the effect that in Colorado, as elsewhere, rather high degrees of irritability offer serious obstacles to a successful issue; that even considerable restlessness and excitation of temperament under appropriate management yields fairly satisfactory results; and that pronounced depression, while the type of neurasthenia exerting the most unfavorable influences upon the course of pulmonary tuberculosis nevertheless responds appreciably to the climatic change.

Insomnia and headaches were frequent special manifestations. Twenty-two suffered to a considerable extent from insomnia. Ten ultimately improved in this respect as well as in the lungs and general condition. In nearly every instance the gain has been slow and interrupted by periods of vexatious exacerbations of the sleeplessness. The majority of the remaining twelve showed no gain at any time, either in the lungs or the nervous disturbance. I have regarded the continued insomnia as of decidedly unfavorable influence upon prognosis; not merely from the loss of sleep and entailed exhaustion, but somewhat as an expression of the more profound nervous irritability with a general susceptibility to all depressing or exciting influences. Attention is called to the fact, although I am unable to give statistics, in this connection, that a very considerable number of pulmonary invalids obtain partial or complete relief in Colorado after having a more or less prolonged period of insomnia before arrival.

Fifteen of my patients were afflicted with migraine. Eleven have obtained relief, and have gained in other respects. In none of these cases however, have the headaches disappeared entirely. The degree of tubercular arrestment has been out of proportion to the neurotic improvement in this class. The latter has followed but slowly and unsatisfactorily a gain in the general strength. I have not sought, save in a few instances, to provide relief by attention to local causes.

Twenty-seven were victims of well-defined hysteria. Sixteen have shown pulmonary improvement, but remain subjects of the original neurosis, though some to a lesser degree on account of increased nutrition and suitable environment. Eleven had done poorly in every way, in eight of whom, as previously stated,

² Boston Medical and Surgical Journal, Sept. 16, 1897.

the pronounced hysteria was directly responsible for the unfortunate results.

An inquiry as to the *time of development* of the disturbances is perhaps of some interest. Of the 51 cases with hereditary influence the manifestation of the nervous condition was apparent in nearly every instance before the recognition of the tuberculosis, but was very frequently aggravated subsequently. Of the 37 in whom no family history of neurotic taint could be discovered, 10 may be considered safely to have exhibited rather pronounced symptoms before the onset of the tuberculosis but which became more marked later; 12 only after the development, or coincidentally with it, and 15 unknown. Apparently the effect of the tuberculosis has been to render the pre-existing nervous disturbance more pronounced, to increase the susceptibility to such influences in those already predisposed by inheritance, and to provide the appropriate conditions for the acquired development, i. e., impaired nutrition, mental depression and auto-intoxication. Likewise, the previous existence of well-marked functional nervous derangement can but afford added opportunities for the development of tuberculosis, from the lessened resistance of the individual, and hence the increased receptivity of the soil to the agent of infection. Impaired general nutrition, while frequently a result, is also undoubtedly a potent factor in the causation of *each* diseased condition.

With reference to climatic influence, it may be stated that in almost no case were the manifestations of nervous disorder displayed for the first time in Colorado. Thirty-four cases suffered an aggravation in this State. Of these, 9 were rendered worse only temporarily and later improved satisfactorily in this respect. Twelve exhibited greater nervous disturbance coincidentally with a corresponding loss of the tubercular condition, with increased impairment of strength and general nutrition. Seven presented exacerbations to be referred solely to sufficient external causes capable of application anywhere, as excessive dissipation, extreme burden of business cares, and unfortunate domestic relations. The remaining 6 became worse, from a neurologic point of view, in the absence of any apparent cause. Of the entire number (34) rendered more nervous, either temporarily or permanently after arrival, 19 died as a result of the pulmonary infection or have grown worse. The balance at the present time are showing varying degrees of improvement. Nine of these have made a remarkable gain in all respects, despite decided nervous disturbances.

Finally, of the 45 cases previously alluded to as having exhibited distinct pulmonary improvement, 39 showed an ultimate gain in the nervous disorder, and of the 63 cases showing no permanent loss, or doing well from the neurologic standpoint, 39 have improved with reference to the tuberculosis. Thus the results are:

Improved in both conditions	Cases. 39
Improved in tubercular but not in nervous condition. 6	
Improved in nervous but not in tubercular condition. 24	
No improvement in either.	19

The reasonable interpretation of this would appear to be, that the influence of the climate upon the nervous condition had been particularly advantageous in a large proportion of the cases, presumably by virtue of the pulmonary improvement secured with the increased nutrition. It is also evident that the climate

has been not unfavorable, to say the least, for the considerable number who either showed an improvement or no change neurologically, notwithstanding a progressive loss in the tubercular disease. These conclusions are of interest in view of the oft-repeated assertion that the co-existence of nervous manifestations contraindicates a recourse to the Colorado climate for the consumptive. The statement of the alleged aggravation of the nervous condition with the resulting unfavorable influence upon the course of the pulmonary disease, presupposes the hypothesis that improvement in the functional disturbance must precede arrestment of the tubercular infection, and at the same time advances the argument that the nervous derangement is of more essential consideration than the tuberculosis. It has been my observation that the nervous disturbances have diminished almost invariably in proportion to the degree of arrestment and the gain in the general strength. I am convinced that the majority of cases temporarily aggravated, or even developed early after arrival, are due in great measure to purely psychical influences, as enforced absence from family and friends, inability to immediate adaptation to strange surroundings, and previously accepted theories as to probable climatic effects. Such cases usually respond favorably later to rational and appropriate management. It should, however, be conceded, I think, that occasionally certain cases, especially those with strong inherent tendencies and severe manifestations, do poorly, particularly in the high altitudes of Colorado. These cases have been comparatively few in my own experience.

While the existence of pronounced nervous conditions in pulmonary tuberculosis constitutes a factor of grave prognostic moment in any location, it would seem that the climatic consideration of the tubercular infection per se should be regarded as of paramount importance. I would also insist that the especial significance of functional nervous disturbance in pulmonary invalids, should be to add further emphasis to the necessity of strict personal attention to details of management, environment and mode of life.

A FASCICLE OF CASES IN SUGGESTIVE (HYPNOTIC) THERAPEUTICS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY H. S. DRAYTON, M.D.
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The American medical world has shown itself easily affected, as a rule, by the current of events, medical and surgical, in Europe. The experiments of Koch with tuberculin, of Klebs, Loeffler and Roux with antitoxin, and the various suggestions with reference to organic extracts—cerebral, testicular, thyroid, etc.—that have crossed the Atlantic have received a ready attention, in some cases developing into a wave of enthusiasm, and have found practical recognition in employment by many of our progressive medical brethren. I would refer merely to the disappointment that some have experienced in applying these more or less authoritative procedures, and remark *en passant*, that the wisest of us are subject to mistake occasionally through the very earnestness of our desire to wrest from old Mors one at least of his dreaded instrumentalities for human decimation.

In view of the readiness of the American profession

to entertain foreign advice in therapeutics it seems inconsistent with that quality of mind that one well accredited *modus* has not aroused interest enough to have it accorded a fair trial. I refer to the hypnotic procedure, or what is otherwise termed suggestive therapeutics. I am sure that all who listen to these remarks have learned something of hypnotism, and whatever the opinion they may entertain concerning it the fact is conspicuous that for several years this form or variety of psychologic medicine has had its hospital or dispensary establishments in Austria, Germany and France, and names of wide reputation, like those of Benedikt, Kraft-Ebing, Charcot, Delboef, Binet and Bernheim, are associated with it. Some American physicians have ventured to treat patients in this manner, but it would appear that with a few exceptions they were merely experimenting, and too distrustful of results to make the method a real part of their professional equipment. Some, too, I judge to be tender on the side of reputation, apprehensive that they might be regarded as giving sanction to "a superstition," as hypnotism was rather vaguely termed recently by the editor of one of our periodicals. I can scarcely believe that any one here gives heed to the medieval nonsense that sensational and unscientific writers offer to the unlearned public under the title of hypnotism or mesmerism.

Having given several years to the observation of the phenomena of suggestion I have come to the conclusion that the hypnotic state is consistent with the human physiology, and not to be regarded as determining a positive pathologic phase of either mind or body, although its induction may prove valuable as an aid in diagnosis. I have also reached the conclusion that in hypnotic suggestion we have at our hands an agency, the power of which is not fully realized, for the treatment of many forms of disease. In this statement I merely confirm the utterance of many writers from the time of Braid and Esdaile to the present.

I shall proceed to give some account of a few cases from my notes of those patients whose maladies commanded more than ordinary consideration. Let me assume that those present are sufficiently familiar with the common methods of inducing hypnosis, although for my own part I can not say that I have any particular method. One of my earliest experiences was recorded about nine years ago:

Case 1.—Frank S., a young man 28 years old, came to me with a history of epileptic attacks dating back to his fifteenth year. His physiognomy, the spare figure, angular hatchet face, dark, acne-spotted skin, dull expression, jerky, irritable movements intimated the chronic epileptic. As the attacks were frequent and often in series, he was incapacitated for remunerative employment. Then, too, the sequelæ of a fit were becoming more severe and exhausting. He had been under the treatment of several specialists. Of one remedy he had taken \$400 worth, according to his father, with alternations of effect, but no decided improvement. Hypnotism had been suggested to the family of Frank, and I was requested to try it, as a *dernier ressort*. The young man consenting, a trial was made, and at the first interview sufficient control was obtained to warrant going on. My object, it may be unnecessary to say, was to impress the mind of the patient with a strong sentiment of opposition to the attacks, to reinforce his will in this behalf, and also to exercise as much personal control as possible over such of his habits as needed correction. He was a cigarette smoker, used strong coffee, and was prone to excess in eating, while in some respects his social doings needed amendment. The hypnotic control enabled me to be quite thorough on this side of his life.

The effects of this treatment exceeded my expectations. In a month he began to improve. The attacks occurred less frequently, and his health in every respect showed amendment.

After a time the treatment was given at irregular intervals, two or three weeks being allowed to intervene between a sitting, and when the patient's last report was made to me he had had no recurrence of the fits for three months, and had undertaken the transaction of business that required travel and exposure, a venture that previously would have been regarded by his friends as entirely out of consideration. In the course of my observation of this case there were developed certain phenomena that will, I think, be considered extraordinary, even if familiar with hypnotic cases. When the patient first came under notice his attacks occurred without warning. He would drop suddenly to the floor or ground as if struck by lightning, and on reviving a severe headache usually compelled him to rest a while, if not to sleep. During my treatment if an attack occurred he would be likely to come out of it with little more than a sensation of dullness that soon wore off. Twice the seizure occurred when I was within ready call, and then, to my surprise, I found that I could, in a few seconds, check the spasm and restore him to consciousness. On one occasion he fell to the floor in the presence of several persons, and was struggling violently when I came to his side. A sweep of my hands from the head to the knee suspended the convulsion and at my command he opened his eyes and rose to his feet, and within ten minutes was able to continue the business transaction he was engaged upon when he fell.

Case 2.—Mrs. E. M. of New Jersey, a woman of 50, of German parentage, vigorous and active, came to me with an account of prolonged attendance upon friends suffering from depressing fevers in spring time. Her appetite had failed, a distressing erythema had supervened rendering her unable to sleep or find repose in any direction. Such medical treatment as she had tried had but increased her distress and restlessness, and further endurance of the condition she declared unbearable. A strong, imperative nature, she seemed at first an unpromising subject for hypnosis, but yielded with comparative ease to the simple procedure of sitting in a comfortable chair and gazing steadily at the white knob of a door four feet or so distant. A brief manipulation of the head deepened the sleep into which she fell in less than ten minutes. Suggestions were made with reference to improvement of appetite, the recovery of nerve control and sleep. Two days later a second treatment of a similar nature was given, the lady reporting great improvement in general feeling, having slept well and relished her meals. This improvement was confirmed by the entire recovery of her usual vigor in the course of two weeks. This case is not offered as of an uncommon type.

Case 3.—Miss A., a lady of Boston, about 32, sent to me by her physician. She had suffered with an obscure cerebral malady for sixteen years; tracing it to nervous shock occasioned by a carriage accident. The focus of the disease lay in the situation of the right angular gyrus or anterior margin of the first occipital gyrus. From that point pain, almost constant when not under the influence of anodynes, radiated to all points of the head, being most severe in the course of the right optic nerve and of the great longitudinal sinus. A well-educated lady, with remarkable self-control, she described her symptoms with great clearness. It is an interesting confirmation of the doctrine of localization that her sight, especially in the eye opposite the supposed lesion, had gradually become impaired until she could not read ordinary print or distinguish objects thirty feet away. For relief of the pain, etc., she had visited specialists abroad and at home, and tried, she said, every kind of treatment—even to the late inventions of mental science and faith cure—and although at the suggestion of her last medical adviser she would now request me to try hypnotism she could feel little confidence in that. At the fifth interview Miss A. passed into the state of semi-trance, which state was repeated at the four or five succeeding interviews. The procedure in this case was simply to sit by the lady while she reclined upon a lounge, to hold her right hand in one of mine, occasionally to manipulate with great gentleness the forehead; meanwhile commanding her in a mild tone to go to sleep. With this semi-trance came entire relief from pain and abatement in the extreme sensitiveness of the scalp that had been an accompaniment of the malady. Besides the suggestion of relief from the old head misery, I advised the taking of small doses of gelsemium tincture and the application of hot-water compresses to the painful parts. The improvement in this case, as described by the mother and companion nurse of Miss A. was marvelous. After the third treatment she was able to ride out and endure with comparative comfort the noise and jars of the street. A year later she called at my office and reported that she had had but an occasional memory of her old affection, and were it not for her defective vision would consider herself perfectly well.

Case 4.—Rosa P., 33 years old, of Russian birth, dark com-

plexion, strongly bilious in temperament, well developed muscularly and possessing the powers of endurance usual to her race. The malady was peculiar in its effects; hystero-spinal in origin, with centers of reflex in the lumbar and cervical plexus, it was exhibited chiefly by great tenderness and pain in the lumbar vertebræ and flexor contractures of both hands and of the cervical muscles. The contractures of the hands, when she was brought to me were apparently permanent, any effort to open them resulting in an intense and painful paroxysm in which the clench was greatly increased and the arms participating in the flexure. The history of the case included ten years or more of hospital treatment and expert observation. The first attack, it was said, had come on unexpectedly when the patient was a girl of 15. She found her hands disposed to close and could not account for it. Belonging to an intelligent family, every available means were tried for her relief. In Russia, Austria, Germany and England she had been under treatment by specialists, Professors Benedikt and Krafft-Ebing among them, a variety of procedures having been undertaken, with but temporary relief, if any. Hypnotism had been employed, but only under repeated suggestions could the contractures be reduced for a brief space. Owing to some influence that was unpleasant in the hypnosis that was commonly produced, it had become objectionable, and the woman at first declined to submit herself to my treatment. However, after a brief interview she consented to a trial and passed easily into complete trance, and at command the hands slowly relaxed. On coming out of the sleep, which was profound, and without any transference of consciousness from one state to the other, the hands remained open and flexible, and continued so, enabling the woman to assist in household duties, etc., for three days, when they closed. Then she came again to me and was relieved of the contraction in the same manner. This woman remained under my observation and treatment for upward of three months, when she went south to live with a married sister. During this time her general health improved; the spinal myalga, which, when I first saw her, prevented but brief rest in any position besides that of sitting upright, also yielded gradually to the suggestive influence. In a letter received fully two months after her departure from New York she stated that her hands had not closed, although she feared they might, because of her inability to apply to me for treatment. I should state in this connection that I had little expectation of doing the patient any permanent benefit because of her unfortunate family environment and lack of necessary care. A year later I saw her, she being brought to my office by her relatives, who wished to have her placed in some public or charitable institution. Her physical state had become much worse, but the poor woman, with eyes swimming in tears, held up her hands to show me that they were still open and flexible.

Case 5.—This case, of a widely differing nature, has a peculiar interest because of certain phenomena. Mrs. M., a strongly built, energetic brunette of 35 years, attending lectures at one of the medical schools of New York City, came to me in February, 1895. She recounted certain nervous experiences that interfered imperiously with the performance of anatomic studies. She was totally unable to dissect. On entering the room where cadaveric material lay she was seized with a strange nervous excitement that compelled her to withdraw immediately, and a distressing sickness followed, the effects of which usually lasted two or more days. The origin of her neurosis she believed to be this: Ten years or so before she came to New York, her father had died suddenly of apoplexy. She was not at home at the time of his death, and on returning was not immediately informed of it, although she knew that he had been very ill. Going into his room, she was surprised to find him lying silent and unresponsive. While she stood at the bedside gazing in speechless anxiety at him, there burst from mouth and nose a stream of blood. This unexpected spectacle terrified her so extremely that for weeks she was subject to hysterical fits and on the border of insanity. For years afterward visions of that blood-stained corpse and bed appeared in her sleep and in her waking hours. A woman of more than ordinary strength of purpose, she had striven against the terrible memory, and believed, until she attempted to use the scalpel, that she had nearly overcome the Nemesis of her life. She did not prove an easy subject for hypnosis, but at length entered the semi-unconscious state—which, I may remark here, is claimed by some writers to be the true hypnotic condition as distinguished from the mesmeric or magnetic trance. As it might be, however, the suggestions for mental calm and self assurance in the performance of anatomic work and other duty were given, and a half dozen sittings of the kind were given. In the course of six weeks Mrs. M. advanced in the degree of self-control until she, as testified by one of her classmates, could

handle the instruments of dissection with coolness and facility.

During the winter of 1895-96 this patient reported to me at times, and to the effect that in pursuing her second year of study she had no trouble whatever, and that her recovery from the mental dread and solicitude of years was practically assured.

Case 6.—Mr. C. A., about 34 years old, by profession a lawyer; of excellent family. The history of the case is imperfect, and it is not necessary to dwell on what may appear to be very probable factors of etiology. Dr. F., who introduced the patient, desired to test the power of suggestion upon a mind confessedly under the influence of a delusion of fear that had continued for some years, and was becoming more accentuated. The patient, a clear-headed and rational man on other subjects, entertained a profound dread of being alone; would not venture to go from one room to another in his father's house without company, and it was only with great difficulty that he could be persuaded to go out of doors for a few minutes. When brought to my office he was in a state of excitement, with high pulse and pallid face. After some minutes of desultory chat, during which his nerves recovered a state of comparative calmness, I requested Mr. A. to sit in an easy-chair and to gaze as steadily as possible at the lens of a lamp used for laryngoscopic examinations, five or six feet distant; meanwhile I sat by his side holding his left hand in my right, one finger pressing upon the radial artery. At the beginning of the experiment his pulse ran quickly up to 120, and then gradually fell to 80, as nearly as I could estimate without consulting a watch. After sitting quietly in the attitude directed, I advised him to relax nerve and muscle as much as possible, giving himself up to a sense of ease and comfort. I gently stroked head and forehead, now and then repeating the admonition to be calm and comfortable. This was the nature of the first interview. At the next interview A. exhibited less excitement on entering my office, and a similar procedure was adopted as in the first, suggestions being added relative to the correction of his delusion. Repeated assurances were given of better self control, more steadiness of will, less attention to surroundings, more courage, spirit, independence, self-possession, etc. This line of suggestive treatment was continued at succeeding interviews until the fourth, when I commanded him to leave his residence at a certain hour in the afternoon, and walk unattended around the block. This was done, and the circumstance related to me by A. with considerable satisfaction. A few days later he came to my office without attendance. In the meanwhile he had gone with a friend to visit the Hagenbach collection of trained animals, an excursion of two or three miles from his home. The spell under which he had suffered appeared to be broken, for after two more interviews I was informed by his old physician that an extensive tour in Europe had been arranged on which he (the Doctor) was to accompany Mr. A., and that my fee for services rendered would be honored on sight. Since that time there have been no intimations of a return of the trouble, and Mr. A. is not the candidate for early confinement in an asylum that he had been considered only a few weeks before I first saw him.

REPORT OF A CASE OF RAYNAUD'S DISEASE WITH PATHOLOGIC FINDINGS.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. EUGENE RIGGS, A.M., M.D.

ST. PAUL.

HISTORY.

Mrs. M., age 64, weight 195 pounds, American, housewife. Had typhoid fever at age of 19, pneumonia at 53, measles, whooping cough, diphtheria, acute articular rheumatism at 50 years. Father died at the age of 76. Mother died at age of 71 of cancer of the breast. Has two sisters living, in average health, and one brother, whereabouts and condition not known. Two years before, the patient had noticed a peculiar numbness of sometimes one finger sometimes another of the left hand, which would last about half an hour. This continued at intervals for over a year. During this period the attacks of numbness came on about once a week, sometimes two mornings consecutively. She was, however, apparently well, when on the evening of Feb. 6, 1896, while going upstairs she was sud-

denly attacked with extreme numbness of the left hand and forearm, with a complete paralysis of motion and sensation in the same. She immediately went downstairs, when she found her hand as white as marble, friction giving her considerable pain. The hand remained white all night, and pain prevented sleep. Next morning the patient noticed the end of the thumb beginning to turn dark, and later other finger tips. The severe pain continued when not controlled by morphia, up to the date of admission to the City and County Hospital, Feb. 9, 1896.

On admission, it was noticed that the reddening was excessive, pulse 80 and somewhat irregular and intermittent, temperature 98.4. Finger tips of left hand were black, with exception of little finger, which was darker than normal. A dark streak extended up the dorsum of the hand between the thumb and forefinger to within three-fourths of an inch of the carpometacarpal articulation. There was loss of sensation and motion in the left hand, extending on the palmar surface to the metacarpo-phalangeal articulation, also loss of the sense of heat and cold over the same area. The arm was cold to junction of middle and upper third of humerus; veins of forearm and hand were very perceptible, giving the arm a peculiar marble-like appearance; the ends of the fingers of the left hand markedly shriveled on palmar surface.

At 11 P.M., February 10, on attempting to get up, she suddenly fell back in bed in an unconscious condition. The face became extremely dark, all respiration ceased, the pulse imperceptible except in carotids, where it could be barely felt. On auscultation, the heart could be only faintly heard. On the morning of February 11 two red areas appeared on the outer side of both thighs, which rapidly extended down the limb reaching the knee about 8 A.M., at which time a dark red spot was noticed on the heel of each foot, also along the external surface of the foot. At 8:45 the four outer toes began to turn purple and the outer aspect of the legs from knees down rapidly turned dark. The inner and anterior surface of the foot and leg was of a peculiar white color with markedly white veins coursing through the whole area. Patient complained of a very severe burning pain in the foot; the legs were cold to the knees. Apparent loss of motion and sensation in the limbs and feet. Patient was somewhat delirious and exceedingly restless. Tips of all the fingers of the right hand were of a dark purple color, but there was no paralysis of motion present in this member. In the right hand there was no development of the marble-like appearance preceding the reddened condition.

At the time of death local syncope had extended up the anterior surface of the left arm to the shoulder and the red color had extended up the dorsum of the arm, also in the axillary region down to base of ribs. The same condition existed in the right axillary region. Both legs were found to be perfectly rigid at 1 P.M., the flexors of the feet predominating. Marbled appearance of anterior surface of both limbs present after death, extending to about three inches above the knee. The brighter red condition on the inner side of the thighs changed shortly before death to a much darker hue. The right remained about the same as at 1 P.M. (Some edema of the lungs noted before death.) The slightly darkened spot which was noted on the left ear appeared perfectly normal after death, which was not the case with other portions of the body affected. Examination of the urine showed tube casts and albumin.

AUTOPSY.

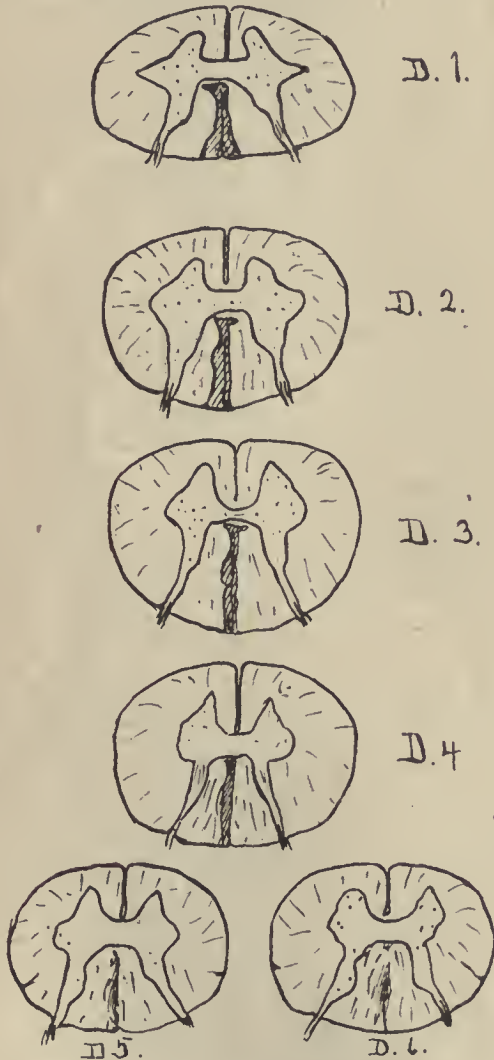
Body very fat (weighing probably 200 pounds); rigor mortis well marked; postmortem lividity slightly marked over the back and under surface of the body. The thumb and all fingers of the left hand were black and gangrenous, the two distal phalanges being involved. On opening the calvarium the membranes of the brain were normal, except the pia mater, which was slightly edematous. The hemispheres of the brain were symmetric and of normal firmness. The vessels at the base of the brain showed the walls very slightly thickened, but no evidence of atheroma nor deposit of lime salts. On opening the thorax the pleural cavities were found free from adhesions; the lungs showed slight emphysema along the anterior borders, otherwise they presented no pathologic changes. The pericardium contained a small amount of clear straw-colored fluid. The heart was large and its walls infiltrated with fat. On section, a large post-mortem clot was found in the right ventricle entangled in the tendons of the tricuspid valve. The cavity of the right ventricle was somewhat dilated. The left ventricle contained some liquid dark blood; its chamber was markedly dilated and the walls near the apex very thin (about one-fourth of an inch), and consisted of fat and degenerated muscle. The mitral orifice was stenosed, admitting only the point of a finger. This was due to old inflammatory thickening, with deposit of lime salts in the anterior leaflet, and slight thickening of the posterior leaflet of the mitral valve. The left auricle was markedly dilated. The muscle wall of the heart was soft and flabby and showed marked evidence of fatty infiltration, with fatty metamorphosis of its walls, best shown near the attachment of the papillary muscle and in the ventricular septum. The blood-vessels of the heart were free from atheroma. The aortic valves showed no pathologic changes. The wall of the aorta was smooth.

Abdomen.—The layer of fat of the abdominal wall was enormously thick—2½ inches in places. An old irreducible omental hernia was found at the umbilicus, which was retained in place by peritoneal adhesion. The opening through which this protruded was about an inch in diameter; the intestines, especially the colon, were markedly distended and the mesentery and omentum were infiltrated with fat. The left kidney was slightly enlarged, its cortex narrow and the pelvis filled with fat. The capsule stripped easily, leaving the surface smooth. The vessels on the surface were much injected, contrasting markedly with the pale parenchyma of the organ, which showed marked evidence of nephritis. The right kidney was smaller than normal, due largely to narrowing of its cortex. The capsule stripped with difficulty, tearing with it portions of kidney, leaving a roughened surface. The cortex was very narrow and its surface uneven, showing here and there puckered areas and a few cysts. The spleen was somewhat enlarged (almost twice its normal size) soft and pulpy and on section very dark. The liver was soft and flabby, slightly smaller than normal and its surface yellowish gray. On section there was visible slight fatty infiltration, and bile-stained areas and dark liquid blood exuded from the severed hepatic vessels. The gall-bladder contained one large irregular cylindrical shaped calculus about one and one-fourth inches in length and three-fourths of an inch in diameter, and with it several small dark granular calculi were present. The stomach showed nothing

unusual. The pancreas were slightly smaller than normal and presented a narrowing near the middle. The head of the pancreas, on section, was darker than normal, but of the usual consistence. The uterus contained a small calcified sub-peritoneal fibroid tumor over the right cornua. The spinal cord was removed, also the median nerve of the left arm from the bend of the elbow to the hand. The radial artery of the left hand contained dark coagulated blood from a point extending about two inches above the annular ligament. The vessel wall was not atheromatous, and no thrombus was discernible. A noticeable feature of the case was the very dark liquid character of the blood all through the body.

when the medulla was embedded and cut in the same manner as the cord, the sections placed in Müller for a week and then stained by Weigert's method. Of the brain only a portion of the anterior cerebral artery was examined microscopically, after staining in paracarmine. The following are the findings:

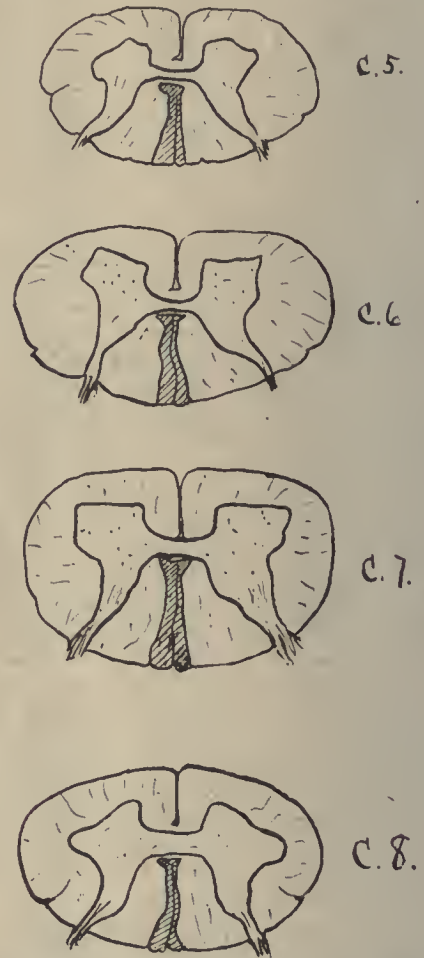
Median nerve.—Transverse sections showed many unstained and unparently shrunken fibers irregularly scattered through all the bundles. Longitudinal sections showed almost all the fibers unstained and shrunken in irregular located segments; throughout the entire course of the several portions examined there appeared to be a simple parenchymatous degeneration. The proportion of degenerated to normal tissue appeared to be about three to two. Many rather large capillary hemorrhages were observed in the sections.



Area of degeneration in Case 9.—Raynaud's Disease. Rigg's Path. Lab.

MICROSCOPIC FINDINGS.

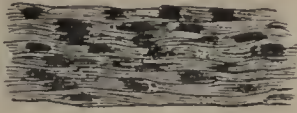
The brain, medulla, segments, C 5 to D 10 of the spinal cord and portions of the median nerve and the anterior cerebral artery were received in the laboratory Feb. 11, 1896. The brain and medulla were injected with carmine starch solution and placed in formaldehyde sodium-zinc-chlorid solution. The cord and median nerve were placed in Müller' fluid. After three months the hardening of the cord and nerve was completed in alcohol, followed by embedding in celloidin, cutting and staining by Weigert's and Weigert-Pal methods. The brain and medulla were kept one year in formaldehyde, etc., solution,



Area of degeneration in Case 9.—Raynaud's Disease. Rigg's Path. Lab.

Spinal cord.—Numerous transverse sections from segments C 5 to D 10 inclusive were examined. All segments from the tenth and seventh dorsal inclusive appeared to be perfectly normal, except for slight capillary hemorrhages scattered through the posterior median columns. Throughout all the other segments examined, from the sixth dorsal to the fifth cervical inclusive, the posterior median columns showed degeneration and numerous capillary hemorrhages. This degeneration first very faintly marked in the middle of the mesial margin of the left posterior median of the sixth dorsal segment column and gradually widening until in the seventh cervical the entire

column area on both sides was involved, was throughout most complete on the left side and in the crescentic area near the gray commissure. The latter area seemed also to be the seat of the most numerous capillary hemorrhages.



Long. section Median Nerve.

Medulla.—The lower half of the medulla, or at least all portions below the restiform bodies, had unfortunately been destroyed in the process of removal. Numerous sections taken from various levels alone failed to show any abnormalities whatever.



Cross-section Median Nerve.

Anterior cerebral artery.—Sections from various portions of this artery showed only a very slight thickening of its external coat.

SUMMARY.

It will be seen that this case had a typical beginning—local syncope, accompanied by much pain and associated with local asphyxia in the same limb. The typical venous marblings were present in both extremities and were very pronounced. The gangrene was of the mummy-like order, coming on without blisters, and the characteristic conical finger points with their shrunken and shriveled skin were most conspicuous. The local asphyxia of the left ear was well marked. We find also asphyxia developed in the right hand without accompanying or preceding local syncope. Death ensued before the latter development of the disease could appear.

The course of this case was however markedly different from the clinical description outlined by Grasset. He recognizes three periods: that of invasion, lasting from a few days to a month; that of development, with the accompanying pains and the commencement of gangrene; and that of elimination of eschars, extending over a period varying from ten days to ten months, the mean duration being from three to four months.

Cold, traumatism, renal and cardiac disease, atheroma, malarial and local poisoning, diphtheria, grippe, gout, organic and functional disease of the nervous system are so often associated with Raynaud's disease that they assume an etiologic value. At times, however, no apparent cause can be found, in which case the affection may be termed idiopathic. The theory generally accepted today as to the pathology of the disease is that held by Raynaud himself, viz., that there is a contraction of the small arteries, a tetanic spasm of nervous origin of the great sympathetic. He believes in a central origin because of the symmetry of the alterations.

In the above case the postmortem would point to a

renal and cardiac complication, though the marked cord lesion must not be overlooked, as a possible etiologic factor. Had this last any relation to the symptoms? From its character it must have antedated the onset of the acute symptoms, though not those first observed by the patient herself. The bilateral areas involved most were not those through which most fibers from the upper extremities pass, but those of the lower extremities, which were latest affected. The left column was more affected than the right and the symptoms were much more pronounced on the left than on the right side. The degeneration of the left median nerve was probably due to the condition of the left hand.

This case was referred to me by Dr. J. B. Brimhall of St. Paul.

THE STRESS OF MODERN CIVILIZATION AS A FACTOR IN THE CAUSATION OF INSANITY.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

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In presenting a few thoughts upon this subject, I desire not to be exhaustive, but to present points merely for your consideration. The author does not claim the stress of modern civilization to be an exclusive factor in the causation of insanity, yet one which should not be dismissed without consideration. He believes that it is the most intimately associated with the formative period of life; that it is a causative factor in the development of neurotic temperaments. Instead of modern culture making the masses more resistive and better qualified for life's battle, in many instances, by reason of over-stimulation and faulty cerebral development, it tends to weaken the inhibitory qualities of the brain.

We are told that man in uncivilized life has but one source of pleasure, viz.: The gratification of his animal desires and passions. In his ultra civilized state, however, we find him possessed of another and higher condition—"a psychical existence—an intellectual life." This changed condition, the result of an irresistible evolutionary process, has transferred him from the field of ethnology to the domain of psychology.

A comparative study of mental alienation of both the uncivilized and the highly civilized races shows an unusually high per cent. of insanity in the latter. Omitting from our consideration epilepsy, trauma and their results, little or no insanity is observed among the unenlightened races. The higher the scale of intelligence and the more exacting the demands upon a people, the more likelihood there is apparently, of brain disease.

That civilization, and especially our modern civilization, should be a factor in its causation, though humiliating to admit, seems nevertheless to be true. Civilization itself is a departure from man's primitive condition. It is a development which gives to him a sort of dual existence and establishes within him an artificial standard. It has made new and extensive demands upon his energies; it has taken nutritive fluids out of their former and accustomed channels, that the brain might be supplied with the best vitalizing fluids of the body.

Anatomically we know the brain is made up entirely

of cells, fibers and ground substances, with the necessary framework of connective tissue, blood-vessels etc. If the processes going on in this structure be limited to its capacity, no harm is expected. If, however, the brain be subjected to the stresses of modern civilized life, a possible over-stimulation and consequent injury may result therefrom. Studying our subject from a histologic standpoint, we find that the nerve-cell belongs to the highest order of animal life aggregation. It possesses specialized nerve function and becomes a necessity in maintaining a proper relation between the infinite number of protoplasmic elements which compose the living animal.

We find that a mental process is the product of cell metabolism resulting from stimulation. The nerve fibers or processes from the nerve-cells, when bunched together in the great centers, must be insulated. There must also be communication between the cells of different and similar function, that the animal, as a whole, may fulfill its highest mission. We know that the muscle-cell, without its individual metabolism, would be useless, even though stimulated by an intact nerve-cell. The same can be said of a brain-cell. We know, in either case, perfect nutrition is essential. The latter being the most highly organized, would suffer the most from nutritive disturbances.

The immature elements of most recent development and highest in the scale reflect very early the disastrous effect of excessive or diminished nutrition. Considering the relatively large size of the cerebro-spinal system of a child at birth, the immaturity of its elements, and, in conjunction with this, the rapidity of growth in the first five years of life—from about eleven ounces at birth to forty ounces in the sixth year—we need not search further than environment for a possible production of early neuroses. Trivial causes produce profound impressions. Instability of the peripheral nerves, instability of the centers, lack of inhibition in the motor ganglion cells, accompany rapid development, diminished resistance and early exhaustion from undue stimulation. If this be true, will not the stress of modern civilization act most perniciously during the formative period of a human being's existence, by reason of undue stimulation, and from this reason will it not so weaken the nerve centers that the neuroses of childhood can but give place to mental enfeeblement or destruction in the adult?

"The prevailing tendency of modern civilized life is to over-stimulation of children. The tendency pervades our whole educational system. It permeates juvenile literature, it is manifest in childish recreations and has invaded the home. Such overstraining and stimulation of the nervous organism can not fail to cause harmful effects during childhood, and frequently produces neurasthenic and nervous temperaments in later life." The five senses were given to us by our Creator that the brain might take cognizance of His created energies. That we might approach nearest to His divine attributes, especially His omnipotence, the human brain was made of material most sensitive. Not that it could receive and record only the images about it by the aid of the reflected rays from the sun, or to analyze the sound waves, but also to receive and understand that which came to it through taste, smell and touch. In our environment of modern civilized life, the delicate structures of the ear and brain, which were so constructed as to recognize the tone, pitch and harmony of sound, are being

shocked by the discordant screams of the locomotive, the noise of the street-car with its clanging bells, the rumbling of the heavy wagons upon our stony pavements, the monotonous cry of the newsboys, the auctioneer or the fruit vender upon our street corners. By reason of all this, the beautiful and refreshing sleep of childhood is disturbed and the growing brain, which demands so much repose during this period of life, has been made to suffer therefrom.

The human eye, even more delicate in construction than any other organ in the body, no longer has reflected upon its retinal expanse the beauty of field and flower; the rolling landscape; the crystal streams with their green verdured banks, or the blue, starry vault above us, but is made to witness the revolting scenes of men maddened by their scramble for gold, or begrimed by the heat of toil in the busy marts of trade. The delicate olfactory cells which gather strength and delight from the pure air of the country, laden with the aroma of growing flowers and ripening grain, which gladden the heart of childhood, are dulled and blighted by the smoke and stench of our cities. Instead of this maddening whirl and strife of modern civilized life, could the eyes of childhood but be limited to see nature in her pristine beauty; the ears hear only the sweet carol of birds and the melody in the rustling leaves of the forest trees; then the sweet lullaby songs of mother would never cease to ripple harmoniously in the chambers of memory. If these things could hold a place in our modern civilized life, no one would dare say that the stress of modern civilization was a factor in the causation of insanity.

UTERINE HYPERESTHESIA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY EPHRAIM CUTTER, M.D.

NEW YORK CITY.

Included in this are uterismus, vaginismus, esophagismus, caputismus, pedismus, spinismus, crinismus and all pains that are reflex from the uterus, either touchal or experienced subjectively alone. To show that such cases are common, permit the following illustration:

Mrs. A. complained of swelling and pain in both ankles, called rheumatism, but there was no morphology of rheumatic blood. Intra-uterinismus was found and treated with iodoform vectors. It was cured and also the ankle joint troubles.

Miss B. had vaginismus so that she had to be etherized for an examination, which revealed an ante-flexed and anteverted uterus. After the use of iodoform vaginal capsules the vaginismus was cured and afterward the uterine lesions of place were relieved by mechanical means.

Miss C., aged 30, could not swallow solid food. Bougies showed that there was no organic stricture of the gullet. Careful exploration revealed a verted and flexed uterus, relief of which was followed by the alleviation of the painful esophageal spasmodic actions.

Mrs. G., one of the best and bravest patients, was ill with a hyperesthetic swelling of the back of the left hand. I touched it gently. "Oh, doctor," screamed she, "don't touch my hand. I would rather you would knock me down." Rheumatism was looked for but its blood morphology was absent. I said that the womb must be at fault. She disputed it. But it was found to be hyperesthetic and retroverted. When these were relieved the hand got well.

Many women have complained of inability to wear shoes and walk, because their feet were so sore, and yet there would be nothing abnormal about the feet. But when their uterine hyperesthesia and lesions of place were relieved the feet were also.

A woman married and the marital functions were disturbed

by her screams of agony and by her collapse, so that every time connection was tried the family physician would have to be summoned. On one occasion—not marital—this physician gently touched her spine in examination and she fainted. This case was seen in consultation. Further history not known.

Calling on one of my uterine cases once, I was met with the exclamation, "Oh doctor, please excuse the disorder of my hair, as I can not bear the touch of comb or brush to my head."

Mrs. G., above alluded to, sometimes had hyperesthesia of the whole body, so that at night she could not bear the weight of bed and night clothes and was obliged to be nude.

What is pain, which is the main element of hyperesthesia? It is something invisible, imponderable, subjective, felt. It needs the medium of nerves which, fully paralyzed, abolish pain, as in etheric anesthesia. After many years' study the writer is inclined to take the ground that pain comes from a partial paralysis of the nerves. Smite with a birch switch and you inflict pain, but with a crowbar you can smite without pain because you kill the person smitten or completely paralyze the nerves near to or remote from the injury. It has seemed as though the uterine hyperesthesias unexplained by organic changes, arose because its stock of nerve force, dynamis or constitutional energy had been so exhausted by the lesions of function or place that the uterine nervous system was partially paralyzed and squealed in pain when it acted. Also that it steals from other parts of the body, whose nerves thus robbed of their share of dynamis squeal also. It is reasonable to expect that its relief must come by restoring to each autonomic organ its normal amount of nerve force by abolishing, if possible, the physical conditions of its cause.

As an inventor of pessaries, I have had to contend with uterine hyperesthesia as the greatest bane to their use. Hence what is said here is the outcome of a fight with conditions that have baffled gynecologists for ages. It is useless to use a pessary or, if you will allow the personality, the Cutter pessaries, unless the hyperesthesias are removed. There are exceptions but they are few. I beg, entreat, implore and beseech that this should never be forgotten. If so, we shall hear less of the hard things said against the use of pessaries. It is a pity that these instruments should suffer because of the disobedience to this rule—a pity, as otherwise more patients would be cured and less opprobria cast on the profession, which it really does not deserve.

I try to utter these moritural words with truth and soberness. There is a conventional disregard of uterine hyperesthesia. Lately I saw a report where a gynecologist examined and treated the females in a large insane asylum and found two-thirds suffering with hyperesthesia and uterine disease. Systemic works glide over this subject. If I am mistaken I shall be glad to be corrected.

A physician told me once that he had never dared use a uterine sound. It would be but guess work to diagnose internal hyperesthesia without it. I think the Simpson sound too big. I like a rigid steel sound, platinum plated, the size of a No. 1 vesical sound. From what I hear, I judge that uterine hyperesthesia is ignored as subjective, as a whim and as unworthy of attention.

As a rule, women bear pain well. Prof. H. L. Hodge of Philadelphia, used to say in his clinics, "When a woman complains, in ninety-nine cases out of a hundred she has a good reason for it. If you are not smart enough to find out what is the matter with her, say so, and never blame her as a malingerer."

Through patients I have heard of women doctors

who used a cold and unanointed speculum in hyperesthetic virgin vaginas. This shows that woman's inhumanity to woman exceeds that of man to woman. I have been called rough by male physicians, but I never had a lady patient say so. Hence I invoke women practitioners to be specially on the watch for "uterine hyperesthesia," and never to undertake to use a pessary without first having removed the hyperesthesia, if present.

The "irritation" of Professor Hodge I call hyperesthesia. He taught its existence as a neurosis without any appreciable organic lesion. But the writer is of the opinion that it exists along with organic lesions, which lesions are curable without the knife in some cases. I have had extra uterine fibroids contemporaneous with mammary gland fibromas and hyperesthesia, that have been diagnosed as cancer, and yet they have been removed by diet and the principles here laid down, after the irritation of Hodge had been removed.

The metabolic changes in health are not confined to normal tissues and organs, but they are applicable and are going on in unhealthy organs or tissues. If healthy organs or tissues can be hyperesthetic it is more likely that unhealthy organs or tissues will be because they have less vitality. To illustrate: on Dec. 13, 1896, I was poisoned at an autopsy, on the proximal end of the first phalanx of my left little finger. Today there is a dermal tuberculosis, whitish, leprous, red, with flattened hard elevations pitted at the top.¹ If anything, the diseased is more hyperesthetic than the sound skin, as unconscious touchings which are unnoticed by the sound skin are hyperesthetic. In fact, galvano-caustic hurts more than on the sound skin. Do not then let the terms "irritation" and "hyperesthesia" be buried in Prof. Hodges' grave and mine own.

Debts of gratitude are due to McDowell, Atlee, Kimball, Sims, Thomas and other surgeons, for opening new fields of gynec diagnosis which to Professor Hodge were unknown; but the knife is not everything. Nor do women exist for laparotomy sections alone. The knife should be used in cases of hyperesthesia as a last resort. For example, a lady said that a distinguished surgeon (whom I love) decided that she needed an immediate laparotomy of an ovarian cyst, seated where she had hyperesthesia. Had he made a vaginal examination he would have found a case in question. Under the principles laid down here and diet, the ovarian and uterine hyperesthesia have disappeared.

A good test is the laying on of hands, practised, I am told, some 2600 years B. C., and now in Germany. Place the patient in supine posture. Put the right forefinger on the hyperesthetic uterus and the left palm over the hyperesthetic ovary. The dynamis thus conferred removed the pain in the last case in a few minutes. I should add that I have not been able to detect the cyst. In 1873 I learned from patients rubbing my well knee that the pain in my broken knee was relieved, when otherwise it had its own way.

Iodoform vaginal gelatine capsules have been found very useful. I have used them since 1862. Though it works most admirably, the bad odor of iodoform is its greatest objection, otherwise I place it at the very head of all medicines, opium not excepted. Aristol comes next to iodoform and is used the same way. It is a wonderful medicine. It ought to be a household

¹ Nov. 28, 1898, cured.

remedy for cuts and burns. I tried it last summer. When rolling, at our seaside cottage, after most had left, a barrel on to a piazza, my hand slipped and a rusty nail projecting from the supporting board penetrated the fascia of the palmar surface of my right wrist. It burnt. It bled. Immediately the whole hand was in hyperesthetic agony. Aristol powder was laid on, then absorbent cotton and a bandage. Shortly the pain subsided. Without suppuration, the wound healed kindly in a few days. The scar remained some time longer and now is gone. I can not help thinking that if uterismus is relieved as my manismus was, it is easy to see why women express their feelings of relief during its application. I think this bit of experience not out of place here as showing the power of aristol to relieve intra-uterine hyperesthesias. To make the vectors, mix aristol into pill mass with molasses which is a little thick, cut into proper size, apply mass to pin-headed wires three inches long that screw into a wire handle like a uterine sound, mould into cylinders with a spatula on a glass plate. Iodoform is used in the same way. Once one application of an iodoform vector to a 3½-inch hyperesthetic uterine cavity in one month's time was followed by a reduction to normal size. In this case the wife of a foreign ambassador at Washington was enabled to resume her diplomatic receptions, at which previously she had fallen insensible on the floor. Amitol is a new substitute for iodoform which I have found quite useful. Its whiteness, cheapness and odorlessness are recommendations. Gelatine vaginal capsules have long served a good purpose. It should be remembered that the meaning of our subject is a loss of nerve force. Restore this and sustain nature's biologic efforts is the way to cure. Those illustrative cases could be given, but as the injunction is to "write short papers," this must suffice.

120 Broadway.

THE SURGERY OF CAMP WIKOFF.

BY N. SENN, LIEUT. COL. U. S. V.

CHIEF OF THE OPERATING STAFF WITH THE ARMY IN THE FIELD.

(Concluded from page 1355).

ERYSIPELOID.

Erysipeloid, an acute inflammatory affection of the skin, described by J. Rosenbach, is a disease of the skin not often recognized. It is usually mistaken for erysipelas. The parasite was described by Rosenbach more than ten years ago, but it has never been classified. Attempts to cultivate it have failed so far. This disease is met with usually among persons engaged in the handling of fish and meat, that is, cooks and butchers. It is attended by very slight constitutional disturbances and its local progression is slow as compared with erysipelas. The starting point is generally a finger, where infection takes place through slight surface defects or a puncture. It consists, pathologically speaking, of a subacute inflammation of the lymphatic channels of the skin. The affected skin presents a bluish color instead of the bright red seen in erysipelas. Another and perhaps more important characteristic sign in the differentiation between erysipeloid and erysipelas is the appearance of the margin of the inflamed area. In erysipeloid the shading from diseased into healthy skin is gradual, the line straight, in erysipelas abrupt and the margin presents well-marked fan-shaped projections instead of a straight line. The thickening of the skin by infiltration in erpeipeloid is slight and the only thing the patient complains of is a sensation of burning or smarting. The disease travels in the direction and against the lymph-current, so that when the point of infection is some distance from the tip of the

finger, this is reached in time by extension of the inflammation downward from the point of infection. The disease travels slowly, it usually takes a week or more before the inflammation reaches the base of the finger when infection takes place anywhere near its tip. The lymphangitis seldom if ever extends beyond the elbow joint. The infection may extend from one finger to another when the inflammation travels in a distal direction. The skin soon returns to its normal condition behind the zone of infection. A case of this kind came to the surgical ward for treatment.

Case 41.—Patrick J. M. McGeoch, age 24, kitchen employe, presented himself September 9, complaining of a burning, smarting pain in the right index finger, which commenced four days ago. Over the radial side of the affected finger, opposite the middle joint, is a small abrasion covered by a thin adherent crust. The skin half as far as the tip of the finger and an inch above this point is slightly swollen and presents a bluish-red color. The discoloration is most marked on the dorsal side. At the proximal margin of the zone of inflammation the diseased gradually shades into the healthy skin, both in regard to color and swelling. Patient is able to follow his occupation. The case presents all the characteristic signs of Rosenbach's erysipeloid. An alcohol compress with oiled silk over it was applied. In three days the inflammation had extended to the base of the finger while the distal portion, the seat of the disease when the patient first came under observation, presented a normal appearance, the skin being somewhat shrivelled by the action of the alcohol application.

AFFECTIONS OF THE RECTUM, ANUS AND ADJACENT TISSUES.

Rectal affections in some form were very common among the returning troops from Cuba. It is fair to presume that some of the soldiers were the subjects of a mild form of hemorrhoids when they entered the service, but it is equally certain that none of them were affected with fistula or abscess. To show the disproportion of rectal disease between the recruits who applied for enlistment and the soldiers returning from the field, I will state that of 10,000 applicants examined in Camp Tanner last spring the following rectal affections were noted: Hemorrhoids, internal, 2; external, 219; inflamed, 1; fistula, 1; prolapsus, 2. I attribute the prevalence of rectal diseases among our patients in this camp to the following causes: 1, intestinal affections contracted in the camps and Cuba; 2, improper food; 3, the relaxing effect of a tropical climate; 4, frequent exposure. Few of our soldiers escaped diarrhea or dysentery. The irritation of the rectal mucous membrane could not fail in many instances to produce a catarrhal proctitis. The inflamed mucous membrane became permeable to the passage of pathogenic microbes, which so constantly infest even the healthy rectum. The loose pararectal connective tissue, under the influence of general causes, became more susceptible to infection, it is therefore not astonishing that we should have found so many cases of perianal, perirectal and ischio-rectal abscesses and their consequences, fistulae. Inflammatory affections of the rectum play also an important etiological rôle in the development of hemorrhoids. We found in a number of cases a direct connection between an antecedent rectal inflammatory affection and the subsequent appearance of hemorrhoids. The intense tenesmus which attends catarrhal proctitis and dysentery causes muscular changes and lesions of the mucous membrane which often become the principal cause of pararectal inflammation and hemorrhoids.

PARARECTAL ABSCESS.

Under this head I will report all cases of suppurative inflammation in the vicinity of the anus and outside of the rectal wall that have been operated on in Camp Wikoff. In all cases the suppurative inflammation pursued a very rapid course. The pain, as a rule, was intense, and fluctuation could be felt distinctly in the course of four or five days. In high-seated paraproctitis the general symptoms were usually severe, a high temperature and a rapid bounding pulse. It was in these cases that the affection assumed the most progressive form. The abscess contents were always fetid, otherwise presented

the usual appearance of pus as found in acute abscesses in other localities.

Case 42.—Robert F. Stanley, age 22, Troop G, Ninth Cavalry, colored. Perianal and ischio-rectal abscess. While in Cuba had diarrhea for eighteen days—August 27 to September 1—had chills and fever. Reached Camp Wikoff September 3, on which day he had pain about the rectum before and during defecation and on sitting down. He was admitted to surgical ward September 8. By careful palpation a small area of circumscribed induration as large as a pea could be felt on the right side of the sphincter muscle and about one-third of an inch from the surface. This swelling could not be detected from the rectum. Pain was greatly increased under pressure. A small incision was made and about half a dram of pus escaped. The little cavity was washed out with peroxid of hydrogen and carbolized water and loosely packed with a strip of iodoform gauze. As an external dressing a hot moist antiseptic compress was used and held in place by a T bandage. Immediate and almost complete relief followed the operation. On the ninth, the temperature rose to 100 degrees F., on the tenth to 101. The pain was intense and referred to the opposite side of the rectum. September 10, a fluctuating swelling could be felt from the perineum and the rectum. The abscess bulged externally as well as on the rectal side. The patient was again anesthetized and the abscess incised through the perineum to the left of the median line. A large quantity of extremely fetid pus escaped. As the undermining was extensive two counter-openings were made, one below and one above the first opening. Two fenestrated rubber tubes were employed in draining the large cavity. The abscess was washed out with carbolized solution and peroxid of hydrogen, and the moist antiseptic compress applied. The pain was relieved at once and the discharge after the operation slight. No tendency to further undermining, on the other hand all indications point to an early and permanent healing of the abscess cavity.

It is in cases like these that practitioners so frequently make a serious mistake by postponing from day to day opening and draining of the abscess. If we had deferred the operation for another day or two the abscess would have ruptured into the rectum and would have led almost inevitably to the formation of an internal or complete fistula. The horseshoe fistulae following cases of ischio-rectal abscess, so frequently found in any of the large surgical clinics are the best proof of the necessity for early operative interference. The rule should be to open such abscesses early, from the external surface, and if fluctuation can not be felt from this direction but from the rectum, the tissues on the side of the rectum can be tunnelled with forceps after making a superficial incision, until the abscess cavity is reached. The surgeon must so conduct the treatment that the formation of a fistula can be avoided, and this can be done in nearly all, if not all, cases in which the abscess is opened before it ruptures into the rectum.

Case 43.—Alva J. Vananken, age 27, Troop K, First Cavalry. Perirectal abscess. On his last day in Cuba the patient had a mild fever and diarrhea; the latter persisted fifteen or sixteen days. For the last ten days has had a throbbing pain in the post-anal region. An abscess found and opened in the median line, between the anus and coccyx. Under ether anesthesia the abscess cavity behind the rectum was freely opened with the Paquelin cautery, taking the fistulous opening in the median line as a guide for the incision. The cavity was thoroughly disinfected and packed with iodoform gauze, over which the usual moist dressing was applied. Rapid healing of the cavity by granulation.

Case 44.—Robert Sylvester, age 24, Company G, Fourth Artillery. Has been ill with typhoid malarial fever while in Cuba. Returned from Cuba on the steamer *Leona*, and reached Camp Wikoff about September 1. Soon after his arrival he noticed pain on the left side of the rectum. The pain and tenderness increased rapidly in intensity. September 7, he was admitted to the surgical ward and the operation was performed without anesthesia three days later. At this time the abscess was prominent on the side of the anus and the overlying skin presented an inflammatory blush. Fluctuation very distinct from the rectum as well as from the surface. The abscess was opened by a single incision and tubular drainage established, as the incision was large enough to serve for drainage. After disinfection of the cavity and packing it lightly with iodoform gauze, a moist antiseptic compress was applied. The patient was very weak at the time the operation was performed, but gained sufficiently in strength in a week to warrant his transfer to a hospital in Philadelphia.

Case 45.—Joseph Barret, age 28, Third Infantry, Company G. Ischio-rectal abscess. About the time of the surrender of Santiago had general malaise, fever, vomiting and diarrhea for which he has since been on the sick list. Several days ago he began to experience pain in the rectum which has increased steadily since, and at the time he was admitted to the surgical ward the ischio-rectal abscess had opened spontaneously on the right side just within the anal margin. General health much improved. On August 31, under chloroform anesthesia the abscess cavity was distended with peroxid of hydrogen for the purpose of ascertaining its exact size and location. A grooved director was inserted into the fistulous opening and used as a guide in laying open the abscess cavity freely with the knife point of the Paquelin cautery. The abscess cavity was disinfected and packed loosely with iodoform gauze over which the moist compress was applied. He improved rapidly after the operation and a few days later was transferred to a hospital in Boston.

Case 46.—William Head, age 20, Eighth Ohio Infantry, Company G, enlisted two and a half months ago. Admitted to the surgical ward with a history of malarial fever and dysentery in Cuba, followed by ischio-rectal abscess which discharged itself near the anal orifice on the right side. Discharge continues profuse. The peroxid of hydrogen test was applied to ascertain the extent of the abscess cavity which was found to extend high up into the ischio-rectal fossa. Owing to the marked anemia and general debility a counter-opening was made lower down and thorough drainage secured, in place of opening the abscess cavity freely with the Paquelin cautery. Chloroform was used as an anesthetic. The general and local conditions improved promptly after the operation.

FISTULA.

The spontaneous rupture of a pararectal or ischio-rectal abscess into the rectum is generally followed by the formation of a fistula. If the abscess communicates with the rectum its existence can be surmised from the intermittent discharge of pus and local symptoms which refer to the rectal lesion. An internal fistula of such an origin is often made complete by the abscess finding eventually an external outlet somewhere in the anal region. An external fistula caused by the opening of a pararectal abscess not infrequently becomes complete by the destructive process penetrating the rectal wall. I have long ago abandoned the probe in differentiating between an external fistula and a complete one. Injection of peroxid of hydrogen into the cavity under pressure makes a positive diagnosis at once. If the fistula is external the abscess cavity becomes tense, if complete the peroxid foam enters the rectum and will escape from the anus. The probe is only used after the test has made the diagnosis and then only as an aid in performing the necessary operation. In diagnosing the existence and location of an internal fistula the rectal speculum is of the greatest importance. Rectal fistula will be less frequently met with when the profession as a whole recognizes the importance of early operative interference in cases of pararectal abscess. In my surgical work in Camp Wykoff only two cases of rectal fistula presented themselves for operative treatment.

Case 47.—Lieut. G. W. Goode, Troop I, Ninth Cavalry. Hemorrhoids and fistula. He was admitted to the surgical ward August 24. He has been almost habitually constipated, and has been much in the saddle. He knows of no definite preceding illness to account for present condition. He has had much pain and bleeding on defecation, pain persisting for an hour or two after. Examination reveals large internal and external hemorrhoids and an incomplete internal fistula following the rupture of a post-rectal abscess, into the rectum through the middle of the sphincter muscle, posterior side. The abscess cavity, the size of a walnut, was freely laid open upon a grooved director with the knife point of the Paquelin cautery. The incision was carried directly backward through the median line. The hemorrhoids, two in number, affecting the posterior segment of the anal ring were removed by clamp and cautery. The abscess cavity was loosely packed with a strip of iodoform gauze. The rectal tampon remained for two days. The patient made a rapid recovery and was able to leave the hospital September 13. The agonizing pain attending and following each bowel movement disappeared immediately after the operation.

Case 48.—John M. Boyd, age 29, Troop G, Third Cavalry, enlisted four months ago. Admitted to the surgical department of the General Hospital August 27. His health was

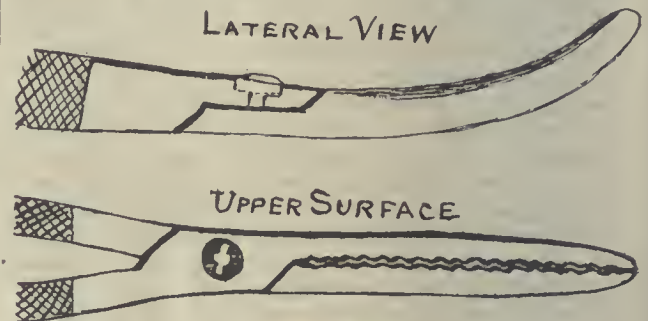
good until he went to Tampa, June 8. At that time he suffered from diarrhea which was persistent, but did not prevent his doing duty in the saddle. For the past five weeks and following a severe pain in the rectum which continued several days, he has noticed a discharge of pus from the rectum. The pain did not disappear entirely after the abscess ruptured into the rectum and was always aggravated during defecation. August 28, under chloroform anaesthesia the sphincter ani was dilated, the internal opening was found, the cavity distended with peroxid of hydrogen, external counter-opening made by the aid of the grooved director and the intervening tissues divided with the Paquelin cautery. Iodoform gauze packing and dry dressing. The internal opening in this case was just above the sphincter muscle, the abscess on the right side of the rectum. Rapid healing of the abscess cavity.

HEMORRHOIDS.

A large number of hemorrhoid cases came to the surgical ward with the desire and expectation of receiving the benefits of a radical operation. I am satisfied that only a small percentage of those affected were willing or prepared to be subjected to an operation. Some of the cases examined peremptorily declined to receive treatment knowing well that the results would put one claim for pension beyond their reach. In my capacity as operating surgeon of the camp I was very anxious to curtail the list of pensioners of this war by performing operations for surgical affections which, if left alone, would furnish a just claim upon the Government. On the whole, I found the colored soldiers much more willing than their white comrades to be benefited by surgery. They proved themselves worthy of their hire in the hospital as well as on the battlefield. Too much can not be said in praise of our colored soldiers. They showed a staunch faith in their doctors as well as their commanders, and were ready at all times to follow their advice as well as the commands of their officers. Nearly all of the hemorrhoids operated on showed pathologic appearances which demonstrated their recent origin. In a very large percentage of cases the first manifestation of hemorrhoidal condition was preceded by intestinal disturbances, diarrhea or dysentery. Fortunately, I had two Paquelin cauteries at my disposal as soon as the operating tent was opened. As I said in the beginning of this paper, my instrumentarium at first was a very scanty one. Instruments, however, began to come, day after day, and finally I had an excellent supply, including a number of cases for special work. The absence of a proper pile clamp from the outfit of the surgical ward at the outset, necessitated the use of something as a substitute. This was found in a curved hemostatic forceps. Except for its lightness, and therefore comparatively inefficient grasping power, this answered the purpose admirably. In fact, the facility and accuracy with which the hemorrhoidal swelling could be clamped and isolated, the small space required for its use, and its general convenience and ease of handling as compared with heavy clamps, now in the market, led to the devising by Major Adams of Chicago, of a hemorrhoid clamp similar to the forceps used, but so constructed as to obviate the defects of weakness and imperfect grasp found in that instrument. The use of the forceps as a clamp has demonstrated, that the amount of pressure and crushing exerted by the old-fashioned instruments are unnecessary and uncalled for; also that there is no need of ivory plates to prevent the transmission of heat through the metal of the forceps to the underlying mucous membrane, as in no instance was any ill effect observed from this cause. Another advantage of the narrow blade forceps has been demonstrated in the absence of any hemorrhage whatever after operation. The new clamp has blades with a serrated grasping surface 5 cm. long, curved on the flat, the width of the blades closed is 9 mm., their thickness 6 mm., beveled away from the upper to the outer edge for 1 mm. The object of the bevel is to allow of the operation of the cautery with the least possible contact with the metal of the clamp, to avoid heating. The blades come into contact at the point first, so that uniform pressure is exerted

the whole length of the blades when closed, and the hemorrhoid can not escape its grasp at the point, as often happens with the ordinary clamp.

The handles are arranged like those of a needle forceps. With one exception the hemorrhoids were removed with the knife point of the Paquelin at a dull red heat, after clamping the swelling at its base. The hemorrhoid was first grasped with a dissecting or hemostatic forceps, when the base of the cone elevated to the desired extent was grasped and clamped with the forceps and the mass outside of the grasp of the instrument shaved away with the cautery. The operation of removal was always preceded by dilatation of the sphincter. The patients were always properly prepared for the operation the day before. The rectum was thoroughly cleared out by the administration of a cathartic and irrigation. The last enema was given on the morning of the operation. As a rule, two or three seizures were made. After dilatation of the sphincter the hemorrhoidal swellings were located and grasped with forceps so that the work of clamping and cauterization could proceed without interruption. Care was exercised in every case not to remove too much tissue; due allowance was given for subsequent contraction. The anal region was shaved and prepared in the same manner as for operations in other localities. One of the principal sources of pain after operations for hemorrhoids has been the protrusion and swelling of the cauterized surfaces. For many years I have suc-



TRANSVERSE SECTION OF BLADES.

Hemorrhoid clamp, devised by Major Adams.

ceeded in preventing this very painful post-operative complication by resorting to drainage and rectal tamponade. This method of dressing rectal wounds after this operation is not sufficiently known and practiced. Those who have not tried it might entertain a fear that it is a source of distress rather than comfort. Quite an extensive experience with this method of after-treatment enables me to make the unqualified statement that the rectal tampon, properly applied, is well borne by the patients and makes the use of anodynes superfluous. I never administer opiates after operation for hemorrhoids. The rectal tampon not only obviates unnecessary pain, but it also is almost an absolute protection against secondary hemorrhage and more than this, it provides for free rectal drainage and constitutes the best possible dressing for the cauterized surfaces.

When I first used this tampon, I was under the impression that it was something new, but I learned later that Mitchell Banks had used a very similar contrivance before. The tampon is made by taking a piece of rubber tubing eight inches in length and inserting into it a glass cylinder three-fourths of an inch in diameter and about 2 inches in length. The glass tube is placed where the gauze tent is tied over the rubber tubing for the purpose of furnishing a support to the string with which the gauze tent is tied upon the tube and to insure patency of the tubular drain. The rubber tube should project well over

the glass cylinder on the rectal side. The gauze tent is made of one or two layers of iodoform gauze. After completion of the operation the tent is carefully folded and the upper portion covered with vaseline. The tube is then inserted into the rectum to the depth of three or four inches and the space between the tent and tube packed with strips of iodoform or plain sterile gauze. After the required amount of packing is inserted the tampon is pushed in the direction of the rectum sufficiently to bring the pressure above the grasp of the sphincter muscle. In doing this the projecting mucous membrane and what may remain of the external hemorrhoids are completely reduced. The gauze outside of the anal orifice is then wound around the tube and forms a part of the external dressing. Over the gauze a wide ring of absorbent cotton is applied and the whole retained in place by a T bandage. The tampon should remain for 24 to 48 hours.



Rectal tampon. Rubber tube 20 cm., glass tube 8 cm.

In removing it traction is made on the gauze tent sufficiently to bring the packing within easy reach when it is removed before an attempt is made to extract the tube. After the removal of the tampon the patient should be given a laxative and after this has acted the cauterized surfaces now minus the eschar are protected by applying carbolated vaseline or some other antiseptic non irritating ointment. I have made it a rule to keep the patient confined to bed for at least a week, still better two weeks. The cases of hemorrhoids operated upon in this camp with very few exceptions have been men whose general health was much impaired, yet in every case the wounds healed quickly and in the most satisfactory manner under the treatment outlined above.

Case 49.—M. J. McNulty, age 31, Company D, Sixteenth

Infantry, enlisted six months ago. Has had small hemorrhoids for two years, causing inconvenience only after heavy drinking. In June, while in Florida, bleeding at stool occurred for the first time. Since he suffered from malarial fever and diarrhea during the Cuban campaign, he has suffered from profuse bleeding on defecation. September 3, under chloroform anesthesia, three hemorrhoidal swellings were removed.

Case 50.—George Morton, age 47, sergeant Ninth Cavalry, Troop A, colored, has been in the service ten years and seven months. Had dysentery two months ago, since then has suffered from pain in the rectum and bleeding with each evacuation of the bowels. August 26, under chloroform anesthesia, three hemorrhoids, partly external and partly internal, were removed by clamp and cautery.

Case 51.—Jesse Donaldson, age 30, Troop M, Ninth Cavalry, colored, enlisted three months ago. While in Tampa, patient suffered from malarial fever and diarrhea, the latter continued for three or four days. Has not been well since that time. Since August 1, he has been much inconvenienced by a hemorrhoidal affection which developed recently. Operation performed under chloroform narcosis, September 2. Three internal hemorrhoids, two posteriorly, one at upper right quadrant, were removed in the usual way by clamp and cautery.

Case 52.—Claude F. Hall, age 23, Company G, Sixteenth Infantry, had hemorrhoids about four years ago, but not so severe an attack as the present. Recovered without operation. Has been in the service since the 17th of September, a year ago. Following an attack of malaris and diarrhea in Cuba, he has been suffering from hemorrhoids for the past six weeks. He has no bleeding, but the hemorrhoids have been protruding constantly and are very painful. September 7, under chloroform anesthesia, three internal hemorrhoids were removed in the usual manner by clamp and cautery. They were located respectively in the posterior right and left quadrant.

Case 52.—James Jervis, age 19, Company K, Thirty fourth Michigan Infantry, enlisted three and a half months ago. Had diarrhea two weeks, before leaving Cuba. Has had much pain and bleeding with movements of bowels since. Never had rectal trouble of any kind before. August 31, under ether anesthesia, two internal hemorrhoids were removed.

Case 53.—Ora Keithley, age 23, Troop M, First Vol. Cavalry, first suffered severe pain from hemorrhoids in July, when on duty in Cuba. He had had previously an attack of rheumatism from exposure to rough and wet weather and sleeping on wet ground. On September 7, three hemorrhoids, partly external and partly internal, were removed.

Case 54.—Horace Carden, age 24, Troop M, First Vol. Cavalry, has suffered off and on for three years from hemorrhoids, the present attack was not preceded by any bowel complaint or other illness. Has had no bleeding, but much pain and itching. Operation under chloroform anesthesia, September 8, when three internal hemorrhoids were removed.

Case 55.—Silas McGovern, age 28, Troop A, Ninth Cavalry, colored, has been in the service three years. Patient was admitted to the surgical ward September 3. One week ago, directly following an attack of diarrhea, he noticed pain in the rectum on defecation. The mucous membrane of the rectum protruded with each stool. Day after admission the patient was chloroformed and three internal hemorrhoids were removed. The appearance of the swellings indicated their recent origin. The mucous membrane was in a state of catarrhal inflammation. The posterior half of the anal ring was principally affected by the hemorrhoids as well as by the catarrhal inflammation.

Case 56.—Joseph Etter, aged 19, Troop I, Ninth Cavalry, colored, has suffered for the past two months from hemorrhoids which he believes were brought on by heavy lifting. Since the supposed "strain" he has experienced severe burning pain with each movement of bowels and profuse bleeding. Pain has been persistent after stools for several hours. September 8, under chloroform, three large, dark-blue hemorrhoids were found, one on right and left side posteriorly, and one on anterior left quadrant. The swellings were removed as usual by the use of clamp and Paquelin cautery.

Case 57.—Lee Shanks, age 26, Troop A, First Vol. Cavalry, has been in the service three months. He has been suffering from hemorrhoids for the past month with no illness preceding. He has had much pain after defecation, but no bleeding. Under chloroform three external hemorrhoids were removed, September 2. One of the swellings occupied the posterior wall of the rectum to the right of the median line, one to the left of the median line posteriorly, and the third in the anterior left quadrant. The hemorrhoids were disposed of in the usual manner.

Case 58.—Corporal Samuel H. Edwards, Troop C, First Cavalry, began to suffer from profuse bleeding on defecation the

latter part of July, following an attack of diarrhea while on duty in Cuba. Pain has not been severe at any time. September 10, under chloroform anesthesia, four very large internal hemorrhoids were removed by clamp and cautery, two from either side of the median line anteriorly. The hemorrhoids in this case were distinctly venous, the swellings being composed of ectatic veins almost exclusively.

Case 59.—Henri Meuronval, age 43, Company F, Second Volunteer Engineers, has suffered from hemorrhoids since puberty, with exacerbations at varying intervals. Recently much pain and bleeding. Examination under chloroform, September 11, revealed a large internal venous hemorrhoid on the right side, which, owing to the fact that the Paquelin cautery did not work that day, was treated by ligature. Before the silk ligature was applied, the mucous membrane at the base of the swelling was incised. An ulcer as large as a dime was detected directly over the sphincter muscle in the median line and posterior surface. This ulcer was evidently the remote result of a retroanal abscess which occurred a year ago. Since that time the pain during and after defecation has been much more severe. Besides stretching the sphincter, preliminary ligation of the hemorrhoid the superficial fibers of the sphincter muscle were divided, carrying the incision through the center of the anal ulcer. Rectal tamponade as usual. The pain was relieved promptly by the operation.

Case 60.—Capt. Nat Phister, age 44, Company G, First Infantry, has had attacks of hemorrhoidal distress in 1888 and 1893 but not so severe as at the present time. He has suffered severely with present attack since August 19, the exciting cause being constipation. The suffering was much aggravated by a long ride in the saddle which he was compelled to take while the hemorrhoids were prolapsed. Since that time has had severe pain and constant muco sanguinolent discharge, necessitating the wearing of a diaper. Under chloroform a medical operation was performed September 8, consisting in the removal of two large hemorrhoids, largely external, and affected by extensive excoriations. The operation afforded the desired prompt relief.

Case 61.—John M. Dixon, age 40, Company B, First Infantry, had an operation seven years ago and had no trouble after that until about the first of August, when after a prolonged attack of dysentery he began to suffer with prolapse of the rectum. He has been in the service seventeen years and when last attack occurred he was in Cuba. He reached Camp Wikoff September 13. He has been greatly debilitated by the dysentery, and the prolapse occurs whenever he assumes the erect position or attempts to walk. Has much constant distress with pain, smarting, itching and occasionally bleeding. Under anesthesia operation was performed September 14. A large hemorrhoid was removed from the posterior aspect of the rectal wall and a vertical strip of mucous membrane by clamp and cautery. A smaller swelling and strip of mucous membrane were removed from the left quadrant in a similar manner. Rectal tamponade. Strict directions were given that the patient should be kept in the recumbent position for at least a week.

Case 62.—James Skinner, age 28, Troop H, Ninth Cavalry, colored, was sick in Cuba with dengue fever, about twenty days, beginning about July 14. Recovered only partially from this before (beginning August 14) he had an attack of malarial fever lasting fifteen days. During both attacks he had poignant diarrhea. During the early stage of malaria the hemorrhoids appeared, with much pain, prolapses and bleeding. On September 13, under ether narcosis, two internal hemorrhoids were removed from the posterior wall of the rectum middle line, and the right posterior quadrant. Patient's health much impaired, anemia marked.

Case 63.—John Holloman, age 22, Troop B, Ninth Cavalry, colored, has always been in good health until the latter part of July, when he had diarrhea for three days while on duty in Georgia. Since then he has had pain on defecation, prolapse of the bowel and sensation of incomplete evacuation, but no bleeding. September 15, the patient was etherized and four internal hemorrhoidal masses removed by clamp and cautery.

Case 64.—Abraham Hill, Company C, Twenty-fourth Infantry, colored, has been in the service twelve years. About eight years ago he had hemorrhoids, which were operated on successfully. For the past three months, while on duty in Cuba, he has been suffering great pain on defecation and slight bleeding. Rectal prolapse at stool, always easily reduced. Has enjoyed fair health and attributes the attack to the heat and dampness of the Cuban climate. Operation under chloroform anesthesia performed September 16. Three very large internal hemorrhoids, located posteriorly and laterally, were removed in the usual way by the clamp and cautery.

The cases related above are instructive in showing what kind

of surgery may be expected among soldiers who have participated in a campaign in a tropical country, subject to its indigenous diseases and debilitated by its climate, improper food and exposures. The results obtained must also counsel the military surgeons to practice their art not only on the battlefield, but also for surgical lesions caused independently of wounds and so often overlooked in the field hospitals. I have to record only two deaths, and both patients were operated on in the wards of the general hospital, being too weak to be transferred to the surgical ward. Both of them were low with typhoid fever complicated by large metastatic abscess, in one the parotid, in the other the submaxillary being involved. One died the next day after incision and drainage, the other on the third day. I am satisfied that many of our cases of phlegmonous and typhoid abscesses would have died without timely and thorough surgical interference. In many of the other cases, more especially hemorrhoids and fistula, the operations performed will restore the men, with the aid of proper general treatment, to their usual condition, and cut them off from the pension list. In all aseptic cases the wounds healed by primary intention, the best possible proof that good surgical work can be done in an operating-tent in the field, and with very limited facilities for carrying out aseptic precautions. Since writing the above paper, a number of interesting surgical cases have been operated on in the surgical ward, which I will now report under the head of

MISCELLANEOUS CASES.

Case 65.—Edward J. Hill, aged 23, Troop I, Ninth Cavalry, colored, enlisted three months ago. Painful tetanoid spasm following gunshot wound of heel. About two months ago, while in Tampa, accidentally shot himself through the left heel with a Krag-Jorgensen carbine (30 cal.). The bullet passed transversely in an oblique direction through the os calcis. There is no evidence of comminution of the bone, the contour being well preserved and the surfaces smooth. While under treatment for the wound, he thinks he contracted "rheumatism in both loins." He has suffered twice from painful tetanoid spasm of the gastrocnemius, the attacks lasting about three hours, then subsiding as suddenly as they came on and leaving the leg painless and useful. He entered the hospital August 28, suffering from a third attack which lasted more than twenty-four hours, subsiding suddenly during the night after his admission. The gastrocnemius is firmly contracted, the heel raised, and any attempt to extend the foot aggravated the pain. No tenderness of heel or scars.

Case 66.—Wade H. Bell, age 21, Company A, Sixteenth Infantry, enlisted May 23. He has been troubled with varicocele for the past two months. It causes soreness and pain on walking any distance, incapacitating him for guard duty, and he believes the difficulty is gradually increasing. He first noticed the varicocele when he was sick first with malarial fever for five days. Had three such attacks. Veins nearly the entire length of the cord much dilated and tender on pressure. Operation by excision under chloroform anesthesia, September 5. Transverse suturing of the external wound to shorten the elongated scrotum.

Case 67.—James H. Hebel, age 21, Battery 3, Fourth Artillery, enlisted three and a half months ago. Purulent ophthalmia and perforative keratitis. On Saturday, August 27, he felt sensation of a foreign body in the right eye. The next day profuse purulent discharge. On examination August 31, the conjunctiva was found intensely swollen and vascular, discharge of pus profuse, eyelids swollen and edematous, pupil contracted; beginning of ulceration near the center of the cornea; beginning pannus, intense photophobia. There is no trace of gonorrhoeal infection. The treatment consisted of frequent cleansing with boracic acid solution and application of ice. Atropin could not be secured for three days. After that time it was used in sufficient strength to dilate the contracted pupil. In spite of all that could be done, the corneal ulcer perforated and the anterior chamber of the eye was partially evacuated. At this time the patient obtained a furlough and, on his own responsibility, undertook the journey to his home in Chicago. He was advised to place himself on his arrival under the care of Professor Hotz.

Case 68.—George Slate, age 24, civilian. Habitual dislocation of the left shoulder-joint. This is the sixth time during the last two years the accident occurred. Patient probably under the influence of liquor when injured, as he does not

know how it happened. Became aware of the dislocation on waking up in the morning. Several contusions on other parts of the body were discovered. Dislocation of head of humerus downward and forward underneath coracoid process of the scapula. On request of the patient chloroform was administered, and the luxation reduced very easily by extension and rotation. The arm was immobilized by a Velpeau bandage. Accident September 15, reduction the following forenoon.

Case 69.—Peter Hansen, age 32, farrier, Troop L, First Cavalry, fell from stumbling horse September 15, in such a way that he struck the ground with his left shoulder. He has been unable to raise his arm since. Carries affected shoulder lower than the opposite one. Pain and circumscribed tenderness over the clavicle about an inch from the acromio-clavicular articulation. Patient somewhat obese, so that the distal side of the clavicle can not be readily traced. Fracture of the clavicle near the acromion process was diagnosed, although no distinct displacement could be made out or crepitus elicited. Arm supported in a mitella.

Case 70.—Edward Consan, age 24, Troop I, Ninth Cavalry, colored. Enlisted four months ago. Admitted to the surgical ward September 7, with swelling and extreme tenderness of anterior surface of the left tibia. Previous diagnosis of osteomyelitis had been made. No history of injury. The swelling is most marked over the central portion of the shaft of the bone. The onset of the disease, the location and character of the swelling and the nocturnal exacerbations of the pain left no doubt as to the syphilitic nature of the periostitis. Inquiry develops a history of primary syphilis four years ago. Has had secondary eruptions and mucous plaques, etc., and at the present time there is hyperplasia of the lymphatic glands in all the principal accessible regions.

Rest in bed, elevation of limb, hot, moist, antiseptic compress and the internal use of potassic iodid in 15 grain doses, four times a day constituted the treatment that was directed. Under the iodid the pain and tenderness diminished, as well as the swelling. A few days after his admission a small fluctuating swelling could be felt in the center of the inflamed area, but as no pus was expected, the use of the knife was refrained from. This superficial central softening is often seen in gummatous swellings and will disappear under the treatment the patient is receiving now. If absorption of the liquid contents of the fluctuating swelling does not take place, tapping and washing out with a 5 per cent. solution of carbolic acid will be resorted to.

Case 71.—L. J. Torney, age 24, Troop D, Sixth Cavalry, has been in the service two years and four months. Pressure paralysis of radial nerve. While in Cuba was in the hospital three days for chills and fever. He joined his command after his discharge from the hospital and was quite well for three weeks, when suddenly he became unconscious and was afterward wildly delirious and had to be tied to a litter for safe transportation. During this trip he lost the use of the extensor muscles of the right hand. The paralysis remains complete, otherwise the patient is in fair condition, although occasionally the temperature rises to 102 F. The patient is not confined to bed. The paralysis of the musculo-spinal nerve was undoubtedly caused by pressure during the transportation on the litter. Massage and electricity were advised.

Case 72.—Thomas Clemens, age 21, recruit, Twenty fourth Infantry, enlisted two months ago. Hydrocele of the cord. Came to the surgical ward for diagnosis September 16. Six months ago, while in the act of lifting a heavy box, was taken rather suddenly with pain in the right side of the scrotum. In a few days a swelling developed, the size of a hazelnut, which has remained. The swelling is tender to the touch and is connected with the cord about an inch above the epididymis. The swelling is circumscribed and fluctuates distinctly. It was diagnosed as a hydrocele of the cord.

APPENDICITIS.

It is somewhat astonishing that, in these days of appendicitis rage, of the many thousand soldiers who have landed at Montauk, not one case of appendicitis came under my notice that would have justified an operation. We would naturally expect that among such a large body of men, almost all of them at some time during the last five months the victim of intestinal affections, the appendix should have claimed its good share of disease. The climate, the diet, the previous intestinal affections contracted in Cuba, should have, according to our ideas of the nature of appendicitis, combined in exciting the disease. But such was not the case. The profession is well aware of the fact that surgeons who can see nothing

else but appendicitis in cases in which the patients complain of pain in the right iliac fossa, have performed laparotomy, and these cases were not few in number, where as an excuse for their error in diagnosis, they have completed the operation by removing a normal appendix. Of the three cases of supposed appendicitis sent to the surgical ward, in only one the diagnosis proved correct, and this case was such a mild one that an operation was not deemed justifiable. One proved to be malaria, and the third typhoid fever.

Case 73.—Charles W. Dyer, age 19, Company K, Seventh Infantry, has been in the service only six weeks. He was taken sick September 11, and was transferred to the surgical ward three days later. The attack commenced with a chill and some fever, the following day pain in the right iliac region set in. Bowels constipated, no vomiting, loss of appetite. Had a similar attack a year ago, from which he recovered in a few days. On his admission to the surgical ward there was slight tenderness over the appendix and cecum, no tympanites and no palpable swelling or muscular rigidity, temperature only a degree above normal. Catarrhal appendicitis was diagnosed, complicated probably by a similar condition of the cecum. Rest in bed, liquid diet and ounce doses of equal parts of castor oil and sweet oil, four hours apart, until the bowels move, constituted the treatment, under which the patient recovered in a few days.

Case 74.—James Reid, age 21, Company I, Seventh Infantry, has been in the service three months. Was admitted to the surgical ward September 1, with the diagnosis of appendicitis. The clinical history, as well as his condition at the time of admission, warranted a change in the diagnosis from appendicitis to typhoid fever. The temperature was erratic, showing malarial complication, but the curve from day to day showed the typhoid part to our satisfaction. The tongue was brown and dry with red tip and margins. Pulse 100 and temperature at that time varied from 101 to 105 F. Abdomen tympanitic and great tenderness in the right iliac fossa. Numerous rose spots appeared on the abdomen next day. Under appropriate treatment the fever subsided gradually at the end of the third week of his illness. The great tenderness in the right iliac fossa undoubtedly led originally to a wrong diagnosis, but it simply indicated in this case deep typhoid ulcers in the lower portion of the ileum.

Case 75.—Martin G. Normas, age 27, Seventh Infantry, Company C, enlisted three months ago. On leaving Santiago he began to feel bad with headache, anorexia and malaria; became worse; lost sleep and complained of pain in the stomach; most severe on left side under costal arch; bowels constipated, tongue large, flabby, with indented margin. Spleen markedly enlarged. At times has had pain in cecal region, which disappeared promptly after the administration of a laxative. Under quinin this patient improved rapidly.

STRICTURE OF THE URETHRA.

Case 76.—H. J. Ewing, age 54, Company A, Ninth Infantry, has been in the service twenty-eight years. Admitted to the surgical hospital September 12, and transferred the next day to a hospital in New York. Has suffered from stricture of the urethra for a number of years. Exploration with the olive pointed bougie reveals a small and tight stricture in the membranous portion of the urethra. The cause of the stricture is a fall upon the perineum he sustained in 1864. Denies venereal infection of any kind. Of late years he has had attacks of stoppage of the urine. The stream is small and micturition frequent. Patient transferred to New York for treatment.

Case 77.—Frank Hugh Banks, age 20, Ninth Cavalry, Troop D, enlisted three months ago. Has had several attacks of gonorrhea, the last, two months ago. The stricture for which he was admitted to the surgical ward September 1 involved the membranous portion of the urethra, was an old one and was much improved before he was transferred on the 8th to his command. By careful and prolonged attempts a No. 8 bougie passed the stricture. The treatment consisted of gradual dilatation.

Case 78.—T. C. Mark, age 29, Thirteenth Signal Corps, enlisted three months ago. Has stricture of the urethra dating back to gonorrhea two or more years ago. Examination made September 14 shows stricture half an inch back of the meatus A 14; another just in front of the scrotum admitting A 12. Gradual dilatation was commenced, but patient was transferred to a hospital in Boston two days later for further treatment.

The few cases of gonorrhoea, syphilis and stricture observed in Camp Wikoff speak well for the morality of our army.

ADDITIONAL CASES OF FRACTURE.

Two cases of fracture of the long bones occurring in men belonging to the Cuban Army are of interest in showing impaired nutrition as one of the causes of delayed or non-union.

Case 79.—Hillyard H. Felder, age 44, packer, not enlisted. Five weeks ago, in Cuba, fell from a freight wagon; jumped to save himself and landed on his feet in a small hole, twisting his legs. He sustained a transverse fracture of the right tibia about an inch above the base of the inner malleolus, and a transverse fracture through the middle of the external malleolus. He came to the surgical ward September 14, the left limb in lateral splints, the right in plaster of Paris bandage. None of the fractures of the right leg have united, and there are no signs of formation of provisional callus. Fracture of left fibula united with some deformity. Patient is over six feet in height and very much emaciated. Plaster of Paris bandage renewed on right limb; no dressing for the left one. Operation for non-union of fracture of tibia advised as soon as the patient's general condition is improved.

Case 80.—John Coleman, age 28, Irish, stevedore, employed at the dock, Montauk harbor. Admitted during the afternoon September 12, to the surgical ward. While handling lumber was struck on right side of face by a crowbar handle set in motion by the slipping of a wrench. The accident occurred an hour before his admission to the hospital. The patient was unconscious and very restless. Right side of face swollen. Two small wounds had been sutured before he entered the hospital. Exophthalmos of right eye caused by retro-bulbar hemorrhage, divergent strabismus and dilatation of pupil, which does not respond to light. Free hemorrhage from mouth; no hemorrhage or serum discharge from either ear. Through the swollen part of the cheek the malar bone could be distinctly moved and crepitus was distinct. Pulse 60. No paralysis. Fracture of the malar and superior maxilla with extension of lines of fracture through the base of the skull was diagnosed. On the second day the patient's condition was very much improved but toward evening a rapid rise in temperature led to a careful search for the cause of the fever. Professor Delafield was called into consultation and found a right lobar pneumonia.

Since leaving the camp I have been informed by Dr. Greenleaf that the pneumonia terminated in a typical crisis at the usual time, and that the patient is recovering rapidly from the injury.

Case 81.—Charles Lubbas, age 44, German, engineer. Fracture of the clavicle. A week ago while at work as engineer on the *Vigilancia*, was struck on the right shoulder by a falling plank producing a fracture of the clavicle at the junction of the outer with the middle third. The fracture was oblique, the internal fragment displaced upward and forward and some overlapping. Reduction and Sayre Velpeau dressing. Patient was transferred the same day to New York.

ADDITIONAL CASES OF GUNSHOT INJURIES.

Case 82.—Peter Carr, aged 40, sergeant Company F, Sixteenth Infantry. In service 16 years and nine months. Was wounded July 2 before Santiago. He fell down at once on receipt of the injury, and on trying to arise found that the left leg was paralyzed both as to sensation and motion. He was carried to the First Division Hospital where the wound was dressed and he remained four days, thence to Siboney where he staid three days before being taken on board Hospital Ship *Relief*. He was landed from the *Relief* at Governor's Island, has had a furlough of thirty days and on Sept. 16 reported for duty at Camp Wikoff, entering the surgical hospital Sept. 18. Examination shows a vigorous looking man with partial paralysis of left leg. There is a scar on the left side of the back 2½ inches from the median line and on a level with the second lumbar vertebra. This marks wound of entrance of the ball, there is no wound of exit. The patient says the wound healed very promptly with only slight discharge; further that four weeks elapsed before he could rest any weight upon the leg, but he has been improving ever since and can now walk with a cane. There is marked wasting of the extensor muscles of the left thigh and marked impairment of sensation of the left foot and leg. He says that occasionally the leg gives way in walking, especially if the toe strikes something above the level of the ground. He can not raise it when flexed and states that with much walking the knee swells. There has been no impairment of function of bowels or bladder and no priapism.

In this case the ball probably passed transversely producing contusion of the cord and bruising the roots of the spinal nerves very near their origin; it is probably lodged where it will do no further harm. The man says the X-ray was used twice but the result of examination was not reported to him.

Case 83.—B. F. Frazier, age 24, Company B, Twenty fourth Infantry, has been in the service eleven months. While in action July 1, before Santiago, he received a wound of the right hand, the bullet entering the web between the index finger and thumb, passing through the ball of the thumb and making its exit at the base of the adductors over the anterior row of carpal bones. No bone injury. The wound was packed with gauze. The wound of exit healed in two weeks, the wound of entrance has never closed completely and has discharged from time to time a small quantity of serous pus. The patient was admitted to the surgical ward July 15. Examination with the probe revealed the presence of a small metallic body. During the preparation of the hand for operation a small triangular fragment of metal was washed out of the fistulous opening. Under anesthesia next day the wound was again explored and the probe passed to a point underneath the scar of the wound of exit, detected another piece of metal which was removed by incising the scar, when a fragment of lead much larger than the first was extracted. On scraping out the fistulous tract with a small sharp spoon shreds of gauze were removed. The bullet that inflicted the injury must have been a deflected one, as otherwise no fragments of lead would have been left in the wound. The gauze undoubtedly belonged to the packing used at the first-aid dressing. The wound was dressed in the usual manner; no provision for drainage was made, with the expectation that it would heal speedily by primary intention.

Case 84.—John Marks, age 22, Troop D, Sixth Cavalry, enlisted five months ago. He was wounded in the charge on San Juan Hill, July 1. The bullet cut the margin of the upper posterior edge of the right ear, entered the scalp one inch above and one and a half inches behind the right external meatus, and emerged from the scalp three inches in a direct line from point of entrance, probably making a superficial groove in the external surface of the occipital bone. The patient says he was taken to Key West while in an unconscious condition, in which he remained two days. July 6 he was operated on, the wound being laid bare by a curved incision and a small piece of bone is said to have been removed. The wound healed in a month. Scars healthy and not sensitive to pressure. He complains now of attacks of throbbing pains from back of head to eyes, three or four times a week; the attacks last sometimes half an hour. He does not complain of vertigo or disturbance of any of the special senses. Whether the symptoms are purely of a neurotic nature or whether they depend on the injury must be determined by future observation. Potassic bromid was prescribed.

From the above report I have excluded minor cases that were treated as out-door patients or inmates of the surgical ward not of sufficient interest to have any material bearing on the subject of this paper. This communication has been written for the special purpose of pointing out to the profession, and more especially to the military surgeons, the nature and sphere of surgical work in field hospitals at the end of a war. This completes my surgical work of this war, and I return to civil life grateful to the authorities and my colleagues for the kindness and many courtesies I have received at their hands.

General Hospital, Camp Wikoff, Sept. 17, 1898.

THE KRAG-JORGENSEN BULLET-WOUND.

BY LIEUT.-COL. VALERY HAVARD.

CHIEF SURGEON U. S. VOLUNTEERS.
BRIDGEPORT, CONN.

At my request, Dr. Mariano Ojuna, surgeon in chief of the military hospital at Santiago de Cuba, kindly sent me, on Aug. 19, 1898, some notes which I offer as a small but interesting contribution to a very important subject. Dr. Ojuna regretted his inability to prepare a more elaborate report, being at the time exceedingly busy in superintending the transfer of the sick and wounded to the Spanish transports. But first a few preliminary remarks.

He states that 541 wounded—43 officers and 498 men came into the military hospital for treatment. Of the killed he makes no mention. As this hospital was the only available one, we may infer that all the wounded really *hors de combat* were admitted to it.

On the other hand, according to the official Spanish report, the casualties were as follow: Killed, officers 17, men 107; wounded, officers 59, men 556; missing, officers 7, men 116.

As this report includes the few navy casualties which occurred before the destruction of Cervera's fleet, and likewise accounts for a certain number of slightly wounded men who never entered the hospital, the discrepancy between it and Dr. Ojuna's figures is sufficiently explained. We may note, incidentally, that the above statistics show a proportion of casualties of about 10 per cent.—1.7 killed and 8.3 wounded. On our side, the total casualties at San Juan Hill were about 13 per cent.—1.86 killed and 11.14 wounded. The ratio of killed to the whole number struck was one-fifth among Spanish, and one-seventh among American troops.

In order to justly appreciate the results described by Dr. Ojuna, it should be remarked that the hospital where all these cases were treated is an old building without adequate water-supply and without sewerage, the excreta being emptied into a large pit; it was also at that time crowded to two or three times its normal capacity: in a word, it appeared beyond the possibility of good sanitation. To this we may add that proper food and several important medicines were scant and became entirely exhausted. Dr. Ojuna's notes, freely translated, are as follow:

" . . . Since the beginning of hostilities, 45 wounded officers were admitted to this hospital; 26 have been discharged cured and 7 died; of the others, only 2 were serious cases: one with comminuted fracture of the left tibia, already united and nearly well, the other with fracture of the same bone but loss of over a centimeter of substance nearly throughout its thickness; in this case a cure is also expected, in time.

"All these wounded, with hardly an exception, never had any fever. They were mostly treated with solution of corrosive sublimate, iodoform, iodoform gauze and absorbent cotton; that is, with antiseptic dressing, changed only every two or three days according to indications. There were fractures of various bones, such as humerus, ulna, radius and those of the carpus, tarsus and metatarsus, but I did not observe a single case of arthritis, nor the slightest complication. As an interesting fact, worth special mention, I did not have to perform a single amputation among all the wounded officers.

"Of the seven who died, two had the skull fractured by fragments of shell, with protrusion of brain matter, while the other five succumbed to internal hemorrhage or peritonitis.

"Of the wounded soldiers, 498 were admitted; 34 died of purulent infection, tetanus, internal hemorrhage and severe wounds of the skull and brain, the latter causing the greater part of this mortality. There now remain only 47 cases which will require ambulance transport to the ship.

"The parts involved were mostly the extremities, inferior and superior, much more rarely the chest, head and abdomen. Very many cases were of great gravity, but thanks to the treatment pursued, the skill of the surgeons and the sanitary care of the attendants, all dangerous symptoms subsided in a few days and the cure followed a normal course, the wounds remaining completely aseptic. Here also the striking fact must be stated that not a single amputation was required or performed, a result speaking

high praise for the conservative surgery always advocated by Spanish surgeons, as well as for the treatment followed.

"As a general rule, the bullet passed through the body or limb, making two clean holes, those of entrance and of exit. Some wounds had no hole of exit, but in most of them the bullet lodged near the skin and was easily extracted.'

"In the case of an officer, the bullet ranged through the face: the hole of entrance was very small and otherwise normal, but that of exit was much larger, with irregular, ragged edges, burnt and discolored by grains of powder; there was much destruction of tissue and healing was very slow. I believe this case was produced by an explosive bullet, such as the insurgents had frequently used before, and that an insurgent was the author of this outrage against the laws of war. Never did the thought enter my mind that it could be imputed to our loyal enemy, the Americans.

"The average time required for the healing of the great majority of our wounded was from 20 to 25 days, even of those most gravely hurt: penetrating wounds of abdomen and chest recovered in a proportion of 70 per cent. with amazing rapidity, without leaving any complications.

These notes, incomplete as they are, corroborate the observations made among our own wounded of the effects of the Spanish Mauser bullet, and justify us in formulating the following conclusions:

1. The rapid-firing, long-range modern rifle, with small steel-jacketed bullet, does not produce a larger percentage of casualties than the weapons used in our Civil War or the Franco-Prussian War.

2. The proportion of killed to the wounded is less than before.

3. Wounds heal with astonishing rapidity, even a majority of those penetrating the abdomen and chest, so fewer deaths occur in field hospitals.

4. Few, if any, primary operations are now performed, and amputations (except as a result of artillery fire) are hardly ever required.

In view of the unsanitary state of the Spanish hospital, and the, perhaps excessive, conservative attitude of the surgeons, the results obtained are certainly very remarkable, and show what, despite adverse conditions, we may expect from an aseptic bullet, rest and antiseptic treatment. These results are, on the whole, better than those obtained on our own side, and the reason must be the necessary and often rough transport to which our wounded were subjected, first from the front to the field hospital, then from the hospital to the sea-shore, from the beach to the hospital ship, and so on, until they reached their final home destination.

SOCIETY PROCEEDINGS.

Association of American Medical Colleges.

SECRETARY'S OFFICE, 104 E. 40TH ST., CHICAGO,
November 26, 1898.

The Association has published its proceedings and already distributed them, six copies to each college holding membership, one copy to every other medical college in the United States and Canada, two copies to every State board of health, and a bound copy to every medical library or large general

1 On our side, the proportion of bullets remaining lodged in the body was one-fifth or one-sixth, an unexpected and surprising fact.—V. H.

library in the world. Additional copies will be mailed to proper officers and persons on request.

The Judicial Council has recommended to membership the University of North Carolina, and the Medical Department of Kentucky University.

The Secretary has written a large number of medical men requesting co-operation in bringing the action of the AMERICAN MEDICAL ASSOCIATION, in relation to the four years' course, to the notice of local societies with which they are connected. Many encouraging replies have been received.

A large number of three-year schools have signified their intention to make their course conform to the requirements of the ASSOCIATION at their next commencement. Some schools, however, persist in maintaining a shorter course in spite of the action of the AMERICAN MEDICAL ASSOCIATION and the rulings of various State Boards of Medical Examiners.

The Secretary has prepared a very complete bibliography of the Association, which will be published in January.

The following rulings of the Judicial Council are of such importance that they are published herewith:

JEFFERSON MEDICAL COLLEGE—DEAN'S OFFICE,
PHILADELPHIA, PA., NOV. 10, 1898.

DUDLEY S. REYNOLDS, M.D., Chairman Judicial Council Association of American Medical Colleges.

Dear Sir:—I beg to present to the Council a case for their judgment. In our annual circular the attached paragraph appears.

TO ADVANCED STANDING.

College graduates in Arts or Science, who during their college course have devoted the stated number of hours to the study of the following branches or their equivalents—General Biology, 90 hours; Mammalian Anatomy, 144 hours; Chemistry, 216 hours; Physics, 72 hours; Histology, 72 hours; Human Anatomy, 144 hours; Physiology, 48 hours; Zoölogy, 96 hours; Embryology, 72 hours—are admitted to the second year without an entrance examination. During this first year they must take *Materia Medica* and Pharmacy (including the laboratory work), and at the end of the year be examined in them. At the end of the second year they must also have completed the dissection of the entire human body and be examined in the entire subjects of Anatomy and Physiology. They have the option of taking first-year Anatomy and Physiology at the end of their first year in this Institution, and their second-year Anatomy and Physiology at the end of their second year. There will be no charge for dissections in their second year.

A student has applied to us for advanced standing to our fourth year graduating class, with the following history: He was for two years in the *medical preparatory* department of the Ohio State University, and did work in excess of that required in the above paragraph. This work was considered by the Ohio Medical University fully equivalent to their first year and he was advanced to the sophomore year. He remained in the Ohio Medical University through the sophomore and junior years, passing all his examinations, and now seeks to become a member of our graduating class.

The only point against him is that his medical preparatory course did not lead to any degree, either B.S. or M.D. At the Denver meeting the following amendment was adopted: "A college not giving the whole four courses of the medical curriculum and not graduating students, but otherwise eligible, may be admitted to membership." This recognizes the value of *work done* in a systematic college course apart from the degree. We have been asked to recognize the systematic work done by students in the Ohio State University and the West Virginia State University while taking the medical preparatory course. We find that certain colleges, members of the Association, who have informed themselves as to the nature of this medical preparatory work, have advanced the "medical preparatory" student one year in his medical course for the two years of the medical preparatory. They say that the students are well instructed, and assert their belief in the propriety of their action in spite of the fact that the "medical preparatory" course does not lead to the degree A.B., B.S. or M.D. I ask your ruling on the question. Is it permissible to recognize the two years of *medical preparatory* work in certain universities as equivalent in time to the first year of the medical curriculum? An early answer will greatly oblige.

Yours very respectfully,
[Signed] J. W. HOLLAND, Dean.

LOUISVILLE, KY., NOV. 16, 1898.

Dear Doctor:—Please read carefully the enclosed copy of Professor Holland's letter, and the accompanying opinion. If the latter meets your approval, please to sign it and return it to me as soon as possible. If not, please prepare an opinion in

accordance with your judgment, on a separate sheet of paper, and forward it to me as soon as possible.

Very truly yours,
[Signed] DUDLEY S. REYNOLDS, Chairman.
(Exact copy of original sent to each member of the Council.)

ANSWER TO THE LETTER OF PROF. JAMES W. HOLLAND, M.D.,
DEAN OF THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA, PA., OF NOV. 10, 1898.

It is the opinion of the Council that, the Constitution of the Association of American Medical Colleges does not contemplate all the circumstances which may arise in relation to claims for advanced standing, based on previous collegiate training received in regular and systematic order.

Section 4 of Article III, of the Constitution authorizes the Jefferson Medical College to recognize the credentials issued by the Ohio Medical University. The student referred to by Professor Holland seems to have complied sufficiently with the requirements of the Constitution to entitle him to the advanced standing accorded him, provided it can be shown he possessed the preliminary education exacted in Sections 1 and 2 of Article III of the Constitution.

The Council does not presume to say what recognition should be given to the work done by students in the Ohio State University, nor the West Virginia State University, in their preparatory medical courses. Deans must be allowed some discretion in individual cases not specifically provided for in our Constitution.

It is the opinion of the Council, that it is permissible to recognize the two years of medical preparatory work in certain universities as equivalent in time to the first year of the medical curriculum; provided, however, that the applicant exhibits the required preliminary education and passes the standard intermediate examination for admission to the second-year course.

[Signed] DUDLEY S. REYNOLDS,
STARLING LOVING,
RUDOLPH WINSLOW,
ALBERT R. BAKER,
JAMES H. ETHERIDGE,
JOHN B. ROBERTS,
VICTOR C. VAUGHAN (failed to report).

HIRAM CHRISTOPHER, M.D., Dean, St. Joseph, Mo.:

Dear Doctor:—Your letter of October 29, addressed to Prof. Bayard Holmes of Chicago, has been referred to me for definite answer.

The Association of American Medical Colleges, as you know, was permanently organized at Washington in 1891, in accordance with resolutions adopted by a convention of medical teachers at Nashville, in May, 1890. At the time of the first organization, the Association pledged itself to observe certain requirements, including three courses of graded instruction of not less than six months each, in three separate years, of all candidates for the degree of Doctor of Medicine. In 1894 the Association adopted, to take effect in 1899, and thereafter, four courses of not less than six months each, in four separate years. This action has been so widely published that it could not have escaped the attention of any person in the regular profession of medicine.

In annual session, at Detroit in 1892, the AMERICAN MEDICAL ASSOCIATION resolved unanimously to demand of all colleges in the United States, the adoption and observance of a standard of requirement which should in no case fall below the minimum standards of the Association of American Medical Colleges. In June, 1898, at Denver, after mature consideration, the AMERICAN MEDICAL ASSOCIATION adopted an ordinance making good its demand of 1892 by amending Article IX of the By-Laws, by defining in definite language certain conditions, which shall hereafter exclude from representation in that body.

From your language to Professor Holmes, it is clear you are familiar with that action. There is no probability of any person familiar with the Constitution, the By-Laws and the Ordinances of the AMERICAN MEDICAL ASSOCIATION, being persuaded that the action at Denver was in any sense irregular or in conflict with the Constitution. In the second Article of the Constitution of the AMERICAN MEDICAL ASSOCIATION, under the heading of "Permanent Members," it is specified that, compliance with the By Laws of the ASSOCIATION shall be exacted. At page 15, Article IX of the By-Laws contains a statement of conditions excluding representation. The action at Denver merely extends these conditions to include conduct, of which no one at that time, nor have they yet at this time been guilty.

If, with the warning of that action before you, you feel able to defy the action of the AMERICAN MEDICAL ASSOCIATION, I am

sure you will not find fault with the College Association, nor with the AMERICAN MEDICAL ASSOCIATION, both of which are limited in the application of their rules and regulations to their own membership.

I should not like to see your institution assume this defiant attitude, and I trust you will recede before it is too late. Trusting you may see the advantages to accrue to your school in adopting the minimum standard of requirements of both the College Association and the AMERICAN MEDICAL ASSOCIATION, and that you will be spared the humiliation of being denied recognition by the only organized body of the profession authorized to speak with authority in the United States. I am, very respectfully, your obedient servant,
[Signed] DUDLEY S. REYNOLDS, Chairman.

LOUISVILLE, KY., Nov. 10, 1898.

PROF. JOHN ROGERS, JR., New York, N. Y.

Dear Sir:—Your communication of October 29, addressed to Prof. Bayard Holmes of Chicago, has been referred to me for definite reply.

The Association of American Medical Colleges adopted, in 1894, an amendment to Article III of the Constitution, providing that all candidates for the degree of Doctor of Medicine in 1899 and thereafter, shall have attended four courses of instruction, of not less than six months each, in four separate years. This has been widely published in the medical press, and it has been the subject of judicial determination on several occasions: the Council holding that the language, "in 1899 and thereafter," must be construed to mean from Jan. 1, 1899. With this interpretation repeatedly published, and unanimously confirmed by the vote of the College Association in annual assembly, the AMERICAN MEDICAL ASSOCIATION last June, at Denver, unanimously resolved to support it and deny recognition to any person concerned in preparing students for the degree, as well as those receiving such degree, after Jan. 1, 1899, on conditions below the requirements of our Association.

On examining your announcement for 1898-99, I find at page 18, your college proposes to graduate the class of 1899 on three courses. I very much regret that you have lowered the standard of requirements, and that your institution proposes to await the operation of the statutory requirements of the State of New York. I am sure that your institution would gain greatly by adopting our minimum standard of requirements, and I trust that it is not too late for you to recede from the unfortunate position which you have taken, as you say, "for the benefit of a few men who registered with the old University of the City of New York." We could not admit to membership an institution that openly proposes to violate our minimum standard of requirement. Trusting you may be able to correct this, and that I may yet have the pleasure of recommending your institution for membership in the Association, I am, very respectfully yours,

[Signed]

DUDLEY S. REYNOLDS, Chairman.

Chicago Society of Internal Medicine.

Meeting of Nov. 22, 1898.

Dr. JOHN A. ROBISON, president of the society occupied the chair.

Dr. HENRY F. LEWIS read a paper on

MUSICAL HEART MURMURS.

He said in part: Musical murmurs heard over some parts of the heart's area, in various abnormal cardiac conditions, are not uncommon phenomena. They are often due to aberrant tendinous cords stretched across the cavity of the ventricle in such manner that they are tightened by the movements of the ventricular walls and caused to vibrate by the of the current of blood rushing against them. In order that such a cord shall act like a harp string and give forth a musical vibration, it is necessary that it lie directly in the course of the stream of blood, and that there be a vigorous action of the ventricle. The musical murmur in these instances is commonly accompanied by a vibratory thrill. In a recent article in the *Philadelphia Medical Journal* the author considers somewhat at length the influence of aberrant tendinous cords upon the production of these musical murmurs. While cases are not uncommon where such cords are found in other cavities of the heart, he believes only one has been recorded where a musical murmur was produced by a cord stretched across any chamber other than the left ventricle. It is necessary also that the cord be across the aorta or upper third of the ventricle; otherwise no musical sound is produced. Eichhorst states that a musical bruit may be caused by a congenital aberrant cord running from the ventricle to the aortic wall.

Disease of the aortic valve or its neighborhood is a frequent

cause of musical murmurs. Many times the sound is loud enough to be audible at a distance from the chest, even enough to disturb the patient himself. Very loud murmurs usually mean aortic disease. McAlldowie reports a case where the sound was easily heard several feet away from the patient. The autopsy revealed a lacerated flap from the degenerated wall of one of the sinuses of Valsalva, which in life probably projected into the blood-stream and gave rise to the systolic "cooing" sound observed clinically. In the case of tendinous cords across the upper part of the ventricle there may be in addition to the systolic bruit or without it, a diastolic musical murmur caused by the regurgitant stream coming back into the ventricle. In relative insufficiency of the aorta there may be dilatation of the ascending portion of the vessel which can cause a musical note heard with diastole.

Huchard maintains that aortic regurgitation due to arteriosclerosis is more commonly accompanied by musical, rough or whistling murmure than is that lesion due to other causes. Arteriosclerosis is the most frequent cause of aortic stenosis and the murmur with that lesion is often whistling or otherwise of a musical character. While musical sounds are oftenest heard in the aortic region and due to lesion of the corresponding valve, yet sometimes mitral disease may be the causative factor. In mitral stenosis such a murmur may exist with diastole or modifying the presystolic bruit characteristic of that disease. Cases are not unknown where a distinct or even very loud musical sound existed for some time and then disappeared. Such might be caused by vegetations on the aortic valve, which were finally swept away by the blood. Musical murmurs heard in the cardiac region may owe their origin to extracardiac causes. Catarrh of the bronchioles of the adjacent parts of the lung, especially the lingual appendix, may give rise to a musical sound from the beating of the heart next to it. A metallic tinkle may come from the cardiac movements setting up a vibration of the walls of the chest.

Dr. LEWIS reported a case of heart disease characterized by a musical murmur heard about the apex and at the end of diastole. He had made the diagnosis of mitral stenosis.

Mrs. G., aged 45 years, married, never pregnant, native of Ireland, had an attack of acute articular rheumatism fifteen years ago. These attacks recurred from time to time for two years, and then disappeared until two years ago. At this time she had an attack of cardiac failure somewhat similar to the recent one for which he treated her. There was great bodily weakness, feeble pulse, marked dyspnea, orthopnea and obstinate vomiting. She went to a hospital and lay in a state of coma for three weeks. Then consciousness returned and anasarca supervened to a marked degree. At the end of six weeks she left the hospital much improved. Since then she has suffered great dyspnea on exertion, but has managed to do her housework until the present illness came on. Several weeks before his first visit she was seized with constant dyspnea, inability to recline, anorexia and obstinate vomiting, rejecting everything from the stomach for five days before he saw her. His first notes are dated March 21, 1898. He found her half-reclining in bed, gasping, with a shallow respiration at a rate of over forty to the minute. The pulse was so weak and irregular that it could not be counted at the wrist. There was much cyanosis and jaundice with considerable emaciation. There was very little edema at that time, but it increased later. The hands and feet were cold and clammy; she sweat profusely from the exertion of whispering; complained of great pain in a small area in the lumbar back. In short, he found her moribund and advised sending for a priest. The heart beat at the apex was very irregular in time and intensity, counting about 150 per minute. The rapidity of pulse, as well as the rapid and noisy breathing, obscured the auscultation, but he was able to make out a not very loud systolic murmur at the apex. Her condition forbade an extended examination and he made a provisional diagnosis of mitral insufficiency with muscular degeneration and passive congestion of the abdominal viscera. The scanty urine was of high color, specific gravity 1028, showed a little bile pigment and a trace of albumin. In the sediment were hyaline and granular casts stained yellow, a few leucocytes and renal and cystic epithelial cells. He prescribed digitalin (gr. $\frac{1}{100}$) every four hours and a diet of liquid peptonoids. Two days later there was little change, except that the pulse was a trifle stronger and the respirations less difficult and rapid. She had been able to retain half an ounce of the peptonoids every two hours, but nothing else, not even water. He replaced digitalin by strophanthus and aromatic spirits of ammonia. Three days more found her pulse reduced to 70 without intermission, but not regular in force. All the symptoms steadily ameliorated. She was able gradually to add peptonized milk, eggs and other light food in the course of a few weeks. Moderate edema of the legs came on. He prescribed

strophanthus, diuretin and a little digitalis from time to time. The urine became less scanty and concentrated; albumin disappeared, and casts diminished in number. Early in June examination showed albumin and sugar absent; urea 50 grams per diem; uric acid increased; phosphates 1.5 per cent. and sediment free from casts. Edema was never great. June 1, auscultation showed a slight soufflé at the apex, heard with systole, and propagated a little toward the axilla. He also heard then, for the first time, a rather low-pitched musical sound with diastole. This sound covered a considerable area about the apex. Cardiac dulness extended one inch to the right of the sternum and half an inch to the left of the nipple line.

The patient's general condition has continued to improve a little, from week to week, until she has become able to go downstairs, out of doors, and even several miles away from home without unpleasant symptoms. Early in June she had several attacks of partial faintness, accompanied by amaurosis lasting several minutes, but these symptoms have since disappeared. Ophthalmoscopic examination shows a dimness and cloudiness of the disc of each eye and a congestion of the vessels. In the right eye there is a considerable tortuosity of the vessels. Examination October 7 showed the musical sound still present, but weaker, and a complete disappearance of the systolic soufflé at the apex. The pulse was rather rapid and not perfectly regular in force; the area of cardiac dulness not perceptibly increased, nor was that of the liver. Pulmonary signs are *nil*. There was a slight accentuation of the second pulmonic sound, and the patient complained of some dimness of vision in the left eye with scintillation of light before it. The left pupil was slightly larger than the right, but both reacted to light. There was little or no edema; the urine passed freely and was negative in character.

As to diagnosis, the essayist is inclined to think that the present condition is one of sclerosis or calcareous condition of the mitral valve, causing the musical murmur heard at the end of diastole in the region of the apex. He thinks the cause of the earlier severe symptoms was a dilatation of the right ventricle and then the left, giving rise to a relative insufficiency of the mitral, as evidenced by the systolic soufflé which, as the ventricular dilatation has subsided, has since disappeared. At the same time, he recognizes the probability of there still being more or less leakage through the deformed mitral valve.

Another case of musical murmur under his observation at the present time, he reports very briefly. The patient, Miss G., 40 years of age, of nervous and gouty antecedents, has suffered from frequent attacks of palpitation for the past year or more, which later became more frequent and distressing. Recently she complained of feeling a lump in her throat, and at times of a sense of suffocation. Examination showed a slight enlargement of the thyroid, tremor, pulse-rate varying between 80 and 120; no signs of exophthalmos. A high-pitched musical murmur was heard with diastole over the right carotid as far up as the angle of the jaw, and for a short distance along the course of the right subclavian. The pulmonic sound was slightly accentuated; the second sound at the apex doubled, and there was a systolic soufflé heard at the apex, not propagated. Desiccated thyroids increased the palpitation and the sense of suffocation, but the thyroid gland has not enlarged. The nervousness and palpitation were modified somewhat by bromide and digitalin; but the condition has been little changed for the last month or two. The blood examination showed 4,500,000 red-blood corpuscles to the millimeter, a normal amount of hemoglobin, and no apparent change in the morphologic aspects of the blood. The musical murmur is diminishing in intensity.

A somewhat similar case of arterial musical murmur in Graves' disease is reported by Forte and Penne. In their case the sound was so intense as to interfere with the patient's sleep. The maximum intensity was over the aortic region and the sound was propagated into the arteries, especially of the right side. In Graves' disease the cause of the musical murmur is not necessarily a cardiac lesion, but may be due to nervous disturbance of the contractility of the heart resulting from the general disease.

Dr. ROBERT H. BABCOCK—The paper has covered the essential points of interest so thoroughly that it leaves very little room for further discussion except by way of amplification of the subject. I am not disposed to take the time of the Society in discussing the causation of the musical murmur, but it unquestionably is due to some condition which favors the vibration of some solid material, a valve, an arterial wall or a calcareous plate, an aberrant cord, or what not. For years I have heard musical murmurs, from time to time, but they have always been systolic, so far as I now recall, with one exception. Something like two years ago I chanced upon a dis-

penary patient who had a diastolic musical murmur. In this case there was aortic insufficiency. The murmur was loud enough to annoy the patient and could be heard at some distance from the body. It was intermittent. It ultimately disappeared before the patient's death, and at the postmortem examination, which was made by Dr. Sippy and Dr. Evans, no satisfactory condition was found which could explain the production of the musical murmur. An aortic lesion was fully established and was due to arteriosclerosis. Recently, I have seen two cases of aberrant cords, and both cases have come under my observation since Dr. Lewis's paper of last winter. One, a female, I had examined a number of times, and had never detected a musical murmur. On one occasion she became violently excited; the heart's action was exceedingly rapid, 160 or more, and there was developed, while I was auscultating, the most exquisite musical murmur I have ever heard, which seemed to me as nearly like the twanging of a violin string or a bow chord as any thing I could think of. As the heart quieted down the murmur disappeared. These murmurs are of great interest, but are rarely of special diagnostic import. They may help us to understand the pathologic condition in a measure, and yet I do not think our knowledge of the conditions which call forth musical murmurs is such that we can always predicate with anything like accuracy the exact condition which gives rise to the musical quality of the murmur. The disappearance of the murmur in my case was due to cardiac enfeeblement.

Dr. JAMES B. HERRICK—Occasionally, the louder the murmur and the more distinct the musical quality, the better the prognosis. As I listened to Dr. Lewis's report of the case, I wondered whether in this instance, when the patient was first observed, on account of myocardial weakness the blood currents were so feeble that they did not give rise to a musical murmur. Perhaps the condition of the patient today would throw some light on that point. As the patient's murmur has again disappeared, it may be that, at the same time, the heart muscle has once more become weak. As Dr. Babcock has said, from a diagnostic standpoint these musical murmurs are, perhaps, as Flint terms them, "mere clinical curiosities." And yet from a careful study of clinical cases and from postmortem observations, we may at some time be able to make certain definite statements concerning the lesion that exists from the character of the murmur, and such papers as that of Dr. Lewis are extremely valuable as helping to get together the histories of a great many of these cases. Laennec, as Dr. Lewis has said, laid a good deal of stress upon the musical character of murmurs. I believe, in his original edition, he even represented them by musical characters showing their exact pitch. His more practical English translator (Forbes) quietly cut out a good deal of his discussion as to the musical character of murmurs; and Latham, one of those clear-headed English writers, in the early part of this century, said that the musical or other quality of the murmurs was of little practical value, though when auscultation was first introduced in England and physicians began to listen to the heart, they were not only captivated by the sounds they heard and by the whole study of auscultation, but they made it considerable of an amusement, and tried to see how nearly they could compare the murmurs to various other sounds, and he says that they even went so far as to represent them by musical notes.

Dr. BABCOCK—Was it not Latham who reported a case in which a musical sound was heard like that of the cuckoo cooing, and yet nothing was found postmortem to explain it?

Dr. HERRICK—I do not remember. Speaking of diastolic musical murmurs, the loudest musical murmur I ever heard was diastolic and in a case of typical aortic regurgitation.

Dr. LEWIS (closing the discussion)—In answer to Dr. Herrick, I think he is right in regard to the condition of the musical murmur in my case. It is a fact that the murmur was not heard while the heart muscle was in a very weak condition at the same time that the heart must have been dilated, at which time there was a loud systolic murmur. I spoke of the difficulty of examining in her weak condition and said that the respiratory sounds were much disordered. Before this time, in the hospital they had discovered a cooing sound, as of a bird in the chest. Since the murmur has begun to disappear again, she is improving, and the heart muscle seems to be stronger.

Dr. CHARLES W. PURDY read a paper entitled

THE PRINCIPLES OF THE DIETETIC TREATMENT OF DIABETES MELLITUS (*vide* JOURNAL, December 3, p. 1329).

Dr. N. S. DAVIS—I have not for a long time listened to the reading of a paper that was to me more interesting and instructive than the one just heard. It reflects the thought of the best students of this subject today. I think the pendulum of medical opinion has swung completely away from the belief

that was so prevalent some time ago, that diabetic patients must be excluded entirely. The prevalent opinion now, at least among those who are studying diabetes most carefully, is that a modicum of carbohydrate foods can be allowed to most patients. The exact quantity must be determined for each patient experimentally and by careful tests of the digestive capacity of each patient. As Dr. Purdy has said, the quantity which each patient can tolerate varies during the course of each one's illness; therefore, a constant watch of the digestive powers of each must be kept. There is a time, it seems to me, when we can place patients upon a strict diabetic diet, as it was formerly called; it is when they first come under treatment. All carbohydrates should then be forbidden in order that we may learn whether we can thus prevent the elimination of sugar by the kidneys. If the latter can be made to disappear, then one can carefully administer small and increasing quantities of starchy food to ascertain how much will be assimilated. Under these circumstances a strict diabetic diet, or one from which carbohydrates have been excluded, is useful, but only for a short time. Again, oftentimes when diabetic coma, or nervous symptoms which lead us to suspect its onset, threatens, patients can advantageously be placed upon a strictly diabetic diet. There are, however, a group of cases that, under the same circumstances, suffer from indigestion, which often seems to have been produced by crowding albuminous and fatty foods to the exclusion of carbohydrates; such patients are frequently benefited by permitting a mixed diet for a little time, that is, throwing aside the dietetic barriers that have been erected. Immediate improvement is not uncommon under such circumstances. It has seemed to me, from some experience, that it is not desirable to place patients upon a closely restricted diet suddenly when they first come under treatment. Patients do better if one at first inquires carefully as to what foods they have been using, and if one article of food is eliminated after the other until they are day by day gotten upon a sufficiently restricted diet. In many cases that I have seen indigestion has been common by suddenly restricting diet, and the patients felt worse rather than better. In at least two instances in which coma developed and proved fatal, it seemed to be precipitated by the sudden change of diet. At least, this was the impression made upon me. Two or three cases are not enough, however, to generalize from. It seems desirable to put patients very gradually upon a restricted diet if they are to be placed upon it at all.

I was extremely pleased with Dr. Purdy's opening remarks as to the necessity of forming a compact, and cast iron agreement, between patient and physician, in order to successfully treat cases of diabetes. Patients in advanced life can be most successfully treated, provided only they are constantly under a physician's guidance. Examinations of the urine must be made frequently. One must have a complete knowledge of the character and quantity of foods patients are taking, and he must look to even the minutest details of hygienic treatment, both dietetic and otherwise, in order to insure success in the treatment of these cases. Frequent examinations of the urine are absolutely essential. The first symptom of relapse or recurrence in patients who have been helped must be looked for in order to properly adjust their diet to their varying needs. This watch must be maintained continuously over years of time, in some cases. In regard to individual articles of diet, the diet lists which I have been in the habit of prescribing are not very different from those Dr. Purdy recommends. I have not added the use of fats as frequently as I wish I had until the last year and a half. I believe that I get better results by giving fats more generously than I used to do. There is, however, chiefly the danger when patients are put upon a fat and albuminous diet, of creating digestive disorders. It is very difficult in some cases to get enough of fats taken to accomplish good. It is best to permit the use of so much of carbohydrates as experience shows are assimilable and to substitute fats for them when none or little can be taken.

Dr. JOHN H. HOLLISTER—For many, many years I have had occasion to watch the progress of cases of diabetes, and I have formulated some conclusions in my own mind which occur to me at the present time. In the first place diabetes is perhaps one of the most interesting diseases for clinical study on the part of the attending physician, and one of the most fruitful that can claim our consideration. The subject-matter of the paper is proof. It involves the whole subject of nutrition; it involves the molecular changes which are incident to tissue-building and the removal of excrementitious matter; it involves processes in which the structure and function of the kidney is inseparably related. This leads me to the thought that we have such a great variety of conditions that the cases must be treated individually. As has been remarked, we need to study each individual case more critically than in almost any

other disease, and if this can not be done we can not lay down any specific line of treatment that shall be applicable in any large number of cases. My experience has led me to the conclusion that there are few persons, except under hospital control, who are satisfactory patients. It has occurred to me, and to all of you doubtless, that most of those who suffer from glycosuria are in conditions of health where they like to care for themselves, and very frequently are scarcely amenable to control. The frequent indiscretions of my patients have led to discouragement on my part with reference to the treatment of this disease. As Dr. Davis has said, nothing but a cast-iron rule can avail, and only those under absolute hospital control seem to give us a fair chance to study the results of treatment. For many years I have been in the habit of gradually changing the diet list, never abruptly, but gradually withdrawing objectionable articles of food till I have brought them down to the point where it seemed to me for a period of time a struggle between their appetites and their wish to obey me was the point at issue, and beyond that point I hardly think it is wise generally to control them, so much so that as the amount of sugar comes to a low point I have sometimes gradually introduced the carbohydrates to see if there was any increase beyond that point, if not, to permit their limited use, and if there was an increase, to withdraw, and I have quite frequently found that a gradual improvement went on, even though I gradually introduced hydrocarbons in connection with their food. And so in the cases that have come under my observation I have endeavored to study individually the manner, results of introduction and withdrawal. One point in the last suggestion of Dr. Purdy struck me very forcibly. It results from three cases I have notes of in which there were intercurrent diseases and the further free use of food was forbidden, and in which sugar disappeared for the time, with the withdrawal of food. The withdrawal of the excess of food gave immediate rest, and the result was very favorable. I have sometimes felt that some of these cases were permanently relieved; but a greater misfortune has been to find, through errors of diet, repeated returns of the disease, and when this is the case I find any form of treatment less available. I have hope for those who have judgment and will-power and will control themselves for any period of time after they seem to have perfectly recovered, but I have none for those who are indiscreet.

With regard to the use of alcohol in diabetes, I have not used it as freely as has been suggested, and I do not know its results as well. I have found that the fatty foods introduced have been favorably received by most of my patients, to the extent that I have inclined freely to administer in connection with the foods that have been mentioned, cod liver oil as a drug or in emulsion, and I have come to regard it in connection with the other articles of food as a favorable part of the diet.

Dr. JOHN FISHER—The question of diabetes is one in which more physicians ought to be interested, and we ought not to let this debate go by without further remarks. The first thing necessary in treating a case of diabetes and in teaching the subject, is a better classification than we have ever had. Dr. Purdy has read a paper tonight upon glycosuria, with a very slight attempt at classification of the cases. There is no physician perhaps in this Society who, in treating several cases of this disease, has not been struck by the great variation in the kind of diabetes that he was treating. For instance, when we get a case of so called glycosuria in a child, we feel that it is going to prove fatal in a short time. When we get a case of glycosuria in a young man who has a ravenous appetite, who consumes gallons of water daily and passes large quantities of urine loaded with sugar, we know that patient will last but for a short time unless we have some method of checking this dread disease. We encounter the disease in older men, say between 35 and 45 years old, who are lean; the kind that Dr. Purdy has referred to, men who have only a moderate appetite, or one which is below normal, while others have quite a ravenous appetites. Dr. Purdy holds that in such cases the proper thing is to make those patients gain flesh. The question comes up, What is the best treatment in order to make those patients gain flesh, and at the same time reduces the amount of sugar in the urine? There are several classes of cases of diabetes: the little child who rapidly declines; the young man or young woman who goes rapidly down; the lean man who has reached middle life or has passed it, and then there comes the older person who has reached 50 or 55 years of age, who, as Dr. Purdy says, is more amenable to treatment than any of the others. It is peculiar that when a person gets old they can stand disease better than a child, and it is a wonder to me whether there is not a different etiology for the glycosuria in a child than that in an old person. There is another class of patients who have diabetes, not uncommon, and they are fleshy people. I have, for instance, under my care at the present

time three such men, two of them six feet in height, one weighing 300 pounds, one 280, and a third, five feet eight inches in height, who weighed a few years ago 268 pounds. Dr. Purdy has told us that in cases of glycosuria the thing to do is to get the patients to gain flesh, and I want to ask the Doctor if he would want these men to put on any more flesh? I do not ask him this question in a spirit of fun. One of these patients in the last six weeks, under treatment, has decreased in weight from 268 to 252 pounds, and I was under the impression that this was a good sign and encouraged loss of flesh. This loss of flesh may be due to his restricted diet, but he had an extra good appetite, drank large quantities of water previous to treatment and was getting up every two hours at night for the purpose of urinating, and sometimes every hour. Under a restricted diet he has been able to go all night without passing any urine. The quantity of glycosuria was eight grains to the ounce when treatment was commenced; at the end of three weeks, he was without any sugar in his urine, and this continued for three weeks, when the condition again returned, so that last week the quantity of glycosuria was four grains to the ounce. It has been a question in my mind whether this fleshy man would not be better off if he lost a good deal of flesh. The same may be said of the other cases. I am positive that these men are in a safer condition with diabetes than lean men would be with the disease. I believe most of you would rather treat a fat diabetic than a lean one. It has struck me that there is some difference in the cause of diabetes in different cases, and if there is, we can not treat all patients alike. It has been suggested that the liver may sometimes be the cause of it. In several cases where postmortem examinations have been made, disease of the pancreas has been found, I think in about one-third of the cases. Other organs have been found diseased in some cases. If the etiology is different our treatment ought to be different.

Dr. JAMES B. HERRICK—Dr. Hollister really made the few remarks that I intended to make. He touched upon a very important point, and that was the fact that our patients who were dieting acquired a certain tolerance for carbohydrates. And I would call attention to the way in which Van Noorden puts it in the classic article which he has written on this subject, and which Dr. Purdy has so highly commended. He states that improvement in the mild or moderately severe cases is not brought about by exercise of the cells, but by rest of the cells. By the withdrawal of the carbohydrates for a time the cells that have been surfeited with too much carbohydrates, too much sugar, are given a period of rest, and they are enabled to acquire tone, so that they then become tolerant of foods that they before rejected. The comparison is not inapt between the condition of these cells and the muscles of a heart that has given out. Where the heart muscle is extremely weak, the heart perhaps dilated, we know it is only by keeping the patient quiet in bed, in the recumbent position, that the heart muscle is enabled to recover its tone. Then when the muscle tone has been recovered the heart will permit movements of the body or physical exertion, as for example ascending the stairs, which before it would not tolerate. In the same way the cells, according to Noorden's theory, reacquire their tone and utilize carbohydrates they before rejected. Some of the older practitioners have, in the course of their experience, gotten on to some of the same facts that Noorden has so tersely, neatly and systematically stated. As Dr. Hollister tells us, he learned this fact of tolerance and the value of fats from his experience. And ten years ago one of our honored physicians taught me that cod liver oil was a good remedy to give to patients with diabetes. I remember at that time having put a patient upon a strict diabetic diet; the sugar lessened, but the woman also grew weak and was losing flesh. I said to the late Dr. C. W. Earle, "What can I do for this woman?" and he replied "Give her cod liver oil and cream, of course." I did, and she improved very much and is living today. Dr. Earle had somewhere learned the value of fats, and he gave to many of his patients who were affected with this disease large amounts of cod liver oil and fats. I do not want to inflict the diabetic bread question upon the society, but I should like to ask Dr. Purdy whether, in his experience, any of the so-called diabetic breads are really reliable and are to be advocated. Several authors, e. g., Williamson, Naunyn, Noorden, and others speak of them as frauds. I should therefore like to know what has been Dr. Purdy's experience with these breads.

Dr. EDWARD F. WELLS—The author of the paper should be congratulated upon having presented a contribution of exceptional value upon a subject which is of great practical importance and extremely interesting. The paper bristles with points of great practical importance. One of the first of these is the statement that the disease is in many cases, especially in elderly people, a controllable one. Another is that skill and

time are required in the management of cases of diabetes. Now, there can be no doubt that a patient with diabetes will fare much better in the hands of one physician of moderate ability than he will at the hands of many physicians of the greatest reputation, that is, going in turn from one to the other. If a diabetic patient can be kept in the hands of one physician week after week, month after month, and year after year for many years, his condition may be greatly improved and his life indefinitely prolonged. In order to do this, however, he must have confidence in his physician. There is only one way to obtain and retain the confidence of a diabetic patient, and that is to treat him fairly and truthfully; take him into your confidence and perhaps a partial partnership in the management of his case, and it is well to state to him, as early as possible, exactly and in some detail, what he can and what he can not expect. Many of these cases can be improved only to a certain extent; the sugar diminishes to a mere trace, but can not be entirely done away with. The thirst declines, and the amount of urine passed approximates the normal; yet, with every care and management, these patients do not get beyond this point; they are made worse if they are not very careful; with them the limit of improvement has been reached. It is extremely discouraging to such a patient, if he has been led to expect that he can be radically, or completely cured, to find that he can be improved to this extent, but no further. It is, therefore, the height of folly to promise too much, but for the legitimate encouragement of the patient he should be informed, approximately, to what extent he can probably be benefited. The best thing for the patient, then, to repeat, is to tell him as early as possible just how far he can be improved and, if you know, why he can not go beyond a certain point. I am sure that the proper appreciation of those points will be of the greatest benefit to diabetic patients. I have had under my care for several months a patient who was troubled with great frequency of micturition, without much urine being passed, only about fifty ounces during the day, and the amount of sugar being reduced to a mere trace. For the relief of the frequent voidance of urine, sulphonal was given in doses of two and a half grains, three times a day. The sulphonal was continued for a long time without my knowledge, during which the patient improved very much. The urine was examined frequently, and starchy foods were gradually added, so that the amount of these which the patient was able to take during this period was much greater than before. Upon discontinuing the sulphonal, the sugar soon considerably increased in amount, so that a return to a more restricted diet was necessary. The question arose in my mind whether the sulphonal had anything to do with the temporary improvement in this case. Another question I would like to ask the essayist is whether he has noticed any relation between tapeworm and diabetes. Two of my patients, one seen several years ago, and one now under observation, happen to be troubled with both tapeworm and diabetes.

Dr. PURDY (closing the discussion)—With regard to the use of carbohydrate foods in diabetes, I think a great deal of damage is done by using them too freely without carefully watching the results upon the urine. It is quite a fad in cases where the stomach rebels against proteid foods, to return temporarily to the carbohydrates, but I think we can do better by simply reducing the quantity of food. In other words, I believe in strictly dieting these cases. If diets are of any use at all, let us follow them carefully, scientifically and accurately. I quite agree with Dr. Davis that patients should have all the carbohydrate foods they can assimilate and use, but no more, unless they can tolerate a great deal. If they can take 300 grams of carbohydrates and assimilate 200 grams, I would give them a moderate amount of carbohydrate food. But we should follow carefully every gram given by observing the urine for twenty-four hours, noticing what amount of carbohydrates has gone astray, and what amount has been used. I make these remarks because one of the most recent authors upon this subject, Williamson, makes the statement that the more severe the case of diabetes, the more liberal he is with diet. I would recommend exactly the reverse of it, and would say that the more severe the case, the more strictly would I diet it. With reference to the remarks of the Doctor who spoke of building up the body weight of the patient, 300 or 280 pounds is an excessive weight for a man even six feet high. Speaking generally, there is no question but what the higher we maintain the weight of the patient, the milder the disease will run. Any physician who has had much experience with these cases must have seen cases where the patients maintained good body weight and practically assimilated large quantities of carbohydrates; but the moment such patients lose their weight, especially if they become spare, it is an unequal fight to the end that they will lose it. Take a man and reduce him to 130

pounds and his case will go from bad to worse. If he can maintain his weight up to 170 or 180 pounds, he will go along favorably under proper regulation of diet, other conditions being equal, and his case will progress altogether differently.

With regard to breads, I look upon them as humbugs, nearly every one of them. I think they have killed more diabetics than any other one thing. I have in my book gone over this question and pointed out the quantities of starch in the so called group of diabetic breads manufactured in this country. The bread made in this city by Mr. Jerome, and to which Dr. Davis called attention at a meeting of the Chicago Medical Society about a year ago, is absolutely free from starch. But like all diabetic breads, so-called, it contains a small amount of sugar. I have used it, and consider it the best substitute for the bread I have used. It is necessary to warn the patient in using this bread that he can not use it like ordinary bread. He must not use over half the amount of ordinary bread; if he does, it will act just like so much more proteid food.

I wish to correct the impression conveyed by Dr. Wells in his remarks that diabetes is curable. I did not intend to convey the impression that it is ever curable. What I did say in my paper was, that diabetics beyond middle age, fairly well preserved, if they die of the disease it is either their fault or that of their physician; that this disease can be kept under control by a proper system of diet. But I believe once a patient is diabetic, he is always diabetic in the sense that he can not return to the use of carbohydrate foods *ad libitum*. I have seen cases, however, where glycosuria was brought about temporarily by the excessive ingestion of carbohydrates, which, when cut off, would cause the glycosuria to disappear. Replying to the question of Dr. Wells, I have had no experience with diabetics in connection with tapeworm. I have had no experience with sulphonal or cod-liver oil in the treatment of diabetes. In fact, I have little faith in the specific action of drugs in this disease.

Chicago Medical Society.

Joint Meeting of the Chicago Medical Examiners' Association and this Society, held Nov. 16, 1898.

Dr. JAMES H. STOWELL occupied the chair.

Dr. NICHOLAS SENN addressed the Society on the
SURGICAL DISEASES OF THE LATE SPANISH-AMERICAN WAR, WITH
A VIEW OF ESTIMATING THE WAR RISK OF LIFE
INSURANCE COMPANIES.

He said that the late war had been characterized by decisiveness and by intense patriotism on the part of the troops; while he had reason to believe that the opposite mental conditions prevailed in the Spanish camps. The American troops had to deal with an impoverished, half-starved, discouraged enemy, which he thinks accounted for the easy victories and short duration of the war. He attributes the repeated victories on land and sea more to the soldiers than to any special military genius displayed by any of the commanders. Speaking from a surgical standpoint, he made the statement that the loss of life on the battlefield, or as the immediate or remote effects of wounds did not exceed 400. The loss in battle in Cuba was 267. A number of the most seriously wounded have died since. In Porto Rico, where there were four skirmishes, the number killed did not exceed 20, and the number of wounded was about 40. The Spaniards were armed with Mauser rifles exclusively. He had abundant opportunity to compare the injuries inflicted with the Krag-Jorgensen rifle and the Mauser rifle, and the wounds differed very little. If any, the Mauser rifle was a more humane one, owing to the smaller caliber of the missile. The stopping power of these guns had been over-estimated, as every hunter of large experience knows. In examining from 1200 to 1300 of the wounded, he was astonished at the limited zone of contusion of the soft parts, which explains very satisfactorily the readiness with which these wounds healed, provided no infection occurred. There is a zone of comminution from both weapons at a range of about 500 yards. He found two cases, among the Spanish prisoners, shot with Krag-Jorgensen rifle, gunshot wounds of the femur at the junction of the lower with the middle third; in both instances infection had occurred. The patient suffered from progressive sepsis; amputation was indicated, and promptly performed in a most primitive way, outside of the Spanish column, in the hot, broiling sun, there being no way of effecting disinfection of the dressings, instruments, etc., except with a kettle of questionable cleanliness. Heat was resorted to exclusively in effecting sterilization. At a certain range he is satisfied that both of the bullets from these rifles will inflict injuries to the long bones and produce more or less comminution. In one instance a young soldier was shot through the

tibia two inches above the ankle-joint with a Krag-Jorgensen rifle, and the hole through the bone resembled very much one made with an ordinary drill. The shot was fired at a range of 1000 yards, but there was no comminution whatever. He referred to the value of the first-aid dressing. In Cuba the military surgeons were hampered in their work by lack of dressing material, also imperfect ambulance facilities. Then, too, it must be remembered that in Cuba hundreds were wounded and nearly 300 killed in three days; consequently the medical department was taxed to its utmost capacity in taking care of the wounded with the limited facilities at their command. In this war, with an insufficient number of medical officers at the front, as shown at the time, men occasionally had to wait for hours, and in a number of instances more than a day, before they were picked up and the first dressing applied. It was in those cases that suppuration most frequently occurred. In Porto Rico it was different. General Miles, who had command of the invading army, took every precaution to look to the welfare and the efficiency of the medical service. He felt the need of a medical adviser and often consulted him. The reverse was the case in Cuba. In Porto Rico affairs were conducted near the fighting line. The ambulance corps was in readiness, and ambulances were to be had in abundance. The moment a man was shot he was carried to the rear and a first-aid dressing, always on hand, was properly applied, and of about forty cases of all the wounded brought back from Porto Rico on the hospital ship *Relief* there were only two cases of suppuration, a remarkably small percentage, proving conclusively the value of a timely, efficient first-aid dressing in preventing wound infection.

He made interesting observations in studying the wounded in Cuba with reference to the sources of infection. In examining over 1000 cases, he became fully satisfied that the small caliber bullet seldom, if ever, carries with it pieces of clothing or any other infectious substance. The bullet itself is practically aseptic, as he had abundant opportunity to observe. In the majority of cases where wound infection occurred, he attributes it to the subsequent too frequent change of dressings and unjustifiable attempts to probe the track of the bullet. He had placed himself on record before going to Cuba, that he considers it unjustifiable, certainly unscientific, to resort on the battlefield or in military hospitals to the probe as an instrument of diagnosis.

He has seen a number of cases of gunshot wounds of the abdomen recover without laparotomy. He believes he was the first one to place himself on record, years ago, that a man shot through the abdomen from before backward on a level with the umbilicus or above, has a fair chance of recovery without operative interference. It is in those cases that the intestinal canal not infrequently escapes injury. In four out of sixteen experiments made for the special purpose, careful subsequent examination of the contents of the abdomen showed absence of visceral lesions which would have demanded a laparotomy. These are the cases that recovered during the late war. In almost every instance the bullet wound was on a level or above the umbilicus. The reverse was the case when the bullet traversed the abdominal wall below the umbilical level, and particularly if it passed through the abdomen transversely or obliquely.

There is one part of the surgical treatment of the wounded which he very much regrets was imperfectly performed. Praise should be given where it is deserved, and criticism bestowed where it is called for. He refers to the want of early immobilization of fractured limbs. At the front he could find no plaster-of-Paris, which should always accompany a fighting army. At Siboney he was furnished with plaster-of-Paris, but it would not set. Plaster-of-Paris dressings, therefore, the sheet-anchor of the military surgeon in the treatment of compound fractures, were lacking or imperfect. Surgeons had to do the next best thing—search for splint material, and fortunately in Cuba nature was very kind to the military surgeon in this respect. The supply of wire splints was limited; it would not go one-half the distance, but the cocoa palm did the rest. He found in the sheath of the cocoa palm leaf a most excellent material, in that it is somewhat plastic, porous and was utilized to great advantage in the immobilization of gunshot fractures.

In contrast to the experience in the Civil War, he found in the Spanish-American War that penetrating gunshot wounds of the knee-joint, of the hip-joint, and of the larger joints, recovered promptly, never proved fatal in the absence of wound complications. The men recovered, as a rule, with useful joints.

When he came to Montauk, where he was on duty for four weeks, he had an excellent opportunity to study the conditions of the returned soldiers, of which there has been so much said, particularly in the "yellow press." At this camp he did sur-

gery of a peculiar kind, and his experience there perhaps would be of more value to life insurance companies and their medical examiners than what he had said in reference to gunshot wounds. When the army of Cuba returned, it was an army of patients, not of soldiers. They were all anemic, emaciated, and, with few exceptions, brought with them, as an undesirable inheritance, malarial intoxication. In almost every instance physical examination showed enlargement of the spleen. As the result of infective substances in the gastrointestinal canal, he met at Montauk with numerous instances of surgical affections directly traceable to intestinal infection. He found a number of instances of enormous ischio-rectal abscess, anal fistula, hemorrhoids, ulceration of the rectum, varicocele and hernia. He attributes the prevalence of perianal and para-rectal suppurative processes to antecedent attacks of catarrhal proctitis, from which almost every one of the soldiers suffered at one time or another. It was at Montauk where he believes he was of most service to the troops, being placed in charge of the surgical department of an enormous National camp filled with thousands of sick soldiers. He is positive, as far as the Illinois troops are concerned, that not a single private was sent to the front with hernia. Exceptions were made in the case of officers. Speaking of privates, the examination of them was so rigid that he was sure not a single hernia escaped attention, and yet some of the men are coming back with hernias. He was astonished at Montauk at the number of cases of hernia that the soldiers claimed to have contracted during their short service. What is the cause? The fact remains, that the men were never exposed to forced marches; the longest march in Cuba was from Siboney to the front at Santiago, a distance of nine miles. He attributes the prevalence of hernia in the returning soldiers to the debilitating effects of the campaign and of disease; to the relaxing influence of the climate; to the disappearance of fat in the region of the inguinal canal. In the near future many of the mustered-out men will apply for pensions for the defect he has just mentioned. In an examination of ten thousand men at Camp Tanner, he found varicocele with great frequency in men of military age, as from 18 to 45 years. At least 25 per cent. of the applicants for military service were affected with varicocele. In not more than two hundred out of the ten thousand did the enthusiastic and ambitious recruits acknowledge that they experienced any inconvenience from this affection. He therefore believed at that time that varicocele of moderate size, without symptoms, should not disqualify an otherwise well built man for military service. He has every reason now to believe that the position he took then was the correct one, judging from his observations of the men that are returning.

Dr. WILLIAM CUTHBERTSON read a paper on

THE ENTERIC DISEASES OF THE ARMY CAMP IN THEIR RELATION TO LIFE INSURANCE.

He said it was the province of the life insurance examiner not only to pass upon the present condition of the applicant's health; the probability of his dying in a short time from some acute disease, but also as to the probable effect on his life expectancy of any disease the applicant might have had. Anything which may in any way impair the health of an applicant, should be carefully inquired into, and he maintains that camp diarrhea and dysentery are two of the most important of these diseases. The history of all armies operating in all parts of the world shows that camp diarrhea, typhoid fever and dysentery are the most prevalent disorders. They exist to a greater extent, however, in campaigns in very warm or hot countries. The records of our Civil War show that diarrhea and dysentery were more frequent and fatal in the Central region than in the Atlantic and Pacific regions. On the contrary, in civil life, intestinal inflammation is more prevalent in the Northern, Middle and Western States than in the Southern. During the recent Spanish American War, while his regiment—the First Cavalry—was stationed in Illinois, the universal intestinal complaint was constipation; while almost immediately after their arrival at Chickamauga Park, Georgia, diarrhea began. This was so invariably the case that whenever a batch of recruits arrived from home, one would hear a member of the Hospital Corps remark, "There comes more diarrhea." The summer months of June, July and August are those in which the greatest number of cases occur and the mortality is the highest.

The three most important factors in the causation of camp diarrhea, dysentery and typhoid fever are:

1. The effects of excessive or prolonged heat, which tends to weaken or arrest the digestive functions, leaving in the stomach and intestines undigested masses, which act both as irritants and culture grounds for the development of fermentative bacteria. On the other hand, excessive cold chills the

surface of the body and congests the blood-vessels of the digestive mucosa, thus precipitating a camp diarrhea which soon runs on into a dysentery.

2. The totally changed conditions under which an army is compelled to live when campaigning from that which its members were accustomed to while in permanent barracks, or at home in civil life.

3. To the food and cooking. It is a hard task on the stomach to accustom itself to the rations furnished by the War Department during active service, more especially when that service is performed in a hot climate. His experience with the cooks in the volunteer regiments convinces him that a great deal of the camp diarrhea which existed was due to the careless and improper way in which the food was cooked and prepared.

The character of the water ingested is another cause for these diseases. Water containing inorganic salts in solution is very often purgative. According to Parkes, water which contains three to ten grains of putrescent animal matter may be hurtful. Water found in stagnant pools or marshy places has a slight effect on the intestinal mucous membrane, producing diarrhea. Sudden changes from heat to cold, unripe fruit, alcoholic excesses, are all conducive to these maladies. Finally, in the production of these diseases are numerous bacteria which give rise to putrefactive changes in the intestinal contents where digestion is impaired.

Enteric fever has proved to be the scourge of the late Spanish American War. The greatest mortality did not occur where expected, namely, on a foreign soil, from bullet wounds and yellow fever, but right at home in large camps, where every appointment should have been up-to-date, with every appliance modern sanitary science could devise. These deplorable results can be directly chargeable to the Medical Department of the regular Army. A wet soil, damp weather, the presence of large quantities of fecal and decomposing matter, and large numbers of men congregated together, furnish a beautiful combination of circumstances for the development of this disease. The presence of hucksters in the camp seemed to be responsible for the spread of typhoid fever in no small degree. The eatables which they hawked from regiment to regiment became infected, and in this way was the disease transmitted. At Camp Thomas, Ga., part of the water-supply was taken from the Chickamauga River, the intake pipe being situated only a few yards above the point where one of the large camp drains emptied into the river. The rest of the water-supply of this camp was obtained from springs and wells located on different parts of the grounds, which soon became infected from the leakage through the already infected soil. Finally, the men themselves invited an attack of typhoid fever by their mode of living. They slept on the ground, very often four in a tent, the tent poorly ventilated, and very frequently closed up all day. They would do this in spite of all orders and warnings. They would buy food from hucksters, and drink river water, in defiance of all advice to the contrary. He is of the opinion that not only the water, but the soil, and even the air of these large camps were infected with the typhoid bacillus.

He entered into the causation of these diseases rather extensively, in order to show the extreme liability of the soldier to contract some of them; hence his undesirability as an insurance risk.

The average mortality of selected risks—and all the soldiers in the late war could be classified as selected risks—is 4 or 5 per 1000 per annum. The latest returns show the mortality of the American Army to have been 10 per 1000 for a period of six months, or four to five times greater than it should be. These percentages should settle definitely the question of the desirability of the soldier as an insurance risk, in the negative. Our woods and plains teem with good material for soldiers; we have an unlimited number of first-class medical men and sanitarians. We have a generous people, and he was assured that when the army is reorganized, it will be put in such a condition that during any future campaigns, the life and health of the soldier will be as well protected as if he were under his own vine and fig tree.

Denver and Arapahoe Medical Society.

Nov. 9, 1898.

Dr. WALTER HILLIARD read a paper before the Society on THE SIGNIFICANCE OF CERTAIN LESIONS OF THE FUNDUS OCULI.

He said in part, that a cursory glance at certain anatomic features of the fundus oculi will suffice to explain its peculiar liability to pathologic changes. Incidentally it may be well to note some similar characteristics of the cerebral cortex in consequence of its embryonic and other important relations to the

retina. The cerebral cortex and retina are examples of organs having the so-called "end-artery system." In these structures the arteries, with some unimportant exceptions, neither communicate with those of other parts nor, indeed, with each other. Even the arterioles may be termed "terminal," each one ending in its own capillaries. Another feature of importance is the capillary network of the retina, which is the finest and closest in the body. Their total area is at least 800 times greater than that of the short posterior ciliaries, from which they arise. In consequence of the law that the velocity of a current in a tube is inversely to its lumen, the velocity of their capillary current must be very many times less than that of the short posterior ciliary artery. The choroid presents another peculiar feature—its vessels are arranged in superimposed layers, progressively diminishing in size from without in. In the profound chronic toxemias produced by such causes as syphilis, chronic albuminuria, alcohol and diabetes, the earliest manifestations of the long series of necrobiotic changes are found in the arterioles and capillaries. A priori we should have anticipated this. Here the blood-current is slower than elsewhere, and the blood charged with toxic substances is in contact with the delicate structure of these minute vessels much longer than in the larger arteries and veins. In every study of the degenerations resulting from such chronic dyscrasias as just mentioned, one should constantly bear in mind that the necrobioses in the essential structures of the organs occur *after* the vascular lesion, and are largely *due* to them. The ophthalmoscopist needs not the black luxuriant locks, the beaming countenance, the firm elastic step of youth and manhood's prime, neither does he regard the gray hair, the wrinkled face, the bent form, the unsteady gait of his patient, nor, indeed, the care-worn look so characteristic of the old veteran of life's many storms, but in these chronic toxemias his prognosis is based solely upon what he observes in this beautiful little mirror—the fundus oculi.

In syphilis, chronic albuminuria and diabetes the lesions of the fundus oculi may always be regarded as terminal symptoms; the chancre, the bubo, the cutaneous rash are but memories of a distant past; the renal epithelium, the Malpighian bodies, the glomeruli were long since helplessly disorganized; it is a genuine and not evanescent glycosuria that we have to deal with. The presence of these lesions in the fundus oculi in the albuminuria of pregnancy bodes the imminent danger of a long train of disaster to the woman. Not only should her uterus be relieved of its contents, but the woman should be advised never again to become pregnant. The appearance of these necrobiotic lesions in connection with acute infectious disease is highly significant of a concomitant meningitis, especially basilar meningitis.

Dr. WM. C. BANE reported a case of

VISION OF RIGHT EYE DESTROYED BY THE KICK OF A HORSE ON RIGHT SUPRAORBITAL RIDGE AND RIGHT CHEEK.

On September 14, 1897, he was requested by Dr. J. N. Hall to see D. R. D., aged 44 years, occupation, stone-mason. The patient gave the following history: Five days previous he was pitched from a buggy, fell near the horse, and was kicked in the face. For eleven hours he was unconscious. On the second day he discovered that he had bare light perception with his right eye. Examination revealed a lacerated wound, one inch and a half in length, extending to the bone, immediately over the supraorbital ridge. The tissues covering the right malar bone were swollen and discolored. There were also some irregular cuts in the right upper lip. There was slight ecchymosis in the tissue of the lower outer quadrant of both eyes. Action of external ocular muscles was normal. He had no light perception with the right eye. V. L. eye = $\frac{1}{2}$. Field for white, normal. Pupils were equal. The papillary reflex of the right eye was absent. The associate reflex of the right with the left eye was normal. The mediae were clear and the fundi normal, there being no change in the discs or vessels. Prognosis as to vision of the right eye was unpromising. Hearing: Right ear = watch in firm contact, L. ear = not in contact. Patient stated that he had not been able to hear the watch on contact with his left ear for ten years. He was able to hear the voice at the ordinary pitch with either ear. On Nov. 9, 1898, R. E., no light perception. Blue white atrophy of the right disc, absence of capillary vessels and slight narrowing of the retinal arteries. E. E. V = $\frac{1}{2}$. Disc, normal. At the time of the accident there evidently occurred fracture of the orbit or bony canal through which the right optic nerve passed, and with it loss of function of the right optic nerve either from laceration of the nerve, or hemorrhage into its sheath, or both. Dr. Van Hölder has examined 124 cases of fracture of the skull, in 86 of which the fracture extended into the orbital roof. In 63 of the 86, the fracture was through the canal, always through the upper plate, occasionally through the inner, or both. In 42 cases there was hemorrhage into the sheath of the nerve.

French Congress of Gynecology, Obstetrics and Pediatrics.
Marseilles, Oct. 8-10, 1898.

POZZI extolled the benefits of scientific congresses, in which he is an enthusiastic believer, although, he observed, the best results, the real scientific gatherings of the congress, sometimes occur in the intervals between the regular meetings. He compared a congress to a bottle that has just been shaken up: Leave it alone a while, the sediment will settle and the wine can be decanted. What matter if there are occasionally dregs as long as there is so much liquor above that is worth preserving! He mentioned that France alone has no chair of gynecology or infant surgery, while even Roumania now has a model, endowed gynecologic institute. He advocated the introduction of postgraduate courses into the French universities.

President PINARD called attention in his opening address to the necessity of specific treatment of syphilitic parents, and the frequency of degeneracy among the children of parents addicted to alcohol.

LE GENDRE'S address on "Dyspepsia in Boarding Schools," stated that in spite of modern hygiene, dyspepsia is more frequent among children now than it used to be in our father's day, and seems to have a nervous or neurasthenic heredity as the foundation, and gastro-intestinal disturbances as the manifestation, frequently presenting misleading symptoms. He noted the connection between this dyspepsia and appendicitis later. He advised better hygienic arrangements, notwithstanding the wonders already accomplished; no sport carried to extremes; the time devoted to meals lengthened; reiterated counsel as to mastication; more milk and eggs in the diet; less salads, and other green vegetables; beans, peas, etc., in a purée, as the hulls are trying to some intestines. The peculiar dyspepsia due to the ingestion of bread too fresh and spongy should be carefully guarded against. More important than all is the co-operation of the family with the school. The family physician should write to the school physician and instruct him as to the tendencies of the child placed in his charge.

PERRIN discussed the "Purpuras of Childhood," which he classifies as: 1, primary, infective; 2, rheumatic; 3, Werlhof's disease, and numerous secondary infective forms.

LE GENDRE would like to abolish purpuras out of the nosology, as it is as illogical to compare them with each other as the headache in neurasthenia and in meningitis. He mentioned a case of purpura in a neurasthenic child that had resisted treatment for three years, cured with absolute rest and protracted baths.

GUINON spoke of

COLITIS IN CHILDREN.

Under three years of age it usually appears as gastro-enteritis, but after this age it resembles more the colitis of adults, and has the same foundation: a neuro arthritic predisposition. He classifies it as acute colitis, with its mucous or catarrhal form and the dysenteric and chronic colitis, which may be mucomembraneous, either indolent or enteralgic, or else paroxysmic, either simple or dysenteriform. Colitis may be confounded with appendicitis, although there is less localized pain, or with peritonitis, dysentery, typhus or tuberculosis. Complications are also frequent; furunculosis, lithiasis, broncho-pneumonia, peritonitis, etc., which obscure the diagnosis. In the chronic form the indications are to combat the neuropathic tendencies with frequent, protracted baths, tepid douches every day, avoidance of fatigue and walking, especially when there is pain. Conform to the diet to the predominant diarrhea or constipation. Milk frequently is responsible for the former. Give hot compresses to the abdomen morning and evening. Modify the intestinal putrefactions with calomel, supplemented with benzonaphthol combined with betol and bismuth salicylate or magnesia. The constipation should be kept under control. Castor-oil in small doses is the best laxative, if one is required. Gentle, cautious massage is beneficial. Others reported coinciding appendicitis and colitis, treated with water only for twenty-four to thirty-six hours, then with diluted milk and injections of serum. A case of typhus in a two months old babe was reported, in which the serodiagnosis was positive, and confirmed by the necropsy.

HOFFA discussed the subject of orthopedics and exhibited radiographs showing the fine results attained with his method of testing clubfoot, congenital luxation of the hip and scoliosis. He treats the latter by first rendering the spine flexible, with gymnastics and an apparatus, until the child can himself actively straighten the deformity to some extent. When the spine had thus become mobilized, he applies a cast to hold it in the correct position. If this method is perseveringly followed the results are very satisfactory. He has also been very successful in Little's disease with massage, passive movements

and an orthopedic apparatus. Many children who were in a most deplorable condition are now able to walk and even dance.

DUCROQUET suspends the child in the Sayre by the head alone, to reduce the hump in scoliosis and apply the cast thus in the walking position. He presses on the hump with the right hand while embracing the pelvis with the left arm, forcing it backward. He observed that it is a great mistake to expect the cast to compress the body into the correct shape; it is only to maintain what has been otherwise secured. Eschare are produced if this rule is neglected.

WEILL of Lyons discussed

HEART AFFECTIONS IN CHILDHOOD.

He said that from the therapeutic standpoint we must distinguish between functional disturbances and those due to congenital or acquired anatomic causes. There is no rational treatment for congenital heart troubles, but etiologic factors can be utilized in the prophylaxis, such as the effects of consanguineous marriages, syphilis or rachitis on the part of the mother. The preventive is also the principal treatment for acquired heart disturbances; the salicylic preparations at the slightest indications of rheumatism, cold baths in typhoid, antiseptics of the mouth in scarlet fever. In case of endocarditis, which is usually caused by rheumatism under five years, the underlying rheumatism must be cured. Compensation is more frequent in childhood than in adult life, and the physician has only to sustain it by appropriate hygiene, muscle gymnastics, food, clothing. The treatment of functional disturbances varies as they are congenital or acquired. With the congenital there is usually cyanosis and chilliness for which a warm climate is to be recommended. The various symptoms are treated symptomatically. Digitalis is given as to an adult in the required form, especially with serious asthote, to children over 5 years of age. Under this age, caffeine, strophanthus, spartein sulphate, or convallaris majalis are to be preferred. Combined with this there should be certain gymnastics, massage of the extremities and abdomen, and chief in importance, the vibration of the precordial region and of the back, called in Sweden "digitalis massage."

BEZY reported several cases of hysteria in children, simulating peritonitis.

MOUREN stated that since he had been using artificial serum in injections for prematurely born infants his mortality had fallen from thirty-six to six in his fifty cases in 1898. He injects 100 grams three to four times during the day.

D'ARTROS stated that he had succeeded in curing chronic serous meningitis in children over 2 years old with potassium iodid and mercury, even in the absence of syphilitic antecedents.

It was announced that Lannelongue's sclerogenic method of treating inguinal hernia has been applied in sixty-two cases with remarkably satisfactory results to date.

MERY mentioned as the indications of mixed infection in diphtheria or streptodiphtheria, the abnormally high fever, worse general condition, evidences of septicemia and pyemia, suppurations of the ears, joints, glands, and various forms of hemorrhage. Diphtheria serum can be given at first in a large dose, but it is of no use after the association has developed its full effect. Antistreptococcus serum can then be used. Local antiseptics is especially important, for which Roux recommends hot water and salt solution.

EXTRA-UTERINE PREGNANCY

was the subject announced for discussion in the Obstetric Section.

SEGOND observed that every extra-uterine pregnancy, once diagnosed, demands surgical intervention. Under four months, if the other annex is likewise affected or there is a uterine neoplasm, the vaginal route is without exception the one to be preferred, but in all other cases laparotomy is indicated, and the extirpation of the fetal cyst offers few difficulties in most cases. The removal of the cyst arrests the hemorrhage if visceral lacerations are avoided. An enucleable hematosalpinx indicates laparotomy, but with an encysted hematocoele that has stopped bleeding the vaginal route is best. The sac must be extirpated with extreme gentleness and prudence. If a hemorrhage starts, the operation can conclude with a laparotomy, vaginal hysterectomy or the removal through the vagina of the entire adnexa. If the hematocoele has periodic hemorrhages, laparotomy is the only operation. In case of extensive hemorrhage (peritoneal inundation), the necessity of a laparotomy is evident from the statistics: 86 per cent. mortality with expectant treatment; 85 per cent. recoveries with an operation. Over five months with a living fetus, the attempt can be made to save the child, waiting until the seventh month, or, according to Pinard, to the eighth or ninth. In such cases the exteriorization of the cyst is sufficient, leaving the expulsion of the placenta to nature. If the fetus is dead, it is best

to wait until the placental circulation is reduced, then extract the fetus, exteriorize the cyst and abandon the placenta. The total extirpation of the cyst can be attempted in cases of tubal pregnancy, if the decortication required is not too laborious, requiring an excessive tamponing of raw surfaces, in which case total utero-annex castration is indicated. This should be reserved for the cases in which, having commenced the ablation of the fetal cyst, it is found impossible to complete it without overtaxing the strength of the patient. The tubo-uterine location of the pregnancy or the existence of a concomitant uterine neoplasm are also indications for total hysterectomy. He disapproves of total castration on account of possible future trouble, remarking that the woman may yet bear fine children and that even the little "ectopics" may turn out well, of which he has recently had a striking instance. Martin has met with cysts which were too friable to be marsupialized. Jonnesco believes that the other annex is almost certain to be affected and that bilateral castration is the only safe plan. Leonte of Bucharest advises leaving the pregnancy alone if all is working well, but operating at once in case of supuration or infection. In all cases he extirpates the entire tumor and irrigates copiously with salt solution.

POZZI called attention to the advantages of the lateral incision such as is done for opening up the iliacus, when the tumor is located at one side of the abdomen. The fetal cyst can be thus incised without opening the peritoneal cavity. He disapproves of listening to the appeals of the woman for castration to protect her from future ectopic pregnancies.

FRANCOIS related an observation of an intracervical abscess completely obliterating the canal in the sixth month in a primipara.

DERICHE has had a patient cured of menorrhagia, with the bicycle; others of chronic diarrhea; others, using it more energetically, cured of chronic constipation. Recent radiography of some men taking part in a bicycle six-day race showed that the viscera had a tendency to assume a more elevated position, which suggests that bicycle exercise might be used to counteract a tendency to abdominal ptosis.

DUBOURG's conclusions from a comparative study of his forty-four hysterectomies for the removal of uterine fibroma or cancer of the cervix, were that the abdominal route is much to be preferred, and that its statistics will be much more favorable when it is no longer reserved for extreme cases, as is the present tendency. Two cases of recto-vaginal fistula after hysterectomy were reported, and the promptness with which they healed without further intervention emphasized.

The value of formochloral in obstetric disinfection was extolled by several.

SEDAN uses formalized soap for his hands, which kills staphylococci and streptococci, and for the patient an aqueous solution of formochloral which is odorless and does not stain the linen. For disinfecting the room one liter of formochloral to 100 cubic meters for eight hours. The commercial formaldehyde is absolutely useless, on account of its polymerization.

QUEIREL asserted that the umbilic cord is strong enough to bear 7 to 10 kilos, and that, even with a macerated fetus, it is seldom that the weight of the fetus can break the cord (118 cases).

RICHELOT treats

RETROVERSIO UTERI

with pessaries and bandages, massage or hysteropexy. In simple cases a pessary may prove sufficient, but it is usually a delusion. Massage is much better, detaching adhesences, relieving congestion and especially valuable in cases complicated with infection. The uterus must be healthy, a metritis cured, before surgical intervention should be attempted. Abdominal hysteropexy is a fine operation, curing many women and favoring conception. The threads must be applied exclusively in the anterior surface of the uterus, below the tubal openings. Certain cases are best treated with vaginal hysteropexy, but Martin and Pozzi object that this should only be performed on women past the menopause, adding that this operation is falling into disrepute generally. A case of non-puerperal osteomalacia treated with ovariectomy was reported. The ovaries were found much atrophied, with macroscopic cysts.

MANGIN has found ligating the uterine arteries a successful measure to control uterine hemorrhage rebellious to all other treatment. The only absolute counter-indication is a lesion of the annexes.

FOCHIER reported three cases of phlegmasia alba dolens rapidly cured with abscesses produced with spirits of turpentine.

MERIEL has found pencils of equal parts of methyl salicylate and airol .1 gm. very effective in endometritis.

MARCEL BAUDOUIN proposed a classification of operations on the uterus, based on the decimal system in use in libraries.

PRAGTICAL NOTES.

Calomel Injections in Lupus.—Thirty-eight cases have been reported cured or very much improved by this treatment, and ten not affected to date.—*Munich Med. Woch.*, November 15.

Ichthyol Stains on Linen.—Javelle water (potassium hypochlorite) will readily remove ichthyol stains from linen.—*Munich Med. Woch.*, November 8.

Aromatic Cod-Liver Oil.—According to Duquesnel, the odor and taste of cod liver oil can be disguised entirely by the following formula: Ol. jecoris. flav. 150 gm., ol. eucalyptus. ether gtt. ii.—*Munich Med. Woch.*, November 15.

Trifacial Neuralgia and Migraine.—Apply, locally, a tampon moistened with the following: sulph. ether 50 gm., melissa alcohol 50 gm., menthol 20 gm. The pain vanishes with the refrigerating effect produced, and relief is experienced for hours.—*Gaz. Méd. de Liège*, November 13.

Gluten Capsules.—Bely utilizes the property possessed by gluten, of not being affected by the gastric secretions, to make a capsule of it for the administration of creosote. He prefers the formula: pure creosote 15 gm., balsam of tolu 05 gm., lime glycerophosphate 05 gm.—*Journ. de Méd. de Paris*, November 13.

Trichloroacetic Acid in Tympanic Perforations.—B. Miot reports forty-nine successes in fifty-one cases of perforation of the tympanum by Okuneff's method of etching the edges of the perforation with trichloroacetic acid to induce cicatricial obstruction of the hole. If the edges are refractory to the action of the acid, he recommends radial incisions or galvanocauterization to freshen them.—*Cbl. f. Chir.*, October 29.

Bacteriology of Accidental Wounds.—A study of 222 wounds demonstrated that there were only 17 sterile, and that most of the microbes found were clinging to the blood clots. Copious rinsing is therefore urgently indicated to remove as many of the germs as possible by its mechanical action. Aiol or iodoform gauze for an antiseptic tamponade was found most effective in infected wounds, or bismuth oxyiodid.—*Cbl. f. Chir.*, October 29.

Bacteriologic Investigations in Diphtheria.—The process is rendered easier and shorter by Schottelius' suggestion that the cotton stopper to the test-tube have a stiff wire loop extending below, to the end of which another piece of cotton is attached. With the stopper for a handle the throat is wiped with the cotton on the end of the loop, which is then inserted into the test-tube, the stopper closing it, the whole placed in a paper tube closed with a cork, enclosed in an envelope with the address printed on it and sent to the Institute. The entire contrivance is supplied by the Freiburg Institute for 25 pfennige.

Modern Treatment of Migraine.—Most cases of migraine are due to intoxication, auto or exogenous, and the indications are to regulate the organic changes, increase diuresis and diaphoresis. Quinin, antipyrin, acetanilid and phenacetin are absolutely contraindicated, as they diminish the organic exchanges. Salicylic acid is an exception, but the increase produced at first is followed by a decrease, and it can not be used long at a time. The measure which fulfils all conditions is a vapor bath or prolonged pack followed by cold applications, combined with an appropriate diet.—*Stekel: Rev. Gen. de Path. Int.*, November 5.

Mechanical Stimulation of the Skin.—F. Lots describes (*Ztschrft. f. klin. Med.*, xxxv, 2) his success in curing or remarkably improving a number of nervous affections, with friction with a loofah, of one member at a time, for ten to twenty minutes, two or three times a day, the patient in bed, supplemented by running around barefooted on pebble stones spread on a blanket on the floor of the room. The pebbles are about 1 cm. in

diameter and are well rounded. The sensation is not disagreeable after the first day or so. The feet become warm, the appetite and intestinal peristalsis are increased, while the general condition improves in every respect. His cases included 11 of neurasthenic cephalaea; 2 of nervous children with a tendency to chorea; 2 of general nervousness in adults; 3 of intermittent pulse; one case of incipient and one of advanced tabes.—*Munich Med. Woch.*, November 15.

Heroin in Coughs.—Manges of New York, in the *New York Medical Journal* of November 26, presents his experience with this drug in the treatment of coughs. In a few cases he found disagreeable after-effects, with the symptoms complained of referred to the sensorium. These symptoms were, however, much more mild and far less frequent than after morphin or iodine. In the aged, not more than twentieth-grain doses are to be given, as they bear the drug poorly. The drug allayed coughs promptly and efficaciously in numerous cases, though in some one-sixth of a grain was necessary. The results were not so good in purely neurotic coughs. The only case where no relief was secured was one of dyspeptic asthma, though other asthma cases gave good results. The results were not uniform in pulmonary tuberculosis, but were better in the early stages, smaller doses being necessary for later stages.

Home Treatment of Chronic Morphism.—Hirt of Breslau has cured twenty-seven out of thirty-five cases. Two committed suicide during the first three days, when the morphin is absolutely denied; the remaining five either relapsed or failed to complete the cure. A reliable attendant is indispensable, and he adds that only a female attendant will answer. During these first three days the patient is kept asleep with 3 grams of chloral or trional, and a bath at 27 to 28 degrees C., with a cold douche, if the sleep is agitated. After three or four days a suggestion-therapeutic treatment is commenced, first extending only to the drug itself and its dangers, and then including the patient and inspiring him with fear and abhorrence of its effects. He only attempts to treat patients whose daily dose is under 0.75.—*Therap. Monatsheft*, 10.

Counter-indications to Breast-feeding an Infant.—Tuberculosis is an absolute counter-indication; with many other diseases the question is not so much the nature as the severity and degree of the affection. Anemia is a relative, the different cachexias positive, counter-indications. The general condition is the guide after an operation has been performed on the mother. Local counter-indications are affections and malformations of the nipples, which can not be remedied with cocain, artificial nipples, etc. Epilepsy, chorea, psychoses, are counter-indications on account of the danger of accidents to the child. Hereditary syphilis is a formal indication for breast-nursing. The quantity and quality of the milk may prove counter-indications; the milk of certain women has a purgative, toxic effect. The passage of toxic medicines and infective germs into the milk must also be borne in mind. The child should be isolated when the mother alone has a contagious disease. Nursing is permissible in localized puerperal infection, but the lacteal secretion fails in general infection.—*Journ. de Méd. de Paris*, Nos. 35 and 37.

Argil for Dressing Wounds.—J. Stumpf describes (*Munich Med. Woch.*, November 15) his surprisingly favorable results obtained with the copious application of dry argil to wounds of all kinds, which heal under it without the slightest reaction. Even the suture threads pull out dry without in the least sticking. The absorbing power of the clay is most remarkable, as evidenced by numerous tests he reports, such as wadding a little cotton, very wet with water and defibrinated blood, and rolling it around in some clay for fifteen or twenty minutes, when it will be found so coated with clay that it is practically a heavy clay ball. Broken open, the wad of cotton drops out

like the kernel of a nut, perfectly dry. All the moisture has been absorbed into the clay shell. He relates a number of instances in which crushed hands, suppurating ulcers, and even ozena, treated with the dry clay first lost all odor and then healed in the most aseptic conditions. He applies it to an "unfingered" wound without further infection, using the ordinary commercial article, heated by the druggist to 150 degrees C. Meat or slices of liver laid in the clay harden rapidly to a brittle, mummified substance.

Technique of Intravenous Injections.—An intravenous injection is almost entirely painless, differing in this respect from the subcutaneous. It works more rapidly and energetically and is especially valuable in severe forms of syphilis. Experience has demonstrated that the fear of embolism and infection were unfounded. Several injections can be made into the same vein. The needle is inserted perpendicularly, then the point turned toward the root of the member, the needle unscrewed to prove by the flow of blood that it is actually in the vein, then the ligature above is unfastened, if one has been tied, to render the vein more distinct. The prick through the skin is all that is felt. The needle is left a moment afterward to allow the injected fluid time to be carried away by the circulation. If the injection is painful, the needle must be in the tissues instead of in the vein. First proposed by Baccelli, Abadie is now introducing the method into France. The formula used is one part mercur. cyanat. to a hundred parts dist. water. One c.c. is the amount for a single injection. They are made every day or every other day, according to the severity of the case. Fifteen to thirty are usually the limit of treatment required.—*Riforma Méd.*, 1898, p. 203.

Vaginal Abdominal Section.—Löhlein has found this operation extremely satisfactory in a number of cases (forty-two during the last two years). The trauma and the possibility of infection of the peritoneum are very much reduced. The patient feels subjectively well from the first, afterward. The easy and thorough evacuation of all fluids in the peritoneal cavity, and the possibility of combining with it a number of other interventions on the perineum, vagina, etc., recommend this operation. The difficulties liable to be encountered are a narrow or rigid vagina, solid consistency of the morbid products to be evacuated, and impossibility to reduce their size by puncture and detaching parts. A ligature became unfastened in three cases, requiring the application of forceps for thirty-six hours. In a number of cases he was obliged to complete the operation with laparotomy, for which reason he advises that the abdomen should always be prepared beforehand as for laparotomy, as well as the vagina. In one case the ovary was removed through the posterior vaginal incision, without interrupting pregnancy. He has been especially successful in peritoneal tuberculosis. The operation was performed once to differentiate carcinoma from tuberculosis.—*St. Petersb. Med. Woch.*, October 29.

Avoidance of Splints in Colles' Fracture.—Mr. Jonathan Hutchinson has encouraged his house surgeons at the London Hospital to treat cases of Colles' fracture without splints. His instructions were never to put on splints unless there was displacement which could be removed by extension, and which returned when extension ceased. In such cases, a very small proportion only, splints are indicated, but they ought not to be kept on long. If the routine treatment by splints was laid aside it would be greatly to the advantage of patients and to the credit of surgeons. In many cases treated in the orthodox way, the wrist and fingers become stiffened, and the hand often becomes painful and useless. Nineteen-twentieths of these cases would have done well and escaped stiffening if the wrist had been kept between two cushion pads for a fortnight. The public, as well as the profession, seemingly think that there is a necessary connection between a fracture and a splint. If one reflects

on the real condition present in Colles' fracture, the truth of these remarks will be evident. In many there is no displacement whatever, and no movements of the patient could produce any. In others there is displacement of the carpal fragment backward to the radial side. If this is present, and can be removed by extension, and returns when extension is remitted, then a splint is necessary, but not otherwise.—*Med. Rev. of Rev.*, October.

Intestinal Surgery: Use of Murphy's Button.—Mr. Frederick Treaves of the London Hospital has had an experience with Murphy's button in fifty to sixty cases. In his opinion, of the various appliances for uniting the divided bowel, the button is the best; not that it can be regarded as a perfect instrument, but it compares favorably with the other forms of apparatus having the same object. He quotes Chelius to show that a French surgeon named Denans, sixty-two years ago, offered a procedure which prefigures the Murphy button; in Denans' procedure he "introduced into the upper and lower end of the divided gut, a silver or zinc ring, thrusting it inwards about two lines from each end; he then brought the two ends together over a third ring, of which the two springs retain the external rings. The included ends of the intestine mortify and the rings thereby becoming unfastened are discharged by stool after they have united the serous surfaces in contact." The results following the use of Murphy's button are certainly satisfactory. The button requires no elaborate preparation; it is always ready; its introduction is exceedingly simple, and is effected in a few minutes. The two parts of the instrument may certainly jam, but that accident is the result of careless handling. He has never known it to induce a gangrene which has extended beyond the limit of the button. The two definite and undoubted objections to the button are these—it may be indefinitely retained, and its separation may be followed by contraction at the artificial opening. In only two cases of gastro-enterostomy performed by Mr. Treves did the retention cause any trouble. In one case the button did not leave the stomach for a year, and the surgeon did a second operation for its removal; a skiagram having shown very clearly that the button was still in the stomach. As an example of the contraction of the colon that may occur after the use of the button, Mr. Treves instances the following case: "A man, aged 61 years, who had had symptoms of chronic intestinal obstruction for some months, was seized with symptoms of acute occlusion of the bowel, attended by immense distension of the abdomen and stercoraceous vomiting. Laparotomy, performed in January, 1897, revealed an epithelioma in the center of the sigmoid flexure. The urgency of the case and the great distention forbade any attempt at excision. I therefore effected an anastomosis, by means of a Murphy's button of the largest size, between the two extreme ends of the sigmoid flexure. The diameter of the button was $1\frac{1}{2}$ in. Fluid feces were passed before the patient left the table and he was at once relieved. The button, which had already been used in two previous cases, was passed on the twenty-second day. The patient was walking out of doors at the end of the fourth week. In March, 1897, he had regained his original weight and his bowels were acting well with aperients. I then performed a second laparotomy to remove the sigmoid flexure. Although only thirty-eight days had elapsed since the passing of the button I found the artificial opening I had made so contracted that it would do no more than admit my little finger. I removed the whole sigmoid flexure and united the descending colon to the rectum by means of the same button. This button was passed on the sixteenth day. The patient recovered rapidly and remains in sound and vigorous health. This association between previous distention of a viscus and the subsequent contraction of the aperture made in it, is, of course, by no means limited to Murphy's button. It applies to nearly every method in vogue for carrying out the operations now under discussion. Still, in spite of many drawbacks and many failures, intestinal surgery has made within the last few years decided and substantial advances; but it will fall short of perfection until antiseptic surgery, which has so far penetrated only to the serous covering of the gut, has reached the mysterious and septic lumen which lies within the bowel wall.—*London Lancet*, November 5.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2 00
Single Copies	10 Cents

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SATURDAY, DECEMBER 10, 1898.

THE PRESIDENT'S MESSAGE.

The President's message again recommends the commission of experts asked for by the American Public Health Association, and it is sincerely hoped in medical circles that a certain Washington Bureau will kindly permit Congress to act on the recommendation of the President without too much opposition.

In my last annual message I recommended that Congress authorize the appointment of a commission for the purpose of making systematic investigations with reference to the cause and prevention of yellow fever. This matter has acquired an increased importance as the result of the military occupation of the Island of Cuba and the commercial intercourse between this island and the United States, which we have every reason to expect.

The sanitary problems connected with our new relations with the Island of Cuba and the acquisition of Porto Rico are no less important than those relating to finance, commerce and administration. It is my earnest desire that these problems may be considered by competent experts and that everything may be done which the most recent advances in sanitary science can offer for the protection of the health of our soldiers in those islands, and of our citizens who are exposed to the dangers of infection from the importation of yellow fever. I therefore renew my recommendation that the authority of Congress may be given and a suitable appropriation made to provide for a commission of experts to be appointed for the purpose indicated.

THE NORTH-WEST FRONTIER DISTURBANCES
IN INDIA.

From an official report we gather some items of information concerning the medical provision for the troops engaged with the hostile tribes from June 19, 1897, to April 6, 1898, which may be of interest at this time when we are investigating what was done

and what was not done for the care of our sick and wounded during the Spanish War. The corps units mobilized consisted of sixteen batteries of artillery, nine regiments of cavalry, ten companies of sappers and miners and fifty-nine battalions of infantry, aggregating 18,688 British officers and men, 41,677 native officers and men and 32,696 followers, giving a total of 93,061. The medical arrangements included fourteen British and twenty-two native field-hospitals of 100 beds each, a total of 3600 beds. There were no regimental, battalion or battery hospitals. There were in addition to the accommodations of the mobilized field-hospitals, 6725 beds available for use at base or general hospitals. The medical and hospital personnel consisted of no less than 9658 men, or over 10 per cent. of the command, followers included.

There were 41,055 men admitted to sick report during the nine and a half months and 1602 deaths, the admissions being at the rate of 451.70 and the deaths at the rate 17.20 per thousand of the strength. Between June 28 and Dec. 27, 1897, the average percentage of sick among the troops in the field was 4.58, the minimum rate at Kohat-Kurram, 1.52; the maximum rate at Peshawur and vicinity, 10.52. Very great attention was paid to the sanitary state of the various posts and camps by the medical officers, and as a rule their condition was remarkably good. The weekly sanitary inspections were carefully made, and especially with a view to the detection of incipient scurvy, which was entirely absent from the British troops. The few cases which occurred among the native troops and followers were very mild. The rations were good, the clothing suitable and the water-supplies safe-guarded as far as practicable. Quinin was used as a prophylactic when considered desirable.

SICKNESS IN THE BRITISH SOUDAN FORCES:
A COMPARISON.

There has been so much denunciation of the sanitary conduct of the war that it is hoped is now over, and some of it undoubtedly based on real defects of management, that we have almost come to accept it as, in this respect, a terrible example of how such things ought not to have been done. In this country we reverse the practice of everywhere else and publish all our errors and deficiencies, so that all the world knows them; there is no limit to the scandalous chronicles given out, often without judgment or basis of truth. Elsewhere public policy and national pride tend to suppress disagreeable truths, and there is no such wholesale newspaper criticism of everything that can by any possibility be made to show a bad side.

The recent Egyptian campaign, in which Great Britain has just been so successfully engaged, has been held up to us as a model of excellence in everything that pertains to the sanitary management of a campaign, and to a large extent the praises are undoubtedly deserved. The perfect fairness of the com-

parisons that have been made to our discredit is however more than dubious. In the one case we have military operations long planned and prepared for, carried on in an arid country where germ infection must be at a minimum, and yet nowhere far from a base where by navigable river or railway every needed requisite could be obtained. The operations were carried on in a torrid climate it is true, but the bulk of the force was native, and the greater portion of the European contingent were experienced troops and had been acclimated to a certain extent by years of residence in lower Egypt. There were no special endemic diseases, like yellow fever, to contend with, no heavy tropical rains and muddy roads to interfere with transportation and render the distance of even a few miles a formidable journey, no dense tropical vegetation and malaria-breeding marshes—for a war in the tropics the conditions may be said to have been in every way exceptionally favorable. It may be added, that the English military are of all other fighting forces the ones most accustomed to tropical campaigning, and the administrative departments of the English army should be the best prepared at all times for its exigencies.

If we take up now the conditions of our own recent war we find nearly every condition reversed. With a war improvised to meet a popular sentiment, green soldiers, officers and men, transformed in a day from peaceful citizens, a little nucleus of a regular army, all the administrative departments of which, medical and otherwise, called at short notice from out of the ruts of more than thirty years of peace, and their tasks and responsibilities tenfold increased, no long careful preparation, and hardly any traditions even of tropical warfare and its requirements to guide their operations, it is little wonder that mistakes were made. Add to this the fact that the military operations of the Santiago campaign were carried on in a miasmatic tropical region, during the rainy season, when the climate is deadly to the unacclimated whites, the dense vegetation, the tropical rains and the total lack of good roads, and therefore of inland transportation facilities, and lastly the presence of the dreaded yellow fever, the wonder is not that the hardships and mortality were so great, but that they should have been so little. The comparison between SIR HERBERT KITCHENER'S successful Soudan campaign and that of Santiago should take in all these facts and then it would be far less disadvantageous in some respects.

Even as it is, we find some points where the vaunted excellence of the British military sanitation is not so evident, or, at least, where even their thorough methods were not altogether effective. In the *British Medical Journal* of October 22 we find the statement that reports in private correspondence state that sickness has been fearful among the English Soudan troops, "although the papers, save the *Chronicle*, say little or nothing about it." Cairo hospital is said to

have been so full that about October 4 most of the sick had to be cared for under canvas. It is further stated that "the mortality during the campaign from enteric fever (which is now following the troops to Crete) will probably be found, when full reports are received, to be excessive. In the same journal a week later (October 29) we find the statement that since the return of the First Battalion of the Grenadier Guards to England typhoid cases have been abundant. One hundred and sixty men, altogether, were in hospital, many of them well-marked typhoid cases. Assuming that the battalion comprised some 800 to 1000 men—rather less than more after a campaign—this would make a formidable percentage, fully equaling that of some of our green volunteer regiments on their return from Cuba, where they had the special disorders of malaria and yellow fever also to combat. On the basis of these statements it would appear probable that typhoid fever was even a greater scourge to the British troops in the Soudan than to our own forces in the training camps and West Indies. Why this should be so is not perfectly clear, unless we are to suppose that the disease was contracted in the Delta and carried up the Nile, as the Upper Nile valley with its scanty population ought not to be a breeder of typhoid. Perhaps we may yet learn that the germ of typhoid is everywhere indigenous and only requires the favorable circumstance of an assemblage of men living under army conditions to make its presence known. It has certainly come well to the front as a modern military disease, and one that requires more attention as such than it has previously received. The fact that in the late Soudan campaign all the experience and foresight of former tropical warfare could not, under apparently especially favorable conditions, prevent its ravages to any appreciable extent bears witness to this need.

Our own experience in this special regard does not appear by comparison, much worse than that of our English kindred, and this disorder eliminated from consideration, it can not be said that the sanitary record of the late war is much worse than ought to have been inevitable with our unreadiness and inexperience in military operations. There is no use, evidently, in making comparisons to our disadvantage as regards this one form of possibly preventable military disease.

THE BROWN-BREAD DELUSION.

One after another the instincts of primitive humanity are getting an unexpected endorsement from modern science. Children always had the indecency to cry for sugar and to appropriate fruit wherever found, in spite of generations of alleged "hygienic" rebuke, which was really based on the good old Puritanic principle that because they were nice there must be harm in them somewhere. Now, distinguished pediatricists assure us that next to proteids, they are the most

important elements in the diet of budding humanity.

For centuries past the great dietetic struggle of the laboring man, master or workman, has been to get white bread for his daily diet. In all the old manuscripts we find the "fayre white lofe" alluded to as the choice-delicacy. All the time his self-styled "betters," whether social or scientific, have united in assuring him that his daily brown or black loaf, whether of rye, oats, barley, peas or whole wheat was much more nourishing and wholesome. He never questioned their correctness, but he continued to prefer white and the more of it the better.

Many of us can remember the new backing which was given to these hygienic views some thirty years ago, about the time that "dangerous thing," a "little knowledge" of chemistry began to be diffused abroad. Their correctness was demonstrated beyond possibility of doubt, we were triumphantly assured, for had not chemic analysis, the new infallible Pope of science, revealed that brown bread was far richer in nitrogen, that greatest desideratum of all foodstuffs? White bread might make fat, but it was brown bread that made bone and muscle. Exploiters were quick to see the opportunity, and forthwith amid flourish of pseudo-scientific trumpets the great "Graham" crusade was launched, for the physical, mental and moral regeneration of humanity by the exclusive use of whole-wheat flour. By gems we were to be saved. The physical degeneracy of our working classes was fully accounted for in mothers' meetings by ascribing it to an excessive indulgence in white bread and tea. The whole horde of dyspeptics, whose name was legion, as this new spirit entered into them, rushed violently down a steep place until they landed upon a blameless diet of Graham crackers and hot water. Here they endured for a season the outcry of their rasped intestinal epithelium and hungry muscle-cells, in the sublime faith that they would have been much worse had they persevered in their former excesses of hot biscuit and pork. Ultimately, however, they were drawn to the conclusion, that although it might be better for their dyspepsia it was worse for them, and here the first absurdity of the hasty "scientific" conclusion was demonstrated by bitter experience. This was that it had failed to take into account the irritating effect of the hard, chaffy particles of husk, which contained the precious nitrogen, upon the gastric and intestinal mucosa. Fifteen years ago "brown-bread gastritis" was a recognized clinical type in some of our great hospitals, and our Philistine profession sent forth a counterblast to the effect that not more than three-fifths of the daily bread was under any circumstances to be brown, or evil results would surely follow, and as most of the enlightened had already backslidden to about this Laodicean position, they were obliged to sadly accept the edict and acknowledge that the new gospel, like many others, was too high to be lived up to completely. Still if it were not for the irritating qualities

it would be the ideal food, and even these defects were turned to account in recommending it as a remedy for constipation, in addition to its other good qualities. For some reason or other, however, the consumption steadily decreased, every family, every class, every nation kept on discarding brown or black bread and substituting white as fast as they could afford it, and even the emancipated *illuminati* found themselves going back to the flesh-pots of Egypt and living without shame upon the white bread, the corn-meal mush, the flannel cakes of the common herd, who had no better guide than their mere appetites. The brown loaf still lingers upon the board, but rather after the manner of the mummy at the Egyptian feast, a tribute to a vanished ideal rather than an article of diet.

And now comes LAUDER BRUNTON with one of those admirably shrewd table reports of his, full of the practical genius which has made his name famous, and completely demelishes the fancied nutritive superiority of this "ideal food." His line of investigation was two-fold, first as to the actual nutritive effect upon animals of graduated exclusive diets of white and of brown bread; second as to the exact form in which the excess of nitrogen was present. The first group of experiments resulted in conclusively proving that although more nitrogen was present in brown bread, less of it actually got into the blood than from a similar weight of white bread; that white bread was not only more digestible and less likely to cause gastritis, but more nutritious, weight for weight, than brown. The second series showed the physiologic and chemic wherefore of the results of the first, inasmuch as the boasted excess of proteids was found to be chiefly in the form of the husk, or skin of the wheat-berry, closely allied to woody fiber, and absolutely insoluble in the intestinal fluids. Dr. BRUNTON pithily remarks that if nitrogen were all that we required, regardless of its form, we could grow fat upon air. He concludes by pointing out that it is precisely the stimulating effects of these insoluble and rather irritating ligneous particles upon sluggish bowels which give brown bread its well-established value in constipation. And as it is slightly richer in fat and distinctly so in lime and other salts than white, it would have certain advantages where the diet was deficient in these substances. But as our heaven-born, instinctive preference for white bread is almost equalled in strength by another for plenty of butter on it, the small fat and salt superiority of brown bread can cut but little figure practically.

We believe that the conclusions of this report will be endorsed by the practical experience of most general practitioners who have given careful attention to the diet of their patients. They found out long ago that their cases did not thrive so well on diets containing too much brown bread or "whole-meal" compounds, and will be rejoiced to find this fact explained upon chemic grounds. LAUDER BRUNTON has rendered

the profession a most valuable service by reporting his ingenious experiments. But it is worth noting that the hard-earned experience of the "man who carries the gun" in the army of medical progress, the family physician, had led him to precisely the same conclusion, and before that the untutored instinct of the natural man had reached the same goal.

Our instincts are the crystallized experience of thousands of preceding generations, and we are rapidly coming to respect them as such in these latter days.

THE LUXATION OF LARGE JOINTS IN THE COURSE OF INFECTIOUS DISEASES.

While it is a well-known fact that changes of greater or less degree frequently occur in the various joints of the body during the course of a large number of infectious diseases, it is not generally known that sometimes complete dislocations take place as the result of the progress of one of these maladies. From the time at which a swelling or disease of a joint was supposed to be due to a distinct local condition to that in which it was regarded as being entirely the result of a rheumatic or gouty taint, we have been continually learning that almost any infecting micro-organism which usually produces localized lesions in other portions of the body, may, if it finds favorable conditions for its growth in the joint, produce arthritic change. Thus we have the arthritic changes of purpura, of pyemia, of acute rheumatism, of the acute epiphysitis of infancy, which is practically an arthritic alteration, and the alterations which occur in rheumatoid arthritis. In addition to these conditions, which seem to arise from a direct infection of the joint, or parts adjacent to it, it is necessary to note that far greater lesions may occur than the inflammatory processes usually met with in the conditions we have named, and therefore a paper which has recently been published by COLLIER in the *British Medical Journal* for Oct. 15, 1898, in which he reports two cases of dislocation of the hip-joint following scarlet fever, is of interest. In the first there was suppuration in the neighborhood of the right hip-joint, but no evidence of bone disease, but dislocation of the right femur upon the dorsum of the ilium took place, necessitating an operation eventuating in a recovery in ankylosis with slight flexion. In the other case, also of scarlet fever, there was a history of injury on the fifteenth day of illness in that the patient fell out of bed upon his face, but it was not until a week later that any trouble with his joint was recognized. In this instance dislocation of the right femur of the sciatic variety occurred, and although reduction followed extensive myotomy, three years afterward shortening of half an inch in the length of the leg was present.

These cases of dislocation during the course of grave illnesses are of very great interest from the medical point of view, and of still more importance

from a medico-legal aspect. As is well known, dislocations have been recorded in considerable number as having occurred during the progress of typhoid fever and acute rheumatism. In the first of these diseases the displacement of the bone has occurred in the earlier days of convalescence, when the patient has been so feeble that it has seemed as if the accident was due to the relaxation of the coverings of the joint and its associated muscles, with the result that the bone has easily slipped out of place, and in nearly all these cases there has been no evidence whatever of any local difficulty prior to luxation. On the other hand, in acute articular rheumatism where dislocation has taken place, there has nearly always been a history of arthritic difficulty prior to the accident, and instead of the dislocation producing pain of a moderate degree, as it has done in convalescence from typhoid fever, the occurrence of the displacement has been followed by great relief from pain owing to the overcoming of the vicious attitude which has been maintained by the limb. The cases of scarlet fever in which this accident has occurred have belonged rather to the typhoid class in that the dislocation has taken place without much pain and therefore without attracting great attention to its presence. As long ago as 1882 RAWDEN reported in the *Liverpool Medico-Chirurgical Journal*, an instance of dislocation following typhoid, in which having excised the head of the bone, he found it practically normal, even the cartilage being healthy, excepting for a little absorption at its periphery, while on the other hand ADAMS in a case of rheumatic dislocation of the hip found the capsular ligament ruptured and the torn margins of the rent closely embracing the neck of the bone. While it is true that unobtrusive monarticular synovitis with effusion may take place in convalescent patients, the literature of the subject does not reveal the fact that post-typhoidal dislocations have usually been due to this condition, and COLLIER believes that degenerative changes similar to those seen in muscular fibers result in softening of the ligaments and of their attachment to the bones. The possibility of recurrence of the dislocation under such circumstances is great, and the prognosis as to the correct use of the limb must be made with caution, since some cases seem to become entirely well while others never get rid of a certain amount of ankylosis or shortening.

CORRESPONDENCE.

Buying Patients.

HARTFORD, CONN., Dec. 1, 1898.

To the Editor:—Recently a physician who has attained some prominence in his neighborhood, wrote me asking what I was accustomed to give the family physician who sent his patient to my care. I replied that I never bought practice and never gave anything to physicians who sent me cases. He answered that he always received a fee of \$10 for sending cases who could pay \$20 and more a week. Where the bills amounted to

several hundred dollars, most medical men sent him 5 per cent. on all accounts over \$200. From inquiries I found that two gold cure establishments had received some cases from this physician and an obscure New York specialist had also received and treated some cases sent by him. Within five years, since the prominence of "gold cures," I have heard of offers of this kind from managers of such places. In all my long experience with the profession, I have never before been approached by a reputable man, and I am confident that a very few medical men would ever stoop to buy or sell patients in this way. The real specialists, who depend on the profession for their cases, feel bound to the medical man to return the case to his care again with renewed confidence of the skill of the family physician. A kind of unwritten law has grown up, in which the specialist assumes the care of the case for a time, and expects to return it to the care of the family physician for further and more protracted treatment. In my experience in the care of alcoholic and opium takers, after a few months' residence in an asylum, the return to the family or general practitioner is a very essential part of the success of every case. The best results come from the general after-cure by the physician outside of the asylum. The case is sent to me by the physician for such care as he can not give at the time and place. When the acute symptoms subside, and restoration begins, it is often better to go back under the family physician's care. In all this the specialist acts as a consultant and has no claim on the patient, nor is he under any special obligations to the physician who sends the case. The physician is rather under obligations for the favor of special treatment, and return of the case to his care again. The idea of buying and selling the privilege of treating the case is repulsive to all sense of honor and professional courtesy. The physician sends his case to the specialist simply because it is the best interest of his case. No other course should receive the least attention.

Very truly,

T. D. CROTHERS, M.D.

The Commission Evil.

MINNEAPOLIS, MINN., Nov. 30, 1898.

To the Editor:—The editorial in the JOURNAL of November 12, on the "Commission Evil," sounds very much as though the writer had stumbled upon the unpleasant fact that some of his friends were engaged in the disreputable practice mentioned. The protest seems a very mild one if the evil is as wide-spread as the writer claims. Dr. Morris' communication in the last issue (*vide* JOURNAL, p. 1314) affords the pleasant assurance that specialists in the East are still in sight, at least, of the ancient traditions. Unfortunately some of our western towns have become so infected with this evil that no honest, self-respecting specialist would dare make the effort to establish himself if he knew the facts. For the past few years, in this city, a patient with an eye bandaged could not walk our down-town streets without being approached by runners with the offer to take him to a better surgeon than the one he was employing. I do not know how many general practitioners are willing to accept bribes, but the fact that advertising quacks find it profitable to send circulars to the profession, offering commissions on all business sent to their surgical, lying-in and other hospitals, is very suggestive, and the fact that men known to be guilty of employing runners are gilt-edged candidates for any position in the gift of their professional brethren, does not indicate such a puritanic state of mind on the part of the latter as would blind them to the glitter of a dishonest dollar. The specialist who fees the runner or the family physician; the insurance examiner who divides his fee with the agent; the surgeon who operates cases for the advertising quacks; as well as the dishonest family physician who betrays his trust, are the parasites of our profession. I

congratulate Dr. Morris on living in a community where such men are not the *leaders* of the profession.

EDWARD J. BROWN, M.D.

Gold Cures.

HARTFORD, CONN., Nov. 28, 1898.

To the Editor:—In my paper on "Gold Cures in Inebriety," in the JOURNAL of October 1, no reference was made to any combination of gold with other drugs for any diseases beyond inebriety. The managers of mercauro and arsenauero, well-known combinations of mercury and arsenic with gold, have misconstrued my statements to be reflections on their preparations. In this they are very much mistaken; no possible criticism was, or could be intended, and more especially as I have used this prescription in many cases with good results, and have repeatedly spoken of it in the *Journal of Inebriety*. My criticism was directed only to specifics of any form which sought to bring about results known to be impossible.

Very truly,

T. D. CROTHERS, M.D.

PUBLIC HEALTH.

Mouse Typhus.—The Austrian government has made arrangements to exterminate the mouse pest in lower Austria by inoculating mice with Loeffler's mouse typhus bacillus.—*Munich Med. Woch.*, November 8.

Pellagra in Italy.—We note in a recent report that sanatoria are being erected in different provinces to treat this disease. Persons affected are compelled to enter and remain forty days, in Padua twice a year. Malaria is the most serious complication of pellagra. It is hoped that the circular of questions submitted to each patient will in time throw some light on the obscure etiology of this affection.

Deaf and Dumb in Norway.—V. Uchermann has recently compiled the statistics of all the deaf and dumb persons in the entire country, with objective data in most cases. Half are congenital defects. Of the cases of acquired deafness, one-fourth were consecutive to scarlet fever, the rest mainly to cerebral and middle ear affections. The influence of heredity is marked, especially the heredity of consanguineous marriages, although the inheritance of deafness and dumbness frequently alternates with other abnormalities, idiocy, epilepsy, malformations, retinitis pigmentosa, etc. He attributes the preponderance of deaf and dumb children in consanguineous marriages to the accumulation of family peculiarities.—*Cbl. f. Chir.*, October 29.

Sulphurous Acid in Preparation of Fruit for Market.—As many hundreds of physicians are directly or indirectly interested in fruit culture, the following item from the "Consular Reports" (November) will convey to them a much-needed line of information. The item is contributed by Consul Barnes at Cologne, Germany. "Persons interested in the exportation of American fruits to Germany strongly desire to remove all reasons for obnoxious official investigations, and have requested me, through the Department of State, to call the attention of the American shippers to this condition of affairs, and to the absolute necessity of abstaining from the use of sulphurous acid, or any such preparation, in the exportation of fruit to this market. A persistence in this practice will undoubtedly result in the entire exclusion of such fruits from Germany. Stricter attention must be given to the German laws. American dealers are still shipping to this market dried-apple slices which have been cured upon zinc frames. This process has been strongly condemned by the German Government, and the sale or handling of fruit thus prepared interdicted by law. These violations are suicidal in their effects, and damaging to the several branches of American trade. It is the opinion of

importers here that in some instances American pears are also treated with the sulphurous-acid process. It is of no consequence that competent medical authorities here have decided that fruit treated with sulphurous acid is not detrimental to health. It is sufficient for the watchful local official to know that the law forbids the sale of such fruit, and that his supreme duty consists in the strict enforcement of the law as he finds it upon the statute books. American fruits are so far superior to other fruits found in this market that it would seem an easy matter to dominate the trade, without a resort to practices which tend to discredit them."

Masks for Non-Isolated Tuberculous Patients.—B. Fraenkel has inaugurated, at the Berlin Charité, the innovation that all the tuberculous inmates must wear masks to catch the germs they expel in speaking and coughing, when they are in the common room, and only remove them while eating or expectorating. The patients soon become accustomed to the mask, as by impregnating it with some medicinal substance they suppose it is to be worn for their own personal benefit, instead of for the protection of others. Bacilli are frequently found on them. At the Dettweiler sanitarium the patients are trained not to cough when assembled at meals. Schäfer found that a leprous subject with ulcerations in his mouth scattered leprosy bacilli through the room in conversing. One of Fraenkel's assistants also discovered tubercle bacilli on his eye-glasses after a tuberculous patient had coughed. Hübner's tests are equally convincing. He took some bacilli prodigious in his mouth and established the fact that they were disseminated throughout the room as he spoke.—*Munich Med. Woch.*, November 15.

Spread of Throat Illness by Milk.—During 1897 there was at Surbiton a well-marked outbreak of follicular sore throat, and as the result of personal inquiry it was very soon found that a milk-supply was the apparent factor in distribution. A visit to the premises was made with no result, and a close inspection of the cowsheds and of the employees was also made. A sewer was being laid in the road outside the farm, and for a limited period there was a smell to be noticed; but it was unlikely that this could have so far affected the milk (since it was not kept stored on the premises near this road) as to render it in any way dangerous to health. A man whose business it was to milk the cows, was examined and found to be out of health, and suffering from well-marked tonsillitis and gastrodynia, and further with suppurating whitlows on the hands. He immediately discontinued any employment with the cows, and no further case occurred. There were considerably over thirty cases of illness, some very severe, under my notice, and probably many more.—*Public Health* (London), October.

Resolutions on Department of Health.—Dr. Liston H. Montgomery offered the following preamble and resolutions at a meeting of the Chicago Medical Society, Nov. 30, 1898, which were unanimously adopted:

WHEREAS, Legislation on the bill which was introduced in the United States Senate during the early period of the present year looking toward a Department of Health as a separate branch of our Federal Government was deferred, owing to the impending crisis of the Spanish-American War; and

WHEREAS, Said bill has the endorsement of the AMERICAN MEDICAL ASSOCIATION, the American Public Health Association and numerous State and municipal medical societies throughout the United States; and

WHEREAS, Much foreign territory to this country has recently been acquired wherein epidemic preventable and pestilential diseases have been and do prevail, and as many problems in sanitary science shall require careful study in these new fields; therefore, be it

Resolved, That for these, and for other obvious reasons, the Chicago Medical Society, through its officers, shall immediately request the President, in his forthcoming annual message to Congress, to recommend said contemplated Department of Health as an urgent necessity to our greater republic, and as a proper method for the protection to health and as a means of preventing a greater loss of life to American citizens visiting

these distant countries, and as a means of looking toward a higher civilization where disease and pestilence are sure to remain unchecked, and through the increase of traffic and commerce are liable to spread to our immediate shores unless some such humane measures are adopted;

Resolved, That a copy of this urgent appeal, namely, preamble and resolutions, be immediately transmitted to the President of the United States for the purposes herein explained, and to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for publication, with the request that they be published in medical journals elsewhere.

Typhoid Fever from Ice Cream.—The annual report of Health Officer Dr. Hope of Liverpool, records a prevalence of fever in a suburb of that city, known as the Knotty Ash district. Four cases were notified to this office about the same time, all being among young children attending the same school. Fifteen cases followed at short intervals, all from the same school. After careful inquiry possible sources of infection which may have existed at the homes of the patients were excluded, and it was ascertained that the milk supplied at the various houses came from dealers whose premises were in good order. Meantime, an investigation had also been made into the conditions of the school. Careful examination exempted the water-supply and the drainage of the school from suspicion. It was discovered that two or more children had been visiting at Knotty Ash early in September, and were suffering from typhoid fever at their own homes, and later on a pupil in a school at Denbigh was attacked under similar circumstances. None of these patients had been at the Knotty Ash school. Ultimately the total number of children infected with typhoid fever amounted to twenty-seven. Inquiry elicited the fact that a village fair had been held in Knotty Ash on September 6 and 7, and that every one of the children who had suffered from typhoid fever, including those who did not attend the school, as well as those who did, had been present at that fair, and all admitted, with two exceptions, that they had eaten ice cream sold by a vender at the fair, and the two exceptions were believed to have eaten chip potatoes purchased from the same vender, though one was too young and the other too ill to give a definite statement. The vender in question was reported to have come from Warrington; but after a careful search in the city, it was found that he was an Italian and had an ice cream factory in a low district of Liverpool, and there was, at the time of the fair, a case of typhoid fever in his house. It may be added that the following were the results of a bacteriologic examination of a sample of ice cream purchased of an itinerant Italian ice cream vender in London. It contained upward of 500,000 organisms per cubic centimeter. The bacteria isolated were the bacillus coli communis (the cream contained 200 or 300 per c.c.), streptococcus pyogenes, staphylococcus pyogenes aureus, staphylococcus albus, bacillus liquidus, bacillus liquefaciens, bacillus liquefaciens fluorescens, and bacillus ubiquitus. Neither oidium lactis nor bacillus diphtheriae was discovered.

Typewriting vs. Penmanship.—Dr. Bizzorero has discussed the advantages which typewriting possesses over the old-fashioned method of pen-writing. In his opinion penmanship is fraught with danger to the writer's health in a variety of ways. To begin with, the constrained attitude he is compelled to assume favors a distorted spine, and especially scoliosis, together with venous congestion, headache, epistaxis, dyspnea and congestion of the abdominal organs leading to constipation and dyspepsia, the latter disability being well-nigh inevitable should he sit down to write immediately after meals. The hands having to execute dissimilar work, the penman can not guide his pen without keeping his eye glued to its point, and so his vision is bound to suffer, asthenopia being a frequent sequela owing to the straining of the accommodatory apparatus. In the adults, vertigo and vomiting frequently complicate the case, but in children, whose power of accommodation is

greater, the complication to be feared is myopia. The use of a typewriter, according to Dr. Bizzorero, is a perfect remedy for all these evils, and for the following reason: The operator sits straight, with head erect and arms at liberty. His lungs have free play and his adominal viscera remain uncompressed. His eyes undergo no strain, for he is not obliged to keep them fixed on a moving pen, in fact, after a little practice he can turn them away from the keys whenever he likes without interrupting his work. That distressing complaint, writer's cramp, so common among people who have to live by their pens, has no terrors for the typewriter. His occupation is an amusement to him, and without the least discomfort he can return to it after eating. But it is not to the healthy alone that typewriting presents so many advantages. Numbers of people who have the misfortune to be palsied can not use a pen, whereas they can express themselves freely, thanks to the machine; and many sufferers from conjunctivitis, iritis or choroiditis who have been forbidden to write after the old-fashioned style can in the same way carry on correspondence with their friends at a distance. If proof were wanting that typewriting has no injurious effect on the eyes it would be forthcoming in the fact that the blind readily become expert manipulators. Dr. Bizzorero advances rapidly in writing as a hygienic advantage, but the legitimacy of the claim is not very apparent. His contention in favor of legibility is, however, more likely to find acceptance, for in truth there are many handwritings of which the attempted deciphering can not but be highly injurious to the health of the unfortunate persons whose sad fate it is to endeavor to interpret the hieroglyphics.—London *Lancet*, October 29.

To the Physicians and Accoucheurs of Illinois.—The law creating a State Board of Health, emphatically declares that it shall be the duty of all physicians and accoucheurs practicing in the State of Illinois, to report all *births* and *deaths* which may come within their supervision; and where the reports are not made the county clerk may recover a fine of ten dollars. This law was enacted twenty years ago. At the same time there was one enacted regulating the practice of medicine, which declares, in substance, that no one shall practice medicine in any of its departments in the State, without giving sufficient evidence of at least a minimum qualification, which with other provisions, are designed to be executed and enforced by the State Board of Health. Such enforcement has driven thousands of quacks and nostrum vendors, charlatans and mountebanks from the State, and kept them out for the whole time. Thus, while it has been a great protection to the people of the State, it has afforded, incidentally, *privileges and immunities to you as physicians* of the whole State. You will please recall that these laws were enacted at the instance of the physicians of the State, by a legislative committee appointed at the May meeting of the Illinois State Medical Society, in 1876, and both laws went into effect the next year. The law was enacted very much as the profession, then represented, asked that it should be. In the meantime you have been quite anxious to have the quacks and nostrum vendors and others made to obey the law, while you have persistently neglected to obey the law yourselves in the matter of reporting births and deaths, so necessary to the collecting of vital, sanitary and mortuary statistics, and without good reason, while enjoying the *privileges and immunities* of the laws. Now, when the State Board of Health feels that it is time to make some advances in sanitation and further suppression of quackery, and to raise the standard of practice as a better protection to the people of the State, which incidentally will extend your *privileges and immunities*, we feel that in view of your past conduct we can not very hopefully ask the Governor and Legislature, which is clearly our privilege under the law, for the much-needed legislation to enable the Board so to do; when we will most likely hear the rejoinder, "how do you expect the legislature to empower the Board to make quacks obey the laws when the doctors themselves do not?" In view of these facts, I suspect that

you would better hunt up your old blanks and begin to practice reporting *births* and *deaths*; for while we shall ask for legislation along the lines suggested, we shall ask for that to enable us to enforce the collecting of vital and mortuary statistics as well. The blank forms in your hands and accessible to you are faulty, and some features of the reports required are burdensome, and you ought not to be made responsible for all the report requires; all of which will receive consideration at the next meeting of the Board, in January, but it is clearly your duty to comply with the law while you enjoy its privileges and immunities.—A. C. CORR, M.D., Pres. of Illinois State Board of Health.

Acute Epidemic Ophthalmia.—Hardly a year passes by, says Greeff, in the *Berlin klin. Woch.*, without an outbreak of acute Egyptian ophthalmia. No district is quite free, and each year acute ophthalmia makes its presence felt in or about Berlin. In the early Napoleonic time, Egyptian ophthalmia is said to have destroyed the sight of many hundreds in a few days. In pursuance of orders from the Government, Greeff has had good opportunity to study carefully true trachoma in regions where it is very common, and also one such epidemic in a district hitherto free. He discusses the features of certain epidemic ophthalmias which, though often confounded with trachoma or Egyptian ophthalmia, are really distinct. The mode of outbreak is not like that of trachoma, which does not spread so rapidly; trachoma is no doubt contagious, but every contagious ophthalmia is not trachoma. The contagious character of trachoma shows itself rather in the slow invasion of the other members of a family or household, of whom one or more has been affected for years, and this usually in a country or district where the disease has been endemic for a century, or it may be for ten centuries. He contrasts certain forms of conjunctivitis with one another and with trachoma. 1. In pneumococcus conjunctivitis, the pneumococcus (Frankel-Weichselbaum) occurs as an occasional inhabitant of the normal conjunctiva, and it may increase so as to bring about an epidemic. It is generally children it attacks; adults are but rarely affected. It is a transient malady, running a benign course somewhat quickly. 2. Morax and Axenfeld's diplobacillary conjunctivitis is a more chronic variety, in which the lids participate largely. In cover-glass preparations the germs are very numerous, lying for the most part in pairs, less frequently in chains. Implantation upon normal conjunctiva produces typical conjunctivitis. It is not certain that any epidemic of this has actually occurred. 3. The conjunctivitis of the Koch-Weeks bacillus seems to be the most frequent of the contagious conjunctivitis. When in Egypt, Koch found the germ in cases of the slightest form of so-called Egyptian ophthalmia. It is the cause of acute contagious conjunctivitis. It sets in very rapidly. Both eyes are usually affected; pain, lachrymation, photophobia, and a sense of burning are complained of. The inflammation lasts about two weeks, and the prognosis is uniformly good. As regards the bacterial origin of trachoma there is nothing settled; whether a diplobacillus or bacillus septatus is the cause is not certain. In case of an epidemic conjunctivitis arising, it is possible to make a diagnosis of its true nature by examination for micro-organisms. Sometimes it happens that the medical officer of a school makes the alarming discovery that a great number of the students are suffering from follicular enlargement, and he may find it necessary to close the institution. He must be careful not to be misled by an epidemic follicular catarrh, or, to be more accurate, follicular swelling. Schmidt-Rimpler, while engaged in the study of the cause of the frequency of short-sightedness in schools, noticed that many children suffered from some affection of the conjunctiva, and decided to make inquiries as to the frequency of catarrh, etc., at a time when there was no epidemic; he found a percentage of 34. On investigation Greeff finds follicles in 27 per cent. of the children. He believes them to be due not to contagion, but to a general pathologic condition; they are quite common in anemic girls whose conjunctivæ are not in the least inflamed. Prolonged fomentation of the eye, as in the treatment of iritis, etc., will also produce them. The difference between them and trachoma granules is an essential difference.—*Edinburgh Med. Journal*.

BOOK NOTICES.

Repetitorium der Chemie. von Dr. CARL ARNOLD, Achte verbesserte und ergänzte Auflage, Verlag von Leopold Voes, 1898. Price 6 marks.

This work has been revised eight times in thirteen years, and, besides giving a good general review of chemic subjects, it treats of their special medical aspects and will make an excellent reference book for those who are able to read the German text. Particular attention is paid to the important combinations of the German pharmacopeia for the benefit of the physician and pharmacist. The body of the work consists of a section of forty-eight pages devoted to the principles of chemistry; one of 228 pages on inorganic chemistry; one of 280 pages on organic chemistry; one devoted to revised nomenclature. A good table of contents and general index completes the volume, which is printed on good paper, has a flexible cover and is a recommendation for the publisher.

Pamphlets Received.

Advantages of Permanent Abdominal Anus, etc.; Advantages of Trendelenburg Posture; On Resection of the Gasserian Ganglion; Removal of an Angioma of the Liver by Elastic Constriction. By W. W. Keen, Philadelphia, Pa. Reprints.

Advertising in Some of Its Phases. By Frank A. Munsey, New York City. Paper, pp. 44.

Are Complete Castrates Capable of Procreation? By B. P. Sturgis, New York City. Reprinted from Med. News.

Auenbrugger and Laennec, the Discoverers of Percussion and Auscultation. By E. O. Otis, Boston, Mass. Reprinted from Boston Med. and Surg. Jour.

Bedborough Trial, A Note on The. By Havelock Ellis. Paper, pp. 25. London: The University Press, 1898.

Ergot Aseptic; The Pharmacologic Assay of Heart Tonics. By E. M. Houghton, Detroit, Mich. Reprints.

Illinois Medical College, Fifth Annual Announcement. Chicago. Kentucky University Med. Dept., Announcement for 1899. Louisville.

On the Relationship of the Nose to Diseases of the Skin. By Walter A. Wells, Washington, D. C. Reprinted from N. Y. Med. Jour.

Satisfactory Method of Removing Powder Stains in Fresh Cases. By J. W. Heustis, Dubuque, Iowa. Reprinted from Ophthal. Record.

Some Advantageous Points in Operative Technic of Pelvic Surgery. By J. P. Crawford, Davenport, Iowa. Reprinted from Med. Record.

Vitality: An Appeal, an Apology and a Challenge. By Lionel S. Beale, London, England. Reprinted from the Lancet.

Trade Pamphlets.

The New 1898 Antitoxin Brochure of H. K. Mulford Company, a thorough revision and improvement of that issued last year, is a valuable reference book on the serum treatment of diphtheria. An interesting feature is a section of official reports on the employment of diphtheria antitoxin and a complete symposium of what all recent text-books say of the antitoxin treatment. It will be mailed gratis upon request.

Blennostasine. McKesson & Robbins, New York City.

Catalogue of Medical Publications. G. P. Putnam's Sons, New York City.

Columbia Desk-Pad Calendar for 1899. Pope Mfg. Co., Hartford, Conn.

Hemabuloids. Palisade Mfg. Co., Yonkers, N. Y.

Hygeia Hotel, The. J. G. Nichols, Citronelle, Ala.

Miscellaneous Pamphlets. Schering & Glatz, New York City.

Munson's Typewriter Brochure. Chas. Ervin Hill, Chicago.

"One Food." John Cash & Sons, New York City.

Physician's and Surgeon's Pocket Dictionary of Medical Terms. Sent gratis on request. Katharmon Chemical Co., St. Louis, Mo.

SOCIETY NEWS.

San Francisco County Medical Society.—In the list of officers, recently elected (vide JOURNAL, November 26, p. 1305) by this Society, the president was erroneously given as Wm. H. Davis instead of George William Davis.

Otological Congress.—The Sixth International Otological Congress will be held in London, Aug. 8-12, 1899. Dr. Urban Pritchard, professor of otology at King's College, London, is president. The meetings will, by permission, be held at the Examination Hall of the Royal Colleges of Physicians and Surgeons, Victoria Embankment. The subject chosen for special discussion is "Indications for opening the Mastoid in Chronic Suppurative Otitis Media." The Congress, which assembles every four years, met last in Florence, where a very successful gathering was held under the presidency of Professor Grazi.

Chicago Medical Society.—A regular meeting was held Nov. 23, 1898, with Dr. Arthur D. Bevan in the chair. Dr. Truman W. Brophy spoke of the results of early operations for cleft palate, and exhibited three or four children upon whom he had operated. The results were excellent in all of them. Dr. Manning

presented a specimen from a case of osteomyelitis. Dr. Arthur R. Edwards reported a case of "Cystic Degeneration of the Kidneys," and exhibited specimens, and Dr. C. G. Buford also showed two kidneys from a case of cystic degeneration. Dr. H. T. Byford exhibited a fibroid tumor which had developed subperitoneally, and had attained a size sufficient to completely fill one-half the pelvis. He resorted to abdominal hysterectomy, and described the manner in which he removed the tumor.

Wayne County Medical Society.—The members, on December 1, visited the Ypsilanti Sanitarium, Ypsilanti, Mich. The distance from Detroit to the sanitarium is some thirty-one miles by street car line. Special cars were provided to convey the visiting physicians to and from Ypsilanti, and these were crowded to the doors with jolly doctors who had laid aside the arduous duties of their profession for a few hours to enjoy the outing. At the sanitarium a banquet was served and the visitors were afterward conducted through the institution. The Society then assembled in the large operating room of the building and was called to order by Dr. R. H. Honner, president. The following responded to toasts: Drs. C. C. Yemans, O. W. Owen, G. A. Kirker, James Hueston, J. J. Mulheron and J. Samson. Toasts to the secular press were responded to by Mr. Baker and others.

Washington Obstetrical and Gynecological Society.—At the 288th meeting of this society, held November 18, at the residence of Dr. W. P. Carr, Dr. G. Wythe Cook read the essay of the evening, reporting a case simulating peritonitis in a hysteric woman. The patient had been ill for several months, suffering from gastro-intestinal catarrh, and had traveled extensively throughout the country for health. Shortly after she developed marked symptoms of gastric ulcer, and during the attack developed symptoms simulating perforation and peritonitis. Dr. Van Renssalaer was called in consultation for the purpose of operating, but advised delay. The subjective symptoms became more marked, but were not in keeping with the temperature and pulse, which were practically normal. Eventually the case was considered hysteria and all the symptoms disappeared promptly under the administration of asafetida. An interesting discussion, with the citation of interesting cases, was participated in by Drs. Sprague, Van Renssalaer, Stone, H. L. E. Johnson and Bovee. Dr. H. L. E. Johnson presented a large polypus which he had removed from a female urethra. The growth was pedunculated, and grew from a point one fourth of an inch above the dilated meatus. The patient has been diabetic for several years and at one time was treated in a hospital at St. Louis. She had been passing large quantities of sugar, but that ingredient had promptly disappeared after treatment with iodid of potash. Dr. Stone presented a microscopic specimen of the cyst-wall from the specimen of supposed tubal gestation which he had exhibited at the previous meeting.

Philadelphia County Medical Society.—At the last meeting of the section on surgery of this society, Dr. Ernest Laplace presented a new pair of forceps he had recently devised for performing intestinal anastomosis. In order to prove its usefulness the speaker gave demonstrations on performing intestinal anastomosis with the instrument and proved that an end to-end anastomosis could not only be more quickly and easily performed, but also that the lumen of the bowel was not lessened. The instrument may be roughly described as a double pair of forceps with long handles, but at an angle of about forty degrees and locked together. Instead of the blades being flat or grooved, each blade has a ring shape, so that the delicate tissues may be easily handled. The advantages of the forceps lies in the fact that one pair may be safely intrusted to an assistant while the operator is able to perform the operation with greater ease and rapidity. Dr. Laplace has given demonstrations upon the cadaver and also upon dogs, and in all instances the utility of the instrument has been proven. Drs. J. Chalmers DaCosta,

Edward Martin, Mordecai Price, Wm. L. Rodman and others, all spoke favorably of the instrument, and thought it possessed advantages over any other device or instrument for intestinal surgery. Dr. Edward Randall read a paper on "Catheterization of the Eustachian Tube" and took the position that the operation should be done more promptly by the general practitioner, who should become familiar with the method. As a medicament he thought the vapor of iodine the best. He preferred a catheter with a straight tip instead of the bulbous, on account of it being more readily introduced into the opening of the Eustachian tube. One of the speakers present dissented from the view taken by Dr. Randall, and preferred the tube with a rounded or bulbous extremity, because of less danger of doing harm in its insertion. The celebration of the semi-centennial of this society is to occur Jan. 16, 1899. A committee has been appointed to make fitting arrangements. Dr. J. Chalmers Da Costa will deliver an oration, and Dr. Kerr Boyce Tupper the memorial sermon. The committee having the matter in charge consists of Drs. William Welch, chairman; W. W. Keen, John B. Roberts, James Tyson, W. B. Atkinson, George M. Gould and A. H. Cleveland.

Detroit Academy of Medicine.—At the meeting held November 22, the Academy listened to a paper by Dr. Heneage Gibbs, health officer of Detroit, entitled "Sarcoma: Some Points in the Prevention of its Growth." He considers it essential to remember that while carcinoma is developed from normal tissue originating from the epiblast and hypoblast, sarcoma arises from tissues developed from the mesoblast, and is therefore of connective tissue type. Typical sarcoma consists of a mass of round and spindle-shaped cells with numerous blood-vessels running through the cells and lying in contact with them. Sarcoma grows from normal tissue which has reached the adult stage before the neoplasm begins to grow, but it first appears as embryonic connective tissue. Malignancy is associated with rapid growth, and the closer they remain to the embryonic type, the more malignant they are. Sarcoma, therefore, grows when presumably healthy tissue has been acted upon by some "influence" of which we know nothing, except that it has some connection with development. Classified according to the method of their growth malignant neoplasms may be divided into: epithelioma, glandular carcinoma and sarcoma. The first starts from squamous epithelium nourished in as normal a manner as any gland in the body. The third type is derived from tissue which is mechanical in function; but which under malignant influence grows and destroys everything on its way. It is nourished directly from the capillaries about the cells; it is therefore a neoplasm made of cells which by the rapidity of their formation promote the means for their destruction because of their low vitality. The cicatricial tissue formed about an old ulcer, while histologically presenting the same tissue as is formed in the early steps of sarcoma, differs essentially in not being under the malignant "influence." The method of prevention of growth in these neoplasms must, therefore, depend upon a study of the growth and development. Local treatment in the first class might stop their growth. In the second form both the circulation and lymphatics must be used and treatment must be local and general. The third form, especially when they approach a normal type of cell, is amenable to operation.

Detroit Medical and Library Association.—At the regular meeting November 21, Dr. E. S. Sherrill read a paper on "The Nature and Treatment of Accidents in Connection with Electricity." He divided accidents into two classes: 1, those arising from contact with an electric current, whether artificial or natural; 2, those from a remote effect not connected with actual contact. He said that death may be occasioned by actual lesion or destruction of tissue or by the arrest of respiration, producing asphyxia. He described the non-fatal cases

as those from which there is shock more or less severe with burning of tissue at the point of entrance and exit of the current. He summarized the effects of the electric current as: 1. In fatal lightning-stroke, punctate hemorrhages in various organs have been found and even meningeal and intrameningeal hemorrhage of considerable size. 2. In fatal shock from commercial currents few autopsies have been reported; the blood is usually found fluid and the viscera congested; small hemorrhages of the serous membranes are frequent. In both these classes there will usually be found the scarred tissue marking the point of contact. Non-fatal cases, he says, have burns of decided severity. There is a period of unconsciousness, usually followed by mental depression or excitement. The respiration is feeble, the pulse slow and small, the skin cool and the muscular strength lessens. Other symptoms may occur, such as loss of vision, nausea, diarrhea, etc. Such nervous symptoms as anesthesia, pain, hysteria, paresis, and even hemiplegia may occur. He gave the results of experiments on the effects of electricity which may produce death. It was reported at the Medical Congress at Rome that with a current of 1500 to 2000 volts the killing of animals was not sure and easy. It is believed that the more highly organized the animal is the greater the danger from an electric shock. Tesla has shown by a personal test that the alternating current of feeble ampèreage vibrating rapidly is harmless, even when the voltage is high, he himself having taken one half million volts. The arc lights of most cities are supplied by a current which has an ampèreage from 5 to 9 and voltage from 1000 to 2000. The treatment for accidents resulting from electricity should be: 1. Prophylactic. Those employed about electric machinery should wear suitable gloves. In some places employes wear a sort of harness which holds flexible strips of copper insulated and extending up the arms, over the shoulders and down the legs to the feet; in thunder-storms trees are to be avoided; in the house rooms containing stoves or open grates should also be avoided. 2. Medical and surgical. Artificial respiration should be thoroughly tried for at least one hour. The strong reflex influence caused by forcible stretching of the sphincter ani muscle should be tried. Oxygen gas should be administered. When pain and nervous symptoms occur give hypodermic injections of morphine. Strychnia should be given for depression. Where there is slough from the burns they should be surgically treated.

At the regular meeting November 28, Dr. F. L. Newman read a paper on "Orbital Cellulitis," and gave the following reasons why this disease is of greatest interest to the general practitioner: He is the one most likely to see the case first; diagnosis usually presents great difficulty; the rarity of the disease; proximity of the tissues of the orbital cavity to the brain and the vascular connection with the other orbit. He gave as causes of orbital cellulitis, trauma, pyemia, facial erysipelas, facial boil or carbuncle, inflammation of the antrum of Highmore, phlebitis, purulent meningitis, typhoid fever, scarlet fever and diphtheria; it may also occur idiopathically in very delicate children. He gave as prominent symptoms of the disease, great swelling and redness of the upper lid; pain, increased on pressure; exophthalmus; congested and chemosed conjunctiva; high fever, etc. The disease should be differentiated from periostitis of the orbital wall and orbital growths. The diagnosis was minutely taken up. As an illustration he reported the following case occurring in his own practice: A girl 8 years of age had previously suffered from a sty on the eyelid. On the evening of January 20 she became very feverish and nervous and complained of a pain in the eye, the lid of which had commenced to swell. The Doctor found the child lying on her back with her eyes closed. The right eyelid was red and swollen, the pulse very rapid and temperature 105 degrees. She was extremely nervous. No exophthalmus was observed at this time. He gave

sedatives and an antipyretic. During the night the symptoms became so severe that another physician in the neighborhood was summoned, but Dr. Newman saw the child early next morning. The condition of the child was very much worse; both upper lids were enormously swollen and reddened and the child was now almost in the condition of coma. Another physician was called in consultation and it was decided that, on account of the meningeal involvement, the case was hopeless. The prognosis proved to be correct. The child began having convulsions very soon after and died at 5 o'clock on the 21st, having been ill less than twenty-four hours.

MISCELLANY.

Personal.—Dr. Sanger Brown has resigned from the faculty of Rush Medical College.

A Motto for the Antivaccin Party.—The philosopher, Hobbes, long ago declared that men would dispute the axioms of geometry when they had a strong interest in so doing.

"Philadelphia Medical Journal."—It is announced that, with the close of 1898, the *Philadelphia Polyclinic* will cease publication, subscribers receiving instead the *Philadelphia Medical Journal*. A similar arrangement was made with the *Atlantic Medical Weekly*, which ceased publication recently.

Inhalation of a Tooth Filling.—O'Donovan of Baltimore, in the *New York Medical Journal* of November 26, reports a case of bronchitis and pneumonia caused by inhalation of the filling from a tooth during extraction under nitrous oxid anaesthesia.

Ethics of Homeopathy.—A medical gymnasium and bicycle club in St. Petersburg recently expelled a member on discovering that he was a homeopath, which fact he had concealed when applying for membership, but he declined to be expelled, and carried the matter into court, where it was decided in his favor. The club has appealed to the higher authorities.—*Deut. Med. Woch.*, November 10.

Artificial Thyrogenous Exophthalmic Goiter.—Notthafft reports the case of a man, 43 years old, who was ordered thyroid extract for obesity. Within five weeks he took nearly 1000 tablets, each containing 5 grains. For the first three weeks nothing was noticed, except loss of flesh, but after this time dyspnea came on, with swelling of the neck and very rapid loss of weight. Altogether, 30 pounds were lost, and five-sixths of this loss took place in the last three weeks. When examined, the patient had marked exophthalmos, with both Stellwag's and Graefe's signs; the thyroid gland was enlarged and pulsated, and there was a thrill over it; there was fine tremor of the fingers and tongue; the cardiac apex beat was displaced outward, and the pulse was 120 to the minute; there was cough and severe mental depression; polyuria and glycosuria also were present. Under the use of Fowler's solution and after the withdrawal of the thyroid extract, most of the symptoms rapidly disappeared, only the ocular manifestations and the goiter persisting for nearly six months. Notthafft considers the case one of thyrogenic Graves' disease, as the rheumatic pains and headache so common in thyroid poisoning were absent, and all the symptoms of exophthalmic goiter were present. He believes that Graves' disease may be due to qualitative changes in the thyroid secretion, and suggests that the explanation of the occasional good effect of thyroid gland extract in the affection may be attributed to the fact that the patient's thyroid is unable to produce a sufficient quantity of normal secretion, and, being constantly called upon to produce a secretion, gives forth one that is changed qualitatively, thus causing a poisoning that gives rise to the symptoms constituting Graves' disease. He believes, further, that the theories of a hematogenic or organic nervous origin of the disease are disposed of by the absence of any changes in the blood or

nervous system that are at all constant or could be considered sufficient explanation for the symptoms. The theory of a pure neurosis, based upon the occasional hereditary transmission of the disease, or its association with other neuroses, and similar arguments is, he believes, after a careful study of the literature, not justified, as such occurrences are probably coincidences. The theory placing its causation in some changes in the thyroid gland is fully justified by the almost constant presence of changes in this gland, both clinically and pathologically by the frequent association of exophthalmic goiter with myxedema, which disease is indubitably connected with the thyroid gland, and by the frequent improvement in cases of Graves' disease after operations upon the thyroid gland. An extensive reference to literature accompanies the article.—*Centralblatt. für innere Medicin*, April 9.

Gastric Tetanus.—Sievers describes two observations of fatal tetanus complicating gastric dilatation from small cicatrized ulcers. There are twenty-seven cases of the kind on record, the dilatation usually caused by the cicatrization of an ulcer, and consequently accompanied by "hyperchlorhydrie," but in a few cases there was neither dilatation nor "hyperchlorhydrie," as in Blazicek's case, in which the distended gall-bladder compressed the duodenum. In three cases the ulcer was complicated with carcinoma.—*Rev. Gen. de Path. Int.*, November 5.

Acute Delirium from Auto-Intestinal Intoxication.—Soelder relates observations of six cases, all young women or girls, in otherwise good health, suddenly affected with motor excitement, distress, cephalgia, uninterrupted walking, death following in a week or two from cardiac paresis. The anatomic changes were cerebral hyperemia and edema, intense congestion of the lungs, parenchymatous degeneration of the kidney, heart and liver, and chief in importance, a coprostasis of the large intestine, although there were no indications of digestive disturbances and no signs of increased putrefaction of the albuminoids in the urine. Similar cases have been attributed to the cerebral hyperemia or to a bacterial invasion of the brain, but the toxic lesions of the large organs favor his theory of an intestinal auto-intoxication.—*Rev. Gen. de Path. Int.*, November 5.

Cocain Poisoning.—A considerable proportion of the fatal cases after the use of cocain has been among medical men who have treated themselves for purposes of relieving pain, and have by accident or design injected an overdose. An instance of this kind occurred a few years ago. The body of a young medical man was found at a railway station. In his hand was a hypodermic syringe containing morphia which he had evidently been about to inject as an antidote. He had been accustomed for some time to inject cocain for the relief of neuralgia. On April 18, Dr. Thomas held an inquest at Paddington on the body of the wife of a medical man, who had died after drinking a solution of cocain. Eight weeks previously she had swallowed a quantity of laudanum from a phial which she had found in her husband's bag, assigning no reason for doing so, but telling him immediately after the act. Antidotes were applied and she recovered. On the evening of April 13, she remarked to her husband, "I am feeling ill," and produced a small bottle from her pocket containing a solution of cocain, which she had abstracted from the bag when she had obtained the laudanum previously. Both bottles were duly labeled "poison." She said she had taken cocain and asked that a medical man be sent for, but all treatment was unavailing. All experience shows that care is requisite in administering cocain, as it has again and again happened that small amounts of the alkaloid have given rise to the most threatening symptoms. Two-thirds of a grain injected subcutaneously caused the death of a woman aged 71 years, in five hours, and a man died almost immediately after taking twenty-two grains by the mouth. Persons, however, habituated to its use can take increasingly

larger doses. Among the most striking illustrations of its threatening characteristics are abnormal exaltations of the feelings, loquacity accompanied by mental incoherence, severe sweating, fall of temperature, shallow and irregular respiration, dilation of the pupils, disturbance of vision, nausea, feeble pulse and, ultimately, collapse. In persons suffering from these symptoms stimulants should be given. The inhalation of chloroform has been tried to relieve the spasm. Nitrate of amyl has also been suggested. Some medical men make it a practice to give a preliminary hypodermic dose of from one-eighth to one-quarter of morphia, according to the age of the patient. The physiologic antagonism between the drugs is pronounced, so that while morphin is not an absolute antidote, it is at least most valuable in counteracting the toxicity of cocain. Dr. Griffin, in the *Philadelphia Medical Journal*, has pointed out the variety of susceptibility and idiosyncrasy to cocain which different individuals present. Some patients who are acutely poisoned exhibit maniac excitement, while others are stupid. It is well known that poisoning has followed the use of a dose far short of the maximum therapeutic allowance, even a fraction of a grain having been reported to have caused serious symptoms. There are also instances in which a solution of a certain strength has been used without unpleasant effects, while a repetition of the same dose on a subsequent occasion has caused toxic symptoms. The injection of camphor dissolved in ether and the employment of artificial respiration, have recently been extolled as the best treatment for the acute poisoning. In chronic poisoning by cocain there is one symptom, known as Magnan's sign, which is of considerable importance in establishing a diagnosis when the use of the drug is denied, and is also of importance in other cases as indicating to the physician the necessity for immediate discontinuance of the remedy. This sign is an hallucination of sensation, the patient complaining of feeling some foreign body beneath the skin. This is generally described as being small in size, and is usually ascribed by the patient to the presence of sand, worms or microbes.

Artificial Immunity and Cure of Infective Diseases.—R. Emmerich and O. Löw publish a preliminary communication in the *Munich Med. Woch.* of November 8, in which they assert that the final destruction of bacilli is due to an enzyme which they themselves form, the effects of which are transferable from one kind of bacillus to another. They state: 1. The growth gradually ceases in many cultures, in spite of an abundance of suitable nutrient medium, and this they have found to result from the presence of an enzyme, formed by the bacteria, which in time destroys them. 2. Some of these bacteriologic enzymes are able to destroy other bacteria, even the pathogenic, besides the species from which they were derived. As these bacteriolytic enzymes are also able to destroy pathogenic bacteria in the animal organism they are capable of curing infective diseases. It is an easy and certain process to cure, with the enzyme of the bacillus pyocyaneus, within thirty hours, an anthrax infection progressing to a fatal course. 1 c.c. of this enzyme solution dissolves *in vitro* in twelve to twenty-four hours millions of diphtheria, cholera and typhus bacilli, showing that this pyocyaneus enzyme can also be used for these infections. Even the plague bacillus is destroyed by it. 1 c.c. will dissolve thirty millions of plague bacilli within a few hours. 4. The bacteriolytic enzymes are destroyed in the animal organism and permanent immunity can not be obtained with them, although a few injections will cure the infective disease. But the writers have succeeded in combining the enzyme *in vitro* with an animal albuminoid which makes it last longer in the animal organism and therefore adapts it to immunization. With this highly molecular complex combination they have succeeded in immunizing rabbits against

anthrax and guinea-pigs against diphtheria. In all probability the effective principle of an immunizing serum is nothing but a combination of the specific enzyme with an organic albuminoid (cause of artificial immunity). The so-called "agglutination" is the first stage in the dissolving of the bacteria by the enzyme combination. 5. The difference in the behavior of the immunizing sera in the presence of specific, pathogenic bacteria *in vitro* and in the animal organism, depends upon the presence or absence of oxygen in the form of gas. Excluding this completely, *in vitro*, the specific pathogenic bacteria are not only agglutinated by the immunizing serum but killed and dissolved, as was proved repeatedly with cholera and typhus bacilli.

Peptones in the Organism.—A communication received by the Académie de Méd. states that the assumption that peptones are toxic products is due to the impurities they contain, which are easily removed by Gautier's new process. The writer proves their non-toxicity by his experiences with animals, to which he administered peptones by both the gastric and intravenous route, finding that the animals gained rapidly in weight, thus also establishing their great nutritive value. Animals fed with peptones combined with carbohydrates, fats and mineral substances, thrived far better than others without the peptones. They do not produce incoagulability of the blood; they merely seem to augment the vitality and the number of the corpuscles. They can not be used for therapeutic anti-infectious purposes, in intravenous injections, for example, as the peptonized animals succumbed more rapidly than the control animals. Their use is indicated, however, whenever gastric nutrition with the usual nitrogenous foods is defective. In such cases the ingestion of peptones by the stomach or rectum offers unquestionable advantages. He also establishes the fact that while plants and microbes manufacture peptones and other albuminoid substances from relatively the simplest nitrogenous elements, the animal, on the other hand, does not manufacture albuminoids even from the most complex nitrogenous products. For the animal, therefore, there is nothing that can take the place of the albuminoids.—*Bulletin*, October 31.

Governmental Meat Inspection.—A case is instanced in the *Northwestern Reporter* to show the marked differences that exist between the law as laid down in England and the law as declared in this country in relation to the implied warranty of wholesomeness upon the sale of meat for immediate domestic use. The plaintiff was a woman who bought some pork from the defendant, a retail dealer in meats, who knew that she purchased the pork for immediate consumption by herself and family. The pork was, in fact, unfit to eat, and made the plaintiff and her family ill. She sued for breach of the implied warranty of wholesomeness. The trial court held that there was no such warranty, and the defendant had judgment there; but the supreme court reversed it, saying in the course of the opinion: "In England at common law there could be no recovery, as there was no implied warranty or quality. But the law on the subject as established in England does not prevail here. As a rule, we think the decided weight of authority in the United States is that on all sales of meats or provisions for immediate domestic use by a retail dealer, there is an implied warranty of soundness or wholesomeness." The system of meat inspection by officers of the National Government has been pronounced unconstitutional in the decision rendered by Judge John Rodgers in the United States District Court for the Western District of Arkansas. He set aside an indictment for bribing a Government meat inspector, on the broad ground that the Federal Constitution does not confer upon Congress any power to legislate in reference to the packing of meat in storehouses or the inspection of meat when thus stored. Hence he holds that the attempt to establish the office of meat inspec-

tion was ineffectual, and there is no such officer. Notwithstanding this decision, it is announced from Washington that meat inspection will be continued for the present under the direction of the Department of Agriculture. The new attorney-general thinks that the indictment passed on by Judge Rodgers omitted to state facts which would have shown that the inspected meat was really in transit from one State to market in another, and thus became liable to Congressional legislation as a subject of interstate commerce.

The Roentgen Ray in Tuberculosis.—R. Müheam reports tests with radiotherapy on twenty six guinea pige, successful in arresting local tuberculous processes, though general infection was not affected by it (*Deutsche Med. Woch.*, November 10). Ausset and Bedart describe a case of chronic tuberculous peritonitis in a girl of 9 years rebellious to all therapeutic measures, cured completely with radiotherapy when the prognosis seemed very unfavorable. There were fifty sances in all, averaging thirty minutes, the tube 12 cm. from the skin. —*Echo Med. du Nord.*, November 13.

Common-Sense Infant-Feeding.—In the *Medical Record* of November 26, Fischer of New York presents several formulæ to be followed when nature has been unkind and deprived the infant of its proper food—breast milk. For an infant under two months old, to be nursed or fed not oftener than once in two hours from 6 A.M. to 10 P.M. (some requiring an extra feeding at 2 A.M.), he orders the following mixture: Cow's milk 200 gm., water 700 gm., milk sugar 30 gm., to be divided into eight parts, the quantity for each feeding consisting of about 100 gm., or 3 oz. For a child from two to four months old, he orders a mixture of: cow's milk 350 gm., water 700 gm., milk sugar 36 gm., to be divided into seven parts of 150 gm., or 5 oz., and feeding to be not oftener than every two and one-half hours. Formula No. 3, for a child from four to five months old, contains: cow's milk 500 gm., water 500 gm., milk sugar 40 gm. This mixture is to be divided into six portions, e. g., three bottles containing 6 oz. and three containing 5 oz. each, the 5-oz. bottle alternating with the 6-oz. bottle every three hours. The child from five to nine months old is to be fed every three hours, the following mixture being divided into three 6-oz. and three 7-oz. portions, and given alternately: Cow's milk 750 gm., water 375 gm., milk sugar 50 gm. Formula No. 5, for children from nine to twelve months old, comprises: Cow's milk 1125 gm., water 375 gm., milk sugar 50 gm. This mixture is divided into eight portions, 8 oz. each, and one bottle given every four hours. Over one year of age, he uses pure cow's milk undiluted, feeding 8 oz. every four hours, the formula being: Cow's milk 1500 gm., milk sugar 59 gm., this quantity being divided into six portions, each containing 8 oz. He emphasizes the necessity of sterilization of everything used in connection with infant-feeding, e. g., cow, pail, stable, etc., also the importance of boiling the nipples immediately after being used, in plain water to which a pinch of salt has been added. They should then soak in salt water until to be again used. If a child takes only half a bottle's contents, the remainder must be thrown away and a fresh bottle be used. He also emphasizes the individualization of feeding, some children requiring food once in three, others every hour. He weighs the child weekly, and if there is not an increase of four to eight ounces during the first three or four months of infant-feeding and several ounces weekly, up to dentition, it is safe to change the method of feeding.

Operating on Wrong Leg.—As the basis of an action for damages sought to be recovered from a practicing physician and surgeon, it was alleged that he was employed to operate upon the plaintiff's right leg, but after putting the plaintiff under the influence of chloroform, wrongfully and carelessly operated upon the left leg, thereby causing the plaintiff great pain and suffering. According to the plaintiff's testimony his right leg was

very sore, and from time to time he got medicine from the defendant, until the latter finally advised him to go to the hospital, and on the following morning the nurse prepared him for the operation by shaving the right leg from the knee down, as the operation was to be upon the shin bone, some wash also being put on and the leg bandaged. He was then taken to the operating-room and given chloroform. On cross-examination he acknowledged that the left leg had also at one time troubled him, but maintained that it had healed. The nurse testified that the patient had a swelling on both legs, but prepared the right one, which was a little discolored, for the operation on being told by the patient that was the one. The plaintiff's brother testified that when the plaintiff was on the operating-table and both legs were exposed, the defendant said: "See here! you fellows have made a mistake; you have prepared the wrong leg for operation." But when the defendant asked this brother which leg it was that the plaintiff wanted operated upon he could not tell, stating that he was confused, but would telephone his folks and make sure, which was assented to but not waited for, perhaps because at about that time the father of the plaintiff appeared on the scene, though previously told by the plaintiff not to do it, and when asked if it was the right leg, which was pointed out, said "No, the other leg," though he said he had his mind on that leg all the time, and thought that the defendant could not make a mistake. Thus, according to these witnesses, did the left leg come to be operated upon; and a week or so afterward the defendant operated on the right one. The case was tried before a jury, and the court directed a verdict in favor of the defendant. But the supreme court of Michigan holds, *Sullivan vs. McGraw*, that the case should have been submitted to the jury for their determination, whether the defendant exercised that degree of care which, under the circumstances, he was bound to exercise, the supreme court considering that there was evidence tending to prove negligence, wherefore it reverses the judgment of the lower court and grants a new trial.

Experimental Surgery of the Heart.—Some extensive experiments are reported from Breslau, in which the hearts of rabbits and dogs were subjected to all kinds of wounds, punctures, incisions, etc., and then sutured, with the result that it is apparent that the heart of the mammal, of the rabbit at least, can stand even quite large wounds if excessive hemorrhage is prevented. The application of a suture even nearly around the heart does not, per se, determine any serious effect if secondary injuries are avoided. It was found that the third, almost the half, of the ventricle could be excised without injury after applying a tobacco pouch suture or ligature above. Several animals were operated by applying a ligature around the ventricle just below the middle, and the heart was then pierced entirely through with a small scalpel just below the ligature, that is, through the wall of the left ventricle, the septum ventriculorum and the wall of the right ventricle. The blade was then drawn downward, dividing the lower portion of the heart into two pieces, opening both ventricles. The wound was then sutured and the ligature removed. One died from the slipping of the ligature; another from sepsis. The other four are alive and well to date (three to five weeks). The danger of hemorrhage is much greater after wounds of the right ventricle than of the left. The sutures included only the pericardium and the upper muscular layers. They must be tied during diastole, as otherwise they tear out. The effect of the operation on the action of the heart was first a slight delay in the next systole, then an arrhythmia lasting several minutes. If the heart wall is punctured or incised very slowly and carefully through the different layers it will be observed that the arrhythmia only appears during the injury to the pericardium and the endocardium. While the needle is passing through the heart musculature the organ beats with normal regularity.—*Obl. f. Chér.*, October 28.

Rehabilitation of Severed Parts.—A writer in the London *Lancet*, October 22, refers to certain recently reported cases in that journal, showing the possibility of the restoration of severed parts of the body, even under very unfavorable circumstances. He refers to three cases in which the severed external ear was successfully replaced. In one the circumstances were anything but encouraging. The ear had been bitten off by a horse and was found lying in a stable-yard. Neither surgical instruments nor antiseptics were available, and a common needle and thread had to be used. In the other two cases the surgeon adopted the ingenious plan of keeping the ear warm and endeavoring to restore the circulation by hot salt bags. We do not know of any other instances in the attempt to restore severed parts in which this had been done. To what extent it is useful it is difficult to say; at any rate it is rational. Several cases of union of severed finger-tips are recorded. In the *Johns Hopkins' Bulletin* (November, 1892), Dr. Finney published a case of surgical suture of severed finger-tips after seven hours. The middle finger was cut off just below the last joint through the phalanx, the ring finger at the root of the nail. The raw surfaces were freshened and the tips were attached each by four sutures. Dr. Finney used antiseptic dressings, but not solutions, because bichlorid of mercury and carbolic acid produce a thin layer of coagulation necrosis. The wounds united by first intention. In a recent number of the *New York Medical Journal* appears an account of an interesting cure that occurred in the practice of Dr. Laurens. A colored man, in using a heavy axe, cut through his shoe and severed the metatarsal bone of the first toe through the head, completely disarticulating the toe, and also cut off the second toe in front of the metatarsal joint. He was seen four hours afterward. The shoe and sock were cut away and the second toe found separated, while the first was hanging by a mere string of skin, every muscle and vessel being cut. They were united by interrupted sutures which included the tendons. A dressing of iodoform and boric acid, equal parts, was used and a spint was applied. The iodoform had to be discontinued before it proved irritating. Union by first intention occurred over more than half the wound and there was but little pus when granulation took place. On the third day sensibility was present in both toes, and in a week the patient could move them a little. Finally, they were strong, movable and sensible, and except for a little tenderness the foot was as good as ever.

Brachialgia and Brachial Neuralgia.—After eliminating the cases of brachialgia due to rheumatism, myositis, inflammation of the synovial sheaths, an affection of the bones or joints, or to peripheral traumatism. Oppenheim has still 189 cases to consider. In 15 there was a vertebral or medullary affection (caries, tumor, tabes, glioma), with pain in a single arm. In 30 cases there was an evident neuritis, with paralysis and anesthesia, either of an infective or toxic nature; in 6 cases it was consecutive to influenza. Others were caused by the pressure of a tumor (aneurysm of the subclavicular, sarcoma). In 12 cases it was impossible to distinguish between neuralgia, neuritis, myalgia or some other lesion, and in 22 cases there was neuralgia without a neuritis or lesion of the central nervous system, evidently due to diabetes, gout, alcoholism or an acute affection. In 14 cases the pain was only induced by an effort. In the principal group, including 96 cases, there was brachialgia proper, with no points distinctly painful to pressure, but rather a psychalgia, consecutive to hysteria, neurasthenia, hypochondria, melancholia. The cases were chiefly in men, and the pain varied with the psychic condition. In some cases the brachialgia was associated with scoliosis. These brachialgiae had developed after a traumatism. In some cases they could be attributed to masturbation, more often to rebellious insomnia. The pain in these cases yields to suggestion. In one patient who had in vain tried nearly every kind of treatment,

it yielded to a single injection of antipyrin. Several cases relapsed or resisted all therapeutics. Brachialgia should be carefully differentiated from brachial neuralgia.—*Rev. Gen. de Path. Int.*, November 5.

Ovaries and Marriage.—The position taken by Mr. Justice Hirschberg, in the case of *Wendel vs. Wendel*, as stated in the *JOURNAL* of September 17 (page 676), does not meet with approval by the second appellate division of the supreme court of New York. The latter, referring to the decision below, says that it was held that because of the loss of her ovaries the defendant was incapable of conception, and, therefore, of "entering into the marriage state;" and that while this conclusion is in harmony with those higher ideals of the marriage state, which ought not to be disturbed except upon grave considerations of public policy, it is forced to conclude that the effect of such a rule was not fully considered. It goes on to state that it is a fact well known to medical science, and familiar in our common experience, that every woman passes through a climacteric period, usually between the ages of 40 and 50 years, after which she is incapable of conception, and yet it has never been suggested that a woman who has undergone this experience is incapable of entering the marriage state, or that she is guilty of any fraud in contracting marriage. In this latter case the ovaries are shrunken and contracted to a point where they no longer discharge the functions necessary for conception, and in so far as the reproduction of the species is concerned, the one is as incapable of "entering into the marriage state" as the other. There is no essential difference between a woman who, through no fault of her own, has lost her ovaries through a surgical operation, and one who has suffered the same result through the operation of nature, and if the one is incapable of entering into the marriage state, the court can conceive of no process of reasoning by which the other may be said to be capable. It seems to it clear, therefore, that it can not be held, as a matter of law, that the possession of the organs necessary to conception are essential to entrance to the marriage state, so long as there is no impediment to the indulgence of the passions incident to this state. Consequently, it reverses the judgment of the lower court. And as to the contention that the defendant was guilty of fraud in not pointing out her exact condition upon being questioned by the plaintiff, the court suggests that he had not availed himself of the means of information within his reach and suggested by what the plaintiff had told him, and, it holds, that cohabitation for a time after learning the facts constituting the alleged fraud must deprive him of the right to have the marriage annulled on that ground.

Depositions Taken Before Trial.—What it thinks was a novel as well as an exceedingly interesting question was presented to the fourth appellate division of the supreme court of New York, in the recent personal injury case of *Ida Green vs. the Middlesex Valley Railroad Company*. It seems that at the instance of defendant the plaintiff was, prior to the trial, required to submit to a physical examination, as provided by section 873 of the New York Code of Civil Procedure. This examination was made before a referee, and in the presence of two female physicians, who gave oral evidence before the same referee, and their depositions thus taken were offered in evidence upon the trial. In each instance the offer was objected to upon the ground that the depositions could not be read in evidence, save in the absence of the witness, and that the witnesses were then present in court under subpoena. The trial court overruled the objections and permitted the depositions to be read, which ruling was duly excepted to, raising the question referred to. The section of the code mentioned, the appellate division says, is part of a general scheme provided by the legislature for the examination of parties before trial, and, as amended in 1893, it was obviously intended to establish a rule

of procedure by which, in cases of this character, a defendant could ascertain the nature and extent of the personal injuries from which the plaintiff claimed to be suffering, and thereby enter upon the trial of his case with some knowledge of what he would be called upon to meet. The method by which information was to be obtained was not clearly defined by the statute, but it seems to be now settled that the physical examination which it contemplates is but a part of the examination of the party before trial, and that it is to be conducted by the oral examination of the plaintiff, as well as of the attending physicians. But, when this much has been accomplished, the question naturally arises as to how far, and under what circumstances, the depositions thus taken are competent evidence upon the trial. The view of the trial court, as applying to this case, has been referred to. But the appellate division does not concur therein, although it has been judicially stated that the record of the examination, which is placed on file, may be introduced in evidence, and section 881 provides that the deposition, or a certified copy thereof, may be read in evidence by either party at the trial. In section 882, it finds a limitation, which leads it to hold that it is not until a party has shown his inability to produce the witness upon the trial, in order that the jury may have the benefit of an examination of the latter conducted in open court, that he will be permitted to read his deposition, and that therefore the defendant in this case had a right to insist that the attending physicians should be required to give their evidence in the same manner as would have been the case had their depositions been taken separate and apart from the plaintiff's physical examination.

Christian Science.—The *Chicago Standard* has entered a protest against a continuation of the immunity from prosecution for their crimes which the "Christian Scientists," thanks to a general misunderstanding and misapprehension of the phrase "religious freedom," now enjoy and abuse in this and many other countries. The idea that any unfortunate victim of mental and physical lesions, or any shrewd and conscienceless exploiter of human credulity, can defy the law and practice the rites of any cult, no matter how degrading, vicious or dangerous, provided the dupe or the knave takes the precaution to call the cult a "religion," is, of course, a wild absurdity, a delusion, which has no basis in reason or the statute books. "The law," declares *The Standard* with perfect accuracy, "can not interfere with religious opinions unless they lead to infractions of well-known principles of morality and public policy; but in such cases it should act promptly. Mormonism encounters the law when it leads to polygamy. 'Christian Science' should feel the law's restraint when it leads to suicide and manslaughter." That it does both in many instances, is known to everybody who has paid even slight attention to this monstrous and horrible fraud. The case of Harold Frederic is at once maddening and pathetic. All his years the man had lived and fought for the realities, the sanities, and the honesties of life. Finally a cell or a duct in the overworked brain gave way and left him temporarily and partially incapable of distinguishing between the true and the false. Nature, aided by science, would have soon repaired the injury, but at the moment when the clear eyes were darkened and the strong mind was helpless, a miserable creature appeared, stretching out rapacious hands for the sick man's gold. She got it, and Harold Frederic is dead. There is ground for hope, however, that this is not quite the end of the tragic episode. The woman who killed Mr. Frederic has confessed her utter lack of legal qualifications to act as a doctor, and that she accepted fees for treatment. Counsel for the executors warned her, while she was testifying before the coroner's jury, that she was in a "serious position." If England has any justice, she will soon be in a prison, and stay there for a very considerable period. Would that every one of her rivale might bear her company.

The High-Grade Modern Hospital.—Dr. Stephen Smith writes of the new era of hospitals and dispensaries. They are no longer regarded as for the sick poor alone, or for the stranger within our gates alone, but for any sick person, be he poor or rich, old or young, whose malady falls within the range of a large class of diseases. During the first half of the present century the State of New York had but one well organized hospital; the century will close with not far from two hundred such institutions, upward of ninety of which are located within the limits of the Greater New York. The modern hospital is constructed on the segregate plan, which so isolates the various parts and rooms that ventilation of one room into another is, as far as practicable, prevented. The modern operating-room is located, constructed, and managed so as to secure the most perfect purity of the air and the most absolute cleanliness. Skilled service is everywhere required. The resident medical staff is selected after competitive examination; the apothecary is a graduate of a college of pharmacy; the head of the kitchen is a *chef*; the matron is a trained nurse. But perhaps the reform in hospital management which has wrought the most salutary results is found in the department of nursing. Today the nurse of the most ordinary hospital is a person of good education, of the most pronounced correct habits, familiar with the import of those symptoms of those diseases that indicate an emergency, reliable in the use of remedies, and skilled in all the arts of relieving the sick by manipulation. In view of the imperious demands of modern medicine for the best possible hygienic conditions surrounding the patient, for perfect antiseptic in all surgical operations, for the greatest precision in all the details of nursing, it is very gratifying to be able to record the fact that the public is responding cheerfully and generously to these requirements upon it for financial resources. Hospitals of the highest type of excellence are appearing in every community, not only for general disease, but for every variety of human affections which can by any means be better treated in hospitals than at home.—*Charities Review*, November.

State Care of the Insane in Indiana.—The State of Indiana needs more room in her hospitals for the insane; they are not quite big enough and never have been, notwithstanding the expenditure within fifty years of \$3,000,000 on their development, and a present capacity for 3300 inmates. The population of the State now amounts to 2,900,000, the number of insane is 4200. Nothing seems to be more disquieting to the average citizen than a call for increase of hospital capacity for the insane. Forthwith it is assumed that mental disease, if not epidemic, is certainly spreading. Commonwealth and citizens should remember that change makes change; that as population thickens the defective element at least maintains its ratio if it does not exceed it; that a ratio must be met, rather than a fixed number, and that the hospitals for the insane should have always a bed ready beforehand for the unfortunate one out of 400 or 600, as the case may be. In every community this is a permanently increasing demand. The prompt and proper care of the insane can only be cured by a wise, liberal and timely adoption of the above policy. This is the humane way of looking at the question: Prevision is needed as well as adequate provision.—Dr. J. G. Rogers, in the *Charities Review*, November.

The Drug Trade in Europe.—An interesting volume of 417 pages has been issued by the Bureau of Foreign Commerce of the United States Department of State, which is a mine of information regarding the conditions of the drug trade in foreign countries. The sponsor of this collection of consular reports, Mr. Joseph Jacobs, a pharmacist of Atlanta and chairman of an important committee in the American Pharmaceutical Association, requested the Department of State to submit a series of questions relating to drugs, chemicals, proprietary articles,

drug stores, pharmacies, laws governing the practice of pharmacy, etc., to the consular officers of the United States in foreign countries. The responses constitute a volume of great interest and value, which will undoubtedly receive much notice, here and abroad, and will serve as a record basis for a long time to come. In Austria, for instance (and in Germany the conditions are very similar), "the law distinguishes between a druggist and a pharmacist, and draws a line between the two which neither is permitted to overstep." The druggist conducts a shop something on the plan of the average drug store here; but the pharmacist requires a university diploma, and can conduct a pharmacy only if he acquires a "concession." The concessions are limited, and attach to a location or are hereditary; a new concession is granted only on the basis of a location distant at least nine and a half miles from the nearest similar establishment, and provided a population of 4000 or more people is tributary to it. This is fine protection for the owner of a concession. In Germany no person can practice pharmacy until he has passed his "state examination"; a foreigner, with a foreign diploma, must pass this examination (requiring academic accomplishments) before he can even become an assistant in a pharmacy. The native candidate, having passed through high school and with a thorough knowledge of Latin, serves three years as apprentice; then three years as assistant in an authorized pharmacy; then three semesters devoted to theoretic study in a German university; and then he is qualified to attempt the final state examination. There is some difference, evidently, between an average "drug clerk" and a German *apotheker* who has passed the examination.—*American Therapist*, October.

Gleanings.—Impermeable stricture of the esophagus consecutive to swallowing "caustic soda," cured by retrograde sounding through a gastrotomy incision (*Munich Med. Woch.*, November 15.)—Fatal case of rupture of the spleen in typhoid fever. Weighed 600 grams. (*Tidsskrift f. d Norske Laeg.*, November 1.)—Carcinoma of the right suprarenal with metastases in the liver, lungs, etc.; and the rare picture of a metastatic carcinomatous hemorrhagic fibrinous pericarditis.—Case of rupture of the uterus, related by Heissler in which the ruptured ring-shaped lower segment of the uterus was expelled. (*Munich Med. Woch.*, November 15.)—Bruns reports 81 subperiosteal amputations of the leg with extremely favorable functional results and gangrene of the flap in only three cases. (*Beiträge z. Klin. Chir.*, xxii, 2.)—Vienna has no crematory, and consequently the request of Dr. Müller, the devoted victim of the recent plague epidemic there, that his body be cremated to avoid further infection, was necessarily disregarded, as transportation to a distant crematory was out of the question.—Cystoma removed from a woman of 38 years, containing thirty-four liters of fluid. The circumference of the abdomen at the level of the umbilicus was 152 c. Prompt recovery. (*Revista de Med. y de Cir.*, October 25.)—One or two drops of bile introduced under the dura in rabbits through a trephining opening, produce symptoms of severe intoxication; the animals run around and when they fall from exhaustion continue the motions of running. (*Klin. Woch.*, November 13.)—Chronic constipation cured with massage of the hepatic region, especially of the gall-bladder. (*Gaz. Méd Liège*, November 10.)

Societies.

The following recent meetings are noted:

Illinois.—Rock River Medical Association, Sterling, November 22; Will County Medical Society, Joliet, November 22.

Indian Territory.—Indian Territory Medical Association, Wagner, December 6 and 7.

Michigan.—Saginaw County Medical Society, Saginaw, November 25.

Minnesota.—Ramsey County Medical Society, St. Paul, November 28.

Missouri.—Medical Society of City Hospital Alumni, St. Louis, December 1.

New York.—Medico-Chirurgical Society of Central New York, Syracuse, December 1.

Pennsylvania.—Clinton County Medical Society, Lock Haven, November 18.

Texas.—South Texas Medical Association, Houston, December 8.

Detroit.

APPOINTMENTS.—Drs. W. R. Henderson and G. P. Johnson of Detroit have been appointed by the Wayne County auditors to act as county physicians for the ensuing year.

HEALTH REPORT.—For the week ending December 3, there were: Deaths 76, under 5 years 18. Births, female 18, male 34. Contagious diseases: Diphtheria, 20, recovered 9; new cases 14, 2 dead; 23 now sick; scarlet fever 29, recovered 6, new cases 14, 37 now sick; smallpox 1.

Louisville.

DUNCAN.—Dr. Ellis Duncan has just been appointed as superintendent of the Louisville City Hospital, vice Dr. P. C. S. Barbour, deceased. Dr. Duncan is a young man, but thoroughly qualified to undertake the duties, having assumed the duties of the office during some of the time that Dr. Barbour, his father-in-law, was incapacitated. Dr. Duncan has but recently returned from Porto Rico, where he went as assistant-surgeon to the First Kentucky Regiment (Louisville Legion), returning on sick leave. He made an enviable record with the regiment. He has also been appointed as assistant to the chair of abdominal surgery and instructor in gynecology in the Kentucky University Medical Department.

GREEN.—Dr. Waller O. Green has been appointed a clinical professor of diseases of the rectum in Kentucky University. Dr. Green was for several years the chief of the rectal clinic of the out-patient department of the Kentucky School of Medicine.

HEALTH REPORT.—Health Officer Allen has just made his report for the month of November. There were 326 births for the month, 181 males and 145 females, 299 white and 27 colored; there were 319 deaths and 69 marriages. The physicians to the poor made 483 visits; 111 nuisances were abated, and 336 animals were removed by the dead animal contractor. Forty-eight cases of scarlet fever were placarded and 35 cases of diphtheria. One hundred and forty-five vaccinations were made by the department, and a number of examinations of milk made, only two of these falling below the standard. In concluding his report, Dr. Allen expresses his satisfaction on the passage of the ordinance requiring the reporting of typhoid fever and whooping-cough and consumption, and expresses the desire that a competent veterinarian be appointed as live stock inspector.

Denver.

HEALTH OF THE CITY.—Cases of infectious and contagious diseases reported during the month of October: Diphtheria 53, with 7 deaths; scarlet fever 25, no deaths; typhoid fever 22, with 9 deaths; total number of deaths 158, of which premature and still-births were 15; cases of phthisis contracted elsewhere 24; death-rate per 1000 per annum 11.25; death-rate per 1000 per annum, excluding phthisis contracted elsewhere, 9.63.

METEOROLOGIC SUMMARY FOR OCTOBER.—Possible hours of sunshine, 345; total hours of sunshine, 280; mean barometer, 24.771; mean temperature, 49; total precipitation, 1.05; mean relative humidity, 41.0; number of clear days, 16; partly cloudy, 11; cloudy, 4.

POPULAR LECTURES.—Dr. Mary C. J. Love, the Chairman of the Department of Health and Hygiene of the Woman's Club of Denver, has arranged a series of lectures to be given during the winter by local physicians on the following subjects: "The Nervous System," S. D. Hopkins; "How We Breathe and How Our Blood Circulates," Josephine Peavey; "Intelligent Womanhood," M. C. T. Love; "Foods, their Chemical Significance and Values," Henry Sewall; "Nutrition and

Feeding of Young Children," Eleanor Lawney; "Puberty and Adolescence," Mary Barker-Bates; "Diseases of the Will, and Power of Suggestion, Hysteria and Hypnotism," J. T. Eskridge; "The Eye and the Ear, their Care and Protection in the Young," Jean Gale; "Women as Mothers," M. C. T. Love; "Sanitation and Hygiene of Home," W. P. Munn; "How Much Physiology and Hygiene Shall be Taught in the Higher Grades of Public Schools—Shall Men and Women be Employed to Teach Physiology to Unmixed Classes?" Leonard Freeman, Mary H. Barker-Bates.

TO PREVENT THE SPREAD OF CONSUMPTION.—The City Improvement Society of Denver has sent out the following note to all physicians residing in the city: "Realizing that physicians can do more than any one power to prevent the spread of consumption, and to insure sanitary reform in the matter of non-expectoration on the sidewalks, to the physicians of the city we therefore appeal for co-operation, that by instructing their patients not to spit on the sidewalks we may have a cleaner and more healthful city." City Attorney Norris has prepared a bill, as follows:

Be it enacted by the city council of the city of Denver:

Sec. 1. It shall be unlawful for any person to spit upon the floor, or any part of any street car or elevator, within the city of Denver.

Sec. 2. Any person violating the provisions of this ordinance shall upon conviction be fined not less than \$3 nor more than \$5 for each offense; and the conductors of all street cars and the pilots of all elevators are hereby authorized and empowered to enforce the terms of this ordinance.

Washington.

REPORT OF THE HEALTH OFFICER.—The report of the health officer for the week ended November 26, shows the total number of deaths to have been 92, 52 white and 40 colored. The principal causes were: Apoplexy, consumption, diphtheria, diseases of brain, heart and kidneys, pneumonia, typhoid fever. There were 97 births, 61 white and 36 colored. At the close of the week there were 127 cases of diphtheria and 117 cases of scarlet fever under treatment. The special report on the death from yellow fever shows that the death from this disease, which occurred on the 18th ult., was the first ever recorded in the District of Columbia. The deceased was a civil engineer and arrived in New York City, on the steamer *Allegheny*, November 16, from Greytown, Nicaragua, via Port Limon, Costa Rica, an infected port. The steamer touched the latter port November 7, and during the voyage the deceased was taken sick, but was able to pass the quarantine officers at New York City, arriving at Washington November 16, where he registered at a hotel, going immediately to his room. At three o'clock on the morning of the 18th, his condition attracted the attention of the hotel authorities, who summoned medical aid. Dr. A. Barnes Hove, formerly resident physician of the Emergency Hospital, responded, and upon seeing the black vomit and learning that the patient had been in a port infected with yellow fever, suspected the infectious character of the disease, and called consultation, which resulted in the positive diagnosis of yellow fever. The urine showed the presence of albumin, without casts, and an examination of the blood failed to determine the presence of a malarial parasite. The patient died comatose at two o'clock the same day. The postmortem held showed the characteristic lesions of yellow fever. The health officer does not anticipate the development of other cases in the District at this season. The usual newspaper excitement followed the report of the case, and as a result the nature of the disease has been discussed pro and con.

GEORGETOWN UNIVERSITY HOSPITAL.—Donation day at the new Georgetown University Hospital proved to be a great success. The friends of the Institution, and those interested in the care of the sick poor, sent large donations of money, food, medical and hospital supplies, all of which were gratefully received by the hospital authorities.

TO REGULATE DENTISTRY.—The dentists of the city have prepared a bill to further protect them in the practice of their profession, and will submit the same to Congress for action in the coming session. The bill provides for a local board of examiners to make rules and regulations, and pass upon the fitness of those applying for a certificate to practice dentistry in the District. It is proposed in the bill that examinations be held in June and December, and it provides that no corporation, not incorporated by Act of Congress, shall practice in the District without special permit from the Commissioners. A fine of \$30 is provided for violations. The Board will consist of five reputable resident dentists who shall elect their own officers and issue all licenses to practice. It also provides for the revocation of license, for just and sufficient cause.

Dr. IRVING C. ROSSE sailed for Europe on the 26th ult., for a few weeks' vacation.

Dr. J. J. ULLOA, of Costa Rica, and Major John V. R. Hoff, U. S. A., of Pan American fame, are visiting the National Capitol. Dr. Ulloa is with the Costa Rican President, now on official visit to the U. S. Government.

BOARD OF TRADE OF WASHINGTON.—At the meeting of the Board of Trade, held on the 30th ult., Dr. W. W. Johnson was appointed Chairman of the Committee on Public Health and Dr. H. L. E. Johnson a delegate from the Board to the meeting of the National Pure Food Congress which convenes in January next.

London.

A most remarkable and, from a medico-legal point of view, most important case, was reported to the Hunterian Society, on November 23, by Mr. J. H. Yargett. The stomach and esophagus of a child, at ten months, were shown, containing rather unusual foreign bodies. The patient had been brought to the hospital suffering from severe dyspnea and dysphagia, with a history of having suddenly choked while eating a piece of brown bread. Exploration with the finger and probe revealed nothing that would account for the dyspnea and, thinking that the fragment of crust probably present in some pouch of the esophagus, would soon soften, the child was kept quiet and carefully watched. In a short time the dyspnea subsided, although the dysphagia persisted, but the child seemed unaccountably weak and depressed, symptoms of broncho-pneumonia developed and it sank rapidly, and died in three days.

At the necropsy, the lungs were found extensively consolidated and the bronchial passages full of bloody mucus and mucus. Upon opening the stomach, two small corks were found, of about the size which would fit an ordinary two or three ounce bottle, and it was naturally supposed that one of these had injured the pharynx in swallowing and given rise to the trouble.

But when the pharynx was laid open to discover the site of the abrasions, the knife struck upon a much larger cork, completely imbedded in a pouch upon its posterior wall. The cork was of the ordinary cylindrical shape, one and one-fourth inch long by three-fourths of an inch thick, and was so deeply sunk in the wall of the pharynx, just at its junction with the esophagus, that its anterior border barely projected into the cavity of the gut. The singular thing was that so large a foreign body could have formed a pouch in the wall of the pharynx and passed out of its lumen so quickly, so as to permit the passage of a probe, and even the taking of a certain amount of milk shortly before the child's death.

But the most interesting developments occurred at the inquest. It was discovered that the mother of the child had lost no less than five other children under two years of age, all of whom had been insured, as was also the case with the infant under consideration. Neither the mother nor the nurse in whose care the child was left during the day could give any light as to how the corks came there; on the contrary, they vehemently repudiated the suggestion that it had ever had

corks or bottles to play with, and even declared that there were no corks in the house and had not been for weeks! In spite of these facts, however, the sapient twelve declined to see anything suspicious in the case, and one of the jurymen gravely suggested that the corks might have got into the gullet by the doctor, who saw the child before it was taken to the hospital, using them to prop the child's mouth open while he examined it! Another nineteenth century Newton was sure that, a hospital being a place where sick folk did congregate, there must have been plenty of medicine bottles about from which the child could easily have gathered two or three corks. And with that low distrust of our profession which marks the vulgar mind, several witnesses had to be called and examined to disprove these asinine suggestions.

Finally, the "bulwark of our liberties" got itself delivered of the illuminating verdict that the child came to its death by means of corks in its stomach and gullet; that there was no evidence to show how the corks were introduced, but that the jury were of the opinion that they were in the child before Dr. — was called to attend it!! Comment is superfluous, but it would be well for the profession to bear this new possibility in mind in cases of sudden death in heavily-insured children.

Philadelphia.

RETURNED.—Dr. John Packard, who has been spending the past few months in Europe, arrived home during the past week.

IMPROVING.—Prof. John Ashhurst, who has been confined to his bed for the past few months, from two mild attacks of apoplexy, is now greatly improved and hopes are entertained for his complete recovery.

CONVALESCENT.—Dr. William Pepper, Jr., who has been suffering from typhoid fever for the past few weeks, at the University hospital, is now convalescent. He will leave about December 10 for a trip to Europe.

PHYSICIAN INJURED.—Dr. Robert M. Given, a member of the medical staff of the Pennsylvania Hospital, was recently thrown from his carriage, sustaining several lacerated wounds of the face and contusions. The coachman sustained a fractured leg.

MORTALITY STATISTICS.—The number of deaths during the week just closed was 399, a decrease of 50 over last week and an increase of 8 over the corresponding week of last year. Of the total number of deaths, 118 occurred in children under the age of 5 years.

HEALTH OFFICER AND QUARANTINE PHYSICIAN.—Owing to the results of the recent election and the selection of Governor Stone the two above-named positions will be left open unless the present incumbents are reappointed. The health officer of this city receives a salary of about \$7100 annually, while the quarantine physician receives \$5000.

STERILIZED MILK SOCIETY.—The Sterilized Milk, Ice and Coal Society, through its founder, has asked for contributions in order to carry on its work during the coming winter. When it is considered that through the influence of sterilized milk the death-rate of children is greatly reduced, it will be seen what an instrument for good this Society may become.

MEMORIAL MEETING.—A meeting commemorative of the life and works of the late Dr. William Pepper was held in the chapel of the University of Pennsylvania November 29. The committee having the matter in charge was composed of representatives from the University of Pennsylvania, American Philosophical Society, Franklin Institute, Academy of Natural Sciences, and other public institutions of the city. Governor Hastings presided, and speakers were present to represent the different institutions with which Dr. Pepper was identified.

SMOKER TO UNIVERSITY ALUMNI.—The Alumni Society of the Medical Department recently gave its semi-annual "smoker." A spirit of patriotism pervaded the banquet hall and Dr. John Guiteras spoke in glowing terms of the victorious army, while Dr. Edward Martin complimented the "woman

nurse," who did much to lessen the pangs of disease and keep down the mortality.

FOOTBALL CASUALTIES.—One of the papers here has kept a list of the casualties reported during the past year, as follows: Number of collar bones broken, 5; legs broken, 4; ribs broken, 4; skulls fractured, 3; torn ligaments in leg, 3; shoulders broken, 2; besides broken nose, concussion of the brain, ruptured kidney, broken wrist, collar bone dislocated, knee dislocated, cartilage of ribs torn, ankle broken, and thumb broken. Internal injuries and twisted legs are hardly considered as casualties.

DIPHTHERIA COMMON.—The northern section of the city, particularly around Nicetown, is being stirred up over the spread of diphtheria among school children. Investigation recently made showed that several children attending St. Stephen's Roman Catholic church were suffering from the disease, and one had died, while at the Asa Packard school two deaths had occurred. It is stated that the greatest care is taken at the schools to prevent the disease from spreading, and that upon the first observance of any complaint the children are immediately sent home with a note to call in a physician. Several children attending the Cayuga school have also been afflicted with the disease. Dr. Charles S. Means, a member of the Common Council, recently introduced a bill providing that all the children who attend the public schools of this city, after Jan. 1, 1899, shall be injected with antitoxin, for the purpose of immunization from diphtheria, and further, that the Director of Public Safety be directed to instruct the Medical Inspector of the Board of Health to enforce the provisions of this ordinance.

GOVERNMENT ALLOWANCE FOR SICK SOLDIERS.—At a recent meeting in the rooms of the National Relief Association several representatives of the hospitals took the position that since the hospitals volunteered to care for the soldiers, therefore they would accept no compensation whatever. Major Peyton, who has charge of all sick soldiers in Pennsylvania, stated that the Government was unwilling to accept charity for its soldiers and desired to pay all who have had charge of the work. Those hospitals and other organizations who have defrayed the expenses of hospital trains to Camp Meade and elsewhere will not be reimbursed for the outlay. It was finally agreed that the Government would pay the hospitals at the rate of \$1.00 a day for each sick soldier. A vote of thanks was passed for the courteous treatment given the hospitals by the War Department, as well as to Major Peyton, the representative of that Department.

FINANCE COMMITTEE.—The Finance Committee of the city council has been working at the usual budget of expenditures for the coming year, but about the only two items of interest to physicians are the salary attached to the position of physician to the county prison and appropriations for charity and corrections. It seems that the actions of prison inspectors have been called in question relative to the fact that Dr. Butcher's salary as physician has been raised from \$1500 to \$1800 a year. The increase was referred to a sub-committee. As to charities and corrections, the department has asked for an increase of \$60,000 for the purpose of enlarging the insane department of Blockley Hospital. While the appropriations for the Bureau of Charities and Correction were \$481,968 in 1898, it is hoped that \$597,918 will be appropriated for the coming year.

GERMANTOWN CHILDREN'S HOSPITAL.—The board of managers of the Children's Hospital of Germantown is still busily engaged in raising the necessary funds for the establishment of the institution on a firm basis. An appeal for contributions has been made with a liberal response. It is now proposed to raise sufficient funds for the present needs by giving a series of entertainments, and up to date arrangements have been completed for this purpose.

SOPORIFIC REFORM.—Whether or not the cares and vexations incidental to public and private receptions are conducive to long existence may be demonstrated by the soporific reform recently set on foot in a neighboring city and taken up by society dames in Philadelphia. At any rate, many leading lights in upper tandom applaud the movement and say, "give us more sleep." While at present the movement is only a fad, in time it may prove to be beneficial, not only to the devotees, but to posterity as well.

CONTRIBUTIONS TO THE GERMAN HOSPITAL.—While Donation Day was most inauspicious for visitors, a number of contributions were received by mail, which makes the record compare favorably with that of former years. The donations consisted of a large quantity of groceries, boots, shoes, dry goods, etc., and \$7,294.36.

PRESBYTERIAN HOSPITAL.—Owing to the fact that this hospital has been lately taxed to the utmost in caring for charity cases and soldiers, and to meet the expenses brought about by the construction of new operating-rooms, a receiving-ward, and the Dulles' memorial ward, it asks for an increase of income amounting to \$20,000. In the appeal it is stated that \$250,000 added to the permanent funds of the hospital would enable them to make good use of all appliances and to meet the more pressing demands made upon the service.

NATIONAL RELIEF CONTRIBUTIONS.—Mr. George C. Thomas, treasurer of the National Relief Association, makes the following report: Cash previously acknowledged, \$78,487.29; cash and supplies, \$769.19; value of supplies to date, \$40,345; grand total, cash and supplies, \$119,601.48. At a recent meeting of the Executive Committee, officers were notified that they would soon be expected to file their reports, to be turned over to the Government. Governor Hastings made a speech and tendered thanks to the Commission in behalf of the State for the excellent service they had rendered. It is stated that 431 families and 1386 individuals are still being cared for by the Commission. A list was also made of the number of soldier patients admitted to the Philadelphia hospitals to date, there being 2238 men, with 108 deaths.

OF MEDICO-LEGAL INTEREST.—A case which has attracted considerable public interest is now being tried in the court of oyer and terminer in this city. Mrs. Mary E. Zelter stands charged with poisoning her aged husband. At the trial expert witnesses were present to give testimony regarding the nature of certain drugs apt to cause the symptoms and pathologic conditions set up by certain persons. Dr. John Marshall, dean of the medical faculty of the University of Pennsylvania, was one of the first witnesses and stated that he had been supplied with portions of the liver, brain, intestines and muscular tissue of the exhumed person, and that over half a grain of strychnin had been thus obtained from these tissues, which he thought was consistent with a poisonous dose of the drug. Dr. Henry W. Cattell, coroner's physician, testified that he had conducted a postmortem examination. Dr. Horatio Wood was then called, and in reply to a question by the district attorney, stated that he was thoroughly acquainted with the effects of strychnin. Having heard the testimony of previous witnesses that the drug had been found in the tissues of the body exhumed, he thought it practically certain that only a small proportion of the poison had been obtained. On cross-examination his testimony remained unshaken.

UNCOMMON CAUSE OF DEATH.—Paul Miller, a child 6 years of age, while feeding chickens, placed a grain of corn in his mouth. It descended into the trachea; all efforts to remove it were futile, and death ensued.

OVERCROWDING OF INSANE.—While the accommodations at Blockley Hospital were originally intended for only 1000 persons, there are at present 1400 insane confined within the different wards.

CONVALESCENT TYPHOID PATIENTS.—Nine soldiers who have been treated for the past few weeks for typhoid fever, at the Presbyterian Hospital, have been discharged. The men were brought to this city during the month of October from Camp Meade.

RACE QUESTION RAISED.—Students of the Jefferson Medical College have passed a resolution providing that a committee be appointed to determine whether or not there is a gentleman not altogether white who enjoys the facilities offered by that time-honored institution. If such is the case an earnest protest will be made to the dean.

DIPHThERIC PARALYSIS.—George Cromm, a child four years of age, after eating a piece of scraple, suddenly died. A history of having recently suffered from diphtheria, and a subsequent necropsy, led the coroner's physician, Dr. H. W. Cattell, to the belief that death resulted from diphtheritic paralysis.

CONTRIBUTION TO UNIVERSITY LIBRARY.—Dr. S. Weir Mitchell has presented to the university library two very important historic documents which have come into his possession. The documents were given Provost William Smith, conferring upon him the power to collect funds for the College and Academy of Philadelphia (now the University of Pennsylvania), also to James Jay power to collect similar funds for the College for the Province of New York (now Columbia University). One is dated April 30, 1764, and the other March 13, 1762. The documents are signed by the Archbishop of Canterbury, Archbishop of York, Lord Bishop of Winchester, Provost Smith and the Rev. Dr. Chandler. Various receipts are attached showing that in one instance a contribution of £500 was made by Thomas Penn.

SMALLPOX.—Five cases of smallpox are reported. For several months past urgent measures have been made to determine how many school children were properly vaccinated in order to keep down epidemics of this kind, but the law has been much evaded. The school authorities of the immediate neighborhood have been notified so that the proper precautions may be taken.

UNWHOLESOME MEAT SUPPLY.—At a meeting of the Woman's Health Protective Association, Dr. W. Horace Hoskins, president of the Veterinary State Board of Examiners, is quoted as saying that a thorough inspection has revealed the fact that meat supplied to this city is frequently unwholesome; in other words, that Philadelphia is a dumping ground for "worn out cows."

ASYLUM POLLUTES SCHUYLKILL.—At the last meeting of the trustees of the State Hospital for the Insane, Dr. Benjamin Lee, secretary of the State Board of Health stated that from his investigations, made some time ago, it was found that deleterious material from that institution was allowed to flow into the Schuylkill, and he therefore requested that the condition be relieved. The secretary of the trustees, however, made reply that the Board was powerless to remedy the evil on account of lack of funds. It is now stated that the whole question will be carried before the State Legislature in order that a proper bill may be passed to abate the evil.

CHANGE OF ADDRESS.

Comstock, H. C., from Sioux City, Iowa, to Hutchinson, Kan.
Corkery, T. L., from Fairfield, Ind., to Wilmington, Ohio.
Chaddock, C. G., from 2906 to 511 N. Garrison Ave., St. Louis, Mo.
Crandall, G. C., from 610 to 511 N. Garrison Ave., St. Louis, Mo.
Formanek, F., from Chicago, Ill., to Walperton, N. C.
Lincoln, B. S., from Chicago, Ill., to Missouri City, Mo.
Lawrence, A. A., from Exeter, N. H., to Millville, Mass.
LeMoine, F., from Port Hope, Can., to 5431 5th Av., Pittsburg, Pa.
Moore, A. H., from Grand Av. and Hawthorne to Dekum Bldg., Portland, Oregon.
Meek, J. H., from Smithfield to Glence, Ohio.
Michael, L. F., from Cheyenne Agency, S. D., to New Ponca, Okla. Ter.
McNicholl, T. A., from 140 E. 39th St. to 1919 7th Av., New York City.
Stevens, G. H., from Hotel Madison to 1819 Adams, Toledo, Ohio.
Thomason, H. D., from Missoula, Mont., to 10 N. S. Cal, Huntsville, Ala.
Turner, R. L., from Ellisville to Meridian, Miss.
Wray, W. E., from Jacksonville, Fla., to Janesville, Wis.
Williams, R. F., from Warm Springs to 508 Grace St., Richmond, Va.
Wilson, E. R., from Sidney to 33 Gill St., Columbus, Ohio.

LETTERS RECEIVED.

American Press Clipping Bureau, Chicago.
Bishop, L. F., New York City; Briggs, W. A., Sacramento, Cal.; Brown, Sanger, Chicago; Bell, C., Indianapolis, Ind.
Cheek, J. M., Highgate, N. C.; Corr, A. C., Carlinville, Ill.
Dinwiddie, R. R., Fayetteville, Ark.; Davis, G. W., San Francisco, Cal.
Ellett, E. C., Memphis, Tenn.; Eastman, J. R., Indianapolis, Ind.; Eshner, A. A., Philadelphia, Pa.
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The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, DECEMBER 17, 1898.

No. 25.

ORIGINAL ARTICLES.

THE DIETARY OF HEART DISEASE.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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CHICAGO.

Nothing is more important in the management of cardiac affections than the regulation of the diet, which should include the determination of the amount as well as the quality of the food ingested. At the very outset we are confronted by certain perplexing problems that arise from circulatory disturbances in the digestive organs and by want of definite knowledge concerning alterations in secretion and absorption brought about through venous stasis. It is still more complicated because of alteration in the metabolic processes incident to changes in the blood-supply of the various organs and tissues. Indeed, the problems confronting us are so complex and have been so inadequately worked out as yet by physiologic chemists that, even were there no time limitations to this paper, I could not hope to do more than consider this subject very superficially.

In the first place, what are the effects of passive congestion on the digestive viscera? From analogy with the effect of stasis on secreting organs, as the kidneys, it is likely that the digestive juices are changed in both amount and quality. Even if the chemistry of these secretions were not altered, the catarrhal swelling of the mucous membrane induced by passive hyperemia would hinder the free flow of the bile and pancreatic juice into the duodenum, which, together with the collection of thick, tenacious mucus in the stomach, would interfere with the proper digestion of the food. Moreover, the congestion, and in advanced cases, the edema of the walls of the hollow viscera, impedes or abolishes their proper peristaltic movements. This renders decomposition of the ingesta unavoidable under the influence of heat, moisture and micro-organisms introduced with the food. The various acids, fatty and otherwise, thus engendered still further irritate the gastroduodenal mucosa, while the gases of decomposition still further distend these viscera. Thus a vicious circle becomes established that augments the evil primarily attributable to disturbed circulation. This is by no means the only aspect of the case; toxins are developed which must either be destroyed in the liver or pass through into the general blood-stream and exert their noxious effect upon the heart and nervous system. We are apt to dwell chiefly on the mechanical disturbances arising in the stomach and intestines, yet the pancreas is an organ that must suffer greatly in function. What modification of its secretion takes place we do not know; yet clinical observation seems to justify the inference that the amylopsin and fat-splitting fer-

ment are more unfavorably influenced than is the proteolytic ferment. Nevertheless, it would be unreasonable to assume that this escapes altogether. Pancreatic digestion is undoubtedly impaired, and consequently the portal vein carries to the liver a mass of toxins together with the products of incomplete or faulty digestion.

This brings us to the most difficult, because the most obscure part of this complicated subject—the effect of passive hyperemia on the liver. This organ differs greatly from other glands, since its functional activity does not depend wholly on its arterial blood-supply, but is determined in large measure by the character of the blood in the portal vein and the activity of its flow. To give an illustration: The constitution of the bile and the rapidity of its secretion depend upon its absorption from the intestine and its return to the liver. If, now, in consequence of stasis in the gastroduodenal and other veins that empty into the portal vein, the bile discharged into the duodenum be returned slowly and inadequately to the liver, the bile thereafter secreted will be watery and deficient in mineral matters. And although the secretion of this fluid is but a minor part of the hepatic function, deterioration in quality and diminution in its quantity exert a baneful effect upon the intestinal contents. Again, if in consequence of defective gastro-intestinal digestion the portal stream be loaded with toxins and the products of such faulty digestion, it is reasonable to assume a resulting derangement in the elaboration of urea and the manufacture of sugar, etc. Very probably also the ability of the liver to cope with toxins will be impaired and numbers of them will pass through into the general system. The anemia so commonly shown by cardiac patients seems to me not unreasonably explicable on the hypothesis that the liver is unable to utilize nucleo-albumins in the manufacture of iron, as well as that the hemoglobin is destroyed by some ferment generated in the intestines. Patients with heart disease are frequently found to suffer with symptoms of Haig's uric-acidemia, and Husche has demonstrated an accumulation of uric acid in the system during loss of compensation, and on the other hand, an increased elimination of it after restoration of compensation. This accumulation of uric acid must depend upon lessened or altered cell activity, as would be naturally expected to result from impaired circulation. Oxidation is defective, partly through reduction of hemoglobin, partly through sluggish capillary circulation, and hence, another factor in the derangement of the metabolic processes. On every side, therefore, we encounter problems of nutrition which we are not able to solve, yet which we must meet in the dietetic management of our cardiac patients. Evidently all we can do is to work along lines conforming with well-established principles.

It is presupposed that the foregoing considerations

do not apply with equal force to all cases of heart disease, inasmuch as the same lesion does not always manifest equal severity of symptoms, any more than do the different lesions. Therefore it is not necessary to enforce rules of diet with equal rigor in all cases. Broadly speaking, therefore, it will suffice to divide all cases into two groups; the one in which compensation is preserved, the other in which it is lost, more or less completely. Although carefulness of diet is advisable, even in the former, to preserve the heart from still further danger, still, considerable latitude may be permitted; but so soon as a loss in the equilibrium of the circulation becomes apparent, dietary restrictions should be enforced. The remainder of this paper is intended to apply particularly to patients whose cardiac weakness necessitates strict medical supervision.

When appetite flags and the patient can not eat heartily at the regular meal hours, it is usual for the physician or friends to think his meals must be reinforced by milk, eggnog and the like, midway between. In some instances nourishment is administered every two or three hours. Such is undoubtedly a mistake. The congested and perhaps edematous walls of the stomach can not by energetic peristalsis empty the chyme into the duodenum as rapidly as normal, and the conditions for decomposition are so favorable that, if additional food be taken before the stomach is ready for it, serious disturbances are sure to result. A feeling of faintness or craving at the epigastrium, often described as an "all-gone feeling," may be mistaken for an indication that food is needed, and as these patients are often tormented with thirst, liquids of all kinds are poured down into the already distended and irritated viscus at irregular intervals. Abdominal distension, eructations, flatulence and increased dyspnea add to the patient's distress. The first rule, therefore, should be to make five and a half or six hours elapse between the taking of solid food; and this should include milk, since by curdling in the stomach it is converted into solid food. So simple a restriction as this will often work wonders in regulating the digestion and removing the thirst and epigastric gnawing. If nourishment between meals is needed, it can be in form of somatose, nutrose and the like, that are not open to the objections urged against solid articles. Nutrient enemata can also be administered during this interval. In my experience, it is beneficial for the invalid to drink a cupful of hot water about an hour before the next meal, as it seems to aid in the expulsion of the chyme. Skillful massage of the stomach from two to four hours after meals is likewise highly serviceable to the same end, besides having been shown by Boardman Reed to augment the amount of hydrochloric acid.

The next step is the restriction of the amount of fluids ingested, particularly with meals. In severe cases patients should not be allowed to drink more than six ounces of fluid, while even in mild ones ten ounces ought to be the maximum limit. This does not mean water in addition to whatever other beverage has been prescribed, but all fluids combined. The purpose of this is to prevent undue distention of the stomach. When edema is imminent or actually present, the total amount of liquid ingested in the twenty-four hours must be reduced to the smallest quantity compatible with the needs of the system. It will generally be found that such a restriction will aid in the removal of dropsy. Milk should be

regarded as liquid, for although its casein is coagulated, it must be remembered that 87 per cent. of the milk is water. Patients should likewise be restricted in the amount of solid food, a good and usually sufficient rule being that they leave the table feeling that they can eat more. A little, well digested, is worth far more than a good deal, poorly digested. This not only lessens the likelihood of distending the atonic organs, which it has been shown, furthers decomposition, but it tends to prevent the still greater cardiac embarrassment occasioned by post-prandial pressure. Such restriction must not be carried to the degree of starving the patient; and yet, if the quality of the nourishment be judiciously selected, it will often surprise one to find how small a bulk will suffice, nay, how it will minister to the patient's comfort.

In considering the various beverages and viands that should constitute the menu for this class of invalids, I think it best to deal with the subject in a general way rather than to attempt to set out the composition of individual meals. Tea and coffee should be weak, the amount of sugar and cream they contain being determined by the degree of digestive disturbance. Cocoa or broma is preferable to chocolate because less rich, and when made with milk is nutritious. If wines or liquor are thought advisable, they should be freely diluted with water. Buttermilk, or malted milk often makes a valuable addition to a meal, and generally agrees well. Effervescent drinks are objectionable on account of the distention they occasion; for this and other reasons I regard malt beverages as injurious. Nevertheless, they may sometimes be allowed when particularly ordered and their bitter taste stimulates a flagging appetite. Iced drinks should not be permitted, neither should fluids be very hot, as a medium temperature is undoubtedly better for a weak stomach. The question of soups and broths must be governed by the state of the kidneys and the habits of the patient. When nephritis exists, stock soups and meat extracts are to be rigorously interdicted. It should never be forgotten that beef-tea and the like are stimulants and possess no real food-value. Cream soups, or purées, as they are called, are not open to the same objection, and are highly nutritious. All these are fluids, however, and when taken in connection with solid articles of diet should be limited in amount, lest they blunt the appetite for what is to follow.

There are two considerations why the carbohydrates must be allowed but sparingly. One is their tendency to undergo fermentation and give rise to flatulent distention of the bowels, and the other, their ready oxidizability, by virtue of which latter quality they appropriate the oxygen required for the utilization of the nitrogenous elements of the dietary. Proteids are indispensable to the maintenance of the heart muscle, and therefore must always constitute a relatively large proportion of the food of cardiac patients. Yet circulatory derangement reduces metabolic activity of the cells; the physiologic leucocytosis becomes excessive, and uric acid and other members of the xanthin group resulting from the splitting up of the nuclein are apt to occasion annoying symptoms which we term "lithemia." Inasmuch as starches and sugars can not be withheld entirely they must be given in as unobjectionable a form as possible. Bread is best taken as toast or zwieback, light crackers, the so-called "shredded biscuits," etc. Entire wheat flour is far preferable to patent flour, since the latter contains little but starch; and if toast and the like grow

monotonous, baking powder muffins or rolls made very light and thoroughly baked may be substituted. Potatoes, both white and sweet, rice, cereals, and the multifarious combinations of flour, butter and sugar whether with or without eggs and milk, known as cake, griddlecakes, etc., are inadmissible. Sweetmeats, including candy and preserved and canned fruits, are likewise to be put under the ban. When fruits are desired or indicated, they are best in their natural state, but even then, must be fully ripe and fresh. Apples are particularly good, because of their relatively large percentage of nucleo-albumin; baked they are often better tolerated than uncooked.

Most of the green vegetables are valuable additions to the dietary, either because rich in proteids and other nutritive principles or on account of their serving as relishes and containing various salts essential to the organism. Peas, lentils, string beans and spinach are said to be relatively rich in iron-forming principles. Tomatoes, cabbage, cauliflower, turnips and kindred varieties are apt to disagree, but if well borne may be permitted. Asparagus, when not contraindicated by renal disease; celery, mushrooms, lettuce, greens of various kinds and young carrots are allowable, while onions, cucumbers, tender radishes and olives may be left to individual desire or idiosyncrasy. Beets are rich in sugar, but otherwise are not generally objectionable. The chief desideratum as regards all such vegetables is their freedom from liability to occasion flatulent distention, as do articles rich in starch and sugar.

Of foods rich in nitrogen, beef and pork head the list, but perhaps are not so easily digested as veal, lamb and mutton, which are excellent when not too fat. All meats should be roasted, broiled or stewed, not fried; but however prepared, they should be as free from gravy as possible and ought to be sufficiently well done to have destroyed the germs of decomposition, through whose action during the time of hanging the meat becomes tender. Fowl and game birds form a capital adjunct to the heavier meats, as also do fish and most kinds of shellfish, particularly oysters, properly cooked. Some of the salted meats and fish, when not too rich, provide appetizing and nutritious dishes. Canned salmon, sausages and the like are too rich in fat, and are apt to cause eructations, whereas fresh tripe is said to be easy of digestion. Cheese is to be forbidden excepting cottage cheese and some light cream cheese, as neuchatel. Eggs are admissible, and when properly cooked are very digestible.

In conclusion, a few words should be said concerning the dietary of two classes of cases: one, in which the cardiac affection is complicated with nephritis; the other, in which it is secondary to arteriosclerosis, with or without angina pectoris. In the former, highly nitrogenous articles are clearly inadmissible; yet carbohydrates promote digestive disturbances. Therefore, a compromise must be made, or milk must constitute the major part of the dietary. When arteriosclerosis is the main difficulty, we are confronted by another problem. We must nourish the overburdened heart, yet must avoid administering foods rich in lime salts, otherwise the sclerosis will be increased. Eggs, cereals and articles rich in phosphates are to be denied, or only permitted sparingly. Moreover, greater than ordinary care to avoid indigestion is imperative, since the products of defective digestion and faulty metabolism will set up vasomotor spasm. The successful management of cardiac disease often

consists in the removal of whatever may serve as a hindrance to the performance of the organ. So simple a matter, therefore, as heightened blood-pressure may make powerfully against the restoration of an unsound heart.

Finally, it may be one thing to lay down a theoretic dietary for patients with heart disease, but it is quite another thing to carry it out in practice. Not only is our knowledge deficient of the physiologic chemistry of pathologic conditions; but we are hampered, even checkmated, by the notions, whims and prejudices of both patients and their friends.

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DISCUSSION.

Dr. BARCOCK—For the purpose of calling forth discussion I should like to direct attention to one or two points. The first is, What would be the value and desirability of nuts in the dietary of heart patients? Through an oversight, not discovered until after the completion of my paper, I omitted to include nuts. These are generally considered difficult of digestion; but I am convinced that this depends much upon individual idiosyncrasy. Nuts are rich in proteids that might well replace animal foods when these latter disagree, and are poor in carbohydrates except fats. Consequently, those kinds that contain the smallest percentage of fat ought to prove suitable for persons with heart disease, if not eaten in excess. The second point is the cause and treatment of the anemia so common in this class of patients. Is the hypothesis tenable that the liver is unable to utilize the nucleo-albumin of the food? Are the usual therapeutic preparations of iron, whether organic or inorganic, likely to prove of benefit? I am free to confess that I have become very skeptical as to the ability of the organism to assimilate iron except as obtained through the food; indeed, I rarely, if ever, prescribe it to my heart patients on this account.

Although as stated I do not administer iron to my cardiac patients with any expectation of its being assimilated as such, yet I feel bound to admit this contradiction, that I sometimes order it for its effect upon the gastro-intestinal tract in the way of stimulating appetite and digestion and thereby improving nutrition and indirectly overcoming the anemia.

As regards Dr. Whittiker's cases treated with iron, it might well be urged that the improvement was due to the rest and improved nutrition. It is conceivable that under such circumstances the heart-muscle might regain sufficient force to carry on the circulation in a more satisfactory manner; when the dropy might at length disappear and the patient even lose all appearance of anemia, so that to my mind it does not furnish conclusive evidence of the improvement in these cases having been wholly due to the iron. The point advanced by the chairman, of the anemia being due largely to defective oxygenation of the blood is a good one, is worthy of careful consideration, and may furnish a valuable hint in the treatment of the anemia.

SUGGESTIONS ON THE DIETETIC TREATMENT OF GOUT.

Presented to the Section on Physiology and Diagnostics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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The great Fothergill and Garrod taught us that uric acid was the causative factor in gout; that it was formed by the metabolism of nitrogenous waste; that it represents a lower degree of oxidation than urea; that uric acid and its salts, being insoluble, are much less easily eliminated, and hence they accumulate in the system; that it is in the liver the splitting up of peptones into glycogen and waste, azotized substance takes place, and its insufficiency causes the diminished oxidation that produces uric acid instead of urea. Haig, in his masterly treatise on uric acid, accepts this theory. This tracing of gout to an excess

of nitrogenous ingesta results in the exclusion of this important group of alimentary principles from this class of patients.

This origin of uric acid, as the exclusive one, can not be maintained today, for we know that much, if not all, of this product comes from the oxidation of the nuclein of the blood corpuscles, and that uric acid is not the sole etiologic factor, but that the uric acid group of leukomains is of great importance. The defects of metabolism which produce the phenomena of gout are neurotic in origin and gout is a neurosis. Not only do we find excessive formation of the uric acid group, but a deficient alkalinity of the blood, and this means diminished solvent power and the precipitation of the compounds in the tissues. With the annihilation of the old theory of the origin of uric acid and the etiology of gout, a review of the principles of diet in the disease has become necessary.

It is true of gout, as of every other disease, that the diet must be made to suit the patient. The old adage, "one man's meat is another's poison," is emphatically true here, so that while the diet of Haig may suit some cases, yet the very opposite, or a diet exclusively of animal food, after the "Salisbury" method, for example, is the best for other cases.

The object of this paper is to insist upon a much more liberal allowance of the albuminoids than the dietaries of Haig, Garrod or Fothergill and their followers permit. The functional activity of the body is largely dependent upon the albuminates, which are necessary to the formation and repair of the tissues and fluids of the body; they regulate the absorption and utilization of oxygen, and contribute to the production of muscular and nervous force and heat, and hence must be of great importance to these patients. Lower the nervous tone and you but add to the danger. The source from which the body can most easily obtain the albuminoid matter is animal food. The amount of this food that should be permitted will usually be less than that used by the normal individual, and yet the extent to which such a reduction can be carried with impunity will depend upon the digestive peculiarities of the individual. The man of sedentary habits requires less than the man leading an active life. An exclusively vegetable diet should be advised only in the exceptional cases.

The consumption of food of all kinds should be minimized. Ben. Franklin's rule of always rising from the table with an appetite is the rule for the gouty. They should consume only enough to nourish the body and maintain its functional activity. Unfortunately for many of them, they pass into middle life with the vigorous appetite of early life and, unrestrained, lay the foundation for obesity, always a calamity for these unfortunates. Sugar, starchy and fatty foods, should be taken in moderation, because they interfere with complete metabolism of the albuminates. This is especially true of sugar; it is as detrimental to the gouty as it is to the diabetic, and for it saccharin can well be substituted, because it not only satisfies the craving for sweets, but also acts as an antiseptic and diuretic, thereby diminishing the danger of auto-intoxication and promoting elimination. The starchy foods, readily converted in the body into sugar, are as objectionable as sugar, and giving rise, as they so frequently do, to defective intestinal indigestion and resulting auto-intoxication, will lay the foundation for acute seizures. Fatty foods are of benefit to some because they satisfy the appe-

tite, and thereby diminish the total quantity of food eaten, but, as is well known, we must remember that under the influence of fat, tissue waste is diminished and less oxygen is taken into the system. This capacity to diminish albuminous metabolism may be very well for the lean, who can digest them, but bad for those who are inclined to corpulency. Eggs should be taken in moderation; there are some in whom they will produce, in small quantities, toxic symptoms. The large amount of fat they contain places them in the above category. Cheese is to be avoided, as the most concentrated of the albuminates, and because of the lactic and fatty acids it contains. Tomatoes, asparagus, rhubarb and strawberries, tending to produce an excess of oxalates, are to be avoided. In short, the great principles to be considered are: 1, abstemiousness in all things; 2, non-restriction of the animal albuminates which are so essential to the nutrition of the body and so comparatively easy of digestion; 3, withdrawing from the dietary the saccharine, starchy and fatty foods that check metabolism and diminish oxidation.

Among beverages we must always remember milk first; it is a very desirable food. The water used should be as free as possible from mineral matter; distilled water being the ideal. There is advantage in taking it hot a half-hour before meals and at bedtime.

The question of the use of alcoholic beverages is important and often difficult to decide. There are many gouty persons who should become total abstainers, and there are others who will be greatly benefited by the moderate use of alcohols. Beer, porter, stout, the sweet and sherry wines, such as champagnes, ports, sherries, Madeira and Burgundy, should be avoided. Moselle, light hock, the light Hungarian wines and claret, especially diluted with an alkaline table water, are permissible. For many whisky, brandy, Scotch whisky, or a gin, well diluted with an alkaline water, is the best form of alcohol.

PHYSIOLOGIC PRINCIPLES UNDERLYING INFANT DIETARY.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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No subject in general medicine has been more prolific of literature in the past and less fruitful of practical results in the present than the question of infant food and infant-feeding. Infancy is still a prey to gastro-intestinal disease. Thirty-five per cent. of the children born, die within the first three years of life of disorders of the alimentary tract or their sequelæ. No satisfactory explanation of this mortality has ever been given, saving that of prevalent dietetic error. No theory accounts for this condition other than this: that out of the great mass of varied experience, the medical profession has evolved no scientific system of infant dietary, has been guided by no sound physiologic principles in the selection, preparation and feeding of infant food.

After an endeavor, maintained for fifteen years, to meet this default and to remove this reproach from the practice of medicine, the writer ventures to present to this body certain foundational facts to which his daily practice has been adjusted and which an

almost unbroken success in infant-feeding and a nearly complete abolition of infant mortality from gastro-intestinal disease have sustained. The hope that one has succeeded in the solution of a problem, which others have so repeatedly failed to solve, would be rash indeed if it were not supported by the test of persistent trial. These facts will be presented in a brief outline form which will afford convenient openings for criticism.

The nursing mother and the individual nursing infant are normal elements in a physiologic equation. Under health conditions these elements are closely correlated. This correlation begins, not with parturition, but with impregnation. The metabolic changes leading up to lactation are initiated with the beginning of pregnancy. The nutritive events which occur in utero are associated with, are directive of, the metabolic events going on in the mammary gland. Evidence of this is seen in the fact that the premature termination of gestation determines an immature climax of functional activity in the breast. In the rabbit and in the cat, the writer has frequently noted the occurrence of structural changes in the gland and the rapid development of an abortive secretion of milk as the results of an induced abortion in the early stages of pregnancy. Clinical observations upon the human confirm this physiologic analogy.

It follows that errors or disorders of pregnancy are frequent causes of failure in the metabolism of the breast, are points of departure from which proceeds a future lack of correspondence between maternal supply and infantile demand. In the normal mother, after parturition, the output of the gland, both in the matter of quantity and in the matter of quality, corresponds with and varies to meet the needs of the infant. Human milk is not of stable composition, a fact which accounts for the uncertainties of analysis.

It must be insisted that this physiologic equation is, in each case, a personal one. In the same mother, with successive children, the largest variations in the quantity and in the quality of the milk-supply are to be observed and this under equally good conditions of maternal health. The quantity of the output corresponds closely with the capacity of the infant's stomach; its quality with the nutritive needs of the child. At successive stages in the entire lactation period, quantity and quality thus keep step, up to a physiologic limit, with the metabolic history of the infant.

Following in the footsteps of Frolovski, the writer has studied and recorded series of cases with reference to this correspondence. Difficult as it is to estimate the capacity of the stomach, postmortem, there is, nevertheless, a close correspondence between the results of measurements of the dead organ in infants, of certain ages, and the estimations, by graduated feeding, and by easily induced emesis immediately after feeding, of stomach capacities in the living child at similar periods of infancy. An equally striking relationship has been observed between these capacities of the infant stomach, so determined, and the measured yield to the suction-pump of the active loaded mammary glands at similar periods. Marked as are these variances in quantity, no less so are the changes in quality, in the proportions of proteids, fats and carbohydrates observed in the human milk at successive stages of lactation.

The responsiveness of the mammary gland to intra-uterine stimuli before parturition and to the infantile demands after birth is not difficult to understand

when the highly developed, typical quality of its metabolism, second only to that of the germinal epithelia, is considered. Its similarly sensitive response to influences disturbant of its metabolism is characteristic and accounts for the frequent failure of lactation. Into the many causes of this metabolic failure it is unnecessary to go. Suffice it to recognize the fact and to see in this disturbed physiologic equation the necessity for the study of a scientific substitution of the normal infant food. The artificial feeding of infancy is a most delicate problem, into the solution of which enters the appreciation of those conditions of quantity and quality in the normal supply upon which emphasis has been put. But that is not all. It turns equally upon an understanding of the conditions of the physiologic demand, upon a better knowledge than has yet been attained of the digestive processes of infancy. They are not those of adult life. They contribute, not merely to the maintenance of the balance between waste and repair; they minister to a constructive metabolism which altogether overshadows destructive tissue-change. Observation alike of the feeder and the food has brought out, quite clearly, some features of infantile digestion.

In the carbohydrate field, nature fortunately provides a fully elaborated supply, for the amylolytic ferment of the saliva is inactive while that of the pancreatic juice is absent in early infancy. Consequently, the non-digestion of starch, the readier digestion of dextrans, the non-inversion and the easy fermentation of cane-sugar, the non-fermentation and the ready absorption and inversion of lactose, are the characteristics of carbohydrate digestion.

In the proteid field, the ready digestion of the lactalbumin and caseinogen of the human milk is to be noted. This is secured by the joint action of the pepto-hydrochloric acid of the gastric-juice and of the trypto-carbonate of soda in the pancreatic juice.

To Professor Chittenden of Yale University, physiology is indebted for the use of the first term, descriptive of the loose chemic combination which exists between the pepsin and the hydrochloric acid. The writer has ventured to suggest the use of the latter term as equally suggestive of the necessary association existing between the trypsin and the sodium carbonate of the pancreatic juice.

The statements of recent writers on infant hygiene that hydrochloric acid does not exist in the normal stomach of very early infancy, can be very simply disproved. It does not exist in free form, and even in the normal gastric juice of adult life is this true. It is existent, nevertheless, as Professor Chittenden has suggested, in association with pepsin. In that relation it will not respond to the usual color tests for free hydrochloric acid. When, however, by the application of heat to 65 degrees C. the pepsin is destroyed, the hydrochloric acid is dissociated from it and can then be detected by these usual tests. In a series of observations upon the gastric juice, taken from seven healthy infants during the first week of life, the writer has clearly determined the effective presence of hydrochloric acid by this method. The agents of proteid digestion exist, then, alike in the stomach and in the small bowel of the infant, even before birth.

The digestion of the proteids of cow's milk by the human infant is a very different matter. Lactalbumin and caseinogen in human milk are one thing; in bovine milk they are another. Proteids of very simi-

lar character, which go under the same names, but are existent in the several tissues and body-fluids, often demand differentiation. Creité, Lehman, Weiss and others have shown that the serum-albumin of one animal is foreign to and toxic in the blood of another and that its introduction is commonly followed by albuminuria. In view of these facts, it is easy to understand that the proteids of the milk of one species may undergo doubtful digestion in the infantile food-tract of another.

In the field of fatty foods, nature again provides an elaborated supply. The fat-splitting process is difficult in infancy and, consequently, the finer the emulsion of the fat in the milk, the more readily is its absorption effected. And in this quality milk varies. Much of the details of infant digestion remain to be determined. Some suggestions, offered by experiment upon the young of the lower animals, await confirmation. Nevertheless, these physiologic problems of infant digestion and maternal supply have been sufficiently worked out to afford the basis for a scientific substitution of human milk by artificial food in that great multitude of cases which demand a foreign supply. Into its consideration enter three primary factors.

1. Substitution must be effective in respect to *quality*. Food analysis has reached a point of accuracy which justifies the demand that food selection and food preparation for infant uses shall be essentially scientific. The market, full of manufactured infant foods, exploited in the secular and medical press as perfect substitutes for human milk and employed, upon hearsay, one after another, in the feeding of the mal-nourished babe, without so much as a personal inquiry upon the part of the prescriber into their nutritive qualities or mechanical conditions, is a scandal to the medical profession. The adulteration of infant foods with these products and the crude methods of modifying animal milk, without reference to the age and digestive powers of the infant-consumer, are curious persistencies of practice quite out of date with the general scientific progress of medicine. Substitution in respect to quality may be effected (a) by the modification of animal milk, (b) by its pre-digestion, or (c) by the use of manufactured foods. A comparison of these methods in detail is unnecessary. It is enough to express the belief that with the attainment of the scientific imitation of the human supply, for all periods of early infancy, by means of modified and pure animal milk, through such agencies as the Walker-Gordon laboratories, which sooner or later our towns and cities must support, will come the survival of our need either for manufactured foods or for the agents of pre-digestion. Only by laboratory methods can scientific modification and absolute purity be attained.

2. Substitution must be effective in respect to *quantity*. A working standard of quantities may be secured by the study of average infantile stomach capacities, at successive ages, compared with the average breast yield at such periods. The following table is illustrative, is accurate enough for guidance, and indicates that the average infant receives a large excess of artificial food.

PERIOD.	QUANTITY.
One week	70 c.c.
One month	95 "
Two months	140 "
Three months	170 "
Five months	215 "
Seven months	265 "
Nine months	300 "

While these average quantities are far less than most bottle-fed babies ingest, the writer can not endorse the contention of Dr. Rotch and others that over-feeding, in the matter of quantity, is a common cause of dilatation of the stomach. It may be doubted, indeed, if gastric dilatation is ever due to over-distension. It is rather the result of a loss of that muscular tone, of that obscure quality of tonic contraction which is the incident of the rest-period in the functional history of the stomach. This loss usually results from disordered chemic conditions within the viscus, due to the indigestion and retention of food. It has been induced, alike in men and in animals, by the repeated introduction of chemic irritants.

Fortunately, the infant stomach, both by its powers of rapid absorption and of ready emesis, resists over-distension. Moreover, distension is the natural precursor of peristalsis. It must be carried to a great excess before contraction fails of response. Excess of food quantity is a sufficiently certain cause of indigestion and of consequent malnutrition, without laying at its door problematic ills.

3. A third and most important factor in scientific food substitution is the element of *time*. Excessive feeding is the head and front of our offending against infancy, but excess is most customary in the practice of the people and of the profession at large, is most habitual in individual cases and is most destructive of infant life in the form of over-frequency of feeding. In its prevalence and in its dangers this practice is so pernicious that, beside it, excess in the mere matter of food quantity is of insignificant proportions. The period as well as the process of digestion is involved in this consideration. Error has grown out of the misconception that the term of digestion is to be measured by the length of time during which food remains in the stomach. In the infant it is peculiarly true that the gastric changes are but preliminary to intestinal digestion. The entire event, including the process of absorption, should be estimated and the physiologic rule of alternating periods of activity and repose in the digestive tract should be respected.

Human milk probably undergoes complete digestion in three hours. The best imitations of it require a longer time. The absorption of the products of digestion is not completed within this period. In infancy, meal too often follows meal with so great rapidity that functional rest is altogether abolished. Indigestion ensues. Malnutrition or hyper-nutrition, which is practically the same thing, follows. A soil is cultivated in the food passages which affords good seeding-ground for pathogenic bacteria. The gastro-intestinal diseases of infancy, with their remarkable mortality, result.

In the past fifteen years clinical observation and physiologic study of this question have combined to mold, for the writer, a practice in this regard which has afforded overwhelming evidence that not even secondary in importance to the choice of infant food and of far greater consequence than the regulation of quantity, is the establishment of definite and, judged by common custom, of extremely infrequent hours of infant feeding. In nearly four hundred infants, fed upon human milk or upon carefully selected and modified artificial food, allotted to them in quantities corresponding to the physiologic standard given, and fed to them from *three to five times in the twenty-four hours*, according to the character of the food ingested, he has witnessed an attainment of weight and height, at successive

ages, far in excess of the average; he has seen the disappearance of serious gastro-intestinal disease and has recorded a mortality of but .75 per cent.

To the application of physiologic principles of infant dietary, rather than to the therapeutics of infancy, the profession must look for a diminution of infant disease and a conquest over infant death.

DISCUSSION.

Dr. C. B. VAN ZANT, Denver, Colo.—If the Doctor will permit I would like to add a fourth factor to the three he has so strongly presented—the matter of locality. With the quantity and quality of food and the intervals of feeding exactly the same, it is a notable fact that in different places the results of infantile feeding will be very different. It is one thing to raise a child artificially in the country and another in the city. Like-wise differences will be apparent in different cities, much depending on external conditions. For a number of years I practiced in a crowded Eastern city; later on, in Denver. I am quite confident, as a result of observation, that infantile feeding is a much simpler problem in Colorado than in certain other sections and that gastro-intestinal disorders in infants, bottle fed, are much less prevalent and much less fatal here than in the East. I am not able to explain this satisfactorily, but venture the following points as probably important: (a) an unusually good and pure milk-supply in Colorado; (b) the common, out-door life and (c) the greater freedom from micro-organisms productive of fermentative changes in foods.

ABSORPTION VS. DIGESTION OF MILK.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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No words or argument are necessary to show the advantage of milk as a nutriment. Millions of human beings, from the cradle to the grave, have proved its life-giving powers, and untold millions will continue to use it, wholly ignorant of any physiologic facts concerning its mode of influencing nutrition, and guided only by instinct, which in animals is unerring, but which in man is often perverted by the elements of civilization.

Milk is food. Alone and unassisted it is capable not only of sustaining life for an indefinite period, but it furnishes all the elements for the complete construction of the human frame; on it alone the infant learns to talk and walk, and develops all the tissues of the system. Adults have lived on it alone for weeks or months, and by it convalescents from grave sicknesses have recovered vitality and strength. Milk is a complex and delicate substance. While composed very largely of water—87 per cent. in an average good specimen—the remaining 13 per cent. contains a variety of substances wonderfully united, chemically and mechanically, in a manner suitable for absorption and appropriation by the economy. It is not the purpose of this paper to discuss the value of milk as a nutriment, nor to study its composition or chemistry, but only to present fully a practical theory in regard to the physiology of its *absorption*, under proper circumstances, as opposed to the commonly received notion that it must undergo *digestion* before it is assimilated in the system; and to this we will immediately proceed.

Some years ago a number of observers reported the intravenous injection of milk. It is not necessary here to recount the experiments and experiences, suffice to say that reliable men have succeeded in introducing pure milk directly into the veins of patients,

where it has mingled with the blood, going first to the lungs, without any thought of digestion, such as takes place in the alimentary canal. These patients lived and thrived under the process.

This intravenous injection and assimilation of milk-food first called the writer's attention to the fact that milk could be thus appropriated by the system without digestion, and led to the study and development of the theory to be propounded, and which he has put in practical application for ten or fifteen years, in hundreds and perhaps thousands of cases, and which daily experience confirms in a most substantial manner. I may say that the theory has been partially presented from time to time before medical societies and to friends, and also casually mentioned in writing; and while objections have been raised, these have generally been satisfactorily met and the plan proposed has been adopted successfully by very many, who, I am sure, would gladly bear witness if they were present. I may mention that the late Drs Marion Sims and Frank Hamilton accepted the theory and acted on it during the later years of their lives, and that the late physiologist, Dr. John C. Dalton, entirely acquiesced in its correctness, and Dr. Wesley Mills, professor of physiology at McGill University, Montreal, lately acknowledged the truth of the proposition,

Recognizing that milk could enter the system without passing through stomach digestion, I began to consider under what physiologic conditions this could be effected other than by intravenous injection. An analogy to the absorption of milk was found in the chyle and its discharge into the venous blood in the subclavian vein and vena cava on its way to the pulmonary circulation. When examined microscopically the chyle is hardly to be distinguished from rich milk, and it was argued that the milk globules could pass unchanged by the same channels through which the elements of the chyle were absorbed from the stomach and intestines; the problem was to present the milk in such a manner to the absorbents that it could be taken up immediately without having it undergo the process of coagulation, caseation and subsequent gastric digestion. Remembering that the blood was alkaline, the chyle alkaline, and normal milk also alkaline, it was suggested that if the milk could be presented to the absorbents in an alkaline state, and at a proper temperature, absorption might take place immediately without the intermediate process of digestion.

The activity of the stomach is such, as shown by the well-known experiments of Alexis St. Martin and others, that with the least excitation gastric juice is immediately poured out, which would, of course, at once coagulate some portion of the milk, and from this it would continue until all the milk was attacked, coagulated and digested. The problem was, therefore, to introduce the milk in such a manner that there should be no stomach activity and no secretion of gastric juice. Plainly then, it must be given quite apart from all solid food, or any substance or condition which could excite gastric juice. Even the least amount of acidity from a preceding meal would coagulate some of the milk and so start on the whole process of caseation and digestion.

Physiologically it is well recognized that the stomach in health does not ordinarily secrete gastric juice except under the stimulus of food. At a varying period after the taking of food, the time being dependent upon the amount and quality of the food taken and the powers of digestion, the stomach has finished its task,

absorption of certain elements has taken place, some portions have been passed on to the intestine, for further action, and the stomach is found to be empty, awaiting further cause for activity. At this period the stomach loses its turgid red color, becomes paler and more or less flaccid, and its surface is bathed with more or less of an alkaline secretion, this constituting the alkaline tide. As stated, this occurs at varying periods of time after the ingestion of food; it may occur in an hour or so after a very small amount of very digestible food, or not for four, five, or even many more hours after a very heavy or unusually indigestible meal, or with very weak or sluggish digestion. This should constantly be borne in mind in connection with the plan of treatment to be proposed, otherwise failure is sure to result. It is only when this alkaline tide is perfectly secured and utilized that the real beneficial results of this plan can be secured.

The idea, then, is to introduce the milk, pure and alone, and at the body temperature, just after this alkaline tide has set in, or during its continuance, and to avoid food or any substance which could call forth gastric secretion until after its absorption has been fully accomplished. It is believed, then, that the warm alkaline milk is absorbed directly by the lacteals and carried at once by the thoracic duct into the subclavian vein, and so reaches the blood and is acted upon in the lungs before it is submitted to liver action.

In contrast to this stands the physiologic process which takes place when the milk is taken with other food and submitted to ordinary gastric and intestinal digestion. Here after being acted upon by the gastric and intestinal juices its casein passes through the state of proteose into peptone and thence through the portal circulation into the liver, to be transformed into urea.

It is difficult to present absolute physiologic proof of the mode of *absorption* of milk here claimed, as opposed to its *digestion*, under the circumstances detailed, but strongly corroborative evidence is furnished in some experiments made by Dr. Andrew H. Smith of New York, who has kindly consented to my mentioning them. Some years ago, while experimenting on kittens to determine certain facts in regard to blood pressure, he accidentally wounded the jugular vein. To his surprise, the blood from it appeared of a lighter color than expected, and in marked contrast to that obtained from the saphenous vein. Taking another kitten from the mother's breasts he opened the jugular vein and found the same condition, and, I believe, he did the same with a third nursing kitten. He says that he could never explain the phenomenon until I propounded to him the theory of milk absorption, in full, which he at once accepted and regarded as an explanation of the condition found in the kittens; the milk being absorbed at once by the lacteals was poured by the thoracic duct into the subclavian vein and found ready exit on the opening of the jugular. I remarked to him that he had supplied the one missing link in support of my theory. It would be interesting to test the condition of the stomach, after taking milk on this plan, by means of the stomach-tube, but possibly this procedure might of itself excite gastric activity, which would confuse matters and vitiate the value of the experiment.

It would lead us too far from the practical object of this paper to attempt to enter at all fully into the

physiology of digestion and assimilation or to elaborate any of the physiologic chemistry of the subject. Suffice to say that this difference in the course which milk can take under varying circumstances becomes clearly evident, clinically and practically, with close and sufficient observation. Proof could be furnished by hundreds of cases in which the present writer has carefully directed this plan of taking milk and has observed and recorded the facts. Constantly those who have been quite unable to use milk in the ordinary way, have followed the plan proposed, with the most satisfactory results. In the writer's own person, milk taken in the ordinary manner and with food invariably disagrees, causing sick headache and functional liver disturbances, whereas, following the plan proposed, he has taken a quart of milk daily for ten and more years with the greatest benefit.

A few words may be added in regard to the practical features of the subject. It has constantly happened to the writer that patients have returned, after full directions had been given, as was believed, with the statement that the plan was not successful, and that it was impossible for them to take milk, as had always been the case. In some instances undoubtedly there may be such an aversion to milk, or such an idiosyncrasy in the patient, that even this plan does not succeed. But almost invariably it has been found that the want of success was due to some failure in carrying out the plan proposed; for it must be clearly understood and most strongly and forcibly declared that unless the theory is perfectly acted upon and the plan absolutely carried out as to all its details, the results claimed can not be expected. But after an experience with it of ten or fifteen years, and with the most varied and often difficult class of patients, and with many temporary failures, I again assert that when perfectly carried out results can be obtained which are of the greatest and most lasting benefit; there is hardly a single fact in medicine or feature in therapeutics of which I am more confident. It is sometimes difficult, however, to succeed at first in getting patients to carry out the plan exactly, for it must be remembered that the smallest possible amount of gastric juice or acidity will cause some portion of the milk to be coagulated; and when this digestive process is once begun, even in the slightest degree, it must go on until all the milk has been attacked and digested.

In many instances I have found that patients had taken with the milk a small amount of food, as a cracker, following the advice of a former physician or that of friends. Again, some will put an egg in the milk, or add whisky or brandy, and in many ways I have had the correct operation of the plan interfered with. It repeatedly happens that the milk is taken too soon after a meal, or perhaps even when a long enough interval of time has elapsed, it has happened that owing to a sluggish digestion, it has come upon the products of a former meal, and not during the alkaline tide. Thus, patients will often take milk at half-past ten or eleven in the morning or at three or four in the afternoon, because at that time they had felt a faint and "gone feeling" and mistook the uncomfortable sensation of delayed digestion for hunger. It will, therefore, often be very difficult to be sure that the stomach has reached the alkaline condition, when only the milk can be taken with advantage. My rule is not to have it taken longer than an hour before the coming meal, but under proper conditions it may often be taken

even up to thirty minutes before eating, although this is rare.

Sometimes, if the digestion is sluggish, it is necessary to administer pepsin or other digestives very freely and repeatedly, to secure an empty stomach early enough; and at times when there is any doubt, I have taken one or more doses of bicarbonate of soda half an hour or so before taking the milk. It is also often advantageous to put a little bicarbonate of soda into the milk, if there is any question as to its perfect alkalinity or as to the alkaline state of the stomach. But these measures will not be successful if there is food or any remains of an acid digestion.

The temperature of the milk is also an element of importance. If taken iced cold the perfect action of the plan is frequently interfered with; the effort to warm the milk in the stomach, which is necessary before absorption, will often seem to give occasion for an attempt at stomach digestion, and a sensation of pressure and discomfort will follow, which is far different from the agreeable sensations accompanying its proper use. My directions, therefore, are that the milk shall be made of the body temperature, by heating it carefully in hot water, if possible; if boiled so as to produce the slightest scum on the surface, and this is taken, it acts prejudicially by exciting gastric action, and the aim of the process is defeated. It is often desirable to warm the milk by the addition of hot water, as absorption is even more readily affected thus than when the milk is too rich and thick.

I have also often seen harm done when cream had risen, and had been stirred into the milk, forming flakes; these small solid particles being incapable of immediate absorption may result in causing the secretion of gastric or pancreatic fluid in the process of digestion.

Many of these points—and more could be mentioned—may seem trivial and unnecessary, but long experience in following the plan proposed under the most diverse circumstances has convinced me that in this, as in so many other medical matters, attention to details is of the utmost importance; and, as reiterated here more than once, it is essential that the plan be perfectly followed in every detail, in order to obtain perfect success.

When prescribing milk according to the plan proposed, pure, warm and alone, one hour before meals, patients often object that it would destroy what appetite they have. But it is an interesting fact, based on physiologic reasons, that when thus taken successfully it not only does not impair the appetite, but greatly increases it. If a particle of food, as a cracker, is taken with it, or if for some reason or fault it does not act exactly rightly, then the appetite is impaired; naturally so, because there is a process of digestion which takes a longer time than the hour, or rather half hour required for its absorption, and the stomach can not be ready for fresh food again so soon.

The physiologic basis for the improvement of the appetite is simple. The process of secretion from the glands of the stomach and elsewhere, depends largely upon osmosis and blood pressure. By the quick absorption of milk the pressure of the blood in the capillaries is increased, and a richer blood is offered for the secretion of the gastric juice. This improvement in the appetite under this plan of treatment has been observed by myself and others in dozens of instances.

A common time of administering milk with me,

especially in poorly nourished females, is in the morning, one hour before breakfast, the directions being that the patient shall lie still for a quarter of an hour thereafter; it is often found then that instead of rising fatigued, with no appetite for breakfast, the patient gains in strength and enters on the day with a vigor quite unknown before. I also very commonly have weak females lie down in a darkened room for a half-hour nap after taking the milk at 12 and 5 o'clock. I could give many, many instances where the transformation of the patient by this simple procedure has been really marvelous. The soporific qualities of warm milk at bedtime or in the night are sometimes remarkable.

I trust I may be pardoned for my seeming enthusiasm in regard to the plan proposed, for it is presented after mature thought and very extensive experience, dating back many years; and I only wish to make this theory and plan so clear and plain that many may be led to adopt it in daily practice, feeling sure that if properly understood and faithfully carried out their experience will be the same as mine and that of many other physicians who have accepted and worked upon it.

4 East Thirty-seventh Street.

DISCUSSION.

Dr. ROBERT H. BARCOCK, Chicago—I desire to add my testimonial to the efficacy of milk taken in accordance with Dr. Bulkley's method. Since having learned of this way of drinking milk two years ago, I have so prescribed it to many patients, and with but one exception, I think, they have experienced no difficulty in its assimilation. On the contrary, it has been well borne, and, what was almost incredible to me at first, it has been found not to interfere with appetite for, and digestion of, the following meal. I am at a loss to explain why milk taken in this manner should agree better and apparently be absorbed or assimilated differently from when drunk at meal-time, but I am convinced that some difference does exist. So firmly rooted are the teachings of physiology in my mind that I am not able to accept Dr. Bulkley's explanation of its absorption directly, as unaltered milk. It may be that being bland and warm the milk is allowed by the empty stomach to pass through into the duodenum; but how it can escape the action of the milk-curdling ferment of the pancreatic secretion, I can not understand. Of course, the cream, or fat of the milk can be taken up by the lacteals at once, since it is already in a state of fine emulsion, while the water and the salts in solution might be quickly and directly absorbed; but I confess I can not understand, as yet, what is done with the casein if it is not subjected to digestion in the small intestine. However, my failure to understand the mechanism of its digestion, or absorption without digestion, offers no barrier to my acceptance of its clinical value when taken in the manner devised by the distinguished author of the paper.

Dr. H. W. SCAFFE, Chicago—My objection to Dr. Bulkley's theory is this: He asks us to believe milk is absorbed by the lacteals as water would be by a sponge, and is conveyed to the veins unchanged. His theory is entirely groundless; his idea of assimilation old-fashioned. The walls of the intestines do not act like inanimate membrane. "The act of seizing food," says Binet, "belongs to living tissue. It is not a chemic nor a physico chemic, but a physiologic phenomena." So it is entirely inadmissible, that by his method of administration or any other method, milk can pass through the living tissue without change. His clinical facts are good, his theory to explain which is entirely false, and if he injects milk into the veins of any animal, he will not feed it, but kill it.

Dr. C. B. VAN ZANT, Denver—Dr. Bulkley's paper, based as it is, upon such a large amount of clinical experience, the value of the method which Dr. Bulkley advocates, can not be gainsaid. With his theoretic explanation, however, of the physiology of this process we must heartily disagree. It is contrary to all the present teachings of physiology to suppose that milk can gain access to the blood-current unchanged and without previous coagulation and digestion. In the first place, we can not believe that milk in any form, or temperature, or in any manner of administration will fail to evoke an outpouring of gastric juice. The experiments of Beaumont showed that it invariably follows the ingestion of fluids, and even the gentlest

titillation of the gastric mucous membrane led to its discharge. If this be true, coagulation of the milk in the stomach is certain, no matter when or how the milk be given. If, however, we grant the possibility of the milk running the gauntlet of gastric juice coagulation and a partial digestion, what assurance have we that it would fail to excite the pancreatic secretion, by which it would inevitably be coagulated and digested? It seems to me totally untenable to suppose that the milk can enter the absorbents directly and without change. While I gladly admit that the method of milk administration which Dr. Bulkeley advocates seems to have the weight of clinical experience back of it and to be valuable, the theory as to its action seems to me out of accord with the present accepted beliefs of the best physiologists.

Dr. BULKLEY, in closing, said he was glad of the criticisms which had been made, as he believed that only by frank and full discussion could truth be brought out. He had purposely presented the paper before the Section on Physiology because he wanted the theory proposed to be scientifically considered and criticised, and he should endeavor to benefit by the remarks made, and should study the subject still further.

But he would say that in spite of the objections that had been raised he should still adhere to theory as proposed until a better working hypothesis was obtained. Because, however the ultimate course of the milk may be considered physiologically, there was somehow a vast difference, greater than he could express by words, between the behaviour of milk when taken in the ordinary way carelessly, or with food, and when administered absolutely according to the principles and methods laid down. This clinical difference, which he had observed for many years—from ten to twenty—and in hundreds of instances, must have some scientific reason back of it; and, for his part, he would prefer to accept the accumulated evidence of years as demonstrating some physiologic difference than accept the statements or arguments that had been brought forward to show that the theory was untenable. Possibly the physiology was wrong—for this is a somewhat changing science—and we can not explain just how milk or indeed other aliments act under perfectly normal conditions, for it is to be remembered that experiments, on which physiology is based, always introduce an abnormal element themselves. He should, therefore, adhere to his theory as an excellent working basis, because it furnished the means of aiding in carrying out intelligently the system or plan described, which with him and others had yielded such exceptionally beneficial results.

WHAT IS THE FOOD VALUE OF ALCOHOL?

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY E. STUVER, M.Sc., M.D., Ph.D.

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RAWLINS, WYO.

Food is described by the Standard Dictionary as: "That which is eaten or drunk, for nourishment, aliment; nutriment in the scientific sense; any substance that being taken into the body of animal or plant, serves through organic action to build up normal structure or supply the waste of tissue, nutriment; aliment as distinguished from condiment;" and Webster gives substantially the same definition.

While these definitions give what I desire to designate as the positive side of the question, there is also a negative side which should be considered in arriving at a true estimate of the food value of any substance ingested by man or animals for the purpose of nutrition. By this negative side I mean that the food substance, while containing the elements necessary for tissue-building or heat-production, should not interfere with the normal organic processes of digestion, assimilation or excretion. Nor should it interfere with the normal oxygen-carrying power of the red-blood corpuscles or impair the healthy activity of the enveloping membrane which surrounds all the tissues and cells of the body, and on whose unimpaired dialyzing power the *endosmosis* of nutrient

material and the *exosmosis* of broken-down, retrograde products or toxins depend. As you are all well aware, recent investigations have demonstrated the immense importance of auto-intoxication and the very serious consequences that may result from retained toxins or waste materials. On this subject Dr. Thomas Oliver speaks as follows: "Bouchard¹ clearly indicates to us that man is constantly standing, as it were, on the brink of a precipice; he is continually on the threshold of disease. Every moment of his life he runs the risk of being overpowered by poisons generated within his system. Self-poisoning is only prevented by the activity of the excretory organs, chiefly the kidneys, and by the watchfulness of the liver, which acts the part of a sentinel to the materials brought to it by the portal vein from the alimentary canal.

In view of these facts free elimination assumes a very important place and must receive careful consideration in arriving at conclusions concerning the relative value of nutrient materials. We should inquire, not only as to the tissue-forming or heat-producing power of any particular food substance, but also ascertain how it affects digestion, assimilation and excretion, and then we will be in a position to arrive at a true estimate of its value to the system. On this basis, let us now try to ascertain the food value of alcohol. I shall confine what I have to say to ethylic alcohol (C₂H₅HO), the kind in common use.

Ever since the earliest historic times until within recent years, it has been believed that alcohol is a true tonic; that it stimulates mental activity, increases muscular force and the powers of endurance; that it enables man better to endure the rigors of extreme cold and the fervor of intense heat than he could without it; that it protects him against the invasions of disease and helps him to counteract their effects and throw them off when contracted—in short, that it elevates his thoughts, increases his powers, blunts his pains and sorrows and enhances his joys. Even twelve or fifteen years ago it was believed by many eminent authorities that pure alcohol possesses a positive food value. T. Cranstoun Charles² says: "As to the rôle played by alcohol in the economy there is still some difference of opinion, but the weight of evidence is in favor of the theory that it acts more or less as an aliment. When ingested in excess much of it traverses the system unburnt and is then found in the urine, sweat and expired air (Lallemand, Perrin, etc.); but when taken in a moderate dose the amount eliminated by the urine forms but a small proportion of that absorbed (Dupré); some even maintain that the quantity thus excreted does not amount to more than 0.7 per cent. (Thresh). The chief portion of the alcohol in the latter case, therefore, undergoes consumption in the body (Anstie, Thudicum, Schulimus, Baudet, etc.). We shall see elsewhere that a little alcohol is generated in the organism itself (Bechamp). Alcohol does not appear to increase the production of heat as a chemic agent (E. Smith), rather, in large amount, lowering temperature by checking some of the oxidation occurring in the body, particularly when abnormal, as in fevers. It also, when given in a state of health, tends to diminish muscular power, but indirectly the effect may be to increase it by improving the tone of the system

¹ Bouchard; Preface to "Auto-Intoxication in Disease," page 8.
² Elements of Physiologic and Pathologic Chemistry, 1884.

through the appetite and digestion of food. While the carbonic acid exhaled is slightly diminished when wines and beer are taken in moderate quantity, the secretion of gastric and pancreatic juices is favored, and there is a gentle excitation of the nerve centers, and at the same time an undoubted addition made in the form of salts, fats, glycerin and albuminoids—beer being not only stimulating and tonic, but also nutritious. Indeed, of the alcoholic drinks beers occupy the first place as foods; then come cider and perry, then wines, and as they sustain and increase vital action, they must be regarded as true foods (E. Smith). According to Voit, also, alcohol must be regarded as a food, as under its influence fewer substances are decomposed in the body."

"Considered dietetically," says Pereira,³ "beer possesses a threefold property: it quenches thirst, it stimulates, cheers, and if taken in sufficient quantity, intoxicates; and lastly, it nourishes and strengthens. The power of quenching thirst depends on the aqueous ingredient which it contains, assisted somewhat by its acidulous constituents (carbonic and acetic acids), its stimulating, cheering or intoxicating power is derived either wholly or principally from the alcohol which it contains (2 or 3 per cent.—in some stronger, 5 to 7, and exceptionally 10 per cent.); lastly, its nutritive or strengthening quality is derived from sugar, dextrin and similar substances contained in it; moreover, the bitter principle of hops confers on beer tonic properties. From these combined qualities beer proves a refreshing and salubrious drink if taken in (scrupulous) moderation, and an agreeable and valuable stimulus and support to those who have to undergo much bodily fatigue."

The above quotations are given because they tersely show the opinions held by many leading physicians fifteen years ago as to the tonic and nutritive properties of alcoholic beverages. As you have doubtless perceived, however, the statements are very vague and general, and when closely scrutinized it will be observed that those beverages for which the greatest thirst-quenching, tonic and nutritive properties are claimed are the ones which contain the smallest percentage of alcohol. This fact in itself should create the suspicion that the opinions expressed were influenced to a certain extent by inherited or acquired appetites or cravings, preconceived opinions or in extenuation of existing habits.

Let us now glance at the physiologic effects of pure ethylic alcohol as determined by careful, accurate and painstaking investigations, with the aid of modern scientific instruments of precision. It is generally conceded that alcohol is almost immediately absorbed into the blood. Here it exerts a most pernicious effect on the red-blood corpuscles, dissolving their iron and devitalizing them (Dr. Wm. Hargreaves), arresting their development and hastening their decay (Drs. Virchow and Becker), as well as diminishing their oxygen-carrying capacity by lessening their power to absorb oxygen from the air in the lungs; by its strong affinity for water it absorbs a part of their moisture, causes them to shrink, harden and may even make them adhere in masses and so hinder their passage through the tiny capillaries (Dr. B. W. Richardson). While in the stomach, instead of aiding digestion, as was formerly supposed, it has been shown by many careful observers that alcohol in very small amount actually retards the

digestion, especially of proteids, very much. This retardation reduces the amount of nutrient pabulum to be taken up by the blood, whose functional or selective activity as we have before seen is likewise impaired by the alcohol directly absorbed. Nor do the evils end here, because the alcohol contained in the circulating fluids on coming in contact with the enveloping membranous sheaths which surround all the tissues and cells of the body, coagulates the albumin contained in their secretions, forming a thin white film over their surfaces, thereby impairing their dialyzing power and interfering with the free ingress of nutrient material for the upbuilding and renovation of the tissues and cells as well as obstructing the free egress of retrograde products or toxins on whose prompt elimination and destruction the healthy activity of the body depends.

With the digestion retarded, the oxygen-carrying capacity of the blood lessened and the assimilation of nutrient materials as well as the elimination of retrograde products and toxins greatly impaired by the clogging of the dialyzing membranes, we would logically infer that alcohol exerts a pernicious influence on the development and functional activity of the muscular and nervous systems, besides perverting and impairing the special senses and mental activity of those who use it (effects diametrically the opposite of those produced by true foods!), and this inference or conclusion we find fully sustained by incontrovertible facts. As cogently stated by Dr. Bunge: "Thousands of experiments on large bodies of men have been made and have led to the result that, in peace or war, in every climate, in heat or cold and rain, soldiers are better able to endure the fatigues of the most exhausting marches when they are not allowed any alcohol. A similar result is observed in the case of the navies, and on thousands of commercial vessels belonging to England and America, which put to sea without a drop of alcohol. Most whalers are manned by total abstainers." Arctic explorers endure the severe cold much better when they abstain from alcohol than when they use it, even in moderation. Nor is this knowledge confined to physicians and physiologists, but the great business interests of the country are beginning so thoroughly to appreciate the fact that alcohol unfits men for doing the best work that many railroads and large manufacturing and mercantile establishments will neither employ nor retain in their employment persons addicted to the use of alcoholic beverages. That alcohol lowers muscular force and endurance is very conclusively shown by the fact that those who engage in athletic sports must stop drinking if they expect to excel. No prize fighter, ball player, oarsman or any kind of athlete can keep up drinking habits without so injuring himself in a few years that he is relegated to the rear as a back number. The careful experiments made on a number of persons by Dr. J. H. Kellogg, several years ago, showed that muscular strength is diminished more than 30 per cent. by the use of alcohol, and substantially the same conclusions were reached by the elaborate experiments of Prof. C. F. Hodge, on dogs, as detailed in the *Popular Science Monthly* of March and April, 1897.

EFFECTS ON THE NERVOUS SYSTEM.

But while alcohol retards digestion, impedes assimilation and excretion, reduces the oxygen-carrying power of the blood and inhibits the nutrition of the

³ *Columbian Encyclopedia*, Vol. xii.

cells and tissues of the whole body, still it is on the brain, or indeed the whole nervous system, that its most far-reaching and malign influences are exerted.

The preliminary stimulation accelerates the heart's action, thereby increasing the amount of arterial blood sent to the brain. This produces the stage of exhilaration, excitement, brilliancy and sometimes frenzy and delirium.

"Owing to the loss of contractile power of the vessels, the increased blood-supply can not be returned to the veins from the brain with sufficient rapidity, and thus there is a block, causing impediment of the circulation, which ought to be free and unimpeded, to allow duly aerated fresh arterial supplies. This is the stage of depression, of depression and collapse, when the memory fades, speech is thickened, voluntary movement ceases, sensation is dulled and consciousness fails. This process frequently repeated sets up permanent tissue changes. The covering envelope is so thickened and otherwise injured that proper nutriment can not be conveyed to the brain, and thus that organ is badly nourished. The shape of the brain cells is altered, and the physical degradation of the cerebral substance sadly impairs the intellectual and moral faculties." (Dr. Norman Kerr.)

I believe the correctness of this picture can be vouched for by nearly every physician. Indeed, good illustrations of it are constantly seen, sometimes even at medical banquets. Nor is this all, for under the influence of alcohol the brain begins to think awry. It can not think straight (Dr M. S. Holbrook), and its influence on psychic processes is curious, for while it renders them much slower, the individual under its influence believes them to be much quicker than usual (Dr. Lauder Brunton). Indeed, experiments made in Heidelberg University show that the consumption of alcohol, whether in large or small doses, produces a tendency to paralysis of the mental faculties (Dr. Adolph Barr).

In view of these facts, I am led to believe that the so-called tonic or strengthening effects of alcohol are due more to its anesthetic and paralyzing power than to any true nutritive or tonic properties it may possess. As Dr. Kellogg has very felicitously said, alcohol is a "nerve-fooler." It makes the person who indulges in it believe his condition is very different from what it really is. If he gorges himself with too much food, alcohol may quiet the protests of his digestive organs and paralyze him into the belief that it is aiding his digestion and increasing his strength, whereas it is doing nothing of the kind.

While he may believe that his senses are keener and his powers of endurance greater, experiments with scientific instruments of precision have demonstrated that his acuity of vision is lowered, his power of hearing reduced, his sense of smell blunted and his taste so obtunded that he can swallow fiery and even caustic liquids without winoing, and his muscular strength, which he believes to be greatly augmented, is shown by the dynamometer to be materially reduced, and even his soul-stirring eloquence and poetic flights are largely discounted in the estimation of the man who has not been imbibing.

Since alcohol thus deceives the person who uses it, and as most of the beneficial results claimed to arise from its use are based on the subjective sensations of those using it, I believe we are justified, after a careful consideration of all phases of the question, after examining the arguments for and against and apply-

ing to alcohol the same tests that we use in determining the utility of other substances used as food, in concluding that if it possesses any food value at all, it is to a very limited extent, and that the dangers connected with its use are so great and far-reaching that it, as every other narcotic poison, should only be used after the greatest possible precautions have been taken to guard against its untoward effects.

DISCUSSION.

Dr. STUVER, in closing the discussion—I do not wish to be understood as claiming that alcohol does not have any food value. The point on which I wish to insist is, that in view of the great possibilities of doing harm, every case should be carefully investigated, and alcohol should not be prescribed in any form unless we are fully satisfied that its dangers and disadvantages will be more than compensated by its good effects in the patient's case. In short, alcohol should be used with as much care as morphin, strychnin or any other poison, and not in the careless, indiscriminate manner in which it has been in the past.

ALCOHOL IN HEALTH AND DISEASE.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY V. D. MILLER, M.D.

NEEDHAM, MASS.

It is with some hesitancy that I present this subject for your consideration, knowing, as I do, the extreme differences of opinion in regard to the effects of alcohol upon the human system, especially in disease. It is over sixty years since the composition of alcohol and its effects upon the human body have claimed the special attention of chemists, physiologists and philanthropists. Since this time very many investigations and observations have been made, and numerous important and scientific works written by investigators whose names stand high in the annals of chemistry and physiology.

Among the seventy-six known elements, there is one called carbon (chemical symbol C). This element is termed an organic substance, as it occurs abundantly in living matter; it is a waste product of animal and a reconstructive product of vegetable life—that is a food for plants and an effete matter of animals. The atomic weight of this element is 12, and its quantivalence is 1, 2, 3 or 4, making it twelve times as heavy as our standard—hydrogen (H). It may replace atom for atom, or 1 for 2, 3 or 4. Owing to its great latitude of power it unites very readily with hydrogen, nitrogen, oxygen, sulphur (H, N, O, S) and their radicals, forming a great number of chemic compounds, among which are many of the new therapeutic remedies. We also have sugar, fat, oils, ether, chloroform and alcohols.

In forming these different classes of compounds carbon follows out definite and fixed laws from which it does not vary. Through the decomposition of vegetable matter a gas is generated known as marsh gas (C H₄)—methane. To this gas add OH and you have an alcohol. There are many gases to which if you add OH alcohols are formed. The alcohol (C₂H₅OH)—ethyl alcohol—is the one used for medicinal purposes, and is one of the best solvents we have. It readily unites with gums and resins, dissolving them; it coagulates proteids, because of its eagerness to unite with water (H₂O), generating heat sufficient to cook the contained albumin. This is what takes place in the human tissues which contain albuminoid matter. The heat generated by contact of alcohol and living albuminous tissue first coagulates

the albumin and renders it unfit for chemic reaction. Professor Hodge of Clark University says that alcohol retards, prevents and is destructive in either large or small doses to normal growth and development; it lowers the working power.

Dr. Chittenden of Yale University says amounts of alcohol equal to 5 per cent. are markedly injurious and retard digestion.

Drs. Zimmerburg of Germany and Marvaud of France by their experiments proved that small doses of alcohol increase the frequency of the pulse, that large doses increase at first, then diminish the heart's action; very large doses depress at first.

Professor Martin of Johns Hopkins University, in his demonstrations of alcohol on the action of the heart, says that an ounce of whisky or brandy always lessens the force of the heart, but generally increases its frequency. The habitual use of alcohol is certain to work a change in the muscular structure of the heart and arteries.

Dr. Woodbury of Philadelphia (Board of Health) says nothing in clinical medicine is more certain than that the continued use of alcohol stimulates the development of connective tissue all over the body, therefore it is a prolific source of disease.

G. Newton Pitt says 75 per cent. of the cases of alcoholic neuritis and 20 per cent. of cirrhosis of the liver was found on postmortem to have tubercular lesions; these lesions assume the fibroid form.

Dr. J. F. Pain of St. Thomas Hospital, London, says that one of the effects of alcohol is to produce an accumulation of fat in the liver. In speaking of its effects upon the nervous system he gives cases of paralysis of the phrenic and pneumogastric nerves, also changes in the peripheral nerves producing hyperesthesia, paresthesia, anesthesia, with loss of knee jerk at every stage, this symptom constituting the symptoms of alcoholic ataxia.

Dr. N. S. Davis says when alcohol is taken into the human stomach it is rapidly absorbed, carried directly into the blood, consequently it undergoes no digestion or assimilative change in the digestive organs and is not converted into elements capable of contributing to the growth or repair of the organized structure of the human body. It has been many times detected as alcohol unchanged in the blood, liver, brain, lungs, kidneys and all the other structures of the body.

Chemistry shows us that alcohol is not a tissue builder, containing none of the elements from which the tissues are made. Its use in health can not be of any value. It is true the grains from which it is made contain gluten, fibrin, etc.—elements of great importance in the development of the human system—but in the production of alcohol a chemic change is produced, so that there is nothing which the tissues of the body can appropriate to their use, consequently, from a physiologic standpoint, we are forced to admit that its use in health even in small doses is deleterious. Take, for example, a sensitive, intellectual young man, a specimen of anatomic and physiologic perfection, note the deleterious changes which the habitual use of alcohol has upon him. The blood becomes impure, as evidenced by the red nose, pimples and blotches on the face; his nervous system deranged, as evidenced by his coarse language, irritable disposition and high temper, often abusive to the mother to whom in former years he gave most reverential and respectful attention. To the wife, whom

he once adored and would have given his life to protect, he becomes cold, harsh and abusive, often treating her with contempt. The children, once his pride, he neglects or often robs, and to his best friends he even becomes insulting. Will some advocate of the "social glass" explain to us the physiologic and beneficial effects of alcohol upon the brain in this case? If alcohol is of no benefit, but decidedly deleterious in health, can we find a use for it in disease?

Dr. Samuel Wilks, F.R.S., consulting physician Guy's Hospital, London, says: "I found it necessary to withstand the use of alcohol in medicine at an early period of my practice. It lowers the functions, causes degeneration of the nerve centers and produces general paralysis, trembling lips, shaky hand, unsteady walk; muscles undergo a change; heart becomes fatty, nerves hardened and thickened from neuritis. Digestive organs morbid, loathing food. Ulceration, thickening of the walls of the stomach and intestinal tract."

In speaking of alcohol as a drug I do not hesitate to say that those who give it believing it to be a stimulant are totally mistaken in its action. In mitral disease of the heart it adds fuel to the fire. There was a time when brandy was the universal medicine in fever. At the present time its universality is abandoned. A number of medical men hold fast to the old notion that brandy supports. For my part, the reasons for giving it are erroneous. At present its employment by judicious men is almost ignored, and they are certainly better practitioners than those who give it to every patient who had a weak pulse. Our knowledge of the action of alcohol in disease is almost empiric, having so few principles to guide us. So far as my observation goes, those physicians who use it in typhoid fever and pneumonia lose a large per cent. of their cases, while those who treat these diseases without alcohol seldom lose a case.

The effect of alcohol is to stimulate the heart to increased action and increased circulation and respiration. In fever we have too rapid circulation and respiration with high temperature. Why, then, give something to increase this condition? Some of our best physicians with large experience, while noting the increased action of the heart from the use of alcohol, find that its force or power is diminished. May this not be the principal cause of the so-called heart failure which many practitioners give as the *cause of death*? Alcohol being chemically a hydrate, must, on physiologic principles, increase the heat of the system, which contraindicates its use in all fevers. Some physicians use alcohol in their practice because their preceptor or some writer used and recommended it; others because their mothers believed in and used it, and they, perhaps without being aware of it, inherited an affection for it. In fevers we have a variety of remedies which have a tendency to lower the temperature and shorten the disease, of far more value than alcohol. Our list of tonics (not stimulants) is numerous. With a chemic knowledge of the elements of food and their different combinations we can feed and care for our patient so that very little medicine will be required. Let us banish tradition and treat our patients upon common-sense principles, then we shall have little use for alcohol.

DISCUSSION.

Dr. C. B. VAN ZANT, Denver—The question as to the status of alcohol in health and disease is a large one, and one that is arousing the greatest attention throughout the country. Like

every other question it has its extremes and a happy mean. There can be no question that the pendulum is swinging away from the indiscriminate use of alcohol as practiced in former days. This is true in our own profession, as evidenced by the fact that a large number of our best men are earnest members of the American Medical Temperance Association, which stands for a restricted use of alcohol in disease. In my judgment, we ought to deal with alcohol as we would with morphia, recognizing that it is an agent both for good and evil. I have long accepted as a maxim the terse statement of Austin Flint, Jr., that "whenever a sufficient quantity of food, to meet all the needs of nutrition, can be taken and digested, alcohol is not only unnecessary but injurious." This statement applies both in health and disease. I think it is taking up an extreme position to say that alcohol never has a legitimate use either in health or disease, and in this respect the author's views fail to meet my own. In moderate quantities it is surely oxidized, and if oxidized, it must be a producer to some degree of animal heat and force. In disease, where a "sufficient quantity of food can not always be ingested and digested," the importance of the use of alcohol is apparent, as a temporary prop to the vitality of the patient. It is only in these temporary conditions that we find its highest value in disease. As an article of diet in health it is certainly unnecessary, if not immediately and tangibly injurious.

Dr. H. R. SLACK, Lagrange, Ga.—I regret exceedingly that the author of this paper is not present, for I would like to inquire whence the quotation of Dr. Martin was obtained. It was my good fortune to have studied under Professor Martin at the Johns Hopkins University, and he taught: "According to circumstances alcohol may be either a poison or useful; when useful it may be regarded either as a force-generator or a force-regulator. It is sometimes a valuable medicine, but does no good in a healthy body. Its proper use is as a whip, to stimulate the flagging energies, and it enables the physician to win many a race for life that otherwise might be lost." Dr. Osler recommends its use strongly in typhoid fever, and in pneumonia says: "It is the only remedy in many instances capable of tiding the patient over the dangerous period." There is no substance in the whole range of medicine concerning the uses and effects of which there is a greater diversity of opinion than alcohol, some as the writer, holding that these are wholly bad and that "no good thing can come out of Nazareth," while to others it is an ideal stimulant, tonic and food. I hold an intermediate position, one that I consider the golden mean, and the position of Dr. Martin as stated before. I have seen many cases where its beneficial effects were marked. It is a well-known fact that the mortality from typhoid fever in the London Temperance Hospital has for the last twenty years been 15 to 16 per cent.; much greater than in other hospitals where alcohol is used. I believe that at present we have no medicine in the pharmacopeia that can replace alcohol as a stimulant, and in some cases its use is necessary.

DIETETIC CAUSES OF INEBRIETY.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Inebriety is one of the most complex neuroses and obscure border-land diseases known. To the average practitioner the inebriate is simply a weak, wilful, vicious man, who has full power to do different but will not exercise it. When the inebriate is examined carefully, and all the facts of his inheritance and of his nutritional, and also mental life and growth are grouped, a uniform progressive line of disease is found. The pathologic conditions which precede alcohol and the conditions which follow from the use of alcohol, are marked in different degrees. The former are not recognized and the latter only recently have come into prominence. The use of alcohol is followed by conditions which differ very widely, and are unexplainable except by a study of preceding conditions before spirits was used. One of these conditions is heredity, that is the transmission of defects and predispositions to degenerate in certain directions, with or without special exciting causes. Another is nutrition, a third

is disease and traumatism and its sequelæ, a fourth is culture and environment, and so on through a long list of causes. In all cases, it may be said that the nerve centers suffer from practical starvation, and the narcotism from alcohol is grateful in covering up the irritation and pain demands for help. In my studies the nutrition of childhood has been found to be an active cause in many cases. I have divided these into the *overfed* and *underfed* cases. In the former the clinical history would follow these general outlines: The nursing child would be surfeited both at the breast and by infant foods. The central thought of the parents would be the danger of starvation and the need of constant ingestion of food. When indigestion followed, another nurse and changed foods in equal quantities would be given. Later, when the child was able to occupy a place at the table with his parents, all discrimination was left to his own tastes, the parents reasoning that the appetite was the best guide and the child's food inclinations should be followed. Anything the child called for as foods or fluids were given freely. The disturbances of digestion which follow are usually treated as weaknesses and tendency to diseases. Consumption, rheumatism, disease of the liver, stomach and kidneys, and other formidable diseases are discerned in the horizon by the worldly-wise physician. Patent foods, climate cures, changes of school and culture and many remedies are tried. Finally puberty is passed, and the digestion is permanently impaired. The appetite is lawless and without control. The body is ill-nourished. Already fatty deposits have begun. The demand for foods and fluids are mere impulses. The taste is disordered. Large quantities of certain classes of foods are taken, then abandoned. The same of fluids, teas, coffees, mineral waters, beers, wines and anything used at the table.

Indigestion and obscure or well-defined nerve failures, nerve disturbances, irregularities of sleep all follow. Then finally comes the subtle tonic bitters containing from 20 to 40 per cent. of alcohol, or the wines or whisky, and inebriety has come. The relief which spirits brings is so marked that it is continued, and then follows a rapid, sharp degeneration, and the inebriety is chronic and complex mental and physical changes appear; opium and other narcotics follow, changing from one to another. This picture is not confined to children of wealthy persons, but occurs in all the various circles of society, in the families with moderate means, and occurs among children who are obliged to begin the serious work of life at an early age. The dietetic delusions of parents are engrafted and graven in the minds of children and the end is inebriety. Some of these cases take on paroxysmal forms, after spirits are used. Thus, an attack of acute indigestion is followed by a drink craze which after a certain time subsides, and breaks out again after a free interval. They become periodic drinkers, and when they die show in the postmortem remarkable stomach degenerations. It is found that the sudden, unreasoning outbreaks of what is called alcoholism, or the use of spirits to prolonged intoxication, occur in those delusional dyspeptics who, from infancy, have had no dietetic or food control. Such morbid eaters occur often among prominent men, and when they begin to use spirits they have no power of control and are soon pronounced inebriates. In these cases digestion is early strained and stimulated far beyond the needs of the body, and the food, non-

assimilable or in excess of the demands of the organism, accumulates and becomes sources of degeneration. Overgrowths, retarded growths, defective growths, with functional derangements both of physiologic and psychologic control follow. Excessive nutrition in childhood is a cause of inebriety in later life, both with and without special exposure, and often among persons who by environment would naturally not use spirits.

The second class of cases I have called the underfed. By that I mean persons who have been practically starved in many ways the first twenty years of their lives. The starvation has come from exclusive diets used from necessity or from theory, or from carelessness and neglect. In very poor families the food from infancy would be potatoes, corn meal or pork almost exclusively, or fruits in more tropic climates, in some form of liquid foods, no variety and one article almost exclusively. In other families, from theory, children would be forced to use one class of food and no others, as for instance meats, or grains, or fruits, to the exclusion of every other class of foods. In the larger proportion of cases, carelessness prevails. Children are supposed after the nursing period to eat the same foods as the rest of the family, and are given without discrimination anything which is prepared. No care is taken of their diet, no judgment is exercised as to quality, variety or nature of foods. At one time fruit is used to excess, or vegetables, or meats, or grains, according to the supply. In the family of a country grocer three boys, after a protracted period of indigestion, became inebriates. I found that the diet of the family was largely dependent on the surplus of perishable food which accumulated in the store. At one time it was eggs, then fruits, then grains, then meats. This diet was insufficient, and states of starvation and defective growth followed which led most naturally to the narcotic of alcohol. In another case two sons of a clergyman began to use alcohol to excess without any apparent reason. The theory of the parents that excess of quantity and variety of food was dangerous, had been carried out from infancy. A limited and always insufficient quantity of potatoes and bread had constituted the daily food. When these children grew up they ate to great excess away from home. This, with starvation at home, broke up the normal nutrition, and the relief from alcohol was so great as to be irresistible. In a case of unusual mental ability where the user of spirits was of an exceptional character, and the effort to recover was of equal intensity to the craze for drink, it was found that regular, uniform diet of moderate variety of foods was medicinal. As long as his diet was mathematically uniform and unchangeable he could keep from spirits, but the slightest deviation in time of using food and their quantity and quality would destroy his mental control. It was ascertained that his mother, during pregnancy and lactation, entertained some opinions of foods and their value and put them in practice in her own case. The result was a very sensitive nutrient organization in the child, with anemic sick headache throughout childhood, great excesses at puberty in foods and drinks and continued nutritive disturbances up to manhood. Then a period of drug-taking and periodic inebriety. Now he is able to be a total abstainer only by the most careful attention to diet. There appears to be a close relation between the excessive use of meat in childhood and inebriety in early middle life.

While the facts are not sufficient from which to draw any general positive conclusions, there are many reasons for supposing that often they are as cause and effect. This appears clear in this case: The parents in a family entertained very strong confidence in the value of meat as an ideal food. It was used and urged upon the children in all forms. One boy began to drink in college and died after a short period of great excess. A sister was hysteric and became a drug-taker, and died early. Later the parents abandoned meat for grains and fruits, and three children brought up on this diet have continued well and healthy. The conditions and surroundings are the same, but the vigor of the children varied widely. Beef-eating foreigners who bring up children on this diet are astonished that their children turn to beer and wine so early. The reason is the early and deranged digestion which, calling for relief of some kind, finds it in alcohol. This question of the value or injury from meats and grains is yet to be studied and settled. After alcohol is taken to excess, the complications of nutrition are many and serious. One of the first essentials in treatment is the elimination of toxins and proper nutrition.

Foods of easy digestion with moderate variety and quantity, and taken at regular intervals are required. Concentrated foods may be useful in some cases and injurious in others. Frequent use of food and in large quantities is to be avoided.

Two conditions exist, impaired and defective nutrition and congestion from over-accumulation of toxins and waste unassimilable foods and starvation. The treatment is not by routine or specifics, either foods or drugs, but by the use of many and complex measures to meet the special conditions called for. Inebriety is not confined nor traceable to any special cause, and its treatment can not be successful by any one measure or form of drug. The unexpected outbreak of the drink craze in early life and the persistence of the use of spirits is unmistakable evidence of some central defect of nerve centers and neurons. These defects are most likely to come from nutrient degenerations in what way no one can tell, yet the facts point out a distinct relation.

The drug poisoning from alcohol, opium and other narcotics most clearly affects the nutrition, and in all cases is followed by veritable starvation and failure to assimilate the food required. Where causes are traceable to early life the degeneration is greater and the symptoms more complex. The same nutritive problems appear in all cases. The use of tea, coffee and wines at meals in early life is a starting point for both degeneration and inebriety later. Many of the most intractable cases of pronounced degeneration where the alcoholic symptom was maniacal have a history of early tea and coffee drinking. The facts fully sustain the assertion, that a large number of cases of inebriety are traceable to defective nutrition in early life. This may be both starvation and poisoning, and the extreme persistence of these states is remarkable. Thus the bad living of childhood with its defects of nutrition may appear in later life as in the following: A child of healthy parents who were killed by accident, was kept six years in the family of a German and wine drinker. He was over-fed and given wine freely at the table, and was considered sickly. Then he was taken by another family and brought up very carefully and abstemiously. After a long temperate life he retired from business at sixty, and soon after began

to over-eat and drink wine at meals, and finally became an inebriate. Many cases are traceable where inebriety began at or before puberty, or after then subsided and later in life broke out again without any special causes. The expression "sowing wild oats" often describes a period of excessive use of spirits and nutritional disturbances, and then a full subsidence and a long period of temperate living. Far down in middle and later life a recurrence of this excess period appears again and often death follows. Here there is a persistence of nutrient and poison effects, which breaks out like some masked fire which has been dormant for a long time. The appearance of inebriety is usually sudden and without any exciting causes, and the change in conduct and manner of living is unexplainable. The same methods of using spirits and the same food impulses and tastes, and same surroundings as far as possible, appearing after a lapse of a lifetime, show that early defects are not affected by time. I conclude at this point with a summary of what I have intended to make clear in this study:

1. Inebriety is a most complex neurosis. The causes are equally complex, and include all the various states of degeneration which influence and disturb nutrition.
2. Obscure indigestion begins, and for this drugs and bitters containing alcohol are used. The narcotism which follows is so grateful that it is continued.
3. Dietetic delusions are fostered in the minds of parents and children, and from this many different forms of inebriety begin.
4. Often the most maniacal and chronic inebriates are from these delusional dyspeptics.
5. Starvation is present in many of these cases. The quality and variety of foods are deficient and defective nourishment follows.
6. The uniformity of taking foods and the quality and variety are essential. This and nutritional rest and mental anxiety are important factors.
7. The inebriety following these conditions is successfully treated by elimination of the toxins and special correction of the nutrition.
8. Nutrition is a very active cause in the production of inebriety, and should receive a careful study in all cases.

DISCUSSION.

D. R. BROWER, Chicago—I am pleased to have heard the admirable paper of my distinguished friend, Dr. Crothers. No man can speak with more authority than he can on the etiology and treatment of inebriety; and what he says is as sensible as it is learned.

It is very gratifying to see so much interest being manifested by the profession on the subject of dietetics, for there is no more powerful agent in the causation and cure of disease. The recognition of the fact that imperfect digestion leads to auto-intoxication, and this to development of diseases of the nervous system, and the further fact that inadequate or improperly cooked food will produce the same result have been of much benefit to all concerned.

The publication far and wide of further facts that tea and coffee in childhood will develop a taste for stimulants that later along will produce inebriety, will save many from this dreadful state. The use of tobacco by the young may also be an important factor in this same pathogenesis.

Dr. CROTHERS (in closing)—The special object of my paper was to call attention to the injuries which always follow the use of alcohol in children. A very large amount of experimental evidence from the laboratory, in the use of alcohol on animals has been gathered for other purposes, which makes the facts conclusive. The disability and defects of children in all circles of life who have used spirits freely in childhood are to be seen in every town and country. I am pleased to most heartily agree with the speaker who preceded me, in the statement of the skill in promoting the growth of animals, in fattening them, in developing their best qualities, so highly developed among stockmen and farmers, while the develop-

ment of children physically through food channels, is totally neglected. We are on the frontiers of a new field of much important work, prominent of which is to clear away the delusions which infect our conceptions of child growth and dietetics. One of these delusions is the food value of spirits and its harmlessness in early life. Our foreign population have strong views of alcohol or beer in childhood. Many others cling to the idea of stimulation and increase of vigor from spirits. These delusions must be overcome and a clearer conception of dietetics as a whole must follow, then we shall do with children what farmers do now with animals.

TUBERCULOSIS: ITS HYGIENE AND DIETETICS.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY A. T. CUZNER, M.D.

GILMORE, FLA.

Tuberculosis in some form or other may fairly be considered the almost universal disease of man. "Schlenker made 100 consecutive postmortems on adults and children. He carefully examined every part of their bodies and found 65 per cent. tuberculous. In over 4000 successive postmortems made in Breslau in 1893, one-third of the bodies contained gross tuberculous lesions. If the microscope had been used, probably enough lesions could have been discovered to make 2500 infections. Babes found lesions of the bronchial glands in more than one-half of his postmortems on children. Biggs could demonstrate characteristic lesions in the lungs alone in 60 per cent. of his postmortems. Grawitz found primary tuberculous deposits in the lungs in 152 out of 221 cases, being nearly 70 per cent. of all infections. Loomis found the bronchial glands infective to rabbits in eight out of thirty bodies apparently free from tuberculosis during life."

Upon examination of the death records of thirteen prisons located in different parts of the country, we find the deaths from tuberculosis to be 59.9 per cent. Doubtless tuberculous deposits could be found in the 40.1 per cent. remaining.

In an article in a September issue of the *Illustrated American*, Prof. Fletcher W. Hewes publishes a dial illustrating the ratio of deaths in the United States from the most prevalent diseases. This is a reproduction of the dial.



In proceeding with our investigation of this disease, it will be as well to consider as briefly as we can: 1, the cellular pathology of the human tissues, and then in addition, what is known of the pathogenic germs thought by many to be the main cause of the disease: 2, the nature of tubercle, from which the disease takes its name; and 3, the hygiene and dietetics of this complaint.

CELLULAR PATHOLOGY.

Animal tissues are resolvable into an aggregation of morphologic units or cells, each having a life history of its own. At their death they are resolved into effete material, very deleterious to healthy cells, if retained in the tissues. Many tissues when diseased become the home of minute forms of life—pathogenic bacteria. All cells are the result of the life of previous cells, "omne vivum ex ovo."

In the course of its development, every cell proceeds from the condition of a unit, in which it resembles every other morphologic unit, through a series of stages of gradually increasing divergence, until it becomes an element or part of a special tissue. The vital functions of the cell may be enumerated as follows: Contractility, irritability and automatism, reception of nutritive material and its assimilation, metabolism, secretion, excretion, and finally reproduction. All cells are sensitive to and influenced by their environment. They are repellent to deleterious influences in proportion as they possess that force or principle which we call vital. On the contrary, as they lack this force, they are open or subject to the invasion of disease. This may be in the form of toxins, or pathogenic germs, or both combined.

The healthy cells of animal tissues are antagonistic to the invasion of disease. All cells, whether of animal or vegetable origin, fulfill alike the law of their being; derived from a parent cell, they are nourished, develop, reproduce and die. During their life history they are favored or injured by their environment and circumstances over which they have but slight control.

Take, for example, cells of animal tissue exposed to contact with the atmosphere and subject to its vicissitudes, such as low temperature and sudden changes, their force (we call it vital) being reduced to a very low ebb for the time being; in contact with such cells is brought the ubiquitous microbe and there is at once inaugurated a conflict; which will come out victorious depends on various circumstances. If the animal cell has sufficient resistance, then the microbe is a failure. On the other hand, should the vitality and resisting power of the cell be very low, and other circumstances favorable, then the microbe is rampant. This may be called the irrepressible conflict sung of by the poets.

BACILLI

Bacteria, microbes, schizomycetous fungi, are minute vegetable organisms causing the different known fermentations, and found associated with certain diseases, of which they are considered by many to be the cause.

"Bacteria in shape show three varieties—*bacillus*, pencil or rod; *coccus*, a ball, and *spirillum*, a corkscrew." Tubercle bacilli are in length one-half to one-third the diameter of a red-blood corpuscle, and their breadth is about one-fiftieth of their length. (See Fig. 1 a.)

BACTERIUM.

There is a cycle of changes in the life of a bacterium that is shown plainly in the illustration. First, *a*, the spore is seen to lengthen to *b*, and forms a rod *c*. This by elongation and by fission produces more rods, *d*. These remain apart, *e*, or join together to form a chain, *f*. Some of the rods lengthen into filaments, *g*. These develop spores, *h*. The spores being set free, *i*, the series of changes begins again.

"For thirty-five years observers have noticed the bacillus of Koch living with the vinegar yeast. Botanists were divided in opinion whether they were inseparably a part of the life history of the *mycoderma aceti*, though nearly always found associated. Some botanists thought they were indispensable parts, and some thought not. *They are the babies of the vegetations, and can be propagated as babies.*" (Ephraim Cutter.)

"I have long ceased to regard all the bacilli, micrococci and bacteria as the ultimate forms of animal or vegetable life. I look upon them as simply the embryos of mature forms, which are capable of propagating themselves in this embryonal state." (Salisbury-McNaughton's prize essay on Malaria.)

Microbes play a very important salutary part in the science of agriculture. They act as nitrogen suppliers to the soil. They are very useful to the dairyman, causing as they do that peculiar fermentation that renders cheese so palatable. They are ubiquitous. The air we breathe swarms with them. This is proved by Professor Tyndall. The food we eat, the water we drink, alike furnish them an abiding place.

The writer's view of the functions of the microbe is as follows: The cell formation of our bodies is constantly dying, as the life force leaves it and its work is done. The same principle holds good through-

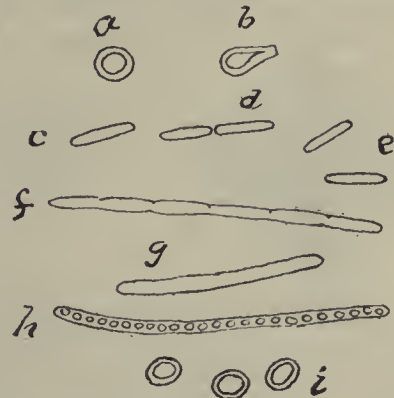


Fig. 1.—Bacterium.

out organic nature. All organic tissues undergo three distinct phases in their history—growth, decay and disintegration, and these three processes may go on simultaneously. In consequence of the dying of the cells, there is a continual accumulation of dead matter that must be disposed of by some process or processes. As one of these, the microbe gets in his work. Each microbe has his own particular work to do. In certain stages of tuberculosis we find more than one microbe associated with the disease. I do not think microbes deserve the ill repute in which they are held. When the human organism is diseased, microbes are found to be much more abundant, the dead matter to be changed and eliminated requiring much more work on their part. Like the buzzard, they are always ready to remove dead and offensive animal tissues. They also act as media of disease, just as flies do. They have likewise the power to impose upon the cell a certain amount of force, that tends to produce a condition most favorable to their disintegrating work.

Dr. Austin Flint admitted the importance of the tubercular bacillus in disease and, as quoted by Dr. H. B. Weaver, said: "You take away their lives, when you take away the means by which they live."

Dr. Andrew H. Smith, quoted by the same writer,

said, in speaking of phthisis: "The fact should be recognized, that tubercle bacilli never become implanted in the healthy system. There is always an abnormal anterior condition that should receive our attention. . . . By sufficiently improving the nutrition, you lift the patient above the plane on which the bacillus flourished."

Solis-Cohen, also quoted by this same author, says: "To make our conception of the disease sufficiently comprehensive, we must include other elements than the bacillus and the changes in cellular structure or chemic constitution of solids and fluids brought about by its activities. . . . That condition which makes the human tissues a 'receptive soil,' a favorable 'culture medium' for the tubercle bacillus—that condition which of old was called a 'diathesis' or 'susceptibility,' is *itself* a disease, a departure from the *norm*, and I believe it to be the most important element in the morbid complexus termed tuberculosis. . . . It is the element requiring the greatest care in the prophylaxis, the most intelligent and faithful treatment."

Dr. Weaver says: "We believe this cachexia, this predisposition, which may be inherited or acquired, is a defective nutrition, superinduced by a want of vital energy, which has its correlative in the histologic expression, in the place of normal tissue, elements of abnormal condition and lowered vitality. We know that tuberculosis is not the product of a truly inflammatory process, neither is it a neoplasm, for it tends

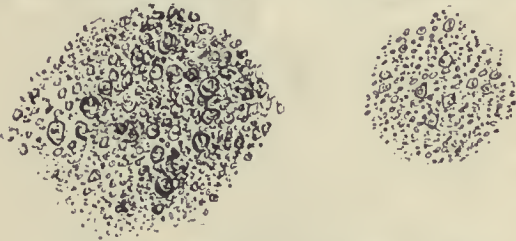


Fig. 2.—a, yellow tubercle; b, gray miliary tubercle.

neither to resolution and repair, nor to proliferation and persistence. Its tendency is to destruction without subsequent repair. It is necrosed coagulation without blood-vessels, without cell organization, without life—it is death."

Dr. Weaver goes on to say: "Therefore, we conclude with Cohen, that when, in the course of ordinary wear and tear, or extraordinary wear and tear, or following inflammation or injury, or from any cause or combination of causes, degraded tissue elements have been produced, it is highly probable that the tubercle bacilli or other microbes, finding therein a favorable soil, modify by their activity the further evolution of the disease."

Consequently, in summing up the facts, as reflected by both observation and experience relative to the causation of tuberculosis, we think we are warranted in the following conclusions: 1. Malnutrition is the starting point of tubercular process. 2. While the bacillus of Koch is, perhaps, the most important of the several microbes that influence the progress of the lesion in the various forms of the disease, yet it does not itself originate the disease in any form. 3. Both factors—the dyscrasia and the bacillus—must exist in combination before there can be tuberculosis."

TUBERCULOSIS.

In the days of my student life, it was held and taught, that phthisis pulmonalis was caused by the

deposition of tubercles in the cells and tubes of the lung tissues, and the changes this material "suffers and works." While this position has not been wholly abandoned at the present time, it is now considered by a majority of the profession, that the tubercular bacillus of Koch is the main predisposing and exciting cause of consumption. The endeavors of the bacteriologist are, therefore, mainly directed to the destruction of the germs within the body and preventing access of fresh germs from without.

The following synopsis of tubercle is from the works of Charles J. B. Williams: "Tubercle presents the following characters: When first deposited it is a clear viscid, albuminous substance, becoming more and more solid by coagulation, as does fibrin, but differing from it in being incapable of organization. When more or less solidified it loses its transparency, becoming grey, yellow or drab. Usually it is friable and of caseous consistence. Tubercle may be variously deposited in small, isolated points termed "miliary"; in granular masses, distinct or confluent; infiltrated diffusely into parenchyma; or aggregated in a mass, and enveloped by a cyst composed of surrounding tissues, thus constituting a tumor. [*The formation of this substance is merely a perversion of nutrition.*—Cuzner.] This is the commencement of the change to which the lowest forms of tubercle tend—that of maturation and softening."

Rokitansky thus describes the softening of tubercle: "After the tubercle has existed for some time in a state of crudity, it becomes, as it were, loosened in the textures, and breaks up on slight pressure and becomes more moist, then changes into a yellowish dissolving casein—like fatty and viscid matter. In the different changes in tubercular matter, as well as in the original deposition of this matter, the adjacent living parts have considerable share. A miliary tubercle from its first formation may become a cause of irritation to contiguous textures. The amount of this irritation and obstruction will depend on the natural excitability of the part, its functions, situations and size of tuberculous deposit."

The following is from the JOURNAL, from the pen of John McFarlin, M.D.: "Tuberculosis is primarily an inflammatory process. Every tubercle begins its history as a single inflammatory node, not very different from those produced by the introduction of foreign particles in the tissues. In the early stages of the disease there is rarely any marked symptomatic involvement, and many cases progress to the considerable destruction of organs before constitutional symptoms are observed. Up to a certain stage, therefore, tuberculosis is not essentially different from any ordinary or non-specific focal inflammation. It is as the disease progresses that the difference is observed; for as the cause of the disease is alive and engaged in growing and propagating its kind, there is a progressive tendency of the disease-producers to disseminate and new inflammatory foci to form; and, as growth means metabolism, there are waste products of the growth to be absorbed and eliminated.

"This is by no means all of the pathology of the disease. The tubercles develop at the expense of the organs whose tissues, transformed into or replaced by the tuberculous tissue, are unable to perform their functions or do these so insufficiently that disease must result from their incomplete action. Lastly, the tuberculous nodes, in which no blood-vessels are

formed, constantly soften and disintegrate with the frequent formation of holes or cavities, in which, if they communicate with the outer air, saprophytic bacteria are likely to grow and the harmless, or oftener harmful, results of their metabolism are absorbed into the blood. Death is more often the result of destruction of organs, suspension of vital functions from local lesions and profound secondary anemia, than from any poisonous principle in or produced by the bacillus."

INEBRIETY AND TUBERCULOSIS.

Dr. T. D. Crothers, in an article in the April JOURNAL, on the subject, "Inebriety and Tuberculosis," says: "Alcohol acts on the body psychologically, physiologically and pathologically, and is literal paralysis and dissolution. No other substance known, in common use, has such profound destructive action on waste and repair of the body. This opens the door for many diseases by destroying the power of resistance and enfeebling all the powers of life." Speaking of inebriates, he further says: "In my experience



with 2000 cases, fully 20 per cent. are associated with tuberculosis." "The use of alcohol results in deranged functions and disturbed energies. The two central processes of life—waste and repair—are affected, the first increased and the last diminished."

As we stated before: "All cells are sensitive to and influenced by their environment. The microbe has the power to impress upon the cell a certain amount of influence that tends to produce a condition favorable to its disintegrating work. To illustrate how it is possible for one organism to influence another so as to minister to its wants, we will state the result of some studies we have made in natural history. We will examine a common gall called "oak-apple," the result of the puncture made by a small fly called "Cynips," of the order *hymenoptera* (see illustration). Galls are vegetable deformities or excrescences, due to parenchymatous hypertrophy, and according to the

definition of Lucaze-Duthiers, comprise "all abnormal vegetable productions developed on plants by the action of animals, more particularly by insects, whatever be their form, bulk or situation." The Cynips appear to prefer to puncture the limbs, twigs or leaves of the plants subject to their ravages, *that are not possessed of as great a degree of force or vitality as the remainder of the plant.* The influence of the puncture of these insects, or of the poison they inject, or of the egg they deposit by means of their ovapositions, or of all three combined, has such an effect on the infected vegetable tissue as to cause them to become hypertrophied and take on a further growth and development, by means of which the egg, larva and future fly are provided with a home and sustenance until such time as the fly is prepared to quit the gall. In addition to this (as will be seen in the illustrations from life) the grub and future fly are incased in an egg-shaped cell which is inclosed in a cavity in the interior of the gall. Leading from this cavity to the rind of the gall, so to speak, is a canal. In the ovoid cell in the interior of the gall, the grub is so placed that the future fly has its head always pointed toward the canal leaning to the exterior covering. When the fly is fully matured, it gnaws through the thin ovoid cell, and crawling through the canal until it reaches the exterior covering, punctures the same and escapes.

CAUSE OF DISEASE.

In summing up from the above examination, I think we may reasonably conclude *that tuberculosis is a disease of malnutrition of the tissue elements of the body;* that the bacillus, while it has considerable work to do and has great influence over the course of the disease, *is not the prime factor or cause.* We may further conclude from the vast clinical experience we have in evidence that there is no known germicide that is capable of destroying the microbes without causing destruction of the tissues or the life of the patient, and that all measures adopted in the past to destroy the bacilli have not obtained sufficient success to warrant us in looking in that direction with much hope for the future.

The bacilli, as we said before, are ubiquitous. If we destroy those in the body today, we have our work to do over again tomorrow. We can not continue indefinitely to act the part of executioners. Are we then to abandon the field as beaten scientists? Not while there is so much to encourage us in the clinical experience of the past.

Since writing the above, we read a curious account of the death of five out of the six Esquimaux Lieutenant Peary brought to the United States. They all enjoyed good health as long as the blubber they brought with them lasted. After it was all gone they began to pine, and successively became affected with coughs and lung troubles; finally they all died but one; this last was also expected to die, if not sent back to the arctic regions.

CURABILITY.

Notwithstanding the great mortality from the disease, overwhelming testimony is accumulating daily to the effect *that if taken in its earliest stages, before the system is exhausted by its inroads, it can, and has been, cured in numerous instances.* Again: Who that has made many autopsies but can testify to cicatrices found in the lungs, the result of the cure of a former tuberculosis? The late Austin Flint used to

teach in Bellevue, over thirty years ago, that the disease was curable if taken in its earlier stages.

The following is from the pen of E. B. Borland, M.D., and is taken from the JOURNAL. "Tuberculosis, uncomplicated with sepsis, may be considered a curable disease, in the sense that it may be held in abeyance, that is to say, kept in a latent condition for a lifetime, providing the vital resistance of the individual is kept up to the normal standard. Nature has been known to completely eradicate in a limited number of cases."

There are without doubt many more recoveries from tuberculosis than the average physician or the laity have any idea of. The postmortems of Schlenker, Babes, Biggs and Grawitz demonstrate this, as is shown in the beginning of this article. It is a common belief that *no one has consumption who does not die of it.*

Continuing, Dr. Borland says: "The scientific physician will endeavor to imitate nature as far as he can interpret her methods. Investigations in search of an antitoxin have demonstrated that there is no immunity against tuberculosis when the three essential factors of infection, viz., debility, abrasions and bacilli are present. [*If there is anything in the theory of immunity a child born of an infected mother ought to be less liable to infection, other things being equal, on account of its being almost constantly inoculated with toxins during intra-uterine life.*—Cuzner.] The question arises, can tuberculosis in its latent stages be cured in all, to all intents and purposes? It has been demonstrated that two-thirds of all infections either disappear or remain quiescent during an average life. If nature can accomplish so much under the reign of empiric medicine, what will she be able to do when the physician concentrates all his energy on building up and maintaining the vital resistance of cell-life, and keeping septic germs, as well as tubercle bacilli, away from the latent infection?"

The following is also from the JOURNAL, by John Hey Williams, A.M., M.D.: "Eighteen years ago I was myself an invalid, suffering from supposed tuberculosis. I say supposed, having then no means of positive diagnosis. I was advised by such eminent authorities as Da Costa, Weir Mitchell and the lamented Pancost, that I could not live a year longer in Philadelphia, and that a change of climate was necessary. My attention was drawn to North Carolina by the writings of Hon. E. J. Aston and the reports of Dr. J. W. Gleitsman. A few months' residence in Asheville, and a more thorough knowledge of its climatic attributes, decided me to take up my residence there. With passing years came confirmed health, and I have remained eighteen years with pleasure and profit."

The careful reader of what has already been written, will doubtless arrive at the same conclusion as the writer, viz., *that this disease is caused by, or is the result of, malnutrition of the tissues involved;* that the microbe takes an active part in its manifestations, and that the disease is curable.

As to the treatment indicated: Shall we endeavor to destroy the microbe, and with this object in view continue to experiment with *serum therapy*, or shall we by a rational system of hygiene and of nutrition, build up and fortify the system against the inroads of the bacillus?

As to hygiene: There can be no doubt that an abundance of pure air and sunlight go a great way

toward arresting this complaint, therefore those afflicted with this disease in its earliest stages, should by the advice and direction of their physician, seek that country where the largest amount of each can be obtained during the year.

CLIMATE.

There has been considerable difference of opinion, and much discussion as to the most desirable climate for preconsumptives. The writer prefers Florida as a place of residence for such, for the following reasons: 1, in Florida there are more days in the year in which it is possible for a patient to be out in the open air and enjoy the sunshine, than can be found in any other State; 2, the climate and temperature are more equitable than in any other State. This is my personal experience of ten years, and is in accord with the reports of the U. S. Weather Bureau. However, each patient has idiosyncracies of constitution which render him or her a law unto themselves in this respect as to climate. Some patients do better in mountain air, while others receive much more benefit from a voyage on the ocean. Some are better served by a dry air, others by a moist one. I think it may be safely affirmed that the average individual but seldom uses over 75 per cent. of the air-vesicles, 25 per cent. remaining in a collapsed condition. These unused vesicles are prone to take on disease. I hardly need remind any one that failure to use means partial paralysis. Again, the object of respiration being to obtain a supply of oxygen to be used in the vital functions, any diminution of the supply means low vitality.

There is a very instructive article in the *Medical World* for October, 1897, of which the following is a synopsis: "Dr. W. F. Ball, Mountain Station, Ohio, writes that in 1851-2, he contracted a dry, hacking cough, with morning expectoration; had chills and hectic fever for months, and lost much flesh; was pronounced by several physicians as incurable. At this time an old Canadian doctor visited his father. 'He examined me thoroughly, and said there was only one way to save me, which was to carry out his instructions faithfully. I was to sit up in bed and throw shoulders up and backward, filling the lungs with air to their utmost extent, until pain would warn me to stop; then to press down on the air to make it fill every cell. The closed cells, which were sealed by adhesions so that they could not be opened, were thus surrounded by healthy cells, and the diseased tissue would suppurate and be thrown off. It worked exactly as he told me. I have practiced these inhalations for over 40 years, and I can now, at the age of 62 years, expand my lungs to such extent as to increase my chest measure five inches, and I never have a cough to trouble me.'"

HYGIENE.

It was formerly held that breathing the same air with a consumptive was highly dangerous. It is now believed that only the desiccated sputa breathed into the lungs is infectious. There can be no doubt that a certain amount of morbid material is exhaled with each expiration. Carefully conducted experiments with the condensed moisture from crowded auditoriums prove this. Very highly offensive putrid albuminoid substances have been obtained in this way. Crowding consumptives into large sanitariums, in my opinion, is not good practice. Far better for such patients to live in homes by themselves and attendants.

"Sunlight is nature's disinfectant, and experiments have shown that direct exposure to its rays for a few hours will destroy such germs as tuberculosis. The old method of exposing infected linen, carpets, etc., to the sun has thus been proven of value, and the rays of the sun must often destroy many of the bacteria present in infected hospital wards. This influence is also beneficial in destroying many of the bacteria deposited upon the surface of the earth, and even the upper layers of rivers must be somewhat purified by the agent." (Prof. A. C. Abbott, Philadelphia.)

The sputa should be received into paper receptacles to be afterward burned. We find in nature, that living beings, animals, plants, and living tissues, whether of animal or vegetable origin, are continually undergoing certain processes, viz: growth or development, decay or death. Both these processes go on simultaneously. Professor Hammons says: "If we could perfectly adjust these so as to balance each other, man might live on forever." By a partial adjustment, we have increased the average longevity several years.

If the excreta of any kind are retained in the tissues, they produce disease, which is a slow form of death. If, after they are removed from such tissues, they are absorbed or applied to other living tissues they produce disease. If not thus absorbed such *excreta* undergo further change or decomposition when exposed to the action of heat and moisture in the open air, evolving during such process foul gases very injurious to life. But when placed in that great stomach of nature—Mother Earth—they are so digested that they are capable of becoming, by the absorption of different plants, parts of living organisms. In densely populated communities the sewerage system of disposal of excreta is adopted.

In an editorial in the London *Lancet*, the editor, in speaking of the sewerage system says: "After all, it is not a perfect success. Besides defiling the Thames to such an extent that the stench from it is quite perceptible, the gases that arise from the opening of the sewers at every corner, and are inhaled by the passers-by, are largely the cause of the many cases of diphtheria and typhoid fever which exist in this city."

It is a query in my mind whether it may not be better for us to modify our plans of disposing of the excreta and waste material of cities; whether the sanitary laws adopted by the Jews under the instruction of Moses would not be better. We find that the Jews had their Gehenna, or hell fire located in the valley of Gi Hinnom, outside the walls of Jerusalem. In this fire was consumed all that was vile and likely to taint human life. Without discarding the sewerage system, might we not supplement it more fully than is done at present by the crematory system of disposal of all offensive substances? In the family this process might be more largely used. Let everything be burned in the stove that can not be passed down the sewers, or buried deeply in the ground, if they live in the country. Col. George Waring of New York states that "the foulest sewerage water passed through ten feet of clean sand comes out clean and pure." This brings us to the consideration of a water-supply.

PURE WATER.

It is very important that tuberculous patients should have an abundant supply of pure water. Water being a universal solvent of organic material, it is therefore

very necessary that no filtration from closets or cess-pools be allowed to contaminate the source of supply. I prefer and instruct my patients to drink large quantities of hot water, as I believe this promotes excretion of deleterious substances from the body, and adds to its functional activities. Frequent bathing of the body is of great use to patients. A sponge bath at night will often allay excitement and give patients rest.

EXERCISE.

Light exercise should be indulged in as far as the strength will permit, especially lung exercise. Many individuals with lung trouble have been cured by learning to play the cornet.

DRUG THERAPY.

Every qualified physician will administer such drugs to his patient as may be required by the particular phase the case may present from time to time. Before leaving the therapy of this complaint I will record my experience with those medicines we may properly call reconstructives; viz., nuclein, either Auld's or Vaughn's or the protonuclein of Reed and Carnrick. Either of these should be administered continuously for months, even after the patient has seemingly recovered from the complaint. The administration of these preparations appears to be, to increase and improve the blood elements of the body.

DIET.

We now come to what, in my opinion, is the most important part of the treatment of tuberculous patients, viz., the diet. With regard to diet, it should largely consist of animal foods. Of these, eggs and milk should preponderate. I prefer to give eggs raw when tolerated. The albumin of the egg is similar to blood albumin, and is digested, or rather, it is absorbed into the blood without undergoing an elaborate digestive process. I have found the white of the egg mixed with water, tolerated when the yolk could not be borne by the stomach. Bone marrow of the ox is of greater value than cod-liver oil. Good creamery butter should be used freely, and to accomplish this result it should be spread *thickly on very thin slices of bread*. Heavy meals should be avoided, but food should be partaken of in small quantities between meals.

Beef feeding, as introduced by Dr. J. H. Salisbury, and largely practiced by Dr. Ephraim Cutter and others, is a wonderful power for good in the nutrition of consumptives. Beef-tea made from beef-extract, I consider positively injurious. It taxes unduly the excretive functions of the body, and has very little nutritive value. It is largely stimulating in its action. When I use beef-tea in my practice I have it prepared as follows: Take a small quantity of gelatin, say about one teaspoonful, and dissolve the same in a cup of hot water. When dissolved add a small quantity of extract of beef for flavoring and stimulating purposes, then add a little salt and pepper. Fruit should be partaken of freely. In fact, the aim of the physician should be, to endeavor by means of all the resources that the science and art of medicine has placed at his disposal to add to the digestive and assimilative powers of his patient, and thus give him or her the greatest chance for a cure of the diseased tissues. I might continue this subject of feeding indefinitely, but enough has been written to show its supreme importance.

INFLUENCE OF THE MIND UPON THE BODY AND ITS RELATION TO EDUCATION.

Presented to the Section on Physiology and Dietetics, at the Fortyninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY RANDELL HUNT, M.D.

CHAIRMAN OF SECTION ON PHYSIOLOGY AND DIETETICS, A. M. A.
SHREVEPORT, LA.

Involving, as this subject does, a comprehensive knowledge of the brain, nervous system and body, their relations and inter-relations, connections and nice dependencies, an overestimate of it is impossible. Though its importance has been recognized for centuries in all the great philosophic treatises of the Aryan peoples, the ideas presented in them have been so entirely spiritual and ethical as in no way to suggest the existence of the psycho-physical law underlying the whole.

The first to clearly perceive and appreciate the existence and potentiality of a psycho-physical law underlying the phenomena arising from the influence of the mind upon the body were Unzer and John Hunter. Since their time, the subject has been ably studied by such men as Muller, Elliotson, Laycock, Braid, Carpenter, Tuke and Haidenhain, who have assiduously devoted their lives to the scientific elucidation of this problem upon purely psycho-physiologic principles. Such is the fruit of their inestimable labors, that the medical profession gives to these workers its highest gratitude and respect, and perceives in the future development of man the raising of a monument to them more lasting than stone, for their researches have practically established the fact that no mental modification can occur without a corresponding change in the body.

A primary purpose of this paper is to demonstrate that through Intellect, Emotion and Will the mind exerts an enormous influence for good or for evil upon the sensations, movements, and organic functions of the human body.

Intellect is the power of the human mind that adapts means to an end, guides the feelings, and enables its possessor to find out and act through knowledge. It acts upon the body more particularly through imagination, with which expectation, sympathy, belief, faith, imitation, and hope are closely associated. Attention also plays a remarkable part in consciousness, in its relation to physical phenomena, and though in one form, an act of the will must be included under this head, prolonged attention giving clear consciousness and good memory, while mind, through attention, concentrates and perceives itself—knowing, feeling and willing. The persistent development of attention is one of the most important and practical factors of successful education, increasing, as it does, the natural growth of perception and conception, which are aptly termed by James the very backbone of our thinking.

The production of psycho-physical phenomena through active attention was understood by John Hunter, who says: "I am confident that I can fix my attention to any part until I have a sensation in that part;" while the power of ideational upon sensational centers is affirmed by Muller, who shows that "ideas do not act merely upon the motor apparatus by which they are expressed, but as frequently affect the organs of sense, which then present sensorial impressions or images of ideas." Insensibility to phys-

ical pain occurs when the attention, modified by expectation, is powerfully arrested in a specific channel, the body failing under the circumstances to appreciate even the application of strong stimuli. "During the year 1862," writes Dr. Braine of Charing Cross Hospital, "I was called upon to give chloroform to a very nervous and highly hysterical girl, who was about to have two sebaceous tumors of the scalp removed. On going into the operating theater, it was found that the bottle containing the chloroform had been removed to the dispensary, and on testing the Snow's inhaler, which at that time I was in the habit of using, I found it to be quite devoid of even any smell of chloroform. Then, having sent for the bottle, in order to accustom the girl to the face-piece, I applied it to her face, and she at once began to breathe heavily through it. When she had done this for about half a minute, she said: 'Oh, I feel it, I feel that I am going off,' and as the chloroform bottle *had not arrived*, she was told to go on breathing quietly. At this time, her hand, which had been resting across her chest, slipped down by her side, and she did not replace it. I thought I would pinch her arm gently to see the amount of discomfort her hysterical state would induce her to bear. She did not notice the pinch, and to my surprise, did not seem to feel it at all. Finding this was the case I asked the operator to begin, and he incised one of the tumors, and then as the cyst was only slightly adherent, pulled it away. The doctor then tried the same experiment again, and without any trouble or pain removed the second tumor."

The rejection of the contents of the stomach as the result of expectation is well exemplified by an experiment made by Dr. Durand. He gave sugar-water to a great number of patients at a hospital; then, pretending alarm, said he had made a mistake and given an emetic, the immediate result of which statement was to cause four-fifths of the patients to be really very sick.

2. Emotions are our capabilities to feel in view of ideas; are occasioned by knowledge, and "are strung on ideas as pearls on threads of gold." Some of the emotions look to self and are called "egoistic;" others are termed "altruistic," because they look to others, but the emotions that look to the truth-world and duty-world are called "cosmic," and by physiologists are located in the optic thalamus, quadregemina, pons, and medulla. They act through the cerebrum, upon which they are dependent for ideas, and through the sensory ganglia, by means of which are produced the feelings with which they are associated. That the medulla is the seat of the emotions suggests naturally that undue excitement, in whatever way caused, produces through the vagi and other nerves that arise from it like effects upon the organs to which they are distributed. Emotion may act upon the sensory ganglia and centers of the nerves of sensation, thereby producing any of those sensations ordinarily induced by impressions upon their periphery; and, though really central, these sensations may be referred to the periphery by the terminals, endings of the nerves. Claude Bernard asserts that the same nerve may transmit the sensory current in either direction, to or from the brain. Other emotions occur, due to the influence exerted upon the sympathetic nerves, as in creepiness from fear. Shakespeare describes the effect of shame upon the ear in the following couplet:

Mine ears that to your wanton talk attended
Do burn themselves, for having so offended.

Prof. Ball of Paris tells of an unfortunate fellow that had a quarrel with his mother-in-law and fell into a violent passion. Full of emotion, he went home intending to tell his wife, but to his infinite surprise, found that he was dumb. Treatment, however, soon restored him to a normal condition. Contrast the mild expression of Humility with that of Pride. Fear expresses itself in cries, tremblings, and palpitations, while Courage is bold, quick and firm.

The heart, blood-vessels, and blood are materially affected by different emotions, as are also the lungs, ureters, bladder and urethra. Dr. Beaumont found in case of the man with a fistulous opening in the stomach, that anger caused its inner coat to become red, dry and irritable, always producing an attack of indigestion. It is well known that the menses are arrested by emotions of a violent character, and that infants suckled at the breast of an angry mother, have been known to be made very ill. Jaundice has been caused by the emotions of fear and pain; a fact which can be explained by assuming that the vaso-motor dilators have been stimulated, thus allowing, or rather forcing the bile into the blood, its pigment being by this channel disseminated throughout the tissues. Pleasant emotion increases functional activity, promotes metabolism, and actually renews, improves, and invigorates the mental and physical being; though its scientific appreciation consists not only in its recognition, but in its substantial application to the improvement of mankind through educational methods and otherwise.

3. Will is the capability of self-direction, self-determination, and self-action; and makes of man a free agent, subdues the force of violent impulse, and guides the intellectual powers. It acts through the cerebral cortex, striated body, and pons. In health and disease the will can control within certain limits the reflex action of the voluntary and semi-voluntary muscles, while in the early stages of insanity there is often a violent conflict between the will and automatic cerebro-muscular action. All familiar with physiology are aware that by inflating the lungs and by an effort of will restraining respiration, the action of the heart can be almost entirely stopped, producing, however, if too long continued, complete collapse. Colonel Townsend once illustrated his power, through will, to simulate death. Drs. Cheyne and Baynard felt his pulse, and found it sink gradually until, finally, they were unable to detect the slightest evidence of life.

The power of volition over the body cultivated by the fakirs is authenticated by English officers and medical men, Dr. Carpenter giving in his physiology the case of a Yogi that by will suspended the organic functions, was buried for six weeks, disinterred and resuscitated. John Hunter says: "The state of the mind is capable of producing disease; another state of it may effect a cure," meaning by this to imply that one kind of emotion is capable of removing a disease produced by another kind of emotion. Dr. Tuke, therefore, thinks it would be more correct to say "that, as in health certain mental states induce disease, so in disease certain mental states may restore health." Such a statement as the above illustrates the importance of this subject not only to medical men, but to teachers, who will discern at a glance the beneficial

effects of certain ideas, feelings, emotions and volitional impulses upon the minds and bodies of children, as also the detrimental effects of certain others. Practically, the true civilization of future centuries and the continued evolution of the human race seems placed in the hands of mothers and teachers.

Most important is it that we should recognize that through a scientific and judicious observance of nature's laws, in education, in government, in social intercourse, there is attainable a physical, mental and moral perfection that has heretofore been esteemed a mere idealization of the enthusiastic devotee of ethics or religion. That this is a fact is demonstrable through the correlative sciences of physiology and biology, which daily illustrate the dependence and interdependence of mind and body. To the student of nature is proven hereby the absolute necessity of a comprehensive knowledge of these sciences on the part of teachers; through the careful and judicious stimulation of ideas and emotions they may arouse and develop only what is good in the nature of the child.

A realization on the part of instructors of the benefit to be derived from moderate benign emotion, and the contrary effect of malevolent emotion, is bringing about radical changes in prevailing methods of education. All true methods recognize as fundamentally necessary the cultivation of the nervous system through an assiduous observance of hygienic dietetic and physiologic laws, associated with well-regulated efforts toward self-knowledge, self-control and self-perfection. Froebel held essentially the same views, views based on the unity of nature with man, of man with God, of God with all, and the consequent psycho-physiologic building of the inner self. Thus, through the enunciation and demonstration of universal truths, there is being rapidly evolved a new system of sociology and education based upon the grand unity of all, and showing as necessary to the evolution of man the knowledge of mental and physical laws. With such observance will come an era of true manhood and womanhood, showing in lives lived after the pattern of the Master the divine and indwelling spirit of the Father.

DISCUSSION.

Dr. J. F. PEAVY, Atmore, Ala.—Personally, I desire to thank Dr. Hunt for his very excellent paper. I am myself, to some extent, a student of mental phenomena, and am especially interested in this very matter of the mutual relation and dependence of mental processes and physical states. Much of the confusion into which we are liable to fall in the study of this subject, may be avoided by simplifying our conception of mind and body as related to each other. We have been accustomed to regard them as distinct existences, capable of being separated from each other and of pursuing independent activities. Until we rid ourselves of this vagary it is clearly impossible to reach any theory of mental and physical correlation, or any logical explanation of modifications produced in either mind or body by influences impressing the one through the other.

Man is a unit, an organic whole. Certain of his higher physical activities we distinguish as mind. The appetites, the desires and inclinations, the likes and dislikes, the hopes and expectations, are generated in nutritional states of the organism. Upon these are based the higher mental and volitional activities. These affective states are at the same time the cause and the expression of the moving of the organism in the direction of ends in the environment which it deems good. In the pursuit of these ends, innumerable adjustments to conditions are effected in the central mechanism, the brain. Many of these adjustments are performed consciously and intelligently, while others are performed subconsciously and automatically. Those adjustments which involve the element of conscious intelligence are on their subjective faces mental states, yet they are nevertheless expressions of brain action.

Mental states are correlated with definite physical processes in the brain. You can not call up the one without producing the other. Furthermore, these physical processes being affections of the central organ of adjustment, have connections and relationships which make them centers of influence affecting more or less remotely the various organs and functions of the body. Thus the mind, or as I prefer to call it, mental action, influences not only the automatic functions of the brain, but also other bodily functions relegated for the most part to lower centers and controlled only indirectly by the brain through an exercise of inhibitory influence over them. Indeed, influences coming through the psychic life are constantly impressing themselves upon the physical organism and taking the shape of normal physiologic activities. Only the curious abnormalities which now and then arise attract our attention and excite our wonder. In our amazement at these illustrations of perverted action, we are in danger of overlooking the fundamental facts of mental and physical correlation in the human organism.

Certainly there is no more inviting study than that of mental phenomena from the standpoint of the physiologist, nor are there any more important therapeutic questions than those which relate to the proper handling of deviations from the normal in this department of vital activity.

Educators quite generally are now realizing the importance of a knowledge of psychology as part of the mental equipment of the up-to-date teacher. Quite generally, too, is the fact being recognized that the psychology which has value rests upon a physiologic basis. The question of the influence of mental impressions and mental exercise over physical development and activity seems scarcely to receive the attention at the hands of educators which its importance deserves. The alternative question of the influence of physical training and development over mental health and efficiency is receiving, and quite justly too, considerable recognition in modern methods and theories of teaching. Physical culture, drawing and other methods of developing manual dexterity have fully established their value. They serve to develop the motor capacities of the central organ of adjustment. They tend to make men of action prompt to meet the exigencies of life as they arise.

Dr. E. STUVER, Rawlins, Wyo.—Everyone appreciates the great influence exerted by the mind upon the body and the converse influence of the body on the development and integrity of the mind. I shall not enter into any general discussion of this subject, but desire to call attention to one phase of the question which I regard as of very great importance in the application of educational principles. The point which I desire to emphasize is that the child should not be regarded as a little man or woman, but rather as an epitome of the development of the race. If we recognize the fact that its ontologic or individual mental development corresponds to the phyletic or racial phases of development, through which the race has passed in reaching its present stage of evolution of the mind, we will at once appreciate the fact that, in order properly to direct the evolving mind of the child through its various ages of credulity, inquiry and faith, up to the fully developed age of reason, that the teacher should have, at least, a clear outline conception of the mental evolution of the race. I desire to congratulate the author on his exceedingly interesting and valuable paper.

Dr. L. DUNCAN BULKLEY of New York said that the influence of the mind over the physical frame is an established fact of which it is often very interesting to observe illustrations.

The ready control of the vascular system, as seen in blushing, often upon mental suggestion, or the paling of the countenance from fear, and the cold sweat occurring under mental emotion, are known to all. I have seen a number of cases where localized sweating of the hands or feet occurred most readily upon mental influences. When the mind was diverted the parts remained dry, but when attention was called to the part the perspiration oozed out and even ran off the part. But mental influences can go farther, and even produce direct lesions of structures in various organs, and he mentioned an interesting case reported by Leloir, where fright caused the sudden and severe development of eczema.

Mental influence can also act in an inhibitory manner and arrest secretions, and probably also check nutrition. He mentioned a very interesting case of a perfectly healthy young lady where the shock of a proposed slight surgical operation completely arrested digestion, so that a simple breakfast was vomited unchanged fully seven hours after it was taken, the suggestion of the operation and visit to the surgeon occurring on rising from breakfast.

The influence of the mind has undoubtedly much to do with recovery from disease, and Dr. Bulkley thought that some of the benefit resulting in the practice of specialists was in the influence of the mind in the way of hope and expectation.

SMALLPOX IN CUBA.

THE EPIDEMIC IN THE HOLGUIN AND GIBARA DISTRICTS OF CUBA, INCLUDING A BRIEF REPORT OF THE SANITARY CONDITION OF THE TROOPS IN THE DEPARTMENT.

BY R. S. WOODSON, M.D., U. S. A.

MEDICAL INSPECTOR DEPARTMENT OF SANTIAGO.

The harbor of Gibara is a small, open one and well washed. The town of 10,000 inhabitants, a walled city nicely laid off with cleanly streets, presents a pretty seaport, which, with the assistance of constant sea breeze and sanitation can be made a perfectly healthy spot for occupancy by troops.

The town and vicinity were carefully inspected for a suitable location for camp grounds, and the most suitable site selected, i. e., the open point of land to the seaward of the city occupied by a small Spanish fort—a level promontory in close proximity to the only available water-supply, consisting of a large, well-cared-for public cistern. The camp was nicely laid out, the fort taken as a guard-house and carefully disinfected, and an adjacent empty house designated as a hospital. Inasmuch as smallpox was prevalent in the city the command was placed in rigid quarantine, and it is recommended that no more troops be sent to this district until the sanitary situation can be controlled.

The mayor and health officers were next visited, and I was informed that for the past three years the city had been badly infected with smallpox and dysentery, that there had been over 1000 cases of the former with 250 deaths since Jan. 1, 1898, and that there had been over 800 deaths from all causes during that period. I took charge of the sanitary situation at the request of the military commander and instituted the following reforms and measures:

1. The Red Cross supplies, which were abundant, and which had been withheld from distribution by the Red Cross agents, were seized by military force.
2. An isolation hospital of 100 beds, fully equipped from Red Cross supplies, was established outside the city walls in the direction of the infected district.

Fifteen male and female immune nurses were employed at twenty and fifteen dollars respectively; an immune guard of eight men under charge of Sergeant King (M.D.), Company G, Second U. S. V. Infantry, were detailed as a permanent guard and acting hospital-corps detachment. Captain Massie (M.D.), Company G, Second U. S. V. Infantry, was placed in command. In two days forty patients were isolated and under treatment. The shed building, 300 feet long, was divided and subdivided for white and colored, and male and female. Two efficient cooks were employed and a well-stocked commissary established from Red Cross supplies. A detention hospital was then established in an adjacent building, and a large house on an adjacent hill was rented as a paying hospital for female patients of a better class. All infected houses of present and past cases were marked with a red cross to be disinfected. Just beyond the city wall is a settlement of 350 people in small thatched huts, badly infected and containing many cases, which will be isolated. At the suggestion of the commanding general of this department, these huts will be used for isolating purposes for the entire infected district and afterward destroyed. The Spanish hospital, well constructed and fairly well supplied, was seized and the goods confiscated for the use of the medical depart-

ment. The building is not used yet on account of infection, but is recommended as a general hospital for troops stationed on the north coast of Cuba. It is believed that the city of Gibara will become a health resort when the epidemic of smallpox now in existence there shall have been controlled.

Holguin, the principal city of the district, is similarly infected, and in much worse degree, there being in that town of 10,000 inhabitants, 800 cases of smallpox at the present time, and a correspondingly large number of cases of dysentery, typhoid fever and malaria cases. All civil government has been abandoned in this city, and its sanitary condition can be judged from the fact that 12,000 Spanish soldiers occupying the city have not established privy sinks. The situation in this district is grave and demands prompt and efficient action. The absolute necessities are: thorough isolation of patients and suspects; disinfection of infected foci; quarantine against infected adjacent districts; maritime quarantine; abundant disinfectants; medical supplies; rations for Cuban poor; 1000 cots with sheets, pillows, blankets, etc.; vaccine lymph for vaccinating 10,000 inhabitants; an efficient corps of physicians as a vaccinating and disinfecting committee, and a sanitary corps of civilian employes for thoroughly policing the city.

It is believed that with proper support, the situation in Gibara can be controlled in one month; in Holguin in two months and in the whole district in three months.

On October 29 I proceeded on horseback to inspect the sanitary conditions of the various hamlets along the line of the Holguin and Gibara railroad between these two cities. Parenthetically I will remark that there was an excellent dirt road and a beautiful open, fertile country.

Bahia de Río Blanco, a small hamlet, 30 thatched huts, 200 inhabitants, six miles from Gibara. No smallpox, the disease having exhausted itself; all huts infected.

Arroyo Blanco, eight miles from Gibara, 300 inhabitants. No smallpox at present; 100 cases in past year, with many deaths; all huts infected.

Cantimplora, five miles from Gibara, a town of 600 people. No smallpox, the inhabitants having exercised some precautions against the disease.

Tondinga, 500 inhabitants, ten miles from Gibara. No smallpox in town at present. No history of past epidemic obtainable.

Auras, twelve miles from Gibara, a town of 1000, at present occupied by Spanish soldiers, contained many cases of smallpox of virulent type.

Aguas Claras was next inspected as a probable location for troops, four miles from Holguin, at present occupied by Spanish soldiers. Water-supply very deficient; there were many cases of smallpox; all huts infected; locality as a probable camp site abandoned.

It is advised, first, that the remaining six companies of the Second U. S. Vol. Infantry be temporarily withheld from entering infected districts; second, that the six companies now in Gibara be held in quarantine at that point and that they do not proceed as yet to Holguin.

Having done everything in the premises with the means at hand, I next inspected Sagua de Tanamo. The latter town is somewhat inaccessible, necessitating twelve miles of travel in a row-boat to the landing, Esteron, at head of Sagua de Tanamo Bay; then ten miles on horseback to the city of Sagua. At Es-

teron is located the commissary store-house, under guard of three men. It is a filthy little hamlet of 300 inhabitants, where malarial fever is rife. All men who have been on duty at this place are invariably afflicted with malarial fever. I would recommend that these stores be moved up to Sagua with the company on duty there, to avoid the necessity of the above exposure. The road from Esteron to Sagua is in good condition. Basan, a small hamlet of 250 inhabitants, half-way to Sagua, is a healthy little town, containing no smallpox nor malaria.

Sagua de Tanamo, a town of 2500 inhabitants, situated on a high, well-drained hill, in the midst of a large, fertile valley, now under cultivation, giving the best evidence yet seen of marked regeneration from the effects of the war, is a comparatively healthy town. The water-supply is taken from the Sagua River, a clear, bold stream, running through the valley. The town is garrisoned by Company L, Third U. S. V. Infantry, under command of Major M. W. Harris, of that regiment. Acting Asst.-Surgeon W. H. Reynolds, in charge of the medical department, a faithful, hard-working, practical man, has established a good hospital in a rented building, where men receive careful professional attention. The general police of the camp is not good. All sinks were in an abominable condition, old sinks were not filled up and new sinks were not sunk beneath the level of the ground, but left to drain down into the adjacent valley, much to the detriment of the neighboring population. There were no kitchen sinks. No records have been kept of this hospital. The surgeon was instructed in military hygiene and hospital administration. The ration was complained of, as being deficient in fresh beef, and of proper diet for the sick.

At Sagua is located a 100-bed Spanish hospital, in fair state of preservation. The present occupancy of it was advised against, until thorough disinfection had been put into effect.

Baracoa was next visited—a town of 4000 inhabitants, garrisoned by three companies of the Third U. S. V. Infantry under command of Lieut.-Col. T. S. Wyly, who possesses all the requisites toward the making of an admirable soldier. The sanitary work that Colonel Wyly has done at Baracoa deserves special mention. He has moved his command from a well-selected camp-site into the Spanish hospital, situated on a high hill. All floors have been removed and earth taken away to the extent of two feet and refilled with fresh gravel, and covered over with a half-inch layer of concrete. Water-closets and shower-baths have been established. The water-supply is taken from the Baracoa waterworks, from the Macaguanigua River, piped up into a reservoir and distributed throughout the post. The hospital was in an excellent condition, records carefully kept, rations and cooking excellent; medical officers intelligent and energetic. A complete chemic laboratory of expensive instruments and rare chemicals was found. It is recommended that they be turned in to the U. S. general hospital, Santiago de Cuba, for the purpose of establishing a chemic laboratory at that institution.

Guantanamo was inspected, November 1. The headquarters and six companies of the Third U. S. V. Infantry were found encamped a short distance from the town of Guantanamo, the latter a city of 10,000 to 12,000 inhabitants. The camp was well selected, on a sloping hillside, well ditched and drained. All

privy and kitchen sinks were carefully dug and well policed. The sick report showed 25 per cent. sick, principal affection being malarial fever. The yellow fever outbreak has ceased to exist, no cases being found by the inspector. The water-supply, taken from the Guantanamo River, pumped into a reservoir, an iron tank, is there piped into a large iron cauldron and boiled. General police at camp is excellent. The hospital is carefully constructed and was found to be in excellent condition. The records were carelessly and improperly kept.

The following general impressions have been gathered from these and former inspections:

1. The lack of a hospital corps detachment at most of the regiments.
2. The inefficiency and ignorance of hospital stewards as regards their duties as such.
3. The low grade of the average medical officer, both commissioned and contract, especially the latter.
4. The fact that commanding officers, as a rule, are very much alive to the necessity of rigid sanitary precautions in this climate.

Upon arrival I was ordered to return at once to Holguin and Gibara and to assume entire control of the sanitary administration of the district. The below mentioned able corps of acting assistant-surgeons were ordered to report to me for duty in connection with the work of eradicating the disease: Myer Herman of New Orleans; Guel Dolz of Havana; W. O. Stone of Mississippi; Felipe Veranes, chief surgeon Cuban Army; Vicente Gomez of New York. We now have the city of Gibara under control and are at work upon Holguin.

SOCIETY PROCEEDINGS.

Southern Surgical and Gynecological Association.

Eleventh Annual Meeting, Dec. 6-8, 1898.

Dr. RICHARD DOUGLAS of Nashville, Tenn., presided over the meeting, which was held at the Gayoso Hotel, Memphis, Tenn.

Prayer was offered by Bishop Gailor.

Dr. ALEXANDER ERSKINE of Memphis delivered an "Address of Welcome" on behalf of the local profession, which was responded to by President Douglas, after which routine business was disposed of.

D. WILLIAM E. PARKER of New Orleans, La., presented a paper entitled

GUNSHOT WOUNDS.

He described the hospital conditions in Cuba and the wounds seen by him made by the modern bullet. He spoke of some experiments made under the direction of Major L. A. La Garde, surgeon U. S. A., as to the relative penetrating powers of the Mauser, Krag-Jorgensen and Springfield rifles. With ammunition of the years 1896 and 1897 the Mauser, fired at a distance of three feet from the muzzle into seasoned yellow pine posts, would penetrate 34 + inches; with ammunition of 1895 it would penetrate 32 + inches; with ammunition of the past year, the Krag Jorgensen, fired at the same distance, would penetrate 24 + inches, and the Springfield would penetrate but 5 inches; yet many lodged Mausers were found, and he was told by the Spanish chief surgeon that but six lodged Krag-Jorgensens were found by them. In speaking of wounds of special regions, he said that flesh wounds, as a rule, healed under one dressing. In the few cases that did not, the sloughing was at the points of entrance and exit, and not along the whole track of the bullet. Explosive effects were not seen by any of the surgeons. He stated that he had hoped to present some statistics as to the wounds of the war, but they could not be had. Wounds of the brain did well. He had heard of at least five cases that were still alive and doing well. But one case of wound of the spinal cord was operated upon and he was doing well. This patient had paralysis of both legs and of the bladder and rectum. Some spiculae of bone had been removed from the cord. At this time the

patient has perfect use of the right leg and partial use of the left, and has perfect control of his bladder and rectum. He said that while he had not in any way modified his opinion that laparotomy should be done for abdominal wounds in civil life, with the small modern bullet and lack of proper facilities this operation should not be attempted in the field, unless there should be symptoms of hemorrhage. About 50 per cent. of these cases recovered without operation. Chest wounds did well and caused but little trouble. In cases of wounded vessels, hemorrhage did not seem greater than in cases wounded by other bullets. When nerves were injured, nerve suture was not attempted on account of the rush of work, but he thought it should be attempted as soon as possible. None of the hospitals had a sufficiently large number of surgeons or hospital-corps men, but he spoke of the efficiency of those who were there.

Dr. F. W. McRAE of Atlanta, Ga., followed with a paper on
PENETRATING WOUNDS OF THE ABDOMEN, WITH REPORTS OF CASES.

At the outset, the essayist referred to a resolution passed unanimously by the Association at the Nashville meeting in 1896, to the effect that in all cases of penetrating wounds of the abdomen it is the duty of the surgeon to make an exploratory incision so as to definitely determine whether the viscera have been injured or not. Since then a few able surgeons have dissented from this opinion. The propriety of surgical interference in cases of penetrating gunshot wounds of the abdomen will depend on one of three things: 1, the general condition of the patient; 2, dangerous internal hemorrhage; 3, wounds of the stomach or intestines large enough to permit extravasation. He quoted from contributions to this subject by Senn, Nunez, Winslow, Budinger, Vaughan, Woolsey, Robson, Chauvel, Michaux, Klemm, and others, and said, from the conflict of opinion and advice given by these and various other surgeons, one is at a loss to know just how to proceed in many cases. His own convictions, based on sixteen cases, which he narrated, are positive. While he has the greatest admiration and respect for the surgical opinions of Senn, he should be recreant to his convictions were he to accept the proposition of non-interference laid down by Senn in his recent contributions to the subject. In most of the cases which have come under his observation where grave lesions of the abdominal viscera have existed, the symptoms of internal injury were practically *nil*, and the positive signs of grave damage almost entirely absent. In conclusion, he reiterated his firm conviction that every case of penetrating wound of the abdomen, where there is reasonable doubt as to injury of the abdominal viscera, should be subjected to at least an exploratory operation. This enables the surgeon to either absolutely be sure that no injury has been done to the viscera, or to repair, as far as possible, such injuries when they exist. The mortality following a simple exploratory operation *per se* is so small as not to weigh against the much greater mortality that necessarily follows the expectant plan of treatment. In the cases he had seen, the general and local signs have been so misleading and enigmatic that prior to the operation a conclusion on his part as to internal conditions would have been entirely guess-work.

Dr. HORACE H. GRANT of Louisville, Ky., contributed a paper on

PRACTICAL MANAGEMENT OF BULLET WOUNDS OF THE ABDOMINAL VISCERA.

Observation and experience with operators coming frequently in contact with this lesion have determined that penetrating wounds of the abdomen demand laparotomy at the earliest possible moment after diagnosis and thorough inspection of the entire region endangered. It is established that not only is the mortality in untreated wounds of the abdomen almost 100 per cent. where the intestines are perforated, and very high in wounds of the solid viscera, but it becomes less promising every advancing hour, until by the second day peritonitis sets in and destroys the hopefulness of the prospect. Within the past two years the speaker has operated upon four cases. In each case the patient was seen early, in no instance later than four hours. In three, resection of the intestine was necessary. Three of these patients recovered; the fourth died from septic peritonitis due to the escape of a large quantity of fecal matter before operation. Autopsy disclosed a perfect intestine.

These three papers were discussed together.

Dr. W. L. ROBINSON of Danville, Va., said he had seen a good many cases of gunshot wounds of the abdomen, and nearly all of them died, either with or without operation. Early operative interference might save some of them.

Dr. G. S. BROWN of Birmingham said he knew of several cases of gunshot wounds of the abdomen that occurred in and

around Birmingham, that recovered without operation. Personally, he had operated on five cases, one of which recovered. In this case there was no perforation of the intestine. Undoubtedly, diarrhea and starvation, mentioned by Dr. Parker in his paper, have something to do with the favorable results. The intestines are most liable to be perforated when full.

Dr. WILLIS F. WESTMORELAND of Atlanta said the results of gunshot wounds of the abdomen on the battle-field should not be compared with those met with in civil life. It is not a question of operating, so far as fatal results are concerned, but the manner in which the operation is done.

Dr. W. E. B. DAVIS of Birmingham thought that Dr. Parker's paper was not an argument against operative procedures for abdominal wounds. Surgeons on the battle-field do not have the same facilities for operating on penetrating wounds of the abdomen that they do in civil practice, and which are necessary for the proper care of cases. If a man sustains an injury to the intestine, if his abdomen is not opened, death may be expected. In twenty or more cases operated on by him and his brother, all of the cases died that were seen twenty-four hours after the injury. This is not an argument against operative interference, but against late operation. Statistics impress surgeons with the importance of early operation.

Dr. GEORGE A. BAXTER of Chattanooga believes it is not necessary in many instances to open the abdomen in cases of gunshot wounds, and cited a number of cases that recovered without operative interference.

Dr. JOHN T. WILSON of Sherman, Texas, advocated early operation in cases where the surgeon is convinced that perforation has taken place. The character, technique and rapidity of the operation are very important. In operating, the intestines should be exposed as little as possible.

Dr. W. L. RODMAN of Louisville said that while he has pursued the practice of operating on penetrating gunshot wounds of the abdomen for the last ten years, after hearing the paper of Dr. Parker and reading the recent contributions of Senn and others, he wondered whether he as well as other surgeons may not have gone too far in operating in so many of these cases; at the same time, he does not wish to be understood as advising a masterly inactivity where the environments for operative interference are favorable.

Dr. WESTMORELAND said that, given a case of perforation of the intestine, particularly where there is extravasation of contents, instead of being masterly inactivity, it is criminal inactivity for a surgeon not to operate.

Dr. PARKER, in closing the discussion on his part, said that he had tried to make a clear distinction between the plan of treatment of gunshot wounds of the abdomen met with on the battle-field and those encountered in civil life. He is strongly opposed to laparotomy on the battle field on account of the conditions that exist. In civil life, however, the thing to do in cases of gunshot wounds of the abdomen, is to get in and out of the belly as soon as possible consistent with good work.

Dr. McRAE believes that a large proportion of operations undertaken for gunshot wounds of the abdomen late will terminate fatally.

Dr. GRANT stated that practically all cases operated on after twenty four hours perish. It is impossible to diagnose perforation of the intestines with any degree of certainty. If a patient is seen within eight or ten hours after the receipt of a gunshot wound of the abdomen under favorable surroundings, whether the bullet has penetrated the intestine or not, the skillful surgeon will not hesitate to make at least an exploratory operation, because it would not hurt the patient, but would probably save his life.

Dr. W. D. HAGGARD, Jr., of Nashville, Tenn., read a paper entitled

A PLEA FOR THE MORE CORRECT APPLICATION OF THE EMMET METHODS IN PLASTIC SURGERY.

The pioneer work of Sims was feelingly referred to. It was a unique circumstance in the annals of surgery that the instruments which made the feat of Emmet possible, and the fundamental principles of his success have remained unchanged. It is not so much the truth of homage to unprecedented genius, as the truth of the great principles enunciated, and the perfection of his devices. The extension of the method of Sims in fistula to the injuries of the adjacent soft parts was made by Emmet. The evolution and perfection of the operation on the cervix was traced. Dr. Haggard described the mechanics of the production of rectocele associated with the common transverse tear of the posterior vaginal wall involving the pelvic fascia, which is the essential pathology of this injury. The rational correction of this complex condition then would not be not to sew the labia together, which is the popular procedure

in one class of operations, nor to denude an arbitrary area of fanciful shape on the rectocele and bring the edges of the raw patch together, after the fashion of another class. It would rather be, in the language of Emmet, "catch up the retracted pelvic fascia at such a point and in such a manner as to take in the slack, as it were, of the fascia throughout the pelvis. By this procedure the displaced posterior vaginal wall is certainly lifted up and drawn forward in contact with the vesicovaginal septum. As the steps of the operation advance the displaced anus is lifted upward and forward, the everted tissues at the vaginal outlet gradually rolled in and the separated levator ani muscles brought together. He accentuated the essential features in detail. The classic operation for the complex tear of the perineum is more amenable to pictorial description and he believes it is more generally understood. He minutely depicted it. In every branch of art there is a troop of imitators who follow so closely the hall-marks of the original that the specimens can scarcely be distinguished from the genuine. So closely are mannerisms copied in literature, art, sculpture and the drama, that the imitators create a distinctive school. This accuracy of duplication is rendered possible by the faithful and scrutinizing study of the original pattern. The unlimited opportunities for the study of models in the arts are obviously impracticable in plastic surgery. We can not all have the privilege of seeing the peerless Emmet, although a distinguished fellow of this Association says that everyone who aspires to do this work ought to. Dr. Haggard regrets that many of Dr. Emmet's pupils do not or can not copy his methods, and he does not hesitate to say that those who do conscientiously strive to imitate him, fall very short in their efforts, but they have at least the satisfaction of having a correct conception of the highest ideals in surgery.

Dr. HOWARD A. KELLY of Baltimore, Md., presented a paper entitled

THE TREATMENT OF COMPLETE RUPTURE OF THE PERINEUM BY DISSECTING OUT THE SPHINCTER MUSCLE AND ITS DIRECT UNION BY BURIED SUTURES.

He said that the results of the best methods of the treatment of complete tears of the perineum are not entirely satisfactory in a large percentage of cases. The control over liquid motions and flatus is as a rule not secured immediately, and it is usually necessary to encourage the patient by telling her that she "will have to learn to control the muscle in the course of time." Such a control, more or less perfect, is gained in the course of several months. This defect in our present procedures is due to a faulty approximation of the sphincter ends which lie buried in a pit, and are therefore difficult to bring into accurate, firm apposition by sutures embracing a considerable quantity of tissue surrounding the sphincter ends. Dr. Kelly proposes, therefore, the deliberate dissection and freeing of the sphincter ends, drawing them out about one and a half centimeters from the tissues, cutting off the scarred ends, and affecting a direct union of the freshened ends by two or three catgut sutures. He was led to do this operation by his experience in a case which had been operated upon six times with a result, which, judged by superficial appearances, was perfect, and yet the patient had no control over her bowel functions. He made a semi lunar incision around the anterior periphery of the anus and found the right sphincter end buried in scar tissue in the median line, while that of the left side was ectopic and attached out under the ischial tuberosity. The sphincter ends were united directly by buried catgut sutures, and the skin wound closed and union took place *per primam*. In addition to these buried catgut sutures a splinting suture of silkworm gut is passed through the middle of the sphincter near the edges of the wound and on up through the septum splinting the ends together and taking the tension off the catgut. He has since taken the hint given by this case and adopted a similar procedure in six cases of complete tear of the perineum due to confinement. Two additional cases were operated upon by Dr. W. W. Russell and one by Dr. Ramsay. In each instance there was a surprising difference between the new and older methods, noted at once in the earliest stages of the convalescence, and the patient was immediately conscious of perfect control of her functions. The bowels should never be locked up. Great care must be taken not to leave any dead spaces in closing the remainder of the wound in the usual way, in order to avoid all risk of infecting the buried sutures. He only recommends this operation to those who possess considerable skill in doing plastic operations and in securing a snug, accurate adaptation of the parts.

In the discussion Drs. George H. Noble of Atlanta and J. Wesley Bovee of Washington, D. C., added their testimony to the usefulness of the method described by Dr. Kelly, but certain features of the technique of which they modified,

Dr. LEWIS S. MCMURTRY of Louisville, Ky., read a paper on
THE TREATMENT OF CANCER OF THE UTERUS.

He said that the treatment of uterine cancer had not shared proportionately in the great advance of modern pelvic surgery. While other diseases which were long the opprobria of medical and surgical science and art had been made amenable to surgical treatment, the treatment of cancer of the uterus was practically where it was twenty years ago. Cancer of the uterus was a very common disease. Women were more subject to cancer than men and in quite one-third of all cases of cancer in women, the uterus was the seat of the disease. The disease occurred as a rule between the ages of 30 and 50, attaining its maximum prevalence at the menopause. It was rare in unmarried and sterile women, and was most common with the mothers of large families. Race and environment have much to do with its development. It had been the experience of the essayist that the disease is proportionately rare in the negro race. From a careful statistic study, Billings declares that cancer is slowly but steadily on the increase, and that its greatest prevalence is in nations which have attained the highest state of civilization. In 1893 London alone lost 3412 of her population from this disease, a percentage of 3.73 of the total death-rate for the year. Cancer of the corpus uteri is rare in comparison with the common exhibition of the disease in the cervix, but not so uncommon as was formerly understood. Cancer of the cervix originates: 1, in the squamous epithelium of the vaginal portion of the cervix; 2, in the cylindrical epithelium of the cervical mucosa, and 3, in the epithelial lining of the cervical glands. Cancer of the body of the uterus originates in the epithelial structures of the endometrium. The treatment of uterine cancer consists in a variety of operative procedures, leading up to the most recent operation of combined abdominal and vaginal extirpation. The names of Verneuil, Carl Braun, Schroeder, Pawlik, Koerberle and Byrne are associated with high amputation of the cervix with ecraseur, cautery and knife. High amputation, as practiced by Schroeder, attained the greatest favor and maintained its position over hysterectomy until 1886. Prior to this time, hysterectomy had such a high mortality (15 per cent.) that high amputation deserved preference. In 1886 the operation of total vaginal extirpation was revived by Martin, Leopold and Olshausen. Since that time this operation has been very generally adopted, and is today the accepted treatment for the radical cure of cancer limited to the uterus itself. With the modern perfected technique the mortality of this operation is reduced to about 4 per cent.

The Doctor referred to the statistics of vaginal hysterectomy as given by Pozzi in the third edition of his treatise on gynecology, an analysis of which does not strengthen or inspire confidence in the ultimate results of this procedure. He said that claims are being made for the permanent cure of uterine cancer by hysterectomy which could not be realized. Of all the cases of uterine cancer which apply for treatment, only a small proportion are within the scope of a clean extirpation by vaginal hysterectomy. The large number of cases in which the disease recurs at the site of operation within a few weeks demonstrates that the operation is in most cases simply a resection, leaving behind sufficient disease for continued activity. His personal experience with this operation has been discouraging. Vaginal hysterectomy for cancer has never been a favored operation with him. During the past year he has done the operation in five cases, which were selected as most favorable for permanent cure. In all the disease was discovered early, and, so far as macroscopic evidence could show, it was limited to the uterus itself. The organ was normally mobile. Of these five cases treated by vaginal hysterectomy, two had recurrence, one in the bladder, the other in the vaginal fornix at the cicatrix, within five months after operation. These were selected cases in which the disease was early recognized; the patients were under 50 years of age and well nourished. The operation was done with a view of going far beyond the region of probable infiltration, and removing the appendages with the uterus. Based on his own previous experience, and that of other operators, it is doubtful if one of the three remaining cases will be living at the end of three years from the time of operation.

The histologic structure of the uterus and adjacent structures is exceptionally favorable for disseminating this disease. The rich lymphatic distribution here is an active means of infection, but the studies of Cullen show that the activity of lymphatic invasion has been exaggerated, and that the common mode of infection is along continuous structures. Extension is most rapid around the vaginal vault, forward and downward under the bladder, and in the base of the broad ligaments. The common invasion of the vagina by implantation

about the cancerous cervix has suggested to Werder the method he has practiced of total excision of the uterus and vagina by suprapubic operation.

In conclusion, Dr. McMurtry considered in detail the choice of operation for the several classes of cases of carcinoma of the uterus which are presented to the surgeon for treatment. For advanced cases, where the entire field of evident invasion cannot be removed, he advocated thorough curettage, scraping away necrosed tissue, emptying obstructed pus accumulations, washing out debris and establishing drainage and antiseptics. Such local treatment will reduce septic intoxication, prolong life, and promote comfort. All operations for radical cure should be limited to cases in which the disease is recognized sufficiently early for thorough removal of invaded structures. This will be best accomplished in the majority of cases by abdominal section and removal of uterus from above, including liberal portions of adjacent structures, especially the upper portion of the vagina, where implantation from the cervix is so often found. While liberal excision of suspicious areas of tissue should be done, it will rarely be found necessary to remove the subperitoneal lymphatic glands, since their enlargement has been often found inflammatory in character instead of cancerous. The field of vaginal hysterectomy should be limited to the few cases of early diagnosis in which operation can be done before deep extension of the disease. Efforts for prophylaxis should be most diligent and should be of universal application. All ulcerative and cicatricial lacerations of the cervix should be repaired as a prophylactic measure.

Dr. WILLIAM L. RODMAN of Louisville asked the members to give their experience relative to the frequency of cancer in the black and white races. He was rather surprised to hear of the infrequency of the disease in the negro woman. According to the last census statistics of Billings, cancer of the uterus is more common at all ages in the black than in the white race. This is also the experience of Matas, who has examined the records at the Charity Hospital in New Orleans. An examination of all deaths recorded by the Health Department of Louisville for the past thirty years corroborated the same view.

Dr. ERNEST S. LEWIS of New Orleans stated that while he had not observed a very marked difference in the relative immunity of negro women to cancer of the uterus, still if his experience is not at fault, he thinks, owing to their uncleanness, their mode of living, and to the more frequent accidents to which they are subject during labor, they are particularly prone to cancer of the uterus. With regard to the results of all operations for cancer of the uterus, he endorsed everything Dr. McMurtry had said. He could only recall one case of vaginal hysterectomy for cancer that lived for eight years, after which the disease returned, and the patient finally died. The disease is so liable to return that he considers any operation as palliative, and he believes that would be the result of the abdominal operation advocated by Dr. McMurtry, particularly in advanced cases, and if cases are met with in the incipency of the disease, in his opinion as much could be accomplished by the vaginal as by the abdominal operation.

Dr. VIRGIL HARDON of Atlanta said during his seven years' connection with the Grady Hospital, he had reason to believe that cancer of the uterus was more frequent in negro women than in white women. He has been led by his experience in the treatment of uterine cancer to the same conclusion as that reached by the essayist, except he had been led to go further. He has operated for cancer of the womb by vaginal extirpation, by the abdominal method, and by the combined method, and he has never yet operated upon a case where recurrence did not take place sooner or later, and for this reason he has lost all confidence in operative measures as a means of effecting a permanent cure. However, he has no doubt on theoretical grounds, that if cases are seen sufficiently early, a permanent cure might be effected by surgical interference.

Dr. HOWARD A. KELLY of Baltimore remarked that he was astounded at the trend the discussion had taken, because he had seen dozens of cases of cancer of the uterus that had remained well for a number of years after having undergone surgical intervention, removing the uterus either by vagina or by the abdomen. He finds carcinoma of the uterus as frequently in negroes as in white women.

Dr. J. WESLEY BOVIE of Washington, D. C., said that his experience in the radical treatment of cancer of the uterus has been more satisfactory than what he had been hearing today. He knows of a good many cases upon which he has operated that have gone on for three years or more without a recurrence of the disease. He has done three operations after the manner described by Werder in the *American Journal of Obstetrics*, last winter, and he is much pleased. In each case he adopted the abdominal rather than the vaginal route, believing a more

radical operation could be performed by this method. He has great hopes for the future treatment of cancer of the uterus by complete abdominal hysterectomy, undertaken early.

Dr. WILLIAM L. ROBINSON of Danville said that when the parts have become infected beyond the uterus, no dissection, however extensive, would ever remove the cause. When the disease has extended beyond the uterus, he believes it is beyond the power of any surgeon to thoroughly remove it. Therefore, unless an operation could be done very early, he would not advise the removal of the uterus.

Dr. W. E. B. DAVIS was profoundly impressed with the position taken by Dr. Lewis as to the ultimate outcome of cases of cancer of the uterus, believing his position is correct. There is no man in America who has had a larger experience in the treatment of cancer of the uterus than Dr. Lewis of New Orleans, and the profession were familiar with his great skill as a surgeon, hence his experience regarding uterine cancer was certainly valuable.

Dr. McMURTRY, in closing the discussion, said he could not endorse the view that Dr. Kelly takes with reference to the ultimate results of the operative treatment of cancer of the uterus. He knows that Kelly's work in this direction has been extensive, and that his reports are sincere and reliable, but there are a great many surgeons, working in the same line, who have done thorough, faithful, skilful work in the radical treatment of uterine cancer, who doubt the future confirmation of Dr. Kelly's views.

Dr. JOHN T. WILSON of Sherman, Texas, read a paper on

FRACTURES INVOLVING THE ELBOW-JOINT.

He said: Fractures involving the elbow-joint are of great interest and always cause more or less anxiety because of their liability to ankylosis, partial or complete: to deformity, or to some interference with the perfect function of the joint as a result. Fractures without the capsular ligament are not so grave, are under better control, give more satisfactory results, and cause less apprehension. Fractures within the ligaments are always troublesome, give rise to more inflammation, demand greater care in their reduction, in the dressing, and in the after-treatment. Ankylosis in various degrees is generally looked for when union has taken place; it is extremely difficult in many cases to avoid this result, but with care, patience and perseverance on the part of the surgeon and patient, this complication can be remedied wholly or in part in nearly all cases. It is necessary to remember that the muscular attachments to the region around the joint are very great. It is difficult to conceive of a fracture here where the fragments do not involve a muscular attachment, and are more or less displaced by it. A knowledge of these attachments is sufficient to indicate the difficulty of confining the broken bones in perfect apposition. In fractures of this joint there is usually considerable inflammation ensuing, the cartilage of the articular surfaces being wounded and the investing ligaments lacerated. The amount of callus thrown out is considerable, it hinders motion, and is generally slow of absorption.

To get the best practical results in these fractures it is of e supreme importance to keep the parts at absolute rest. To do this, the joint must be put up in a suitable fixation dressing and patient kept in a quiescent state; in order to do this it is necessary to confine patient to bed for a week or more, and a fixation dressing is applied in the beginning of the treatment. Eminent surgeons differ in regard to the position of the forearm. The different fractures and the different degrees of fracture require different positions of the forearm, require different positions in pronation, supination and the angles. Either extreme strikes him as being irrational. He is guided by that position which favors best the coaptation of the fragments and the relaxation of the muscles, giving the least deformity, and the flexed position in some degree has been the one usually employed. After an aseptic scrubbing of the joint, arm and forearm, under an anesthetic the diagnosis is made, if possible, and the dressings applied. After a nice application of the spiral reversed roller, not too tight, a firm pad of sterilized gauze is placed in front of the joint opposite the broken fragments, thick enough for a firm support, and not as thick as to interfere with the functions of the splint. The anterior splint is then put in place, one with a ratched hinge much like that of Dr. Agnew, which can be placed at any angle desired and extending from near the wrist to above the insertion of the deltoid. A pasteboard trough is then moulded to the posterior surface of the limb extending from the axilla to the ends of the fingers and confined by a roller. If no contraindication this dressing is not disturbed for three or four days, or longer, if deemed advisable; it is then carefully removed, the joint examined and if the inflammation has subsided the permanent dressing is applied.

The correct position is maintained by the anterior splint and a carefully moulded plaster of paris trough is fitted posteriorly; this must be adjusted nicely in order to support the fragments, keeping them in place posteriorly and laterally. This should also extend from the axilla and support the hand, should not be heavy and cumbersome, but firm enough to thoroughly fix the joint and arm. This can be done by having some strips of heavy gauze or cheese cloth measured by the sound arm and carefully cut to the proper size; the plaster is thoroughly rubbed in these and they are then applied, the arm being well protected, layer by layer, a solution of plaster rubbed in between each layer until of the thickness desired. This dressing can be controlled at will, and if nicely applied is not so cumbersome as it would seem. If it becomes desirable to change the position or angle, the plaster trough can be taken off by simply removing the roller, the position changed and a new trough applied. He prefers to have the anterior splint of wood broad enough to cover the joint, and yet not extending quite to the ends of the epicondyles, the joint fitting closely down to the bend of the elbow, the ratched notches changing not more than the eighth of an inch at each movement. If properly made, this splint is light enough and yet firm enough for all practical purposes, and much of its usefulness depends upon its fitting well, and so with the plaster trough. If extension and counter-extension are necessary, these can be had by extending the plaster trough under the axilla and the anterior splint will make sufficient counter-pressure by means of the roller. This gives a firm, fixed dressing, keeping the parts in place and at rest, so necessary in all inflammatory conditions of the joints. The patient is seen frequently, the joint examined at any time when there seems to be an indication for it; this should never be done, however, if there is no special indication for it after the permanent dressing has been applied and the surgeon satisfied that the fragments are in place. If kept in this position and joint at complete rest, danger of ankylosis is not great.

After three or four weeks, not earlier unless there is special indication for it, dressings can be renewed, the joint examined with care and, if any stiffness, passive motion gently instituted under an anesthetic, if necessary. If only fibrous bands exist, they can be broken up. Violence should not be used. Gentle motion, frequently repeated and persevered in, will often accomplish more than sudden forcible separation with shock attending it. Rubbing and systematic massage at this stage is of great value, and if stiffness is not readily overcome, persistence in the gentle efforts continued; after five or six weeks patient is instructed to gently exercise the joint twice daily with Indian clubs and dumb-bells, neither of which should be too heavy. He is advised to use the hand and arm constantly, and in time, in the great majority of cases, will be rewarded with success. In some cases improvement may take many months or two or three years before the function is restored. If there are several fragments of bone and some so small they can not be kept in apposition, their removal would save time and trouble and give a more favorable chance for a better joint. If ankylosis has supervened upon a fracture and many months of patient effort at restoring the function of the joint proved futile, an operation is justified. If a fragment is causing the trouble, it can be removed. A resection will often give a good useful joint.

Dr. J. WESLEY BOVÉE of Washington, D. C., read a paper entitled

THE USE AND ABUSE OF NORMAL SALT SOLUTION.

The term "normal salt solution" has been used interchangeably with artificial serum. Various compositions and strengths of the constituent elements of the blood have been used with the name—normal salt solution. According to Kirke's "Hand-Book of Physiology," salt exists in the blood plasma in the proportion of 5.546 parts per 1000 and .6 per cent. is a good practical formula. Other ingredients, i. e., egg albumin, have been added to the salt which really make an artificial serum instead of normal salt solution. Of the five different routes through which it is introduced, the intra-arterial, suggested by Dawbarn, is considered unsafe in all conditions and should not be practiced. The subcutaneous is the most useful for general use. In emergency work the intravenous method will often be needed in severe hemorrhage and the rectal enema of solution will be found of great advantage in nearly all cases where no bowel lesion is to be combated. In abdominal surgery the peritoneal cavity will be the place selected for its introduction, and even in vaginal opening of the peritoneal cavity as in hysterectomy from this way the author has thrown considerable quantities into the peritoneal cavity, the hips being elevated at the time and the peritoneal opening closed directly afterward. The intravenous route, usually the most

rapid, may be rendered slower than the subcutaneous by difficulty of finding a vein and successfully introducing the canula. The physiologic action of normal salt solution is as a powerful stimulant to the cardiac ganglia and the nerve-centers. The skin, kidney and intestinal functions are stimulated markedly and other organs are likewise affected. Osmosis is markedly promoted by it and as a result of increased arterial tension the blood supply to the heart muscle is much increased. It has a hemostatic effect when supplied locally to raw surfaces, lessening oozing by stimulating and contracting the smaller vessels. According to Hayem and others, it augments the number of red-blood corpuscles. It is eliminated by the skin, changing the chemic reaction of the perspiration and heavily loading it with salt. The kidney also carry away an enormous amount of it when large quantities of it have been introduced into the tissues. The lungs remove it freely, it having been noticed in crystals on the lips after its free use. Autopsies after its use under the skin have shown a considerable quantity of it in the intestines, demonstrating it is thrown off by this route.

The essayist then spoke of its use in general medicine. In surgery the principal indications for its use are shock, hemorrhage and sepsis. In shock it should be employed early, on the table during operations, or even before the operation has been undertaken in bad cases, or after operation in milder ones. Severe hemorrhage is to be treated in the same manner, though only after the flow of blood has been checked. If the hemorrhage be severe, the intravenous route may be employed, it being about the only indication for this method. In the author's abdominal work he almost invariably leaves a considerable quantity of salt solution in the peritoneal cavity. Its salutary effect is produced by its action on the abdominal viscera with which it comes in close contact. To prevent adhesions in the pelvis, one or two liters suffice. It hastens absorption of stray or concealed blood-clots, septic foci, or escaped fluids, by carrying them well up into the abdominal cavity in cases of pelvic surgery. In hemorrhage it is probably best to infuse small quantities and often rather than one large quantity. Judging from the reports of experimenters, the use of salt solution is not a harmless procedure. It is contra indicated in such conditions of the blood as hemophilia, dyserasias, deficient fibrin, etc. It would seem not unreasonable that such a strong stimulant coupled with its dilation of the blood vessels, when used in large quantities, and especially when thrown directly into them, would be very harmful in such conditions of the circulatory apparatus, as myocarditis, pericardial effusion, atheroma, arteriosclerosis, cardiac degeneration, bad valvular lesions, thrombosis, and recent cerebral apoplexies. Chronic diseases of the lungs, kidneys or liver, especially if malignant, are apt to be aggravated by it. Active hemorrhage in any location is aggravated by it. The presence of toxins in the blood has been found to retard the elimination of normal salt solution, and for that reason small quantities at a time only should be employed.

It is necessary to avoid certain accidents and mistakes in using normal salt solution. We must know the solution is sterile when it enters the tissues of the body, except by the rectum, in which case it is of no moment. Avoid air-bubbles entering into blood-vessels or cellular tissue. The fluid must be of sufficiently high temperature when it reaches the body. Chills occur from a cold solution and are dangerous to very weak patients. The vessel containing the solution as well as the tube and needle conducting it must be aseptic and thoroughly pervious; the tube should have a glass window that the rapidity of the current and the presence of any foreign body may be noticed. When the solution is to be introduced through the skin, either into cellular tissue or vein, the local surface should be cleaned as much as the limited time will permit. Probably not more than a half liter should be injected into the tissue through one puncture, as localized necrosis and aseptic inflammation have resulted from over distention of the tissue spaces. Ordinarily not more than one ounce per minute should be injected into tissue or vein. Pulmonary edema, dyspnea, headache, vertigo, mental excitement, delirium, hallucinations and severe pain in the left side occur from over-distention of veins from too large infusion.

In the discussion, Drs. Parker, Johnson, Noble, Farham, Cartledge, Tiffany, Kelly, McMurtry, Baxter, McRae, and Brown, spoke favorably of the use of normal salt solution.

Dr. JOSEPH TABOR JOHNSON of Washington, D. C., presented a paper on

THE CONSERVATIVE TREATMENT OF THE DISEASED OVARY.

The difference between the radical and conservative treatment of the diseased ovary is somewhat difficult to define, inasmuch as the most radical treatment under some circumstances is really the most conservative, while in other cases,

to conserve the best interests of some particular diseased ovary requires the most radical surgery.

In the early part of the present decade, quite a conservative wavelet swept over the country, and considerable harm was done to pelvic and abdominal surgery in the mild and gentle name of conservatism. Incomplete conservative operations were done, some of which had to be completed later on by radical operations. Some of the men who claimed to be the most conservative, and attracted the timid doctors and frightened patients, were actually removing more ovaries and tubes than many of their so-called radical friends. Much credit has been claimed for saving a part or the whole of one ovary and tube, when only a simple catarrhal salpingitis existed, by an operator posing before the profession and community as a conservative, when the surgeon designated a dangerous radical, to be avoided, would actually not have operated at all, and would probably have cured his patients by other means. In some instances genuine, successful conservatism was practiced with lasting beneficial results, but not always from the highest and purest motives. Again, it has been charged that actual radicalism has successfully masqueraded under the name and guise of conservatism to the injury of the trusting patient, and the discredit of good surgery. So much has been learned by accumulating experience, as the domain of the gynecologist was undergone so much expansion, that real conservatism is gradually gaining ground over real radicalism to such an extent that he who presents ovaries and tubes or a fibroid uterus to a modern up to date medical society, has to state very good reasons why he sacrificed these important organs in their entirety to escape criticism and possibly censure. Sacrificial surgery is gradually giving way to more conservative and humane methods. He believes there is a maxim in general surgery in favor of saving every inch of the human body possible, and another that it requires a higher order of skill to save a mutilated or diseased member than it does to cut it off or to cut it out. With his present experience in abdominal surgery, he is free to confess that he can now save ovaries and tubes which he formerly thought it necessary to totally remove. The increasing skill of our abdominal surgeons and their accumulating experience in actual conservative work, go to show that we are approaching nearer to that true conservatism which is the offspring of increased skill and experience. In abdominal surgery it requires a higher order of skill and a greater experience to save an organ or part of an organ than it does to remove it. It is important to save a portion of one ovary, when the other has been removed on account of a tumor, an abscess, or for any other cause. The disagreeable symptoms accompanying the artificial and premature change of life are often stormy and protracted; in some rare instances threatening, if not resulting in actual insanity. These women are happily prevented from falling into such a condition by saving one or a portion of one ovary; menstruation is then not interrupted, and the sexual and other feelings of the patient undergo none of those sudden and peculiar revulsions which unfortunately sometimes follow the total removal of both ovaries and tubes. In conclusion, Dr. Johnson said that if growing experiences in the abdominal cavity and accumulation of evidence continue in favor of more conservative and less sacrificial operative work, he feels sure that the deep debt of gratitude now felt toward abdominal surgeons by suffering women will be tenfold increased and intensified.

Dr. RICHARD DOUGLAS of Nashville, Tenn., delivered the presidential address. He made a departure from the usual or stereotyped address and selected for his subject

ACUTE GENERAL PERITONITIS.

Before considering his subject proper, he spoke of the growth of the association and the excellence of its scientific work, saying that the association owes its existence and high standing to the indefatigable efforts of Dr. W. E. B. Davis, the permanent secretary.

A bacteriologic classification of peritonitis is beset with many difficulties, and while the speaker is free to admit that for all practical purposes peritonitis is of bacterial origin, yet there occurs a respectable percentage of cases in which the most rigid examination fails to disclose the presence of micro organisms. Hartmann and Moreau recently reported such a case in detail. Of 110 cases bacteriologically classified by Flexner, there were twelve cases which he was obliged to consign to the idiopathic group. It is true that in all of these patients there existed conditions predisposing to peritonitis, such as cardiac, renal or hepatic disease. In the intensely septic mycotic form of peritonitis their absence may be accounted for by the fulminant type of the disease, death occurring from intoxication before the colonies of bacteria are well established.

Any effort to individualize the effect of a specific bacterium,

to connect its presence with a definite pathologic phenomenon and characteristic symptomatology is as yet futile. Mikulicz avers that all forms of peritonitis run the same clinical course regardless of the bacteria that cause it. There is a law laid down by Maloz to the effect that if the peritonitis is of intestinal origin, the colon bacillus will show it; if it is of uterine origin, that is, connected with abortions or labor, we will find the streptococcus. It is asserted that the colon bacillus constitutes nine-tenths of the bacteria of the digestive tract, the colon is its natural habitat, but its behavior upon gaining entrance to the peritoneal cavity depends upon many circumstances, and this bacillus has many morphologic conditions, many forms and stages. The constancy of its presence in peritonitis, since the demonstrations of Welch and others of its capacity of transmigration through the bowel, has led many to attach to it great significance as an etiologic factor, but its association with other forms of micro organisms renders the first proposition of Maloz null and void. If we interpret Maloz' law correctly, the absence of streptococci would eliminate the possibility of peritonitis being of puerperal origin. In rebuttal of this idea, Dr. Douglas quoted from Winckel, who says, "Kroenig examined all parts of the uterus of a woman dead from infection and found not only the superficial thrombi at the placental site thickly filled with bacteria, but also the serous lining of the peritoneum." This case shows that a woman may have a peritonitis following abortion without streptococci, and it further shows that the colon bacillus without an intestinal lesion may produce a fatal peritonitis. No doubt too much importance has been ascribed to the colon bacillus, and it is interesting to note that Tavel, who was among the first to emphasize the pathogenic powers of the bacillus coli communis, thinks now the bacillus coli should be considered merely a collective name of many varieties of bacteria.

No better argument against bacteriologic classification can be adduced than the words of Simon Flexner, who says: "In order that pathogenic bacteria introduced directly into the peritoneal cavity may cause a peritonitis, general or circumscribed, evanescent or fatal, the normal conditions of the peritoneum must in some way be modified." It is clear, then, that in the human being, as in experimental animals, some other condition than the mere presence of pathogenic micro organisms in the abdominal cavity is necessary in order that peritonitis may be produced. Bacteria alone and unaided by physical conditions are comparatively innocuous.

Restricting consideration entirely to acute general peritonitis, it occurs from traumatic or consecutive causes. Under the head of traumatic peritonitis is embraced all infective inflammations arising from wounds of the peritoneum, whether accidental or operative, penetrating or non penetrating. Consecutive, secondary or symptomatic peritonitis may be subdivided into peritonitis by continuity, and perforation peritonitis.

Under the head of traumatic peritonitis all forms of peritonitis must be embraced that are due primarily to a trauma. The destruction of tissue, the retention of blood clots and natural secretions, prepares a suitable soil for microbial invasion, and this essential infecting element may be introduced from without, as through penetrating gunshot, stab or operative wounds, under which circumstances it is usually a poly infection, the streptococcus predominating. There are also contusions of the abdomen without an external wound which so injure and lower the resistance of the tissue as to favor the migration of the intestinal micro organisms and their infection of the general cavity.

The supervention of acute general peritonitis, as secondary to pre-existing disease processes, embraces in its etiology infective inflammations not only of all intraperitoneal viscera, but all organs or tissues contiguous thereto, and it does not appear to him to be too broad, if there be included within its scope those peritonitides of hematogen or metastatic origin, for it is well established that the specific germs of diphtheria, scarlet fever, pneumonia and erysipelas have produced acute general peritonitis.

Peritonitis by continuity is the uninterrupted extension of the inflammation from an infected area to the peritoneum and is accomplished by the invading army of micro-organisms through the lymphatics, blood-channels, or by direct penetration of tissues. The reactionary inflammation which determines the localization or diffusion depends upon the virulence of the bacteria, the resistance of the tissues, and, what is too frequently overlooked, the individual resistance of the patient. Puerperal peritonitis of streptococcus origin conspicuously illustrates inflammation by continuity.

Perforation peritonitis is the next subdivision of secondary peritonitis. The sudden opening of a focus of suppuration and the discharge of its contents into the peritoneal cavity, whether it be from hepatic abscess, a pus-tube or mesenteric

gland, is a true illustration of perforation peritonitis, yet the inflammation and systemic infection following is not necessarily so conspicuous. The duration of the primary disease, the virulence of the micro-organisms, the preparedness of the peritoneum by fortifications of adhesions, the general condition of the patient are all circumstances which may modify and circumscribe the peritonitis. It is more common for perforation peritonitis to occur as a result of ulceration of the wall of some of the hollow viscera as in peptic ulcer, typhoid and dysenteric intestinal ulceration, duodenal and appendicular ulceration.

The conclusions that may be drawn from an etiologic study of peritonitis may be thus summarized: Traumatic peritonitis, especially the post operative variety, is essentially a grave condition, not only because there is immediate or primary inoculation of the peritoneum, but the conditions are all favorable for germ culture and dissemination. Peritonitis by continuity may become general and prove rapidly fatal, but this is not the rule except in puerperal cases. Contrary to the expressed opinion of more than one writer, there is nothing peculiar about the peritoneum, or the cecum, or appendix, or the true pelvis, which accounts for the more frequent localization of inflammation in these regions than in other areas of the abdomen. The method of invasion, the activity of the process and resistance of patient alone determine the local or general type of peritonitis. Visceral perforation, whether traumatic or pathologic, is an ideal condition for germ culture and the elaboration of toxins. Their rapid absorption and general diffusion throughout the peritoneum sufficiently explain the grave state into which the patient is precipitated. It may be asserted that the clinical course and pathologic expression depend largely upon the nature of the exciting cause, the character of the pre-existing disease or injury, and the mode of invasion.

Without attempting to formulate any definite pathologic classification of general peritonitis, and to adapt each to its special cause, he prefers to direct his efforts to simplifying and dispelling the confusion that exists. He accepts, with slight reservation, the now almost universally conceded idea that acute general peritonitis is and must be septic, that is, of bacterial origin. But he maintains that surgeons do not understand each other, nor have they all a clear conception of what is meant by septic peritonitis. It has been a race for life between the practical surgeon and bacteriologist as to who should claim the honor of naming the pathologic phenomena in this great serous bursa. He maintains that the surgeon is alone competent to define, classify and prognosticate the protean types of this disease. That men are honest, painstaking and accurate, goes without saying, yet how can surgeons reconcile the report of McCosh's last series of eight cases of general septic peritonitis and six operative recoveries with the experience of Senn "of many cases of diffuse septic peritonitis without a single successful result"? The answer certainly is not in the superior skill or special technique of the operator, but it is to be found in an analytic study of McCosh's cases, six of them were purulent peritonitis and two serous peritonitis, not the class of cases referred to by Senn at all. Tietze defines diffuse septic peritonitis to be "that form of peritonitis in which there is little or no exudate, severe symptoms of intoxication and terminating rapidly fatally." Some four years ago, Dr. Douglas reported eight cases of general peritonitis subjected to operation with four recoveries and four deaths. He dealt with them all as cases of general septic peritonitis from a misconception of the term. Two of them only properly belonged to this class and they terminated fatally. The others were cases of general purulent peritonitis with two deaths and four recoveries. He is very well pleased with his percentage of recoveries, but disgusted with his classification. He did not discriminate between diffuse septic peritonitis, the patient dying in twelve hours with profound toxemia and dry peritoneum after perforation of the appendix, and one of perforation with enormous purulent effusion, but mild symptoms of sepsis. This error of his is the common one with the profession, and it is the outcome of an attempt to classify peritonitis by the character of exudate.

The etiologic classification of peritonitis places it as subsidiary to the primary lesion which produces it and its practical import is its local origin. A painstaking investigation into the clinical history will usually determine the origin or structure primarily involved. The symptoms and physical signs, if the case is seen sufficiently early, will still further aid in incriminating the part under suspicion. This valuable diagnostic evidence does not conform to any stereotyped expression; the symptomatology of peritonitis is as varied as its causes. By the presence of any striking symptom or group of symptoms, physicians can not arrive at a decision in a doubtful case, but from the whole picture they must form conclusions.

(To be continued.)

Chicago Medical Society.

Regular Meeting, Nov. 30, 1898.

Dr. ARTHUR D. BEVAN officiated as chairman of the meeting.
Dr. F. KREISSL read a paper entitled

WHY IS GONORRHEA STILL A MUCH-DREADED DISEASE?

Speaking of the cause of failure in successfully dealing with gonorrhoea, the author pointed out superficial diagnosis, incorrect conception of the gonorrhoeal process, improper selection of the remedies, and the almost universal tendency to begin with an effective treatment too late and to discontinue it too soon, and last, but not least, the lack of individualizing cases. He stated that hard and soft chancroidal ulcers, and the presence of mucous patches in the urethra during the secondary stage of syphilis, furnished a secretion which is mistaken for gonorrhoea and is treated as such, until the appearance of local symptoms on the skin and other parts of the body direct attention to the real character of the discharge. The same applies to herpetic eruptions and tuberculosis of the urethra, leading to tubercular ulcerations, which may, in rare instances, be partially symptomatic of a more or less generalized urogenital tuberculosis or, in rarer cases, it may start primarily in the urethra. Simultaneous infection with gonorrhoea and syphilis is not a very rare occurrence, and the same is true of a urethra affected with secondary syphilis, in which the gonococcus may become implanted.

The treatment of gonorrhoea, in order to be effective, should be commenced as early as possible, to prevent the gonococcus from penetrating the tissues, and should be kept up until the physician is satisfied that all gonococci are annihilated. Silver salts still rank highest among the antigonorrhoeals, and their value in destroying the vitality of the gonococcus is being more and more appreciated. For the past fourteen months he has used protargol, a silver salt, which is highly recommended by Neisser, and which favorably compares with argonin in its prompt effect and total lack of irritation of the tissues. It has a strong penetrating power, and is therefore also applicable in the more chronic cases. But in treating a case with the silver salts the physician should not forget that more or less reaction follows each application, which manifests itself as a secretion lasting for from four hours to several days, according to the concentration of the solutions used.

A point of importance is that the silver salts in a certain concentration do not check the catarrh, and they ought, therefore, not to be expected to dry up the canal after having annihilated the gonococci. Astringents must be used to do this, which accomplish the desired result within a very short time. When this does not take place; when even a scanty secretion appears at the meatus, or filaments in the urine, the physician must look out for complications. The most common complications are strictures, or their forerunners—glandulitis or periglandulitis—or the disease may have invaded the posterior urethra, the seminal vesicles and Cowper's glands. By stripping the parts and making a microscopic examination of stained specimens, valuable information is gained as to the nature of the secretion, and any doubt is removed if the case is one of urethrorrhea, prostaticorrhea or gonorrhoea. The physician rarely has occasion to see posterior urethritis in those cases of acute gonorrhoea which are treated with the silver salts from the start, provided the patient observes instructions in regard to diet and habits. As to the Valentine and Janet irrigations and the Oberlander-Kollman treatment with dilatation and flushing of the canal, either following each other or simultaneously, he remarked that reports as to their efficiency in cases of acute gonorrhoea are contradictory. He would not recommend either. They might perhaps, by simply washing out, do good in a very mild case at a time when comparatively few gonococci appear on the surface of the urethra, but he believes they do much harm by causing traumatism in an acutely inflamed canal. In chronic cases, where the process is confined to a limited number of follicles, the combined treatment of cauterizing by the urethroscope or dilating and irrigating by experienced hands will be found gratifying. In closing, the author quoted a remark which is attributed to Ricord, namely, that "gonorrhoea is a disease which starts as a slight burning on urination, but of which only the Lord knows when and how it will end."

Dr. THOS. J. WATKINS followed with a paper on "Gonorrhoea in the Adult Female."

Dr. I. A. ABT contributed a paper on

GONORRHEA IN CHILDREN.

He said that gonorrhoeal infection of children manifests itself primarily as a vulvo-vaginitis, a urethritis of the male child, a purulent ophthalmia, stomatitis, or rhinitis of the new-born. He discussed genito-urinary gonorrhoea and complications in

children. So frequently has the gonococcus been found in cases of vulvo-vaginitis, that no doubt can be felt that gonorrhoeal infection plays an important rôle in this disease. Cohen-Brach examined twenty-six children suffering from vulvo-vaginitis, and in every case but one gonococci were found. W. Fisher examined the secretion in fifty-four cases, in fifty of which he found gonococci. The disease occurs in children from one to 12 years of age, though it is most frequent in children under 6 years of age. As to the constitutional condition of the little girls, weakly or rachitic children are not particularly susceptible; on the contrary, the children as a rule are well developed and well nourished. As to the clinical course and symptomatology, on the inner surfaces of the thigh and on the perineum one usually observes an eczematous condition of the skin covered with a dried greenish-yellow pus. The labia majora adhere to one another. If they be separated, it is noticed that the mucous membrane of the vestibule is red and swollen, as is also the hymen, and a quantity of pus is to be seen; pressure upon the perineum will frequently cause pus to exude from the vagina. In the majority of cases the urethra is involved. It is not unusual to find the ducts of the Bartholinian glands involved, and a small quantity of pus can sometimes be pressed out of these ducts. Fisher reports a Bartholinian abscess. In many cases the inguinal glands are enlarged, particularly in those cases where eczema or excoriation exists. As a rule, the temperature is normal, though slight elevations during the first few days of the illness have been recorded. As a general thing, the subjective symptoms are trifling or absent. The intertrigo may cause itching, or there may be pain upon urination or vesical tenesmus. The disease may last for weeks or months. The urethritis may persist after the vulvo-vaginitis has terminated. Exacerbations and relapses are not uncommon. The endometrium is said never to be involved.

In children, as in the adult female, the tubes or ovaries and peritoneum may be involved. Gonorrhoeal pus in the tubes has been found at autopsy in five cases of girls from 7 to 9 years of age. The genitalia of little girls may be the point of entrance for the organisms which cause peritonitis. The bladder is seldom involved in little girls; a temporary vesical tenesmus, or in rare cases a temporary vesical catarrh, may occur.

Epidemics of vulvo-vaginitis have been frequently described; they occur particularly in hospitals and institutions, among the children of the poor, though none are exempt. Skutch describes what is probably the largest epidemic which has yet been reported in the city of Posen. During the month of August, 1890, 236 cases were reported, and probably many more occurred that never came to notice. These cases all developed in the course of eight to fourteen days in little girls from 6 to 14 years of age—school children. In a number of the children it was noticed that the disease occurred after they had visited on one or more occasions a free public bath. The common use of towels, soap, and the bath water may have carried the contagion from one child to the other. In the majority of cases gonococci were demonstrated. Purulent ophthalmia developed in a few, not a stated number of cases. The vulva and urethra are most often attacked primarily; the vagina, if involved, becomes so secondarily; the gonorrhoeal virus may be conveyed through sponges, towels, bed linen, by manipulations of the parts with unclean fingers, fever thermometers, or the contagion may, in rare cases, be conveyed by criminal assaults on little girls.

In a general way, it may be said that the prognosis in little girls is more favorable than in adults. In a majority of cases the disease terminates in three months, though there are cases recorded where a chronic urethritis resisted all forms of treatment.

The symptoms of gonorrhoeal urethritis in male children present much the same picture as is seen in the adult. Koplik has seen children in arms suffering from this condition. Bokai observed 109 cases of urethritis in children, many of whom, he points out, suffered for weeks or months from a urethritis. Most of these were probably gonorrhoeal. Twenty-seven occurred during the first year, 36 from the first to the third year, 32 from the third to the seventh year, and 14 from the seventh to the fourteenth year. Holmes has not infrequently seen cases of gonorrhoea in male children. Rona says that in his fifteen cases the process was in every case a urethritis totalis, the disease becoming chronic, and usually lasting for months. Moncorvo has seen many cases of gonorrhoea in small boys. Von Arsdale has frequently observed gonorrhoeal urethritis in young boys. One case was in a child ten months old; two cases were in children from one to four years. Dr. Abt has notes of two cases.

In private practice, as well as in hospital and dispensary practice, it is in most cases difficult to accurately elicit the mode of infection, though it can not be doubted that most

cases are due to actual sexual contact, a lesser number to manipulations of the parts with infected hands, linens, and the like. The recorded cases show that the majority of children acquire the disease from servants, or from little girls suffering from vulvo-vaginitis.

Strictures occur the same as in adults. Kammerer reports a case in a child two and a half years old, who, six months after an attack of gonorrhoea, developed a stricture which did not permit the first catheter to pass. A suprapubic puncture was made to empty the bladder. Two strictures were found in the anterior urethra, and one impermeable in the membranous portion. The deep stricture was treated by performing an external urethrotomy. The anterior strictures were relieved by dilatation. Cystitis has been observed by Viger and Moncorvo. Rona encountered the complication in two cases. In one case it continued, and persistent hemorrhage occurred. It has been supposed that epididymitis and orchitis do not occur as complications, owing, perhaps, to the functional inactivity of the organs. True, the condition has been seldom observed, though Rona reports a child fifteen months old suffering from a urethritis totalis. In about twelve days after the beginning of the disease it was observed that the scrotum was swollen, and both testicles were painful. After fourteen months the patient was dismissed as cured, though a little hard nodule, the size of a pea, remained in the left epididymis. Lymphagitis of the penis, balanitis and balano-posthitis occur commonly. Rectal gonorrhoea has not been observed in any of the cases previously reported.

The diagnosis presents but few difficulties, and differs in no important detail from that of adults. The specific must be differentiated from the non-specific variety. This differentiation depends on the presence or absence of the gonococci, and also upon the duration of the disease and the occurrence of complications. The gonococcus must be found in considerable number, and arranged in groups within the leucocytes. It must decolorize readily by Gram's method of staining. The best culture-medium is made from the blood or serous fluid of man. The treatment of vulvo-vaginitis, which the author considered at length, consists of cleanliness, antiseptics and rest of the parts.

Dr. D. N. EISENDRATH followed with a contribution on

PATHOLOGY OF GONORRHEA AND TREATMENT OF SOME SURGICAL COMPLICATIONS.

He said: The history of the gonococcus dates from 1879, when Neisser first found it in gonorrhoeal pus. It is a coccus occurring in pairs, generally in the interior of leucocytes, with a clear interspace between, with adjacent sides flattened (his cuit shaped). Its size varies from .8 to 1 in length and from .6 to .8 in width. In the tissues and pus its size is uniform; in cultures it varies. It is neither a strepto- nor a staphylococcus, but has a grouping of its own which is quite characteristic. It is non-motile and divides longitudinally. It is best stained with an alkaline methyl blue or gentian violet solution. It is decolorized by Gram's method. This serves to distinguish it from all other cocci except the so called pseudo-gonococci, and the meningococcus of Weichelbaum. Lustgarten and Mannaberg described the former (pseudo-gonococci) as occurring in healthy and gonorrhoeal cases. It is a lemon-yellow diplococcus, decolorized by Gram's method and occurring in about 5 per cent. If all the well-known points, as to the morphology, staining reactions, enclosure and arrangement within cells be observed, a mistake in diagnosis is possible in only a small number of cases. The meningococcus, in its morphology, intracellular position, appearance in culture-media, decolorizing with the Gram stain, more completely resembles the gonococcus, but in this case as with the pseudo-gonococci, the culture-test is the only reliable one in doubtful cases, namely, the gonococcus will only grow on media in which some albumin taken from the human body is present and will not grow upon ordinary media; whereas the other cocci spoken of will grow well on all media. Bumm was the first to obtain successful results in the cultivation of the gonococcus by using human blood serum. On account of the difficulty of obtaining this serum Wertheim suggested a far more practicable medium in the shape of human blood-serum agar. Some human serum seems necessary, but ovarian, pleuritic, ascitic and hydrocele fluid can be substituted for the blood-serum. Many other media have been suggested, but none have proven satisfactory. If none of the above fluids can be obtained, a convenient method is that of Pfeiffer, namely, to allow a number of drops of blood from a previously sterilized finger to flow over the surface of a tube of nutrient agar. Surface colonies are pale, grayish, translucent, finely granular, with finely notched borders. The gonococcus is exclusively aerobic and is very sensitive to temperature.

One of the most interesting contributions to our knowledge of the gonococcus, since its discovery by Neisser and its cultivation by Bumm and Wertheim, has been made by de Christman, published last year in the *Annales de l'Institut Pasteur*. He isolated the toxin of the gonococcus from pure cultures growing in rabbit serum bouillon containing glucose, which he found better than the Wertheim medium. The injection of the toxin obtained from filtered cultures produces the same results as the cultures themselves. This toxin placed upon the human urethra, caused, after one hour had elapsed, a drop of thick yellow pus, which contained a large number of mono- and polynuclear leucocytes and epithelial cells, but no gonococci. The toxin acts first upon the epithelial cells, and the leucocytic emigration is secondary, because in the first drops taken the former greatly exceeded the latter in number. This artificial urethritis was accompanied by pain and the other typical symptoms, and disappeared gradually. It resembles the true gonorrhoea in the fact that the secretion continues long after the inflammatory symptoms have disappeared. In cases in which there is a doubt as to the nature of the process, the injection of such a toxin would clear it up. In animals the injection of the toxin causes rapid loss of weight and high fever. Locally it causes abscesses, with thick sterile pus, no tendency to spread, and which heal by resorption. There are no lesions to be found postmortem. Heat has no effect upon the toxin; it can be precipitated by alcohol and extracted with glycerin. The toxin is formed in the bodies of the gonococci themselves. Injected into the anterior chamber of a rabbit's eye it produces great irritation and early pus formation. Injected into the pleural cavity, it produces rise of pulse and respiration and all the evidences of a pleuritis, with the formation of thick yellow pus. Animals can be immunized by intravenous injections of the toxin in thirty days, so that injections of pure cultures, or the toxin, have no effect. This may have a future in the treatment of some internal complications of gonorrhoea.

In man the favorite ground for the gonococcus is upon mucous membranes, preferably those lined by cylindrical or transitional epithelium, not excluding squamous, as Bumm claimed. It readily penetrates between the cells into the connective tissue and between muscle-fibers. It grows most luxuriantly, however, upon the surface, and it is probably through the destructive action of its toxin, as de Christman has shown, upon epithelial cells and leucocytes, that pus is formed. The localization of the gonococcus in the joints and tendon sheaths may take place almost from the very beginning of the disease, and not necessarily from the time the posterior urethra is invaded, as was formerly thought, depending more upon the invasion of the deeper layers of the tissues of the urethra and bladder. They are greatly favored by trauma, excesses, or irritating therapeutic measures. It is a frequent complication of the gonorrhoea of pregnancy, or of the puerperium, of ophthalmia neonatorum, or of the vulvo-vaginitis of children. No joint can be said to be free from it. It does not generally involve, or wander from one joint to another, as acute articular rheumatism does, nor does it seem to be as polyarticular. In men the knees are most frequently affected, in women the wrists and finger-joints. The disease in the joints may be acute, sub-acute or chronic. Of the former there are three varieties: the acute gonorrhoeal hydrops, in which there is a serous or seropurulent effusion; a second variety in which, in addition to the effusion, there is extensive thickening of the capsule and involvement of the para-articular tissues. In this variety the exudate may at times be purulent, cause perforation of the capsule and peri-articular abscesses. A third variety resembles the ordinary pyemic arthritis, with destruction of cartilage and capsule. The second variety is the most deplorable, because in spite of all treatment it leads frequently to ankylosis. In general, the tendency of gonorrhoeal arthritis is through the early adhesions and capsular thickening, as well as particular infiltration, to lead to stiffness, subluxation and contractures. Examination of gonorrhoeal joints shows as the principal changes, loss of endothelium, and under this formation of granulation tissue, it is the change to connective tissue of the latter which leads to the above results.

Gonorrhoeal tendo-vaginitis and bursitis are not at all rare affections. The former occurs most frequently in the tendon sheaths of the extensors in the hand, and of the tibial muscles in the lower extremity; the latter in the bursa between the insertion of the tendo Achillis and the bone. The treatment of acute hydrops should be rest and compression with or without the application of some local remedy like guaiacol carbonate. The internal administration of salicylates, etc., is of but little avail. In the second variety, with extensive capsular and para-articular involvement, if a cast or a splint does not succeed within a short time, an early puncture of the joint with wash-

ing out with some antiseptic solution, e.g., bichlorid of mercury or lactate of silver with injection of iodoform emulsion, followed by massage, active and passive movements, will give the best results. If these latter means are not employed, fairly early, even in cases in which the joint is not washed out, ankylosis is almost certain to result. When the exudate is purulent, with high temperature and threatened destruction of the joint, arthrotomy is frequently necessary. The treatment of gonorrhoeal tendo-vaginitis is comparatively simple. It is rarely necessary to open the tendon sheaths in order to evacuate the pus, but even here the tendency to stiffness of the fingers and toes must not be forgotten, and early massage and movements should be insisted upon.

Dr. BERTRAM W. SIPPY contributed a paper on

GNORRHEA FROM THE STANDPOINT OF INTERNAL MEDICINE.

He said: The following etiologic factors are to be considered in the production of the metastatic inflammations of gonorrhoea; 1, the presence in the part of the gonococcus; 2, the action of gonotoxins produced either at the site of the inflammation, or possibly conveyed by the blood to the part from the seat of primary infection; 3, secondary infection with various microorganisms; 4, mixed infection. Arthritis occurs as a metastatic complication of gonorrhoea in from 2.5 to 3 per cent. of all cases. The clinical picture of the disease varies greatly. The most common form begins with pain in several joints. In a short time one or more of the painful articulations, the knee-joint, usually, begins to swell rapidly. Pain may be intense or moderate. Soon fluctuation is present. During the first few days, a temperature of 102 of 103 degrees, and other constitutional symptoms attend the local process. In a few days, the acute symptoms subside, but the effusion remains. The subacute stage continues a few weeks, until the fluid is gradually absorbed. Real suppuration rarely takes place, and when it does, undoubtedly mixed infection with pus microbes is nearly always present.

In other cases, phlegmonous inflammation of the synovial membrane, ligaments, and peri-articular tissue may be accompanied by an exudate largely fibrinous in character. Stiffness of the joint is a marked feature from the beginning. Deformity may develop rapidly, and it is in this form that ankylosis is most likely to take place. Another form is characterized by peri-articular inflammation only. At times, the disease manifests itself as an acute polyarticular affection, resembling acute articular rheumatism. Chronic hydrops, involving usually one joint, may result from repeated exacerbations of the ordinary form of gonorrhoeal arthritis, or the process may be subacute or chronic from the beginning. Above all, that which characterizes gonorrhoeal arthritis is its appearance as a complication of gonorrhoea, the fluctuation of the joint affection, with that of the primary gonorrhoeal disease, and the tendency to ankylosis. Endocarditis complicates gonorrhoeal processes much more rarely than arthritis. The left heart is more frequently affected. There is nothing characteristic in the symptomatology, aside from the etiology.

The prognosis is always doubtful. The most favorable cases are those in which the temperature is low or normal, and the physical signs of the disease not pronounced. Cases which were clinically ulcerative endocarditis, have recovered with chronic heart lesions.

Diseases of the brain, spinal cord, meninges, cranial and peripheral nerves have been reported on good authority, in which gonorrhoea was regarded as the etiologic factor. Anatomic disease, however, is rare. Relatively, the peripheral nerves are most frequently affected. The condition is either a neuralgia or neuritis. Thirty-five or forty cases of spinal cord lesions, including several autopsies, have been reported. A myelomeningitis, involving the lumbar cord, is the most common lesion. The disease may be acute, but is usually chronic. Functional diseases of the nervous system is much more common. The neuroses may be general or local. There is nothing specific in the symptomatology of nervous diseases complicating gonorrhoea. A relatively large number of cases of myelomeningitis have recovered. Bacteriologic research has been attempted a few times. Thus far the gonococcus has not been found.

Chicago Gynecological Society.

Regular Meeting, Nov. 19, 1898.

Dr. NICHOLAS SENN, the president of the society, occupied the chair.

The society discussed the subject of

CYSTITIS IN THE FEMALE.

Dr. SENN opened the discussion by dealing with the etiology and classification. He said that the recent great advancements

in the prevention and more successful treatment of infective surgical diseases are the direct outcome of the vast increase of our knowledge concerning their etiology. Surgical bacteriology paved the way for rational surgery. It is now very generally conceded that inflammation of any tissue or organ is invariably caused by microbic invasion, and that all other causes only act by determining or favoring infection. If this be true, it is apparent that the successful treatment of cystitis presupposes an accurate knowledge of the nature of the microbic origin of the inflammation. Suppurative cystitis and tubercular cystitis are so entirely different in the nature of their bacteriologic origin that the method of treatment successful in one would almost with certainty aggravate the other. Inflammation of the bladder is often the result of a mixed infection, and it is of paramount importance in all such cases to gain accurate information by bacteriologic examination of the urine concerning the part which each kind of microbe plays in the causation and continuance of the inflammatory lesion before an intelligent and successful course of treatment can be devised and carried into effect. It is of special importance in the successful management of cystitis and conditions mimicking cystitis clinically to make a sharp distinction between the cases in which the symptoms are caused by inflammation and those in which they are due to non-inflammatory pathologic conditions. It will be seen from what has been said that the modern etiologic study of cystitis is based largely on a carefully conducted bacteriologic examination of the urine. The exercise of patience and perseverance is often required, as in many cases the urine has to be examined repeatedly before the necessary information is gained.

Predisposing causes do one of two things or both: 1. They effect tissue changes which determine the localization of microbes from the bladder, adjacent organs or the general circulation. 2. They furnish a nutrient medium for the growth and multiplication of microbes. The most frequent of all predisposing causes of cystitis is retention of urine from any cause. Abnormally increased muscular action of the bladder as occurs in cases of central or peripheral irritation of the nerves which preside over the muscular structure of this organ, or in consequence of the action of local irritants, as a stone, foreign bodies, tumors, chemic or toxic substances, is a recognized predisposing cause of inflammation of the bladder. Abnormal conditions affecting the quality or quantity of urine frequently precede inflammation of the bladder, and must be regarded in the light of predisposing causes. Tumors of the bladder, malignant and benign, frequently precede and complicate cystitis. A calculus or a foreign body becomes a predisposing cause of cystitis by the production of local lesions and vascular changes favorable to the localization and growth of bacteria, which are the essential cause of the inflammation. Compression of the bladder from within and from without is a potent predisposing cause of cystitis. Pressure from either direction diminishes the vascularity and nutrition of the bladder wall, and in this way increases the susceptibility of the tissues to invasion by disease-producing microorganisms. Venous stasis is a local predisposing cause of cystitis. To trauma has been assigned for centuries a direct influence in the causation of cystitis.

The essential or exciting cause of cystitis is invariably the presence and pathogenic action of microbes in the tissues of the bladder, the seat of inflammation. In the study of etiology of cystitis it is important to consider in detail the routes of infection. Under the head of exciting causes, Dr. Senn dealt with infection through the urethra, infection by the urine, infection from adjacent organs and infection from the blood.

Coming to the classification of cystitis, he said that a rational classification is essential in discussing the etiology, symptomatology, diagnosis, prognosis and treatment of this disease. He gave both Guyon's and Rovsing's classifications of cystitis. In the anatomic classification, pericystitis, paracystitis, interstitial cystitis and endocystitis were enumerated and dwelt upon at length. Under the head of pathologic classification he gave catarrhal cystitis; suppurative cystitis; ulcerative cystitis; exudative cystitis; exfoliative cystitis and dwelt upon each of these forms at considerable length. In the clinical classification he gave acute cystitis, and chronic cystitis, and in the bacteriologic classification: 1, bacillus coli commune infection; 2, saprophytic (mixed) infection; 3, staphylococcus infection; 4, streptococcus infection; 5, streptococcus erysipelatosus infection; 6, typhoid bacillus infection; 7, diplo-bacillus infection; 8, Gonococcus infection, and 9, bacillus of tuberculosis infection. The bacteriologic classification of cystitis is the most modern and certainly the most important. It has a direct bearing on the etiology of the disease, and suggests to the surgeon the most rational course to pursue in its treatment. In long-standing and obscure cases of inflammation of the bladder, examination is not complete without examination of the urine

with sufficient care and thoroughness upon which to base a correct bacteriologic classification. Surgeons must learn to appreciate the value and importance of this part of the examination before they can expect material advances in the treatment of cystitis. If the surgeon has not the necessary knowledge or equipment to make these examinations satisfactorily, he should assign this part of his task to a competent bacteriologist.

Dr. JOHN A. WESENER followed with a paper on the

CHEMIC AND MICROSCOPIC EXAMINATION OF THE URINE, WITH SPECIAL REFERENCE TO THE DIAGNOSIS OF CYSTITIS.

He said that very little had been done on the microscopic and chemic examination of the urine in cases of cystitis. It is true, we are told to differentiate cystitis from pyelitis by the character of the epithelium present. In the case of females, in whom cystitis is suspected, the urine should be obtained by the catheter. If this rule be followed, it will avoid the possibilities of contamination from the vagina. Cystitic urine may be either acid or alkaline. If the infection is by the bacillus coli, it is acid; if in addition it becomes infected with the bacillus vulgaris, it becomes alkaline. Of 200 cystitic urines examined, 68 per cent. were acid and 21 per cent. alkaline. Of the alkaline urines found, decomposition took place in some after voiding. The reaction of the urine no doubt depends on the character of the bacteria present. The works of Rotoski, Krogin and Müller justify the above assertion. Müller found cystitic urine acid in 75 per cent. of all cases examined by him; while Melchoir showed from an analysis of sixty-two cases, that ammoniac decomposition is only a subordinate circumstance in cystitis, depending solely on the microbe present. The most important of these is proteus vulgaris.

To differentiate cystitis from pyelitis, Dr. Wesener proceeds as follows: In cystitis there is always more pus than in pyelitis, and for this reason kidney epithelium is found more readily in pyelitis because of the smaller amount of pus present. After centrifuging the urine, it should be tested for the amount of albumin it contains. In cystitis it is found absent or present, depending on the amount of pus; whereas, in pyelitis, a considerable quantity of albumin is always found. The explanation for this difference is due to the fact that the kidney is a much more vascular organ than the bladder; therefore, exudation takes place more easily. Red-blood cells are found more frequently in pyelitis than in cystitis. In pyelitis casts are often found. Clinically, we might succeed in distinguishing these two conditions by washing out the bladder with sterilized water immediately after urination; examine the urine collected, and also the washings for pus. If the water contains a considerable amount of pus, it is probably cystitis.

Dr. WILLIAM T. BELFIELD then discussed

INSTRUMENTAL EXAMINATION OF THE BLADDER IN CASES OF CYSTITIS.

He said that twenty years ago cystitis was a clinical entity characterized by the presence of three symptoms—retention, frequent and painful urination, and pus in the urine. To day it clinically had receded from the rank of an entity to that of a symptom. The symptoms considered characteristic of inflammation of the bladder today, such as frequent and painful urination and pus in the urine, are now known to be caused, not merely by inflammation of the bladder as a whole, but also by infections, injuries to certain limited parts of the bladder, etc. Now, other parts of the urinary organs are involved, such as stricture of the urethra, and morbid conditions of the pelvis or the kidney. The reason why the cystitis has thus receded from the first and second ranks from that of an entity to that of a symptom has been especially set forth by Dr. Senn, viz., that cystitis is always to be considered in the nature of a bacterial infection, and that the bladder is not susceptible to bacterial infection when it is in a normal condition. The reason why so much advance has been made in the matter of cystitis is because of the improvement in means for the mechanical examination of the bladder. Twenty years ago the sound was the only instrument in use. It revealed the existence of stricture, of foreign bodies in the bladder encrusted with urinary salts, and with the aid of the finger, prostatic hypertrophy in the male. It is true, the finger was sometimes used for the investigation of the female bladder, but it was not generally recognized nor a universally employed measure. Dr. Belfield then referred to the value of the cystoscope as affording means for inspecting the entire wall of the bladder. There are instances on record in which stones have been entirely cut off from the general bladder cavity under diverticula, but they are rare. There are plenty of others which present a free surface to the bladder cavity, but in such localities as to be entirely beyond the reach of the sound. He related a case in which the ordinary symptoms of chronic cystitis were present,

and likewise symptoms strongly indicative of stone in the bladder. The man had had the matter of castration strongly urged upon him, but fortunately refused. An examination without an anesthetic failed to discover stone; the cystoscope at once revealed a stone near the protruding part of the prostate, just above the urethral orifice. A couple of weeks later the man was operated upon. When the patient was chloroformed, sounds were introduced with curvature likely to lead to the locality where the stone was known to be located. Dr. Belfield was unable, however, to touch the stone. A suprapubic incision was therefore made and the stone removed. Cases of this kind show the extreme value of the cystoscope.

Dr. M. L. HARRIS followed with a brief paper entitled

INSTRUMENTAL EXAMINATION OF THE BLADDER IN THE DIAGNOSIS OF CYSTITIS IN THE FEMALE.

His remarks were confined entirely to instrumentation of the bladder as bearing upon diagnosis, and were still further limited to a consideration of his own instrument—the urine segregator—which possesses the following advantages:

1. It collects the urine, so that it may be analyzed.
2. It does this without entering the ureters, thus obviating the danger of infecting the kidneys.
3. It not only enables the physician to differentiate bladder from kidney disease, but to determine the exact condition of each kidney, which is so essential in all diseases of the urinary tract.
4. Its use is so simple that extraordinary skill is not required.

Dr. JAMES H. ETHERIDGE read a paper entitled

REMEDIAL TREATMENT OF CYSTITIS IN THE FEMALE.

He said that the treatment of cystitis is conveniently subdivided into constitutional and local. The constitutional treatment consists chiefly of the use of remedies to increase the functions of the alimentary canal, of the skin, of the use of agents whose action so changes the character of the urine that it shall be unirritating to the diseased organs, and of medicines that can relieve pain and vesical tenesmus. Diet also falls under this heading. A soluble condition of the bowels should be maintained daily by salines, taken on the empty stomach, before breakfast. It is of prime importance to bear in mind that a glass of hot water taken immediately after the saline will energize the latter wonderfully, so that a diminished quantity of the drug will suffice. For example, a glass of hot water will make one-half or even one third of the dose of Hunyadi water that will move the bowels, effective and satisfactory. It is a matter of therapeutic experience that three daily bowel movements contribute to relieve the sufferings of an inflamed bladder. Diversion of the blood-current toward the intestinal canal under saline laxatives tends to diminish the amount of blood in the walls of the bladder. He recalled two cases of hypercatharsis in women with cystitis, one from physic and the other from a poisoned food product, wherein recovery in one and great temporary relief in the other case followed. The diet of cystitis patients should be carefully regulated. Milk is the most univereally used agent. For the relief of pain and tenesmus, analgesics are demanded. Opium is the supreme agent for the relief of vesical suffering. It can be used as Dover's powder, with camphor, also in rectal suppositories. It has its drawback, most decidedly, in the way of deranging the secretions and excretions. Its chief objection is the induction of the opium habit. Other agents, as chloral hydrate and the bromids, very often bring relief from pain. They are without the objections of the opium. The indications for the medical treatment lie chiefly in the reaction of the urine. If the urine is too acid, or very acid, it should be alkalized. It is alkaline, remedies must be given to change such reaction. Remedies can be given by the stomach to accomplish these ends. The treatment of all cases of cystitis involves two classes of remedies—those for use by way of the stomach, and those for use in the bladder. The second subdivision of the remedies used internally in cystitis is the class called germicidal agents. Their name is legion. Many of them have been used for generations. The older germicidal remedies include creosote, used especially where tubercle bacilli are found, cubebs, copaiba, oil of sandalwood, tar water, uva ursi, buchu, sodium salicylate, pareira brava, and the sulphocarbolates. Under this division come the balsams and the terebinthines. These remedies are all old, but they are reliable.

The essayist next dwelt on the important remedies for local use in the bladder. Before using medicines in the bladder, this viscus must be washed out with a normal sterilized salt solution, a dram to the quart, or with a saturated solution of boric acid. He uses the latter wholly. The injection must be small in amount, usually an ounce or two in severe cases, and given slowly. The selection of the remedy for intravesical application depends somewhat upon what the urinalysis reveals.

In all cases of simple cystitis the sovereign remedy is silver nitrate .1 to .5 per cent. In obstinate cases, this is one of the most reliable agents in strong solution, say twenty grains to the ounce. Of this five or ten drops only are used. The smallest amount should be used at first, larger ones later. Its use is not very painful; only exceptionally is it so. One to three or four drams can be used. At first it can be used once in two days; later, daily, till its further use can be discontinued. Simultaneously with its use, needed remedies by the stomach must be given for acting on the urine. The local treatment of the bladder should be performed with complete antiseptic precautions. The first thing done should be to wash out the bladder as completely as possible with saline solution or with a saturated solution of boric acid. In the majority of cases of cystitis this line of daily treatment is sufficient. When no improvement occurs in ten or fourteen days, the mild solution of the silver nitrate can be used with every expectation of a successful issue. Many physicians use this agent to begin with, claiming that since silver nitrate is the chief of all remedies for inflammation of mucous membranes and that days of time are gained by commencing all treatment of cystitis by using it. Such a claim sounds well, and it seldom disappoints the physician. Cases that resist all local and general treatment combined fall under the surgeon's hands.

Dr. ALEXANDER HUGH FERGUSON made some remarks on
THE SURGICAL TREATMENT OF CYSTITIS IN THE FEMALE.

He thinks chronic cystitis demands surgical treatment. In cases of cystitis in the female, local applications can be made through the cystoscope, and curettage could be performed. The application of nitrate of silver, and various topic applications, can be made to inflamed areas and ulcers of the bladder. Suprapubic cystotomy in the female has been done and there may be some cases calling for its performance, still he believes there is very little benefit to be derived from drainage suprapubically. Colpocystotomy, as practiced in cases of cystitis in the female, needs only to be mentioned to be condemned. Draining the bladder through the vagina, causing great discomfort and discharge of urine through that avenue, necessitates subsequent operation to cure the vesicovaginal fistula. He only did this operation once, and he always regretted it because he had to do three subsequent operations before the vesicovaginal fistula was closed. A careful examination should be made of the uterus and tubes. Examination of the kidneys should receive attention before the bladder is treated, sometimes after. If there is a tubercular condition of the kidney, it had better be treated surgically before the secondary vesical condition, because extension of the disease to the kidney is much more dangerous than extension of the tubercular disease of that organ to the bladder, which can be treated secondarily.

Dr. G. A. KLETSCH of Milwaukee, in the general discussion which followed the presentation of the above symposium, by invitation, read a short paper on

THE PREVENTION OF CYSTITIS IN THE FEMALE.

He said: An irritated condition of the bladder producing a congestion is frequently present in the female; but as soon as the cause of the irritation is removed, the bladder symptoms disappear. This was best illustrated to him in his hospital days by a demonstration of Dr. Emmet's. In a posterior parametritis, he would fix the cause of an irritable bladder, which would have eventually ended in a cystitis, in inflammation of the uterosacral ligaments. He contended that the inflammation in them soon led to contraction and shortening, and consequent dragging of the uterus into the hollow of the sacrum. This made tension on the neck of the bladder at its fixed point under the symphysis pubis, the base being attached to the cervix. He buttonholed the urethra to relieve this strain, thereby allaying the frequent desire to urinate, and then treated the seat of the disturbance to overcome the cause of the trouble. This teaches two things in the prevention of bladder troubles: 1, to avoid introducing a cause from which a cystitis might arise; 2, to relieve the patient of the one present without the introduction of another through any action of the physician. One condition alone can long exist without ending in a cystitis. In the autopsy room he has examined many a case, in which a hyperemic condition of the mucous membrane of the bladder was found, this not having developed further than an increase of the vascularity of the part. Frequently the intense vascularity indicated that it must have been of long standing, and still no inflammatory process resulted. The one element alone was present, which in itself was not sufficient to bring about a cystitis.

It is a question in his mind whether infection alone can produce a cystitis. Experimentation on animals has been carried on to decide this point. When the infectious material was carried into the bladder, was there not a lesion produced which

was the seat of inoculation? When called upon to enter the bladder, the one element was present, usually a congestion, and the physician introduces the other from without through the passing of the catheter. This behooves physicians to practice great care when they are called upon to exercise this function. Not only must all infection be removed from the parts under observation, but the instrument used must be thoroughly sterilized. Care must also be observed not to lacerate the tissues; for if the bladder contains decomposed urine, as it usually does, infection would find a fresh nidus by which it could enter and bring about its work of destruction.

Further discussion of the papers was participated in by Drs. F. Kreisler, E. C. Dudley, Albert Goldspohn, William Cuthbertson, Charles S. Bacon, L. L. McArthur and Lester E. Frankenthal.

French Congress of Surgery.

Held at Paris, October 18 to 22, 1898.

GUYON delivered an able and interesting address on

NEPHROTOMY

which, he observed, should aim to destroy the smallest possible amount of the renal parenchyma, bleed as little as possible and expose the maximum of renal tissue. This is best accomplished with a lumbar recto-curved or oblique incision. After having freed the organ from its adipose envelope, it is drawn out as much as possible and the pedicle compressed by an assistant. The organ is then opened with a long incision on its convex edge extending into the pelvis. By introducing a finger into the organ and palpating from the outside with the other hand, a calculus could scarcely be overlooked, although lesions of miliary tuberculosis might escape observation in the cortic substance, and even a neoplasm, as in an instance related, in which the lesions seem insignificant, until the microscope revealed the structure of alveolar cancer in a small fragment of false membrane discovered, and nephrectomy confirmed the existence of a renal neoplasm which had escaped attention. He considers nephrotomy superior to pyelotomy for the removal of calculi, except in the one case when palpation demonstrates a regularly shaped, medium-sized calculus in the pelvis. The best incision for nephrotomy is the lumbar recto-curved or oblique, downward and outward. This incision at once reaches Henle's vertebro-costal ligament, useful in managing the pleura. After having incised the convex edge of the organ and explored the inside, the walls between the different divisions should be destroyed as much as possible, and to avoid purulent peripheral lesions and facilitate future operations, the two valves of the renal tissue should be sutured to the lips of the parietal wound, as close to the integument as possible, thus evacuating and re-establishing the function of the kidney in case of anuria. He called attention to the remarkable tolerance of the kidney for this operation, with or without previous retention. Notwithstanding the free communication of the organ with the exterior and the drainage, infection does not invade the tissues. There is merely a slight sclerosis extending inward more or less from the edges of the wound. The renal tissue is not affected and the urine of a nephrostomized kidney scarcely differs from normal. Nephrotomy seems the superior operation in most cases of calculous anuria, and the only operation in serious cases. Both kidneys are usually more or less affected even in simple primary lithiasis, and in most cases the other kidney is no longer working properly when the anuria appears. It may seem normal in some cases, but is still liable to have lesions of an aseptic nephritis when render it particularly sensitive to the inhibiting influence of a reflex emanating from the other kidney (Guyon's reno-renal reflex). Nephrotomy is far from the ideal conservative operation in uronephrosis. The cause should be removed if possible, with ureteral catheterism, nephrorrhaphy, ureterotomy or ureteropyelotomy. But if the other kidney is destroyed and it is indispensable to retain all of the renal parenchyma that has been spared, then nephrotomy is directly indicated. The advantages of nephrotomy in simple pyonephrosis are evident. The objection of the fistula has been shown to be unfounded, as in many cases it heals in a few months or even several years after the intervention, and the more readily, the greater the destruction of the kidney. In certain cases the fistula can be prevented or healed by simple permanent ureteral catheterism, or by operations re-establishing the normal course of the urine. Secondary nephrectomy always offers a last resource when healing is evidently impossible and the secretion of the kidney has no longer any actual physiologic value. Nephrotomy is almost always preferable to interventions aiming to re-establish the normal course of the urine. These should be made later, after the

nephrostomy, when the general and local conditions are improved. Guyon's experience with nephrostomy in tuberculous pyonephrosis has been unfavorable. The improvement is always transient. The fistula has always persisted and no patient survived over two years. He prefers nephrectomy in these cases, if the other kidney is normal. The mortality of primary nephrectomy as published is 28 per cent. and of secondary nephrectomy 34 per cent. His experience has been sixteen recoveries out of seventeen primary nephrectomies for renal tuberculosis. Summarizing his cases with those of Czerny, Bardenheuer, Küster, Israel, Tuffier and Routier, he has a mortality of 10 per cent. while the mortality was 17 per cent. in 84 nephrostomies for renal tuberculosis. The latter operation is therefore only indicated when there are other advanced tuberculous lesions which would render nephrectomy impossible. In such cases it is well to take advantage of the undoubted palliative relief of the permanent opening of the kidney, although, after several weeks or months, the phenomena return as before. Radiography has not fulfilled the hopes of its application to the kidneys.

LE DENTU recommended multiple punctures all through the organ, and nephrotomy, in case of nephritis with much pain, persisting months and years in spite of medical treatment.

REXNIER's experience has been the necessity of a secondary nephrectomy in every case nephrotomized, and he considers primary nephrectomy no more serious than secondary.

BAZY rejects as useless or impossible the fastening of the renal edges to the skin. He makes his incision from the costomuscular angle to a point two or three finger breadths above the highest part of the iliac crest. After nephrectomy he places a bougie in the ureter through the pelvis, to ensure the permeability of the tunnel and prevent its obstruction by clots or pus after the operation. He recommends cystoscopy and the use of methylene blue as the best means of exploring the condition of the other kidney, observing that catheterism of the ureter may carry the infection into a sound ureter from an infected bladder. He reports only two cases in fifty nephrotomies, in which he had to operate twice, and only three in which a secondary nephrectomy was necessary. Tuffier reported fifty-seven nephrotomies: in three cases through an abdominal incision, with the precaution to suture the pre-renal peritoneum to the parietal peritoneum before opening the purulent pocket of the pyonephrosis. He noted in many cases the existence of very small, almost microscopic foci at the nephrotomy, which developed later into multiple abscesses. He considers nephrectomy indicated not only for lithiasis and pain as suggested by Le Dentu, but also for renal hemorrhage and certain forms of nephritis. It should be performed as early as possible. He rejects nephrotomy in cases of hydronephrosis, preferring plastic operations to re-establish the course of the urine.

DOYEN reported a patient cured and in perfect health eleven years after nephrotomy, preceded by an incision of the kidney which showed it invaded by miliary tuberculosis. He avoids the dangers of retrograde catheterism by first carefully rinsing out the bladder and then having each ureter compressed in turn. Pus is then found in the urine after compression of the ureter on the side of the suppuration, but if the other kidney is sound no pus is found after the bladder has been rinsed again and the other ureter compressed.

LEGUEU described a case in which nothing was found at the nephrotomy, and yet the patient was very much benefited by the purely exploratory operation. The trouble had evidently been renal neuralgia in a very nervous woman.

ALBARRAN observed that a fistula is rare in a kidney not distended at the moment of operating, outside of tuberculosis. But when there is retention a fistula is frequent, on account of the constriction, the bending, or the vicious insertion of the ureter in the pyelorenal pocket. When the course of the urine through the ureter is once established, the fistula closes spontaneously; this he accomplishes by inserting a permanent sound. In case of a fistulous opening, if the analysis of the urine indicates benefit from retaining the organ, he inserts a sound, replacing it by larger sizes during the days following, using it for irrigations of the kidney pocket and withdrawing it in a fortnight. If in spite of the closing of the fistula, there are still indications of retention, he inserts the sound as far as it will go, and then incises the kidney, finding the ureter by means of the sound, and performing ureterotomy, ureteropyelostomy, uretero-pyeloneostomy, autoplasmic resection of the kidney or "capitonnage" of the pyelorenal pocket. With a purulent fistula a careful diagnosis should be made with ureteral catheterism. If the kidney secretes pus through the sound, cleans and open wide the perirenal foci. The kidney should not be extirpated unless it is impossible to empty these foci without ablation of the organ. If the kidney is not secreting at all, nephrectomy is indicated. In regard to operations

to re-establish the normal course of the urine, he advises not operating at the same time as the nephrostomy, but waiting for the inflammation to subside. He also recommends not hurrying the healing of the fistula. After a while the ureteritis may subside and the conditions become more favorable.

PHOCAS reported a case of six months' insanity consecutive to a nephrotomy.

DELBER described the remarkable result of nephrotomy in a man of 60 years, too weak from his tuberculous pyonephrosis to undergo nephrectomy. Five liters of pus and 360 c.c. of cheesy substance were removed. He curetted every three or four days, and injected iodoformed ether every second day. The patient was dying at the moment of the intervention, but recovered, has gained in weight and seems quite well a year later, still keeping his fistula.

LOUMEAU related a case of severe renal hematuria nephrotomized and cured, although no appreciable lesions were discovered.

JONNESCO also emphasized the absolute benignity and unquestionable efficacy of nephrotomy and nephrolithotomy, followed by the immediate suture of the kidney.

CHIBRET reported the unique case of a vigorous man of 55 years, in good health except an attack of nephritic colic and complete anuria. A nephrotomy failed to show any calculi or gravel, but the kidney was nearly twice its normal size, purple, very much congested and so friable that when he tried to draw it out to the wound, his fingers sank into it as into a soft substance, and it was with the finger that he opened it down to the pelvis; smooth recovery.

REVERDIN of Geneva, in his address on

THE SURGICAL TREATMENT OF GOITER,

stated that the mortality in 6103 operations has been 2.88 per cent., but eliminating the older, complicated cases, the mortality would be very little above zero. The mortality from total extirpation has been 26 deaths in 137 operations; from interglandular enucleation, less than 0.78 per cent.; from the combined methods, 2.99 per cent.; from Mikulicz' resection, 6.66 per cent., and from partial extirpation, 3.56 per cent. Several enlarged upon the dangers of chloroform and expressed their preference for cocaine in their operation.

DOYEN inserts a tube in the larynx, by which means he can use chloroform at will. He stated that with his "crushers" he can perform thyroidectomy in five to ten minutes.

ROUX mentioned that he had long ago discarded chloroform anesthesia, but that he found pulmonary disorders afterward, usually attributed to the chloroform were as frequent as without it. Hundreds of snucleations were reported by other members with only one death (paralysis of the heart).

GIRARD operated on one woman in labor on account of imminent suffocation. The child was born dead but the mother recovered.

BERARD mentioned that after partial operations on the thyroid, fever and nervous phenomena are frequently observed, not serious, evidently due to the liberation of substances normally secreted by the gland which produced the "thyroid fever."

PICQUÉ classified "Otitic Suppurations" as osteodural, intradural, pericerebellar and intracerebellar abscesses, the latter either cortical or medullary and requiring more than simple trephining—an osteoplastic operation with a mastoido-occipital flap, retro- and sub-sinuous, which allows full inspection of the cerebellar pocket.

LANDOLT extolled the advantages of his method of treating strabismus—detaching the muscle and attaching it with a couple of stitches near the cornea. In case of extreme strabismus he combines with the advancement, the resection of the tendon end of the muscle, and supplements the operation with orthoptic exercises.

FAURE suggested treating facial paralysis by an anastomosis between the peripheral end of the facial nerve and the end of the spinal nerve—the trapezian branch severed at a convenient point.

COUDRAY recommended resection of the external branch of the spinal as the best treatment for spasmodic torticollis.

CALOT reported many cures of affections of the cervical glands without scars by injecting two or three grams of a fiftieth solution of chlorid of zinc with a very fine needle three or four times, with an interval of two days, completing the cure with injections of camphorated naphthol.

JONNESCO reported six recoveries in sixteen operations of temporary craniectomy (fourteen hemicraniotomies, two partial craniectomies; in four cases resection of the cortex to a greater or less extent. In eleven cases the operation was performed to relieve edema of the brain. One patient died from hemorrhage; two from later development. The six recoveries included two

of traumatic and one of Jacksonian epilepsy, two hysteria with prostration and idiotism, with mania. There were two much affected; six were unaffected by the operation (two epileptics with acute mania and four idiots).

LEQUEU described a case of extirpation of a mammary neoplasm, in which an early recurrence required operating, leaving a large defect. As all the available flaps had been used in the first operation he detached the sound breast and sutured it with the nipple on the median line, as a large flap, with success.

FROELICH reported twelve recoveries in twenty-six cases of Potts' disease in infants, which he treated by strapping the child, dressed, to a board in extreme lordosis. Four died and ten are still under treatment. He noted that the paralysis is localized in the two members, but is never absolute.

TUFFIER announced that his attempts to cause atrophy in inoperable tumors with "atrophying ligatures," had failed to produce the slightest curative effect, although as a palliative measure they procure the cessation of the ichorous and other discharges.

LARGER stated that he had found local or general baths of saturated solution of potassium chlorate extremely effective in relieving the pain in extensive burns. He continues the application of the chlorate in compresses on a superficial burn, and treats a deep burn as an ordinary after the pain has been relieved. The fact was emphasized by several, that patients apply earlier for an operation now than formerly.

ROUX observed in the conclusion to his review of two years of gastro-intestinal surgery, that the Y-posterior-gastro-enterostomy, with a suture in three stages, is not in itself a dangerous operation, notwithstanding its length and the possible escape of a little of the intestinal contents; as in twenty-four gastro-enterostomies for pylorus affections he has not lost a single patient. The operation was completed in forty-three minutes. Almost all were cicatricial constrictions or fibrinous rings from old gastroptoses.

TUFFIER observed that he did not decide upon the method of "abouchment until after he had removed the tumors and considered the conditions left. His record is, sixty-two operations on the stomach; fifty gastro-enterostomies, with two deaths; nine pylorotomies (three deaths and six cures) and three operations limited to detaching adhesences.

DOYEN advocates the Y-anastomosis, like Roux, but makes the abouchement lateral instead of terminal, which reduces to the minimum the orifice for the passage of the bile into the jejunum, thus avoiding the regurgitation of bile. The gastro-enterostomy should be as far as possible on the face of the stomach and transmeso-colic. This insures the slope and emptying of the stomach contents.

DOYEN was the first to propose surgical intervention for non-cancerous affections of the stomach, not only for ulcer and cicatricial stenosis, but for spasmodic contraction of the pylorus with enlarged or contracted stomach. His method of pylorotomy consists in isolating the tumor, holding the gastro-colic omentum out of the way with a few ligatures, then applying his "crushers" beyond the tumor on the duodenum, reducing the intestine to the single thickness of the serous coat. A double ligature is placed in the groove and the intestine cut between the two ligatures, thus avoiding the escape of any fluid. The resulting stump is pushed back into the duodenal cavity with a double "purse" suture, after having removed, with scissors and thermocautery, any scraps of mucosa beyond the thread. The same operation is then done on the side toward the stomach, which can be pivoted outward. The forceps must be applied twice and a strong thread tied firmly in the groove. If the tumor is small a double purse suture is enough, but if large, a couple of superposed rows of overcast sutures are required. He proceeds to the gastro-enterostomy by perforating the mesocolon, and drawing down the posterior face of the stomach. The edge of the orifice of the mesocolon is overcast to the stomach, preventing the strangling of the small intestine at this point. The loop of the jejunum is drawn up, fastened to the stomach, and a lateral anastomosis made, after which the origin of the jejunum is sectioned with the "crushers" between a double ligature. The two stumps are finished as before with the purse suture. At this moment the stomach communicates with the jejunum laterally anastomosed, the upper end of which forms a cul-de-sac. The duodenum and the origin of the jejunum have become a tube closed at both ends. Nothing further is required except a lateral jejunojunal anastomosis with a very small opening for the bile. The duodenum by this process becomes a prolongation of the common bile and the pancreatic ducts. This method of operating: "crushing," the purse ligature, and Doyen's elastic jaw forceps, realizes the most aseptic conditions, allowing gastro and enterostomies without any

contamination of the field by fluids from the alimentary canal. He applies the same method to all his operations on the stomach, small or large intestine and especially to the resection of the appendix (*vide* JOURNAL, page 73).

LUCAS-CHAMPIONNIÈRE confirmed the great advantages of his method of mobilizing fractures from the first (*vide* JOURNAL, xxviii, page 1034).

MASSE reported that a number of dogs that had cholecysto-gastrostomy performed on them over a year ago, are still well, with normal digestion in spite of the presence of bile in the stomach. The common bile-duct had been ligated in the middle in most of them. The results indicate that this operation could be applied successfully to man in case of total obstruction of the bile-duct. The tolerance of the stomach for the bile also indicates that the care taken to prevent possible reflux of the bile into the stomach in gastro-enterostomies has been unnecessary.

GUINARD mentioned, as an aid in the diagnosis of perforating gastric ulcers, the appearance of the pain as a sudden sharp stab, near the left false ribs on the nipple line; the peculiar form of the tympanism and the ballooning of the abdomen and, especially, the record of the gastric past. Only two successes were noted in the eleven cases operated reported by several present.

WALTHER has observed the pain in two cases occurring in the lower abdomen, where there was an encysted peritonitis, connected with the perforation by adhesences.

DELAGENIÈRE reported ten cases of surgery of the bile passages, mostly abouching the gall-bladder through the rectus muscle in the anterior fascia of the muscle; one death. The cholecystostomy not only disinfects the bile passages and diverts the course of the bile, at least temporarily, but prevents any increased tension in the passages, thus avoiding rupture of the sutures and the escape of bile. Thanks to the fetula the sutures can be relied upon to hold.

ABADIE observed that section of the cervical sympathetic as theoretically indicated in a number of disturbances in certain organs caused by permanent excitation of the vasomotor nerves, leading to disordered nutrition, and that other affections besides exophthalmic goiter and glaucoma, may be found amenable to the same treatment. He added that we should study the morbid phenomena that may be determined in the viscera of the thorax and abdomen by the vasomotor of the sympathetic in these regions.

TEMOIN related an instance of fetal exaggeration of the symptoms in exophthalmic goiter consecutive to bilateral resection of the cervical ganglia.

JONNESCO reported six cures and four improvements in ten cases of exophthalmic goiter thus treated, adding an account of the excellent results attained in 45 cases of epilepsy and 7 of glaucoma with resection of the cervical sympathetic.

Next year the congress will discuss the questions: "Total Abdominal Hysterectomy," and "Tumors of the Bones," with addresses by Ricard, Pollosson and Berard.

SELECTIONS.

Shall the Consultant Pay the General Practitioner for Cases Referred to Him?—A contributor to the *Colorado Medical Journal* raises this question for discussion and argues for an affirmative reply as regards certain cases. His argument fails to satisfy the positive ideas of ethics of the editor of the *Philadelphia Medical Journal*, whose comment provokes a rather severe rejoinder in the first-named journal, and elsewhere the question is being taken up and discussed. The original proposer of the discussion, who shows his sincerity and earnestness by signing his name to his communication, argues simply that the general practitioner, before referring a case to the specialist, sometimes gives it a certain amount of attention, for which the patient will not pay him; and that therefore the specialist, who is benefited by such reference, should reimburse him. The rightfulness of paying for cases referred in this way must, however, be considered quite apart from the excuse of seeking by secret connivance to extort from an unappreciative patient, what may be rightfully due to his regular medical attendant. It involves more important influences and issues. There is reason to believe that it has been resorted to without any such plausible excuse; and by those who have not the manliness to avow such a practice, although they might hope that an avowal

would bring to them patients from such doctors as were willing to advise patients to go where it would be most to their own (the doctors') pecuniary advantage. While it may be a very small proportion of the profession who are liable to do any loose thinking on this subject, loose thinking does lead to loose practice, and on that account the subject is worthy to be generally discussed and to have its different aspects clearly presented. Even dropping all appeal to what are called higher motives, and considering it solely from the standpoint of selfish pecuniary interests, there is more than one side to the question. From the side of the general practitioner it may well be asked: Will the peddling of the patients prove permanently profitable? While it might be anticipated that there would be lively bidding among rival specialists, and that the young, inexperienced and ambitious would presently be willing to turn over the whole fee for the sake of experience and *eclat*, other things must be thought of. Can the general practitioner always land his patient in the net of the specialist who will charge the largest fee and share it most liberally? Can the transaction be repeated with the same patient or any of his friends? Will the patient so referred ever return to the general practitioner at all? Will not the specialist, instead of regarding the patient as leased, regard him as transferred in fee simple, and be shrewd enough to see that the way to recoup is by himself referring the patient to the next specialist, and so on until the patient can no longer be "referred" (sold), or is not worth "referring?" While the specialist may think it would pay to give a good percentage for patients, and so keep busy, gain experience, and come to be known as a rising specialist, instead of spending years of waiting in hard study of literature and the minute investigation of his few cases; while it may appear probable that the occasional reluctance of the general practitioner to give his patient the chance of benefit by the specialist's "superior knowledge and skill," would pass away under the influence of the proper percentage; while one might hope that the general practitioner with a direct pecuniary interest would be able to discover more cases of cataract, appendicitis or retroversion requiring operation, and even succeed in steering his neighbor's patients to his own pecuniary advantage, it must not be overlooked that the general practitioner who enters upon such a course may become too grasping—may prefer a larger fee to a smaller; and thus become the canvasser for the embryo specialist, or recent graduate who can afford to pay most for the opportunity to gain experience and advertise himself to the community. Then what will one's reputation be worth when the truth leaks out that it is built upon recommendations for revenue only? But when it comes to considering the scheme from the standpoint of the patient there ceases to be anything to consider, for no such plan can be put in operation with the consent of the patient. He will not knowingly pay indirectly through the specialist a fee that he would refuse to pay directly to his family physician; and if he knew that he was advised to go to a specialist who would divide the fee with his adviser such advice would not be worth giving. Only when all the parties directly concerned understand its nature, and agree to it, is a business transaction legitimate or honest. What is taken by stealth is stolen. If you claim that it is not theft to take what property belongs to you, the reply is that taking it by stealth always raises the presumption that it does not belong to you. The payment and acceptance of a fee from the specialist without the knowledge of the patient belongs exactly in the same category as collusion with the apothecary for a percentage on prescriptions. Only when the thing is done with the full knowledge of the patient can the referring physician rise from the level of a bunco-steerer to that of the paid agent or respectable drummer of the specialist. If any physician wishes to serve his patients as a professional adviser he must preserve his patient's respect and his own self-respect by openly demanding a proper recompense for his services, and properly enforcing that demand. He must not seek to obtain secretly and through the aid of another, what he is afraid or ashamed to ask openly. That would be a poor way indeed to dignify his calling and teach a proper respect for his services.—*Philadelphia Polyclinic*, December 3.

Hawking Physicians.—There may have been a time when the physician to some royal court found time and was permitted to engage in the sport of hunting with a hawk upon the wrist. Our present remarks do not apply to this kind of gaming, but to a less ennobling pursuit of crying one's wares upon the street or peddling them out for the highest price obtainable. Several of our contemporaries have had much to say of late upon the subject of commissions paid by specialists to general practitioners for cases referred to them. That there exists any very considerable amount of such reprehensible practice we are not inclined to believe, but that reference cases are at times paid for on the one side and the dividend freely accepted on the other is undoubtedly true. More's the pity. What has been called "bargain-counter" surgery, especially in the realms of abdominal and pelvic pathology, must have some existence in fact, or one would not hear of it from so many different sources. The blame has been placed almost exclusively at the door of the specialist, but one correspondent touches the keynote, it would seem, when he says that "country doctors frequently go about from surgeon to surgeon, seeking the highest bidder." It would not be surprising if equal blame were to be attached to him who has the case to sell and to the one who is willing to buy. It was some years ago that many reputable surgeons in this city were shocked in their finer susceptibilities by a down East doctor who landed in town with six laparotomy cases, which he proceeded to farm out on terms most advantageous to himself. Many of the surgeons approached had not before heard of such shrewd businesslike methods being applied to human existence, and very properly showed the visitor the door. Undoubtedly these surgeons would pursue the same course today. It is at least to be hoped they would. Whether or not this hawkster succeeded in finding an operator sufficiently devoid of ethical honesty to offer the proper "divy" is not divulged. He may have taken the subjects to one of our neighboring cities, where so great a cry has gone up against the giving and accepting of commissions as to lead one to infer that the practice is much more prevalent than with us. Or he may have gone with his half-dozen protruding females back to his quiet New England village, and by operating upon them himself secured the whole of a smaller fee. Whatever may have been the outcome of the pilgrimage, the lesson must have been learned that because one man "sells" another does not always feel inclined to "be sold." Among the worst medical sins are to be reckoned those of commission. Physicians who indulge in such practices must sooner or later come to grief, and it would be better that both sides take warning before the patients discover for themselves that their welfare is being bartered and that they are likely to fall into the hands of incompetents willing to overcharge in order to pay exorbitant dividends.—*Medical Record*, December 3.

PRACTICAL NOTES.

Local Treatment of Neuralgia.—Apply, two or three times a day, the following mixture on cotton: Menthol and guaiacol, $\bar{u}\bar{u}$ 1 gm., alcohol. absol. 18 gm.—*Vienna klin. Rund.*, November 13.

Motet's Operation for Ptosis.—Ptosis can be corrected by utilizing the synergy between the levator palpebrae and the muscles of the globe. Motet cuts a strip in the rectus superior and pulls it through a buttonhole in the tarsal cartilage to suture it to the upper lid.—*Gaz. Méd. de Paris*, November 12.

Scarlet Fever After Laparotomy.—A. Sippel reports a case of scarlet fever appearing in a virgin three days after laparotomy for an ovarian tumor; evidently the infection had occurred previous to the operation. He concludes from the favorable course and lack of complications in this case that it is unnecessary to defer an important operation, herniotomy for instance, in a scarlet fever patient, and that a child could be delivered

without being infected in simple scarlet fever.—*Munich Med. Woch.*, November 15.

Formaldehyde Disinfection.—Fairbanks states in the *Cbl. f. Bacteriologie* that raising the temperature of the room to be disinfected to 70 to 73 degrees shortens the time necessary for the disinfection. He used a Schering apparatus and found that bacteria were killed in eight hours, instead of requiring over twenty-four as previously.

Lupus Erythematoses.—Hebra reports remarkable success in six cases of this affection treated simply with alcohol applied on cotton, with which the surface is dabbed forty to fifty times. In each case the cure was prompt and complete, in spite of the chronic character of the lupus. Kohn has also applied it with success. Kaposi observed that the alcohol may have been the effective factor in the old *spiritus sapon. kalin.* Soap must be avoided while the alcohol is being used.—*Vienna klin. Woch.*, November 17.

Sign of Sclerosis of the Aorta.—Cherchevsky calls attention to a sign that will reveal sclerosis of the cross of the aorta even in its incipient stages. He has established that the arch of the aorta in normal persons has a variable dimension, as can be determined by tapping the region of the aorta with the percussion hammer five to ten times. The aorta dilates, and its increased diameter can be readily detected with the percussion. But if there is sclerosis the aorta remains unchanged.—*Semaine Méd.*, No. 51.

Heteroplastics for Prolapsus of the Brain.—F. Franke relates (*Cbl. f. Chir.*, November 26) his success with a celluloid plate with projecting ends, which he inserted under the edges of the skull to close the defect after operating on an abscess behind the ear, through which the brain matter was protruding with such tension that no sutures would hold. The celluloid plate held the brain substance in check for several weeks, when it was removed. The prolapsus had disappeared and a bone-skin flap from the regio supra-mastoides was applied with immediate and permanent success.

Potassium Chlorate for Burns.—Lutaud's method of applying chlorate of potassium to burns, for which it is being highly recommended of late, is: Open the blisters and apply cataplasms every four hours until the epidermic flaps are entirely detached. A sheet of cotton moistened with a solution of potassium chlorate is then applied and oiled silk over it. To prevent sticking to the wound a little glycerin is added to the solution or the chlorate is incorporated with lard; or, better still, Declat's glyco-phenique is used instead of the glycerin. The sedative effect of phenic acid on burns is remarkable.—*Jour. de Méd. de Paris*, November 20.

Water Gymnastics.—Von Leyden and Goldscheider emphasize the importance of the effects attained in cases of atrophy of the lower extremities, painful joints, etc., by a series of gymnastic exercises performed under water, which should be at a temperature of 28 to 32 degrees R. The sensation of weight and resistance is removed and the buoyancy imparts both a physiologic and psychic stimulus of great value. An attendant holds the trunk still, if necessary. If able to stand, the exercises are best performed in an erect position, the body supported.—*Deutsche Med. Woch.*, November 17.

Vomiting of Pregnancy.—Barth observes that uncontrollable vomiting in pregnancy depends upon two factors in varying proportions; a nervous influence emanating from the uterus and reflected upon the nerves of the stomach, and an auto-intoxication from defective function of the liver. The clinician should carefully inform himself in regard to the pathologic past of the patient as soon as possible, as temporizing is criminal when there is an evident hepatic lesion. In such a case, if an exclusive milk diet and oxidating medicating do not control the vomiting, then there is but one thing to be done, i. e.,

arrest the pregnancy and at once, before the auto-intoxication aggravated by the digestive disturbances and inanition has time to produce irremediable disorders in the organism.—*Semaine Méd.*, November 16.

Euphorbium in Surgical Tuberculosis.—Pénières announced a year ago that he had been very successful in curing local tuberculous processes with an emulsion of the gum resin, euphorbium. He now states that experience and time have only confirmed the great value of this simple treatment, particularly in monoganglionic adenitis, which is usually cured with two or three injections. One striking case is a girl of 14 years, who had an enormous poliadenitis on the right side of the neck, almost inoperable. The left side had been similarly affected, but had been operated several times and was seamed with scars. The tumor compressed the ear, causing deafness; its surface was covered with suppurating fistulous openings, and even respiration was impeded, but the case was entirely cured in a few months with a dozen injections of the euphorbium, made very irregularly. The tumors and deafness disappeared, and the skin became white and supple.—*Gaz. Méd. de Paris*, November 12.

Gastrostomy.—Urban reports a case of carcinomatous degenerated stomach entirely removed; smooth recovery; no disturbance in digestion; woman of 35 years (*Munich Med. Woch.*, November 22). Perier recently presented before the Paris Academy of Medicine a patient operated on a year before for a neoplasm requiring excision of the middle portion of the stomach and of the transverse mesocolon. He then united the two cul-de-sac left after this annular excision, with a double suture reinforced by a lining made of the omentum. She has gained 13 kilos in weight, appetite is good and digestion easy. Constipation is controlled with cascarn and injections daily. He emphasized the necessity of pushing down and away from the field of operation the fecal matters in the colon. By pushing the contents of the distended colon down to the sigmoid flexure, he was able in the course of three days, with numerous injections and suppositories, to secure a copious passage, after which the patient rapidly improved, although her condition had been quite precarious before. He ascribes to the ignorance of this necessity his failure in another case which promised equally well. He concludes his communication with the advice to push the contents of the intestines during a laparotomy well down into the rectum, when the accumulations indicate any difficulty of evacuation.—*Bulletin*, November 15.

Sulphuric Acid in Infections.—Noskowski states that sulphuric acid is extremely effective in arresting infections, on account of its property of absorbing oxygen. Bacteria in general are unable to live without oxygen, and where it is lacking they procure it by decomposing organic substances, if possible; if not, they die. Sulphuric acid also obtains it from the same substances as the bacteria, and introduced into the organism it absorbs the oxygen, which stimulates the hematoses, respiration, circulation and the organic exchanges, thus depriving the bacteria of the oxygen they require and also stimulating the organism to repel their invasion. He finds that animals can take 25 milligrams of sulphuric acid per kilogram without injury, in a subcutaneous injection. His method with man is small rectal injections of 10 centigrams of nascent sulphuric acid made by dissolving in water a sulphid and an organic acid, fractioning the dose as desired. Infants can take 10 milligrams every two hours, increasing gradually to the age of 8, when the dose can be 10 centigrams, as for an adult. One to six of these injections will certainly cure intestinal infections in young and old. Three to twelve injections are necessary in typhoid fever, eruptive fevers and influenza. Even in advanced tuberculosis they will prolong life many years, and in fresh cases have resulted in a few cures. He has it inhaled in a gaseous form in pulmonary affections.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$5.00
Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, DECEMBER 17, 1898.

STUDIES OF THE COLON BACILLUS.—COLON INFECTION OF THE URINARY TRACT.

The colon bacillus has been found in connection with a large number of diseases, but whether it can be stated to be the real cause of many of these processes is still an undecided question. There are as yet great difficulties in the way of accurate identification and classification of bacteria, as witness the so long confused relations between the colon and typhoid bacilli. Only recently has it been possible, by means of PFEIFFER'S phenomenon (Widal's reaction), to show that there is a fundamental difference between these two organisms.

A large number of the investigations bearing on the colon bacillus are of little value, because of the incomplete descriptions of the forms of growth and other biologic characteristics of the bacilli studied. RAHLFF¹ attempts to draw a clear picture of the typic colon bacillus and its biology. For this purpose he cultivated sixty-two different kinds of this microbe, partly from the feces, partly from pathologic products.

He describes the typic colon bacillus as follows: It is decolorized by GRAM'S method; does not liquefy gelatin; it decomposes lactose and glucose, and grows quite luxuriously on different kinds of potato. It does not decompose urea, but among the author's sixty-two varieties there were two which decomposed urea, one of these coming from the feces, the other from urine containing pus. There are numerous microbes that resemble the colon bacillus, but differ in one or more points from the typic organism. Con-

sequently, all investigations concerning this bacillus or allied forms should definitely specify the morphologic and biologic characteristics.

The forms which RAHLFF has studied were obtained partly from normal feces, partly from pus in perforation peritonitis, and also from purulent urine. In many cases one variety was obtained from the normal excretions, and another from the pathologic product. The virulence was determined in a large number of cases by intraperitoneal injections into guinea-pigs. It was found that the colon bacilli from the normal feces, as a general rule possessed the same nearly constant degree of virulence, whereas the bacilli that were obtained from the urine varied very much, some being more virulent, others less virulent than those isolated from the feces of the same individual.

Among the large number of disease-processes with which the colon bacillus is more or less closely connected, the author has selected for more extensive study, infectious processes in the urinary tract and perforative peritonitis. Previous investigations in regard to the infections of the urinary tract are undoubtedly vitiated in many instances by two distinct sources of error: the first one is, that urinary, especially tube, cultures from fluids and organs containing colon bacilli and other bacteria very often yield but one growth, namely of the colon bacilli, which have the power of preventing by overcrowding the growth of other bacteria. In such cases, microscopic examinations, careful study of smears, and various technic aids must be employed in order to demonstrate the possible presence of microbes which the cultures do not bring to light. In these cases the primary cultures should always be made by the plate method. Another source of error is to be watched for in examinations in regard to the presence of colon bacilli in dead bodies. It may be regarded as fairly well established, that the colon bacillus may migrate in large quantities into parenchymatous organs, not only after death but also during the agony, and that when found outside the digestive tract under such circumstances the colon bacillus has undoubtedly incorrectly been regarded as the cause of the perhaps fatal illness.

In agreement with the claims of ROVSING, RAHLFF insists that the colon infection of the urinary tract is essentially a benign process. The colon bacillus but rarely attacks the bladder; the kidney and the pelvis are however, often involved, being the seat of the primary infection, which may descend along the ureter. The colon infection of the kidney and renal pelvis is described clinically as of rather sudden beginning, with fever and chills; at times severe and persistent, at other times less well marked, lumbar pains; and a constant diarrhea. Often the urine is burning: there may be vesical tenesmus, and the urine, which is acid, will be found to contain more or less pus and numerous bacteria. Objectively, there is usually a marked tenderness in the region of the

¹ Studier over colibacillen, 1898.

kidneys. The attacks subside very generally without any treatment, except that the urine may continue opalescent and free of bacteria for a longer or shorter time, while the patients have otherwise apparently regained perfect health. The author believes that the more severe cases depend upon a gastro-intestinal disturbance, which is shown by the very nearly constant diarrhea, and that from the intestinal tract the colon bacilli pass into the blood and become localized in the kidney and the pelvis. In many cases a pre-existing nephrolithiasis seems to favor this localization. It is very probable that the local renal infection occurs during the process of elimination through the kidneys.

OYSTERS AND DISEASE GERMS.

There are probably few persons of any taste who doubt the wholesomeness of oysters, though the question has been raised and extensively discussed in times past. In the light of modern germ theories it again comes to the front, and the possibility of their conveying disease has to be seriously considered. Three or four years ago an epidemic of typhoid among the students of an eastern college was credited to the ingestion of oysters that had been taken from sewage contaminated water, and some similar experiences in Great Britain led to the appointment of a committee of the British Association for the Advancement of Science to investigate the matter and report results. This committee, consisting of Professors HERDMAN (chairman), BOYCE and SHERRINGTON, Dr. C. A. KOHN and Mr. G. C. BOURNE, has this year made the third and final report, the substance of which is given in *Science* of November 27.

In a previous report the committee had already called attention to the presence of organisms in oysters closely resembling the bacillus coli communis, and also of others varying somewhat in their reaction from this species, and strongly suggestive of Eberth's bacillus, and a comprehensive Local Government Board Report of Dr. KLEIN had likewise done the same. Their later researches, which were not solely confined to oysters, but included other edible mollusks, mussels, periwinkles, whelks, etc., as well, are only confirmatory of these earlier ones, while their additional thoroughness and completer methods give them a decidedly greater value. In nineteen samples of oysters from various sources there was found in nine a bacillus closely resembling *B. coli*—in some cases almost a pure culture was obtained with characteristic odor. The reactions differed; in one group they were typic, acid, coagulating milk, giving out indol and gas, and the growth on potato was luxuriant. In another group, however, there was a very actively motile bacillus that did not coagulate milk, gave out indol and gas bubbles only occasionally, and had in three cases an alkaline and in two a slightly acid reaction. Serum tests were negative, and from all the

facts the committee concluded that it could hardly be identified with the true typhoid bacillus.

In the earlier reports of the two previous years the committee had given the results of experimental infection from oysters, and in the present one they recommend, in view of the existence and frequency of microbes of the colon type in these as well as in other species of shellfish, that steps be taken, either by Government inspection or by co-operation amongst the dealers, to remove any possible suspicion of sewage contamination. It has been proven sufficiently that oysters can imbibe sewage, and the source of the contamination being proved, the danger is a real one. They recommend the formation of an association of oyster dealers who, for the credit and safety of the trade, will look after the sanitary requirements and provide for periodic examination of the oyster beds, with special reference to their needs. They seem to think that there is little danger in oysters from pure sea water, at least so far as regards these disease germs; the peril of sewage infection lies therefore, mainly in the fattening beds, which are apt to be in fresh water or tidal creeks, and in oysters taken from estuaries and rivers that receive the sewage of thickly populated territories.

There does not appear to be any evidence given, at least in this final report, that sewage necessarily affects the mollusk itself—it may be that it thrives on it—but it none the less may be a dangerous source of infection to its human consumers. The committee report, however, touches upon another possible cause of unwholesomeness in these articles of diet or luxury, that is due to a disease of the oyster itself. A green coloration of oysters has long been observed to occasionally occur, and has, in times past, been attributed to copper and occasionally supposed to render the oyster unfit for consumption. There has been, however, no really authoritative utterance given out, and green oysters have often enough been eaten without serious consequences. The committee investigated this phase of the oyster question also, and find that while a green tinge is not always an indication of the unfitness of the mollusk for human food, it is in some cases associated with a diseased condition, leucocytosis, and that such are not to be recommended. It would appear that there is room for further study on this subject, especially in this country, for their researches were apparently confined to European oysters or to American oysters transplanted to European beds. The report does not aid us over here to decide what green tinted oysters are wholesome and what are not; we are left in doubt as to the whole class.

● It would be well if those States in which the oyster fishery is an important industry could utilize the suggestions of this report in some legislative act that would tend to secure the public against possible dangers from contamination of this very important and

popular form of sea food. Oyster cultivation is or should be a very important local industry along our coast, but it ought to be under regulation. If oysters fatten in sewage infected streams, this ought not to be permitted to be a temptation to ignorant or unscrupulous breeders, and local government regulations should control the choice of the beds as well as their working. There is an opening for the labors of a State bacteriologist in each and all of the oyster-producing States, sending out as they do a food product so popular and so generally eaten raw or imperfectly cooked and thus especially liable to convey any existing germs of disease.

AUTO-INTOXICATION AND NEURASTHENIA.

The relation of uric acid to neurasthenia has been long ago suggested, but has not entered definitely into the pathology of the disorder. Ordinarily we are or have been inclined to accept the action of the fatigue and exhaustion of the nerve-cell as the principal factor in its production without specially looking further for the influence of morbid metabolism in its production. Nevertheless, in these days, when auto-intoxication is invoked so often as a cause of disease, neurasthenia could not well be overlooked, and certain French authorities, notably among them VIGOUROUX, have maintained that neurasthenia and the arthritic diathesis are closely connected, if not merely differing manifestations of the same general disorders of oxidation and tissue change. In this country we have recognized a disorder the majority of the symptoms of which are essentially neurasthenic—lithemia, as the common American manifestation of the gouty constitutional vice—thus admitting, to a certain extent at least, that auto-intoxication may give rise to these characteristic symptoms. The presence of uric acid in excess in the urine of neurasthenics has long been noted, and the relations of the gouty diathesis to the condition have been admitted by some neurologists who, like DERGUM, for example, are inclined to admit a toxic factor in its production.

An important addition to the literature of the subject is contributed by BECHTEREW, the well-known Russian investigator of the physiology and pathology of the nervous system, in the *Neurologisches Centralblatt* of November 15 last, under the title of "Ueber Störung des Stoffwechselfs bei Neurasthenie" (The Disorders of Metabolism in Neurasthenia). He has had for a considerable period, examinations and analyses of the urine of neurasthenic patients carried on in POEHL'S laboratory, and found that neurasthenia, sometimes at least, appeared to depend upon irregularities of oxidation. In general, and especially in the severer types of the disorder, there was a more or less marked decrease of urea and an increase of uric acid. The proportion of the general nitrogen in the urine to that in the urea—which, according to POEHL, is the coefficient of the oxidation energy and the expression of the tissue

respiration—indicated a constant and notable decrease of nitrogen oxidation. The proportion of uric acid to phosphoric acid, in the form of its di-sodium salts, showed an increased cleavage of uric acid and led to the conclusion of the presence of a more or less pronounced uric acid diathesis.

In the severer cases of neurasthenia BECHTEREW also found that the proportion of general nitrogen to phosphoric acid, which according to SULZER indicates the decomposition energy of nerve tissue, seemed to be increased, and the same was true to some extent as to the proportion of general phosphoric to the amount of glycerophosphoric acid, which according to LEPIN, indicates lecithin decomposition. In many cases also the quantitative ratio of sulphuric acid to the aromatic sulphuric acids that serves as the index of intestinal putrefaction appeared more or less markedly increased.

From these results, BECHTEREW believes that neurasthenia is associated with irregularities of oxidation of nitrogenous substances in the organism and that it must therefore be classed with the other disorders due to and associated with disordered general metabolism. The chief cause is, he thinks, an intestinal auto-intoxication, a more reasonable theory than that of gastric dilatation suggested by VIGOUROUX. He does not, however, exclude other predisposing causes of neurasthenia, such as mental strain, etc., which may have their influence in the causation of the intestinal disorder. There is a wide field for research yet in the action of the fatigue poisons, especially in the nervous system, and this may carry us back to still more remote factors in the etiology of neurasthenia. When once intestinal putrefactive poisons are absorbed, however, there may be ample reason for even severer disturbances of the nervous system; the part they play in the causation of some forms of insanity is probably an important one.

There is something in the suggestion thrown out by BECHTEREW, that mental overwork and sedentary habits may divert the proper blood-supply of the intestines to some extent and thus embarrass their functions and lead to stasis and absorption of toxic material, and also that shock and other occasional causes of nervous asthenia may act through the vasomotor system. Whether we are justified or not in accepting his conclusions, his facts are valuable additions to the sum of our knowledge as to the conditions associated with neurasthenia, and their suggestions are perhaps still more valuable. They throw additional light on the relation existing between arthritism and neurasthenia, one that must have suggested itself many times to any one with a practical acquaintance with these conditions and one which, though disbelieved in by some authorities, appears to be more and more forcing itself upon our attention. Whether we are to consider them identical in their etiology and pathology is one thing; the recognition of their intimate relation is perhaps another.

ABERRANT FORMS OF CHRONIC LEAD-POISONING.

It has been well said by one of the great teachers in medicine that when a patient comes before the physician with obscure symptoms in connection with the nervous system, indicating organic disease, two conditions should always be thought of as the possible exciting cause: syphilis, and chronic metallic poisoning in some one of its forms, usually in the form of lead. This dictum arose from the fact that syphilis is competent to produce almost any lesion in the body, and that lead often manifests its presence by conditions which are so unusual that its presence as an exciting cause is not suspected. It frequently gains access to the body in a manner which does not raise suspicion, as for example, in the well-known epidemics of plumbism that have arisen from the use of previously pure water delivered through lead pipes, the attacks of "dry cholera" so-called which have followed the use of flour ground in mills in which the stones had been "filled" with lead, and again, as in two cases which have come under our notice, it has gained access to the body owing to the fact that seamstresses make it a habit to chew small particles of thread which they bite off when threading their needles which thread when, it was made of silk, was sometimes loaded with lead to increase its weight. By this habit of chewing leaded threads enough of the poison was taken into the body to produce saturnism.

It is also becoming a well-known fact that nothing is more easy than to make an erroneous diagnosis of locomotor ataxia when in reality the condition is one of plumbic peripheral neuritis, or pseudo-tabes, and these difficulties in diagnosis are increased not only by the facts that we have mentioned, but by the additional discovery, which is becoming more and more clear each year, that the manifestations of chronic lead-poisoning may not appear for a long time after the patient has been exposed to the poison. Thus we have recently seen a case in which the symptoms of lead-poisoning did not come on for six months after a painter ceased working at his trade, and several cases of this character have been reported recently in the *Birmingham Medical Review*, by KAUFFMANN, in which the patients presented symptoms of lead-poisoning a number of months after being exposed to the poison, in one instance after almost two years. An analysis of the urine in these cases showed the presence of lead, proving that the diagnosis of the cause of the symptoms was correct.

The manner in which this curious delay occurs is not far to seek when we study the question of the elimination of lead. It is a substance which is eliminated from the body very slowly indeed and, like other metals, has a tendency to accumulate in the tissues, where it forms a fairly stable combination with the protoplasm, and probably also with uric acid, as is illustrated in the development of what has been

called "plumbic gout." Further than this, almost every tissue of the body seems to be capable of containing it, though the muscles and blood contain less than any other part. In many instances it is evident that these delayed symptoms arise from the gradual deposit of lead in the tissues during the period in which the patient is in a condition of good health and nutrition, and that later on, when by reason of illness, bad food, or unsanitary surroundings, a portion of the protoplasm of the body is utilized for vital processes, the lead which has been deposited is picked up once more by the blood and lymph streams and distributed to the tissues, where it produces its effects. This matter is not only of importance from a medical point of view, but also because interesting medico-legal questions arise in connection with it. Thus, for example, a suit might be brought upon the part of a person who had been unwittingly exposed to lead with the development of symptoms a number of months afterward, and the defense might claim that it was impossible for so long a period to elapse between the exposure and the development of plumbic symptoms. The cases that we have cited show, however, that this would be competent defense.

BOOK NOTICES.

Transactions of Iowa State Medical Society. Vol. v. Cloth. Illustrated. Pp. 425. Burlington: Keehn-Harper Mfg. Co. 1898.

Besides the minutes of the forty-seventh annual session of this Society, the volume contains forty-eight papers and addresses presented before the Society, with obituary notices and portraits of Drs. Elizabeth Hess, Henry Clay Bulis, Walter Oscar Richards, R. H. Moffit and W. A. Todd. There is also a list of the permanent members of the Society, the Iowa delegation to the Denver meeting of the AMERICAN MEDICAL ASSOCIATION, a list of exhibitors and auxiliary medical societies.

Annual Report of Health Officer, Port of New York. Paper. Illustrated. Pp. 100. New York and Albany: Wynkoop Hollenbeck Crawford Co. 1898.

This, the report of Health Officer A. H. Doty, is that for the year 1897, transmitted to the Legislature March 30, 1898. Some of the topics considered are: "Inspection of Passengers and Crews of Incoming Foreign Vessels;" "Disinfection by Steam;" "Formaldehyde as a Disinfectant;" "Formaldehyde with Special Reference to its Chemistry in Disinfection;" "A Preliminary Note on the Investigation of the Antitoxin of the Bubonic Plague," and "Notes on a Yellow Fever Prophylactic Fluid."

Transactions of Pathological Society of Philadelphia. Edited by WILLIAM S. CARTER, M.D. Vol. xvii. Paper. Illustrated. Pp. 493. Philadelphia: Wm. J. Dornan. 1898.

This volume contains the report of the Society's proceedings from October, 1895, to June, 1897, and contains lists of former presidents, officers, committees and members. The contents are classified under the several heads: Diseases of the osseous system, of the digestive tract, of the cardiovascular and hemopoietic systems, of the respiratory tract, of the genito-urinary system, of the nervous system, and diseases of the ductless glands. There is also a chapter on miscellaneous matters and one on technic.

Transactions of Medical Society of West Virginia. Paper. Illustrated. Pp. 235. Wheeling: W. J. Johnston.

This volume contains the proceedings of the thirty-first annual session of this society, held at Martinsburg, W. Va.,

May 18-20, 1898. There is also a "Report on New Remedies," and papers on: "Diabetes Insipidus, with Cases;" "Exophthalmic Goiter;" "Fracture of the Patella; Treatment by Mediate Ligation," and "A Brief Review of Theo. Durrant's Case."

Journal of Proceedings of the National Pure Food and Drug Congress.
Papér. Pp. 54. Washington, D. C. 1898.

These proceedings are for the Congress held in Washington, D. C., March 2-5, 1898, and comprise the many addresses and papers presented at this session.

PUBLIC HEALTH.

Book-holder for Schools.—The Giessen High School provides each pupil with a simple, cheap, adjustable little book-holder to stand on the desk and hold the book open at the proper angle, made on the principle of a folding photograph-case.—*Deutsche Med. Woch.*, November 17.

Health of Indiana.—The reports for November indicate an increase over the preceding month, in area of prevalence, of tonsillitis, bronchitis, rheumatism, pneumonia, scarlet fever, pleuritis, inflammation of bowels and erysipelas. Decrease is indicated in intermittent fever, influenza, diarrhea and dysentery. Typhoid fever and diphtheria remained unchanged.

Intoxication from Meat.—Salchow reports five cases of intoxication following the ingestion of some freshly purchased corned meat. In two cases vomiting was the only symptom, but the three others, children, presented every symptom of severe poisoning with atropin or a similar alkaloid. All recovered in ten days.—*Deutsche Med. Woch.*, November 17.

Army and Navy Mortality in Life Insurance.—The mortality in the British army and navy, under modern war conditions, has been analyzed by the secretary of a large life insurance company. He found, to begin with, that the selection of men for entrance into the navy is so severe that in the first year the standard of health is considerably higher than among a body of insured lives in the first year of insurance. He concludes that 6.1 per 1000 is the extra mortality rate which, for life insurance purposes, may be considered as incident to service in the navy, and that 9.9 per 1000 must similarly be rated as the extra hazard for army service. He figures up these extra rates thus, taking as the observed period the ten years, 1886-95. In the army the extra rate among active lives in the whole force was 4.7 per 1000 while in the navy it was only 1.8 per 1000. But the risk of death in active war service was 3.8 per 1000 in both army and navy, from the standpoint of life insurance. He quotes from Smee to the effect that "after carefully weighing the available data, and giving consideration to the conditions of modern warfare, and the present strength and efficiency of European armies and navies, and also to the diminished mortality in respect of climatic risk, we propose, for the purposes of the report, to estimate that the British army and navy will be engaged once in forty years in a national war, involving the calling out in active military service for a term not exceeding three years of two-thirds of the whole force of officers and men in both branches of the service"; and Lord Rosebery, speaking before an association of commercial bodies some weeks ago, reminded his hearers that the country is in an epoch of danger, not having been engaged in a European war in forty years past. Among British naval stations, the Mediterranean has the highest death rate, 10.6; the North American and West Indies station has the lowest, 5.1; in the East Indies station the extra mortality rate for insurance purposes was 7.0 in the five years, 1886-90, and 5.8 in 1891-95; the average for all stations is 7. The insanitary condition of the Mediterranean station is chargeable to filthy towns and harbors, but this is improving. The extra rate in the army has also declined from 10.6 in 1886 to 5.5 in 1896.—*The Independent*, November 24.

Obstacles to Sanitary Service.—In the October issue of *Public Health* (London), a curious instance is related of unrequited faithfulness on the part of a health officer, located in the west of England, who ran counter to the wishes of a local politician, who was chairman of the district committee. In the family of the latter a child was found to be ill of scarlet fever. When the health official began to inquire into the origin of the infection the medical officer found that another child in the house had been ill in bed for a fortnight, and was desquamating freely. The latter case had not been notified, which fact was reported to the Council. At the same meeting, the medical officer had to report that the child of a neighbor had been sent to school within a week of being taken ill with the same disease, and that this case also had not been notified. When the report came to be considered, a single proposition was made to prosecute in both cases under the Notification Act. According to the newspaper report, the chairman, one of the offenders, did not leave the chair, but remarked that he had a complete answer to the charge. It appears from the report that on a vote being taken no one opposed the proposal, nevertheless, the chairman, at a subsequent stage of the proceedings, declared that the proposal had been lost. On this declaration being disputed, a second vote was, by leave of the meeting, taken, and the voting was then equal, whereupon the chairman gave his casting vote for quashing proceedings against others as well as himself, and placing the health official at a signal disadvantage as to his future official course. It is not easy to think that such a disgraceful bit of jobbery can be matched, and all sanitarians would be pleased to learn that the superior governmental authorities have taken the case into consideration. A question arises whether the chairman has not laid himself open to proceedings for a much higher penalty than that provided for under the Notification Act. So far as the district in question is concerned, legal proceedings against other offenders must be an impossibility. The unfortunate medical officer of health had the courage to report to the council the neglect of its chairman to notify the first case in the family, but being in private practice, has probably very materially injured his patronage.

An Efficient Woman's Health Society.—The last annual report of Dr. J. Niven, health officer of Manchester, England, says that no report on the sanitary work of the Manchester Corporation would be complete which did not include some reference to the work done by the Ladies' Health Society in the poorer parts of the city. This organization concerns itself partly with social and partly with sanitary matters. Established as early as 1862, it has of late appeared to grow in strength and influence. That portion of the work in which the society comes in relation with the health office is carried out by health visitors, who are employed, guided, and assisted by the ladies who form the society. The female health visitors live in their respective districts, and are at the constant call of the people for help and advice in cases of emergency. They visit the houses systematically—six hours a day, except Saturday—and a report of their work is received each morning by the health office. They supply lime in suitable cases for purposes of lime washing, and lend out Turk's head and flat brushes for use. One visitor alone during the last twelve months has had fifty bedrooms, and numerous sculleries, cellars, yards, and closets thoroughly limewashed by the tenants. They supply carbolic soap to poor people at 2d. a pound, or 5d. a bar of three pounds, which is used in the cleaning of their houses, giving away a little at their discretion. In those cases where soap is supplied free, the health visitor sees that it is applied to the intended purpose of cleansing the house. The cleaning of floors, burning of refuse, washing of clothes, and other points of the same kind, are matters of great moment to health, in which the health visitors give much useful instruction. The

visitors carry with them disinfecting powder, explaining its use, and leaving it where necessary; at the same time they make a record of any dangerous condition discovered. An important part of their work is that which is devoted to the interests of children. They call attention to bad clothing and neglected conditions, and do what they can to remedy what is wrong—sometimes even dressing the children in case of neglect, and giving clothing in suitable cases of want. They give systematic instruction on infant-feeding. They also instruct the mothers, in a precise manner, how to keep the children's heads clean, and see that it is actually done. They fulfil an important part in the distribution, and oral explanation of printed instructions on feeding children, and on the steps which a householder must take to keep his family in good health. In the last annual report of the health officer the results of an inquiry which they made for him on infant-feeding is given. It is largely through them that a knowledge of the contents of handbills on sanitary matters becomes known to the poorest class. They also visit, on behalf of the medical officer of health, the homes at which deaths have occurred, except from any infectious disease, and fill up the card supplied to them in each case. They also do other work of a very useful nature, such as lending out maternity-bags to poor people, and, in cases of general illness, sheets, night-dresses, pillow-cases, etc. In summer the health visitors recommend suitable children to the Children's Holiday Fund, and see to the cleanliness of the children before they go for the holiday. In 1890 the Corporation paid the wages of six of these female health visitors; they now pay the wages of nine.—“Annual Report,” 1897.

A Model Water-Plant Village.—The *Sanitary Record*, London, describes a village built up for the accommodation of the workmen and their families, who are employed upon the new waterworks of Birmingham. That city has entered upon an expensive undertaking in order to protect itself against the commercial and sanitary embarrassments of water-scares, having secured vast water-bearing territory in Wales for the purpose of having ample reservoirs. The “model village of Birmingham,” as it is called, has been built for those employed upon these works, and the details are worthy of note by all interested in the carrying out of great works. The houses are built of wood, and the village is approached by a suspension bridge. The advantage of this is that “strangers” have to state their business before they can find a way into the place. If they are seeking work a night must be spent in the corporation “doss-house” on the opposite side of the bridge. Here they must strip and have a bath; during the night their clothes are disinfected, and in the morning the applicant has to appear before the resident medical officer. If everything is satisfactory a permit is given to cross over, and by this means a clean bill of health is maintained. The village itself, to quote from the article we have referred to, is laid out in streets, the house blocks being specially designed, as the case may be, for the accommodation of single families or for the housing of a limited number of unmarried men lodging with a married couple. In the latter case each lodger has his own separate cubicle and locker, and enjoys the use of a living room in common with the other inmates of the house. The villagers number some 1500 navvies and others employed on the work, with their wives and families. Baths and wash-houses have also been built, a large public assembly-room, a canteen and general store, a postoffice and a police station. A medical officer and a staff of trained nurses are associated with the infirmary hospital down near the work, and the isolation fever hospital up on the hillside, away from the abodes of men; and a chaplain and missioner look after the principal well-being of the settlement. This small town is only a temporary arrangement; that is, when the work is finished it will be removed, yet the sanitary provision made is as complete as for any permanent

town. A constant water-supply is laid to all the houses, and fire hydrants are placed in the streets. These derive their supply from a temporary reservoir in the hills behind. The main drainage and sewerage works are complete in every particular, and the flushing of the street sewers is carried out on “an original and unique plan,” calculated, we are told, to ensure the absolute cleanliness of the system from end to end. Advantage is taken of the natural fall of the river, the engineers having laid the main pipe through the village parallel to the river, and continued it up stream till it taps the river-flow at a point above the highest house in the settlement. Thus a constant stream of pure river water is day and night scouring through the full length of the drainage system, and discharging into the settling tanks down the valley below the village. Thence the clarified sewage, very dilute, passes back into the Blau. In addition to all these excellent arrangements, a line of rails has been laid from the village to the works. After the train has taken the men to their ground it returns to the village and conveys the children of the colony to a school, three miles away.

Decline of Vaccination in England.—The antivaccinationists are commonly regarded as a “feeble folk,” not a most irrational body, peculiar to or but little known outside of the Anglo-Saxon race. They may be feeble intellectually or logically, from the point of view of the medical majority, but they have been powerful enough politically to increase the numbers of the unfortunates who are susceptible to variola, as well as to stifle the best instincts of the British law-givers. According to the twenty-fourth annual statement of the officials appointed under the act requiring compulsion in England regarding vaccination of infants, passed in 1871, we may believe that in 1872 the proportion of unvaccinated persons in London was 8.8; in the rest of England, 4.5. In 1875 the proportion was as low in England generally as 3.8, but since that time the number has increased until, in 1895, the figure for England and Wales was as high as 20.5. Of the 921,512 births returned as registered during the year 1895, deduction was first made of the deaths that took place before vaccination; of the survivors, 816,682, there were registered 76.5 per cent. as successfully vaccinated, 0.4 per cent. as either insusceptible or as having had smallpox and, including 1.7 per cent. as under medical certificate of postponement, and 23.1 per cent. as at that time not finally accounted for as regards vaccination. The proportion of cases not finally accounted for in England and Wales for 1895 is 20.5 per cent.; in the metropolitan returns for 1895, 24.9 per cent.; in the provincial returns 19.8. It is thought by the editor of the *Scalpel* in the issue for October, that a want of care has caused the unpopularity, if it really exists, among the poor of England concerning the best-proven remedy for that terrible disease—smallpox—and only by a greater degree of care on the part of every practitioner of the holy art of vaccination can the medical profession go forward in the line of life-saving pointed out by Jenner. So far as lymph is concerned the vaccinator is enabled to say that in the new glycerinated bovine lymph, it has the best that the ages have yet produced, probably better than that which Jenner himself had to operate with. A very plausible objection to vaccination has been removed by the introduction of this relatively aseptic material. A common-sense view of the question appears to be that it is distinctly unfair to the better-educated majority that it should through the faddist opinions of a small and ignorant majority, be exposed to the dangers of a pestilence like smallpox, and it is probable that if instead of abandoning compulsory vaccination, those in authority in England had firmly stood out against the agitation and had resolved to enforce the law strictly, the movement against it would have died a natural death. At any rate, it seems safe to make the assertion that this country and other nations who have become convinced by experience that vaccination is a safeguard against the ravages

of smallpox, will be chary of following England's lead and of trying what Lord Lister calls "a tremendous experiment." It is interesting to note that Scotland and Ireland refuse to have the new law put into operation within their borders, and that the English Government *does not intend to alter the existing regulations in regard to vaccination in India*, thus plainly showing that in the case of England it is taking steps at variance with its better judgment, as regards its own population; thus giving to its latest legislation upon the subject the color and form of a cowardly compromise and an insincere homage to a sanitary science, falsely so-called.

SOCIETY NEWS.

Medico-Chirurgical Society, Louisville.—The regular meeting of this society was held at Seelbach's Hotel, December 2, as the guest of Dr. L. S. McMurtry, who read a paper on "Endometritis."

Nelson County (Ky.) Medical Society.—Among the papers to be read at the regular meeting of this society are: "The Nausea and Vomiting of Pregnancy and Its Management," by J. B. R. Cooper, Samuels; "Chronic Glandular Enlargement and Its Treatment," by S. B. Crume, Bloomfield; "Some Difficulties in the Catheterization of the Male Urethra," by A. G. Blincoe, Bardstown; "Puerperal Eclampsia," by W. S. Napper, Boston. Dr. B. E. Gore of Bardstown, is president, Dr. J. W. Hill Jr. of Boston, secretary.

International Congress of Gynecology and Obstetrics.—This Congress is to be held at Amsterdam, Aug. 8 to 12, 1899. The subjects appointed for discussion are: 1. "Surgical Treatment of Fibromyomata." 2. "The Relative Value of Antisepsis and Perfected Technique in the Present Results of Operative Gynecology." 3. "Influence of the Position on the Shape and Size of the Pelvis." 4. "Indications for Cæsarian Section." The official languages will be English, German, French and Italian. The addresses, translated into these languages, will be delivered to the members a month before the opening of the Congress.

Mildraugh Hill Medical Society.—The regular meeting of the society was held at Elizabethtown, Ky., December 8, with Dr. C. Z. Aud as president and Dr. E. Smith as secretary. The following papers were on the program: "Some Points in Obstetric Practices," by W. A. Ligon, Sonora; "Bright's Disease of the Kidney," by Stinson Lambert, Owensboro; "The Care of the Patient in Typhoid Fever," by B. M. Taylor, Greensburg; "Some Suggestions Concerning the Treatment of Typhoid Fever," by D. W. Gaddis, Hodgenville; "Brain Surgery," by W. C. Dugan, Louisville; "The Prevalence of Errors in Refraction," by A. G. Blincoe, Bardstown; "Diphtheria, with a Few Notes on Cases in Point," by D. C. Bowen, Nolin; "Lavage of the Stomach," by J. T. Green, Leitchfield; "Indigestion," by F. A. Barnett, Lebanon Junction.

Philadelphia Neurological Society.—At the last meeting, Dr. H. C. Wood exhibited two cases of myopathy, which seemed to have exerted itself on several members of the same family. The woman was of middle age, the muscles of arms seeming to be of normal rotundity, but with tender spots in certain areas. Areas of anesthesia also existed in various portions of the body, in both cases. In the man, the patellar reflexes were mostly exaggerated and ankle clonus was marked. In both cases the gait was awkward, almost causing the patient to fall. Dr. Wood thought that beside the usual lesions found in these cases, the posterior root zones were also involved. Dr. John K. Mitchell presented an interesting case, the diagnosis of which was obscure. A lad, about 17 years of age, gave a history of recurring attacks of paralysis with anesthesia, involving the extremities and entire body from the neck downward. During the attacks the muscles presented the reaction

of degeneration. In certain attacks, premonitory systems frequently exhibited themselves, such as burning of the toes or other vague symptoms, and on the following morning total paralysis would come on. This paralysis would last for a day or two and gradually subside until not a trace of the disease remained. No positive diagnosis was made. Dr. Mellus of Johns Hopkins was present and read a paper on "The Motor Tracts in the Brain and Spinal Cord." The paper was based on experiments upon monkeys, in which portions of the brain had been removed from the so-called motor areas and the degeneration had been subsequently studied from the pathologic changes produced. The pathologic lesions were illustrated by lantern slides.

Southern Medical College Association.—This association met at Memphis, Tenn., December 5, prior to the meeting of the Southern Surgical and Gynecological Association, and after considerable discussion, it was decided to increase the course of study from three to four years. It is well known that the question of making the course four years instead of three has been before the association for two years, but it has been passed from time to time, in order that so radical a move might be fully discussed by all the faculties that are to be affected. Dr. Sinclair of Memphis presented the matter first at the meeting of the association in Atlanta, and since then from time to time it has been discussed frequently among each of the faculties in the association. At the meeting, only two of the thirteen colleges in the association failed to send representatives to the conference. On account of the change to the four-year course, it was necessary to introduce a number of amendments to the Constitution and By-laws of the Association, but none of them was passed, because it is the rule that such amendments shall lie over for one year. This is for the purpose of giving the delegates an opportunity to present plans for whatever changes are contemplated in their respective faculties before final action is taken. The delegates present were: Drs. S. S. Crockett, of the University of Nashville; W. E. B. Davis, of the Birmingham Medical College; Christopher Thompkins, of the Virginia Medical College at Richmond; Ernest S. Lewis, of Tulane University, New Orleans; G. C. Savage, and Richard Douglas, of the Medical Department of Vanderbilt University of Nashville; T. H. Wood, of the University of Tennessee, at Nashville; Campbell of the Tennessee Medical College, at Knoxville; G. A. Ketchum, of the Alabama Medical College of Mobile, and A. G. Sinclair, of the Memphis Medical College. The University of the South was to have been represented by Dr. J. S. Cain of Nashville, but he sent a proxy in the person of Dr. Savage. The only two colleges in the association not represented were the Texas Medical College of Galveston and the Southern Medical College of Atlanta. The other absentee from the list of thirteen was the Bessemer Medical College of Bessemer, Ala., and it is no longer in existence.

Washington Medical Society.—At the regular weekly meeting of this society, held November 23, the death of Dr. C. M. Hammett was announced, and on motion, a committee of three was appointed by the president to draw suitable resolutions and report at the next weekly meeting.

Dr. D. S. LAMB presented a number of pathologic specimens, including hydrocephalus in a calf; a meningocele; an anencephalic fetus, and a specimen showing an arrest in the development in twins.

Dr. PHILIP S. ROYE read the essay of the evening entitled, "Diagnosis of Tubercular Meningitis in Children." He said the disease was generally characterized by severe headache, vomiting, constipation, under three years, drowsiness, while in older children the mind remained clear, drowsiness appearing later. Contraction of head and tenderness in cervical region, and sometimes pain in chest—taches cerebrales and cry are not pathognomonic. As a rule the temperature is low, and the

pulse rapid; the temperature curve is irregular, differing materially from that in typhoid. The history of tubercular lesions elsewhere and tubercular parentage are important factors in diagnosis.

Dr. ACKER, in discussion, referred to two cases of tubercular meningitis which occurred in his practice in the Children's Hospital of this city, and which he had reported at the last meeting of the American Pediatric Society. The first case presented a tubercular history and was rachitic and suffered from retracted head, apathy, screaming, and had irregular pulse and temperature. The second case gave a history of adenitis and keratitis, and suffered from vomiting, apathy, irregular pulse and temperature and violent headache; both these cases recovered. He quoted Dr. Jacobi as saying that he knew of one case, which he thought to be tubercular meningitis, which recovered, but had known of no others; the doubt in diagnosis being the recovery. Dr. Jacobi says the diagnosis was based: 1, on the reaction to tuberculin; 2, examination of eyes, which would present characteristic appearance of choroid coat. Post-basis meningitis gives the same symptoms and lumbar puncture is the only means of diagnosis. In tubercular meningitis the diplococcus is found. He said that Dr. Northrup gives as diagnostic in infants: persistent vomiting, apathy, irregular pulse and respiration. The Doctor said he based the diagnosis on: previous history, persistent vomiting, local spasm (head drawn to side or back) and hereditary history. Low temperature is frequent. He said all these symptoms may be present in a case and the postmortem would sometimes fail to show the presence of tubercle.

Dr. LOCHBOEHLER referred to a case in his practice in which there were no spasms or rigidity. The temperature ranged between 100 and 106, but was normal for six days. The pulse was feeble and ranged from 140 upward.

Dr. S. S. ADAMS said that diagnosis depends on the stage of disease and age of the child. It may be confounded with typhoid, and the diagnosis is impossible in the earlier stage of irritation, but easy when irritation is at its height, because the temperature is then low. In all other diseases of advanced cerebral irritation, the temperature is high.

Dr. W. W. JOHNSTON mentioned a case in which lumbar puncture afforded great relief for twenty-four hours.

NECROLOGY.

ELLIS G. ARMSTRONG, M.D., Flora, Ind., November 23.—
W. H. Baker, M.D., Lynchburg, Va., November 27.—
Charles M. G. Brant, M.D., Omaha, Neb., November 25.—
Edwin Carson, M.D., San Diego, Cal., November 24, aged 40 years.—George Coryell, M.D., Riverside, Ill., November 28, aged 89 years.—Albert J. Phillips, M.D., Baltimore, Md., November 24, aged 43 years.—Thomas W. Simmonds, M.D., Martineville, Va., November 21, aged 38 years.—F. H. Van Valzan, M.D., Spring Mills, Pa., November 26, aged 60 years.

JAMES ALEXANDER MOORE, M.D., Bellevue, New York City, 1883, died at his home in Helena, Mont., November 29. He was a son of the late William Moore of St. Croix, Danish West Indies.

MISCELLANY.

Carcinoma Hardened With Formalin.—Bayer urges further tests with his method of destroying the vitality of a carcinoma with injections of formalin, transforming it into a dead, removable mass.—*Die Aerztl. Praxis.*

Peculiar Stainable Bodies in Syphilitic Products.—F. Winkler announces the discovery of regular spherical bodies in the various lesions of syphilis (gumma, condyloma, sclerosis, lymph-gland, etc.), and even in the sperm of syphilitics) never found in any other disease. They have each an eccentric light spot. Unna has been studying them with him and both agree that they are neither blastomycetes, nor hyaline products, but a peculiar, hitherto undescribed product of syphilis, of strikingly regular structure, which deserve a special place in histopathology. They stain with thiodin or toluidin blue and

decolor with formalin, or they can be stained with polychromic methylene blue and decolorized with iodized alcohol or the glycerin-ether mixture. They are more prominent if the tissue is stained with orange or eosin.—*Munich Med. Woch.*, November 8.

Perforating Ulcer of the Mouth.—Letulle of Lille has reported an instance of this rare condition in a male, aged 50 years, an alleged alcoholic subject, who presented fairly well-marked symptoms of tabes. The teeth in the left half of the lower jaw were all wanting except the central incisor, those on the right side being healthy. In the upper jaw there were only three teeth left, and apart from the persisting teeth the alveolar border was atrophied; on the right side of the upper jaw there was a cavity involving the alveolar border and the hard palate, opening like a cone into the middle meatus of the nose. The mucous membrane lining it was pale, thickened, but not ulcerated; its sensibility was much impaired. The patient was not aware of this condition, but on being questioned he said that liquid food had for five months come through the right nostril. This lesion is rare; Baudet has collected eight cases chiefly on the subject of tabes. It may be unilateral or bilateral, but always occurs in the same situation. As to the explanation of the lesion, there are two views: that of Galippe, that it is the result of alveolar pyorrhea aggravated by tabes; and that of Baudet, that it is an atrophic tabetic lesion due to the fifth nerve being affected, which begins by loss of the teeth and atrophy of the jaws, and sometimes terminates by ulceration and perforation into the antrum. The decision between these theories must be left to the future, but probably a combination of the two would be most satisfactory. At present only one case has been examined after death, and that very incompletely.—*British Medical Journal.*

Normal Urology of Childhood.—Bezy reported the results of investigations by Carron, Monfet and Thadée which establish the following standard for the urology of children past infancy. For each kilogram of the child, and in twenty-four hours, the volume of urine excreted is 30 to 38 c.c., which is one and a half to two times that of an adult; total amount of nitrogen, 30 to 33 c.c., while that of the adult is 28 c.c. The elimination of urea varies from 88 to 90 per cent.; the amount of uric acid from 9 to 10 millimeters; in the adult it is 8 millimeters. The amount of phosphoric acid is 77 millimeters, according to Thadée, and 67 according to the others. It decreases with age.—*French Cong. of Gyn. and Pediatrics.*

Bronchitis.—Scheppegegrell (*N. Y. Med. Jour.*, December 3) considers abnormal nasal respiration the most frequent cause of bronchitis, and one commonly overlooked. As the most prominent conditions which interfere with or prevent normal nasal respiration, he enumerates: 1, Total absence of nasal respiration; 2, partial interference with this function; 3, lowering or loss of the normal nasal function in respiration; 4, pathologic processes in the nasal chambers by which the inspired air may be vitiated.

The Lymph.—L. Asher concludes a study of the lymph in the *Deutsche Med. Woch.* of November 17, with the statement that the lymph-glands are for the purpose of transforming the partially injurious products of metabolism originating in the work of the organs, into substances that can be utilized over again, and consequently the term "lymph" should be restricted henceforth, as the fluid entering the glands differs so essentially from the fluid that emerges. He has also experimentally established that the fluids of the serous cavities, synoviae, etc., differ from actual lymph. The morphologic indications of increased glandular activity in the vicinity of pathologic foci with increased substance destruction, seem from this standpoint merely the quantitative increase of a mechanism already at work in the organism.

Malarial Fevers on Pacific Coast.—In the *N. Y. Med. Jour.* for December 3, Perry presents results of some observations on this subject, with tables and map showing the regions in which malarial fever prevails. He finds that only the milder forms prevail, nearly always the tertian, occasionally the quartan, but rarely the aestivo-autumnal variety. In Washington they prevail only along one or two rivers in the Puget Sound Basin, the Columbia River Valley, Chehalis Valley, Yakima Valley, with an occasional case in the Columbia River Valley of the northeastern part of the State. The disease, in Oregon, is found only in the Columbia River Valley, Willamette Valley, Rogue River Valley, Umatilla Valley, with a few cases in the Columbia lowlands of Gilliam County. In California's Sacramento Valley, San Joaquin Valley, Tulare Basin and Kern Valley, with an occasional case in the Santa Clara Valley, the disease occurs.

Bilateral Resection of the Pneumogastric.—Prof. J. Pavloff has several animals on exhibition in which the vagus was cut on both sides, six to seven months ago. The only disturbance seems to be in the digestive function. There has been no pulmonary edema or pneumonia, as the animals were not allowed to get any food into the trachea or bronchi.—*Munich Med. Woch.*, November 15.

Cherry-Stone in the Eustachian Tube.—G. Trautmann reports a case of severe chronic, suppurating otitis media, with perforation, in which syringing with tepid water dislodged and expelled a cherry-stone in the Eustachian tube, the cause of the ascending suppuration. As the patient spat it out of his mouth at the third syringeful, he observed that "his head was all free again" and all the lesions healed promptly. There was nothing to indicate its presence, but all efforts to cure the otitis would have been fruitless if it had not been discovered.—*Munich Med. Woch.*, November 22.

Carbolic Acid in the Eye.—Dr. Ray of Louisville reports a medico-legal case of interest, in which a medical friend of his, practicing in central Kentucky, was concerned. Dr. A. was accused of accidentally dropping carbolic acid in the eyes of a new-born infant suffering with ophthalmia neonatorum. He was sued for damages, and Dr. Ray was asked to testify on the witness-stand. The circumstances were these: A child suffering with ophthalmia neonatorum had been ordered a solution of nitrate of silver and the nurse in attendance placed the bottle on the mantel, and along beside it she also placed a bottle of carbolic acid which had been used in disinfecting the vessels around the lying-in-chamber. The Doctor was unaware of the fact that there was any carbolic acid in the house. He came in one evening about dark to see the child, and it was apparently doing very well in about the second week of a purulent ophthalmia involving both eyes. He had the nurse take the child in her lap near the window, and he walked to the mantel and took up the bottle which was in the place he had been in the habit of finding the bottle of nitrate of silver solution, then took a medicine dropper and drew a few drops of the fluid into it and sat down to cleanse the eyes preparatory to dropping into them the solution. As usually happens, the lids were very much swollen, and in getting them open they became everted, so it was difficult for him to expose the cornea. With the lids everted in this way he dropped a drop of carbolic acid upon the exposed conjunctiva. He stated on the witness-stand, however, that he was unable to see the cornea, and that the carbolic acid only came in contact with the under surface of the lid. It ran down the side of the face over the lid and produced a little white discoloration characteristic of carbolic acid burning, and he immediately thought something was wrong. The child cried very hard, and he asked the nurse what the liquid was. She said it was the medicine he had placed upon the mantel. He went again to the mantel and found the bottle of nitrate of silver solution there untouched,

and also found that he had used carbolic acid instead. He immediately washed the eye as thoroughly as possible and applied some vaselin. The child recovered with a large central leucoma, and the doctor was sued for \$5000 damages. Asked if he ever used carbolic acid about the eyes, Dr. Ray told them he did. Asked if he ever used chemically pure carbolic acid, he replied that he had done so a number of times; that he frequently applied pure carbolic acid to corneal ulcerations with a probe wrapped with absorbent cotton. Asked what he thought would be the effect of carbolic acid upon the cornea, he stated that it would be superficial; that the effect of pure carbolic acid to the healthy cornea would be to simply scrode the epithelium. The Doctor was mulcted for \$350. Dr. R. does not believe that pure carbolic acid will produce a perforation of the cornea; it will destroy the epithelial layer, but that will be all. But in an eye the seat of ophthalmia neonatorum, the disease itself, in connection with the erosive effect of carbolic acid, might result in perforation of the cornea. It is well known to all that under the most approved methods of treatment a great many eyes are lost from ophthalmia neonatorum.—*American Practitioner*, October 15.

Ginseng in Korea.—Dr. Horace Allen, the United States Minister at Séoul, states that the Korean ginseng can not be regarded as inert, however correct the opinion may be of those medical writers who have reported the American root has no therapeutic power. The root is the panacea for most of the ills of the Chinese and Koreans, and has held this reputation for centuries. It is regarded by these people as a strong aphrodisiac. Quinin has been shown to be so much more efficacious in the frequent malarial fevers of these countries that ginseng has lost some of its popularity in these cases; but, wherever a tonic or a "heating medicine" is needed, ginseng continues to be resorted to, and by combination with quinin its reputation will be enhanced rather than diminished. It is supposed to owe its great popularity in China to its properties as an aphrodisiac. The district where much of the Korean root is grown is hilly or mountainous. The climate is much the same as that of the northern portions of our Central States, except that here there is a distinct rainy season, some forty inches of rain falling during July and August. It is possible that our summers may be too dry for the successful cultivation of this plant. Michigan would probably be the best place for making an attempt at the cultivation. Wild ginseng is supposed in Korea to possess almost magic properties. Such roots are usually kept for the royal family. The cultivated ginseng requires seven years to mature. It is raised in little plots of richly manured soil, well mixed with leaf mold. The beds are carefully covered by mats or other protection, raised sufficiently to allow of cultivation and of the free access of air, and care must be given to keep the plants moist and free from weeds. As there seems to be almost unlimited demand for this root in China, it might as well be produced, in all its excellence, in the United States if possible. The American and Korean ginseng roots differ in appearance; the American seems to be made up largely of fibrous roots called "beard," while the Korean root is more compact. The two are given different names by botanists. The Chinese plant is called *Aralia schinseng*, while the American is called *Aralia quinquefolia*. There is by some believed to be a difference in the effect produced by the use of these two roots. There is no market for the powdered root; the Chinaman who pays from a half-dollar to \$100 for an ounce of ginseng, wants all his money's worth. The powder might be made of any similar root of no value. Ginseng, like wine, increases in value with age. The best ginseng has been growing for 100 to 200 years. The Korean ginseng is supposed to arrive at perfection after thirty years, although it is used after six years. This is one of the reasons why ginseng is so high-priced. I take it for granted that the

American ginseng is wild, and so may be of any age, even more than a century old. The age is told by counting the rings on the center and side roots, or those parts resembling the torso and arms. Dr. Chung King-u, Imperial Medical College of Tientsin, resident surgeon of the Tung Wa Hospital at Hong-kong, the only hospital in China which is devoted to Chinese medical practice, but which is under the supervision of a Chinese physician versed in western medicine, states that in his experience he has failed to observe any definite results obtained by the use of ginseng. Its use among the Chinese is entirely empiric, and its efficacy depends upon the imagination of the patient.

Malt Combinations.—The diet of the adult human is, and must be, largely made up of carbohydrates, whose place of preparation into assimilable forms is in the small intestine. It is perhaps too much to say that a majority of the cases of so-called dyspepsia are in reality that of impaired or deficient intestinal digestion. If the food has been well masticated, and if the stomach is able to carry on its motor function and then to empty its contents into the duodenum, and if indigestion then occurs, the source of the trouble, in a majority of cases, will be found to be in the small intestine. Of all the diffusible enzymes, the special function of which is to convert starch into dextrin and later into maltose, diastase is one of the most efficient. This ferment, or one having exactly the same action, is a very essential part of the pancreatic juice, and under favorable conditions it is able to convert many thousand times its own weight of starch into dextrin. Diastase is a soluble albuminoid enzyme germinated from the gluten or cereals at the time of sprouting. Vegetable diastase, ptyalin and pancreatic diastase all act in exactly the same way, being capable of acting upon cooked starch with great rapidity. The essential factor which assures this rapidity of action is that the diastase shall be present in large quantity; when the relative proportion of the enzyme is large in comparison with the amount of starch the transformation goes on rapidly and the action continues for a long time. Since a large part of the digestive work is done in the small intestine, and since the ferment called pancreatic diastase or amyllopsin has consigned to it the digestion of all the starchy food which is contained in the diet, since the action of pancreatic diastase and of vegetable or malt diastase is so identic as to be incapable of distinction, it is no wonder that the preparations of malt diastase have come into general use in the treatment of all the varied forms of indigestion. The preparation of vegetable diastase known as "maltzyme" has come into general use among physicians, and the fact that it has received the patronage and endorsement of medical men all over the country, is proof positive that the preparation is strong in diastatic power. Maltzyme is not alone efficient in digestive power, but it is also pleasing and palatable, and furnishes an ideal vehicle for the administration of the other remedies with which it has been combined—cod-liver oil, cascara and the hypophosphites. Maltzyme preparations are nutritive as well as highly diastatic, because they contain predigested carbohydrates and nitrogenous material combined with the phosphates of the grain. It is highly important that all who practice medicine should recognize the value of the best preparations of malt, for it is often necessary, while giving treatment to separate organs, that the physician should give special attention to the digestive organs and processes, or else he will find his results unsatisfactory.—*Jour. of Med. and Sci.*, September.

A Quinquennial Census Necessary.—Dr. E. W. Hope of Liverpool objects to the official estimate of population in his city, as based upon the regular decennial census. He has been a careful student of the subject for many years, and it is his belief that a material underestimation of his city's growth has resulted from "the rule of thumb" measures and methods that

obtain in official circles. He says that during recent years reasons have been growing stronger for calling into question the correctness of the results of the method adopted by the registrar-general for estimating the population of the city. The method, it will be remembered, is based upon the assumption that the rate of change (increase or decrease) in the various districts of the city which took place year by year during the intercensal period ending in 1801 has continued since. The registrar general estimates that the population has increased from 629,443 in 1891 to 633,645 in 1898, i.e., the total population of greater Liverpool has increased by 600 every year, making a total increase during the seven years of 5200. The reasons for believing that this estimate is very much below what the population actually is may be summarized in the following manner: The natural increase of the population, viz., the increase in the number of births over deaths since the census of 1891, exceeds 40,000. The increase in the number of registered voters since the last census exceeds 26,000. The increase in the number of houses built over those which have been demolished since the last census is close upon 3500. The increase in the number of inhabited houses since the last census was found, by police inquiry early in the year, to be upward of 14,400; making a liberal deduction of 5 per cent. for a possible margin of error, leaves an increase of 13,620. Each of these facts suggests strongly that the actual increase has been greater than the estimated increase. Clearly, what is wanted is a more frequent census for the whole country, certainly not less frequently than every five years. It is singular that the registrar-general is satisfied week after week and year after year to publish, under the imprimatur of his office, figures which everyone conversant with the subject must hesitate to accept as correct. No word of explanation, no word of warning, no comment is issued with these returns; cities and districts are strung together for comparison, with egregiously misleading results, and with consequences which tend to cripple and retard sanitation. No doubt a quinquennial census would go far to correct these mistakes, and tend not only to prevent the waste of time involved by the compilation and issue of fictitious returns, but also to put an end to the mischief which such returns give rise to. But, pending such a census, it is unsatisfactory to find that the registrar-general regards the subject as of so little importance as to decline to discuss it, preferring to leave the matter for his successor to deal with. The decennial census was inaugurated one hundred years ago, and the benefits afforded by it now require to be supplemented by a quinquennial one. At the meeting of the Section of State Medicine of the British Medical Association in Edinburgh, July 27, 1898, a resolution was unanimously passed to the effect that it was absolutely essential that a quinquennial census of the whole country should be taken in order to ensure accuracy in statistics relating to the public health. In Germany a five-year census is taken, and in Japan the register of the population of each sub-district is corrected annually by the addition of infants born or of persons domiciled in the district, and by the removal of persons dying or leaving the district.—*Public Health*, October.

The Teaching of Anatomy.—The teaching of anatomy at Columbia University has reached the differentiation stage of progress. A new curriculum has been adopted, in such a manner that the topics will be distributed in a two-year course in human anatomy, and the students may be distinguished as being either of the elementary or the advanced classes. Dr. G. S. Huntington of the College of Physicians and Surgeons, who has labored early and late to bring about this improvement in his branch, has published his views of the probable results of the new teaching, in *Bulletin XX*, of the Columbia University. He says that the new plan has enabled his school to solve a part of the problems of the intelligent education of his pupils in as nearly a satisfactory manner as seems now to be possible.

The first-year student does not attend any lectures in anatomy. During this year the instruction consists in practical demonstrations to small sections of the class, dealing with the entire anatomy of the extremities and with the bones, joints, muscles and blood-vessels of the head and neck, including also part of the peripheral nervous system of this region. In direct connection with the demonstrations, extensive practical work in the dissecting-room is required. The first-year student also attends a series of demonstrations constituting the preliminary visceral course, designed to afford that general information regarding the body cavities and their contents which is requisite to the correct appreciation of the concurrent instruction offered by the departments of physiology and histology. In the second year the laboratory work continuing, the student attends demonstrations to sections of the class in the anatomy of the central nervous system, organs of special sense and cranial nerves. The entire second-year class attends three lectures a week on the anatomy of the body cavities and viscera. The preparations illustrating these lectures are, in the afternoon of the lecture-days, demonstrated again separately to sections of the class, enabling each student to study and inspect the same closely. In this way an opportunity is given to make the anatomic lecture what it should strive to be, not an attempt to teach anatomy at long range to several hundred men at once, but an occasion for presenting the broad morphologic principles upon which the animal organs, apparatus and symptoms are constructed. Here the significance and importance of the structural peculiarities of the man can be accentuated, illustrated, and explained in all their bearings by contrast with the corresponding structures of the lower vertebrates. It is quite evident that the institution must command the requisite material for illustration in order to carry out a liberal plan of instruction in general morphology. The progress of the last eight years in this respect has been gratifying. The morphologic museum began its development in 1890 in one of the small rooms in the cellar of the south wing. Columbia today possesses an equipment which, while it still falls short of the ultimate design, yet is unequalled in the beauty and clearness of the preparations, and in the complete character of the series most extensively used in the courses of instruction. The first and second floors of the new anatomic building are designed to be the permanent home of the museum, and provide ample floor and gallery space. It is the confident hope of the department that here the future growth of the collection will be as rapid and healthy as it has been in the past under less favorable surroundings. Unfortunately, however, it was found necessary at the time the anatomic building was erected to leave out the equipment, and the department is today in urgent need of cases for the two floors. The old cases inherited from the pathologic museum are overcrowded and have to be used merely for storage. The museum loses one of its most important educational features in not being accessible for purposes of serious study in present condition. It is not possible to carry out the systematic serial exhibition which is the fundamental principle in the application of the collection of the student.

Surgical Scenes in Asia Minor.—Dr. William S. Dodd, a medical missionary at Cesarea, Asia Minor, writes of his surgical experiences following a little local war or revolt. He says: "When I have read the surgical reports from the army at Santiago, and learned that out of nearly thirteen hundred wounded, only sixty-eight died, and hardly one of these from wound infection, I could not but contrast such a condition with the results of a recent incident in this land. The preparations made for the immediate application of antiseptic dressings to the wounds by the wounded themselves or by their comrades, together with the general intelligence of the men who make such preparations effective, is so utterly different from any-

thing that could be thought of in this land on the part either of the people or the authorities as to make one realize the blessings of civilization and Christianity. A week after the fight there came to me a messenger from Oozoonloo, requesting me to see the wounded. Not a physician or surgeon had been sent by the Government to look after the suffering. In this country there are no physicians except in the cities, so that the region for a distance of ninety miles is a blank, as far as medical service is concerned. Before I could go I must have the permission of the Government; official word must be sent back and forth before this could be secured, inasmuch as Oozoonloo is not under our own governor; and so it was eleven days after the battle when I reached there. I found then that a Turkish physician had reached there shortly before me, but he knew nothing of surgery, had no antiseptics with him, and the wounds were, of course, all in a horribly septic condition. Many of them had had no change of dressing for several days, and these, too, compound and comminuted fractures of large bones. The village dressing in such cases oftentimes consists of fresh manure applied with the idea of reducing inflammation. In the case of the father of a poor family of six children, on whose account more than of any other one person I had been begged to come, lockjaw had already set in, and he died soon after. The Turkish physician had no idea of drainage for these deep discharging wounds, having plugged them all with pieces of twisted wicking, the universal method of "drainage" in this country. I used up three yards of drainage tubing in dressing seventeen cases. I left a supply of antiseptics and of directions with the man who does the local "doctoring" of the place, and so came away feeling that my visit would not be wholly in vain. The whole incident is pre-eminently Turkish. The change of the seat of government for the sake of self-interest of officials, the element of bribery in the case, the foolish opposition of the people, their persuasion that force would not be used against them, the encouragement to this belief from the long dallying of the authorities, the final outburst ten times more bloody than was needed, the neglect of the suffering and carelessness for their welfare, and the ignorance of the official government physician who came more to make a report on the wounds of the dead than to care for the living—all these are just what one would expect in Turkey.—*The Evangelist.*

Medical Inspector for the Army.—Col. Charles R. Greenleaf, assistant surgeon-general, U. S. A., has been assigned to duty as medical inspector. The scope of his duties has been defined in a letter addressed to him, Dec. 3, 1898, by the Surgeon-General, as follows: In the discharge of your duties as medical inspector of the army you are expected to report to me upon the sanitary condition and wants of troops in the field, at military posts and in general hospitals, and as regards the skill, efficiency and conduct of officers, enlisted men and civilian employes connected with the medical department. You will see that existing orders and regulations relating to the medical department are complied with, and that all prescribed reports and returns are promptly made and forwarded when due. You will examine into the quality, quantity and condition of medical and hospital supplies, reporting any failure upon the part of responsible medical officers to make proper requisitions, and any deficiencies found due to failure on the part of supply officers to promptly fill approved requisitions. You will ascertain what diseases are most prevalent in the camps visited by you, and will inquire into the cause of such prevalence and the steps which have been taken for the prevention or arrest of any infectious diseases which may exist, indicating verbally or in writing to the responsible medical officers such additional measures or precautions as may be requisite. When sanitary reforms requiring the sanction and co-operation of military authorities are urgently demanded, you will report at once, in

writing, to the officer commanding the military department, corps, division or camp, calling his attention to the facts, and recommending such measures as you consider necessary for the relief of insanitary conditions existing. A duplicate of such report should be forwarded to the Surgeon-General of the army. You will ascertain whether medical supplies are properly used and with due regard to economy; whether any additional articles not now included in our supply-tables are necessary for the treatment of the sick; whether the equipment of regimental hospitals is such as is contemplated by recent orders; whether cases of infectious diseases or of soldiers seriously ill are improperly retained in regimental hospitals; whether division hospitals are fully equipped as regards supplies, medical officers and attendants to properly care for the sick of the command to which they belong; and whether contract surgeons have been examined as prescribed by recent orders. You will give especial attention to dist kitchens, and see that they are equipped for providing the sick with suitable light diet. You will ascertain whether a proper use is made of the fund provided for the purchase of suitable articles of diet for the sick, as prescribed in General Orders No. 116, and whether the commissary department has on hand for sale such articles as are necessary. You will also inquire as to the sufficiency of tents, ambulances, and other articles furnished by the quartermaster's department. You will report any abuses or deficiencies existing to the commanding general of the department, corps, division, camp or military post, sending a duplicate of this report to the Surgeon-General of the army. You will also report upon the professional competence, attention to duty, and general qualifications of medical officers, calling the attention of the Surgeon-General to those who deserve especial commendation, and also to those who are considered incompetent, or for any reason undesirable members of the medical department. You should give special attention to the efficiency of the hospital corps, reporting whether proper discipline is maintained and proper instruction given in all that pertains to the duties of enlisted men of that corps.

Not Synonymous.—According to a judge of the court of the State of Rhode Island and Providence Plantations, medicine, in the popular sense, is a remedial substance. The practice of medicine, as ordinarily or popularly understood, has relation to the art of preventing, curing or alleviating disease or pain. It rests largely in the sciences of anatomy, physiology and hygiene. It requires a knowledge of disease, its origin, its anatomic and physiologic features, and its causative relations; and further, it requires a knowledge of drugs, their preparation and action. Popularly, it consists in the discovery of the cause and nature of disease and the administration of remedies or the prescribing of treatment therefor. This all assumes importance when the supreme court of Rhode Island says, in the case of *State vs. Mylod*, July 18, 1898, that, in the construction of penal statutes, a well-established rule is that words and phrases must be taken in their ordinary acceptance and popular meaning, unless a contrary intent appears, and that the words "practice of medicine" must be taken in this, their ordinary or popular meaning, in determining whether a statute regulating same is violated by certain acts of a Christian scientist, for example. Its conclusion is that prayer for those suffering from disease, or words of encouragement, or the teaching that disease will disappear and physical perfection be attained as a result of prayer, or that humanity will be brought into harmony with God by right thinking and a fixed determination to look on the bright side of life, does not constitute the practice of medicine in the popular sense nor, therefore, violate the statute referred to. And the court does not think that because the statute applies not only to those who actually practice, but also to those who announce in any way a readiness to practice, that the legislators intended to give a broader

than the generally accepted meaning to the words "practice of medicine." The most that it thinks can be claimed for this feature of the statute is that it operates to broaden the offense created by the statute so that the attempt or the announcement of a readiness to practice medicine becomes equivalent to the actual practice. Furthermore, a recognition by the statute of the existence among medical men of differences regarding the treatment of disease, while certain diseases are treated by the "regular school" without the use of drugs, the court maintains, does not broaden the meaning of the words "practice of medicine" to include the practice of that which, in the popular sense, is not a practice of medicine. To give to the words "practice of medicine" the construction claimed for them, it also suggests, would lead to unintended results, because, if the practice of Christian Science is the practice of medicine, Christian Science is a school or system of medicine, and is entitled to recognition by the State board of health to the same extent as other schools or systems of medicine, as, under the statute under consideration, the board has no arbitrary power, and can only determine whether the applicant possesses the statutory qualification to practice in accordance with the recognized theories of a particular school or system. To protect the public, not from theories, but from the acts of incompetent persons, the court goes on to say, the legislature has prescribed the qualifications of those who may be entitled to perform the important duties of medical practitioners. The statute is not for the purpose of compelling persons suffering from disease to resort to remedies, but is designed to secure to those desiring remedies competent physicians to prepare and administer them. Nor does it, in terms, prohibit the use of the word "doctor" by any person, whatever his business or profession may be. The assumption of that title by a Christian scientist is not unlawful, and the use of the word is entirely immaterial in any case, unless under such conditions or circumstances, or in such connection, that it may serve as an announcement or indication of a readiness to engage in the practice of medicine or surgery.

Necessity of Intestinal Bacteria.—Schottelius recently raised some chickens from the egg in absolutely aseptic conditions, with the result that the fowls did not thrive like the control-chickens, but gradually dwindled away and died by the seventeenth day.—*Munich Med. Woch.*, No. 36.

Physicians' Strike.—The difficulties between the profession and the "sickness insurance associations" in Germany culminated recently in a definite "strikes" on the part of the medical men in two German cities. The strike at Barmen resulted in favor of the physicians, as a satisfactory compromise was effected, but at Remscheid the organization won the day, bringing in outsiders to fill the vacancy, although with the result of the founding of a new association with the former medical attendants. These associations to provide medical attendance in case of illness, are for the benefit of the laboring classes, and are mostly managed by working men or small trades-people, who assert their mastery over the physicians who contract to attend to their sick, by appointing and dismissing them at pleasure, a system which leads to many abuses. It has been abolished in some places where the association makes a contract with some local medical society, any members of which can be summoned to their sick at contract rates.

Red Ant Pest at Albany.—Taken individually, the small red ant (*Monomorium pharannis*) is not difficult of extinction. A well-planted foot will terminate the existence of the hardiest specimen. Taken en masse, however, he prospers exceedingly, even under adverse conditions, and his multiplication is fairly logarithmic for speed. Pouring boiling water, benzine or kerosene emulsion upon his domicile, if it can be found, tends to discourage him. The difficulty is to track him to his lair. Old and rotting woodwork is a favorite abode of his, and the old-

fashioned wooden sidewalk forms a roof of easy exit for populous ant cities. It is unlikely that the Albany correspondent will be troubled further this year by the small red pest. If he will start in early next summer and trail home the first red ant he sees about the house, he will probably be able, by a liberal use of the hot water boiler, to free his own immediate vicinity from the industrious and pervasive insects.—*New York Sun*.

Gleanings.—The *Bulletin de la Soc. de Pharmacie* states that bismuth salicylate should be rejected on account of its uncertainty and impurities, and the subnitrate used or, better still, the "cream of bismuth," the hydrate of bismuth oxid. . . . Orthoform is warmly recommended for cracked nipples. Besides its analgesic action it is siccative and antiseptic, healing the cracks in a few days. . . . Nitrate of silver crayons are found more effective than the solution, for buboes, panaris, etc. A crayon 2 to 4 mm. in length, inserted and left, will rapidly cure the lesion without too much caustic action (*Semaine Méd.*, November 16). . . . Netter ascribes to the sterilization a case of infantile scorbutus in a child fed exclusively with home Soxhlet sterilized milk from a well-directed dairy. In 103 observations there were only 11 in which similar conditions prevailed. In 29, the milk was bought ready sterilized. The rest used various preparations (*Bull. des Hôp.*, November 10). . . . Birth of twins with eleven days interval between them (*Lyons Méd.*). . . . Wolfe reports the case of a healthy woman who never menstruated, but when 45 years of age was much frightened by an insane girl, commenced to menstruate the same day, and eight months later conceived and bore a healthy child (*Lancet*, August). . . . Schultze adds another to the eight cases on record of echinococcus ovarii; not diagnosed before operating; patient recovered a year later. . . . Non-closure of the foramen ovale forming almost entire absence of septum in patient of 42 years, and in another of 62 (*Deutsche Med. Woch.*, November 17). . . . Lechner describes the case of a student who can make one eye go through the motions of abduction and adduction, while the other is fastened on a fixed spot, without varying the accommodation. It confirms Herring's law in regard to the associated innervation of the ocular muscles (*Graefe's Archiv.*, No. 3). . . . Professor Hayem's new clinic at the Saint-Antoine is arranged so that it can be darkened at a moment's notice, for radiographic work, projections of microscopic preparations, etc. . . . Two cases of tubo-abdominal wall fistulas are reported, through which menstruation occurred during the period, showing the bloody discharge in the tubes as in the uterus (*Cbl. f. Gyn.*, No. 45). . . . Rose recommends a wedge-shaped excision of the tubes from the uterus to protect against subsequent gonorrhoeal infection of the peritoneum, or to insure sterility. . . . Case of fatal intoxication from injection of gray oil (*Berlin klin. Woch.*, No. 46). . . . Case of noma after scarlet fever, with congenital syphilis, cured with potassium iodid (*Deutsche Med. Woch.*, 46). . . . Three cases of aneurysm of the mitral valve, observed by Drasche. Peculiar musical sounds noted. Small chronic aneurysms of this kind sometimes heal spontaneously (*Vienna klin. Woch.*, 45). . . . Case of myxedema in woman of 47 years, progressing for years, completely cured with thyroid tablets. . . . According to the *Munich Med. Woch.* of November 22, Fineen's "Light Institute" at Copenhagen (vide *JOURNAL*, page 303) is richly endowed, and the daughters of the best families volunteer their services as attendants. His treatment of lupus with concentrated electric light is proving very successful. . . . Unfavorable influence of kidney troubles on the course of an infective disease is confirmed anew by a fatal case of measles in a patient with nephritis (*Vienna klin. Rund.*, 47). . . . Naugheauer reports a case of extra-uterine pregnancy nearly at term; living

child extracted through the abdomen; mother recovered; placenta implanted in the cavum vesico-uterine (*Vienna klin. Rund.*, 47). . . . Sudnik has found the "high frequency" current very valuable in reducing an intracarpoid luxation of the shoulder. Besides its anesthetic effect it acts directly upon traumatic contractions (*Journal d'Hygiene*, Nov. 17).

Old Plantation Malady.—Doctor: Your wife must have chicken broth three times a day, and you must give her a spoonful of this medicine every hour during the night. Mr. Jackson (dubiously): Wa-al, doctah, I doan' see how yo' specks me toe pervide her wif de chicken broff and gib her dat medicine at de same time.—*Factotum*.

Washington.

HEALTH OF THE DISTRICT.—The report of Health Officer Woodward, for the week ended December 3, shows the total number of deaths to have been 117, of which 69 were white and 48 colored. The principal causes of death were: consumption, diphtheria, nervous diseases, heart diseases, diseases of the kidney, pneumonia, scarlet fever and typhoid fever. At the close of the week there were 123 cases each of diphtheria and scarlet fever under treatment.

NEW MUNICIPAL HOSPITAL.—Senator McMillan has introduced a bill in the Senate which provides for the building of a new municipal hospital, in which shall be treated the patients now cared for in the Columbia, Freedman and Almshouse Hospitals. The bill directs the trustees of the Columbia Hospital to sell that property and hand the proceeds into the United States Treasury Department. It further provides for an appropriation of \$200,000 for the purchase of a site for the proposed hospital, and a further sum of \$50,000 to begin the erection of buildings, which may, when completed, cost \$200,000.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—The monthly meeting of the attending staff was held December 3, to receive the report for the month of November, which was as follows: Number of new cases, 566; number of ward patients, 81; number of emergency cases, 362; number of redressings, 188; number of prescriptions, 2989; number of deaths, 7; number of postmortems, 4. Dr. Mohart, assistant resident physician, who has been seriously ill for the past two weeks, is now convalescing and will shortly resume his duties. Dr. James R. Church, the medical hero of the Rough Riders, and formerly a resident physician of the hospital, has successfully passed the examination and been admitted as a surgeon of the regular army. Dr. Church is a graduate of the Columbian University.

Louisville.

A RETROSPECT.—Dr. T. B. Greenley of Meadow Lawn, Ky., read a very interesting paper before the Filson Club on the 5th inst., entitled, "The Doctors of Long Ago," which was a delightful reminiscence of the physicians of Louisville during a period between 1844 and 1846, during which time Dr. Greenley was a student of the University of Louisville Medical Department, and subsequent years. The oldest physician in Louisville at that time he said was Dr. Hall, who in 1797 was elected assessor of the town, which then consisted of not more than 500 inhabitants. Another of the pioneer physicians mentioned was Jas. C. Johnson, the first white male child born in Louisville after its settlement on the banks of the Ohio. Dr. Greenley is still in active practice, though more than 80 years of age, and has long been an active medical society worker, last year attending the meeting of the Kentucky State Medical Society, three local and county medical meetings, the AMERICAN MEDICAL ASSOCIATION in Denver, and the meeting of the International Association of Railway Surgeons at Montreal, he being the local surgeon at Meadow Lawn to the Illinois Central R. R.

APPROPRIATION.—Among the appropriations mentioned in the dispatches from Washington is one of \$8,500 for the Marine

Hospital at Louisville. For the five internal revenue districts of Kentucky, \$151,500 is appropriated.

OSTEOPATHY.—In the case of G. N. Murphy against the State Board of Health, the injunction granted by Judge Settle preventing the Board from molesting the plaintiff in the practice of his profession, has been made perpetual. The State Board of Health has appealed the case, and as it is of such vital importance to the Board, the case has been set for an early hearing. This is the case in which the Board sought to revoke the license of Dr. Murphy for practicing osteopathy.

London.

CALCULI AND CANCER.—An interesting discussion developed in the Pathological Society, November 18, over the specimens of primary carcinoma of the gall-bladder, one shown by Prof. Bradford without a calculus present, and one by Dr. Hunter with a calculus firmly grasped by the growth. Dr. Hunter was of the opinion that the presence of gall-stones in cancer was simply a coincidence, like a carious tooth in epithelioma of the tongue or lip. Dr. Voelker took the same view, although they certainly were much more commonly present in carcinomatous gall-bladders than in normal ones, the proportion being about 70 and 30 per cent. respectively. This might easily be accounted for by blocking and derangement of secretions. Several others spoke in the same strain. The secretary, Dr. Rolleston, believed that while much of the coexistence of the two conditions might be ascribed to mere coincidence, it could not all be so explained. He cited the recent researches of Zeigler, who found calculi present in 90 per cent. in a large number of cases of primary carcinoma he had collected. To check this result, he cited some sixteen cases of secondary invasion of the gall-bladder, and found stones present in only 20 per cent. Acting upon this suggestion Rolleston had searched his own hospital case-reports and found five cases of primary cancer, in four of which stones were present, and six cases of secondary invasion in only two of which were calculi found. He, therefore, agreed with Zeigler that some important relation actually existed between gall-stones and primary carcinoma. The president, Dr. Payne, thought that cancer of the entire alimentary tract was rapidly increasing in frequency, and the gall-bladder was no exception. He regarded the relation between it and calculi as extremely uncertain.

HARBEN LECTURE.—In the last Harben lecture upon "Tuberculosis," Sir Richard Thorne discussed the problem of compulsory notification of phthisis, and, after a careful survey of the field, pronounced definitely against it. He regards the case of tuberculosis as far from parallel with that of scarlet fever or diphtheria, and thinks that at present legal interference will do more harm than good, preferring to rely upon educating popular opinion. The experience of New York City, he regards as conclusive, inasmuch as the enforcement was extremely partial and only practically among the tenement classes, and secondly, because the marked diminution in the death-rate attributed to it was already in progress before the measure was enforced.

THE GREEN OYSTER.—Professor Herdman, as chairman of the special commission upon the oyster industry, has just made an important report. The commission finds that the green color liable to occur in oysters is due to two causes: one, as in the celebrated "green oysters" at Marenne on the French coast, so highly prized by epicures, and the bivalves from certain English river-mouths, harmless, and due probably to swarms of small vegetable organisms; the other, as in some American oysters and those from Falmouth, and possibly from Colchester, is caused by an excessive deposit of copper and iron in the tissues, and is probably pathologic. The copper is deposited from the blood by the leucocytes, both in the tissues and upon the surface of the body, in the form of a basic carbonate. The interesting feature of this change is that as cop-

per plays much the same rôle in the blood of molluscs, as iron does in that of mammals, we may here have a deposit of blood salts, such as occurs in chlorosis and pernicious anemia—our human "green sickness;" indeed, Herdman described the process as a "leucocytosis." But, unfortunately, the oyster is not satisfied with the association of harmless micro-organisms. The commission reported the finding of large numbers of bacilli of the colon group, some of which gave reactions suggestive of bacillus typhus in the gill-cavities and stomach of many samples of oysters. None of these oysters, however, had been taken from pure sea-water, but as the bivalve has a distinct affinity for sewage bacteria, and a saying of the fisherman is "the muddier the water, the fatter the oyster," so that they are brought farther and farther up the estuary as the time of their marketing approaches, they recommend that active measures be taken to inspect all oyster-beds frequently with reference to their possible contamination by sewage. There seems a decided probability that the oyster actually collects the bacteria from the water, as its food consists chiefly of vegetable micro-organisms, and it fattens rapidly in water containing small amounts of sewage. It is not injured by the pathogenic germs and probably would digest them along with the others. What we suffer for is our rudeness in interrupting the oyster during digestion.

MEDICAL SOCIETY OF LONDON.—At the last meeting, the president, Mr. Edward Owen, reported a successful gastro-enterostomy for pyloric cancer, with the use of the Murphy button. The patient was failing rapidly in strength, but since the operation in July last, had gained twenty pounds and was nearly free from pain. Mr. Battle presented a case of total disappearance of a large sarcoma at the neck and superior mediastinum, under the use of Coley's fluid. The President objected to the case going into the Transactions as an instance of cure by this method, as he thought the real nature of the growth uncertain. Mr. Mansell Moullin congratulated Mr. Battle upon reporting the *first authentic case* of cure by Coley's fluid (italics ours) in this country, which in view of his championship of the method and its numerous trials, was rather a surprising statement. Mr. Waterhouse declared himself very skeptical as to the value of the method and the reliability of some of the reports made upon it. He himself had tried it in five cases with no result whatever, except the death of two patients by hyperpyrexia. The impression seems to be general that no one else can get such results as Coley reports.

CHANGE OF ADDRESS.

Burns, T. M., from 925 to 841 So. Water Street, Denver, Colo.
Bradford, H. W., from Jamaica Plain, Mass., to Wolfboro, N. H.
Beach, S. C., from McCook to Ravenna, Neb.
Brown, Le Roy, from Heron to St. Paul Park, Minn.
Craig, J., from White Sulphur Springs to Columbus, Mont.
Clark, J. A. M., from Detroit to Cascade, Mich.
Cutter, J. B., from Colonial Hotel to Presidio, San Francisco, Cal.
Durbin, L. T., from 2430 Stout to 1763 Clarkson, Denver, Colo.
Dougherty, P., from Los Angeles to 80 So. Madison Ave., Pasadena, Cal.
Dvorak, W. J., from 1539 to 1540 W. 22d Street, Chicago, Ill.
Davidson, T. W., from Galesburg to Abingdon, Ill.
Huntington, W. D., from Adeline Street to Central Bank Bldg, Oakland, Cal.
Johnson, F. W., from 919 to 626 John Street, Cincinnati, Ohio.
Kennedy, T. W., from 1024 17th Avenue to 1540 High Street, Denver, Colo.
Peery, M. E., from Pittsfield to Carthage, Ill.
Ross, C. H., from Summerfield, Kan., to Upland, Neb.
Raub, J. I., from 319 B St., S. E. to 421 B St., N. E., Washington, D. C.
Seheiber, 146 N. Clark to 298 E. Division, Chicago, Ill.
Sauer, E. N., from Racine to 320 Chestnut Street, Milwaukee, Wis.
Stokes, W. B., from Coldwater to Farmington, Ky.
Yolton, J. L. & R., from Eddy Bldg., to 208 E. Jefferson Street, Bloomington, Ill.
Zeller, H. R., from Beamsville to North Lewisburg, Ohio.

LETTERS RECEIVED.

Byerly, A. J., Coggon, Iowa; Beck, Carl, New York, N. Y.
Cadwalader, J. S., Cleveland, Ohio.
Dewey, R., Wauwatosa, Wis.; Derriek Adv. Agency, The Paul E., New York, N. Y.
Elson, J. A., Smithville, Ohio.
Harrison, R. H., Houston, Texas; Hummel, A. L. Adv. Agency, New York, N. Y.
Johnson, T. J. L., Washington, Pa.
Lautenbach, L. J., Philadelphia, Pa.; Lee, C. B., Glen Jean, W. Va.
Morgan, J., Cambridge, Vt.
Rose, J. R., Eastman, Ga.
Snyder, John F., Hawkeye, Iowa.
Wynn, F. B., Indianapolis, Ind.

The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, DECEMBER 24, 1898.

No. 26.

ADDRESSES.

EMPHYEMA IN CAMP GEORGE H. THOMAS.

Annual Address delivered before the Pittsburg Academy of
Medicine, Dec. 2, 1898.

BY N. SENN, M.D., Ph.D., LL.D.

Professor of Surgery in Rush Medical College, in Affiliation with the
University of Chicago; Late Lieutenant-Colonel U. S. V., Chief of
the Operating Staff with the Army in the Field.
CHICAGO.

The short, decisive campaign with Spain just ended was characterized, from a medical standpoint, by the smallness of the number of those killed in the field, the prevalence of disease and the large number of deaths from this source. The brilliant victories on land and sea which forced Spain to sue for peace have cost us so far over three thousand lives—less than three hundred from the effects of bullets and over two thousand nine hundred from disease. The number of deaths from disease will be increased materially, as the different military hospitals at home and abroad still contain a large number of our sick, many of whom will succumb to the diseases contracted during the campaign. Even in case the hostilities are not renewed, it is impossible to predict the total loss of life at the present time, to say nothing of the thousands who will never recover the health they brought into the service. The unusual amount of sickness which prevailed among our troops, in our home camps and at the seat of war, can be attributed to various causes. The call to arms came at a time of the year when bronchial affections, pneumonia, pleuritis and rheumatism are prevalent. In the State camp of the Illinois troops cerebro-spinal meningitis made its appearance during the first days of their encampment. Typhoid fever had its origin in our State camps and followed our army to the National camps and to the seat of war in Cuba and Porto Rico. The accumulation of large armies and the prolonged encampments in localities which lacked a system of sewerage, could not fail in promoting the local spread of infectious disease. The invasion of Cuba occurred during the rainy season, which had a deleterious effect on the health of the unacclimated troops, rendering them more susceptible to the effects of the semitropical climate and the prevailing diseases. The transportation facilities for the unloading of the transports were utterly defective in furnishing the invading army at the proper time with the necessary supplies. The clothing of our troops was not adapted for the Cuban climate. And, lastly, the necessary precautions to protect the troops against yellow fever, which is always found on the Cuban coast, where the landing was effected, were not carried into effect. The commanding general had been fully advised by the Chief Surgeon of the Army in the Field, but the instructions were ignored in the haste and tumult of the brief campaign. A lack of a good knowledge of sanitation

on the part of many of the medical officers, and especially the inadequate policing of the camps, had their influence in promoting the local spread of disease. Amebic dysentery and malaria, the two tropical diseases to which our troops were exposed in the southern camps and in Cuba and Porto Rico, figured largely in the sick and mortality reports. The prevention of these diseases was beyond the control of the medical department. The ordinary camp diarrhea, from which almost every participant of the war suffered to a greater or lesser extent, I am satisfied, did much to increase the receptivity of our soldiers to typhoid fever infection.

Another matter of the greatest importance concerning the health of our troops was the regulation government ration. The food selected and furnished for the army in Cuba and Porto Rico was the same as that which had been used in the North. Every one who served at the front for any length of time must be convinced that the emaciated, starved condition of our soldiers who returned from Cuba, and who escaped disease, was largely due to the nature of the food upon which they had to subsist. The purchase of food at the seat of war was out of question. Investigation will undoubtedly prove that many of the canned meats did not contain the amount of nutriment claimed for them. Fresh meat and black bread furnished the continental armies are not only more palatable, but also more nutritious than the canned meats and hard-tack furnished our army. A careful inquiry into the kind of food our occupation armies should be furnished, is one of the most important duties of those who are in charge of the commissary department. Another subject of special importance is the special diet for the sick.

It is to be hoped that the medical department will be consulted concerning these matters, and that the recommendations made will receive the well-merited attention of the military authorities. During my service, I met one of our soldiers who served under General Gordon in his advance on Khartoum, who informed me that during that campaign the British troops were supplied, on the whole, with much better food than was the case in Cuba. England has benefited by long experience how to conduct a campaign in a tropical climate; we are novices in this kind of warfare, but have learned enough during the last six months to enable us to take better care of our troops, should we again be called upon to conduct a war beyond the limits of our country.

I have deemed it appropriate and advisable, in accepting your kind invitation to deliver the address at this annual meeting, to discuss briefly and from the most practical standpoint, a surgical affection which I had an opportunity to study in a most satisfactory manner during my service at Chickamauga. It is my purpose to occupy my allotted time by relating my experience with emphyema in Camp George.

H. Thomas. I was on duty as chief surgeon in that camp for nearly four weeks during the months of May and June. During that time the camp was occupied by nearly 40,000 men, representing nearly all of the States east of the Rocky Mountains. With the exception of one company of cavalry on guard duty, the army was composed entirely of volunteers. The days were hot, the nights cool; the midday temperature frequently reached 98 to 100 degrees F. The drouth which prevailed at that time rendered the roads dusty, the clouds of dust being only settled occasionally by showers of short duration. Camp diarrhea, dysentery, cerebro-spinal meningitis, pneumonia and typhoid fever were then the principal diseases we had to contend with.

It is one of the complications of pneumonia—empyema—as observed in Camp George H. Thomas, that I desire to discuss this evening. Empyema represents the pathologic product of suppurative pleuritis. Suppurative pleuritis is always the result of a pyogenic infection of the pleura sufficient in virulence to give rise to pus formation. In the absence of traumatic causes it appears clinically and pathologically either as an isolated inflammation of the pleura or as a more or less remote complication of pneumonia. Bacteriologically speaking, suppurative pleuritis can only result from the presence in and the specific action upon, the tissues of the pleura of pyogenic microbes in sufficient number and virulence to give rise to a suppurative inflammation.

Non-traumatic, suppurative pleuritis is a comparatively rare, isolated affection; in the great majority of cases it presents itself as a complication of pneumonia. Recent investigations tend to prove that the essential cause of pneumonia is either Fränkel's pneumococcus, Friedlander's bacillus of pneumonia (diplo-bacillus) or the streptococcus pyogenes. Streptococcus pneumonia, occurring either as a primary or secondary affection, is characterized clinically by the gravity of the disease and pathologically by the tendency to pus formation. The microbes of pneumonia discovered and described by Fränkel and Friedlander are the bacteriologic agents usually found in the inflamed tissues in croupous pneumonia. Both these microbes possess feeble intrinsic pyogenic properties, and when, during the pneumonic process, abscess formation or suppurative pleuritis sets in, the complication occurs usually as the result of a secondary or mixed infection with pus microbes. Croupous pneumonia is a self-limited disease, and when febrile symptoms persist after a sufficient time has elapsed for the disease to complete its typical cycle, it is usually an indication that mixed infection has occurred, and in this event it becomes the urgent duty of the attending physician to look for, locate and determine, if possible, the nature of the complication to enable him to institute timely, appropriate therapeutic measures.

In suppurative pleuritis complicating pneumonia, the inflamed lung tissue is seldom involved in the suppurative process. Resolution may proceed in a satisfactory manner at the time and after the suppurative pleuritis has set in, a fact which would tend to prove that the parenchyma of the lung is more resistant to the action of pyogenic microbes than the tissues of the pleura, or that these microbes find their way more readily to the pleura than into the pneumonic focus after secondary infection has occurred. The complicating secondary pleuritis manifests itself

usually about the time the crisis is expected or a few days later. It is evident that suppurative complications in cases of pneumonia would be likely to appear in cases in which the tissues are rendered susceptible to the action of pus microbes and under circumstances which would supply the bacteria for the secondary, mixed infection.

Both these conditions were present and operative in Camp George H. Thomas. The health of many of the men encamped at Chickamauga was impaired soon after reaching camp by the sudden climatic changes, change of food, malaria and camp diarrhea. Nearly all cases of pneumonia were characterized by the gravity of the symptoms and a tardiness with which resolution occurred. Camp Thomas was located on the government reservation ten miles south of Chattanooga. The ground is undulating and in part well wooded. Numerous clearings and open spaces furnished excellent facilities for the drilling and maneuvering of the troops. The National Park is traversed by a sluggish stream, the Chickamauga. Three regiments of cavalry and a number of batteries were in camp during the month of June, the time the five cases of pneumonia complicated by empyema came under my observation. The ground is intersected by numerous roads which during the season of drouth which prevailed at that time, became covered with inches of fine dust, which by driving of innumerable vehicles of all kinds, the marching of troops, the passage of cavalry and artillery would rise in dense clouds and by sudden gusts of wind would often cover the entire camp. This dust was contaminated by pathogenic microbes of all kinds, which could not fail in finding their way into the air-passages of the occupants of the camp. The dust was most abundant near the roads on which there was the most travel, that is, near headquarters.

It was not strange that most of the cases of pneumonia originated in localities where the dust clouds were densest, filling the tents and kitchens and covering the food supplies. The dust had undoubtedly some influence in the causation of pneumonia, and more particularly in determining the frequency with which it was attended or followed by suppurative pleuritis.

Many of the soldiers left their State camps affected by bronchial catarrh, which constituted a potent predisposing cause to pneumonia. This was particularly true of some of the regiments from Illinois. Naturally the first regiments arriving at Camp Thomas were quartered near the great thoroughfares of travel and those arriving later in more remote parts of the camp. It is a noteworthy fact that those regiments farthest away from headquarters were almost free from pneumonia, while those nearest the center of travel furnished the largest number of cases. The cool nights, the lying on the moist ground and the inadequate supply of blankets did their share in serving as potent exciting causes. Some definite information in reference to the distribution of the disease can be gained by considering the location of the division hospitals, and the number of cases of pneumonia treated in each one of them. The division hospitals were located as near the center of the respective divisions as possible.

The First Division Hospital was established on the Lafayette Road, about three-quarters of a mile from the headquarters of the corps. The Second Division Hospital was established about two miles from head-

quarters and about one-quarter of a mile from any principal thoroughfare, the Brotherton Road being the nearest one. But few of the regiments of this division were encamped on roads subject to much travel.

The Third Division Hospital was located at the junction of the Alexander's Bridge Road and the Jay's Mills Road, about two miles from headquarters. Some of the regiments of this division were quartered on roads which were used by the wagon trains hauling water, consequently frequently exposed to clouds of dust.

During the latter part of May and the month of June forty-six cases of pneumonia developed in the First Army Corps. These cases were distributed among the division hospitals as follows: Hospital at Headquarters, 4 cases; First Division Hospital, 32 cases; Third Division Hospital, 10 cases. The Second Division Hospital was not established until the middle of June, and from that time on until the end of the month not a single case of pneumonia was reported. Careful inquiry at the regimental hospitals failed in finding a case previous to the establish-

ment of the division hospital. Five of these cases were operated upon by myself: four at the St. Vincent's Hospital and one at the Leiter Hospital. The following case represents the pathologic conditions found in these cases as well as the surgical treatment which was resorted to in meeting the indications of the empyemic complication:

W. F., private, Third Ill. Vol., was taken suddenly ill while on drill, May 30. The attack was initiated by nausea, vomiting, dizziness and a sense of great prostration. On the following day severe diarrhea set in, which, in connection with persistent vomiting and intense headache, influenced his physician to transfer him to the division hospital. At that time physical examination revealed a well-marked bronchitis. In the evening he had a decided chill; temperature 103.

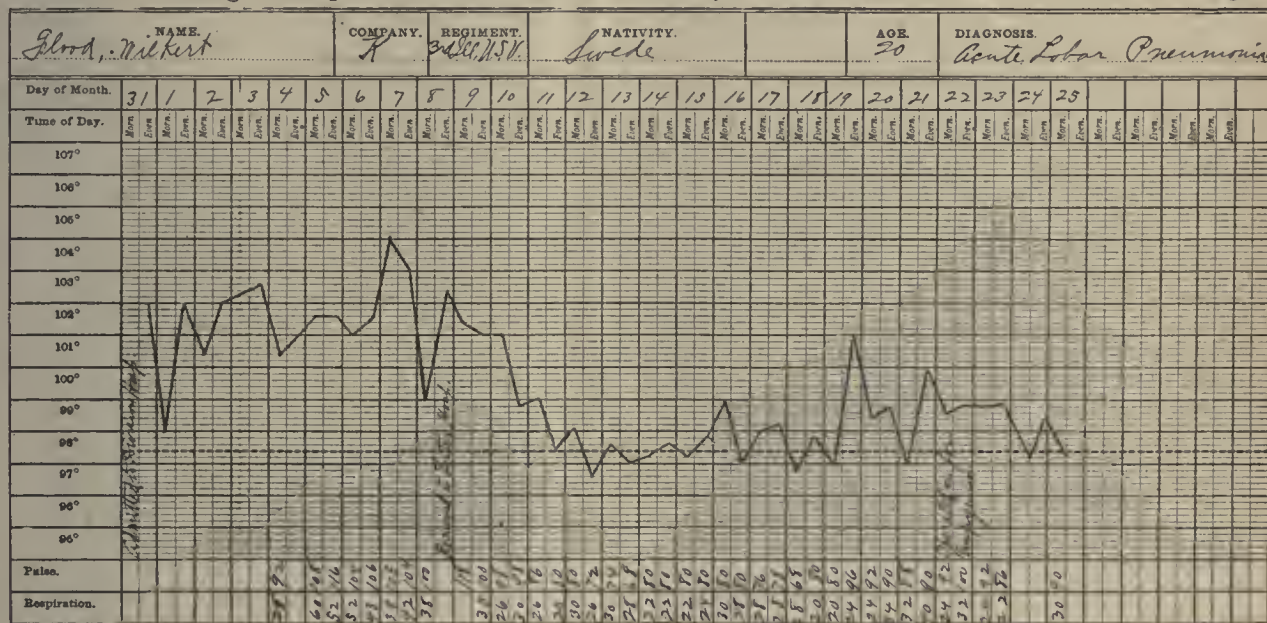
June 1 he complained of severe pains in his chest and back, cough dry and hacking, sputum tinged a rusty color. Diarrhea continues; slight delirium; temperature 99 in the morning, 103 in the evening.

June 2. Chest pains not relieved, sputum more deeply tinged. Temperature varies from 101.5 to 103.

June 3. Diarrhea under control; cough and expectoration unchanged; delirium and temperature about the same.

June 4. No material change in the condition of the patient; tongue dry and dark brown.

Daily examinations of the chest did not reveal any signs of



Record of variations of temperature beginning May 31, 1898, at Leiter Hospital.

ment of the division hospital. This was the division encamped almost entirely away from any of the principal roads, hence least subjected to dust-infection. It will be noticed that 32 cases, or nearly 70 per cent. of the entire number, occurred in the First Division regiments. Out of these forty-six cases six died, or a mortality of 13 per cent. The six fatal cases came from the First Division. In three of these fatal cases death was caused by the progressive extension of the septic pneumonia, and in the remaining three death was caused by complications. In one case death was attributed to a typhoid condition; in two to cerebrospinal meningitis. The septic nature of the cases of pneumonia which developed in the First Division is best shown by the frequency with which empyema attended or followed the pulmonary disease. In this division empyema complicated the pneumonia in nine out of the entire number of thirty-two cases, equal to 28 per cent. Four of these cases were treated at the Leiter Hospital and four at the St. Vincent's Hospi-

tal, Chattanooga. Five of these cases were operated upon by myself: four at the St. Vincent's Hospital and one at the Leiter Hospital. The following case represents the pathologic conditions found in these cases as well as the surgical treatment which was resorted to in meeting the indications of the empyemic complication:

June 7. Patient delirious most of the time; cough harassing, and copious expectoration of rusty sputum. Temperature rose rather suddenly to 105.

June 8. Cough less troublesome, sputum more scanty; subjective symptoms improved. Patient was transferred to the Leiter General Hospital, when on his arrival the temperature was found to be 102.4. The medication at this time consisted of strychnia in small doses, muriate of ammonia 5 grains every four hours, alternated with 3 drops of turpentine. Under this treatment the temperature was reduced 1½ degrees during the first day, 2 degrees the second, and 1½ degrees the third day, becoming normal June 11. Carbonate of ammonia was substituted for the muriate at this time.

From June 12 to 18 the temperature ranged one degree above and below normal. The pulse, which had been 118 beats per minute and feeble on his admission to the Leiter Hospital, became fuller and stronger and diminished in frequency to 80.

June 19. Temperature suddenly rose in the afternoon to 102, pulse 96.

June 20. Examination of chest showed absolute dulness on the right side, extending as high as the fourth rib. The appearance of fever after a few days of complete defervescence

and the rapid increase of the area of dulness, displacement of the apex-beat to the right, as well as a marked bulging of the lower intercostal spaces, left no doubt of the existence of empyema. The symptoms indicating the presence of this complication were so evident that it was not deemed necessary to resort to an exploratory puncture to verify the diagnosis.

In all of the cases of pneumonia complicated by empyema that came under my personal observation, the disease pursued a very similar course to the one described. The clinical symptoms were characterized by their severity. The patient's general condition left little doubt as to the septic nature of the original disease. As in the case detailed, the suppurative pleuritis commenced two to three days after the pneumonic symptoms had subsided, its onset being announced by a rise of temperature and the appearance of local and general symptoms, suggestive of the existence of a suppurative affection.

It is more than probable that in most of these cases the pyogenic microbes, which eventually attacked the pleura and caused the suppurative process, entered the lungs at the same time and in the same manner as the microbes which caused the pneumonia. The bronchitis and diarrhea which initiated the disease were plain evidences pointing in this direction. In some of the cases in which the pneumonia pursued a more typical course, the subsequent suppurative pleuritis was caused by a secondary mixed infection. All cases of empyema which were subjected to operative treatment were characterized pathologically by the presence of an abundant fibrinous exudate, which covered both the visceral and parietal pleuræ, and, in the form of large fibrinous masses, mixed with the thick cream-like pus. The purulent accumulation occurred rapidly, filling the pleural cavity in a very few days. Displacement of the heart, enlargement of the chest and bulging of the intercostal spaces were the most significant local signs indicating the presence of a large quantity of pus in the cavity of the chest. The right and the left sides were affected with about the same frequency. In one case the pleuritis was limited, leading to a circumscribed empyema in the left side. The abscess occupied the lower and posterior part of the chest. In performing the radical operation in this case, a section of the tenth rib, about three inches from the spinal end, had to be excised. The location of the empyema was determined beforehand by systematic exploratory punctures, the first two punctures yielding negative evidence. As a rule, expansion of the compressed lung followed soon after the operation, showing that resolution had occurred before or after the pleuritic complication appeared.

In some of the cases suppuration was scanty after the operation; in others it was abundant. In the former event a process of repair set in promptly; in the latter case it was retarded. The final process of obliteration of the pleural cavity was accomplished by granulation, cicatrization and cicatricial contraction. Evacuation of the pus and drainage were always followed by a fall in the temperature to normal, or nearly so, accompanied by symptoms denoting rapid improvement of the patient's general condition. In two of the cases the physicians in attendance were misled in their diagnosis by the absence of fever. The pleuritis was initiated as usual by a rise in temperature and other febrile disturbances, which subsided in a few days, the patients feeling well with the exception of the complaint of embarrassment of the respi-

ration. In one case the respiration was so much interfered with by the copious pleuritic exudate that the lips were blue and the pulse almost imperceptible—conditions which necessitated the performance of the operation without an anesthetic. We relied in this case on strychnia and whiskey to counteract the immediate effects of the operation. In the absence of such contraindications ether was used as an anesthetic, aided by the administration of some heart stimulants immediately before the administration of the anesthetic.

OPERATION FOR EMPYEMA.

The existence of an empyema in the adult is a sufficient indication for the performance of a radical operation. Puncture and removal of the pus by aspiration may succeed occasionally in mild cases of suppurative pleuritis in the case of children; seldom, if ever in the adult. Operative treatment should be instituted as soon as a diagnosis can be made. Unless the signs and symptoms are conclusive, the diagnosis should be verified and the pus accurately located by an exploratory puncture, as was done in most of the cases operated upon in Camp Thomas. Nothing is gained and much is lost by postponing surgical treatment until the accumulated pus has increased to the extent of producing serious and often irremediable compression of the lung on the affected side. The plastic exudate, which is often copious, as in all the cases forming the basis for this address, is another source of danger in case the operation is not promptly performed, as it creates conditions unfavorable to the subsequent expansion of the compressed lung and extenuates indefinitely the infection.

In view of the pathologic anatomy presented by the cases of empyema which constitute the basis for this paper, it must be admitted that the only rational treatment consists in opening the pleural cavity freely and in establishing efficient tubular drainage. Intercostal incision and drainage do not enable the surgeon to remove the large fibrinous masses which play such an important rôle in maintaining suppuration and in preventing speedy obliteration of the pleural cavity. The fibrinous exudate contains pus microbes, and unless removed at the time the operation is performed, serves as a nutrient medium for their growth and reproduction and interferes mechanically with pulmonary expansion and speedy obliteration of the pleural cavity by granulation and cicatrization. One of the important modern indications in the surgical treatment of empyema is to remove the inflammatory product as thoroughly as possible, and this can only be done after opening the cavity sufficiently to remove by mechanic measures the infected exudate. In recent cases resection of two inches of one rib at a point where drainage will be most effectual will afford sufficient room to subject the pleural cavity to a thorough removal of the inflammatory exudate. With the exception of the case of circumscribed empyema, we opened the chest in the axillary line where the ribs are nearest the skin and usually resected the seventh rib. With one exception, aspiration was performed a day or two before the operation for the purpose of securing partial pulmonary expansion before admitting air into the pleural cavity.

Preliminary aspiration is of special value in the treatment of large empyemic cavities. The surface of the entire chest was thoroughly disinfected and every care taken to carry out full aseptic precautions

during the operation. The opening of large pus cavities is attended by great responsibility, and this is more especially true in empyema, as secondary infection is liable to occur unless the operation is performed under strictest aseptic precautions. If an anesthetic is given, the greatest watchfulness is required to guard against accidents. I always prefer to perform the operation under partial anesthesia, and I am very partial to strychnia and alcohol as valuable adjuncts in minimizing its immediate and remote dangers.

I place the patient partially on the opposite side with the chest slightly raised, and the arm on the side to be operated upon raised to the side of the head for the purpose of increasing the width of the intercostal spaces. I expose the rib to be resected by a slightly curved incision with the convexity directed downward, beginning the incision at a point corresponding with the upper border of the rib, carrying it in a gentle curve to the lower border, and terminating it at the upper border at a point about four inches from where it started. By reflecting the cutaneous shallow, oval flap in an upward direction, the muscular covering of the rib is exposed. A straight incision over the center of the rib, about three inches in length, is then made down to the bone. With an elevator the periosteal envelope with the tissues attached to it is then separated, taking care to lift out from its groove the intercostal artery with the tissues to be reflected. After laying bare the rib to the extent of at least two inches, the rib is lifted forward with the elevator and excised with a strong pair of bone-cutting forceps. If the diagnosis is positive, all that remains is to make an incision with the scalpel in the center of the periosteal trough, large enough to admit the tip of the index finger.

The evacuation of the chest contents should always be done slowly; this can be done most effectually by interrupting the flow of pus from time to time by inserting the index finger into the pleural incision. After evacuation of the pus and loose shreds of fibrinous material, the pleural cavity should be carefully examined by direct inspection and digital exploration. Plastic exudates attached to either pleura must be removed as thoroughly as can be done with finger and a small gauze sponge held securely in the jaws of a pair of long, preferably slightly curved, forceps. The membranes should be removed by mopping and not by the use of sharp instruments. Scraping of the pleura with a sharp spoon is superfluous and occasionally detrimental. In acute cases I have often noticed quite free hemorrhage from the pleural surfaces even after gentle efforts to dislodge the adherent fibrinous exudate. Should troublesome hemorrhage follow the procedure, packing of the pleural cavity with one long strip of plain sterile gauze should at once be resorted to. The space below the drainage opening is packed first, and if the hemorrhage is not arrested, the balance of the cavity is packed from above downward.

Tubular drainage is the ideal method of draining a suppurating pleural cavity. I use for this purpose two fenestrated tubular drains, the size of the little finger, about four inches in length and securely fastened together with a large safety-pin. Drains have been repeatedly lost in the pleural cavity for want of resorting to this simple precaution. After inserting the tubular drain, the external wound is sutured in the usual manner. The curved incision, as described

above, not only exposes the ribs more freely than the straight incision, as usually practiced, but it is also much better adapted for prolonged drainage.

I never irrigate the pleural cavity the day the operation is performed. I do so later, provided suppuration continues. In case irrigation of the pleural cavity becomes necessary, care is necessary in the selection of the antiseptic solution; carbolic acid and corrosive sublimate in the usual strength are dangerous, and should never be used. I make use of either a saturated solution of the acetate of aluminium or Thiersch's solution. Both of these solutions are efficient as an antiseptic and non-toxic even when used in large quantities. The value of the double drain is made apparent when it becomes necessary to irrigate the pleural cavity. By placing the patient on the opposite side, the fluid which enters the chest through one tube escapes through the other as soon as the cavity is full, thus washing it out thoroughly. By placing the patient on the affected side the cavity is emptied, when the same procedure is repeated until the solution returns clear. The solution used should always be heated to blood temperature, as irrigation with a cold solution is fraught with danger.

The external dressing should consist of a thick cushion of sterile gauze and absorbent cotton to absorb the fluid as fast as it escapes, and to provide the wound with a filter to prevent post-operative infection. The best way of keeping the dressing in place and to prevent the entrance of unfiltered air into the cavity, is to substitute for the ordinary bandage the rubber webbing bandage. Change of dressing and antiseptic irrigation become necessary as often as the dressing becomes saturated. For the purpose of obviating frequent changes, the dressings should be ample.

As the cavity diminishes in size the drains are shortened from time to time, and sooner or later one of them can be dispensed with. Premature removal of the drain is often followed by relapse. Drainage must not be suspended until the surgeon can satisfy himself by careful examination that the pleural cavity has become obliterated.

Should the lung fail to expand sufficiently in the course of a few months to place the cavity in a condition for definitive healing, Schede's thoracoplasty operation is the operation of choice, as Estlander's multiple rib resection has not yielded the expected results in the practice of many operators, including my own. It is well for the surgeon to keep close watch of the size of the cavity during the after-treatment. It has always been my custom, at stated intervals, to place the patient on the opposite side, then fill the cavity with one of the antiseptic solutions used for irrigation, then evacuating the chest by reversing the position and measure the quantity of fluid removed. By recording the results of such measurements, we are in a position to judge with mathematical precision the size of the cavity, and determine whether or not healing is possible without further and more serious operative interference. Prompt and progressive improvement followed the operation in all of my cases of empyema operated upon in Camp Thomas. In most of the cases suppuration was soon under control, followed by speedy pulmonary expansion and permanent healing of the empyemic cavity by granulation. In two of the cases a recent examination made by Dr. A. F. Lemke showed that the patients recovered their former health.

Our limited means of making a satisfactory bacteriologic examination of the inflammatory product made it impossible to ascertain in each case the nature of the microbic cause of the suppurative complication. In two of the cases, inoculation of proper nutrient media resulted in an abundant growth of the staphylococcus pyogenes aureus. I have but little doubt that in most, if not in all cases, the suppurative pleuritis developed in consequence of a secondary infection with pus microbes, probably in most instances with the staphylococcus, as indicated by the clinical course of the disease and the nature of the inflammatory product. The etiologic relationship of dust to pneumonia, and especially the pleuritic complication, must be regarded as established by the facts related above.

The influence of dust in the causation of pneumonia and suppurative pleuritis acts in two ways in the causation of these diseases: 1. The mechanical irritation of the bronchial mucous membrane resulting from the presence of ordinary dust renders the epithelial layer of the bronchial mucous membrane more permeable to the entrance of pathogenic microbes. 2. Pathogenic microbes, and in this case pus microbes, are suspended in the dust and find with it entrance into the air-passages.

The importance of early radical operative intervention in the treatment of empyema can not be overestimated. The only efficient treatment in such cases consists in opening the cavity of the chest freely by rib resection, removal of inflammatory product and establishing free tubular drainage, followed by safe and efficient irrigation, should subsequent suppuration demand it.

CHAIRMAN'S ADDRESS.

Presented to the Section on Stomatology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY G. V. I. BROWN, M.D.
MILWAUKEE, WIS.

It is my pleasure, as your chairman, to give the first greeting to the Section of Stomatology of this ASSOCIATION, and also to our confrères in joint session, the Colorado dentists, among whom I trust it may be the inaugural of long and beneficial intercourse. Stomatologists in fact we have long been, I am sure, but to be so recognized by title is a long step forward in the direction toward which, from year to year, those who have carried the burden of the vast amount of work necessary to this Section have labored, and is certainly worthy of general congratulation. We no longer serve under the somewhat limited, almost ambiguous term of "oral surgeons," but are hereafter to be recognized as those having understanding of the science of the mouth, a tribute complimentary to the scientific character of papers which, published side by side in the journal of this ASSOCIATION with the essays of the most learned medical and surgical lights of the day, have gained the respect of the other branches, having given those who treat diseases of the mouth their only opportunity to exchange ideas directly with the medical world, the influence of which, in discovering to it the possibilities of applying the technique of the skilful dentist, in conjunction with a knowledge also of surgical procedure and medical science, can not be overestimated.

The address of your chairman, Dr. Andrews, last

year, in following out the idea of an anniversary celebration, has told the story of the earnest few, the authors of our being, so completely that reference to the history of the Section is unnecessary. It seems, however, that his suggestion as to the necessity for united efforts being made in the interest of sanitation, in having the mouths of school children regularly examined by regular practitioners of dentistry and, in a general way, instruction given as to the care they ought to receive, is worthy of reiteration in order that the idea may not escape entirely. An effort made in my own home during the past year to carry out the plan has not proven thus far of any practical value, but constant agitation and repeated effort will undoubtedly accomplish much that is at first apparently impossible.

There is another line of duty to which I would respectfully call your attention, which also calls for united effort in order that our objects may be furthered. As we all understand, the essential idea of this Section is that dentists shall also be graduates in medicine, therefore properly entitled to the benefits accruing from association and consultation with physicians. There is a difference of opinion as to the advisability of having the student take the medical degree first and the special degree in dental surgery afterward, or vice versa, but there can be no question of the importance and little, if any, of the necessity of having both. Unfortunately for this desideratum, the difficulty of accomplishment is most unfavorable, owing to lengthening of the required course of instruction for recognition by the National Association of Medical College Faculties and the National Association of Dental Faculties; while with each it is a mark of progress toward higher education, and the probable effect, so far as the Section of Stomatology is concerned, and the advance of both professions into that interlying field, fast becoming of value to each, bids fair to completely abort, or at least inhibit a promising growth in future usefulness. The number of years of study required is becoming, not only quite beyond the possibility of the average student to attend, but more extensive than the benefits to be derived from the practice of our special branch will warrant, in comparison with other departments of medical science. Therefore, the natural result will be that the student of the near future must decide either to be a dentist, pure and simple, without a degree in general medicine, or be obliged to become an oculist, an aurist, a rhinologist or a practitioner, limited to some one or more of the other special fields of medicine for which he can equip himself with one year, or perhaps a little more, of study after graduating at some medical college, and even if he takes a short postgraduate course abroad, as so many do, will yet have perhaps expended less time and money than would be required to complete his attendance at a reputable dental school.

When this Section was first organized and recognized by the AMERICAN MEDICAL ASSOCIATION it was possible to complete the required course for the degree of D.D.S. in two years, then get an advanced standing in the medical college and receive the degree of M.D. in one year afterward. Today the National Association of Medical Colleges requires four years for graduation, and the dental faculty association three years, with the prospect of an additional year in the near future—now under consideration. It has already become a matter of some difficulty for a graduate of

either school to be allowed advanced standing of even one year in the other, so that under the most favorable circumstances it requires five years' study to acquire both degrees at the present time, with every likelihood of the sixth year being added. Thus it seems not altogether improbable that, without adjustment of the difficulty, the Section of Stomatology may become almost limited in its active usefulness to the lives of present members.

I believe the good work done by this Section already, and the far-reaching benefits resulting from the great advance due to an understanding of the nature and treatment of diseases of the mouth, applied in a scientific manner, by association with other departments of medicine, have established the fact beyond the peradventure of a doubt, that from a clinical and scientific standpoint it has earned the right to urge upon each side that an effort be made to further the protection of further influence, by modifying for the purpose, in a reasonable manner, the exacting requirements upon those who desire to be fully equipped with both degrees. To take the medical graduate in one year through the necessary technique of operations upon the teeth, in order that he may become an accomplished operator in that short time is almost impossible. To require students of the dental college to take a full course in anatomy, physiology, chemistry and all the fundamental branches, the same as medical students, has been proven to be, for the average individual quite too much in addition to his mechanical instruction, having a tendency to cause neglect of the latter, but in dental schools that are connected with medical colleges and universities, it is always possible for a student, willing to make unusual effort, to take the regular course with the medical student, and at the same time fulfill the requirements of his dental studies and laboratory work. For such, the reward and encouragement should be that, having passed the same examinations, with an average equally as high as his medical brother, he will receive credit for those branches and be exempt from future examinations, so far as they are concerned, when he undertakes the study of medicine, also that the dental student so educated shall receive some mark of distinction in his degree, which will serve to note the difference in his favor over other graduates in dentistry, and that the holder of such a degree be allowed to finish his course of medicine in at most two additional years. On the other hand, medical students at colleges where both branches are taught may avail themselves of the opportunity to do required work under the instructions in dental operative and prosthetic technics, and having done so, be admitted to the senior year of a dental class with credit allowed them for this work done, even though it had been done while a matriculate in the school of medicine. Such an arrangement would in no wise tend to let down the bars in either profession, and would without doubt encourage many students to make this effort, the enviable result of which would be more fully educated men and a greater number brought up directly in line with the purpose of this Section.

The bibliography of the past year, in its valuable additions to science from members of our profession, particularly of this question, invites discussion in a most alluring manner were time and and your patience sufficient, but in order that all may not escape, and because of special interest to myself as bearing upon a subject, the clinical aspect of which has for some

time been the object of my investigation, I desire to call attention to the photographs of microscopic sections recently shown by Dr. J. Leon Williams of London, in line with others by Talbot and statements by Black demonstrating that the blood- and nerve-supply of the peridental membrane of the tooth is something quite different from that which is depicted in the illustrations of Gray and other anatomic authorities, clearly showing as they do, nerve filaments and nerve fibers communicating directly with the peridental membrane of the tooth from the main nerve-supply, a most important clinical consideration. Last year before this Section, in my paper on "The Hyperkinesis of the Muscles of Mastication," I endeavored to call attention to the fact that tooth-grinding or extreme pressure of the jaws, caused by irritation of the nerve-centers controlling those muscles, was a common etiologic factor intimately associated with neuralgia of the trigeminus, and other pains of the head, particularly in those forms of the headache which are the accompaniment of neurasthenic conditions. Since the writing of the paper referred to a number of very interesting cases have come under my charge, in which the character of the pain had been mistaken for reflex of uterine diseases, and for which there had been one or more operations performed in the hope of relief, but without success, which in every case was afforded by correction of the source of irritation, discovered to be in the mouth. In one case there was evident a condition such as might be attributed to what is known as eye-strain, and I desire to introduce at this time the expression "jaw-strain," as applied to a similar general condition resulting from an irritable weakness of the nerve-centers controlling the muscles of mastication and the trigeminal branches directly affected which, without going into more minute explanations, are easily accounted for by an examination of the photomicrographs referred to. Since through the peridental membrane we have as direct a connection with the main nerve-supply as had long been supposed to be through the apical foramen of the pulp of the tooth only, tooth-grinding could have produced an equivalent condition to that of eye-strain, which several writers claim to be the cause of at least 50 per cent. of all cases of hystero-epilepsy and other disorders of nervous origin.

Full of hope, strong in the faith that the essays before us—to which in closing I invite your attention—will add their mite to benefit mankind in the alleviation of suffering, and filled with a deep sense of our several obligations, I thank you for courteous attention, and the honor of addressing you in my present capacity.

ORIGINAL ARTICLES.

DIET IN DISEASE.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CHARLES H. SHEPARD, M.D.

BROOKLYN, N. Y.

There is no function of the human body so essential to its existence as the process of digestion, and it may be stated as a fundamental proposition that those foods having a natural proportion of the elements of nutrition are the most desirable for maintaining a correct balance of the system and retaining its vigor.

No infringement of this law is tolerated. When we attempt to nourish the body on any one element of food, such as starch, sugar or fat, it is sure eventually to prove a failure, and bring on gastric disturbance and functional incapacity. Whenever an excess of even the simplest and most appropriate kind of food is taken, the digestive organs become overtaxed. If this excess is persisted in, nature refuses its assistance and allows that which it can not utilize to remain unappropriated, from lack of digestive fluid to complete the process, and from being unacted on it soon ferments and entails manifold and untoward consequences. The large amount of fluids secreted by the different glands and mucous membranes prevent putrefaction and aid in the distribution of nutriment to the proper channels to sustain life. This shows the intimate relation between diet and disease. In fact, a carefully regulated diet has, in numberless cases, proved one of the best, if not the very best, corrective of disease.

In this land of plenty there is an enormous waste of food material by all classes, but of all wastes the worst is that of excessive eating, not only because it destroys the food, but for the reason that it produces many of the diseases that are attributed to other causes. When we consider how much suffering of body and mind results from systematically abusing the stomach, it will be understood and admitted that our people are great sinners against the laws of health. It is acknowledged by the best authorities that mankind as a rule in this country partake of about double the quantity necessary for the highest condition of health, and it should readily be seen that plethora can be quickly and safely reduced by abstinence, with water, warm or cold, to dilute and wash out the surplus. Inasmuch as our bodies are made up of what we eat and drink, and our health and happiness is largely dependent upon the proper selection of our food, no reasonable mind can for one moment doubt that our health is made or marred by that selection, and it becomes us as sensible beings to make a study of the subject, if haply we may thereby secure the maximum of physical vigor and intellectual force, for it is in proportion to his mental clearness that a man succeeds or fails in the many struggles of life. Both the quantity and quality of food are important, so that mankind shall be neither overfed or underfed, and thus preserve a happy medium that contributes to the most perfect condition of health.

Just so soon as people learn and obey the laws of health will they begin to realize and obtain the fullness of days which is their due, and which is estimated by many to be over one hundred years. If man had what he is entitled to, the birthright of a clean, vigorous constitution, which never comes of reckless parentage, and then could be brought up under the most sanitary influences, this would be the minimum of his years. The time will certainly come when it will be considered a disgrace to be sick, for that condition is only brought about through a transgression of nature's laws.

It is evident that as we progress in intelligence and refinement our food standard changes. Perhaps it would be more correct to state that as man improves in his dietetic habits he will advance physically, mentally and morally. Today, not only is less alcohol used with food than in former years, but fruits are more and more in demand, and it is equally true of grains and vegetables, and doubtless many of the

great variety of nuts will be found desirable, to the further exclusion of animal food. Nuts are fat-forming, heat- and force-producing, and more nutritious than animal foods, and are not open to any suspicion of disease-production. The nut-growing industry is of increasing importance and will be found largely remunerative in the not remote future. Then nuts will take high rank among the foods of our people. As compared with the nourishment they give, fruits and nuts have the least proportion of earthy salt. Animal flesh comes next, then vegetables, and fourth in rank we have cereals and pulses, which are shown to have the largest amount of earthy matter.

A union of the cereals with fruit, vegetables and animal food has so far produced the most satisfactory results, though the mass of mankind enjoy life and are well nourished without animal food. The educated Brahmin lives very simply, often upon one meal a day. As man advances toward a higher plane, he inevitably tends toward what, for want of a better term, may be called vegetarianism. Those capable of the greatest endurance subsist mainly upon the products of the earth. The Grecian athletes, who made the glory of the Olympian games, were trained on vegetable food. Those were the days when the Grecian outlines were the standard of physical beauty, both in face and figure. The eminent Professor Virchow says, "the future is with the vegetarians."

The first requisite in our diet is that of pure water. Man can live many days on water alone, for we are mostly made up of water, and disease can be quickly washed out of the system by taking nothing but pure water. This has been many times demonstrated. Impure water has been the cause of some of the most fatal epidemics. Another important requisite is that of pure milk. In infancy we live on milk alone, which may be called a perfect food, containing as it does all the elements of nutrition. Another important requisite is good bread, but when it is made principally from the starch portions of the grain, with the phosphates and other nutritive elements excluded, it is very far from being the "staff of life," as it is sometimes termed. The most perfect bread is made of the entire wheat, not too finely ground, and mixed with pure water, adding nothing but a little salt, and then baked in a quick or hot oven. This is the primitive form of breadmaking and contains all the nutriment of the grain. The greater the departure from this standard the more undesirable, from a health point, does the bread become. The more bread is raised by leaven or yeast, the greater is the destruction of the elements of nutrition. When we consider how much the popular bread of the day is robbed of its life-giving principle, it is not so much to be wondered at that the unsatisfied craving for perfect nutrition leads to the saloon and a thousand other ills. More than one physician thinks that the enormous increase in diabetes in this country is due to our modern way of living, and particularly the use of fine flour in bread and other preparations, which is deprived of a large proportion of the most important elements of nutrition. It has been many times demonstrated that children fed largely on white flour bread are found to be deficient in the bone-forming elements, and this is plainly shown in the teeth. Another thing that militates against the teeth of our people is the habit of using so much soft food. If we do not use our muscles they become weak and flaccid; so with the teeth, they decay and become

useless, the gums soft and the teeth loose. The reason we need the tooth brush so much, and have to call upon the dentist so often, is because of the large use of food that does not require mastication.

The most untoward results come from feeding infants and children with unsuitable elements of food, and at times allowing them substances such as common salt and lime, that by no possibility can be utilized as food. That so many live after passing through the ordinary ordeal demonstrates the wondrous vitality and power of resistance of the human race to morbid influences. Chlorid of sodium, or common salt, is by no means identical with the salt contained in fruits and vegetables; in these it has been organized and fitted for appropriation to animal life. From recent experiments in Europe, there is strong presumptive evidence that common salt, in excess, produces renal troubles leading to Bright's disease. Lime also, an important element in the formation of the teeth and bones, can not be utilized in the crude form of mineral lime; on the contrary, it delays and interferes with digestion, but in the organized form, as found in the whole wheat grain and other cereals, as well as in fruits and vegetables, it is prepared in the most perfect manner possible for the building up of the human framework, as these elements become digestible only after their assimilation by plants suitable for human food.

While condiments and seasonings are very popular, the fact remains that they are entirely innutritious, and serve to foster an artificial appetite. They destroy our appreciation of the finer flavors of the foods. At the same time they prove injurious to the health, by irritating the lining membranes of the digestive tract, and thus creating as a natural sequence an artificial demand for alcoholic mixtures. It is said of one of the Roman emperors that his taste became so vitiated that his food was necessarily seasoned with asafetida, in order that he might realize some taste of what he ate. Undoubtedly many of the vices that injure society and eventually result in crimes have their beginning at our own tables. We certainly can not expect to build up a strong vigorous constitution, capable of resisting disease, by feeding on ice cream, rich pastries and sweets. They do not furnish the bloom of youth. On the contrary, it has been found by reliable experiments that by providing the kind of food that goes to the nourishing of blood and muscle, the development of children has been forwarded to a remarkable extent.

Dr. Springer of Berlin announces that extracts from cereals, obtainable everywhere, are the best bone builders, and therefore well adapted to the growth and perfection of children. Here is his recipe: "Take two soup-fuls each of corn, barley, oats, rye, maize and bran, boil in four quarts of water three hours, allow to cool and then strain. If necessary add enough water to make a quart. A palatable yellowish fluid is obtained, which may be improved by the addition of milk for children." The results with several children placed under his care surpassed his anticipations. This has the merit of being equal in value to any of the extensively advertised food-nos-trums of the day, and is much less expensive. Secret foods should no more be encouraged than secret medicines, for some of them are simple frauds, particularly the so-called diabetic foods, and others are dangerous to the sick and well alike. The worst of all are the alcoholic beverages masquerading under the name of

malt. The best and most economical food materials for universal consumption are those in common use, and which need no fancy names. One authority says, in an attack of summer diarrhea in children under two years of age, all albuminous and starchy foods should be prohibited. It is the mature opinion of expert physicians that at such times, milk and the milk foods only tend to furnish fresh fuel for the growth of pathogenic bacteria in the gastro-intestinal tract. Give instead nothing but toast-water or barley-water for thirty or forty-eight hours. They contain plenty of nutrition for such conditions, and rarely produce any disturbance.

The list of foods that are said to be useful for this or that disease is almost unlimited, from onions, spinach, asparagus, cranberries, lemons, to figs, apples, grapes and prunes. Eczema has disappeared upon a discontinuance of starch foods and a substitution of fresh and dried fruits, milk, eggs and olive oil. The fact that a special line of diet is often curative for a large class of diseases is fully demonstrated by the different "cures" that are established in many countries, such as the grape cure in Southern France, the whey cure in Switzerland, and the koumiss cure of Southwestern Russia, and there are so-called fruit cures. Apples, oranges, lemons, bananas, prunes, tomatoes, etc., have been utilized at different times and in different ways for such purposes. The milk cure is another claimant for favor, and the dry cure, which consists in gradually reducing the amount of fluid taken into the system, also has its advocates, and there is the vegetarian cure as well as the beef and hot water cure, all of which have many followers, that seek the same end through different means. Fruits are among the most beautiful productions of nature, satisfying the esthetic taste as well as the palate. The purest water is contained in them. Their sugar is abundant and harmless, their acids cooling, refreshing and corrective of many untoward conditions of the body. The up-to-date physician recommends them largely, and they have been used to counteract the alcohol habit. The demand for fruit today is not only much greater, but a much superior quality is required than was prevalent thirty years ago.

An exclusive diet of fresh fruit for breakfast, without much change in the other two meals, has been found successful in relieving indigestion. One author claims to have cured himself of serious stomach troubles by means of this régime. The writer has made a trial of this plan for more than a year past with pleasing results. A short time ago a physician claimed that one meal a day of prunes was most beneficial to the nervous system, and would even make criminals more tractable. It is related of the Emperor Nero that he ate greedily of onions and garlic to improve his voice. Grapes are nutritious and the juice is said to contain sugar, tannic acid, bitartrate of potassium, tartrate of calcium, common salt and sulphate of potassium. The use of unfermented grape juice is deservedly increasing and taking the place of alcoholics in the practice of some of our ablest physicians. The delicious grape fruit is reputed to be a rival to quinin in the treatment of malaria, and the blackberry has long been considered as a sovereign remedy for summer complaints. The German analysts say that the apple contains a large proportion of phosphorus, and is admirably adapted to renewing the essential nervous matter of the brain

and the spinal cord. The old Scandinavian traditions represent the apple as the food of the gods, who when they felt themselves growing feeble and infirm, resorted to this fruit to renew their powers of mind and body. Those who cultivate the habit of eating a great deal of fruit are the gainers both in health and appearance, though it is well to heed the Spanish proverb, "Gold in the morning, silver at noon, and lead at night."

A water diet, or an entire abstinence from solid food for a limited time, and using water freely, has proved efficacious in a multitude of cases, especially in removing old tumors and enlargements of certain parts, such as goiter, etc., showing that the inherent vitality was sufficient to relieve the system of disease when the overplus was cut off and the system permitted time to eliminate the morbid accumulation.

An English magazine reports of the Northumbrian women, who came of a large framed race, and whose work lay in the fields, that they were hearty and buxom on a diet of oatmeal and milk, but as having sadly degenerated, become paler in color, stunted in size, and less capable workers, because wheat flour had supplanted oatmeal, and cheap tea taken the place of milk. . . . Tea is injurious when taken with or shortly after meals, because the tannin it contains tends to coagulate the albumen of the food undergoing the process of digestion. . . . Meat, fine flour bread and tea are the staple articles of food for a large part of our foreign-born population, as well as for some of the natives, and their children are fed in the same manner when quite young. This form of diet produces as a result, a pale, sodden complexion, dull eyes, flesh with no firmness, and individuals without stamina. . . . Children are more sensitive to nervous stimulation than adults. Their nervous system is extremely delicate. Even a slight irritation in the alimentary canal is sufficient to throw the child into violent convulsions. Therefore neither tea nor coffee is a fit drink for children. It is more than probable that the common use of these narcotics during childhood and youth is one of the factors that in later years produce the army of neurasthenics. It is stated by travelers in Brazil that the free use of coffee by the inhabitants is bringing about an evident deterioration of the people. This is conspicuously shown in their complexions and their nervous systems. By irritating the nerves that govern the heart action, coffee quickens the circulation, and in many cases induces cardiac palpitation. There are a few persons upon whose nervous constitutions coffee acts in the same way as alcohol.

It is frequently noticed that both improper quality and quantity of food has directly produced disease. When the horse, the cow, and many other animals are sick from overwork or exposure, they refuse their food, and when they begin to eat it is recognized that convalescence is at hand. This object lesson is worthy of imitation by the higher animal, man. Just so far as a departure is made from the laws of health, will the penalty be suffered, and this calls to mind the fact that in the South the planters are attempting to utilize for their cattle some of the dregs of their sugar mills, called "black strap." This may apparently work well for a time, but as it is not their natural food, in the end it is liable to result disastrously, as has the feeding of cows on "still slops," only it may come in a different form of disease.

That life and health are appreciated as priceless is shown by the American public in a misguided man-

ner, when it pays two hundred million of dollars annually for proprietary medicines. "All that a man hath will he give for his life," but he who pays out money for patent medicines is paying more for death than life. More and more it is believed that strength of body conduces to strength of mind and morals. Young men and women gladly place themselves on a restricted diet when training for some game or enterprise, and thereby receive many an object-lesson in the value of certain kinds of food to enhance or destroy their powers of endurance. The judgment that this or that plan of diet is the proper thing to ensure success makes it a pleasure even to those who have been educated in a vastly different school. How much more will the great majority of mankind, when they come to realize that the problem of life is dependent on the kinds of food and drink they habitually use, learn to enjoy those things which the judgment of scientific research tells them are conducive to their higher development and health, and thus shall we not only find that a consistent diet aids in the cure of disease, but in a larger measure tends to the prevention of disease. As a rule, however, most of us learn these facts through the medium of painful personal experience. Certainly a subject fraught with such important consequences is worthy of earnest study, and happy are they who early learn the lesson, and thus avoid many of the pitfalls of our day, and pass on to a serene old age. A good authority says, "Every one dies before his time. This is not strange, for during his whole existence, from the cradle to the grave, a human being, even if in good circumstances financially, is surrounded by unhealthy conditions. He eats scarcely anything that is not adulterated, wears hardly anything but what is shoddy, and ignorantly neglects both personal and public cleanliness. 'Cheap, let's get it cheap.' Purity is the last consideration, and no matter at what age he dies, he has by this constant use of adulterated products, been deprived of several years of life." Most truly did Seneca say, "Man does not die, he kills himself." An English authority, in speaking of the alimentation of old age, says that in advanced years the stomach can no longer endure the strong food of former days. The period of decline is characterized by several changes, both in the voluntary and involuntary muscles of the body. A want of tone affects the circulation generally, the digestive system becomes weaker, and the mental powers share in the decreasing vitality. For healthy old age the body should be lean and spare, like that of a school-boy, the foods being reduced in quantity and animal food restricted. If the decline in energy is not met by a corresponding diminution of the demands upon it, the result is sure to be an accumulation of fat, and retrograde changes, producing gout and rheumatism. In advancing age the food consumed should approach that of youth, and in second childhood, a return be made to the bread and milk of early days.

The hereditary vigor with which all are endowed, some more and some very much less, is what may be called personal equation, and may easily explain how it is that some individuals can go on transgressing the laws of health in a most reckless manner and yet outlive others who are most scrupulous in the care of their health. The fact is that many of the latter have found themselves obliged to lead a careful life, else they would have to pass on altogether. Those who squander their stock of vitality, never see the fullness

of their days, and their children, if they are unfortunate enough to have any, are still shorter lived. It is what we eat and drink that makes or mars our condition. If we partake only of the pure, we shall be clean and pure throughout. If on the contrary we handle the unclean and attempt to build up with gross material, it will result in uncleanness, disease and death.

Those who are seeking to retain their health as well as those who desire to regain it, must necessarily observe simplicity in their diet, and uniformity in the time of meals: The highest efficiency of the forenoon work is not promoted by a hearty breakfast, nor is a hearty luncheon helpful to the afternoon duties. For those who are actively engaged during the day, the evening seems most desirable for the principal meal. For centuries this has been the practice of the people of many countries. Nothing should be eaten between meals, nor when the body is exhausted. Scientific experiments have demonstrated that fatigue is a disease, and that it is possible to produce the same symptoms in one animal by inoculation with the fatigued serum of another, showing that overwork produces an actual poison in the system. Worry is equally antagonistic to good digestion. A little rest and banishment of care in preparation for a meal should become a habit. It means preserved health and lengthened life. Three meals a day are ample, many flourish on two, and for some persons one meal a day has been found sufficient. With good food, and the best is none too good, well cooked, and well masticated, the stomach will do justice, especially if only gentle exercise is indulged in for an hour or more afterward. The digestive process usually occupies the stomach from two to three hours. It is always better to eat too little than too much, this is proved by common observation. Indigestion and nightmare are the penalty of over-indulgence. It is not in the quantity eaten that one is benefited so much as in the amount that is assimilated and appropriated for the needs of the body. Nature's mode of saying that the system is in no condition to take care of what may be forced upon it, is indicated by a want of appetite. The eating of candy is pernicious because of the sugar of which it is made and the inopportune times it is usually partaken of as well as the poisons which it sometimes contains. Nothing but pure water should be partaken of between meals or when one is inclined to enjoy exercise before breakfast. There will be more general invigoration if the stomach is not then called upon to work. The morning hour is a choice time for either mental or physical exertion, as it follows a long period of rest and recreation, and the stomach is quiet. Ordinarily there is but little work done after the late and hearty dinner, and as there is but little tissue waste during the hours of sleep, and that is the time when assimilation is most perfectly carried on, the body has then sufficient energy accumulated and stored up to meet all demands of the morning's pleasure or exercise. Any severe exercise is best taken on an empty stomach, because then the nervous energy is free and can be concentrated on whatever is desired to be accomplished, but when the stomach contains an undigested meal, a portion of vital energy is required for the work of digestion, and the more it is interfered with the worse it is for the individual concerned.

He who desires the supreme vigor of health, can have no use for alcohol, tea, coffee or tobacco. With pure water, well-chosen wholesome food, the exclusion

of all narcotics, and clean habits, together with our bracing climate and active pursuits, and the intermixture of the most enterprising races of the world, the American people should develop into the highest type of individual, family, and national life.

Fortunately the application of science to daily living is on the increase. Education is beginning to affect domestic life and in the near future our people may learn how to prepare a diet that will promote their health and development. The cooking schools are an indication of progress in this direction. There is no reform movement that appeals so directly to our daily needs as reform in diet, and herein the physician may find a field for some of his noblest work, when considered from the standpoint of morality and hygiene. What we shall eat, and what we shall drink, are ever recurring problems, and upon their wise solution largely depends the health and happiness of mankind.

81 Columbia Heights.

THE IMPORTANCE OF A PROPER DIETARY FOLLOWING LAPAROTOMY.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June, 7-10, 1898.

BY C. W. WATTS, M.D., Ex-U. S. SURGEON.

MOBERLY, MO.

We propose to divide the subject into three heads: the dietary preceding, the dietary at the time of, and the dietary following the operation.

In order to be correctly understood we define a laparotomy to be any surgical operation performed upon the contents of the abdominal cavity at any point between the ensiform cartilage of the sternum and the symphysis pubis. And we propose to draw also the line of distinction between the operation performed on the organs contained therein and the other viscera, from the fact that the dietetics should be different from those necessary in cases of appendicitis, and operations performed upon the stomach and intestines. From an experience that covers a number of years, both in private and hospital practice, we are disposed to attribute the fatal results following operations on the abdominal cavity, more to the neglect of a proper dietary than to the direct result of the laparotomy. The surgeon who performs the operation is not to blame, but the one who has charge of the patient before and after the operation.

Before any operation is performed, for at least ten days, the patient should be prepared for the operation by a proper diet. The *prima viæ* from the buccal cavity to the anus should be thoroughly emptied and cleansed by antiseptics and aseptics. Not a single particle of extraneous matter should be left. After this cleansing process has been completed a fluid diet should be commenced and kept up until the hour for the operation has arrived, when all dietary measures should cease until the operation has been completed; then a plain nutritious fluid diet should be kept up until the patient is dismissed. If it be a gastrotomy, a gastro-enterostomy, an enterotomy, or the removal of an appendix, the diet required in these cases is one by enema in preference to *per orem*, for reasons too plain to mention. On flushing the colon and as far up as the sigmoid flexure, you can give nourishment in all these flushings, with the exception of the one used to relieve the flatus and gaseous distention of the

intestines, which should be of simple hot water sterilized.

Supporting the system by nutritious enema is almost an unknown quantity among surgeons. Only those who have had practical experience are competent judges of its beneficial influence.

What we mean by nutritious enema are euema composed of sterilized milk, wine-whey, animal broths, etc., introducing into these enema any antiseptic that the surgeon may deem necessary. As surgeons we have not respected the digestive glands of the intestines sufficiently. We have not been disposed to give the stomach or intestines involved as much rest as they demand or require when being repaired by the surgeon. We have depended more upon the *vis chirurgical* and ignored the *vis medicatrix naturice*, or the neglect of giving Nature, Dame Nature, the privilege of exercising her proper functions of recuperating energies. Many fatal results from the various laparotomies performed at the present day are the direct result of ignoring Mother Nature.

In operations upon the ovaries, kidneys, uterus and liver we can allow more generous diet, and can give well-digested fluids and solids, but in cases of stomach and intestinal operations we must adhere strictly to a fluid diet, given in small quantities and not too often repeated. Especially is this true where a section of the intestine has been removed. In this operation, as in a fractured rib, we require to apply adhesive strips to control the respiratory muscles. So in the enterotomies, we must prevent the peristaltic action by not inviting it by the administrations of food. Keep the stomach empty and let it rest until the intestinal wound has healed, which is but a short time. The laparotomist approaches his case with a good deal of confidence of success if his patient has had a careful dietetic preparation for the operation, and if he is certain that the dietetic precautions will be adhered to until convalescence has been completed. Too many operators are reckless and careless, and beget as a result, failure—failure invited by their reckless procedure. Too many are anxious to operate, regardless of the condition of the patient. Nowhere within the domains of surgery is the aphorism truer than in the saying, "haste makes waste."

Prepare your patients for the operations. I had rather amputate a limb upon a full stomach and bowel with assurance of success than to plunge my knife into an intestine or appendix with the same stomach and bowel loaded with their contents. Fortunately for humanity our noble profession is working up along this line. The day is not far distant when any form of laparotomy will be a comparatively safe operation, provided due regard has been had to the dietetic part of the treatment. More credit is due to that careful and painstaking physician who prepares his patient for the operation and then leads him safely through a proper dietary following than to the operator who does the work. All true surgeons will admit this. Examine the statistics of all laparotomies performed in this and the old country, and their history attests the truth. Of course we have no reference to those cases where an immediate operation is demanded. Fortunately, these cases are but the exceptions to the rule that governs proper treatment in the majority of cases. Every year has proven in its results the necessity of a proper dietary. Successful results are so sure to follow a proper dietary that it will soon be that any surgeon who neglects it should be held responsible and sub-

ject to prosecution for malpractice. There is no excuse under the heavens for reckless surgery, or for a surgeon who ignores the recuperative powers of nature. Who is so egotistic as to believe that his own surgical procedure will be vindicated by an offended nature? In the language of the immortal, illustrious Gross, "Respect nature, gentlemen, respect her. Relieve her of any dead parts, but for God's sake don't attempt substitution on her." Good, pure water is fine food, is easily digested and contains tissue properties. Good milk properly prepared is nutritious and safe, wine-whey is good, peptones and peptonoids are, to say the least, doubtful. I had rather my patient live on nothing than to use them in many cases.

Total abstinence is a fine diet in many cases. I never knew a laparotomy patient to die from starvation, but I have known them to die from overfeeding and neglect of a proper dietary.

THE IRRATIONAL AMERICAN BREAKFAST, JUDGED BY OUR PRESENT KNOWLEDGE OF THE PHYSIOLOGY OF DIGESTION.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY BOARDMAN REED, M.D.

PHILADELPHIA.

A witty Frenchman once remarked in substance that Americans partook of a dinner at breakfast time. It is a fact that on the continent of Europe it is the almost universal custom to break the fast in the morning with a very light meal consisting generally of little, if anything, besides rolls and coffee or chocolate. In no other country, probably is so hearty a breakfast eaten as in these United States. This may or may not be prominent among the hygienic faults that make Americans the most dyspeptic people in the world, but it is doubtless one of the causes. It is not reasonable to expect of the digestive organs as energetic and efficient work in the early morning as later in the day. The circulation is then less active and the nervous system not yet aroused to its fullest energy. One would naturally suppose, therefore, that the gastric, pancreatic and intestinal juices would not be so readily supplied in the quantities necessary to digest a very hearty meal at the breakfast hour as some hours later. Healthy, vigorous persons, who exercise much out of doors, can so adapt themselves, no doubt, to the habit of beginning the day with a heavy meal, and such persons may not be the worse for it; but it is different with dyspeptic and delicate people from whatever cause. These nearly always do better when given some light nourishment soon after awakening, their first substantial meal being taken at a later hour.

But this beginning of the day with a large complicated meal, scarcely less in extent and variety than the dinner, is not the only dietetic error of which the majority of our people are pre-eminently guilty. The relative order in which the average American takes the various kinds of foods entering into his generous breakfast is in defiance of the teachings of physiology. For example, it is well established that the digestion of starch is begun by the action upon it of the ptyalin in the mouth, as well as on its way to the stomach and during the first twenty or thirty minutes of its sojourn in the stomach—that is to say, while the gastric contents continue to be either

neutral or only faintly acid. The percentage of acidity at which starch digestion is arrested is stated differently by different authorities. Ewald and Boas found it retarded by .07 per cent. of hydrochloric acid and stopped by .12 per cent. Chittenden states that it is stopped by .003 per cent. This is reached by the normal stomach at the end of the first fifteen or twenty minutes after the beginning of a meal and in much less time when the secretion of hydrochloric acid is excessive, as it very frequently is with dyspeptics. When meat or an animal broth forms one of the earlier courses of the meal, the stomach contents become acid sooner than when milk or vegetables or cereal food is taken. It follows then that our amylaceous foods when forming part of a mixed meal should: 1, always come in the earlier courses, and 2, be as thoroughly masticated and insalivated as possible, so as to insure a prompt conversion into the forms of sugar in which only they are capable of absorption and assimilation.

The breakfasts which are served in most of the better-class American hotels, as well as in a large proportion of the wealthier private families in this country, begin with fruit (often highly acid kinds, such as grapes, oranges, or grape fruit), followed by some form of mush (largely starch) washed down with milk or cream, and with scarcely any admixture of the saliva. Enough of the sour fruit has often been taken before to render the stomach contents too acid probably for the digestion of the farinaceous foods to take place, even if any saliva—the only fluid capable of digesting them which they can encounter before entering the duodenum—had been incorporated with them. In the table given by Boas as representing the results obtained by both Ewald and himself, the organic acids are credited with a decided power of inhibiting the digestion of starch, though less than that exercised by hydrochloric acid.

The third course is usually beefsteak or mutton chops, which, in the normal stomach are almost sure to stimulate the secretion of the gastric juice to a degree which carries the acidity of the stomach contents above the starch-digesting point, supposing that the acid fruit of the first course has not already done this. To render it still more impossible that any further starch digestion should take place in the stomach at this stage of the breakfast, most persons, including children and healthy young adults having presumably an abundant gastric secretion, are usually encouraged to stimulate their peptic glands to a still greater secretion of the acid gastric juice by a free use of pepper, hot sauces or other condiments. If the meats were taken without accompanying or following starchy foods, it would not be so bad, but as a rule potatoes and hot bread in some form are eaten at the same time, and very often the meal is topped off with griddle cakes and syrup, one of the most indigestible and flatulent of the combinations of carbohydrates.

Another peculiarly American habit is the drinking of ice-water, often in large quantities, with every meal. This retards digestion, both by lowering the temperature of the contents of the stomach and by an over-dilution of the gastric juice. It is also capable of damaging seriously the delicate mucous membrane and ultimately causing catarrhal inflammation in patients otherwise predisposed to that affection. Is it any wonder that Americans so generally suffer from stomach troubles, and especially from the manifold consequences of the indigestion of starch?

If one must eat so large a meal in the morning, the viands might be served in the following order with much less risk of harm: 1, cereals well masticated and accompanied by rolls or bread and butter to carry down plenty of saliva; 2, potatoes with more bread and butter if desired; 3, meat or eggs, accompanied by a little salad; 4, fruit; 5, coffee or chocolate.

A NEW THERAPEUTIC MEASURE—THE ELECTRIC-LIGHT BATH.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. H. KELLOGG, M.D.

BATTLE CREEK, MICH.

In a paper read before the American Electrotherapeutic Association, at its meeting in New York City, in September, 1894, I presented a description of a new method of applying heat to the body, using, as the source of heat, the incandescent electric light. I also gave in this paper the details of many experiments which I had conducted for the purpose of determining the physiologic effects of this bath, and also a comparison of the effects obtained by this bath with those obtained by the Turkish and Russian baths. The general conclusions to which I was led by this investigation were as follows:

1. The electric-light bath stimulates the production of the elimination of CO_2 in a very marked degree. In an electric-light bath lasting for thirty minutes, the percentage of CO_2 elimination during the last ten minutes was 5.13, as compared with 3.60, the average of CO_2 elimination before the bath. In a Russian bath the percentage of elimination was 3.96. In a Turkish bath of thirty minutes' duration the percentage of CO_2 elimination was 4.01.

2. The elimination of nitrogenous wastes, represented by urea, and also the elimination of total solids, was greatest in the Russian bath and least in the electric-light bath, doubtless the result of excessive skin activity.

3. The amount of perspiration produced by the electric-light bath was fully double that induced by the Turkish bath in the same length of time. The time required for the first appearance of perspiration was, in the electric-light bath, about one-half that in the Turkish and Russian baths. The reason for this is apparent when one recalls the fact observed by Bouchard, that perspiration begins when the temperature of the blood has risen .7 degrees F. above the normal. In a study of the physiologic effects of the electric-light bath in 1891, when I made my first experiments upon this subject, I found the internal temperature was raised by the bath 1.6 degrees F. in five and a half minutes, the surface temperature rising in the same time 2.3 degrees F.

From these facts it is evident that the electric-light bath raises the temperature of the blood more quickly than any other form of bath. The reason for this is apparent when it is remembered that the skin and other structures of the body readily permit the transmission of the radiant energy of the electric light, which, entering the body as light, becomes by the resistance which it meets transformed into heat. This heat is developed in the deeper tissues instead of being slowly carried in by conduction from the surface. The skin is, like glass, a poor conductor, but at the same time allows the passage of radiant energy

in the form of light. This fact explains the readiness with which perspiration is induced by the electric-light bath.

Prior to my own experiments upon this subject there had been, so far as I can ascertain, no scientific study of the physiologic effects of the electric light upon human beings. William Siemens, in 1880, published a paper giving an account of some very interesting experiments which he had made for the purpose of determining the influence of the electric light upon plant life, from which he drew the following conclusions:

1. That the electric light is efficacious in producing chlorophyll in the leaves of plants and in promoting growth.

2. That an electric center of light equal to 1400 candles, placed at a distance of two meters from growing plants, appeared to be equal in effect to average daylight at this season of the year (March), but that more economic effects can be attained by more powerful light centers.

3. That the carbonic acid and nitrogenous compounds generated in diminutive quantities in the electric arc produce no sensible deleterious effects upon plants enclosed in the same space.

4. That plants do not appear to require a period of rest during the twenty-four hours of the day, but make increased and vigorous progress if subjected during the daytime to sunshine, and during the night to electric light.

5. That the radiation from powerful electric arcs can be made available to counteract the effects of night frosts, and is likely to promote the setting and ripening of fruit in the open air.

6. That while under the influence of the electric light, plants can stand increased stove heat without collapsing, a circumstance favorable to forcing by electric light.

Numerous observations have also been made by other persons, among whom the first to make experiments was Hervé-Mangon (*Compt. Rend.*, liii, 243). These experiments showed that the electric light was capable of producing the development of chlorophyll and inducing heliotropism, or the phenomenon of turning or bending toward the light. Experiments made in 1869 by Prillieux (*Compt. Rend.*, lxi, 410) showed that the electric light is capable of promoting assimilation in plants or decomposition of carbon dioxide and water. In 1889 and 1890 a series of very important experiments were conducted at the Agricultural Station of Cornell University to show:

1. That the electric light may be used under such conditions as to make it fairly comparable with sunlight in its power to promote protoplasmic activity.

2. That the electric light acts as a tonic to plants so that they are able to endure adverse conditions which otherwise would cause them to collapse.

3. That the electric light is a true vital stimulus, since the effect of its use at night upon plants is essentially the same as that of the longer day of the Arctic upon plants growing in those regions.

These observations agree with those of Siemens, made some years before, in which it was shown that a plant exposed to ordinary daylight and six hours of electric light in addition, "far surpassed the others in darkness of green and vigorous appearance generally." Strawberries and other fruits were fully equal to those raised under ordinary conditions, and grapes were of stronger flavor than usual. Melons were remarkably

large and aromatic, and bananas were pronounced by excellent judges to be "unsurpassed in flavor."

It has been known for many years that workmen engaged in electric-light plants, or otherwise exposed to the influence of powerful arc lights, sometimes suffer effects similar to those of sunstroke, showing that the electric light is capable of producing profound impressions upon the nervous system and the tissues of the body in general. It was a knowledge of these facts that led me to undertake investigations which finally resulted in the development of the electric-light bath. Having engaged in sanitarium work for more than a quarter of a century, in which time I constantly made use of the sun bath, as well as other modes of applying heat to the body, I thought



Fig. 1.—Upright cabinet for electric-light bath.

it worth while to make careful investigation of the value of the electric light as a source of thermic energy. I had constructed, as early as 1891, various experimental forms of baths which I have gradually perfected. Some of these admit the whole body in a sitting posture, others lying down. Some are adapted to the application of heat to a circumscribed portion of the body, as the trunk, the feet or the spine. The accompanying cuts show the several forms of bath that I have in use at the present time. These baths are now employed in various places in this country and in foreign lands.

The electric-light bath has been received into special favor in Germany. Professor Winternitz, the greatest living authority on hydrotherapy, speaks as follows respecting the electric-light bath in his re-

cently published treatise, "Physiologische der Hydrotherapie": "The electric-light bath is a method of recent origin and equal to the sun bath. It was at first employed empirically. (Only the arc light was thus employed, and in the most inefficient and unscientific manner.) Dr. Kellogg of Battle Creek has constructed one for the entire body, as well as for the separate parts thereof. Various shaped cabinets are supplied with mirrors internally and a great number of electric lights. In the center of a large cabinet is a chair upon which to place the patient; in a still larger cabinet an entire bed can be admitted with the patient in a lying position, thus enabling the light to be thrown on the entire body. In Germany one can see in certain places, Chemnitz (Dresden) instead of the small electric lights, arc lamps (carbon) without glass, placed in the corners of the large cabinet.

"It has been undoubtedly demonstrated that radiant heat penetrates the tissues much better than conducted heat, and it is quite probable that cellular activity is powerfully changed by these rays of heat (either qualitatively or quantitatively). The effects of the vapor bath can be brought about in the cabinet, and the differences thus far determined are the following: The giving off of the $C O_2$ is more abundant than in the vapor bath, and what is especially noteworthy is that the perspiration appears very soon and at a very low temperature, and is very profuse. We notice the earlier appearance at 95 degrees F. (Kellogg averaging 85 degrees F.), while in the vapor bath a much higher temperature is generally required to produce the same effect. The time at which the perspiration in the electric-light bath appears averaged three and one-fifth minutes, while



Fig. 2.—Horizontal cabinet for electric-light bath.

"As soon as the electric source is introduced the entire body is flooded by the light, the rays are constantly reflected by the mirrors so that the entire body is very uniformly and intensely illuminated.

"The temperature of the atmosphere in the cabinet varies according to the source of light, and is increased very much by the use of arc lamps (167 degrees F. and over), while by the use of the incandescent or glow light, a slow increase in temperature takes place, and hardly reaches the above-mentioned temperatures. The increase of temperature when globe lights are used may be easily influenced by introducing more or less lamps or globes which have a greater or less degree of exhaustion. Those lights which contain the greatest amount of air give more heat than those which have been more thoroughly exhausted. The effect upon the body is, as far as our limited observation goes, equal to that of a vapor bath, but differs materially from it.

in the vapor bath almost five minutes was required. Finally, the quantity of perspiration in the electric-light bath is considerably larger. That the rays of heat here play the most important part, and that it is not on account of the temperature of the air in the cabinet, is further shown, for instance, by the fact that the external surface of the thighs, which were directly opposed to the light, perspired much more rapidly and profusely than the inner surfaces which received only reflected rays. Within ten to thirty minutes the temperature reached 104 degrees F., pulse 160, respiration 42, with symptoms of fever-like condition. We have thus far employed the electric-light bath, like the vapor bath, only in a few disorders, such as chlorosis, chronic rheumatism and gout, and have obtained satisfactory results. More extensive experience is wanted. Kellogg reports very favorable results of treatment of chlorosis, gout and a number of cases in which there is need of increased

metabolism. Lahman reports regarding psoriasis: "As we now possess a thermic method in the electric-light bath by means of which we are able to measure the exact dose, and knowing the power influence on cell-life and the entire organism, we believe this method of thermic application should receive an important place. It enables us to influence a number of maladies much more rapidly, better and more intensely than we have heretofore been able to do."

Fig. 6 represents the apparatus as used by Professor Winternitz. Several German manufacturers are making electric-light baths of different sorts, and the bath is rapidly gaining favor among German practitioners. I am sorry to say that in Germany it is also being exploited to a considerable extent by charlatans.

As stated in the paper above referred to, I believe that the peculiar value of the electric-light bath is due to its efficiency as a means of communicating heat to the body. In the Turkish bath, heat is communicated to the body chiefly by the convection of heat and air. Air, being a very poor conductor, communicates heat to the body very slowly. Absorption of heat is further hindered by the skin, an excellent non-conductor, and by the rapid evaporation of moist-

manner as it penetrates any other transparent or translucent medium. In case of the water bath, Turkish bath, vapor and hot-air baths, heat reaches the interior of the body by conduction, passing through successive layers of living tissue which, while affording great resistance to conduction of heat, readily allow the passage of the luminous rays from the incandescent film. It is true that non-luminous as well as luminous heat waves are thrown off by heated bodies, the whole gamut of radiant energy in the form of heat being stated to consist of fully four octaves, more than two of which are below the red, while a whole octave is above the violet, the luminous range occupying a space only a trifle greater than what would correspond to a chord of the sixth in music. But the lower octaves of these heat waves seem to be far less active than those included within the luminous area and above it. I do not consider that there is any specific effect obtainable from the electric light which would not be derived from any equally efficient source of radiant heat, and on this account I should prefer to use the term the *Radiant Heat Bath* rather than *Electric-Light Bath*, as the former term leaves room for the employment of any luminous source of heat



Fig. 3.—Electric-light spine bath.



Fig. 4.—Electric-light trunk bath.

ure upon the skin, whereby it is cooled so rapidly that it is possible for a man to enter and remain for a considerable time in an atmosphere far above the boiling point. I have several times been in a Turkish bath at 300 degrees and suffered no inconvenience. The heat derived from the electric light, however, enters the body by radiation and not by convection.

The skin, as well as the air, is to a large extent transparent to radiant heat, and the same is true of all the living tissues. This is evidenced by the phenomena of transillumination. By a speculum placed in the vagina or rectum, and a suitably arranged electric light of 16- or 32-candle power placed over the abdomen, one may see the interior of the pelvis illuminated and made to glow with a bright red light, the red color being due to reflection from the red corpuscles of the blood. Even the bones are transparent to light when in a living state. This is clearly shown by placing the hand between an electric light and the eye with the fingers in close contact. The hand being placed near enough to the light, the whole finger will be seen to be illuminated by the light and not simply the soft parts. Light penetrates the body in the same

which may possess properties identical with those of the electric light.

In the incandescent electric-light bath perspiration is induced at a temperature of 85 degrees F. The air about the patient is usually the same as the ordinary room temperature, while the Turkish bath requires 150 to 200 degrees F, and the Russian 120 to 140 degrees F. Pure air at ordinary temperature is provided for the patient in the electric-light bath, instead of the heated impure air of the Russian or Turkish bath. The electric-light bath does not depend upon the effect of the heated air surrounding the patient, as in the Russian or Turkish bath, but upon the radiant energy which passes in straight lines from the incandescent filament into the patient's body without heating the air, the air about the patient being of the ordinary temperature; just as a person standing in front of a log fire out-of-doors on a frosty night may expose one side of his body to intense heat, while the other is chilled by the zero atmosphere which surrounds him.

A score or more of these baths are now in use in this country and in different parts of foreign coun-

tries, and with these baths several hundred thousand applications have been made within the last few years, and the results have been such as show that it is destined to be permanently recognized as one of the most effective agencies for combating a large variety of morbid conditions.

In auto-intoxication the electric-light bath is particularly helpful, as it not only stimulates elimination through the skin, but by penetrating the tissues, stimulates the processes of oxidation whereby toxins and waste matters are prepared for elimination. By accomplishing the results required of it in so short a space of time the electric-light bath is comparatively free from the exhausting effects which often result from the Turkish bath, the hot immersion bath and other modes of inducing perspiration. In the treatment of the rheumatic diathesis there is no agent which so promptly affords relief as the electric-light bath, since it adds to the powerful eliminative effects of heat the soothing influence of light upon sore muscles and joints. In obesity, likewise, the electric-light bath proves a sovereign aid through the pene-



Fig. 5.—Electric-light trunk bath in use.

trating power of its rays, which stimulate the processes of disassimilation, while at the same time aiding the elimination of débris.

Nervous headache, or migraine, now pretty generally recognized as a toxemia, yields readily to the systematic employment of the electric-light bath in connection with the proper regulation of diet. The electric-light bath enjoys the great advantage over other methods of applying heat in that it produces strong atonic effects, at the same time that it encourages powerful elimination.

As a prophylactic, the electric-light bath possesses a high value, especially for persons who are compelled to lead a sedentary life, such as teachers, doctors, lawyers, preachers, judges and professional men generally, and to a still greater degree by the majority of women, and which necessarily results sooner or later in disease and premature death from the accumula-

tion within the body of those poisons which are destroyed or thrown off through active exercise in the open air. The electric-light bath is the best of all substitutes for muscular activity; for persons whose business necessarily keeps them confined indoors, it is the most invaluable means of maintaining sound health. The importance of skin activity as a means of maintaining health is intuitively recognized by the dwellers in the Arctic region. Every Laplander's house has a sweat-room connected with it, in which every member of the family takes a weekly sweat followed by a plunge into a snowbank during the cold and inactive season of the year.

In this country a vast number of people, especially dwellers in cities, are daily suffering from the deteriorating influence of a sedentary life, to whom the electric-light bath, combined with a cold shower bath,

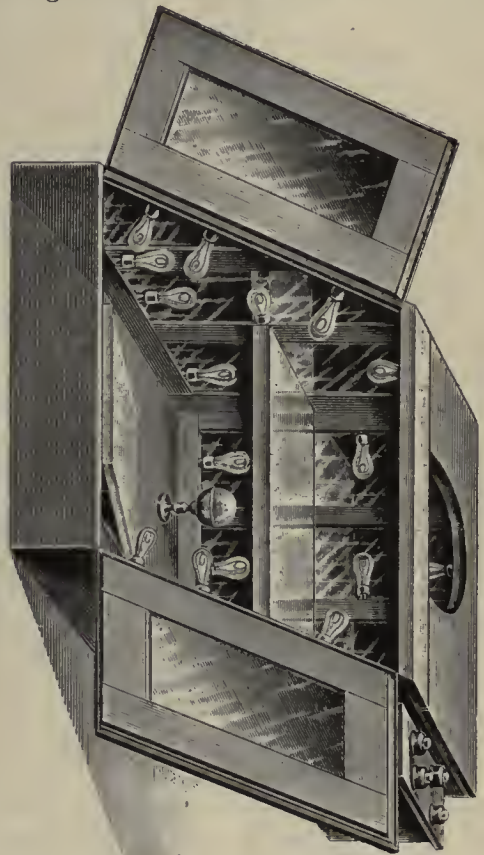


Fig. 6.—Cabinet for electric bath (Wintemitz).

would prove an inestimable boon. An especial advantage of the electric-light bath is the comparatively small cost of installation. The Turkish and Russian baths require expensive heating apparatus, furnace, steam boiler, in addition to fireman and engineer and frequent visits from plumber and steamfitter to keep everything in order. The electric-light bath is complete in itself, requiring no greater expense in installation than the running of two small wires for a short distance. The bath can be placed in the back room of an office, or, for private use, may be placed in a bedroom, or even in a bathroom. Another very great advantage is the small expense involved in the maintenance of the bath. After the bath has been installed and connected with the city current, the expense for maintenance is simply the cost of the current. This expense is incurred only while the bath is in actual operation, whereas the expense of the Turkish or

Russian bath is more or less continuous, as the bath must be held in constant readiness for use. The usual length of an electric-light bath is from two to ten minutes, according to the effects required, the average length being about five or six minutes. This would make the cost of a single bath $2\frac{1}{2}$ to 3 cents. There is practically no cost for repairs. There is nothing to wear out in the electric-light bath except the lamps, and these are guaranteed to last a thousand hours, which would furnish an electric-light bath every day for fifteen years. The electric-light bath is always ready for use. It is only necessary to turn on the current, and the light shines out instantly, and with its full intensity. Another touch of the button, and the heat is removed wholly or in part, as quickly as it came. Thus the heat may be instantly and perfectly modified to suit the requirements of each individual case.

By a number of simple appliances it is possible to localize the electric-light bath at will. For applying heat to circumscribed areas of the surface the electric light is superior to all other sources of heat. In use it is far more convenient than the fomentation, hot bags, or any similar appliance. I am sure that the radiant energy of the electric light penetrates the tissues to a depth of several inches. This I proved by actual observation, as before intimated. For deep-seated pain, as well as for the relief of hyperesthesias of the skin, I know of no remedy more valuable. Many applications of this sort have been made by myself and my colleagues, several thousand in all, and I have constant reason to be grateful for the acquisition of this therapeutic measure, and it has afforded relief to many cases which have stubbornly resisted all other therapeutic means which I have been able to employ.

After having employed this bath in several thousand cases I feel justified in urgently inviting the attention of the profession to test its value, and I feel sure that a study of its merits will lead to its practical application in the treatment of a great variety of chronic ailments, many of which so obstinately resist ordinary therapeutic measures.

AUTO-INFECTION AND PATHOGENIC PHYSIOLOGY.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. B. NEWTON, M.D.

STAFFORD SPRINGS, CONN.

The increasing knowledge of pathologic anatomy and pathogenic physiology tends to evolution in therapeutics affecting our remedial agents. We discover that they have more or less definite value; they have their rise and fall. The drug extolled today by high authority we find does not come up to the manifesto of the manufacturing chemist and may be obsolete tomorrow. When antifebrin was first introduced, a child was brought from New York City for treatment. Their physician had prescribed this drug in 2-grain doses, to be given every two hours if there should be a rise in temperature. After they had given it for a couple of days, the nurse noticed cyanosis and coldness of the extremities, with failing pulse. This fact was a valuable one to us. It is now found to have its effect as an antipyretic by depressing the heart, it has a directly paralyzing action upon the cardiac muscle.

There is evidence that toxicologic effects are less common after the use of acetanilid, which does not keep the temperature down quite so long as the other antipyretics. To guard against possible accident, strychnia or quinin act favorably with acetanilid, on similar principle that we combine morphia with atropia. When the hypodermic method of using morphia was introduced, there was much precaution used to avoid the introduction of air, which might act as an embolus and cause death, and also might have a toxic effect by way of excitation of the peripheral nerves. It is now found that these dangers do not exist. We have the history of a case of supposed admission of air hypodermically with morphia which was followed by immediate death, when this method was first used. It cast much discredit upon the experiment, though the patient would have died if it had been taken by way of the stomach, as a result of the disease for which it was given. Our pathologic studies have also caused the evolution of antiseptics. The time was when an unclean skin, foul air and environment were disregarded by the surgeon. Lister began the war against microbic dirt. The mercuric bichlorid had its rise as a germicide, but its fall was only in the matter of lesser strength. It was found to act as a poison when poured into the abdominal cavity of the strength of 1 to 1000—it was reduced to 1 to 5000 and 1 to 10,000. Carbolized water was used of a strength which acted as a toxic irritant upon the tissues. The room was misty with carbolic vapor from the steam atomizer; the operation was performed in its cloud with hands dripping in the supposed germicide. Then came the announcement that the spores of the germ the vapor was aimed at could not be killed with oil of vitriol or boiling water. Then came iodoform, its villainous mephitic odor lingering in the operating room with the persistence of Mary's little lamb. It is now found that a solution of sodium chlorid answers equally as well in washing the field of operation. Lawson Tait uses water drawn from the tap, with equal success. Absolute cleanliness is where we are today in the evolution of antiseptics. It is a satisfaction to know that in the evolution of the treatment of idiopathic diseases we have found a definite cause—a germ, a toxic ferment, the product of which acts as a specific poison, "touching the life of all the blood corruptibly." If the microscope does not reveal to us all the toxicoses of a large family of ailments, it is because of the difficulties of chemic and microscopic study, but which are being overcome, and knowing the conditions of their inner development, we shall be able to prevent their destructive work.

Of the remissions of fever, its limitations, its dangers and its recurrence as an autumnal fever has always been known; but in this generation we have the probable discovery of its cause and individuality. Previously treatment could only be directed to the symptoms instead of its causation. My personal observation has been that a typical case of typhoid fever as it appeared thirty years ago is now somewhat rare. Since malarial fever became prevalent the latter has greatly modified it, being more remittent, less frequent hemorrhages, greater range of temperature, less delirium; quinin acting favorably, while formerly in the typhoid was no well-marked remedial effect, even contraindicated except as a tonic at the close of the fever.

The Brandt treatment, or the hydropathic, calls for a bath every half-hour, fifteen minutes at a time, when the temperature is 101 or upward; tells the patient to

amuse himself by rubbing his skin. This will lower the surface heat, but there is objection to this course when the patient is much reduced in strength or when hemorrhage is likely to occur. In any case the application of water of a temperature most agreeable to the patient is always best in its effect. The most satisfactory way is to sponge the exposed body at shortest intervals, wetting only the invalid while comfortably at rest in bed; we have reduction of temperature and economy of strength which will be needed at the crisis.

The Woodbridge treatment, which has attracted much attention, is fully in accord with the fact of the presence of a toxic organism in the intestinal tract. The tablets contain some of the active antitoxins—hyd. chlor. mitis, guaiacol, menthol, thymol, eucalyptol, though the most active and safe one known—the bichlorid—he has omitted. The only trouble we ever have with this latter is when given in doses so large as to offend the stomach. The 1/100 grain is a better remedial dose than the 1/15 grain, quinia being almost a specific when the fever develops the periodic type. Thirty years ago, when the soldiers came home from the South they quickly recovered from the chills, for the malarial wave had not swept over the Eastern States. When, upon its later visitation as an epidemic, we had instead of a typhoid fever whose prominent feature was a continuous high temperature with only slight remissions at the end of each week for one long month, with delirium and hemorrhage, a new type whose greatest features were extremest cold, rapidly followed by extremest heat, then a diaphoresis unknown in other fevers. The popular theory is that all pathologic conditions have origin in bacilli from without. May not toxic organisms result primarily from decomposition of tissues, the warmth and moisture of the body becoming a medium, causing by their presence in the blood an auto-infection from the diseased organ, thus distinguishing from germ causing diseases? There is an old saying that "no man of himself doth catch." He may have antitoxins destructive of life which he can not transmit. He can contract pneumonia, not from others, but from well-known exposure to a rapidly alternating temperature and moisture, and the morbid opportunity of the winter cold. A suspected pneumococcus is discovered in the lung tissue after it has reached the morphologic change, the gray or yellow hepatization, the primary cause being a sudden suppression of normal perspiration and peripheral nerve excitation. It rarely occurs during the summer months, when the earth, the air and the turbid waters are swarming and humming with bacterial and insect life. Only the pneumo-germ is absent. By the skin, an important excretory and absorbing organ, is eliminated inorganic salts, carbonic acid, acetone, urea, alkaline lactates, and sudorates, which produce auto-inflammations when interrupted and reabsorbed. The water of perspiration contains these salts in perfect solution as impure water. Vital statistics show plainly the increase and subsidence of fevers and diarrheas of children during the cold and hot months.

In Hartford, in 1895, there was only one fatal case of typhoid fever in February, 3 in March, none in April, 7 in November and December. In January, 1896, no fatal case; in July, August and September 12 fatal cases were reported. For 1897, in March there were no fatal cases; in September and October 10 fatal cases. Statistics illustrate the influence of the

seasons in the mortality in that city of children under 5 years of age during the hot and cold months from diarrheas. In March and April, 1897, there were no deaths, but in the months of July and August 40 children died of this disease. In January, February, March and April, 1896, there were only 3 deaths, while during the months of July and August 52 deaths were reported. The greatest variations of thermometer, barometer and hygrometer are noticed in those States bordering on the Pacific and Atlantic coasts. Mark Twain once met a gentleman who told him he was making a collection of all the kinds of weather in the world, to have a museum of meteorology. Twain told him that traveling to extreme parts of the globe was useless; that if he would come East he could get all the kinds in a week.

We have 3000 miles of continent on one side and 3000 miles of ocean on the other, representing the extremes of dryness and humidity. From the far north we have its unvarying cold, from the south the hot breath of the tropics, the benign wind of the continent on the west and the sea-breeze of the Atlantic Ocean on the east. The summer months are the most gracious and lovely of the year. We are at peace with nature; even the ocean is pacific after the storms of winter. The charms and splendors of the year are now complete. That great meteorologic varieties increase the mortality, we recall the fatal influence of the blizzard of 1888, when the amount of sickness and number of deaths was enormous. Of a continuous and intensely high temperature, we recall the death-rate in New York City in 1896 during five days of phenomenal heat, from August 9 to August 14. It was estimated that 1000 persons died directly from its effect, that the deaths of as many more were caused by it among the infants and children from the intestinal antitoxins of cholera infantum. At St. Louis it proved as disastrous to life as did the great tornado, Cholera would not in the same time have caused so great destruction of life as did the sun heat. When the north wind came, invigorating with its ozone, the heated term was closed.

Am I speaking disrespectfully of the microbic family when I say that as an exterior bacterial cause they were not in it? They were surely at the demise of tissue and disposed of its remains. The question is: Were they present there as a primary cause, or was death the result of retrograde metamorphosis, the decay and dissolution of the organic tissues and of the blood from active hyperemia of the brain induced by the insupportable heat of the sun's rays?

According to the experiments of Professor Bouchard, the organism in its normal, as in its pathologic state, is a receptacle and a laboratory of poisons. Among these some are formed by the organism itself, others by bacterial proteids, low forms of vegetable growth which are the guests or the normal inhabitants of the intestinal tract, or are parasites at second-hand and disease-producing. Man in this way is constantly living under the chance of being poisoned. Yet this intoxication is not realized, for the organism possesses resources which enable him to escape. The carbonic acid which the lungs exhale in twenty-four hours, if a fractional part were retained, would act as a fatal poison.

The auto-intoxication caused by the presence of bile in the blood is a familiar illustration of the toxic symptoms of bile acids affecting the cardiac ganglia, as shown by the slowing of the pulse if unattended.

with inflammation. There is languor and muscular weakness; he feels that he is being weighed down by some grave mistake that his liver has made, really from fault of habit or diet. As elimination is incessantly being effected through the kidneys, experience shows us that the most intense form of jaundice does not kill, because the coloring matter, which is more poisonous than the salts, escapes by way of the kidneys. As a result of absorption grave cerebral disturbances arise from its autotoxic effects, with delirium, convulsions and coma.

It is a reasonable conclusion that because of the waywardness of our organism, the diseases of auto-origin should be studied, as well as those of a more definite germinal character coming from without, it being the fate of our structure that many of the diseases to which flesh is heir are born within us.

COLORING MATTERS AND FERMENTS.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY J. F. PEAVY, M.D.

ASHEVILLE, N. C.

No other generalization which the human mind has reached has done so much to bind in organic unity the phenomena of the physical universe as the law of conservation and correlation of forces. It has helped very largely, too, to clear our thinking of many vague and unscientific notions. Among these is the notion of a vital principle or force. Science now substitutes the more definite and logical conception of organization, itself, accomplished through natural means, appropriating, co-ordinating and directing natural forces. In the light of this law, the phenomena of organic nature in their physical aspects become interpretable as incidents in the ceaseless redistributions of matter and motion, of which all organic changes consist. Vital changes are natural phenomena, and are linked in by physical bonds with the successions of nature. The forces through which life manifests itself are drawn from and returned to the common stock in nature.

The inorganic basis of organic development was laid during the variations of heat and pressure incident to the cooling and contraction of the earth. Under suitable temperature and pressure conditions, the so-called elements, as well as the higher inorganic compounds, as they exist in nature, have been formed and stored in the composition of the earth's crust and atmosphere. For ages the earth was thus engaged in fixing a large part of her own surplus energy under the form of balanced chemie attractions, transmuting the coarser irregular motion—heat—into the finer, systematized motions upon which depend the chemie properties of substances.

The properties of any substance, in the widest sense, may be defined as its stored potentiality of reacting in its own defined and characteristic way to incident forces. This potentiality inheres in the molecular constitution of the substance, and the definition is true of any aggregate of matter, be it molecule or man. Working with its own supply of force, our earth must have stopped short of organic evolution. It could never have produced the higher differentiations of form and function—the life and beauty of organic nature. A continued increment of energy is necessary with which to build organic properties or functions. This is furnished by the solar radia-

tion. In the organic world, the light, heat and chemie energy derived from the sun under the form of vibratory motion constitute the source of power-supply for building up the almost infinite number and variety of forms. On the other hand, the combining activity of oxygen, which, in organic nature is the complement and correlative of solar force, gives to these forms while living the capacity of vital expression, and finally restores them when dead to the condition of inorganic matter.

The three general functions of life, considered in its dynamic relations, are: the fixation or storage of solar energy; its redistribution and organization in securing organic balances, and its final liberation as vital, and for the most part, motor functions. The first of these functions is accomplished in the vegetal world through the agency of chlorophyl in the green portions of plants; the second is carried on in both vegetal and animal forms, through the instrumentality of ferments, acting as the agents of the cellular elements; while the final liberation of this stored solar energy is accomplished through the agency of hemoglobin (and its derivatives—the coloring matter of bile and urine) and transmuted into the distinctive activities of animal life.

In the economy of organic nature, chlorophyl, the green coloring matter of plants, and hemoglobin, the red coloring matter of blood, perform functions that are complementary to each other. They may be considered as placed at the two extremes of a series of chemie bodies, embracing between them the various catalytic agents active in living forms. The entire group exercises peculiar dynamic functions that are of the highest importance in the transformations of force effected by living organisms.

Chlorophyl is concerned in building up from inorganic materials, organic compounds utilizing and storing the energy of the solar rays, while hemoglobin is concerned in oxidizing these compounds and liberating the stored-up force. Chlorophyl stands at the base of the nutritive processes of vegetable life and maintains a port of entry for materials and force which build up the organic world, while hemoglobin actively supports the vital manifestations of animal life and, assisted by its derivatives, the coloring matters of bile and urine, restores to inorganic nature the materials and energy which have served their ends in the animal economy. Chlorophyl, by giving, as it were, specific direction to the vibrations which constitute solar light and heat tears asunder the atoms of carbon and oxygen in carbonic acid, CO_2 , and of hydrogen and oxygen in water, H_2O , freeing O, while the C and H are appropriated by the plant in the formation of carbohydrates and other oxidizable compounds, while hemoglobin supplies O, breaks up the oxidizable compounds and forms carbonic acid and water.

In order to further develop our theory and to furnish a basis for its postulates, it becomes necessary to introduce some general considerations relating to the properties or functions of matter, and especially those of the metal—iron. Electricity, magnetism and chemie activity are affections of matter having a common starting-point or basis in the capacity of matter for molecular polarization. They are convertible each into the other two. Electricity and magnetism might be called conjugate forces, so close and direct is their correlation. They are inseparably associated through acting in lines perpendicular to each other. To excite a molecule electrically is to excite it mag-

netically in a direction transverse to the line of electric excitation. To magnetize a molecule in a given direction is to electrize it in a transverse direction. Starting with this condition of molecular polarization, determining conditions decide what the resultant action shall be. If the proper conditions be present, the force propagates itself as electric currents. If answering chemic bonds are within reach of the excited affinities, chemic unions and rearrangements result. Should the conditions for conduction or chemic action be wanting, static electric conditions are established.

Most of the elements may be arranged into an electro-chemic series with the alkali metals—potassium, sodium, etc.—with hydrogen at the positive end, and the halogens—bromin, chlorin, etc.—with oxygen at the negative end. In the middle of the series are iron and manganese. These metals present a strong resemblance in the variety in color of their oxids and salts, their behavior toward oxygen, their magnetic properties, and the fact that they may occupy either the acid or the basic side of salts. From this last fact we infer that they are sometimes found on one side of the middle line manifesting acid or negative affinities, sometimes on the other, manifesting basic or positive affinities, their behavior depending upon special conditions in the different cases. It is by reason of their position in the electro-chemic series, possessing nearly balanced affinities in opposite directions, that the condition of bipolarity may be readily induced in them and they are hence distinctively magnetic.

The special office of magnetism in nature is to transmute other forces, to serve as a pivot or vehicle of change in their direction or modes of action. It is itself dynamic, that is, capable of producing effects, mechanical, electric or chemic, only when the body in which the magnetic condition exists or that upon which it acts is in a state of *motion*, or the magnetism itself is varying, commencing, increasing, diminishing or ceasing, in which case the molecules themselves may be inferred to be in a state of motion. A magnet is an aggregation of molecular magnets, and its action is the combined action of its molecular elements. A permanent magnet may be viewed as a static condition of force, of motion arrested and stored in the form of bipolar tensions. It embodies the capacity to take up mechanical motion and convert it into other modes of force. This capacity has been turned to immense practical account in the magneto-electric machinery so highly developed of late years. The capacity to transmute mechanical motion into electro-chemic force is possessed by each molecule of a substance in a condition of magnetic excitation. The aggregation of molecules into magnets simply aggregates or combines their action. With these facts and deductions from accepted facts before us we are now in position to further develop our theory or view of the action of these immensely important physiologic agents.

The coloring matters, chlorophyl and hemoglobin, contain the magnetic metal, iron, and upon this primary property of iron depend their peculiar dynamic functions. True, there is a striking contrast in the manner in which the property comes into play in the two cases, being made the basis of a function in each which undoes what the other does. This contrast will appear as we proceed. The action of chlorophyl is a dynamolytic process comparable to electrolysis; in fact, virtually the same. The iron of chlorophyl is

magnetized and set in motion by the energy of the solar rays. Thus are developed what are essentially rotating magnets. The condition of magnetization and correlated electro-chemic excitement with rotary motion in the atoms or particles of iron is a transitional condition of the force, which, received on the one hand as vibratory motion, is delivered on the other as electro-chemic force. This electro-chemic force is expended in tearing apart the atoms of C and O in CO₂ and of H and O in H₂O, and become posited, as it were, in the atoms of O on the one hand, and of C and H on the other, to be again delivered up as heat, mechanic motion, or muscular and other forms of vital activity when these atoms again meet at the other border of the organic world. This attractive force of the atoms of H and C on the hydrocarbonaceous compounds formed for the C which has been removed and diffused in the atmosphere, is the exact equivalent of the solar energy used in parting them, and constitutes the ultimate basis of all force manifestation in organic nature.

Plants utilizing the energy of solar light and heat, manufacture, out of materials drawn from the atmosphere and taken up from the soil by the roots, a variety of compounds—starch, fats, albumin, etc. A part of these compounds fall from the elevated plane of "proximate principles" to the condition of simple binary compounds, the measure of which retrograde metamorphosis is the amount of CO₂ exhaled by the plants. The descent from a higher to a lower plane liberates force, which, in conjunction, perhaps, with heat derived from external sources, and, acting through the agency of diastase and other so-called catalytic agents lifts another part of these compounds to the grade of organized vegetable tissue. The greater part, however, remains as reserve stores of material and force to be either used by the plant itself in the formation of parts subsequently developed, or to serve as food for animals.

Animals receive, ready prepared for them in the vegetable kingdom, the material for their nutrition and structure embodying the capacities for the force evolutions which constitute the expressions of life. True, much of this material is raised to higher planes, substances of exceeding complexity, of high molecular weight, being required to meet the demands of the extreme differentiation of form and function in the higher orders of animal life. In this lifting of pabulum for the formation and maintenance of organic structure, force is consumed, contributed no doubt by the retrograde metamorphosis of other constituents of the food, but rendered available through the agency of so-called ferments. Some of these are, in all probability, products of the ductless glands and as yet but little known. The great and striking characteristic, however, of animal as distinguished from vegetable life, lies in the fact that its chemic processes are, in the main, reductions of matter with evolutions of force which find expression as heat, sensori-motor activity, etc. At the top of the scale of organic nature, we find beginning processes the exact reverse and complements of those we found initiated by solar energy through the agency of chlorophyl in the green leaves of plants. These processes end in the complete restoration to inorganic nature of the matter and forces which have performed their parts in the mystic play of that inscrutable something we call life.

The red corpuscles of the blood, by virtue of the iron which exists in them as a constituent of their

hemoglobin, take up oxygen from the air in the lungs and deliver it up in the capillary circulation, returning with their hemoglobin in the reduced condition. In making the circuit from the lungs, through the capillaries and back to the lungs, the hemoglobin changes from the bright red of highest oxygenation to the violet of lowest reduction, passing, no doubt, through the whole gamut of colors. When it leaves the lungs it occupies the red or dynamic end; when it returns to the lungs, the violet or chemic end of the chromatic scale, its color at each stage of the declension being the index to its dynamic capacity. At the point of lowest reduction its dynamic capacity is a minimum, its chemic affinity for oxygen after it reaches the lungs, a maximum. At the point of highest oxygenation, its chemic affinity is satisfied, its dynamic capacity a maximum. In the capillary circulation this chemico-dynamic force—of which hemoglobin in its transit from the lungs is the vehicle—is reconverted into heat and motion by the impact, as it were, of atoms which had been torn apart by the dynamolytic action of chlorophyl in the green leaves of plants.

Chlorophyl and hemoglobin, with the other catalytic agents between them, require for their physiologic activity certain necessary conditions. One of these is always heat or other available force in the ascending, constructive, lifting, force-consuming series on the one hand, another the presence of oxygen with its capacity of unlocking force in the descending, destructive, force-releasing series on the other. Solar energy, either as the direct rays of the sun or as diffused daylight, is necessary, furnishing as it does the working force for the activity of chlorophyl. This activity, with the processes which depend upon it, ceases in the dark.

The permanent withdrawal of light starves green-leaved plants to death. True, it has been shown that plants will flourish in the electric light with the exclusion of the sun's rays, but the electric light furnishes energy under the form of vibratory motion practically identical in character with solar light. Diastase, which initiates and helps to carry forward the process of germination in seeds, is inert until supplied with the proper degree of heat. The same thing can with safety be affirmed of other agents related to diastase and concerned like it in constructive metabolism.

The nature and mode of operation of the various substances which serve to transmute heat into constructive energy under the directive agency of animal and vegetable organisms appear to me to furnish a rich field for practical investigation. The alkalinity of the blood and tissues furnishes an all-important condition for hemoglobin in the animal economy. The alkalinity of the blood differs in degree at the two extremities of the circuit. In the lungs it reaches its highest degree from the exhalation of carbonic acid. In the capillary circulation it becomes less alkaline from its absorption of the products of oxidation. In passing from the lungs to the capillaries the iron of hemoglobin crosses its equator between acid and basic affinities. In returning to the lungs it recrosses to its region of positive attractions. In the lungs it is electro-positive, and unites with oxygen, which is electro-negative. In the capillaries of the various organs and tissues of the body it becomes electro-negative, repelling its oxygen. The oxygen itself is doubtless converted into its allotropic form, ozone; that is, the atoms of O_2 , the ordinary condition

of oxygen, are dissociated and polarized in the same direction. In this condition they can not unite with each other, but possess in the highest degree the affinities of oxygen.

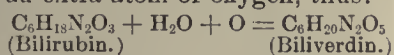
In discussing the action of chlorophyl we figured the iron as in a condition of balanced bipolar tension, performing the part of rotating magnets, appropriating the solar radiation and converting it into electro-chemic force, thereby tearing apart the atoms of O and C in CO_2 and of H and O in H_2O and positing the energy of O, on the one hand, and of C and H on the other, under the form of chemic affinity. In the case of hemoglobin, we view the iron as oscillating between acid and basic affinities, being in the one case, in the condition of electro-positive accentuation, uniting in the lungs with the electro-negative oxygen; while in the other case, through a change of chemic environment, it swings into the opposite direction of electro-negative accentuation, throwing off the electro-negative oxygen, the resulting oxidation reconverts the chemic affinity into heat and other forms of energy. It would seem, however, that the alkalinity of the blood, with its changes in degree at the extremes of the circuit, does not absolutely endow hemoglobin with its polarity or cause of itself alone the reversals of affinities. Blood outside the body will for a time manifest this property, as shown by its changes in color from red to purple, or from purple to red, according as the oxygen is excluded or supplied. Hemoglobin, if extracted unchanged from fresh blood, will behave in the same peculiar way toward oxygen. Even the hematin in blood-stains possesses a remnant of this property. An examination into the *rationale* of the guaiacum test for blood discloses this fact. Peroxid of hydrogen does not by itself oxidize a solution of guaiacum, producing the characteristic blue reaction, because its loosely-held oxygen is liberated in the condition of antozone, and only agents liberating oxygen in the opposite or ozonic condition can produce the reaction. If hematin be present, however, the reaction occurs, the antozone undergoing a conversion into ozone. This seems to indicate that the iron, retaining something of its physiologic setting in the hematin molecule, retains also something of its physiologic power.

The alkalinity of the blood, however, with its changes in degree at the extremes of the circuit is necessary to the performance of the physiologic function of the red corpuscles by determining the time and place at which the reversals of the oxygen affinities of hemoglobin occur. In the lungs, where alone oxygen is obtainable, the highest oxygen affinity of hemoglobin is thereby developed. In the capillaries of the various organs and tissues of the body, where oxygen is needed to meet the demands of the ceaseless change, the highest repulsive force of hemoglobin for oxygen is thus brought into action. When the blood-cells die, their hemoglobin undergoes a conversion into a substance which has been called "hematoidin," the more complex molecule of the former breaking up and the atoms of C, H, N and O rearranging themselves into the simpler molecules of the latter. This substance is believed to be identical with bilirubin, the yellow-red coloring matter of bile. The transformation of hemoglobin into bilirubin appears to be a spontaneous change, taking place under the conditions furnished in the blood of the living animal when the blood-cells die.

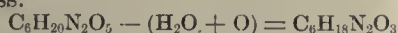
Bilirubin has been found in old extravasations of

blood, evidently produced upon the spot by transformation of hemoglobin. If red-blood cells be broken up and made to assume a liquid form by alternate freezing and thawing, and the solution be injected into the veins of an animal, the operation is followed by a discharge of bilirubin in the urine. Under ordinary conditions, the liver extracts the coloring matter from the blood-cells as fast as they die, completing their disintegration. Under certain abnormal conditions the liver is unable to keep up with the work of removing the disengaged and transformed coloring matter, and jaundice supervenes. Probably most forms of hematogenous jaundice are due to unusual or rapid death of blood-cells, either from direct poisoning or depraved nutrition and consequent excessive liberation and transformation of coloring matter. Here the liver, though acting perhaps with its ordinary capacity, is incompetent to rid the system of the excess.

If the disorganization of the blood is very rapid or profound, such grave conditions as hemorrhage, ecchymoses, hematuria or hemoglobinuria develop. Various toxic agents may interfere directly with the activity of the liver-cells and lead to abnormal retention of coloring matter. Probably the jaundice which follows phosphorus poisoning is the joint result of rapid destruction of blood-cells and direct toxic action on the cells of the liver. The moderate jaundice, which usually exists in connection with cirrhosis of the liver, is due to the incapacity of that organ, from pressure on its cells and diminished blood-supply, to remove the coloring matter with sufficient rapidity, though the death-rate among the cells may be only ordinary. Here, however, the increased discharge by the kidneys compensates in a measure for this impaired function of the liver, and the jaundice is not apt to be marked. Jaundice from catarrh of the bile-ducts or other obstructive conditions has for us no special interest in this connection. The coloring matter of bile as a physiologic agent occupies a place between the red coloring matter of blood and the green coloring matter of plants, and performs functions related to that of each, taking part in the vegetative processes of nutrition on the one hand, and the oxidations of animal life on the other. It is a fact, too, worthy of note, that the chemic and spectroscopic properties of this substance indicate very interesting and significant relations to hemoglobin on the one side and chlorophyll on the other. It exists in *two conditions*—bilirubin and biliverdin, the red and the green matter of bile. The difference between them is one of hydration and oxygenation, biliverdin being derived from bilirubin by the assumption of a molecule of water and an extra atom of oxygen, thus:



Bilirubin is formed from biliverdin by reversing the process.



Permit me at this point to state some facts which are considered settled by experimental evidence. Bile drawn directly from the bile-ducts during digestion and absorption is green, its coloring matter being in the condition of biliverdin. Bile obtained during the interval of digestion, or which has been stored in the gall-bladder, is yellowish red, its coloring matter being in the condition of bilirubin. If yellowish red bile be shaken up with air or exposed to the action of an oxidizing agent, as nitric acid or iodine, the color

changes to green; then, if oxygen be excluded by placing it in a bottle and corking tightly, the color changes to yellowish red again. This fact suggests an analogy to oxyhemoglobin and reduced hemoglobin.

Glucose, $\text{C}_6\text{H}_{12}\text{O}_6$, the product of the digestion of starch and saccharine substances, is deposited in the liver as glycogen or liver starch, $\text{C}_6\text{H}_{10}\text{O}_5$, undergoing a dehydration. After digestion and absorption have been completed, this material is given off as required by the needs of the system, undergoing a rehydration into glucose. There is reason to believe that albuminose—the product of the digestion of the albuminous elements of the food—undergoes a reduction in the liver to blood albumin, losing an atom of oxygen. We have already found reason to conclude that the conversion of hemoglobin into bilirubin is the normal transformation which follows upon the decay of the blood-cells under the conditions furnished in the circulating blood.

With these facts before us we venture to suggest further that, while digestion and absorption are in progress, the liver-cells, by a selective action upon the coloring matter of worn-out corpuscles on the one hand, and the glucose and albuminose of the portal vein upon the other, bring these substances into intimate relations with each other, effecting the interchange between them of water and oxygen, converting glucose into glycogen, albuminose into blood albumin, bilirubin into biliverdin. The green bile formed under these conditions is conveyed directly into the alimentary canal, and doubtless takes part in the hydrations and oxidations going on there. Having required these important and onerous duties of the coloring matter of bile, it might be suggested that we desist from further impositions. However, there are facts still unexplained, conditions unsatisfied, in our problem. The facility with which the bile coloring matter, chameleon-like, changes its hue, makes it a very accommodating substance. The secretion of bile continues during the intervals of digestion. A small reserve is stored in the gall-bladder, but the greater part finds its way into the intestine. Its color is now yellow-red, the conditions for forming green bile having ceased with the completion of digestion and absorption. The conditions in fact are reversed. Glucose, while undergoing deposition in the liver, required to be dehydrated into glycogen. In order to be available for the needs of the organism, it must be rehydrated and rendered again diffusible. The necessities of the case require us to lay this duty too upon the accommodating coloring matter. During the intervals of digestion yellow-red bile continues to find its way into the empty intestine, and is for the most part reabsorbed. In the portal vein the conditions are now present for the immediate conversion of bilirubin into biliverdin. We have already noted that if bilirubin in alkaline solution be shaken up with oxygen or atmospheric air, it is converted into biliverdin. Equivalent conditions are present in the radicles of the portal vein, that is, the blood is an alkaline menstruum and the hemoglobin of the red corpuscles is liberating oxygen. It is, I think, a reasonable assumption that the blood should carry some surplus of oxygen through the absorbent villi, during the intervals of digestion, since during the height of physiologic activity large quantities must be needed to meet the demand. Having the oxygen at hand, the bilirubin appropriates water from its solvent, just

as it does when shaken up in alkaline solution, with oxygen or air. In this way it is changed into biliverdin. Now, re-entering the liver, it comes in relation with the glycogen and yields up to it its water, becoming reconverted into bilirubin and reconverts glycogen into glucose. The atom of oxygen associated with the molecule of water, and liberated with it, is no doubt applied to the final oxidation of nitrogenous bodies which have served their ends in the economy. Of this reaction the urea formed in the liver is the product. The liver may be regarded as a chemico-vital laboratory in which certain elements of the food are prepared for assimilation; while others which have yielded up their capacity for meeting the demands of structure and function are prepared for elimination. The coloring matter serves the liver-cells in effecting these transformations by acting as a carrier of water and oxygen.

All honor to the men who are devoting themselves to arduous experimental work. Yet it is as much legitimate scientific progress to deduce the meaning of a fact as it is to get the fact. It is believed that the view presented in this paper is logical, consistent and true, resting upon a basis of accepted science. As an interpretation, then, of facts reached—to be sure, through the labors of others—it is hoped that it presents claims worthy of consideration.

DISCUSSION.

Dr. PEAVY—In closing this discussion I have nothing to add directly to the material contained in the paper itself. I am glad that Dr. Van Zandt has referred to the fact that hitherto no satisfactory explanation has been proposed of the mechanism by which the chlorophyll-bearing cells of plants decompose carbon dioxide and water, nor of the *rationale* of the oxygen-carrying and distributing function of the red-blood cells. These very difficulties first led to the investigations which resulted in the development of the view here presented. That the solutions offered are the true ones, my own mind no longer entertains a doubt.

In the decompositions effected by light in the green leaves of plants we have no more disturbance of unstable chemical balances, but the dissolution by a definite mechanism of the firmest chemical bonds. That the energy expended in effecting these decompositions is derived from the sun's rays, and is represented in the attraction of the divorced atoms for each other, is entirely beyond question. The process is clearly a conversion of mechanical into chemical energy. The postulate that this conversion and electro-chemical decomposition are accomplished through magnetization of the iron contained in the vegetal cells appears not only fully warranted by the premises adduced in the body of the paper, but it seems to be the only possible mechanism of the process. The facts of electrolytic decomposition and of the magneto-electric conversion of energy appear of themselves sufficient to render the conclusion necessary.

The theory that the oxygen-carrying and distributing capacity of hemoglobin is dependent upon a property of its iron, allowing it to exercise either positive or negative affinities under different conditions, appears also to satisfy the logical demands of the problem, and be fully justified by the facts of physics, chemistry and physiology. In proposing this explanation we are assuming no new property for iron. That it does manifest sometimes acid and sometimes basic proclivities is a well established fact. Its behavior in this regard is determined by its chemical environment.

Manganese, so closely related to iron in the electro-chemical position and properties, shares with it this oxygen-carrying function in the blood. The so-called catalytic action of black oxide of manganese, as illustrated in laboratory experiments, but shows the capacity of this substance under molecular agitation—heat—to take on and give off oxygen. Indeed, in certain chemical reactions manganese salts play the part of intermediary bodies, acting as carriers of oxygen, taking it from one and giving it to another of two bodies without being themselves directly affected in the reaction.

Blood outside the body, as long as it retains its vitality, will turn purple if oxygen be excluded, and then red again if oxygen be supplied. This shows that even without the special conditions furnished in the circulating blood, hemoglobin,

the color of which depends upon its degree of oxygenation, tends spontaneously to take on oxygen, liberate it and renew its supply. As far as this part of our theory is concerned, the proof amounts to scarcely less than practical demonstration.

Dr. Van Zant might have added that physiologists have never hitherto furnished the bile with a function in keeping with the quantity and constancy of this secretion. Doubtless it performs some secondary part in intestinal digestion—the green bile formed during the progress of digestion and absorption taking part, it may be in the hydrations and oxidations going on in the alimentary canal at that time. Intestinal digestion, however, is fairly well performed without the presence of bile, so we conclude that it is not primarily a digestive secretion. That it is not an excrementitious product is evident from its reabsorption from the intestine during the intervals of digestion. If the bile flow of the dog be diverted from the alimentary canal and discharged externally through a fistula, it is found that, while the appetite remains good and digestion is well performed, the animal soon begins to waste and finally dies from disordered nutrition. A significant fact is that the bile flow itself rapidly diminishes in quantity and becomes very scant. From this experiment we conclude that the bile is essential in some way to the nutrition of the body, and that its partial reabsorption is necessary to furnish part of the materials for continued secretion. So we seem forced to the conclusion that bile performs its most important function in the liver itself, and that even after it reaches the intestine in the intervals of digestion, it has not yet consummated its work. Whether the task I laid for it will meet with approval of physiologists generally remains to be seen. I wish to disclaim any intention of arrogating to the coloring matter the whole function of the bile. Only such part of it as is specially fitted by nature to perform and which is in general line with the work of this class of physiologic agents do I claim for its own specific function.

METHOD OF TEACHING MATERIA MEDICA.

WITH SPECIAL REFERENCE TO DENTAL STUDENTS.

Presented to the Section on Stomatology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY WARREN B. HILL, M.D.

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This subject, like many others, has two aspects: the real and the ideal. Dentistry is in a transition period. Some years ago it was almost a mechanical art, but there have always been in the profession men who held high ideals, and through their earnestness, enthusiasm and work it is being rapidly transformed into an ideal profession. In its highest sense dentistry should be, and is, a specialism in medicine, and the work of a number of men in this country has demonstrated that the best results and greatest achievements may be derived by making it so.

There is a tendency in the civilized world toward specialization. It has been found that higher attainments can thus be reached. But on the other hand, through narrowing the field of work, we are apt to contract the mind, and thus we find that which we gain in skill compensated by a loss in broader comprehension. It becomes necessary, therefore, when training a mind for specialty work, that we have a broad foundation upon which to build. It is not sufficient that one entering the study of dentistry should have acquired a certain amount of knowledge of English, mathematics and physics, but his mind should have been trained in broader fields, so that the concentration upon this single study will not have the effect of dwarfing the intellect and narrowing the mind.

The fundamentals of medicine should have been mastered early in his dental study, and his mind have been trained in grappling with the more abstruse problems in medicine, before he is obliged to concen-

trate his entire attention upon a portion of the oral cavity. I believe this proposition to be true from the standpoint of an educator, whose business it is to build up and round off a symmetric mind and character, and I believe it is also true from the standpoint of the practitioner, who, to be successful, must be familiar with all the factors that bear more or less remotely upon the conditions which he is treating. Thus, if we could teach dentistry according to this ideal, the question, "How much materia medica shall we teach?" would be answered thus: "All that is taught in the study of medicine." However, the obstacles that present themselves are a lack of time in the curriculum and a lack of disposition on the part of the student.

In a three-year course of six or seven months each year the average dental student is overworked in mastering the fundamentals of dentistry and medicine, and in doing the amount of laboratory and infirmary work necessary to make him proficient. It has become necessary, therefore, to abridge the work in materia medica, as well as in anatomy and physiology, in order that they may have sufficient time for the dental laboratory. In our institution there are some who are better endowed by nature, and who have a higher ambition than the average student. Realizing the advantages that present themselves by attending a school where both medicine and dentistry are taught, they are taking the full course in materia medica, therapeutics, anatomy, etc., thus completing, in a large measure, the fundamental work in medicine, in the anticipation of earning a medical degree, as well as that of D.D.S., in order that they may be better equipped for their practice, and at the same time they are rounding out their education and giving their minds a broader development.

For the average student the number of remedies in materia medica must necessarily be limited. The escharotics, the antiseptics and those that are used particularly in their everyday practice must have precedence, but there are many others whose actions have a remote influence upon the mouth and its diseases, which must also be taught. All of those affecting nutrition and assimilation have a direct interest to the dentist, and the art of prescribing should not be neglected, as it sometimes is. Having selected the few remedies we wish to teach, what to teach about them should be our next concern. All that we know is hardly too much. Their pharmacology is essential, their constituents and chemistry should be taught, and their physiologic action in its broadest sense should not be neglected, and then their therapeutic value in dentistry, as well as in medicine, should be the cap-sheaf of our investigation.

The question of how we shall teach it is a much more difficult one. Teachers are born, not made, and each teacher must adopt a method adapted to himself. In my work I have found the pharmacology of a drug can best be taught by object-lesson. The laboratory may be provided or improvised; it is only necessary that the student shall have an actual living acquaintance with the drug. The physiologic and therapeutic action can best be taught by didactic lectures, wherein the student may partake of the enthusiasm of his teacher, and may be made to feel, through that enthusiasm, the effects on long and personal experience with the remedy, which will inspire him with confidence—a mighty adjuvant in the application of drugs. There is much, however, that should be eliminated

from our lectures. The names, preparations, composition, chemic reaction, doses, etc., should be supplied in advance, that the student may commit them to memory, and have regular recitations and drill on them. This work should precede, or go hand in hand with, the laboratory work. I have never found a text-book which taught just what I wished to teach of any particular drug, nor one which treated only of those drugs which I esteemed of greatest importance to the student. I, therefore, have adopted a system of preparing skeleton notes which embrace those things that the student must commit to memory, furnishing mimeograph copies to each of the students, and leave for my didactic lectures that which I feel I could enliven by my personality. I have followed this course for three years, and the increased proficiency of the classes since its adoption has demonstrated to me the efficacy of the plan.

Having familiarized himself with the pharmacology of a drug, the student now comes to the most interesting part of his study. He has been grounded in his physiology, his chemistry, and his pathology, and now he is enabled to see the practical applicability of this knowledge in the application of the remedies to diseases. After due consideration, I have omitted to place upon my skeleton notes anything of the physiologic action or therapeutics of a drug, because they are not to be memorized, but to be reasoned out. Just how a drug acts primarily upon one organ, and through some of the great systems of the body results in a secondary action upon another organ, and drawing the parallelisms between the action of remedies and the pathologic conditions in diseases is as fascinating a study to the student in medicine or dentistry as is the illustrating of a natural law in physics. This is the logic of medicine.

In teaching therapeutics it is not sufficient to tell what diseases may be cured, and which harmed by the administration of a given drug. It makes a fascinating study for a student to take a disease, hunt out its etiology, trace the pathologic changes that take place, for the purpose of selecting a remedy that will overcome the conditions known to be present, eradicate the etiologic factor, or to build up certain structures in order to offset the destructive processes of the disease.

In my work this is still further supplemented by a course of applied therapeutics, in which we have the patient before us. We now can no longer follow the classic lines laid down in books, but must take diseases as find them, modified by the various agencies that environ the human animal. The pathologic conditions must here be studied out and remedies found that will logically supply the indications. If, perchance, in this course the student has witnessed diseases treated which are of little interest to him as far as he is concerned in his practice, he may have been given a lesson in mind culture that will serve him in good stead. The power of reasoning from effect to cause, and back to effect, is the best mental discipline for cultivating practical minds.

Potion for Whooping-Cough (L. Concetti).—Resorcin 2 gm. ; antipyrin 1 gm. ; aq. dest. 70 gm. ; syrup of codein 10 gm. ; syrup of cedar 20 gm. ; tincture of opium 3 drops ; tincture of belladonna 8 drops. A teaspoonful every hour or second hour to infants ; a dessert-spoonful for children from one to three ; and a tablespoonful for children over three.—*Semaine Méd.*, November 30.

NOISE AS A FACTOR IN THE CAUSATION OF DISEASE.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY ROBERT W. HASTINGS, A.M., M.D.

BROOKLINE, MASS.

Modern life has many peculiarities, and in his consideration of the influences which tend to the health or disease of the people, the physician must study carefully these features which may or may not introduce new factors. Among them, none is more frequently quoted than the tendency to group in large cities. So well accepted is this tendency that we need not give any figures to support the statement.

Many grave hygienic problems have resulted from this congestion of human life. Their solution has called for the most exact scientific research, careful formulation of sanitary laws and rigid enforcement of them. As a result, the dreadful scourges and epidemics which so often decimate the cities of the old world, do not obtain a foothold among us. Yet, disease is by no means abolished, though the average life may be a little lengthened. All too frequently life is cut short from preventable causes, and almost invariably one or more senses or faculties are impaired early in life. I ask your attention to one of the more obscure factors in the causation of disease which remains and in some lines is on the increase. Of scientific research in regard to it there has been very little. The reasons for this will be obvious. Still less attention has been paid to legal restrictions because of it.

What is noise? It is difficult to sharply separate "noise" from "sound." Ganot says: "Sound is the peculiar sensation excited in the organ of hearing by the vibratory motion of bodies, when the motion is transmitted to the ear through the elastic medium." "Sound, properly so called, or musical sound, is that which produces a continuous sensation, and the musical value of which can be estimated, while noise is either a sound of too short duration, like the report of a cannon, or else it is a confused mixture of many discordant sounds like the rolling of thunder or the noise of the waves." Whoever has lived beside streets can give better illustrations than these; for instance, the passing of a heavy team loaded with street-railway iron, or of a series of teams loaded with stone or coal. To such an one the "rolling of thunder" or the "noise of the waves" is like music. Now I do not suppose any one will deny that city life has in it far more kinds of noise than country life—not more sounds but more noises. And these noises are intensified and repeated by the high walls against which they strike and from which they rebound again and again. Nor are the street noises by any means all of the story. It is an unusual thing to be able to converse easily in any large factory. The persistent clatter, clatter of the machinery drowns the human voice almost completely. It is not the sound of the shoemaker, spinner, weaver or blacksmith in his or her country shop, but the confusion of a score or hundred similar sounds joined to a multitude of others made necessary by the machines and shafting.

Our consideration of what has been and is the effect of this noise incident to the great change in manner of life, naturally divides into three portions: 1, the effect of noise on the ear itself; 2, the effect on previously known or existing diseases; 3, its power to

originate disease or in any way affect the health of the general community.

With reference to the first, some careful observations have been made, for there is one class of men who work in the midst of such din that the attention of aurists has been drawn to them. These are the boiler-makers. The constant reverberation of sounds produced by hammering large pieces of iron in a short time produces boiler-makers' deafness. St. John Roosa says, "boiler-makers are nearly all hard of hearing." "Those who work on the inside of boilers as riveters and who have shorter waves of sound striking upon their ears, lose their hearing most completely." Just what the lesion is, is not wholly decided. The author above cited thinks it is a hyperemia of the ultimate nerve fibers of the cochlea, and declares that "an acoustic neuritis may be produced by noise just as well as an optic neuritis by exposure to a glare." Dr. E. E. Holt records observations of deafness in boiler-makers, ship-caulkers, etc., but thinks the lesion is a middle-ear catarrh.

Dr. Roosa's theory seems to us more reasonable, however. Indeed, he has found that people with chronic middle-ear trouble hear better in the boiler factory, and ascribes this to the unusual excitation of the nerve. Doubtless many of you could give testimony of cases where deafness has arisen in persons exposed to constant loud noise. Boiler-makers and ship-caulkers are by no means the only ones who work in the midst of a din. The observations above noted are good as far as they go, but there is room for far more study in this line. This investigation, in order to be of value, must be carried on by experts who shall be able to separate results produced by noise from those due to other causes.

If we turn to the second division of our subject we find even less scientific research, but a general unanimity of professional opinion. When once it becomes evident that a patient is to be seriously ill, almost the first requisite is a quiet room. Thus Billroth advises for feverish and nervous patients a room where such noises as hammering, rattling of carriages, etc., can not be heard. Wise directs the selection of a sick-room on the second story, or higher in cities, and where it may be as quiet as possible. Many other authors might be quoted, but we all believe in it. When a patient—old, young or middle-aged—is sick, we want him in a quiet place. Now, why? What effect does noise have? Perhaps the chief result of noise is to prevent sleep, and sleep is an absolute necessity to bodily or mental recuperation. Indeed, Menander has said that all diseases are curable by sleep. We do not believe that, but we do realize its great value as a remedial agent. During sleep the brain becomes anemic, and the vessels of the skin dilate. Experiment has shown, too, that every sudden noise causes an increase of the volume of the brain, even though the sleeper is not awakened. Each such change produces a corresponding effect upon the nerve-centers and checks or prevents the processes of plastic nutrition. Thus, though the patient may become accustomed to the noise, the evil effect will be present to a greater or less extent. Quiet is desirable and may be necessary, not only as a means to secure sleep but to allow rest. When the blood-vessels are being continually contracted and relaxed according as the reflex centers are excited by noises or not, the disturbance in the supply of food to the diseased part is of grave importance. A

vicious circle is soon easily established, and the noise which at first seemed such a little factor becomes a very large one.

Suppose the patient *does* get a fair allowance of quiet sleep, if the other part of the day is disturbed by various noises, the course of the disease is thereby aggravated. The prevention of the ringing of neighboring church bells or of loud traffic along the street when a great statesman is ill, are familiar illustrations of the popular recognition of the desirability of quiet for sick people; it is just as desirable for any poor or obscure patient.

All this is true of any acute systemic disease. If, now, we turn to the chronic diseases or to those which have to do chiefly with the nerves or the great nerve-centers, we find our factor even more important. Details are unnecessary. Every physician knows the effect—sometimes fatal—of a sudden fright upon a chronic heart case, and a fright is as likely to come from a noise as from anything. Every physician knows, too, the steady failure of a nervous case, due to the constant repeating of noises about the patient. Between these two extremes we may find nearly every diseased condition of men—digestive, circulatory, nervous or local—each showing an aggravation if exposed to noise.

But does noise originate any diseases itself, and what effect, if any, does it have upon the general health of the community? We have already mentioned the diseases of the ear. Manifestly, as has already been indicated, contagious diseases can only be affected secondarily. Scientific research may yet discover, however, that sound-waves, like light-waves, do have a direct influence upon the growth of germs. It is difficult to see how any direct etiologic relation between noise and disease of the respiratory system can be traced. The same may be said of the circulatory, renal and digestive systems. Diseases of any of these portions of the body may, however, be secondary to nervous diseases. But does noise really cause any disease of the nervous system? Tyson describes nearly one hundred and fifty different forms of nervous disease, but to no one of them does he assign noise as a cause, with the possible exception of epilepsy, hysteria and neurasthenia. An epileptic convulsion or a hysteric attack may be due to a sudden fright, and this is likely to arise from an unusual noise. Neurasthenia takes its origin in the constant excitation and consequent exhaustion of the nerve-centers. Dr. F. X. Dercum has very successfully demonstrated this explanation of neurasthenia. No excitant is more frequent, none more persistent than noise. Moreover, so common is this disease in our country that it has aptly been called "Americanitis." Chapin says "as a factor in the production of insanity, neurasthenia must be considered the most important. The largest proportion of hospital admissions, received in an acute stage, have a history of neurasthenia. It is fitly called the soil out of which insanity develops." We all recognize insanity as one of the great evils threatening modern life. Do these authoritative words establish an etiologic relation between insanity and noise? But what of the relation of noise to the usual every-day life, usually esteemed healthy. Who shall say how far the high-strung, nervous, active temperament of the American people is due to the noise with which they choose to surround their daily lives? Surely, it is a factor which can not be entirely disregarded. Only physicians

know how important this temperament is in the inception, course and convalescence of disease.

Finally, we may properly consider the children. They are notoriously the cause of noise. What effect does noise have upon them? Holt says functional nervous diseases are steadily increasing among young children, and ascribes this increase to playing with them, "stimulating to laughter and exciting them by sights, sounds or merriments until they shriek with apparent delight." He advises that all such romping and playing during the first year at least be absolutely prohibited. During the first three years sleep is not very deep and hence demands attention to quiet surroundings.

We have then found noise a factor in the causation of certain ear diseases, in the course of many acute and general systemic diseases, in the etiology of some nervous diseases, chiefly neurasthenia and to some extent in the general health of the community. What line of action is open to us as students of preventive medicine? First, careful study is demanded of specialists, general practitioners and inventors to devise some protection for the ears of those who must work in the midst of a continuous din. Cotton has been used, but is inefficient. It is no slight matter to have such a large number of people continually added to our population, nearly or wholly deprived of their hearing. Many of them must become, sooner or later, a charge upon the public, and all of them are to a great degree rendered incapable of work. Protection to the eyes is guaranteed by law. Why not for the ears? Moreover, it seems probable that a careful examination of manufactories will show that much of the noise is unnecessary. If it were realized that the noise is really harmful, quiet would be secured by the same methods that we have good air and suitable light. It will cost some money, but when the people demand quiet the capitalist must furnish it. As usual the physician must lead the way.

If, now, we turn to noises outside of factories, there is also much to be accomplished. Pavements may be made smoother, as they are in Washington, D. C.; carriages may run more quietly, as for example by the addition of rubber tires; street cars and steam cars can run more quietly by care in the construction of roadbed and cars, and in the running of the cars; heavy teams may be so constructed and loaded as to avoid the dreadful jar, clatter and crash so often heard on our streets; hurdy-gurdies, handorgans, street-venders and newsboys may be restricted in time, place and calls; shrieking whistles and jangling bells may be abolished. These are but examples. Many other possible regulations will occur to you. It will require time and work and money. As physicians we must believe that quiet is a great essential to good health and then we must persuade the people that our belief is well founded.

Kilsyth Road.

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A STRIKING ANALOGY BETWEEN THE PHYSIOLOGY OF ANIMALS AND THAT OF PLANTS.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

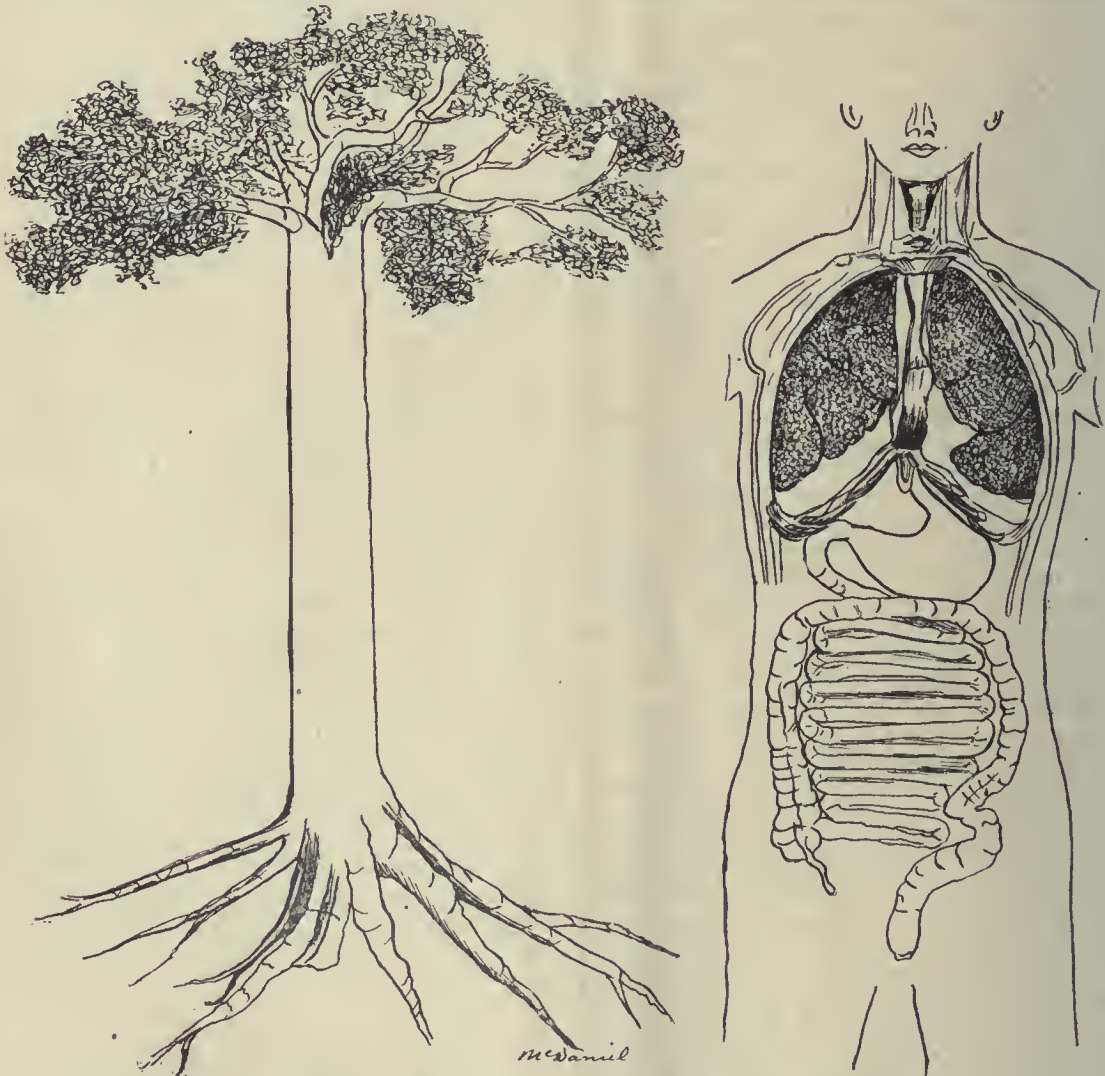
BY EDWARD DAVIES McDANIEL, A.M., M.D., LL.D.
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There is a unity of plan in the anatomy and physiology of plants and animals that affords one of the most striking, most forcible and most beautiful of the evidences of the unity of nature. This unity of plan, in addition to its great but overlooked importance in comparative anatomy and physiology, is also of so great consequence and utility in human physiology and dietetics as to demand from physicians constant consideration and utilization. It is so plain and easy to be understood, that it may be rapidly and satisfactorily traced, in the following illustration from plant

which the tree derives its pabulum, and into which it discharges excrementitious matters. Below, the tree divides into large roots, which divide and subdivide into smaller portions until, in almost capillary attenuation, they permeate the soil—the other great source of food-supply and of waste discharge.

If we strip away the leaves, leaf-stems and small branches, we will have left, above the trunk, only the large limbs, which we can conceive to be hollow like the fingers of a glove, and if we invert these into the upper end of the trunk, conceived also to be hollow, and then imagine the leaves, stems and small branches to be all restored to their former places, the new arrangement will represent the air-tubes and lungs, through and into which the air enters the chest to furnish food to and remove excrementitious matters from the like parts as before.

If we conceive the like change of arrangement applied to the roots and rootlets of the tree, we will have the absorbent and secernent surface of the roots and



to man, by going from left to right, or from man to plant, by going from right to left. All that is needed here is to start at the man, as every hearer will desire the pleasure of returning by himself back to the plant.

The tree, as is seen, ends above in large limbs, branching again and again into smaller and smaller portions, and finally terminating in leaves that spread out into the air—one of the two great sources from

rootlets in apposition, with an internal field of supply and discharge—of endosmose and exosmose—i. e., a soil. However, this soil is unbounded, stationary and permanent, but is of limited supply and must be regularly renewed. There must be a receptacle with proper devices for income and outgo. Such devices are furnished in locomotor organs for reaching a food-supply, in prehensile organs for its appropriation, in

an alimentary canal for its receptacle, and in a proper outlet for residual and excrementitious substances.

The relationship between the foods and excrementitious matters of plants and of animals may be studied in connection with the illustration, and also the importance of remembering in dietetics and therapeutics, the great importance of the proper management of the contents of the alimentary canal to man's health and life.

DEVELOPMENT OF THE VITAL FORCE.

A PHYSIOLOGIC CONSIDERATION OF SOME OF THE FEATURES.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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It is important to bear in mind the dictum of the great German pathologist, Professor Virchow: *omnis cellula e cellula*. All our experiences, whether they have been directed in the search for facts among the elements of the vegetable or among those of the animal kingdom, tend to establish this apothegm as a truism.

The questions are often asked: Whence came the first cellule? Was it a development from an atom? What was its previous physical constitution? In reply, it seems but proper to say that the introduction of such inquiries is merely the result of premature consideration. In the discussion of the subject before us we will not say, however, that the examination of some facts touching upon the questions raised is not one of the objects that can come properly within our purview. Reference to the subject of the divisibility of matter may serve to awaken in us some thoughts on the question.

It is generally admitted that there is no definite limit to the properties of bodies by which their parts are capable of separation. However small a particle of matter may be, it is impossible to conceive that it can not again be divided. There may be, nevertheless, a speculative line of demarkation beyond which bodies can not be divided by the ordinary means that are within our present control. This inability on the part of mankind to accomplish more, does not affect the principle by which the disintegration of substances about us is continuously carried on. A grain of musk will sometimes diffuse its particles so as to scent a room for years, without losing any of its apparent weight. A dog will often detect his master's footsteps or the way of traveling through crowded streets or frequented roads by the mere scent, or the sensible appreciation of particles that have been exhaled from the owner's clothing or from his person. This is another proof of the exceeding attrition which matters may undergo and still have physical properties capable of being recognized.

In speaking of the cellule it is reasonable to infer that there have been variations as to its extension and form from the earlier parent cell. The nerve or ganglion cells of man and the vertebrates differ greatly in form, and vary in size from 10 to 100 microns. The cells of the motor areas are for the most part the larger. The earth during the earlier periods underwent many great revolutions. The atmosphere was constituted largely of nitrogen, and this condition of

the air must have continued until some forms of vegetation had taken on permanent activity, by the gradual evolution of oxygen from the elements that were subject to disintegration and change. The anaërobic cellules which subsist through the medium of the fermentation they produce, assumed from the increasing contact with the oxygen the nature of aërobic organisms. The changes through which such cellular bodies passed could not have been other than of a slow type. The earth, in some form and extension, must be of great antiquity, if not of beginninglessness.¹

Though there are many indications that the earth has undergone vast and mighty change, there is no real proof that the whole mass at any one time was in a molten state. Assuming that such was the case the atmosphere surrounding it may not have been so affected as not to have been a center for fostering some of the various forms of cellules. The interior of the earth is almost entirely unknown; the depth which we have been able to penetrate is scarcely to be reckoned when the whole diameter is taken into consideration. The theory deduced on account of the gradual increase of the temperature as we descend, that the earth is still in a molten state, and that we are living upon a mere crust, as it were, is based upon a most unstable foundation. Paley was once confronted with the question as to the eternity of matter. He disposed of the subject by saying that all the various parts of the universe presented indications of being the work of design, and if of design, there must have been effected by a designer. Paley compared the structure and composition of various bodies to those of a watch which might be found on a roadside. Each part of the timepiece being so constructed as to depend upon the proper working of the other parts, would impress any one who might be wholly unacquainted with the character and uses of such a device, that it was the result of design and of a designer. Paley, it must be admitted, was a pleasing and gifted writer, but he was quite unacquainted with the more modern methods of investigation and results of the inquiry of the inconstancy and transmutation of the species.

As before remarked, there must have been a gradual evolution of the aërobic from the anaërobic cellule. After the oxygen became more freely disengaged from the deeper centers, the formation of the nervous cerebro-spinal axis took place, and its development continued until it reached the stages of the various types under which it is now represented. By slow degrees the environment of the cellule improved; it was then able to appropriate to its growth a more choice pabulum, and this was transmitted to the central parts, where the structures became more highly vitalized. The effete matter was then extruded toward the surface. In this way substances of the cell, says a writer, assumed a greater activity until there appeared ele-

¹ The authority for the creation of the heavens and of the earth rests entirely upon interpretations of the "sacred writ." The term *bara*, occurring in Genesis and translated "created," is used in Isaiah, where Jerusalem is spoken of as "created in rejoicing, that is, caused her to rejoice." The word means primarily "to cut" or "to carve" of materials that existed before the cutting or carving took place. In another passage the word *bara* is used in speaking of begetting a son. We all have our ideas how cities have been built and have been made sources of pride and rejoicing to their inhabitants, and how sons or children have been begotten or produced. The various agencies employed by mankind in accomplishing any great object or event are frequently represented as being the attributes or instruments belonging to a higher power. So also the results of the action of inanimate agencies, as heat, light, and electricity, have often been described as the workings of a supreme being. These considerations, though born of our religious consciousness or deduced from metaphysical inquiries where the ultimate basis of our being is to be differentiated from its phenomenal aspects, should occupy, nevertheless, no important place in a scientific investigation.

ments from which contractile tissue and muscular sense were developed.

That principle or grade of intelligence, which in animals we denominate as "instinct,"² must have been the gradual result of chance acts put forth, either for the purpose of preservation from danger or for greater comfort and growth in their living. When we come to analyze carefully our own actions and to compare them with those of the lower forms of animal life, we shall find that they are largely the result of association and of learning by experience. These perceptions in animals are not the glimmerings of lapsed intelligence, for that view would imply that the ancestors were superior in knowledge to their descendants. All observation and experience show that there has been a gradual progress in brain power in animals even in the forms we call protozoa.

Human beings, it has been claimed, are superior to animals on account of the power of reason; that is, that mankind possesses the power of ratiocinative processes or of presenting syllogistic arguments, of generalizing and of drawing conclusions. As we study more thoroughly this phase of the human mind we shall be forced to conclude that this attitude or attainment is not of so great importance as has often been represented. Most people can reason correctly and can arrive at proper conclusions provided the premises they choose are true. In order to have true premises man must not overlook the results of his experience. An animal does the same. Every animal must be regarded as something more than a recorder and transmitter of impressions. His impulses are the results of his sensations. The same is true of man, though in a higher degree, on account of his cerebral or encephalic centers having reached a larger and more powerful development, from a more prolonged and active exercise of those parts. A good example of an animal's power of reasoning is seen in the study of the beaver, whose skill in constructing his house and in damming a stream is remarkable. The animals when preparing their lodges on the banks of a river or lake are occasionally overtaken by floods, and so some of them lose their lives. If they were to build their huts far enough away to be safe from the destructive action of the higher rise of floods, their escape from the huntsmen, who are their greatest enemies, would not be so easy.

The further we carry on our researches regarding the nature and value of ratiocinative processes, the less will we consider such operations as the greatest of all attainments. What remarkable discoveries in art or science have been made by relying essentially upon the methods of inductive philosophy? Most of the great achievements have been made by the persons who have been well versed in the details of similar methods of procedure or in the mechanism of works that afford light respecting the new invention. Harvey, in reply to the question as to what first gave him the idea of the circulation of the blood, said that the valves of the veins pointed away from the central organ, the heart, and that this fact led him to believe that they must have been concerned in the movement of the blood in the heart and arteries. This celebrated physician and surgeon, it must be remembered, had, before he made his discovery, been an accomplished anatomist. He had made himself master upon the

subject of the views of Servetus, of Columbus, of Cæsalpin and of other great investigators, who, it appears, were on the verge of interpreting the principle by which the motion of the blood was controlled.

The knowledge of all principles underlying science generally has slowly been evolved. The same is true in regard to the conception of a plan for the efficient working of the steam engine and of gaining a knowledge of the most available materials for its construction. It has taken ages for man to learn how to describe correctly the several parts or bones of the skeleton, or the different portions of a plant and flower, as their several characteristics are now studied and set forth. The nervous cerebro-spinal axis of man, like that of any animal, was constituted originally of a mere entanglement of developing primitive cellulæ.

Man's adaptation to his environment was undoubtedly accidental, though it proved favorable to his growth, progress, and attainment. He is often too apt to boast of his superiority over some of his apparently weaker neighbors, just as one nation regards its own material possessions and its opportunities as of far greater consequence than those within the reach of other nations. Referring again to the power of reason as measured by the scale of what are called logical conclusions, how very fallacious this attribute will often prove when implicit trust is had in the deductions that are reached through its operation.

The consultant says that general anasarca, or dropsy, in the human body is dependent upon one of three causes of disease, viz., upon disease of the heart, of the liver, or of the kidneys. Examination showed that the heart was not primarily affected; the liver was also regarded as not abnormally involved. The great edema must therefore be, in accordance with the general proposition enunciated, due to original disease of the kidneys. The autopsy showed, however, that the cause of death was owing to pressure upon the ureters of morbid growths (uterine fibroids) which had been the *fons et origo* of all the untoward symptoms. Had a little more attention been paid by the advisers to the formation and effects of pelvic neoplasms and to the results of inflammatory conditions, and less trust been placed in the conclusions drawn by reasoning without the help of knowledge and experience derived from such special study, the patient's suffering might have been relieved and her life prolonged by the adoption of proper, timely surgical methods of treatment.

Facts are often wrongly interpreted by regarding certain phenomena as the result of laws of the animal economy. If by law we mean that certain special phenomena occur after the appearance of particular conditions, there can be no objection to using the term "laws" for phenomena. When we assert that such phenomena are the results of a law established by a lawgiver whose dictum is irrevocable, we deceive ourselves and thus give color to the conclusion that all remedial measures for relief are useless.

By the term "law" we can mean no more than that certain results follow when certain conditions are presented in accordance with special observed facts which have previously been ascertained. We know that when chlorin and sodium in limited quantities, and under the influence of a particular temperature, are brought together the formation of common salt will be the result. Should the condition of our

² See Prof. H. W. Parker's interesting article on "The Mystery of Animal Minds," in the February number of Popular Science News, 1898; also in a previous number of the same journal.

atmosphere undergo a material permanent change, such a product as salt by the union of the two elements might not be the result. Assuming that such a physical atmospheric change should supervene, we can not otherwise conceive than that the principle essential to the formation of chlorid of sodium must have been beginningless. The departure from the occurrence of such results can only take place during the presence of other conditions. Should our entire planets, as it is possible for the human mind to apprehend, be so heated or melted as to destroy apparently all animal and vegetable life, as has seemingly prevailed within its structure during the several geologic periods which may have existed, it would be altogether likely that life of such nature and character would again recur after the subsidence of the heat or of the caloric that would be engendered by the fusion of matters, though it would undoubtedly require the lapse of centuries for its reduction. The ebb and flow of tides which would take place would be on a scale that would be almost incomprehensible. The enormous columns of clouds that would be formed from the ebullition of all the watery elements, though destructive to the larger living organisms, would nevertheless waft volumes of cellules far beyond the border lines of the consuming heat evolved. Living cellules would thus be preserved and their multiplication in some form would be continued. The diameter of such cellules might gradually undergo, during the subsequent processes of their formation, material diminution. The aerobic organisms would assume, as before stated, more and more the nature of anaerobic bodies, or of other minute forms of life, dependent on the pabulum which could be appropriated from the circumfusa in which they would be enveloped.

In this connection it might not be improper to state again that carefully recorded experience and close observation tend to show that all forms of animal life, except those in which morbid changes have occurred, have materially advanced to a higher state of development. Even those we denominate as the protozoa have progressed and undergone division into branches of a higher grade. How impossible would be the accomplishment of the task, should any one attempt to enumerate the various cycles or eons that elapse before a simple unicellular protoplasm can become so differentiated as to reach the higher grade of organisms.

Who could say what had been the history of each single class of primitive cells before it assumed a more complex structure? We may denominate such organisms unaltered bodies or forms of life, but, as before remarked, we can not say that such simple bodies have always been in such a state, or that such unicellular organisms have not previously had at varying intervals an innumerable number of unfoldments and regressions.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Regular Meeting, Dec. 9, 1898.

Prof. C. S. N. HALBERG officiated as chairman of the meeting. Dr. GEORGE W. JOHNSON of Dunning, Ill., read a paper entitled

A CONTRIBUTION TO THE STUDY OF THE BLOOD OF TUBERCULAR PATIENTS.

He said that hematology was yet but imperfectly developed, and like many other methods of clinical examination, was

replete with error. It seldom gave a pathognomonic diagnosis, but often gave a protosight of data that can be detected in no other way. Its limits of usefulness in the practice of medicine are yet undefined. But it has come to be of such importance of late, that scarcely any clinical examination is complete without an examination of the blood. This is especially true of the chronic infectious diseases, and more particularly of tuberculosis. Anent the blood of tubercular patients, it is stated by an eminent authority on hematology, that while the patients appear to be profoundly anemic, their erythrocytes are seldom diminished in number and the hemoglobin is usually up to par, or but slightly below it. The question is therefore asked, "What is the cause of the apparent anemia in tubercular patients?"

It is the purpose of the paper to report observations on the blood of fifty tubercular patients in the advanced stage of the disease. Every possible source of error known to the author was eliminated or reduced to a minimum. A diagnosis of tuberculosis of the lungs was positively established by microscopic examination of the sputum. That the exact extent of the disease might be known and no other pathologic process present to influence the elements of the blood, a thorough physical examination was made. Especial attention was paid to cavity formation, with the idea of determining the presence or absence of leucocytosis in such conditions. The technic was essentially that detailed in Cabot's work on the blood. Clinical notes were taken on age, sex, duration of illness, family history, presence or absence of hemoptysis or hemorrhages, afternoon temperature and somatic condition. Unfortunately, the patient's word had to be taken as to the family history. This, however, was unimportant. In the microscopic examination of the sputum, note was made of the presence or absence of strepto- or staphylococci, for it is stated by Leyden, in "Musser's Medical Diagnosis," that pus micro organismi were not found in the purulent contents of tubercular cavities. They were found in great abundance in each one of the fifty cases detailed in this paper.

Hemoglobin.—Two methods of estimating the percentage of hemoglobin were resorted to: that by Fleischl's hemometer, and Hammerechlag's specific gravity test. In these cases Gloischl's instrument was more accurate. The specific gravity test invariably registered too high a percentage. The best chemicals were used, with accurately tested Squibb's urinometer. Repeated tests were made and by different persons, with the same results. The corpuscle index was estimated from the percentage of hemoglobin as read from Fleischl's instrument. In Germany, Jellinek has been experimenting of late with an instrument called Jolle's ferrometer. This is an instrument for estimating the amount of iron in the blood. He reports eight cases of secondary anemia in which the hemoglobinometer gave readings much higher than those recorded by the ferrometer, and suggests that poorly oxidized blood may give a higher hemoglobin per cent. than the amount of iron in the blood would warrant. The hemoglobin per cent. in Dr. Johnson's cases was far below normal in every instance, notwithstanding a new instrument was used, which always reads higher than one in long use. The blood was always very dark and watery, being difficult to save till taken.

Chlorosis.—This condition was met with in eight cases. Notwithstanding that it is seldom met with in males, five of these eight cases were in male patients. It is a fact that no hard and well-defined line can be drawn between mild cases of secondary anemia and chlorosis, but from the classic symptoms laid down for chlorosis, these cases would most certainly and more properly come under chlorosis. The percentage of hemoglobin was very low, even to oligochromemia; the erythrocytes but slightly diminished in number and smaller in size than normal, with now and then well-marked necrobiotic changes. There was always leucocytosis, which is not usually true of uncomplicated chlorosis.

Leucocytes.—There is always a leucocytosis if cavities are present, and the vital resistance of the patient is not too low. The number of leucocytes will be in proportion to the virulence and extent of the septic process and the vital resistance of the patient. If the septic process is extensive and the patient extremely asthenic, there will be hypoleucocytosis. Cavities were demonstrated in twenty-eight of the cases. Of this number, twenty-six had marked leucocytosis, the other two were very asthenic. The white cells were greatly increased in nineteen of the twenty-two remaining cases in which cavities were not demonstrated. The remaining three were also asthenic. Leucocytosis, therefore, occurred in forty-five of the fifty cases. Pathologic leucocytosis is diagnostic of cavity formation, although the cavity can not be demonstrated by physical examination. The absence of leucocytosis precluded cavity formation in fairly sthenic cases.

In cases of chlorosis there is lymphocytosis. In secondary anemia the adult lymphocytes are the more numerous. Polymorphonuclear neutrophils are abundant in septic cases. If there is an asthmatic or dysphonetic condition, the eosinophiles will be increased. Such was the observation in these cases. Ehrlich's triple stain was used in the preparation of the slides. Neusser's granules were seen in a number of cases, but were not constantly present, or could not be detected from the granular appearance of the eosinophiles. They appear as separate bodies, lying in the protoplasm immediately around the nucleus, and are most commonly seen in the mononuclear variety. They are considered to be peculiar to chronic tuberculosis and are indicative of uric acid diathesis. Among the cases was one of Addison's disease. In this case the leucocytes were all more or less granular, the granules being finer than those seen on the eosinophiles, and darker, like small grains of powder.

Erythrocytes.—Well defined necrobiotic changes were noted in thirty-six of the fifty cases. Of these thirty-six cases, twenty-eight had secondary anemia. Both hemoglobin and the number of erythrocytes were diminished, with necrobiotic changes in the erythrocytes, such as irregularity in size, none being larger than normal, while some were normal and others showing poikilocytosis, oligochromemia and oligocythemia, together with a diminished number of leucocytes and an increased number of adult lymphocytes and normoblasts. The degree of such changes was, of course, varied, and there was usually leucocytosis, which is most always true of secondary anemia.

Recapitulation.—The hemoglobin was far below normal in each of these cases. Chlorosis was met with in eight patients. In these eight cases there was oligochromemia, normal or nearly normal number of erythrocytes, diminished diameter of erythrocytes, with occasional necrobiotic changes, lymphocytosis, normoblasts, and diminished number of adult lymphocytes, and low corpuscle index.

Dr. HOMER M. THOMAS.—The able paper presented by Dr. Johnson is one of widespread interest, not alone to those especially interested in tubercular disease, but to the profession at large. It represents a vast amount of painstaking, thorough and scientific work. The detail of blood examination in tubercular disease is one of elaborate technic. The study of hematology, as we know, is as yet imperfectly developed, and while the present methods of clinical examination are thorough and up-to-date in every particular, it is possible that errors may be discovered with improved technic.

The question of the apparent anemia in tubercular patients is one in which many theories have been advanced, but nothing definitely determined. We know that the paleness of the skin is not due to a lack of hemoglobin; it is only by following up lines of investigation and finding out the real cause which exists between the apparent anemia and pernicious anemia that we can acquire any data upon which to establish a differential diagnosis between the two conditions. This has been very ably accomplished by Dr. Johnson. His thesis is worthy of particular commendation, because he does not attempt to dogmatize, to establish a theory upon the results of his findings, but rather to make a plain statement of facts and allow us to draw from these facts our own deductions.

It has been stated by Leyden in "Musser's Medical Diagnosis," that pus micro-organisms were not found in the purulent contents of tubercular cavities. In Dr. Johnson's fifty cases pus micro-organisms were found in great abundance in each one of the cases. This discrepancy in statement may be due to the fact that in Leyden's cases there existed auto-infection without communication of the cavities with the larger bronchial tracts; while in those observed by Dr. Johnson there existed direct bronchial connection with the cavities, and hence mixed infection resulted. These observations will go a long way toward placing upon a firm scientific basis the hematology of tubercular cases. It would be of vast scientific interest if some other observer, as fortunately situated as Dr. Johnson is, in contact with tubercular cases, could make a similar series of examinations. Then a comparative analysis could be instituted between the two series, and discrepancies and agreements might be readily ascertained.

I wish to congratulate Dr. Johnson on the scientific character of his work, and hope that this series of cases may be but the beginning of more and more work in this interesting and invaluable line of investigation.

Dr. R. B. PREBLE.—I appreciate very fully the labor that Dr. Johnson must have expended upon this paper. There is no work which comes to the clinician that is more trying and requires more patience than that of hematology, and at the same time, it must be confessed, there is scarcely any work which brings us so little true satisfaction.

Certain conclusions were drawn by the essayist which, it seems to me, were rather strongly stated. For example, the statement that a leucocytosis is pathognomonic of the presence of cavities, although we are unable to demonstrate them by physical signs, can not be substantiated, because the leucocytosis which we find in cases in which cavities can be demonstrated is not due to the presence of cavities themselves, but to the presence of bacteria which give rise to cavity formation. These cavities are due not so much to the tubercular infection as to the mixed infection. If we have the latter without cavity formation we find leucocytosis also. So that the most we can infer from the presence of leucocytosis is that we have not a pure tubercular infection, but that we have added to it the more active pus bacteria, especially pus cocci.

It is interesting to note that Dr. Johnson has run across cases of chlorosis. The dividing line between chlorosis and secondary anemia is not by any means a sharp one, so that cases of chlorosis and secondary anemia are not easily differentiated. It is interesting to note in this connection, that one of the questions which must always be considered when we come in contact with chlorosis is whether we have a case of chlorosis or one of incipient tuberculosis under the picture of chlorosis. This frequently happens, especially in girls. They present apparently a chlorosis, and it is found later on not to be true chlorosis but incipient tuberculosis.

I think Dr. Johnson is right with reference to his statement of Neusser's granules. It is well known that Neusser is a little inclined to attach too much significance to these granules, and yet one hesitates a good deal to question his conclusions, because he is a man of such great painstaking and exactness. It was my pleasure to listen to Neusser's lectures for a number of months. He is a man who is known among his immediate associates as one who is extremely careful both in his work and in making statements. He writes but little, but what he does is very good. While it would seem as if Neusser had overdrawn his conclusions, still one hesitates to question anything that he says.

Dr. JAMES G. KIERNAN.—It seems to me that a number of points in general pathology, suggested by the paper of Dr. Johnson, ought to be considered. For instance, take the question of chlorosis. At one time the attempt was made to demarcate hysteria from certain symptoms which occurred in the female from certain symptoms of precisely the same character which appeared in the male. Here, as with chlorosis, the question was a difficult one to determine, because the female is more liable to certain symptoms. Certainly, from this standpoint, Dr. Preble's opinion regarding chlorosis does not seem to me to cover the point entirely. While it is true that chlorosis is premonitory of a large number of cases of tuberculosis, and while it is equally certain that chlorosis occurs in all three types of the tubercular diathesis, is it anything more than the demonstration of the fact that a culture medium for the development of the tubercle bacillus is produced by those conditions? Some years ago a very valuable brochure was published in a Herman series of clinical lectures by Sokolowski, in which he discussed a number of conditions mimicking tuberculosis. In a large number of these conditions, while hematologic factors were not narrated, clinical phenomena were. These seemed to indicate that chlorotic conditions resembling those occurring in the preliminary stage of tuberculosis were present in a number of cases of malaria, post-pregnancy and nervous exhaustion states. On the other hand, Sokolowski pointed out that prominent among the tubercular affections which mimic other diseases is pseudo chlorosis. For a long time, he remarked, a certain connection between chlorosis and pulmonary tuberculosis had been noticed. Some forms of chlorosis attacking young women at puberty would obstinately resist otherwise successful treatment and gradually pass into lung tuberculosis. The opinion obtained that the condition was simple chlorosis which from some obscure cause passed into phthisis. Trousseau first called attention to this condition, which he termed pseudo-chlorosis, and showed it was a precursor of phthisis. The pallor of pseudo-chlorosis is, as Sée has pointed out, often distinguishable from that of chlorosis. The pallor of chlorosis is a waxy one shading into green. The pallor in pseudo-chlorosis is bluish-gray shading into ashen. It is of interest, therefore, to find that hematologic observation has confirmed these older observations in clinical medicine and has pointed out a basis for the semeiology. It is not surprising, therefore, that there should be conditions occurring in both male and female, who are victims of tuberculosis, which will mimic, if not actually be, chlorosis, and which is practically a culture medium for the development of tubercle bacilli.

With regard to the question of leucocytosis and cavity formation raised by Dr. Preble, there exists another factor in addition to what he called the most active agents of degeneration,

the staphylococci, the streptococci, and the pus cocci in general. There is still that tendency from an expression of constitutional defect, in addition to the onslaught of the pus cocci, aided by the tubercle bacilli. I understood Dr. Johnson as saying that the condition prior to cavity formation was one of leucocytosis.

Dr. JOHNSON—I simply stated that where there was pus infection, even where there could not be a cavity demonstrated, leucocytosis was diagnostic of cavity formation, and I simply meant that it was diagnostic of bronchiectatic abscesses and smaller abscesses, which I believe would be difficult to demonstrate physically.

Dr. KIERNAN—Taking another phase of your paper, would you regard leucocytosis as an expression of a defect of vital resistance, or of the opposite condition—an attempt at repair?

Dr. JOHNSON—If there be a leucocytosis, I consider it an attempt at repair.

Dr. KIERNAN—That was precisely the position assumed by Sokolowski. In accordance with the usual laws of pathology, when there is an onslaught by active organisms, like the pus cocci, there is an attempt at excess of the white corpuscles, and hence, under ordinary pathologic laws, that should be expected in the case of a cavity where the vital resistance was sufficient, rather than the reverse. It seems to me, that is an expression of a pathologic law.

I do not think Dr. Johnson has taken too positive a standpoint in his paper. His findings have been merely put as strongly suggestive rather than as demonstrative. Considered from that standpoint, it is an extremely valuable contribution. Of course, there need to be undertaken a large number of control experiments along this line, but we must not forget that in hematology, as elsewhere, the old fiat that was pointed out by Bacon in his "Idols," that is, a man takes a label and proceeds to measure everything by it without reference to control experiments. This paper can only be criticised from its suggestive standpoint. It must be remembered that in pulmonary tuberculosis there are a great many phenomena such as occur in a large number of exhaustional conditions. They occur with greater rapidity; they are more demonstrable; they are mingled more with the minor phenomena produced by the tubercular changes, but still in a general way they resemble the other conditions of exhaustion. This is peculiarly true of the psychoses produced by tuberculosis. That being the case, one would expect a large number of phenomena having a close resemblance to other constitutional conditions modified more or less by the local states. As Dr. Preble has pointed out, a good many of the most difficult conditions that have to be dealt with in considering pulmonary tuberculosis are due rather to the secondary ravages of pus cocci than to the original ravages of the tubercle bacillus itself. But it should also be remembered, that while the tubercle bacilli can produce a constitutional condition which predisposes to pus cocci ravages, yet behind the tuberculous condition are a number of constitutional states, and all of these should be considered.

I would like to see, what I think will ultimately be made, precisely the same observations along the line of what Sokolowski has called pseudo-tuberculosis that have been made here, that is, observations to determine how much of these hematologic phenomena are produced by constitutional conditions which underlie and predispose to the tubercular condition, and how much of them are produced by the secondary consequences of the tubercular infection.

Dr. J. A. WESNER—Dr. Johnson has not overstated the case in saying that the specific gravity and Fleischl's method of estimating hemoglobin are very inaccurate. In normal blood all the hemoglobin is not oxyhemoglobin, but some of it is hemoglobin; furthermore, oxyhemoglobin is changed quite rapidly in the presence of air, etc. Fleischl's hemometer is standardized to the color of oxyhemoglobin and it is this variation of color of the different colors of hemoglobins which makes this error. Hopps-Seyler's method is very accurate and simple; he uses an apparatus composed of two compartments. One of these he fills with a standard carbonic oxid hemoglobin solution, and in the other he places the blood to be examined, and dilutes up to the mark with water, and then passes in carbon monoxid gas to saturation. We now have two hemoglobins, both of the same chemic composition, and, therefore, of the same color. We could apply the same method to Fleischl's hemometer; instead of using an oxyhemoglobin prism, use a carbonic oxid hemoglobin prism, and then saturate the drawn blood with carbon monoxid and place in the disc and proceed the same as given under the Fleischl's method.

With reference to pathologic leucocytes, I think Dr. Johnson's answer to Dr. Kiernan, that it is an effort at repair, is correct, and I believe if the urine had been tested in all of these cases albumose would have been found. This is always

indicative of either pus formation or chronic suppuration. In simple tuberculosis we will not find any albumose in the urine. When we have mixed infection, especially when there is an effort at repair, albumose will be found in the urine.

Dr. JOHNSON (closing the discussion)—I wish to make myself clearly understood in regard to pathologic leucocytosis. I believe it is universally conceded by pathologists that where there is a pathologic leucocytosis, there is always a septic process, and that was the thought expressed in my paper. I desired to be understood as saying that where there are pus micro-organisms present, such as streptococci and staphylococci, and where there are purulent discharges in the sputum, demonstrated by microscopic examination, there is the formation of bronchiectatic abscesses. I stated in my paper that there are various degrees of cavity formation, as well as various degrees in the septic process, and that is what I meant when I stated that a pathologic leucocytosis is diagnostic of cavity formation, although the cavity could not be demonstrated by physical examination. I desire to thank the members of the Academy for their attention and discussion of my paper.

Southern Surgical and Gynecological Association.

Eleventh Annual Meeting, Dec. 6-8, 1898.

(Concluded from page 1473).

Dr. A. M. CARTLEDGE of Louisville contributed a paper entitled

WHEN SHOULD WE OPERATE FOR APPENDICITIS?

He drew the following conclusions: 1. Probably 98 per cent. of the patients who die of acute appendicitis without operation have the fulminating variety of disease. Operation, to be of service, must be done in the first twenty-four hours, better in the first twelve. 2. In view of the fact that we have no means of knowing the probable course of a given attack of appendicitis, operation, when possible, should be performed within the first twenty-four hours after the onset of symptoms. 3. Patients seen after the third day should not be operated on until over the attack, or until purulent formations, if such take place, have been walled off and the patient practically rid of general sepsis. An exception to this rule is the rupture of an appendiceal abscess into the peritoneal cavity, a very rare accident, when abdominal section should be immediately performed. 4. Probably as many patients recover from general septic peritonitis by stimulants and purgatives as by operations. In either event, if it is a case of true general septic peritonitis, the mortality will not be far from 95 per cent. Contributions to medical literature would indicate that there is a sad need, on the part of the profession, of more definite views as to the nature of this disease. If operated on at all, no attempt at general cleansing of the cavity should be practiced; quickly assist nature to take care of the desperate patients, by removing the source of the foci. To do more is to add the shock of an unbearable operation to an already nearly exhausted vitality. 5. Subject to interval operation patients who have suffered unmistakable attacks of the disease. 6. Do not operate too soon after a severe attack with many adhesions; the operation will be greatly simplified by waiting a few weeks longer. In the meantime, keep the patient upon light diet and little exercise. Patients do not usually have a recurrence until the adhesions or splints have been removed by absorption. The mortality from interval operations should not be more than 1 per cent. In drawing the above conclusions, Dr. Cartledge wishes it to be distinctly and thoroughly understood that they are not to be considered in the sense of hard and fast rules, but simply as a working basis for the general practitioner.

Dr. GEORGE H. NOBLE of Atlanta read a paper on

URETERAL ANASTOMOSIS.

He gave an analysis of thirty cases collected from literature, and divided them into two classes: 1, ureteral anastomosis, or union of the ureter end to end or side to side; 2, ureteral implantation into the bladder. July 2, 1898, the essayist ligated the ureter with the ovarian vessels and Fallopian tubes in a case of large extraperitoneal fibroma. This was the very first ligature applied in doing the hysterectomy. The bladder end was split about three-eighths of an inch, as much of the mucous membrane as could be drawn out was cut away; then the upper or kidney end of the ureter was invaginated into it, using a mattress suture for the purpose. The split was then closed with fine sutures, making a snugly fitting cuff around the opposing end with no mucosa intervening. Small silk was used to stitch the raw edge of the inferior segment around and to the sides of the upper section. A peritoneal cuff was thrown around the joint thus made and the ureter buried behind the

peritoneum. The entire work was conducted with the aid of a ureteral catheter, which had been introduced through the ureter into the bladder and drawn out of the urethra with a pair of forceps. The upper end was passed into the kidney end of the ureter. This served a useful purpose, the entire manipulation being greatly facilitated and preventing obstruction of the ureter by crowding down the cut end of the mucosa just below the line of union. This case had suffered from absorption of pus for a number of weeks from double pyosalpinx, was emaciated and thoroughly septic. Her temperature just before going upon the operating table was 103 degrees, and had been running equally as high for the time she had been in the hospital and perhaps longer. Her pulse was 130, weak and thready. Thus this anastomosis was done under unfavorable conditions, but was successful.

In October, 1898, he did a successful resection of the left ureter in a case of extraperitoneal extension of sarcoma of the ovary. About one and a half inches of the duct was removed and the ends united as above. The peritoneum was stripped from the entire left half of the pelvis. The bladder was separated from the upper portion of the vagina, and also from the horizontal ramus of the pubic bone, and drawn up to left side to the ileopectineal line to cover or bury the ureter, and fastened with a silk suture. In this instance the ureteral catheter was introduced on the stiletto, and being stiffened by it passed directly out of urethra from the ureter; thus the use of forceps was necessary to fish it out of the bladder. Abdominal and vaginal gauze drains were used. There was no leakage.

The essayist said that there are several features necessary to success in doing ureteral anastomosis aside from thorough asepsis: 1. Perfect coaptation or invagination, which must be done in such a way that no mucous membrane can slip between the ends of the ureter. 2. The ureteral artery should be preserved in its continuity to the ends of the ureter. If this vessel be destroyed, when the ureter has been dissected loose from its attachments, it will perish beyond the point where it ceases to receive its blood-supply. The ends of the ureter should be cut back to the point where the artery is intact, lest under diminished blood-supply and tension it should perish. 3. All strain or tension must be relieved. Should union occur by first intention, the parts will separate as soon as the sutures cut out or are released. 4. There must be no obstruction to the flow of urine.

Dr. WILLIS F. WESTMORELAND of Atlanta presented a paper entitled

CARCINOMA OF THE BREAST.

He said that carcinoma now presents even a more serious problem than formerly, on account of its rapid increase. The proportionate mortality from cancer is four and a half times greater now than half a century ago. No other disease can show anything like such an immense increase. According to statistics, two out of every five cases of carcinoma in the female are of the breast. Over three-fourths of all the tumors occurring in the breast are carcinoma, or to be exact, of 637 tumors, over 503, or 83.20 per cent. were carcinoma, leaving only 107, or 16.79 per cent., representing all other forms of neoplasms. The author discussed the etiology of the disease at considerable length. Speaking of the pathology, he said there was no subject in surgery about which such divergent opinions are held. There is a wide variation in the malignancy of carcinoma, some proving fatal in less than a year, a few others taking ten or fifteen years. He divided the new varieties of carcinoma into the scirrhous and medullary or encephaloid. The former has an average duration of life of about thirty months, the latter of about twelve months. When it is considered that the skin and pectoral muscles are involved in nearly every instance in this disease, the surgeon can easily see the philosophic reasoning upon which Halstead's operation is based. The essayist follows the Halstead method in carcinoma of the breast. He believes, however, that Dr. Bloodgood was the first to demonstrate the advantages of completely cleaning out the postero-internal subscapular region by the supraclavicular route. The results of the Halstead operation, in the opinion of the essayist, depend upon the ability of the individual operator, his earliness in seeing the case and his closeness in following Halstead's technique. This operation not only requires surgical skill and experience, but proper respect for the magnitude of small things.

In the opinion of Dr. Westmoreland, no surgeon will make a satisfactory operation on his first few cases. He finds that with each case he operates more satisfactorily. The operation does not present the seriousness that its magnitude would lead us to believe. He has operated six times before his class at a public clinic and transferred the patients afterward, at times quite a distance, to their homes. In his first operations he

had some shock from exposure, but this is easily controlled by placing hot towels over the exposed surfaces. There is practically no blood lost in a properly made operation. It is better to complete the operation, grafting included, at one sitting. When, for any reason, this is not practicable, the cleaning out of the supraclavicular region and the grafting can be made at a second operation. When grafting is done at a second operation he finds it better to remove the granulations. This is best done by curetting. In two of his cases it was necessary to remove the subscapular nerves, and in another to resect the axillary vein. No unpleasant sequelæ followed in either case. He has operated upon over fifty cases of carcinoma since he began surgical work, and has always cleansed out the axilla and stripped the muscles in each case. He has been making Halstead's operation since its introduction. He does not know the results in the majority of these cases. Two of them, however, came back to him with later recurrence, one with a carcinoma of the femur five years after the operation, no local return; the other with a local return in the cicatrix nine years afterward. This case died in a short time from metastasis. He feels quite sure that these were not independent new growths. There is always one rule, that the more malignant the case, the greater the blood changes.

The primary object of the paper was to point out the fact that a careful clinical examination of each case, a record of the local conditions, the type of tumor, the blood changes, whether or not there was marrow infection, the family history, and the length of time it had existed, would not only give definite facts upon which to base a prognosis, but, if published with each case, would give all surgeons a record of infinite value for comparative purposes.

Dr. I. S. STONE of Washington, D. C., contributed a paper on

THE RARITY OF OVARIAN CYSTS IN NEGRESSES.

After several years' experience in a hospital for women, where a large number of negroes are annually treated for gynecologic diseases, and where cases of uterine myomata are frequent, the writer has noticed the extreme rarity of ovarian neoplasms and especially of the multilocular variety. He addressed letters to all the members of the Association and to several other prominent surgeons elsewhere, and of the large number who replied to his inquiry there was almost universal acquiescence in the position taken by him, save from one important medical center, i. e., New Orleans. According to the records from the hospitals of this city, cysts of the ovary of all classes are rather more frequent in the negro than in the white. Leaving aside this one source, the author advanced overwhelming testimony favoring the view that ovarian tumors are exceedingly rare in the negro race. The essayist makes a careful distinction between multilocular and unilocular cysts, because there can be no doubt about a diagnosis at the time of operation when a multilocular cyst is found. It is otherwise with parovarian cysts or those of the broad ligament, etc., which are perhaps classified as ovarian, and their removal called ovariectomy in hospital reports or operation lists, when, strictly speaking, they are not ovarian tumors. He has frequently operated for dermoid, papillomatous, parovarian and broad ligament cysts in negroes (although most of these in mixed cases), but has not seen a multilocular ovarian cyst.

Dr. F. W. PARHAM of New Orleans read a paper on

RESECTION OF THE THORACIC WALL FOR TUMORS GROWING FROM THE THORACIC SKELETON.

He reported two such operations of his own with successful results. Both operations widely opened the pleural cavity and the lung collapsed in both. In the first the collapse was relieved only when the great pectoral muscle was brought down and sutured to the rent in the pleura. In the other, signal service was rendered by the Fell-O'Dwyer apparatus for maintaining regular respiration. He believes the perfection of this apparatus and its application in skillful hands will greatly aid in the developing of the surgery of the chest. He had collected all cases operated on up to date with a mortality of 25 per cent. for the intrapleural operations for tumors of the chest wall.

Dr. W. L. ROBINSON of Danville, Va., presented

A CLINICAL REPORT ON THE USE OF ANTISTREPTOCOCCIC SERUM IN SEVEN CASES OF PUERPERAL SEPTICEMIA, FOUR OF POST-OPERATIVE SEPSIS, THREE OF SEPTIC CELLULITIS, AND TWO OF ERYSIPELAS.

The use of antistreptococcic serum in puerperal fever, aseptic cellulitis, post-operative sepsis and erysipelas, comprises seven cases of puerperal fever treated by him with high fever, rapid, weak pulse, characteristic breath, chilliness, nausea and insomnia, pelvic tenderness, with scanty, fetid lochia. From 12 to 20 c.c. were injected after the usual treatment had

failed, including irrigations, intra-uterine and vaginal, sealing abrasions of the cervix and perineum, saline injections, purgatives, stimulants, etc., with prompt improvement in the general condition, rapid fall of temperature, lowering of pulse-rate, and complete recovery. The effect was manifest in from eight to sixteen hours in the majority of cases. In three post-operative cases of sepsis, seemingly hopeless, all usual treatment failing, the serum in twelve hours transformed every symptom of high fever, chilliness, rapid, weak pulse, diarrhea, etc., into a hopeful condition, resulting in rapid recovery. Pain subsided in twelve hours, fever in eight hours, diarrhea in forty-eight. One was a vaginal hysterectomy; the second was operated on for the removal of pus-tubes, and the third was a vaginal hysterectomy. Three cases of septic cellulitis consisted of suppurative cellulitis of the hand, commencing in the finger, one of injury from a rusty nail, and the other from the spur of a cock. Both had been treated by general alterative tonics and locally with improved antiseptic measures, but the disease progressed daily, involving new tissue till the serum was used, which promptly arrested the progress of the disease in both cases and saved the hands. A third case was a gunshot wound of the ankle, with marked septic prostration, chills, diarrhea, etc., which was dissipated promptly by the use of the serum, so far as fever and general septic symptoms were concerned.

Two cases of erysipelas: One, 16 years of age; abscess following extraction of tooth, discharging at two points on the neck. Redness and swelling covered one-half of the face, nose and head. Temperature 104.4 degrees; pulse 140; delirium, vomiting, chilliness, etc. Ten c.c. of the serum were injected at nine P.M., resulting in fall of temperature to 100 degrees. Next morning there was complete arrest of all symptoms, followed by prompt recovery. The second case was one of nephritis; puffed eyelids and face; erysipelas of the thigh; hard, red, shiny swelling; delirium; two injections used in twenty-four hours rendered patient convalescent in thirty-six hours. The serum used was that of Parke, Davis & Co.

Dr. J. B. MURFREE, of Murfreesboro, Tenn., followed with a paper on

PENETRATING WOUNDS OF THE CHEST.

He confined his remarks largely to wounds of this region. Such a wound is produced usually, by external violence where the walls of the chest are penetrated and the offending substance enters the thoracic cavity. It is a wound where not only the chest-walls are injured, but also the tissues and oftentimes some of the viscera within the cavity. Penetrating wounds of the chest vary in their extent, character and severity. They vary from a small perforation with a delicate knife blade or small bullet, merely separating the tissues without inflicting any serious injury, up to a fearful laceration with great loss of tissue or serious damage to an organ produced by a large knife or a minie ball. Wounds penetrating the chest are dangerous from hemorrhage, from the admission of air into the pleural cavity, producing collapse of the lungs, from emphysema, from empyema, from septicemia and exhaustion. When a large vessel is injured, death quickly ensues from loss of blood; while injury to smaller vessels may endanger life and even prove fatal from continued or frequently repeated hemorrhage. The symptomatology and treatment of these wounds were dwelt upon by the essayist at considerable length.

Dr. GEORGE S. BROWN, of Birmingham, Ala., reported a case of vesico-rectal fistula of eight years' standing, the result of perineal lithotomy, with cure after ten operations.

The following officers were elected for the ensuing year: President, Dr. Joseph Taber Johnson of Washington, D.C.; vice presidents, Drs. F. W. Farham of New Orleans, and W. L. Robinson of Danville, Va.; secretary, Dr. W. E. B. Davis of Birmingham, Ala.; treasurer, Dr. A. M. Cartledge, of Louisville; to fill vacancy in the Council, Dr. L. McLane Tiffany of Baltimore.

New Orleans was elected as the next place of meeting, time to be determined by the Secretary with advice of the Council.

After the presentation and adoption of resolutions of thanks, the Association adjourned.

Cincinnati Academy of Medicine.

Regular Meeting, Dec. 6, 1898.

Dr. E. H. SHIELDS contributed a paper to the meeting entitled

THE HYPODERMIC METHOD IN THE TREATMENT OF SYPHILIS.

He had used this method in some seventy-six cases in private practice and in many more in charity work, and always with the best of results, the manifestations of the disease disappearing with from twenty-six to sixty injections. He had given

over seventeen hundred injections without abscess formation and attributed this good result to several reasons: that the injections were deep intramuscular; that he did not use calomel; that the solution used was sterile. In this latter connection he thought not enough care was taken in rendering the preparation sterile. He usually, though not invariably, used the bichlorid of mercury, and the injections were usually given about once a week. The pain of the injection was not very severe and was often preferred by the patient to the inunction treatment. He especially recommended this method in the roseola stage, when the face was involved and it was desired by the patient to most quickly rid himself of this early lesion; and also in those secondary eruptions that resisted other methods of treatment, as the so-called psoriasis palmaris luetica. In a case of iritis the pupil had responded to atropin only after the injection treatment had been instituted, though the internal administration of mercury had been pushed to the limit. (A similar experience was mentioned by one of the subsequent speakers.) Among all his cases he had had but one recurrence.

Dr. RAVOGLI opened the discussion, saying that he had read a paper on the hypodermic treatment, seventeen years ago, before the Academy. At that time, when calomel was used almost exclusively, when the injections were subcutaneous, and when but little was known of aseptic technic, abscess formation on the fifth or sixth day was very frequent. To be sure, previous to suppuration the mercury in the system had accomplished wonderful results. He himself had had one case develop gangrene, and death had almost resulted. The patient had been confined to bed many weeks. Another objection to the use of calomel was the tendency to an early production of ptyalism; once injected, absorption would continue from the reservoir until the supply was exhausted. The ptyalism would become worse, and nothing could be done unless the points of injection were incised. He had abandoned the method many years ago, but of late he had treated some of the inmates of the Cincinnati Hospital by hypodermic injection. He found that the neurotic condition usually present among the women of a venereal ward was greatly increased. The pain of the injection was greatly complained of, often lasting several weeks, almost always causing a decided limp on the day of the injection. Nodules were often formed at the point of the injection which persisted for months. He agreed with the essayist as to the good results obtained by this method in malignant cases of syphilis, and had often seen lesions most persistent to other methods of treatment clear up rapidly after a few injections. He thought that it was for these cases particularly this treatment should be reserved. He did not believe in treating all cases indiscriminately by means of any one method of treatment. Drs. Heidingsfeld, Merrill, Ricketts, Weaver, H. M. Brown, Marcus, Haines, and the essayist, also discussed the paper.

Dr. BYRON STANTON, local member of the Ohio State Board of Health, read some interesting facts regarding the presence of smallpox in the State of Ohio, stating that the subject was of general interest in that it had assumed almost the proportions of an epidemic, and that because the type of the disease had been almost universally mild it had been mistaken in many places for chicken-pox. The latter, to obscure matters more, had indeed been prevalent at several places where undoubted cases of smallpox were also raging. The present epidemic had begun in March of the present year, having been brought to Carroll from Georgia. Several members of an "Uncle Tom's Cabin" troupe had become infected, but the mildness of the cases baffled the attending physicians and no precautions had been taken to prevent spread. In all, about 550 persons had been attacked, almost all persons who were neither protected by a previous attack nor by vaccination. The mildness of the present epidemic is shown when it is stated but five deaths have occurred out of the total number of cases reported. Over thirty towns have suffered, including the cities of Sandusky, Cleveland, Dayton and Cincinnati. In the latter city, up to date, nine cases have been reported and isolated at the Branch Hospital. In most of these cities the "Uncle Tom" troupe had given performances. To their credit it may be said that they were unaware of the nature of the disease attacking their various members. They are now happily corralled in Cincinnati. The town that has suffered the most is Loveland, between twenty to thirty miles from Cincinnati, on the Pennsylvania Railroad. This place is not yet free from infection.

Regular Meeting, Dec. 12, 1898.

Dr. O. P. HOLT presented a patient afflicted with pernicious anemia. The principal point about the case was that the diagnosis had been positively made about two years ago (Jan-

uary, 1897), and that he had been incapacitated from work for fully a year before that time by weakness, loss of strength, palpitation and shortness of breath. He was admitted to the Cincinnati hospital, January, 1897, with the above symptoms and also with great edema of the lower extremities, the external genitals, and the face, particularly the eyelids. The skin was of a decided lemon-yellow color. He was very well developed and not emaciated. During the year of his illness he had consulted many physicians, and diagnoses of all kinds had been made: Bright's disease, heart disease, particularly malaria, but never pernicious anemia. A careful examination of the urine, quantitative, qualitative and microscopic, showed the kidneys to be normal. The heart was normal, aside from soft, blowing, systolic murmurs, not constant, heard indifferently at apex and base, which murmurs could be readily accounted for by the anemia. The lungs were normal, also the liver and spleen. There was no history of venereal disease or of alcoholism. The examination of the blood showed the reds to be in the neighborhood of one million, the whites about three thousand; the hemoglobin estimation showed the individual corpuscular richness to be above normal, taking the number of reds into consideration, so that the color index was above one. The stained specimens showed marked poikilocytosis, both in size and shape. Nucleated cells were not common, but the normoblasts exceeded the megaloblasts. This latter point—the excess of normoblasts over megaloblasts—has always been regarded as a rather favorable sign as far as prognosis is concerned. He thought that the increase in hemoglobin was due to the fact that the average size of the reds was above normal. The eye grounds were normal, and no retinal hemorrhage had developed. The stools were examined frequently for parasites, as described to be occasionally present by some observers, but none were found. Indeed, no gastrointestinal complications had been observed at any time. The patient was kept in bed, functions kept normal, and arsenic administered in the form of Fowler's solution, and gradually increased until he was taking fifteen drops three times a day without discomfort. The edema gradually disappeared, he became stronger, his red count gradually increased to almost three millions and at the end of three months he was discharged at his own request, greatly improved, as he thought well. To the present time he has been kept under observation, and during this interval has had two typical relapses, which latter are regarded as very characteristic of the disease. His last count showed the following: reds, 2,700,000; whites, 7,000 (very unusual, as a leucopenia is almost always present); hemoglobin 43 per cent., differential count (500 whites): small lymphocytes, 36 per cent.; large lymphocytes, 1.2 per cent.; neutrophils, 60.4 per cent.; eosinophiles, 2.4 per cent.; no myelocytes. While counting the five hundred whites, twenty-six normoblasts and one megaloblast were observed. In puncturing the ear to obtain the blood, the latter flows with great difficulty, and deep puncture has to be made so as to obtain sufficient blood for examination without resorting to pressure. The blood remains fluid for a long time and seems to have very little power of coagulation. Poikilocytosis, while present, is not so marked as at previous examinations. In the treatment of this disease many remedies have been used with apparently little success. While temporary improvement has followed the exhibition of several, this good effect could not be properly assigned to the drug in question, as it is well known that many cases have improved without medication, and relapses, as he had said before, were typical of the disease. Iron he regarded as useless, as the disease was not looked upon as resulting from increased destruction of reds, but to something interfering with their proper manufacture. Various body extracts have been used, but with little good effect. Bone marrow has been reported of value in some cases, but the time is not yet ripe to ascribe too much to this remedy. Arsenic, in the form of Fowler's solution, which this patient has taken freely, is looked upon by most authorities as the most valuable agent as far as we now know.

Dr. C. A. L. REED read a paper on "Fat and Fecundity," which was discussed by Drs. C. E. Caldwell, Bonifield, H. M. Brown, T. Louis Brown, Kiely, Haines, Fraid, Johnston, Ricketts, Judkins.

The French Congress of Urology.

Paris, October, 1898.

ALBARRAN, HALLE and LEGRAIN presented the subject of
VESICAL INFECTION.

They stated that in 304 cases examined the bacterium coli was found 131 times, pure in 98; the pyogenic staphylococcus was found 70 times. The pyogenic streptococcus has only been

noted eighteen times in literature. In their experience gonorrhoeal infection very frequently depends upon the action of the gonococcus exclusively. Fraenkel's, Friedlander's and the typhus bacillus are but rarely encountered, while the Koch bacillus is among the most frequent agents of vesical infection. The recent discovery of anaerobic micro-organisms in vesical infections throws a new light on certain gangrenous and fetid processes. The diagnosis depends upon histo-bacteriologic analysis of the urine, which differentiates bacteriuria from cystitis and determines the extent of the lesions. The destruction of the micro-organisms by medical means is usually unattainable; surgical intervention is necessary to evacuate the results of stagnation of urine and apply antiseptics or open up the organ, insuring drainage and repose.

CARRIER reported two cases of vesical infection consecutive to dysentery in which the infection must have proceeded from the intestines, and yielded to energetic medication.

PIQUE extolled the value of the hypogastric incision in vesical infections except in the case of ascending infection with severe lesions of the upper urinary passages. The gravity of this operation has been much overrated.

JANET emphasized the contagiousness of vesical infections, mentioning an instance in which he found the same diplococcal bacillus in the urethritis of two men which he had noted in the bladder of their common mistress. He considers sexual relations counter-indicated in case of vesical infection, even bacteriuria. Others confirmed this statement with numerous instances of urethritis contracted from vesical infection in others.

HAMONIC recommended permanganate as an especially effective antiseptic for the bac. coli; sublimate and mercuric bino-did for the staphyl- and streptococci; copper sulphate for the gonococcus and zinc chlorid for the Koch bacillus.

ESCAT related the case of a young man with acute gonorrhoea who was seated and in erection, when another person sat down in his lap, causing a spongio-fibrous rupture of the urethra, with the immediate formation of a diffuse sanguine infiltration in the entire perineal region, and in the course of several months complete retention, with lesions requiring internal urethrotomy and dilation.

BOECKEL reported a case of rupture of the urethra back of the ligament of Carcassone, from a very violent shock to the perineum. A suprapubic median laparotomy evacuated a pus pocket and disclosed the location of the solution of continuity of the urethra, but a few weeks later symptoms of constriction required external urethrotomy, a hypogastric incision and retrograde catheterism, with a sound left for three weeks before complete recovery.

LEGUEU reported an extensive urethral breach filled by the lining process devised for vesico-vaginal fistulas. The patient kept the permanent sound twenty days, but she is now completely cured. Permanganate was preferred to protargol by several members for gonorrhoea.

ESCAT proclaimed the superiority of cyanid of mercury for this affection. From 1 to 5 per cent. solutions can be used progressively and as much as a liter, without inconvenience to the organ or organism. It induces a serohematic exudation in the urethra which proves an effective serotherapy against the gonococci, and when better appreciated will render valuable services in gonorrhoea and perhaps in all urinary affections.

MONOD confirmed its value from experience, although he observed that the application is sometimes painful. The pathogenesis of secondary aseptic urethritis in persons with a gonorrhoeal past was discussed, and instances related in which the bicycle, coitus and the immoderate use of beer produced it.

CARRIER of Lille has even observed cases of urethritis in men without venereal antecedents but addicted to beer to the extent of twenty liters in the twenty-four hours.

ABARRAN reported six observations of double angioneurectomy for hypertrophied prostate, all satisfactory and come remarkably improved. The results of vasectomy reported were twelve cures, ten improved and twelve failures, out of forty cases operated (Nicolitsch), one absolute failure (Reynès). Six cases remarkably improved by the Bottini operation were reported.

COTTE described a case of acute prostatitis following a two-months' old gonorrhoea, requiring the prerectal incision and evacuation of the abscess, in which the gonococcus was found pure, furnishing fine cultures. He can find no similar case in literature.

DESOS observed, in regard to prostatic calculi, that they can be reached by the perineal route if they are small or medium-sized, but if they are found too large to extract by this means, even after the perineum has been opened, the hypogastric incision must be resorted to.

A number of cases of vesical tuberculosis were reported,

cured with cystotomy, curetting and cauterizing the inner surface of the bladder.

NOGUES has been very successful in some recent cases with installations of a 1 to 4 per cent. solution of ichthyol.

VIGNARD protested against the laborious enucleation of the organ, which too frequently preceded nephrotomy.

LOUVEAU does not advocate in general immediate suture of the kidney after nephrotomy for calculous anuria, but reported two observations in which the catgut suture healed by first intention without any filtering of urine through the wound.

ALBAREAN always leaves a drain in the kidney reaching to the pelvis after nephrotomy for calculous anuria. He reported several cases of pyelonephritis treated with lavages of the pelvis with boric acid water and nitrate of silver, 1 to 1000. He urged all to establish better the indications for catheterism of the ureters. He only applies it in bacteriuria in the rebellious form, and the precaution of a lavage of the kidney will forestall accidents. In severe pyonephrosis he only resorts to catheterism just before the surgical intervention.

HOGGE recommended salol, 9 grams a day, as a preliminary to catheterism of the ureters for vesical bacteriuria.

DESROS has observed chills and fever follow catheterism of the ureters and cease as the catheters were removed. In one case an intense chill followed catheterism for a severe pyonephrosis, with death in three days, suggesting caution in catheterizing.

"Essential Hematuria" is the subject announced for discussion next year.

PRACTICAL NOTES.

Plastic Surgery in the Mastoid Process.—Von Mossetig-Moorhof describes, in the *Cbl. f. Chir.* of November 19, his method of closing a defect after ablation of a cholesteatoma in the ear, and all danger of recurrence is past. He cuts a tongue-shaped flap below the defect, after freshening the edge between two parallel lines drawn around the edge of the flap. The edges of the defect were detached all around so that they could be lifted with a hook. The flap was then turned back over the defect and the edges of the flap pushed under the raised edge of the defect all around. Four stitches held it in place and the space left by the flap was sutured in a straight line. The exposed under surface of the flap covering the defect cicatrized over in his six cases in two weeks. An extraneous flap might be applied, if desired, to render the operation more cosmetically complete.

Plastic Surgery of the Eyelids.—Professor Angelucci describes the following cases as a typical illustration of his method: After removal of an ulcerated epithelioma requiring the excision of both lids, of the lachrymal gland and of some neoplastic nodules in the tissues of the orbit, two large flaps were cut, one on the brow and the other on the cheek, extending down to within one centimeter of the angle of the jaw, sliding the flaps together and suturing them with the horizontal median line of the orbit between, the eyebrow on the upper flap a little lower than its normal position. The orbital edge of each flap was sutured to the conjunctiva of the cul-de-sac, except in the internal angle, where it was sutured to the peripheral segment of the bulbar conjunctiva, which had to be detached up to the limbus. The *Rev. Gen. d'Ophthalmologie* for October 31 illustrates the results a couple of months later. The new lids work and wink well, the secretions of the conjunctival sac are sufficient to protect the corneal epithelium, and although the cosmetic results might be better, the important problem of protecting the eye is solved.

Surgical Treatment of Ulcer of the Stomach.—Berg urges the publication of all cases after having been followed long enough to determine the ultimate results, as the indications are still so uncertain. He describes thirty cases operated on. The first ten were ulcers with infiltration simulating a palpable tumor. His conclusions from the results attained were that pyloroplastics is inferior to gastro-enterostomy, which must occasionally supplement segmentary resection. The exclusion of the pylorus supplemented by gastro-enterostomy, protects

best against the danger of progressive infiltration and perforation, when it is impossible to excise it as in certain cases. Seven cases of cicatricial stenosis of the pylorus were treated with gastro-enterostomy (in one case preceded by ineffectual pyloroplastics). The rest were for various benign affections. He warns against attributing serious gastric disturbances to hernia, and advises an exploratory laparotomy when the hernia is operated on. All his cases recovered. *Nordiskt Med. Arkiv.*, xxxi, 5.

Bonaldi's Local Anesthesia.—This process comprises the anesthesia of the external surface of the tympanic membrane with a mixture of phenol, menthol and cocain hydrochlorate, $\frac{1}{10}$ gm., or 2 gm. of the phenol to .5 gm. or 1 gm. of the other ingredients. The internal surface of the membrane and the mucosa of the tympanum are anesthetized with two or three drops of a one-tenth solution of cocain instilled by an incision or incisions made in the membrane with a Hartman canula, mounted on a small syringe. The blood flows very little, if at all. His experience includes twenty-eight operations; paracentesis, destruction of synechia, mobilization, ablation of the ossicles, total ablation of the tympanum, also for hypertrophied tonsils and tuberculous infiltrations and vegetations of the larynx.—*Rev. Hebd. de Laryng.*, etc., November 26.

Cocain and Spartein Anesthesia.—Bagot combines spartein with cocain, which obviates the depressing effect of the cocain on the heart, while rendering the anesthesia more lasting. He has a powder prepared beforehand: cocain hydrochlorate .04 gm., and spartein sulphate .05 gm. When ready to use, the powder is dissolved in one or two cubic centimeters of boiled water. As much as eight to twelve centigrams of cocain can thus be injected in fractional injections without accident. In operating on a tumor he injects 1 c.c. of the weaker solution on one side, and waits seven or eight minutes before injecting the other side. He can then commence the operation in a few minutes on the side first injected. If the operation requires over twenty minutes, a third injection can be made, which keeps up the anesthesia for three-quarters of an hour.—*Gazette Méd. de Liège*, December 1.

Paroxysmal Hemoglobinuria.—In a discussion of several cases at the Berlin Medical Society, it was established that exposure to cold, even walking around barefooted in a bed-room, would in certain persons produce an attack of hemoglobinuria. The blood came from the ureters in one case. Avoidance of getting chilled has arrested the affection in certain cases as reported; Ewald observed that he had never derived any benefit from amyl nitrite, which has been recommended for hemoglobinuria.

Anthrax on the Nose.—A. Strubell reports a severe case of gangrenous and necrotic anthrax spreading from the tip of the nose, with chills, fever, etc., completely cured with scarcely a scar, by frequent injections of a 3 per cent. solution of carbolic, a total of 400 Pravaz' syringe-fuls in eighteen days, combined with copious stimulants, warm baths, and hot cataplasms at a temperature of 50 to 55 degrees C., applied locally every ten minutes, night and day. The growth of the anthrax bacillus is checked at 40 degrees and permanently arrested at 42. Cultures from the nose were very virulent, but no bacilli were found in the blood.—*Munich Med. Woch.*, November 29.

Aneurysms of the Arteria Ilio-femorals.—The *Vienna Klin. Woch.* of November 24, contains a detailed review of eighty-five cases in literature and a personal case, by F. Schopf. He concludes: Compression should be attempted in every case if possible. It may cure alone and, if not, it at least prepares the way for a collateral circulation. If an operation is finally required, total extirpation, if practicable, is the safest method to follow. It ensures best against recurrences, promotes the development of the circulation, is no more dangerous than any other method in respect to the wounds and renders rapid

recovery possible. The number of total extirpations of all kinds of aneurysms is increasing; according to Delbet's statistics, from 1875 to 1887, 320 aneurysms were treated with ligatures and 63 with total extirpation, or one extirpation to each five ligatures, but from 1887 to 1894 there were 189 ligatures to 76 extirpations, or one to two and a half ligatures.

Radical Cure of Mal Perforans.—Chipault has cured twelve out of fourteen cases by stretching the nerve, followed by cleaning out the ulceration, removing all necrotic bone and horny edges, concluding with an aseptic bandage. All were cured, but two relapsed (four months to three years). The nerve should be stretched not too far from the spot, and still not too near. Nine times it was the nervi plant. int. and ext.; once the plant. int. alone; once the collateralis int. of the great toe, and three times the saphenous ext. at the edge of the Achilles tendon. The nerve is stretched with the finger or a forceps, principally toward the distal end. He noted in the etiology: tabes, diabetes, syringomyelia and alcoholism. The evacuation of the ulcer alone will not cure, but stretching the nerve alone will accomplish it, though much more slowly. He believes that stretching the nerve is also applicable to tumors on amputation stumps, and zoster eruptions, as well as to other cutaneous affections with a nervous basis.—*Cbl. f. Chir.*, November 19.

Wounds of the Heart.—Professor Rydygier opens up the heart by a horizontal incision starting a little to the right of the sternum, and extending through it and still farther to the left, just above the third rib. The incision is then carried downward, obliquely outward to the left, including the left third, fourth and fifth ribs. The periosteum is then cautiously detached from the sternum, and the bones sawed. The triangular flap thus made is carefully raised, keeping close to the bones and detaching the muscles. The heart is thus amply exposed, while there is no danger of injuring the pleura or pericardium, and the liability of foam production is reduced to the minimum. Riedel states that in one case the air getting into the pericardium with the blood from the wound churned the blood into foam by the heart action, until it poured down over the whole chest wall. Rydygier's flap has only been tested on the cadaver.—*Vienna klin. Woch.*, November 24.

Dressing for the Umbilicus.—S. I. Kouzmine has devised a treatment for the umbilic wound that has proved extremely successful in forty-two cases. He slips an elastic band over the cord, 3 mm. thick, 9 in diameter and stretching to 3 or 4 cm., pushing it down over the cord to within a centimeter of the abdominal wall. No further ligature is required. The stump is then covered with two or three folds of plastered cloth, which hardens into a solid shield protecting the umbilicus from infection, and undisturbed by bathing the infant, etc. To prevent injury to the abdomen a strip of cotton is inserted around its lower edge, and a cloth bandage to hold it in place. The plaster is left untouched until the cord drops off, when the stump will be found mummified and aseptic.—*Semaine Méd.*, November 30.

Dangers of Lumbar Puncture.—The usually harmless lumbar puncture may lead to fatal results in persons with abnormal cerebral vascularization, the same as a cranial injury on a normal person produces a bulbar shock for a moment, which soon passes away, while the same shock in a pathologic condition may entail the most serious consequences. *Le Lyon Méd.*, reports the case of a syphilitic with abrupt, complete paraplegia, resisting all treatment for two years, when Jaboulay resolved to try lumbar puncture. Ether; 20 c.c., of a clear fluid escaped, and 10 c.c. of a 5 per cent. solution of iodine were injected. While the patient was still half drowsy from the anesthetic, the respiration suddenly ceased, although the heart and pulse were beating regularly and there was no marked cyanosis. In spite of artificial respiration, traction of the tongue, etc., it

was impossible to re-establish normal respiration, although the heart and pulse action continued normally for over an hour and did not finally cease for an hour and a half. The necropsy disclosed generalized syphilitic myelitis, with a softened focus in the left brain, no alteration noted in the medulla, liver or heart, but multiple syphilitic gummata in the right kidney.—*Presse Méd.*, November 19.

Diffuse Parenchymatous Keratitis.—Syphilis has been found the most important factor in the affection in Panas' experience, but in from 30 to 50 per cent. some other cause must be sought. It is also observed in animals, which do not have syphilis. Tuberculosis was noted in twelve out of fifty-one cases and next in the etiology, impaludism, influenza, rheumatism, gout, uterine affections and rachitism. The usual treatment was deep injection of mercuric iodid, and then potassium iodid administered internally, in tuberculous cases, deodorized iodoform in powders. Paracentesis of the anterior chamber and iridectomy, seem to act favorably in chronic cases.—*Presse Méd.*, November 19.

New Symptoms of Measles.—Meunier has noted a marked loss of weight in persons during the incubating stage of measles, when there are no symptoms as yet to indicate the disease. It is noticeable four or five days after contagion and amounts on an average, to 300 or 500 grams a day in child of 1 to four years. It may even attain 790 grams. This progressive loss of weight continues several days and seems to be independent of the age, or severity of the affection afterward. He suggests that it may prove important in indicating and isolating the disease in schools, etc.—*Gaz. hebdom. de Méd.*, 89.

Formulæ for Cuticolor Ointments and Pastes.—Rausch has been devoting much time to studying the best combinations for this purpose and testing them. He recommends the following formulæ, all for external use. The ichthyol preparations are adapted whenever an emetic and vaso-constricting effect is desired. Sublimite can be added at will, without affecting the color. 1. Cuticolor zinc ointment: Armenian red bole .03 gm., glycerin 6 drops, zinc ointment to 10 gm. 2. Una's zinc paste: Armenian bole .24 gm., glycerin 20 drops, eosin (1 to 500), 8 drops, zinc paste 40 gm. 3. Una's zinc sulphate paste: Armenian bole .24 gm., glycerin 20 drops, eosin (1 to 500) drops, paste of zinc sulphate 40 gms. 4. Una's ichthyolized zinc paste: ichthyol, 1 per cent., zinc paste 30 gm., eosin (1 to 500) 16 drops. 5. Ichthyol, 2 per cent.; zinc paste 40 gm., eosin (1 to 500), 20 drops. 6. Ichthyol, 3 per cent.; zinc paste 40 gms., eosin (1 to 500), 22 drops. 7. Ichthyol, 4 per cent.; zinc paste 40 gm., eosin (1 to 500), 40 drops. 8. Ichthyol, 5 per cent.; zinc paste 40 gm., eosin (1 to 100), 12 drops. Cuticolor gelanthum: Armenian bole .02 gm., eosin (1 to 500) 2 drops; zinc oxid 4 gm., glycerin 3 gm., gelanthum 20 gm.—*Journ. de Méd. de Paris*, November 27.

Sanguinoliform.—C. S. Engel of Berlin has applied to therapeutics the physiologic fact that the red-blood corpuscles in the embryo of mammals are nucleated and peculiarly rich in hemoglobin. He procures the embryo of the pig in large quantities, fresh from the slaughter-houses, and produces a powder from the blood-forming organs, desiccated and pulverized, with two parts sacch. lact.; a trifle ol. menth. pip., and for some cases, 2 per cent. ferrum oxydatum. This is administered, per os, three times a day, each dose, from what can be taken up on the point of a knife to half a teaspoonful. He is much gratified at the results attained, which correspond to the theoretic assumption of the value of this treatment with physiologic hemoglobin. In a boy of 7 years, the specific gravity of the blood rose from 1046 to 1057; the hemoglobin increased rapidly from 40 to 60, and finally to 75 per cent., in the course of two and a half months. His investigations were made on ten subjects, mostly chlorotic girls, and every two or three weeks the blood was carefully tested for its specific gravity, alkalinity, amount of hemoglobin, proportion of red and white corpuscles, blood plates, etc. His communication in the *Deutsche Med. Woch.* of November 24 is a theoretic and practical study of our present knowledge of the subject.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

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Foreign Postage	2.00
Single Copies	10 Cents

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SATURDAY, DECEMBER 24, 1898.

INJURY OF THE SPINAL CORD WITH SYMPTOMS
OF SYRINGOMYELIA.

When the condition of syringomyelia was first described, it was believed that the accompanying symptoms were distinctive and characteristic, and that the peculiar sensory dissociation observed was pathognomonic, but time and experience have not unqualifiedly sustained these earlier notions. It has been abundantly shown, clinically and pathologically, that the symptoms, except as to their mode of onset and course, bear no relation to the process itself or to the nature of the lesion, but rather to its situation and extent. So-called syringomyelic symptoms have been observed in association with cavities, neoplasms, hemorrhages, traumatism and other lesions of the spinal cord; and the manifestations vary in accordance with the structures involved. Most often the multipolar ganglion-cells of the anterior horns of the cervical cord are affected, so that weakness and wasting of muscles in the upper extremities result; while involvement of the adjacent pyramidal tracts gives rise to spastic phenomena; and invasion of the posterior columns is responsible for interruption of sensory impulses, tactile and muscular sensibility often escaping, while pain-sense and temperature-sense are usually impaired or lost. As stated, there is, however, no rigid invariability of the symptoms or in their distribution or extent.

An instructive case of vertebral injury, with involvement of the cervical cord, and presenting symptoms of syringomyelia, is reported by LLOYD in the Spring number of *Brain* for the present year, with some

interesting reflections on the course of the sensory tracts in the cord. A laboring man, 60 years old, had, at the age of 30, received an injury to the dorsal and cervical spine by being jammed between two canal-boats, but recovery took place after five weeks' treatment. At the age of 57 years, the man was buried in a landslide for an hour; and on returning to consciousness after twenty-four hours, the *left* arm and leg were found paralyzed. Contractures subsequently developed. The muscles of the arm and shoulder were, besides, atrophied and the seat of fibrillary contractions. Clonus was marked in the fingers, wrist and ankle on both sides, and the phenomena of so-called spinal epilepsy were readily elicited in the legs. Appreciation of pain was lost on the entire *right* side of the body, excepting the face; temperature-sensibility in the *right* lower extremity and in a small area on the anterior aspect of the right side of the chest; and tactile sensibility in the *right* leg. An angular deformity involving the seventh cervical and the first and second dorsal vertebrae was visible, as well as a depression in the lumbar region.

Death resulted from some intercurrent affection five years after the second accident. On postmortem examination, in addition to evidences of extensive fracture of the cervical vertebrae, the dura was found adherent to the body of the sixth vertebra, while an angular deformity at the junction of the fourth and fifth vertebrae compressed the cord into a ribbon at the exits of the fifth, sixth and seventh cervical roots. At the level of the third and fourth roots the dura was twice as thick posteriorly as anteriorly. On histologic examination, the greatest destruction was found at the level of the seventh cervical vertebra and on the left side, including the pyramidal, cerebellar and antero-lateral ascending tracts, the anterior and posterior horns, the anterior portion of the posterior columns and the gray and white commissures. The destruction extended across to the right side of the cord along the commissure, but in its greatest intensity did not reach the horns of the right side. There was, however, some diffuse degeneration of slight degree in the antero-lateral column of the right half of the cord, and the anterior and posterior horns were misshapen and slightly degenerated. Ascending degeneration of the left cerebellar and antero-lateral tracts could be traced to the medulla oblongata, and two well-defined streaks of degeneration in the posterior columns, the one extending from near the gray commissure backward through the postero-external column, and the other from a point in the postero-internal column at the posterior longitudinal fissure backward and outward, but not to the periphery of the cord, could be traced to the level of the pyramidal decussation. There was marked descending degeneration of the left lateral pyramidal tract throughout the cord, slight degeneration of the right pyramidal tract, slight diffuse degeneration in the posterior columns, and degeneration

in the comma-zones for a short distance downward.

It is pointed out that while no cavity had formed in the cord, the seat of the lesion, particularly in its distribution about the central canal and the central gray matter, corresponded with that observed in many cases of syringomyelia. The segmental loss of tactile sensibility confined to the right leg is considered possibly hysteric, from the absence at and above the seat of lesion of any serious involvement (such slight implication as existed being symmetric) of the posterior-internal columns, through which the sensory fibers from the lower limbs pass. PRINCE, in the article on syringomyelia, in DERCUM'S "Text-book on Nervous Diseases" (p. 590), cites BRUHL and CHARCOT as authority for the statement that "the loss of sensation in the arms occurs in zones, extending in a circular manner around the limbs, as in hysteria, and does not follow the anatomic distribution of the nerves in neuritis. This zone-configuration is thought to correspond with the arrangement of the spinal centers."

The thermanesthesia and the analgesia in this case are considered as pointing unerringly to the conclusion of VAN GEHUCHTEN, that in all probability pain-sense and thermic sense are transmitted through the gray matter by way of cells whose axis-cylinders become the fibers that constitute especially the antero-lateral ascending tract; and these fibers are, according to the same authority, crossed. The fibers for tactile sensibility are believed, on the contrary, to pass up the posterior columns on the same side.

USE AND ABUSE OF COCAIN.

When we reflect upon the almost universal use of this drug in medical and surgical practice it is difficult to understand that but fifteen years have elapsed since its introduction to the medical world. Even at that time it was thought by those acquainted with its uses that a new era had been opened, particularly in the realm of minor surgery, but probably its most sanguine adherents little reckoned that in so short a time it would become so well known as to escape the bounds of professional watchfulness. Its advantages in small and short surgical operations, where without its use general anesthesia would become almost imperative, has been exemplified times without number. The injection of a 0.5 per cent. solution into the deeper layers of the skin along a proposed line of incision will make that incision practically painless, and abdominal sections have been performed under this local anesthesia alone.

By its invaluable aid wonders have been accomplished in ophthalmic surgery. Previous to the introduction of cocain, when a cataract operation must perforce be performed under a general anesthesia, the operators were not at all sure but that they would find the vitreous upon the primary dressing, forced out of the wound by the retching and vomiting efforts so frequently happening after the administration of

an anesthetic; or perhaps the violence of these efforts exciting a hemorrhage into the vitreous, in either case interfering absolutely with the success of the operation.

In nose and throat practice, cocain finds its most frequent use, and we might add, abuse. Not only are the various operations along these passages facilitated by anesthetizing the mucous membranes with solutions of this drug, but other important purposes are also well served; we are able to tell if a turbinate body is congested or whether the chronic congestion has led to true fibroid hypertrophy, by noting whether or not a weak solution is able to materially reduce the size of one of these bodies; if so congestion is principally to blame, and vice versa. Suppose that we are dealing with a patient with congested turbinates, and a cocain solution is applied; contraction in these erectile tissues soon follows, and the rhinologist is then vastly better able to discover other pathologic lesions that may be situated posteriorly, while operative procedures are far more easily performed by thus enlarging the field of vision. Again, when caustic drugs, either in strong solution or in pure form, are to be applied, it is the part of humanity to relieve the patient of all possible suffering in so far as it is not inconsistent with his safety.

In acute rhinitis, by contracting the vessels of the nasal mucous membrane, the turbinate bodies are reduced in size, the nasal cavity is freely opened, and the patient much relieved; but with the wearing off of the beneficial effect of the cocain, which unfortunately takes place very quickly, the vessels become more congested and tortuous than before, and the condition is aggravated. Resort is again made to the spray, and the same farce, or rather tragedy, is again enacted.

Before we had any realization of the hidden dangers of the drug, slaves to cocain were detected in all parts of the world where this terrible servant had been introduced. The servant had again become the master and a master that demanded the very lives, by inches, of his slaves. Even in comparison with morphinism but a small proportion of cocain habitués are ever able to throw off the shackles of their tyrant, and the results of the latter drug are even more deleterious and deadly than the former. It is to be deplored that so many of our profession have yielded to its devastating influence, and all the more so that anyone, professionally or otherwise, is so easily able to replenish his supply at the nearest drug store without prescription.

Unfortunately, in the early stages of the habit, the mental faculties as a rule are greatly benefited, and more head-work, if it may be so termed, can be performed. Cases without number have been reported of this influence among professional men, physicians, lawyers and even ministers. We all remember how Dr. CONAN DOYLE makes his great hero, Sherlock

Holmes, perform his feats of reasoning only after the instillation of a few grains of cocain into his veins. As in the morphin and chloral habits, it takes progressively increasing doses of cocain to satisfy the craving, and cases of taking as high as sixty grains in twenty-four hours have been reported. Later the drug exerts a degenerative action on the nervous system, and the will-power is completely lost. Upon the other tissues the condition becomes similar to that which in children we have been pleased to term marasmus. As regards the histologic effect upon the various organs, many experiments have been made upon the lower animals, and we have reason to believe that similar changes take place in man. In the brain and cord there is usually a well-developed hyperemia. On microscopic examination there are found degenerative changes in the large ganglionic cells of the cord and in other large collections of these cells in various parts of the body, particularly the cardiac ganglia. SCHEPPEGRELL, who has looked into the subject rather closely, makes the following statement: "In chronic poisoning the degenerative processes are found to have advanced farther in the cells of the spinal cord and medulla, minute cavities, atrophy and hyaline degeneration of the muscular tissues; in the nerve ganglia there is fatty degeneration, minute cavities and simple atrophy; in the liver atrophy of the hepatic cells is present. The vascular system is most affected in the spinal cord, there being cellular proliferation and hyaline degeneration of the coats. In the heart and liver an atrophic condition of the tissue is found, also a swelling of the endothelium of the capillaries of the cardiac ganglia."

Acute cases of poisoning are by no means uncommon, as every rhinologist will testify. Especially are the symptoms liable to follow the spraying of the nose with the usual strength used, 5 per cent., as a preliminary to examination and treatment. The nasal mucous membrane having a greater absorbing power than that of the mouth and pharynx, toxic symptoms are more apt to follow applications to the former. In mild cases of poisoning, the pupils dilate, the pulse becomes slow, the skin exhibits a marked pallor, the patient is often loud and boisterous in his conversation; in more pronounced cases, the face becomes cyanosed, the pulse rapid and thready, and syncope may supervene. Finally coma, with stertorous respiration and abolition of the reflexes may come on with the most startling rapidity, followed closely by dissolution. The amount of the drug appears to have little influence in the production of mild or grave symptoms, idiosyncrasy here being of the greatest importance. The time elapsing between the application of the solution and the establishment of toxic symptoms also varies within wide limits.

One word as to the substitution of drug habits. Attempts have frequently been made to cure morphinism by the use of cocain, and vice versa, this

either on the advice of physicians or the victim attempting to take the cure into his own hands. This is not to be countenanced for a moment, in that the habitué becomes a slave to both, and the breaking down of his nervous system occurs even more rapidly than before. Many persons become victims through the pernicious habit of taking snuff. Probably all preparations of this contain cocain in larger or smaller quantities, and the physician may often be put upon the right track by obtaining the history of such a habit.

SCHEPPEGRELL, through his residence in New Orleans, has been enabled to add to the literature a peculiar phase of the cocain habit. He states that among the southern negroes, not a few of them draw up crystals of some salt of cocain into the nose. The object of this is not to obtain a free breathing space, but on account of the exhilaration a small quantity produces when taken in this manner.

Lastly, we must remember the many blessings that the proper use of cocain has bestowed upon mankind, at the time not forgetting that we are dealing with a two-edged sword. We should never put the drug into the hands of the patient himself. We should endeavor to find some means of preventing its dispensation by druggists without a prescription by a qualified physician. We should not in our private offices be too prone to apply it indiscriminately to all cases where a little suffering is to be borne. When it does become necessary to resort to its use in private practice, we should not allow our patient to know what drug is being used. With these restrictions, cocain has the greatest power to yield good results, and may in time become an unmixed blessing and regain the place in the profession that of late years it seems to have lost.

ALCOHOLISM IN FRANCE.

MR. ARCHDALL REID, in a publication of his which has been recently widely quoted, considers alcohol as working out a benefit to the race by exerting a selective action on degeneracy, and thus in time producing a racial immunity to its own effects. There may be a grain of truth in this opinion, but in some respects it is open to question, and it does not so fully justify the conclusion obviously deduced by many, and apparently so intended by the author, that it is rather a good thing than otherwise for the race. If it acts in this way, so, it may be said, do tuberculosis, syphilis and other pests of civilization, which also cull out the physically and otherwise defective, and to the extent that they leave only the more resistant and prudent, may be said to improve the race average, and also to develop in time a certain degree of immunity to their attacks. That alcohol can be said to really act in a similarly remotely beneficial way, while directly and immediately disastrous in its effects, is far from being an established truth, either sociologically or physiologically, and as an abstract truth it is still more open

to dispute. We may speak approvingly of the fool killer as serving a useful purpose, but he becomes a very serious functionary if the general population, as a distinguished Briton once said of his countrymen, are mostly fools.

It is of interest in this connection to note the spread of the agitation against alcohol in countries, where, if a real immunity could be produced by long-continued usage, it ought now to exist. In our own country and in Great Britain the question is comparatively an old one, and there is little doubt that the conditions here and there are better in this regard than they formerly were. Most people, however, would be inclined, from a survey of the facts, to attribute whatever good has resulted rather to a public sentiment in favor of temperance that has grown up during the last fifty or sixty years than to any immunity derived indirectly through the vices of ancestors. In continental Europe, the general interest in the medical and sociologic aspects of the alcohol question, judging from the active public efforts in this direction, is of more recent date, but it seems to be increasing, and may be taken, in some measure, as an index of the greater spread of the evils of alcoholic excess. In France, a country that should show an immunity if any can, the conditions appear to be serious enough and to amply justify apprehensions of national disaster from alcoholic degeneracy. According to a recent paper by Prof. M. DEBOVE in the *Presse Médicale* of November 16, the consumption of alcoholic drinks, calculated in figures of absolute alcohol (100 per cent.), is at present 14 liters per inhabitant, as compared with 10.5 liters in Germany, 9.25 in Great Britain and 6.10 in the United States. If distilled liquors only are included, as in a recent thesis by M. RUYSSSEN, quoted by DEBOVE, the amount is 4.54 liters per head as compared with 2.85 liters in this country. The figures he gives are the more significant when comparisons of recent and former years are offered, and we see that the consumption of alcohol in distilled spirits per head has risen in France from 1.1 liter in 1830, and has decreased in this country from 5.75 liters in 1860 to the present figure of 2.85. France, a country where alcohol in the form of wines and other fermented liquors has been almost universal and which ought reasonably to have thus acquired an immunity, if such were possible, has taken more and more to stronger drinks till it now leads the list, while this country, which a few decades ago had a still higher ratio, has fallen back in their usage to nearly the lowest figure, and is well down toward the minimum in the usage of all forms of alcohol-containing beverages. The number of cabarets in France has increased from 281,000 in 1830 to 500,000 in 1897, and indeed in some departments there appears to be one dramshop to every twenty or thirty adult inhabitants. New York and Chicago, with their numerous enough saloons, appear very moderately equipped in this regard when

compared to Paris with its 33,000 cabarets, or one on an average to every three or four houses. M. DEBOVE sarcastically says, in view of the rapid spread of these establishments, that he does not despair of yet seeing street-cars turned into ambulant saloons and thus spreading throughout Paris the benefits of alcoholism.

It would seem that there might be some error in Professor DEBOVE's figures; they certainly appear extreme, but we have no means of contradicting them. If correct, the economic aspects of this overgrown industry, if such it can be styled, ought to stir up French statesmen and legislators. France certainly appears to be well in the way of obtaining all the "benefits of alcoholism" to the full satisfaction of ARCHDALL REID and others of his class who can discover these beneficial effects.

While France seems to be in the lead in this regard, other European countries are also advancing in the same line. Belgium appears to be one of these, and some years ago similar complaints were uttered by a distinguished Austrian alienist in regard to the spread of the use of stronger alcoholics in southern Europe. The anti-alcohol congresses that have been held within the last few years and have been attended by some of the highest medical authorities, are a sign of the times that the need of some check is needed for the increasing alcoholic consumption. The movers in this work are not fanatical prohibitionists or even, as a rule, advocates of total abstinence at the present time—they are chiefly scientific medical men who can see the evils they wish to check. In a country like France, that seems just now, to use a colloquialism, to be going the full pace, there is certainly room for their best efforts.

THE ARMY MEDICAL DEPARTMENT OF THE FUTURE.

Under the above caption, in our issue of December 3 last, we suggested the likelihood of a large increase of the personnel of the Medical Department of the Army in the immediate future. We considered that for the Regular Army required by the United States, the present strength of the Medical Department, 192 officers, would have to be increased to at least 450 by the appointment of 258 medical men to fill original vacancies. This we regarded as the very minimum of needful expansion. Since then, three bills providing for the reorganization of the army have been introduced into the Congress of the United States. The precise wording of these bills is given in another column. It suffices for our present purpose to say that one provides for an increase of 404 medical officers, and each of the others for an increase of 309, making the total of the one 598, and of the others 501. It is evident that some action will be taken by Congress to increase and reorganize the regular army, so that the volunteer troops may be relieved from service and returned to their homes; and it seems probable that

this action will involve a large addition to the present medical force. This is the point which we desire to bring to the notice of the younger members of the Association, that those of them who have military aspirations may not be taken unawares by the announcement of the convention of an examining board to fill vacancies in the corps. Army medical appointments have been made by competitive examination since the days of the Revolution. In 1775 the Provincial Congress of Massachusetts Bay required each candidate for a position in the Medical Department to be subjected to a close examination by qualified medical men, and there was nothing *pro forma* in the work of that early board, for it is on record that eight out of fourteen candidates were rejected for failure to come up to the standard. The system then instituted has never ceased to be the rule. In the coming expansion of the corps, it is not likely that appointments will be made without this examination. In fact, all the bills now before Congress provide for the examinations now required by law.

No action will probably be taken by the Surgeon-General of the Army looking to the selection of the best men for the new position until these positions have an actual existence by legislation; but medical men desirous of filling them may do much in the way of special preparation to meet examining boards, if they recognize the likelihood of the speedy appointment of such boards. We know from the "Circular of Information for Candidates seeking Appointment in the Medical Corps of the United States Army," that applications for permission to appear for examination are in order at all times. This circular, issued from time to time by the Surgeon-General of the Army, gives the Constitution of the Medical Department at the date of its issue, and states the pay and emoluments and the duties and privileges of army medical officers, the method of making application and the manner and scope of the examination to which candidates are subjected, illustrating the general character of the latter by a series of questions on the various subjects taken from the records of a recently convened board.

At this present writing, the Chairman of the Military Committee of the House of Representatives is reported as having stated his belief that a bill reorganizing the army will be passed at a very early date. Our young friends should be prepared for prompt action by the Surgeon-General of the Army on the passage of this bill.

CORRESPONDENCE.

Stammering.

CORTLAND, N. Y., Dec. 13, 1898.

To the Editor:—In a late number of the JOURNAL there was a note as to the cause of stammering that startled those of your readers who heard the after-dinner speech of Mr. Henry Guy Carleton. To see the rich jokes of this excruciatingly

funny stammerer presented as an item of medical interest is too much. But when we see it this week copied into the *Philadelphia Medical Journal*, sandwiched in between articles on the pure flour law and under-average life risks, the matter becomes serious. Would it not be well to mention that his comma bacillus of stammering is not to be taken so seriously as it reads? Yours respectfully, F. W. HIGGINS, M.D.

ASSOCIATION NEWS.

Section on Laryngology and Otology.—The program for the Section of Laryngology and Otology has been filled, and no more papers can be accepted for the Columbus meeting in June, 1899.

BOOK NOTICES.

Physician's Visiting List for 1899. Philadelphia: P. Blakiston's Sons & Co. 1898. Leather cover, \$1; plain binding, \$0.75.

This is the forty-eighth year of the publication of this handy visiting list, which will be useful to any physician. In contains, besides the blank leaves, a calendar, tables of signs, weights and measures, dose table and a "new complete table for calculating the period of utero-gestation."

Medical Record Visiting List for 1899. New revised edition. Leather. New York: Wm. Wood & Co. 1898.

In this edition the matter useful in emergencies has been increased, an important change being "in the list of both apothecaries' and decimal systems, and the indication of such as are official." There are also the uses tables concerning matters the physician often wishes to refer to, as weights, measures, solutions, etc.

PUBLIC HEALTH.

Technic Instruction for Religious Orders.—The recent French Catholic Medical Congress passed resolutions urging the training of all sisters of charity in the professional care of the sick and the instruction of the students in seminaries and theologic colleges, in practical hygiene, by a physician.—*Jour. des Sci. Méd. de Lille*, November 26.

Influenzal Prevalence.—A mild form of la grippe has been reported by many physicians of New York City and vicinity, a few cases having appeared as early as the middle of November. A large proportion of the cases have taken on the form of an acute coryza with soreness of the throat. The attack almost invariably begins with a chill, and headache and pains in the limbs.

New York State Pathologic Laboratory.—The ninth annual report of the New York State Commission in Lunacy, just issued, contains a full report on the methods and principles underlying the pathologic work of the State hospitals in the central laboratory in New York City. According to the *Charities Review*, November, this report "should receive careful consideration, for it not only develops methods of investigation, but presents a new view of the pathology on insanity, which by common admission is less perfectly understood than any form of disease afflicting the human race; and, if any hope of alleviating this curse is held out, in a better understanding of its nature and prevention, no possible means should be withheld, or no lack of encouragement toward its thorough investigation." Dr. Van Gieson, the director of the institute, is clear and explicit in his demonstrations and deductions, and can not well be misunderstood.—*Medical News*.

Scallops in Sewage Waters.—According to the *Medical News* for December 3, Fairhaven, Conn., has a large industry in shellfish which is being injured by sewage pollution. So large have become the quantities of factory refuse and sewage that pour

into the docks that pleasure boats no longer anchor at that point. When the New York Yacht Club gave this as a reason for omitting its annual visits it was laughed at, but now the citizens appreciate that the yacht owners discovered a condition which is becoming serious. When the Vineyard steamers went out this summer there was a trail of stench in their wake as they stirred the water with their paddles, which demonstrated how polluted the river is with filth. Business at the Fairhaven bath-houses has fallen off, for it is only at high tide, and often not then, that the water is sufficiently clear to tempt a bather. Scallops taken in the upper harbor have caused fever among those who have eaten them, and physicians have declared that the shell-fish which live in the mud on the shore are dangerous to eat on account of the sewage. Many are agreed that there are things more serious than high taxes, and a menace to the health of the community is not to be lightly regarded.

Epileptic Colony in New Jersey.—Under an enactment passed in 1898, an "epileptic village" is about to be inaugurated in the southern part of New Jersey. The act defines that this colony shall be governed by six managers, constituting a non-partisan board, having a three-year tenure. This board is instructed to select a suitably-located site, provided the cost of the same with the buildings on it shall not exceed \$15,000. The law further requires that all plans for improvements to the property shall be submitted to and approved by the governor of the State. It is understood that a suitable site, consisting of about two hundred acres of land in the central part of the State, near Princeton, has been secured, that there are some good houses on the place, and that it is the intention of the managers to get enough of these buildings in condition to receive about twenty patients during the present year. Patients are admitted on a certificate signed by at least two freeholders of the town or township in which the applicant resides, which certificate must be attested before a magistrate. Freeholders in New Jersey exercise about the same powers and duties relative to charitable work as is exercised by superintendents and overseers of the poor in New York. The certificate made by the freeholders must also be certified to under oath by at two physicians, who must set forth the fact that the patient is an epileptic.—*Charities Review*, December.

Diet for Laboring Men.—Secretary Wilson of the Agricultural Department has been engaged in an investigation for the purpose of throwing light upon the most suitable varieties of food for laborers, mechanics and others whose daily work involves the expenditure of great muscular efforts. His agents in this research have studied the dietary of athletes and others, the amount and variety of whose food was measured and regular. Extensive examinations have been made on farms, in the shops and the factories, but the results there were not so satisfactory as at Yale, Harvard and other places, where better facilities were afforded for making tests. Agents of the Department were present at both New Haven and Cambridge while the crews of those universities were in training for their big rowing match last spring, and kept accounts of the amount and variety of food furnished to the men. There is no absolute rule as to the diet of the athletes, and trainers of men preparing for feats of strength and endurance have widely varying ideas on this subject. Investigations are to be carried on in other lines, with the idea in view of finding out what foods are the most nutritive for hard-working men. Experiments with bread and cereals have been carried on at the University of Maine, and at the University of Tennessee digestive experiments were made on the students. Interest in the nutrition investigations being made by the Agricultural Department is spreading all over the country. Secretary Wilson states that among the gratifying evidences of this fact is the recent appointment of one of his agents as a consulting expert to the

Lunacy Commission of the State of New York on the food and diet of the insane. In connection with its other duties this commission is charged with prescribing the diet for the inmates of the asylums for the insane throughout the State. The Department of Health of the City of New York is arranging to issue circulars of practical information regarding the nutritive value and preparation of foods for general distribution in that city.

Kings County Hospital, New York.—This important institution, located at Flatbush, Long Island, is the subject of a special official report by Commissioner T. G. Bergen. This hospital for the poor of Kings county has in former years been the scene of disgraceful overcrowding and other scandal, growing out of years of political jobbery. Under the management of Dr. J. T. Duryea, medical superintendent for the past two years, important improvements have taken place, not only in the appearance, but in the accommodations of the place. Not only have all the wards been renovated and better furnished and supplied and the operating-room established, but a special home and rooms for trained nurses are already furnished, as well as a house for the resident physician and special rooms for the members of the medical staff. At the present time the presence of the professional nurses in their uniforms, with junior nurses or pupils aiding them and learning their profession, the improved condition of the quarters for the medical staff, and the opportunities furnished for instruction to medical men, graduates of medical schools, are a mark of an up-to-date system. For the first time in its history this hospital is now making a return to the medical world for the benefit of science and, therefore, for the good of humanity, for all the sums which in recent years have been spent unscientifically upon its wretched maintenance. It is proposed, with the additional sum of \$100,000, granted by the Board of Estimate of 1898, to furnish additional wings to the main building for the accommodation of two hundred or more patients, for a better home and resting-place for all the nurses, away from their patients when off duty, and possibly for better accommodations for the idiots and feeble-minded and for convalescents, and also to create an amphitheater for the purpose of clinical instruction. In this way this hospital may yet become a credit to the people and a blessing to the sick poor of the Brooklyn Borough. Nearly 680 patients are now under treatment at this hospital, very many of these afflicted with diseases which prevented their admission into other hospitals of the city.

SOCIETY NEWS.

Washington Microscopical Society.—At the regular meeting of the Washington Microscopical Society, held December 13, a joint paper was read by Drs. George T. Howland and Henry A. Robbins, entitled "The Gonococcus Neisser," and the different methods of staining.

Cincinatti Society for Original Research.—At the regular meeting, December 8, the following program was given: Dr. Sattler, "Anatomic Basis of Temporal Neuralgia;" Professor Edwards, "Plans of the Biologic Laboratory of Cunningham Hall;" election of Officers.

Association of the French Medical Press.—An international congress of the medical press is being discussed by this Association, and efforts are under way to have it organized as a special Section of the International Medical Congress of 1900. If not found feasible, it is proposed to hold it as an autonomous congress. A congress of medical deontology is also under discussion, and the organization of a medical club in Paris.—*Presse Méd.*, November 12.

Northwestern Ohio Medical Association.—The fifty-fourth meeting held at Lima, Ohio, December 8 and 9, 1898, was the largest

and one of the most interesting meetings of the association. Twenty new members were admitted and 122 applications for membership received. The next meeting will be at Findlay, Ohio, in December 1899. The following are officers: R. E. Jones, Gower, president; W. K. Dickey, Toledo, first vice-president; B. S. Leonard, West Liberty, second vice-president; J. P. Baker, Findlay, secretary; T. M. Gehrett, Deshler, assistant secretary and treasurer.

American Physiological Society.—According to *Science*, November 4, a meeting of the American Society of Naturalists will be held in New York, December 28 to 30, at which arrangements will be made for sessions of a number of affiliated scientific organizations. Among these, it may be stated that the American Physiological Society and the American Psychological Association will meet on Wednesday, Thursday and Friday, and probably the same days will be chosen for the American Morphological Society, the Society for Plant Morphology and Physiology, and the Association of American Anatomists. The Section of Anthropology of the American Association will meet on Tuesday, followed on Wednesday by the American Folk-Lore Society.

Washington Chemical Society.—At the recent meeting of the Washington section of the American Chemical Society, held at the Cosmos Club, Dr. E. A. DeSchweinetz of the Columbian Medical School, read a paper on the "Estimation of Nicotin," and reported his past investigations and experiments with the curative serum for hog cholera. He also exhibited liquid air, which he served with a ladle and demonstrated its wonderful and interesting properties.

Society of Ophthalmologists and Otologists.—The November meeting of the Society of Washington Ophthalmologists and Otologists was held at the residence of Dr. J. H. Bryan, Dr. Swan M. Burnette, president, in the chair. Dr. Bryan read a paper entitled "Chronic inflammation of the Middle Ear." He discussed, at some length, the differential diagnosis, and pointed out the particular class of cases which should and those which should not receive operative interference. Dr. Suter read a paper on the "Twisting Power of Cylindric Lenses." An interesting discussion followed both subjects, and was participated in by Drs. Burnette, Wells, Richardson, Muncaster and Belt.

Philadelphia County Medical Society.—At the last stated meeting of the Philadelphia County Medical Society, Dr. Lawrence Flick read a paper on the subject of "Contagion; Its Meaning and Sanitation." In the paper the speaker first introduced the philology of the word "contagion," after which he cited the definition as expressed by different medical writers. Speaking further on the subject, Dr. Flick thought that the word "contagion" should include the word "infectious." Drs. A. A. Eshner and Solis Cohen both dissented from the view as expressed by Dr. Flick, and held to the opinion that the word "contagion" should be used in rather the restrictive sense, while the word "infectious" should be used more broadly and include the word "contagion." Dr. H. Ferree Witmer presented an unusual case of aphasia affecting a lad about 15 years of age. Suitable charts and diagrams were also exhibited to show the locality of the lesion. Dr. A. J. Downes read a paper on the "Bottini Operation for Enlargement of Prostate Gland," and exhibited the instruments and battery necessary to complete the operation. A case in which an aged person had been treated for this affliction with distressing symptoms, at the hands of the speaker, had shown a wonderful improvement. Only five minutes are consumed in the operation, which seemed relatively free from danger.

International Congress of 1900.—Dr. Lannelongue, chairman of the Organizing Committee of this medical congress, has announced that the time for holding the sessions has been fixed for Aug. 2 to 9, 1900. The entrance fee, amounting to 25 francs, can either be sent to the general manager at Paris or to the committees who are acting in foreign countries. Every subscriber will receive a document showing the extent and arrangement of the Section in which he is interested. The congress is divided into five Sections: 1. Biology: *a*, anatomy, descriptive and comparative; *b*, histology, embryology, teratology; *c*, physiology, physical and biologic chemistry; and *d*, anthro-

polgy. 2. Medicine: *a*, general and experimental pathology; *b*, bacteriology and parasitology; *c*, pathologic anatomy; *d*, visceral pathology; *e*, medical diseases of children; *f*, therapeutics and pharmacology; *g*, nervous diseases; *h*, mental diseases; and *i*, dermatology and syphilology. 3. Surgery: *a*, general surgery; *b*, surgical diseases of children; *c*, surgery of the urinary organs; *d*, ophthalmology; *e*, laryngology and rhinology; and *f*, otology. 4. Obstetrics and gynecology. 5. State Medicine: *a*, hygiene, sanitary medicine and epidemiology; *b*, forensic medicine; and *c*, military medicine and surgery, naval medicine and surgery, and colonial medicine. Two general meetings will be held; one on the opening day and the other at the end. Only those members nominated and invited by the Committee will be able to read papers. All proposals relative to the work of the congress must be handed in to the Committee before May 1, 1900.—London *Lancet*, November 26.

Washington Obstetrical and Gynecological Society.—The two hundred and eighty-ninth meeting of the society was held December 2, at the residence of Dr. Joseph Taber Johnson. Dr. Bovee presented two Fallopian tubes which he had removed. In either tube hematosalpinx and pyosalpinx was found, the blood tumor occupying the tubes nearest the uterus, while the pus cavity occupied the fibriated portion. Dr. J. T. Johnson presented two large, fibroid uteri, which he had recently removed. The first was removed from a white woman, aged 58 years, who gave the following history: Eight years ago she consulted Dr. Murphy at Columbia Hospital, and he performed an abdominal section but declined to remove the tumor, on the ground that it was not a suitable case for operation. She applied to Dr. Johnson at the Georgetown University Hospital two weeks ago, who successfully removed the growth. The growth presented a large polypus in the interior of the uterus. The second was removed from a white woman, aged 38 years. This was a large, pedunculated fibroid which grew in the broad ligament. As the uterus was found to be diseased, that was also removed. Both patients made an excellent recovery. The paper of the evening was read by Dr. Samuel S. Adams, on the diagnosis of tubercular meningitis in infants. Dr. Adams discussed particularly the question of diagnosis and pathology. He gave the history of three interesting cases, which he had recently seen in consultation with other members of the society. The patients died, and he regretted that no postmortem was permitted. The discussion was opened by Dr. E. E. Moree, and further participated in by Drs. Adams, Smith, H. L. E. Johnson, Winter, Cook and Acker. Dr. D. W. Prentiss gave the history of a case of syphilitic fever. No history of specific character could be obtained in the beginning of the attack. The patient had chills and fever daily. Finally, a suspicious sore throat suggested syphilis. Iodid of potash and protiodid of mercury promptly cured. The chart showed daily fever, often high, of a typical, regular character, but no corresponding increase of pulse.

Washington Medical Society.—At the meeting of the society held November 30, Dr. William C. Woodward read a resolution of regret on the death of Dr. Charles M. Hammett, which was formally adopted. Dr. Dallas Bache, U. S. A., and Dr. Wm. H. Gardiner were elected members by invitation. Dr. Maues presented a case of calculus pyelonephritis and calculi in the gall-bladder, with intermittent fever. The patient had been a sufferer for many years and at one time was supposed to have been suffering from peritonitis, and on another occasion was supposed to be in labor. Repeated urinary examinations showed negative results. Operated on for ovarian disease, the tubes and ovaries were removed. The patient had four attacks of renal colic and subsequently pus was found in the urine. Postmortem showed a large calculus in the left kidney and three calculi in the gall bladder. Dr. Glazebrook presented two kidneys and gave following history: The patient, aged 41 years, suffered from inguinal hernia, urethritis, stricture and rupture of the urethra; urethra sacral fistula, cystitis, retention and calculus. The stone was crushed and removed per urethra. Postmortem showed the left kidney weighed one ounce; urethra fibrans. Right kidney weighed fifteen and one half ounces. The ureter contained a large calculus and was distended from that point to the kidney. Section of the kidney showed sloughing and infarctions. Dr. W. W. Johnston read a paper on the differential diagnosis of disease characterized by regular intermittent fever. He said, that as a rule disease accompanied with chill, fever and sweating is usually assumed to be malarial, in a malarial region. The following of such a rule is often the source of error. He mentioned the following fevers which presented similar symptoms: malaria, hepatic, ulcerative endocarditis, vegetative endocarditis, rheumatic, acute tuberculosis and syphilitic. In malarial, the fever begins with chill, and the temperature is at its

height in four or five hours, followed by sudden sweat; secretion of urea is increased. Where the initial attack or the three stages continue for less than ten or more than twelve hours, diagnosis is doubtful. The spleen is usually enlarged and the skin sallow. Finding the presence of the plasmodium confirms the diagnosis. In hepatic fever there is suppuration or inflammation of the bile-ducts; chill, no prodromes, irregular course; chill usually in afternoon or evening. Rise of temperature begins with chill. Sweating is least constant, usually short; urea decreased for two or three days between fever; no pain; no icterus; no physical signs, except biliverdin in the urine. Diagnosis is by exclusion and by sudden cessation. In endocarditis, one of the most characteristic symptoms is intermittent fever, chill at no fixed hour, highest evening temperature 102 degrees, followed by sweating; pulse rapid; exhaustion marked; interval of a day between fever; leucocytosis; organisms in blood; results fatal, embolic symptoms. In rheumatic fever there is chill every day, never exhausted, and stiff joints. In one case Dr. Osler noted the presence of small subcutaneous nodules on the legs. Salicylate of soda cures. Quinin is useless. In tuberculosis, fever is first intermittent, then remittent and finally intermittent; chill at midday; flushing of face; loss of flesh. In syphilitic fever, daily pain, daily fever, often high, but no corresponding increase of pulse; previous history.

At the meeting held December 14, the president, Dr. Samuel C. Busey read his annual address entitled "The History and Progress of Sanitation of the City of Washington and the Efforts of the Medical Profession in Relation Thereto." Dr. Busey described the original city as laid out, and referred to its hygienic and anti-hygienic features; the different water-courses and streams, swamps and lowlands; he referred to the gradual growth of the city and the different acts of Congress regulating its government; the introduction of Potomac water in 1859; the beginning of sewer construction in 1810; and described its evolution. He gave an interesting account of the first organized effort of sanitation, which occurred in 1819, in the appointment of a health officer, whose duty it was to report nuisances to the mayor; culminating in the present health laws of the District as aided and modified by the efforts of the Medical Society. He also referred to the evolution and growth of the city hospital system, and closed his remarks by showing the effect of sanitation in lessening the prevalence of contagious diseases and its influence particularly in lessening a number of cases of typhoid fever in the District.

NECROLOGY.

SAMUEL DECKER, M.D., College of Physicians and Surgeons, New York, 1867, of Griffin Corners, N. Y., died December 6, aged 59 years.

EDWARDS HALL, M.D., Albany, N. Y., 1844, died December 10, at his home in New York, where he was long and favorably known as a faithful family physician.

ALBIN J. FULDA, M.D., of New York, who had been in poor health for several years, died there December 9. He served during the Civil War as surgeon of the Forty-fifth New York Volunteer Infantry.

SOLOMON P. CAHEN, M.D., New York City, died of pneumonia, December 6. Born in Germany in 1895, he came to New York in 1860, returning to Germany in 1864, where he later was graduated in medicine from the University of Leipzig.

GEORGE W. BAKER, M.D., Brooklyn, N. Y., died December 5. He was born in 1837, received the degree of M.D. from the College of Physicians and Surgeons, New York City. During the Civil War he enlisted in the medical corps, and was soon assigned to a hospital in Washington, where he served for three years.

L. CHAPMAN SMITH, M.D., New York University, 1878, died at his home in Brooklyn, N. Y., December 9. After receiving his dental diploma he began the study of medicine and after his graduation, took up the study of pharmacy. He was 45 years old and a member of the Kings County Medical Society. A wife and two daughters survive him.

GOVERNEUR MATHER SMITH, M.D., College of Physicians and Surgeons, New York, 1855, died in that city December 8. He was a son of the late Prof. Joseph Mather Smith of the above college and inherited his literary as well as humanita-

rian impulses. His name was well known in hospital work and benevolent institutions. He was unmarried.

HENRY CAMPBELL DUGHTY, M.D., Augusta, Ga., died at his home December 4, of consumption. He was demonstrator of anatomy in the Medical College of Georgia, and in addition to his work in surgery gave a great deal of attention to chemistry and bacteriology. He was but 26 years old.

NATHAN SHERWOOD KING, M.D., of Yonkers, N. Y., died at his home, December 11, of pneumonia. He was born in 1824 at Fishkill, and was graduated from Williams College in 1849 and from the College of Physicians and Surgeons three years later. He leaves a wife and one married daughter.

JOSEPH W. MARSEE, M.D., Indianapolis, Ind., Dean of the Indiana Medical College, died December 3, after an illness of two days, aged 50 years. His connection with the Indiana Medical College began twenty-three years ago, when he became demonstrator of anatomy, later succeeding to one of the chairs of surgery, and six years ago to the office of Dean.

J. G. CUNNINGHAM, M.D., Kittanning, Pa., died December 12. He was a member of the County, State and AMERICAN MEDICAL ASSOCIATION, and of the G. A. R. and Masonic bodies, and a graduate of Jefferson, class of 1867.

A. C. MORRIS CHESTON, M.D., West River, Md. December 1.

C. M. Deitrich, M.D., Galesburg, Mo., December 8.

Daniel Dupree, M.D., Dallas, Texas, November 25, aged 77 years.

Thomas D. Wright, M.D., Preston, N. Y., aged 81 years.

E. B. Fleece, M.D., Wildwood, Fla., November 30.

Hosea A. Hamilton, M.D., Oneonta, N. Y., December 6.

J. B. Hanaford, M.D., Apopka, R. I., December 6, aged 59 years.

George Z. Higgins, M.D., Strong, Maine, December 11, aged 66 years.

J. W. Hill, M.D., Knoxville, Tenn., December 4.

Francis Johnson, M.D., Pawtucket, R. I., November 27, aged 65 years.

J. L. Jones, M.D., New Middletown, Tenn., December 4.

L. Metzger, M.D., Brooklyn, N. Y., December 4, aged 35 years.

S. R. Millington, M.D., Poland, N. Y., November 28, aged 72 years.

Henry Ostrom, M.D., Alton, N. Y., December 8, aged 73 years.

John Parr, M.D., Buel, N. Y., December 7.

Martin Payne, M.D., Portland, Ore., December 2, aged 62 years.

Albert J. Phillips, M.D., Baltimore, Md., November 24, aged 44 years.

D. T. Porter, M.D., Memphis, Tenn., December 2, aged 72 years.

Leander Seaton, M.D., Stauffer, Pa., December 11, aged 40 years.

John I. Sherwood, M.D., Covington, Tenn., December 2, aged 66 years.

Norman T. Shobe, M.D., Indianapolis, Ind., December 1, aged 22 years.

William S. Stevens, M.D., Augusta, Ga., November 29.

E. M. Stillman, M.D., Andover, N. Y., December 6, aged 57 years.

F. E. Strong, M.D., Lancaster, Wis., December 13, aged 40 years.

S. C. Warner, M.D., Ceres, Va., December 5.

J. A. W. Wegsforth, M.D., El Paso, Texas, December 9, aged 35 years.

DEATHS ABROAD.

SIR WILLIAM JENNER, the distinguished pathologist and physician in ordinary to the Queen and the Prince of Wales, died December 12. He was born in 1815 and was educated at University College, London, in which institution he became professor of pathologic anatomy in 1848. He was president of the Royal College of Physicians from 1881 to 1889, when he retired from the practice of his profession. He was the first person to establish, beyond dispute, the difference between typhus and typhoid fevers. He was appointed physician extraordinary to the Queen on the death of Dr. Baly, in 1861, and the next year was gazetted physician in ordinary to Her Majesty, receiving the same preferment in 1863 in the household of the Prince of Wales. He attended the Prince Consort during his last illness. It was in recognition of his services during the severe illness of the Prince in 1871 that he was made Knight Commander of the Bath. He was created a baronet in 1868. He wrote numerous papers on fever, the acute specific diseases, diphtheria, diseases of children and diseases of the heart, lungs and skin. Among his published books are a treatise on diphtheria, and "The Identity or Non-Identity of Typhus or Typhoid Fevers."

H. A. PILLIET, M.D., Paris, aged 37 years. Seldom has so brief a career seen such an amount of scientific work accomplished. His constant co-operation on the staff of the *Progress Médicale* and of the *Tribune Médicale*, and as professor in the training schools for nurses, did not interfere with his abstract scientific labors, studies of the liver in infective diseases, toxic gastritis, muscles of the bladder and uterus, etc. He prepared for any work of this kind on an organ by an exhaustive study of the normal organ in man and animals, before turning to the pathologic conditions.

MISCELLANY.

Betala Hydrochlorate vs. Tetanic Toxin.—Roger and Josué announce that one centigram of betain hydrochlorate will neutralize, completely, one drop of tetanus toxin in experiments on guinea-pigs, and merely diminish the effects of two drops of toxin, thus establishing the limits of its neutralizing action.—*Semaine Méd.*, November 30.

Protracted Grippe.—Tilaloff has observed several cases of grippe lasting several months. In three cases there was continuous slight fever for five months, and in two, intermittent relapses, transient, but occurring at intervals for several years. Change of climate is required for this chronic grippe.—*Presse Méd.*, November 26.

Edema of the Larynx.—The *Rev. Hebd. de Laryng.* for November 19 describes two cases of edema of the larynx, probably of angioneurotic origin, one due to the menopause, treated with leeches, sodium salicylate and sodium iodid, gradually diminishing during several months, till final recovery. The other commenced abruptly in a young man after a simple stroll on the seashore so violently that intubation was required at once. The patient was out of danger the same evening.

Ascending Neuritis.—Marinesco concludes a histologic study of this rare affection with the statement that the most frequent if not the only cause is a local affection. If there is much tendency to spread, the agents of the infection pass by means of the lymphatic spaces in the nerve to the spinal cord; that is, a spinal-cord phase supplements the neuritic phase. The destruction of a certain number of nerve-fibers by the microbe and its toxins may affect the center even before the toxic substance has reached the spinal cord. If, on the other hand, the poison is very diffusible, the central lesions are marked before there are manifest lesions in the nerves, as happens with nicotine injected into a peripheral nerve.—*Presse Méd.*, November 23.

The Pancreas in Diabetes.—Lancereaux asserts that a certain form of diabetes, *diabète maigre*, is necessarily connected with every profound alteration of the gland, and that the other forms of diabetes may be due to a material disorder or merely a functional disturbance in the innervation. Glycosuric diabetes is therefore no longer a distinct disease, but, similarly to albuminuria in relation to the kidneys, is a syndrome subordinate to a material disturbance of the pancreas or to mere disturbance of the innervation.—*Bull. de l'Acad. de Méd.*, November 15.

Osteomalacia. F. Schnell has observed thirty-two cases at Würzburg: one recovered spontaneously; sixteen received medical treatment alone and eleven surgical after the former had failed. He classifies them as progressive and tardy. The progressive form appears early and has no remissions. The tardy form was observed in multiparæ, with exacerbations during pregnancy and remissions in the intervals. Phosphorus and cod-liver oil proved the most effective medical treatment, diminishing the pain. Castration proved successful, not only at first, but in its permanent results. The ovaries in the fourteen cases examined were degenerated in proportion to the severity of the affection, the stroma transformed into fibrillary connective tissue, with a tendency to hyalin degeneration of the vascular apparatus.

Carrion's Disease.—The October numbers of the *Crónica Médica* of Lima are devoted each year to a discussion of this disease, better known as Peruvian verruga and Oroya fever, and to a eulogy of the devoted young doctor, D. A. Carrion, who was making a comprehensive study of these supposedly separate endemic diseases, and become convinced of their identity. To demonstrate it he inoculated himself with blood from a patient with verruga at the Hospital 2 de Mayo, and died in a couple of months from the effects, with a typical case of Oroya

fever (1885). His description of the particulars of the disease as it attacked him is one of the most exact and comprehensive studies of any disease extant.

Experimental Tuberculosis.—Richet states that dogs inoculated with pure cultures of the Koch bacillus were exposed to the vapors of turpentine for an hour every week during six months and the development of the infection was definitely arrested, while the control animals all died.—*Presse Méd.*, November 28.

Myositis Ossificans Progressiva.—Stempel has been studying, for three and a half years, a typical case commencing at four years of age. He concludes from his numerous microscopic investigations that the process is not due to the muscles or bones, but proceeds from the connective tissue, originating in some disturbance of the tissues in the embryonal period, producing defective differentiation of the original gelatinous tissue—representing the mesenchyma—which would develop normally into connective tissue on one hand and into bone and joint tissue on the other. If this normal differentiating process is disturbed, the places normally occupied by connective tissue are filled with bone and joint tissue. The coexistence of the other disturbances in development, absence of the terminal phalanges, etc., which generally accompany this affection are also explained by this theory.—*Cbl. f. Chir.*, November 19.

Intestinal Obstructions.—In a previous number of the *JOURNAL* (p. 966) in an article on "Intestinal Obstructions from Gallstones, with Report of a Case," by J. P. Lord, M.D., Omaha, Neb., an illustration which belonged to a paper appearing later in the *JOURNAL* was erroneously inserted, in place of the following:



Photographs, actual size, of gallstone, in half section, case of Jere Cooper, operated March 14, 1898, by Dr. Lord.



Photograph, actual size, of gallstone removed from lower ilium of Jere Cooper, by Dr. Lord, March 14, 1898.

Abdominal Fixation of the Uterus.—Henricius reports sixty cases operated on—15 retroflexion or retroversion; 39 prolapsus, or other causes. Three have borne healthy children at term (two operated for prolapsus and one for retroversion). In forty-eight cases, recovery was smooth; in 5 there was a fistula or hernia or both; in one, sepsis from the tube removed, in one case necrosis of the part, the abdominal wall probably too tightly compressed. In one case there was a slight phlebitis of the leg and in another an emphysema in the abdominal wall.

He has collected 122 cases in literature in which abortion followed in 14, premature natural delivery in 3, premature artificial delivery in 1. In 104 cases of delivery at term, there was breech presentation 6 times, shoulder 6, asynclitism of the head, 1; spontaneous delivery in 66 out of the 104; eclampsia in 2.—*Nordiskt. Med. Arkiv.*, xxxi, 5.

Rupture of the Umbilic Cord.—Tissier reported, at a recent meeting of the Paris Medicolegal Society, a case of delivery in a standing posture in which the weight of the child, 2670 grams, broke the cord horizontally across, the divided surfaces as smooth as if they had been cut with scissors. Other cases were related in which the weight of the child had caused the usual oblique rupture, and Charpentier mentioned a case in which a very heavy fetus was accidentally picked up by the cord and suspended a few moments without rupturing it.

Vitality of Severed Human Flaps.—Wentscher asserts that Reverdin's flaps can be kept three weeks without loss of vitality in a 6 to 10 per cent. salt solution, or dry in cotton, and then be successfully transplanted. A brief freezing does not injure them, but they are very sensitive to warmth, long application of disinfectants and much desiccation. The tissue should not be too dry to easily imbibe the protoplasmic stream after transplantation.

Surgical Intervention on the Insane.—Picque of Paris, proposes to increase the discretionary powers of the curator or administrative committee in respect to operations deemed indispensable by the physicians of the asylum that has the insane patient in charge, adding to the present regulations: "The administrator may, in case of conflict with the family, order the application of treatments considered indispensable."—*Presse Méd.*, November 26.

Fundus Oculi Lesions: Correction.—In the report of the paper of Walter Hilliard, M.D., (vide *JOURNAL*, December 10, p. 1421), in the sentence: "Another feature of importance is the capillary network of the retina, which is the finest and closest in the body," the choroid is meant and not the retina.

Quinin in Malarial Fever.—Dr. Robert Koch having had the temerity to declare that the "black-water fever" of South Africa is really "quinin poisoning," has most effectually injured the reputation of quinin, at least in the minds of the majority in South African territory, and has thereby occasioned a heated discussion in British medical journals and societies. Dr. Koch's opinion is not accepted by the English physicians who are resident in South Africa, and they vehemently protest that it is superficial and fallacious, arguing with liberal references to long experiences, which show that black-water fever patients recover quickly if treated promptly with heroic doses of quinin—that, in the words of Dr. R. U. Moffat of Uganda (*British Med. Jour.*, Sept. 24, 1898), "there is only one treatment for malaria: quinin, more quinin, and yet more quinin."—*Am. Therapist*, November.

Tachypodia or "Hot Foot."—The late Dr. Péan of Paris was once called in the capacity of a physician to attend a duel. One of the adversaries was so cowardly that he ran away after the first shot, unhurt. The four seconds, the remaining combatant, and the Doctor stood looking at each other with embarrassment and discomfort, when Dr. Péan broke the silence by saying gravely, "I know the disease that has suddenly attacked this gentleman," and taking out his pencil and paper, he drew up a report as follows: "At the first shot, Mr. X. was taken with a sudden attack of tachypodia that would not yield to treatment. The seconds, therefore, on consultation with the physician, stopped the duel."—*Medical News*, December 3.

The Pathologic in Goethe.—W. A. Freund contributes an article to the *Munich Med. Woch.* of November 29 that will create a sensation among the admirers of Goethe, as he states

that the fact of the early death of his children and the degeneracy of those that survived, studied in connection with his own illness at one time, which after the most unfavorable prognosis, terminated unexpectedly in recovery in the course of a year, indicate a specific disease cured with specific treatment. The lesions mentioned in his letters, his reference to "Don Sassafras," and his later relapses support this view, which Freund claims explains much of the medical, chemic and philosophic tendency of his writings.

The "Pugwash Plant" of the Indian Doctor.—The man who has worked the country long and successfully as an Indian doctor gives directions for the pursuit of this noble calling. Buy up a job lot of senna and make it into senna tea, with a few other "yarbs." Bottle it and take it out on the road with a wagon. Name it "Yokotami, the Great Blood Purifier of the Pugwash Indians." Men will throng to the wagon to get it, and, going to the edge of the crowd, will take a furtive swig to see how much better they feel. They usually think they do, and after their bowels have moved the next morning they know they do.—*Popular Science News*, November.

Temperature on Determination of Sex.—Molliard stated, at the Paris Académie des Sciences, October 31, that a higher temperature favors the production of females (Düsing), and Schlecter arrives at the same conclusions in regard to horses. Von Siebold has shown that eggs of the nematus ventricosus produced more females as they were kept at a higher temperature, and Molliard confirms this fact in regard to the mercurialis. Knight, on the other hand, has noted that the water-melon raised in a hotbed, has only male flowers.—*Presse Méd.*, November 9.

Bequests.—The late David Leahy of Brooklyn left certain large sums to charitable institutions, of which the St. Mary's General Hospital of Brooklyn receives \$10,000, the St. Mary's Maternity, \$7,500, and the Home for Consumptives of Brooklyn, \$5,000. Several homes for children, and other institutions, together with those named above, are to receive \$100,000, in addition to which a residuary interest in over \$200,000 is left to those charitable institutions and to the Catholic University and Yale College.

Dr. Jacobi Honored.—An anonymous donor has presented \$50,000 for the endowment of a ward for children at the Roosevelt Hospital, New York, the ward to be used for the purposes of the clinical instruction of the students of the College of Physicians and Surgeons, and to be known as the Abram Jacobi ward for children. The trustees of Columbia are to have the right to nominate the persons giving instruction in this ward, and that appointment has been conferred upon Dr. Abram Jacobi, Professor of Children's Diseases. One of the conditions of the gift was that the donor's name should not be made public. Only the students in their final year will be taught in the ward, which will be open to all children, except those having contagious diseases.

For Cuba Libre.—Dr. John Guiteras, Professor of Pathology in the University of Pennsylvania, will resign at the close of the present year to accept the chair of the Practice of Medicine at the University of Havana. Dr. Guiteras has been greatly interested in the liberation of Cuba and wishes to build up the medical courses in the University of Havana.

An Army Medical Examining Board.—The Army Medical Examining Board, which was convened in Washington, D. C., October 10, last, has concluded its present labors by filling all existing vacancies in the corps. The Board consisted of Col. Dallas Bach, assistant surgeon-general; Major Louis A. Le Garde, surgeon, and Captains G. E. Bushnell, G. D. De Shon and E. L. Munson, assistant-surgeons, United States Army. One hundred and seven candidates were invited to appear, but thirty-three failed to avail themselves of the oppor-

tunity; twenty-nine were rejected on account of defective physique and twenty were passed as satisfactory in every respect. Among the successful candidates were Dr. Church, who, as assistant-surgeon of the Rough Riders, distinguished himself in the fight at Las Guasimas, June 25, 1898, and Dr. Ford, the assistant-surgeon of an immune regiment, who came all the way from Manzanillo, Cuba, to have his qualifications tested. The Board has adjourned subject to the call of its president. It has not been dissolved, and may have considerable work before it if Congress passes a bill for the reorganization and increase of the army.

Accident to Hospital Shp.—The *Bay State*, a hospital ship belonging to the U. S. Army, was the scene of an explosion of an ice-making machine at Brooklyn on December 6. The expert engineer in charge of the machine lost his life, and twelve members of the hospital corps of the vessel were injured or temporarily in danger of asphyxiation. The injured men were treated successfully on board of the *Relief*, which chanced to be lying at an adjacent wharf. The *Bay State* was only slightly injured. She was formerly the property of the State of Massachusetts. At the close of the hostilities with Spain, she had been purchased by the Federal authorities and assigned to Chief Surgeon R. M. O'Reilly, whose future post of duty will be at Havana and in Cuban waters, referred to in another item.

Appointment as Contract Surgeon in the U. S. A.—The following requirements are exacted by the Board of Examiners: Evidence of graduation at a regular reputable medical college—diploma to be submitted to the Board. Proof of hospital or other professional experience will be of benefit to the candidate. Candidates must be in good health, of reasonably sound physique, and citizens of the United States. The examination is of a practical nature, embracing hygiene, practice of medicine, pathology and surgery. In addition, a thesis on some professional topic will be prepared by the candidate. The following questions submitted to former candidates are published as a guide to applicants: 1. What chemic and physical qualities of water would lead you to suspect its potability? 2. What are the varieties and pathology of felon? 3. What is Widal's test? 4. What are the modern methods of treating diphtheria? The pay of acting assistant surgeons is \$150 monthly. The applicant must be free from physical defects which would incapacitate him from the military service. For further information address Major H. S. Kilbourne, Surgeon, U. S. A., Army Building, 39 Whitehall Street, New York City, President of Board of Examiners.

To Profit by British Experience.—Lieut.-Col. R. M. O'Reilly, chief surgeon, Havana, Cuba, has recently been ordered to proceed to Jamaica, with the view of gathering information concerning military sanitary methods in that island, which may be of use to us in our occupation of Cuba. Surgeon-General Sternberg gave him the following special instructions:

In compliance with instructions contained in a letter from the Adjutant-General of the Army, dated Dec. 2, 1898, you are expected to make a careful inquiry with reference to the methods now in use in the island of Jamaica for protecting soldiers of the British Army stationed upon that island, from fatal infectious diseases and from the deleterious effects of climatic influences. You should ascertain, as far as practicable, the results obtained by improved methods which have been adopted as the result of experience, and full details as regards the housing, clothing and feeding of British soldiers in semi-tropical and tropical climates; also the methods found most satisfactory for the disposal of excreta and for the protection of troops from infectious diseases, and especially yellow fever, dysentery, camp diarrhea and the malarial fevers. The measures of prophylaxis adopted, and the results of such measures should be fully investigated. Especial attention should be given to the question of rations and clothing which have been found suitable for the climate of Jamaica; also as to the construction of barracks found by experience to be most suitable and conducive to the health of the soldiers in garrison; also

to everything pertaining to camp equipment and the sanitation of camps as practiced and as required by army regulations and orders. You are expected to make to the Adjutant General of the Army a full report upon these subjects.

Protection from Insects.—A memorandum from the office of the Surgeon-General of the Army, issued as far back as June 13, 1890, does not appear to have attracted the attention of medical journalists. We present it here as being of interest to others than those to whom it was first addressed:

The attention of medical officers of the regular and volunteer armies is invited to the following extracts from a letter addressed to the Surgeon-General by Prof. Stantord E. Chaille of the Medical Department, Tulane University of Louisiana, New Orleans: "Instructions appear to have been issued to our soldiers for the preservation of health in the tropics, and I believe it well worth your consideration whether it would not be well to have disseminated among them information calculated to alleviate greatly their sufferings from mosquitoes, fleas and other insects, sufferings which often deprive soldiers of the sleep and rest which, with food, are the primary requisites for their efficiency. During the Civil War many soldiers blessed me for the following information: Mosquitoes, fleas, bedbugs and, I believe, insects generally detest and will avoid the essential oils and the plants which, with or without bruising, are strongly impregnated with their odor. In New Orleans, oil of lavender is used by many for relief from mosquitoes; a drop or two smeared on a hand or on any naked surface will protect until it dries up, say half an hour. While a Confederate surgeon I was in a town infected with fleas, and secured great relief by using freely in my boots and clothing and about my bed the bruised pennyroyal which grew abundantly within the town. Smearing exposed parts with grease will protect from mosquitoes until the grease disappears. A small piece, say one or two inches square, of fat middling or bacon to smear on exposed parts is more efficient than essential oils, because the grease does not dry up as soon, and would probably protect during the usual hours of sleep, if used at the beginning and repeated once during the night's rest."

Bills to Reorganize the Army.—Three bills "for the Reorganization of the Army of the United States and for other purposes" have been introduced into Congress. Each has been read twice and referred to the committee on military affairs. The following are the sections of each which relate to the medical department. It seems likely that the provisions in Senate Bill 4900 for so many assistant surgeons-general with the rank of major, captain, etc., are merely the result of clerical errors in copying the bill.

SENATE BILL 4900, introduced by Mr. Hawley. . . .

SEC. 15. That the Medical Department of the Army shall hereafter consist of 1 surgeon-general, with the rank of brigadier-general; 20 assistant surgeons-general, with the rank of colonel; 30 assistant surgeons-general, with the rank of lieutenant-colonel; 175 assistant surgeons-general, with the rank of major, and 120 assistant surgeons-general, with the rank of captain, mounted, and 250 assistant surgeons-general with the rank of lieutenant, mounted. The enlisted force of the medical corps shall consist of 250 hospital stewards, 250 acting hospital stewards and 2000 privates.

SENATE BILL 4938, also introduced by Mr. Hawley. . . .

SEC. 11. That the Medical Department shall consist of 1 surgeon-general, with the rank of brigadier-general; 20 surgeons, with the rank of colonel; 30 surgeons with the rank of lieutenant colonel; 100 surgeons, with the rank of major; 350 assistant-surgeons, with the rank of first lieutenant; and a hospital corps consisting of 250 hospital sergeants, who shall have the pay and allowances of hospital stewards; 100 pharmacists, with the compensation of \$40 per month and the allowances of acting hospital stewards; 500 hospital corporals, with the pay and allowances of acting hospital stewards; and 3200 privates. *Provided*, That all vacancies in the grades of colonel, lieutenant-colonel and major created or caused by this section shall, as far as practicable, and subject to the prescribed examination, be filled by promotion, according to seniority, as now provided by law. *Provided also*, That assistant surgeons shall have the rank of first lieutenant for the first five years' service, and that of captain after five years' service, subject to the examination now provided by law. *And provided further*, That the period during which any assistant-surgeon shall have served as a medical officer of the volunteer army during the war with Spain shall be counted as

a portion of the five years' service required to entitle him to the rank of captain.

Acting assistant-surgeons may be appointed by the surgeon-general, with the sanction of the Secretary of War, and under such regulations as may be prescribed by him, for temporary service, whenever imperatively necessary, at a compensation not to exceed \$150 per month. *Provided*, That no one shall be so appointed until he shall have passed a satisfactory professional examination.

HOUSE BILL 11022, introduced by Mr. Hull. . . .

SEC. 11. That the Medical Department shall consist of 1 surgeon-general, with the rank of brigadier-general; 10 surgeons, with the rank of colonel; 20 surgeons, with the rank of lieutenant-colonel; 110 surgeons, with the rank of major; 360 assistant-surgeons with the rank of captain or first lieutenant; and a hospital corps consisting of 250 hospital sergeants, who shall have the pay and allowances of hospital stewards; 100 pharmacists, with a compensation of \$40 per month and the allowances of acting hospital stewards; 400 hospital corporals, with the pay and allowances of acting hospital stewards; and 3000 privates. *Provided*, That all vacancies in the grades of colonel, lieutenant-colonel and major, created or caused by this section, shall, as far as practicable, and subject to the prescribed examination, be filled by promotion, according to seniority, as now provided by law. *Provided also*, That assistant-surgeons shall have the rank of first lieutenant for the first five years' service, and that of captain after five years' service, subject to the examination now required by law. *And provided further*, That the period during which any assistant-surgeon shall have served as a medical officer of the volunteer army during the war with Spain shall be counted as a portion of the five years' service required to entitle him to the rank of captain. *Provided further*, That all vacancies in grade of assistant-surgeons shall be filled by competitive examinations, as now provided by law.

Acting assistant-surgeons may be appointed by the Surgeon-General, with the sanction of the Secretary of War, and under such regulations as may be prescribed by him, for temporary service whenever imperatively necessary, at a compensation not to exceed \$150 per month. *Provided*, That no one shall be so appointed until he shall have passed a satisfactory professional examination.

Medical Registration in Connecticut.—The regular examining committee of the Connecticut Medical Society has held eight special examinations during the year 1898, the last one on November 8. Seventy-five applicants were examined, five of whom were for midwifery only and seventy for general practice. Of the seventy general practitioners, thirty-nine were found qualified and twenty-one not qualified, while six were conditioned. Of the latter, three were afterward examined and found qualified. The results of the last examination have not been reported to the State Board. One of the rejected midwives was also re-examined and passed. This committee and the two other official examining committees have held a conference and decided to apply to the State Board of Health to appoint the time and place for examinations only once in four months, i. e., in March, July and November; that all examinations shall be written in English, and that at least 75 per cent. of answers must be correct to enable a candidate to pass, but that "conditions" may be allowed, if there are not more than two branches under a marking of seventy-five, and the markings not less than fifty, with re-examination at the expiration of four months.—*Medical News*, December 3.

Hospitals.

By the will of Josiah B. Thomas of Peabody, Mass., \$50,000 is left for the founding of a hospital in Peabody.—The new St. Luke's Hospital, Bayonne, N. J., was formally opened for patients December 3.—The Presbyterian Hospital, Chicago, has received \$50,000 as a Christmas gift, from Mrs. Averell of Chicago, to endow a free ward of ten beds for men, to be known as the Albert J. Averell Memorial Ward.

Cincinnati.

HEALTH REPORT.—The Health Department reports an average of nine cases of chickenpox per day. The cases of smallpox at the branch are all doing well.

PERSONAL.—Dr. Lawrence Shields, who has held the posi-

tion of resident physician at the Cincinnati Hospital for the last two years, has accepted the post of associate to Dr. Parsons of Mexico City.

Washington.

REPORT OF HEALTH OFFICER.—The report of Health Officer Woodward for the week ended December 10 shows the total number of deaths to have been 1119, 73 white and 46 colored. The principal causes of death were apoplexy, bronchitis, consumption, diphtheria, nervous, circulatory, genito-urinary, pneumonia, malignant growths, and typhoid fever. The total number of births was 127, 77 white and 50 colored. At the close of the week there were 122 cases of diphtheria and 129 cases of scarlet fever under treatment.

EMERGENCY HOSPITAL NURSES' HOME.—The new home for the nurses of Emergency Hospital, the gift of Mrs. Phebe Hurst, was formally opened, December 7. The hospital superintendent, Miss Simonton, received several hundred callers, all interested in hospital work. The home is located opposite the hospital, has the ambulance stable adjacent, and is connected with the hospital by electric signal. A large number of rooms in the hospital, formerly occupied by the nurses, will now be vacated, and the space used for the accommodation of patients.

COLUMBIAN GRADUATES IN THE ARMY.—At the recent competitive examination for Army surgeonships, none of the graduates of the Columbian Medical College failed. The list included Drs. James R. Church, surgeon of the Rough Riders, J. H. Ford and Dr. Wolf. The best examination was passed by J. H. Ford, member of the class of '97.

HOSPITAL FOR FOUNDLINGS.—At the 12th annual meeting of the Board of Directors of the Washington Hospital for Foundlings, recently held, Dr. Z. T. Sowers was elected president. The following staff was also elected: Drs. Z. T. Sowers, chief of staff, D. K. Shute, ophthalmologist; C. W. Richardson, laryngologist and M. F. Cuthbert, R. W. Baker, Samuel S. Adams and J. R. Wellington.

London.

HARVEIAN LECTURE.—The first Harveian Lecture was delivered this week by Dr. Wm. Ewart at St. George's Hospital and College. The series of three is to cover "Disease and its Treatment and the Profession of Medicine in 1899." The first lecture dealt with the present aspects of disease, and after a rapid sketch of the disappearance of many diseases and the diminution of others, the immense advances in our means of recognizing and treating them, etc., Dr. Ewart settled down to a broad and philosophic consideration of the interesting questions: "Can Disease Entirely Disappear?" "Will Such Approach to Disappearance as may be Expected Seriously Limit Our Usefulness and Field as a Profession?" The first of these questions he quickly answered in the negative, pointing out, as Clifford Allbutt pithily remarked some years ago, "Die we must, somehow," and every life saved from infections and diseases of malnutrition simply meant an adult to die later on of, say arterio-sclerosis or of cancer. It was theoretically possible for death by old age to be a purely natural, even physiologic, process, but practically it was extremely rare that all men "went to pieces all at once," like our beloved Holmes' immortal "One-hoss Shay." Some "weaker place can't stand the strain," gives way, and death occurs by what we term "disease." As to the effect of the diminution of disease upon the profession, he held that while it had perhaps temporarily diminished the amount of employment for us in certain directions, yet upon the whole it had distinctly widened our field so far. Our standards of health were much higher, there was a keen desire to avoid risk of disease, a determination to have even discomfort alleviated, on the part of the community, which was bringing thousands of patients whom formerly we would never have seen. As he summed it up, "Disease had diminished, treatment increased." He cited American experience as bearing out this position and expressed the hope that the day would come when England would attain as high a standard of thoughtfulness and foresight in the removal of all possible conditions of disease and calling skilled attention to the very earliest symptoms "as obtain in Transatlantic Britain." He also referred to the wide field opening up to the profession in the supervision of education, and, in fact, took a strikingly similar position to that assumed editorially by the *JOURNAL* a few weeks ago.

MOLLUSCUM CONTAGIOSUM, CANCER, ETC.—At Mr. Jonathan Hutchinson's clinical demonstration last week a case of molluscum contagiosum was presented with the history that a generalized outbreak of the eruption had developed some three weeks after the patient had taken a Turkish bath. Upon

which the lecturer remarked that, in his experience, nearly every case of widespread molluscum contagiosum in an adult, had developed very shortly after taking a Turkish bath, and that he believed the disease to be often due to the use of infected "public" towels, vigorously applied to a softened and heated skin. It would be interesting to notice whether such a connection could be traced upon the other side of the Atlantic. It was also stated, in commenting upon a case of cancer, that in the lecturer's opinion the children of parents who married late in life were more liable to cancer than those of young parents. This was one of the factors in the increasing prevalence of cancer, as marriages occur usually at a much later age than formerly. The other and weightier factor was that cancer being a disease of adult or late middle life, and a larger proportion of children surviving to attain this age, the proportion of those in the community liable to its attack was markedly increasing. Mr. Hutchinson said that he had been much interested of late in the question of disease liability of the children of old parents, and asked for information from his hearers as to the truth of the statement that grafts taken from an old apple tree and inserted in a young root-stock would live only as long as the parent tree. Gardeners had assured him that it was an accepted rule among them that when the old tree died the grafts were sure to follow very shortly. If this be true it would appear that every part, even of a composite community like a tree, had a more or less definite and limited life-expectation determined by that of the whole. Does this apply to our own tissues, including our generative cells, and has a race a life period like an individual?

LORD LISTER, in his presidential address at the late annual meeting of the Royal Society, dwelt chiefly upon the late triumphs of preventive medicine and announced that Dr. Turner had discovered a method of protection against the terrible African rinderpest, by inoculation of serums along the line suggested by Koch and that 700,000 cattle had already been saved by it and there was hope of entirely eradicating it.

Philadelphia.

DR. AND MRS. S. WEIR MITCHELL have sailed for Egypt, where they will spend several months.

DR. WILLIAM PEPPER, JR., who has recently recovered from a severe attack of typhoid fever, sailed last Saturday for the south of Europe and will cruise in the Mediterranean for several weeks.

QUARANTINE AGAINST RABID DOGS.—Dr. J. C. McNeal, of the Department of Public Safety of this State, has reported to State Veterinarian Leonard Pearson of this city that a large number of rabid dogs exist in the Sewickley Valley. At a recent meeting of the Live Stock Sanitary Board, called by Governor Hastings, at the request of Dr. Pearson, action was taken and all dogs in the Sewickley Valley were quarantined.

GIFT CONTESTED.—The will of Sarah Donnell, who recently bequeathed the bulk of an estate valued at \$10,000 to various charitable institutions, including the Episcopal Hospital, is being contested by her sister, who recently filed a caveat with the Register of Wills. The ground on which the contest will be brought has not become public.

VISIT TO SOUTHERN ARMY CAMPS.—Dr. M. S. French, secretary of the National Relief Commission, left last week on a visit to the different army camps throughout the South. On his return trip Dr. French will visit the different hospitals along the Atlantic seaboard, including Savannah and Fort Monroë.

LA GRIFFE PREVAILING.—Early in the week a few scattered cases of grippe made their way to the hospitals. Later the school children became affected, and now it seems scattered abroad throughout the city.

DIAGNOSIS SUSTAINED.—It will be remembered that last week Dr. W. B. Atkinson of the State Board of Health was sent to investigate the suspicious cases of skin disease epidemic throughout the town of Bradford, Pa., and the surrounding country. Dr. Atkinson is reported as finding a number of cases with symptoms so manifest that he at once reported them as smallpox. This diagnosis seemed to startle a good many of the practitioners in Bradford, and they had no hesitancy in stating that the diagnosis was incorrect. A public meeting was called and rousing resolutions adopted setting forth the

opinion that smallpox was not epidemic in the locality. However, smallpox has continued to spread throughout the city, and on December 11 twenty cases were reported. Dr. Benjamin Lee, secretary of the State Board of Health, also visited the place and concurred in the diagnosis as expressed by Dr. Atkinson.

MEDICO-CHIRURGICAL COLLEGE.—Plans are now under consideration for the erection of a laboratory for this medical college which, when completed, will cost several hundred thousand dollars. A plat of ground adjoining the property and extending along Cherry and Seventeenth Streets has been purchased. At the meeting of the trustees, to be held in January, it is rumored that the matter will be formally discussed, as up to the present time nothing has been decided as to the style of the proposed building.

LEGISLATION FOR PURE FOOD.—Delegates from this city have been appointed to the Pure Food and Drug Congress which meets in Washington on January 18. The special duty of this Committee is to urge upon Congress the importance of the Brosius bill now before that body, which provides against adulteration of food and drugs. Secretary Smedley is quoted as saying that the various exhibitions at the food show recently held here prove the ingenuity of the adulterants in counterfeiting both the flavor and appearance of food products to an alarming degree. For instance, strawberry jelly is made of glucose, gelatin, anilin dye and artificial flour; cayenne pepper is mostly gypsum; black pepper is largely gypsum and ground coccoanut shells; mustard is principally wheat flour, cayenne pepper colored with a poisonous drug known as Martin's yellow.

A HEALER WITHOUT DRUGS.—Mr. Carol Morton of New York recently gave an address in this city on "Christian Science," and is reported as saying that Christian science is in thorough harmony with the spiritual significance of the Bible. In fact, the Bible is the text book mostly used. Christian scientists accept Christianity according to Christ instead of Christianity according to the dogmas of men. God, the Supreme Being, is certainly synonymous with nature. Health of body, like holiness or wholeness of character, is the normal condition of the image of God, man and woman. Jesus healed the sick and reformed the sinner by the same method. He did not use drugs or material methods. He operated through mental or psychic laws. Christian science has nothing to do with faith cure, spiritualism, theosophy nor hypnotism, but it can not agree that the practice of medicine is a science.

STUDENTS AND THE MUNICIPAL HOSPITAL.—At the meeting of the city council last week, Dr. Walk, a member of that body, who offered the resolution providing that students of the different medical colleges be permitted to visit, for instruction, the patients suffering from diphtheria and smallpox at the Municipal Hospital, has not pressed the resolution as if he thought it would prevail. In fact, so much opposition has been created and ill-feeling engendered on account of this resolution, that instead of being its advocate at the last meeting of the council, Dr. Walk was absent, and it was given out that he will not press the measure any further.

FOR NEW LABORATORIES.—The committee appointed for the purpose of soliciting subscriptions for the new laboratories at the University, to cost \$300,000, report that they have received much encouragement in the work. The plan is to enlist the 6000 medical alumni and thus form centers of local associations under one general alumni association, and thus unite all the graduates in medicine. This is the first general call for contributions from the medical alumni for improvements at the University, and much is hoped for this plan. Provost Harrison has stated that these new physiologic, chemic and pathologic laboratories would be the next building erected during the coming year, and that he would guarantee that one half the expense of the building would be \$150,000.

PHYSICIAN RESIGNS.—Dr. John M. Foyst, who has been for the past few years physician to Girard College, has resigned his position and will engage in private practice. The position pays a salary of \$900 a year, and places a suite of rooms, meals and a servant at the disposal of the occupant. No successor has yet been chosen.

APPEAL TO BOARD OF HEALTH.—Residents of a certain district of Germantown, this city, have made a formal protest against the condition of a neighborhood of Pulaski Avenue, Morris Street and Chelton Avenue, which is being circulated among the residents of that locality to be subsequently turned over to the Board of Health. It is stated that during the past few months considerable sickness has occurred there and that many cases of diphtheria have existed, from which four deaths

have occurred. The locality is believed to be in an unsanitary condition, from the fact that large pools of water are said to form in the gutters, and that at the present time microbes abound.

MICROSCOPE OF FIFTY YEARS AGO.—Dr. J. Cheston Morris recently gave a lecture on "The Development of the Microscope," before the microscopic section of the Academy of National Sciences. He said that in 1850 there were upright microscopes of German and French make, and that one of the greatest improvements was the Ross stand, which enabled a person to examine an object at any angle. Achromatic lenses were made afterward, and many of the latest improvements were due to American opticians and mechanics.

MORTALITY STATISTICS.—For the week ending at noon, December 17, there had been 481 deaths, an increase of 45 over last week, and 30 over the corresponding period of last year. In children under the age of five years, 118 occurred.

FREE HOSPITALS FOR POOR CONSUMPTIVES.—The proceeds of the Philopatrian Ball will go toward the expense of these patients. Instead of erecting a new building for the treatment of these cases, certain wards will be set apart in those hospitals which will care for the tuberculous, and to them the proceeds will be distributed. The hospitals which have taken the greatest interest in this work are the St. Agnes and St. Mary's. The amount of money paid each week for the support of these patients is \$5.00.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—Special Assignments: Col. Charles R. Greenleaf, assistant surgeon-general, U. S. A., to Savannah, Ga., and to such other places as may be necessary for the purpose of inspecting the medical department at that and other stations. Col. Wm. H. Forwood, assistant surgeon-general U. S. A., from the U. S. Soldiers' Home, Washington, D. C., to duty as chief surgeon department of California, San Francisco, Cal., relieving Lieut.-Col. Johnson V. D. Middleton, deputy surgeon-general U. S. A., on his retirement from active service. Major Henry S. Kilbourne, surgeon U. S. A., to report to the quartermaster-general as medical inspector of transportation. Acting Assistant-Surgeon Aristides Agramonte to Havana, Cuba, on business connected with the study of the cause and prevention of yellow fever, under special instructions from the surgeon-general of the army.

Medical Supplies: Major John B. Hall, surgeon U. S. A., from mustering-out duty in Pennsylvania to San Francisco, Cal., to assume charge of the medical supply depot at that place. Major James E. Pilcher, brigade surgeon, Vols., from the Seventh Army Corps to duty as supply officer at Savannah, Ga.

To Santiago: Major Randall R. Hunter, brigade surgeon, Vols., from leave of absence to report to the commanding general; and Acting-Assistant Surgeons Frederick Hadra, Frederick W. Fabricius, from the Josiah Simpson General Hospital, Va., and John C. Greenewalt from Fort Thomas, Ky., all via New York City.

To Pinar del Rio: Acting Assistant-Surgeons George B. Lawrason and F. Medina Ferrer to report to Brig.-Gen. George W. Davis for duty with troops going to that province.

To Porto Rico: Major John Van R. Hoff, surgeon, U. S. A., assigned as chief surgeon of the Department. Acting Assistant-Surgeon E. A. Southall, via New York City to Ponce for duty with the Nineteenth U. S. Infantry.

To the First Army Corps: To report to the commanding general at Macon, Ga., Capt. Charles E. B. Flagg, assistant-surgeon, U. S. A., from the General Hospital at Fort McPherson, Ga.

To the Second Army Corps: Major Edgar A. Mearns, brigade surgeon, Vols., from the First Army Corps to Athens, Ga., for duty with the Third Division.

To the Fourth Army Corps: Major Henry D. Thomason, brigade surgeon, Vols., and the following acting assistant-surgeons to report to the commanding general at Huntsville, Ala.: R. E. Caldwell from Richmond, Va.; Charles Farmer from Lexington, Ky.; R. L. Taylor from the Josiah Simpson General Hospital, Va.; Edwin P. Wolfe from Washington, D. C., and J. Stebbins King from New York City.

To the Seventh Army Corps: Major Ira C. Brown, brigade surgeon, Vols., to report to the commanding general; Major William S. Bryant, brigade surgeon, Vols., to Brig.-Gen. Lloyd Wheaton as chief surgeon, First Brigade, First Division, and Major George B. Bunn, brigade surgeon, Vols., to Brig.-Gen. H. C. Hasbrouck as chief surgeon, Second Brigade, Second Division.

To mustering-out duty: Major Ezra Woodruff, surgeon, U. S. A., from Fort Trumbull, Conn., to New York City for N. Y. Vols.; Major W. C. Borden, brigade surgeon, Vols., at Washington, D. C., for the Fifth Company U. S. Vol. Signal Corps; Major Richard W. Johnson, brigade surgeon, Vols., at Chicago, Ill., for the Seventh Company U. S. Signal Corps, and Capt. Henry R. Stiles, assistant-surgeon, U. S. A., at Portland, Me., for the Eighth Company, U. S. Vol. Signal Corps.

To duty at hospitals, etc.: General Hospitals: Major Benjamin F. Pope, surgeon, U. S. A., to Savannah, Ga., for duty pertaining to the supervision of the construction of the general hospital at that place, and as surgeon in command of the hospital when completed. To the Josiah Simpson Hospital, Va.: Major Edwin F. Gardner, surgeon, U. S. A., from duty with the Third Division, Second Army Corps. To the Hospital Ship *Relief*: Lieut. Weston P. Chamberlain, from the General Hospital, Fort Monroe, Va. To the Hospital Ship *Bay State*: Acting Assistant-Surgeons Charles E. Marrow from the *Relief* and Randolph M. Myers from sick leave in Washington, D. C. To the Hospital Transport *Nobilis*: Acting Assistant-Surgeon Charles B. Mittelstaedt to Savannah, Ga. To the U. S. Hospital R. R. Train: Acting Assistant-Surgeon C. L. G. Anderson.

To duty at Military Posts: Major Louis A. La Garde, surgeon U. S. A., from Fort Robinson, Neb., to the U. S. Soldiers' Home, Washington, D. C., as attending surgeon. To the Washington Barracks, D. C., Acting Assistants-Surgeons C. B. Millhoff, from Johnston, Pa.; Benjamin J. Edgar, from the General Hospital, Fort Myer, Va., and Isaac W. Brewer, from sick leave in Washington, D. C. To Columbus Barricks, Ohio: Major William J. Wakeman, brigade surgeon, Vols., from sick leave, and Acting Assistant-Surgeons Harold W. Cowper, from Fort Myer, Va., and Louis T. Hess, from Washington, D. C. To Fort Adams, R. I.: Capt. George J. Newgarden,

assistant-surgeon, U. S. A., from duty at Savannah, Ga. To Fort Leavenworth, Kas.: Lieut. Basil H. Dutcher, assistant-surgeon, U. S. A., from Fort Grant, Ariz., and Acting Assistant-Surgeon Francis M. McCallum. To Fort Grant, Ariz.: Acting Assistant-Surgeon John E. Bacon, from Fort Hancock, N. J. To Fort Crook, Neb.: Acting Assistant-Surgeon John R. Hicks, from the General Hospital, Fort Monroe, Va.

Leaves of absence granted or extended: Majors Charles Richard and William R. Hall, surgeon, U. S. A.; Lieut. Clyde S. Ford, assistant-surgeon Fourth U. S. Vol. Infantry, and Acting Assistant-Surgeon E. W. Pinkham.

Sick leaves granted or extended: Major Wallace Neff, brigade surgeon, Vols.; Capt. John D. Howe, Assistant-Surgeon, Sixth Ohio Infantry; Lieut. Maurice C. Ashley, assistant-surgeon, First New York Infantry, and Acting Assistant-Surgeons Charles S. Stern, E. Van Hood and Isaac W. Brewer.

Resigned: Major Burton S. Booth, surgeon Two Hundred and Third New York Infantry; Major Salem Heilman, surgeon, One Hundred and Fifty-Seventh Pennsylvania Infantry; Lieut. F. L. Albritton, assistant-surgeon Sixth Ohio Infantry, and Lieut. Paul M. Mecray, assistant-surgeon Fourth New Jersey Infantry.

Honorably discharged: Major William H. Arthur, chief surgeon Vols. (Major and Surgeon U. S. A.) his volunteer commission only; Major Wallace Neff, brigade surgeon, Vols.

Contracts annulled: The following acting assistant-surgeons: From the General Hospital, Fort McPherson, Ga., James H. McCall, of Huntsgton, Tenn., Edwin M. Patterson of Washington, D. C., and James C. Ross of Salt Lake City, Utah. From Washington, D. C., Frank Garnett Young of Clarksburg, W. Va. From Fort Meyer, Va., Edwin C. Barstow of Washington, D. C. From the Josiah Simpson Hospital, Va., Wallace S. Chapman of Denver, Colo., and from the General Hospital at Ponce, P. R., John L. Goltra of Buffalo, N. Y.

CHANGE OF ADDRESS.

Allen, B. G., from Robbins, Tenn. to Somerset, Ky.
Brooks, S. D., from Port Townsend, Wash. to Nat'l Quarantine Station, Angel Island, Cal.

Brewster, B. H., from Hooper to Petrolia, Pa.
Campbell, J. G., from 5107 Lexington ave. to 6857 Wentworth ave., Chicago, Ill.

Chapple, C. L., from Ashbury to Barrabas Hospital, Minneapolis, Minn.
de Beque; W. A. E., from De Beque to Youngerman bldg, Des Moines, Iowa.

Fenelon, M. P., from Ripon, Wis. to Cartville, La.
Graham, C. A., from 16th and Curtis street to box 764, Chicago.

Joslin, H., from Stedman bldg to 921 Logan ave., Denver, Colo.
Kreass, S. S., from 1316 to 1510 Walnut street, Philadelphia, Pa.

Loper, J. B., from 415 8th to 1213 25th, Des Moines, Iowa.
Parker, W. T., from Asylum Station to Westboro, Mass.

Paterson, R. N., from Oakland to 1606 California street, San Francisco, Cal.
Shortridge, W. R., from Elgin, Ill. to La Plata, Mo.

Sweeney, A., from 366 Wabasha street to Lowry Arcade, St. Paul, Minn.
Van Fradenburg, G. A., from Alcott to Manassa, Colo.

Wilson, H., from Lima, Ohio to North Loup, Neb.
Whalen, C. J., from 237 North Clark to 235 Dearborn ave., Chicago, Ill.

LETTERS RECEIVED.

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The Journal of the American Medical Association

VOL. XXXI.

CHICAGO, ILLINOIS, DECEMBER 31, 1898.

No. 27.

ORIGINAL ARTICLES.

HYGIENE AND DIETETICS IN DIABETES MELLITUS

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY FRANCIS E. CARROLL, M.D., A.B.
BOSTON, MASS.

If perfect culture of mind and body was to be had, a perfect knowledge of the laws of life, an intellect and body trained, the moral faculties of man in balanced order, the human race would not perish under a grievous yoke of disease; the youth of man would be protected and become more perfect; decay of life would be blended with happiness of perfect knowledge; life would become more vigorous, disease more remote. Life is an entity, a constant growth, a resultant waste, a potential energy an eventual expenditure. No agent has been found to arrest the waste or crystallize the tissues of growth and vigor from decay. To do so would be death itself, for life is an incessant change, its vital energy dependent upon the laws of nature, a neglect of which inevitably produces lamentable results. To prolong the period of vital energy, the improvement of the nutrition of the tissues is necessary, either by hygiene or by preparing the proper food for the purposes of nutrition, or removing or preventing those chemie changes in the tissues, called decay. The benefits derived from these principles have extended the duration of life, and it is from this irresistible inference—the instruction derived from experience—that the hygienic and dietetic treatment adapted to diabetes mellitus can abridge or prolong human life. It would be wise had man a mystic elixir capable of preserving life, where there had been injurious habits and old damages, of rendering a stream pellucid which is turbid at its source, but our nature, having no *Deus ex machina*, must look to the proper supervision of that upon which health and life are dependent.

One great means in the efficacy of hygienic treatment of diabetes mellitus is *air*. The air influences, by variations in the amount or condition of its normal constituents, by difference in physical qualities, or by the presence of impurities. The patient should be surrounded by most favorable hygienic influences, because of the mischievous consequences of the disease proceeding slowly or rapidly according to the constitution, age of patient and circumstances in life. No one who has paid any attention to the condition of health in disease can doubt that impurity of air marvelously affects the individual in the convalescent state. The respiration, and cutaneous emanations of man, the impurities from combustion of light and heat, the effluvia of uncleanness of rooms and persons, demand that the sleeping-room should be well

ventilated, removed from any impure flow of air, and that the house should be wholesome and well drained. The patient should pass much of his time in the open air, the action of the sun's rays vitalizing the atmosphere and imparting vigor and energy to the system. During the cold of the winter a glass house with southern exposure is a great comfort. For cleanliness and to preserve a healthy state of the skin, bathe regularly in water not too cold, not allowing the body to be long submerged. After a warm alkaline bath in winter, or a tepid bath in summer, either on retiring at night or arising in the morning a brisk friction or massage, using coca oil, facilitates the removal of effete epithelium, and is conducive to stimulating a healthful action to an otherwise dry and harsh skin. A foot-bath of hot water, with the addition of a tablespoonful of mustard, is very useful where there is fulness of blood-vessels in the head, continued sleeplessness or obstinately cold extremities. Warm flannel next to the skin, and residence in a warm equable climate is an aid to health.

For individual life to continue to exist, the healthfulness of its envelope—the body in which it dwells—must be preserved. So the ingesta, which goes directly or indirectly to the growth, repair or the production of energy in any form, must be administered to insure the proper continuity of the body, its textures, its organs, its processes and actions. Alimentation and beverages are necessary to the existence of all organized beings, but the requisite quality and quantity depend very much upon the circumstances connected with each individual case. It is quite obvious, that to accomplish the best results in the processes of healthy nutrition, the application of dietetic principles is a most prominent feature, and in the widest acceptance of the term it is of prime importance—the corner-stone in the treatment of diabetes. A necessary reform of diet should be had in diabetes. A strict disciplinarian subjects his patient, without reason, to a stringent diet; another, more captious, permits every conceivable latitude. A conscientious, docile patient obeys the strict rule, gets disgusted with mutton or beef, and alimentation in general, consequently is nauseated by a meat diet and abandons it. A capricious, covert one, disregards all necessity, and deceives the animal economy.

The efficiency of diet depends upon the proper elimination of all ingesta containing grape-sugar, cane-sugar, beet-root sugar and starch. The glycogenic function of the liver and its hepatic action on carbohydrates renders food of such assimilative nature injurious, aggravates the glycosuria, and the excretion of sugar gradually increases. A certain, exact determination of ingesta and its effects in reference to carbohydrate metabolism should be outlined and noted. The normal, assimilative action of the liver should be enabled to be approximately defined, and its carbohydrate metabolism estimated, by exclud-

ng the patient from a generous diet and directing a strict diet from ten days to a fortnight. After having followed this cautious procedure, a standard is obtained whereby the effects of a stringent diet can be readily determined.

In many cases, a gradual substitution of articles of a mixed diet, in definite quantities, may be cultivated with advantage, and should sugar reappear, the diet can be duly regulated. In severe cases, carbohydrates should be permitted and results noted. In a large number of diabetics, a pure skim-milk regimen results in a total disappearance of sugar, whereas others can take milk and potatoes, in small quantities, with success, and with slight increase in amount of sugar. Individual idiosyncrasies must be watched and suspected, as some patients tolerate starch in one form better than in another, as bread rather than potato. Many diabetic foods possess an injurious amount of starch, and others are useless and absolutely indigestible, so that the *summum bonum* of diet must be insisted upon with such additions as are judicious. An exclusive animal diet may reduce, or cause the sugar to disappear, but it can not always be tolerated, for appetite will grow "stale," and the necessity of a mixed diet becomes a serious study. In this disease, the nervous system is correspondingly implicated and a rigid devotion to animal ingesta increases the tension, for there is a physical degeneration peculiar to this affection, and a mixed diet is the wisest course to pursue. When thoughtfully regulated, such a regimen is more likely to keep the disease stationary by upholding vitality than by being confined to one diet, while the stomach and system become debilitated with results of innutrition, and sooner or later succumb to the fell destroyer. Milk, when assimilable, is a boon to the invalid. When digestion is apt to be deranged, peptonized milk may be substituted, but the monotony of a milk diet becomes unbearable. Cream, as long as it agrees, may be allowed, and cod-liver oil is a nutriment, particularly where fatty articles are easily retained.

To many of the laity there are certain fixed principles by which this disease must be attacked; and one is that complete abstinence from amylaceous food or any liquid or substance convertible into sugar is necessary. Logically true these premises may be, yet a suitable diet, eliminating all saccharine and amylaceous, sugar-producing substances, strictly speaking, is impossible. There is skim-milk treatment, best used in the incipient stage, causing the sugar to disappear, and an abatement of symptoms as long as the diet is rigidly followed; in others, where disease is persistently established, it is not of any use, despite all treatment. Even in later life, when diabetes is most amenable, fat meats, eggs, soups and fish may be taken daily, to vary the diet as much as possible, taking the hearty meals in the earlier part of the day. The most important article of diet—bread—deprivation of which is illy borne by the patient, is a source of careful thought to the physician—the substitutes of bread are so various, imperfect and injurious. Gluten flour, however prepared, possesses starch. Where extreme discipline is required, the carefully prepared bran, thoroughly washed and free from starch, or bran prepared by the cold-air blast process, may be used. Pavy's almond food, Seegeus' almond food, Camplin's method of making biscuit of bran flour, Kueltz's biscuits of inulin from Iceland moss, are substitutes for bread. When exclusive diet is not determined the ordinary bran may be used.

In the nature of beverages, milk, combined with lime water, soda water, or buttermilk, is good, or a refreshing draught is Apollinaris, Vichy or carbonated waters. There is no water that so alleviates the distressing thirst of the diabetic as Waukesha Bethesda water. Certain mineral waters have long enjoyed an overestimated reputation in diabetes, as the Vichy and the Carlsbad, due to their aperient action on the liver and bowels. Mineral waters in America are legion, and each has its exponent with proofs accordingly.

Use of alcohol in diabetes demands careful attention. If used, non-saccharine wines are prescribed—hock, Bordeaux, and German or French wines, even dry sherries and madeira—but under suitable restriction. Bordeaux claret is preferable to whiskey, and no malt liquors or strong alcoholic drinks should be allowed. Alcohol should be prohibited when it acts detrimentally to the nervous system and when albuminuria is present. With all due regard to alcohol, the animal economy is best without it. The great object, in dietetic treatment of diabetes, is to manage digestion, and check or diminish the formation of sugar.

The writer, having confined the paper to hygiene and dietetics, has purposely avoided medicinal treatment, and trusts, however inefficient the line of thought has been, the reader will pardon the meager discussion of a subject most important to the laity. He will now offer a bill of fare, trying to be liberal enough to satisfy the palate of the diabetic, and subject to the blue pencil of the physician in his special case:

PERMITTED.

Meats.—Flesh meats of every variety: beefsteak, beefsteak with fried onions, mutton or lamb chops, roast beef, corned beef, kidneys, broiled or stewed, smoked beef, calfs' head, sweetbreads, lamb fries, veal, tripe, ham, bacon, tongue, sausage, pigs' feet. *Poultry and Game.*—Broiled chicken, chicken salad, game cooked in every way. *Fish, fresh and salted.*—Fish in oil, sardines, spawn, lobsters, oysters, clams, crabs and shrimps. *Eggs.*—In every way, scrambled, boiled, omelets of all kinds, wherein flour, sugar and prohibited vegetables are not used. Cream, butter, cheese, sour milk. *Soups.*—Animal broths, beef, veal, chicken, ox-tail, turtle, oyster broth, clam broth, terrapin, avoiding vegetables inadmissible, and flour and starchy substances, as rice and vermicelli. *Green Vegetables.*—Summer cabbage, turnip tops, spinach, watercress, mustard and cress, green string beans, green ends of asparagus tops, green parts of lettuce, celery tops, sorrel, mushrooms, dandelions, sauerkraut, cucumbers, olives, pickles. Use moderately cauliflower, brussel sprouts, young onions, broccoli. *Fruits.*—Gooseberries, red currants, plums, cranberries, strawberries, cherries—acidity neutralized with soda bicarbonate. *Bread.*—In known amount, made of gluten, bran, almond flour or inulin. *Custard.*—Made without sugar. *Nuts.*—Almonds, walnuts, brazils, hazels, filberts, pecans, butternuts, cocoanuts. Salt and pepper may be used. *Drinks.*—Tea, coffee, cocoa from nibs, mineral waters, soda waters, dry sherry, claret, acid wines, dry sauterne, rhine, moselle, burgundy, chablis, hock, brandy, gin. No malt liquors. Burton, when long bottled; light beer in moderation, also bordeaux. Glycerin may be used instead of sugar in tea or coffee when imperative, but it is wise to eliminate it as a substitute for sugar altogether.

PROHIBITED.

Sweet dishes—sugar in any form. *Bread.*—Wheaten bread, ordinary biscuits of all kinds; cake, desserts made with flour or sugar; puddings and pastry of all kinds; honey, rice, corn, flour, sago, tapioca, arrow-root, macaroni, vermicelli. *Farinaceous or Saccharine Vegetables.*—Potatoes, artichokes, turnips, carrots, parsnips, peas, beans, beets, spanish onions, asparagus, tomatoes, stalks and white parts of cabbage, lettuce, cauliflower, celery, broccoli, radishes. Liver of all animals; nuts, chestnuts; fruits of all kinds, fresh or preserved; jama, syrups, sugars; diabetic foods, sweet pickles. *Drinks.*—Chocolate, sweet wines, sparkling wines, port wine, liquors, sweet ales, mild and old; porter and stout, cider. Milk does not need to be absolutely banished, but if used, use sparingly.

IMPORTANCE OF PHYSIOLOGY AND DIETETICS TO THE SURGEON.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY CHAS. G. PLUMMER, B.S., M.D.
SALT LAKE CITY, UTAH.

The dimensions of this subject are such that it is impossible to encompass it by the confines of a single article, in a limited time.

The relationship existing between physiology and surgery, in every phase of our profession, is so intimate that, to think or work in the latter without a thoughtful consideration of the former, can never lead to successful results. When we look at what is done by our masters in surgery, we are convinced that they only attained such perfection in their handling of surgical subjects by close application of the very principles of the science. To become merely a flash operator or a mechanic demonstrator of what the human hand, aided by a well-trained eye, is capable of in a dexterous way, may go a long way toward giving that one a wide reputation as a surgeon, but, in the long run, the surgeon is known by his results. The brilliant operator is bound to secure certain excellent successes, but, if he maintains his standing in the major work that comes to him, he can not give the cold shoulder to physiology and dietetics. They are his guiding stars. No definite line can be followed; he must cut according to his cloth, and he who lacks physiologic good sense, no matter how otherwise endowed, is no surgeon. But time will not permit me to go into the minutiae of the physiologic and bacteriologic laboratories, or into the very essence of physiology itself, and trace out its many ramifications. Such an exhaustive treatise on the subject can be found in any of the most recent text-books, in much better form and more acceptably than I am able to place it before you.

There is no reason why a surgeon should be a better physiologist than a practitioner of medicine, an obstetrician, a gynecologist, an oculist, or any other disciple of the many branches into which the profession has been divided. The very foundation-stone of the science of medicine is physiology; it must be, from its very nature, for surgery is really but a branch of medicine; and all who do work in our numerous specialties, must, by wise legislation, first attain the degree of Doctor of Medicine. Anatomy must be what some might term almost the right arm of the surgeon. But if this be true, physiology is the right

arm of anatomy. For, of what satisfaction is it to him who performs an operation, to look over his work, dress the wound, and then to see his patient die because the normal functions of the body go unattended? Is it not physiology that steps in here, takes up the work where the knife left off, and by intelligent management adds another success to the surgeon's credit? The knife in the most skilful hands the world ever knew can do only so much. It may relieve organs of the burden of diseased tissue, it may lop off unnecessary and useless members, but who ever heard of its replacing extirpated tissue of the stomach or intestinal tract, that could perform the functions of that lost? How long would our patients survive if, for instance, the entire alimentary canal were removed? Very true, indeed, sections of great length have been made from the intestinal tract, huge slices have been cut from the stomach, and the patient made an excellent recovery, but, if the physiology of the bowel be destroyed, or even too greatly interfered with, if the destruction of the glands of digestion take place, death comes inevitably.

Thus at the very elbow of the surgeon stands physiology, to warn the too venturesome operator that a halt must be called if he values his patient's welfare. By physiologic forewarnings we come to recognize malignant conditions interfering with alimentation and other functions, and to be forewarned is to be forearmed. These indicate to the surgeon, not only the position, but the character and extent of the involvement of normal tissue, thus enabling him to lend a helping hand to his greatest ally.

Great successes have been recently announced wherein the adaptability of the least remnant of the stomach, left after excision for malignant disease has been demonstrated. Schlätter (vide JOURNAL, vol. xxx, p. 265), Krönlein, Schuchardt, and Langenbuch have related to us their partial or complete gastrectomy, and the duodenum took up the task of playing stomach for the living example, and did it with success.

We do not know all of physiology as yet. Still, without paying it our most profound respect the most brilliant results of modern surgery would come to naught. Thus, with due respect to anatomy, to express myself more clearly, the surgeon must be equipped with two right arms; physiology first and anatomy second.

Were it not the fact that all bodies or engines of use must, in order to perform their necessary functions, be supplied with the proper elements to replace loss and repair damages, there would be very little for the surgeon to do beyond the mere exhibition of his skill and dexterity in handling the scalpel. Then all operations would be successes, and the surgeon would be the only truly great one among us.

The principle, that attention to the physiologic details of all operative work must ever be borne in mind holds good under all circumstances. The operator who willfully violates a physiologic principle, either in the immediate operation or in the post-operative care of his cases, will pay for it as dearly as he who goes contrary to any established surgical procedure. Infection of the intestinal tract, for instance, is as easily accomplished as infection of an open wound, and usually causes more disturbance to the patient than if the operated area became one solid slough. There is not enough attention paid to the ante-operative and the post-operative care of patients, especially

in abdominal surgery. One of the first questions asked by the nurse, when the operation is over, is, "Doctor, what may the patient have to eat?" Often, without waiting to consider the amount of resistance with which the patient may be endowed, the surgeon will say, "Oh, almost anything he wants," thus committing one of the grossest errors of which he is capable. So much has been said and written on the subject of dietetics, in connection with surgical work, and yet so little is accurately known, that it behooves each operator to himself become an investigator; and as his experience becomes greater with the increase of work, he will be enabled to lay down certain principles by which those coming after him may profit.

But the trouble is that as soon as the mere operative manipulation is a thing of the past, the patients usually cease to be an item of interest, except in a perfunctory way, and they are left to the tender mercies of a house physician, a nurse, or an undergraduate. Our surgeons are not physiologists. The matter of experimentation, carried out with strict adherence to scientific principles, is almost unknown to the great majority of them. The application of the simplest facts concerning diet and assimilation is disregarded. The condition of the patient, that element about which so much talk is wasted and so little is known, which we call "shock," is often overlooked. The fact that shock should enter into our considerations in minor operations is scarcely thought of; for to the mind of many an ambitious operator of today, such an element is unworthy of notice, except it be in connection with the invasion of the abdominal cavity. To him, an assault on the abdomen by a route which leads to the capitulation of some of its organs, is the acme of his desire. The terms "laparotomy," "celiotomy," "abdominal section," and lastly "vaginal section," are significant of such visions of greatness and reward to many men that they overshadow all other approaches to a career of usefulness and distinction. To be able to add name after name of successful sections of the abdomen to one's record, seems to be the height of the ambition of many with whom we come in contact. It is indeed lamentable that result cuts no figure. A cure often takes a secondary place in many long lists of statistics. The mere fact that the operated ones live to get on their feet and drag about in a half-dead manner for months and sometimes for years, perhaps with a post-operative hernia also, does not seem to have any influence on him who has his eye on the fee rather than on successful work. If the surgeon, if all practitioners, in fact, were better physiologists, if all physicians paid more attention to diet and assimilation, in the administration of remedies and the care of those to whom they owe their time and their best efforts, the surgeon, specifically, would not reap such rich rewards.

We can not overestimate the great value and importance, not only to one's self, but also to the patient, of a thorough knowledge of the subject of the administration of food, its treatment by the stomach, its assimilation and its final distribution through the proper channels. If we resolve the subject into a question of importance to the surgeon, it comes more closely to him when the matter of dietetics is considered in his care of patients after abdominal operations. One should not forget the all-important fact that the processes of waste occur continually. There can not be a moment of our lives, be we sick or well, asleep or awake, when such waste of tissue does not go on.

Repair must take place equally as rapidly, else we lose, so much in fact, that our life is endangered. For this reason regularly feeding the operated one at night is of as much importance as food by day. The vitality must be sustained by the proper exhibition of easily assimilable materials, either by the mouth or rectum, from the very outset. It is a grave error to starve the patient after section of the abdomen, a certainty which experience alone can teach us. It is a fact that must be taken into consideration that the functions of the vasomotor system are abnormally suspended by the shock sustained by one undergoing such a major operation. Consequently, the administration of foods of almost any character, until the equilibrium of the vasomotor system is restored, is most unwise. Usually we look for one to be fully out of shock in from twenty-four to thirty-six hours. Then the stomach is in fit shape to readily seize upon nutriment in small amounts, often repeated, and in a concentrated or predigested form. The intestines will be in readiness to assimilate and convert into proper solution the food administered, and the weakened heart will be buoyed and strengthened thereby, its beats will be firm and full, and of such a quality as to assure us our patient is in good condition.

We so often hear of and sometimes see patients who, it is claimed, die of exhaustion. What is this exhaustion? Too often, it may be, it is but the consequence of a succession of shocks, operative or otherwise, sustained by the individual, which so overpower and outweigh the recuperative ability that what little spark of vitality remains flashes out and they are gone. If this obtunded sympathetic system were taken into consideration at the time of extensive injuries to soft parts, and to the extremities, amputation and operation would not be so hurriedly advised and performed. Shock of operation added to shock of injury, is like feeding fuel to a flame that should be extinguished. Physiologic reaction rarely sets in where a system has been so ignorantly handled. If we would but stop and look into the book of the physical body, on the pages of which we read the rapid, weak, irregular pulse, the total insensibility to pain, perhaps the partial or complete loss of consciousness, the contracted pupil, the blanched face, the pinched, drawn countenance, the sighing respiration, the refusal of nourishment with the consequent craving for water, here we would see, as it were, an open page of the plainest most simple teachings from the book of physiology.

Physiology gives us at a glance the contraindication to operation, and it tells us how long, and to what extent we may pursue our cutting. Who would undertake operative procedure on a kidney without determining, by physiologic examination and investigation, the condition and amount of urinary secretions? It is the test-tube, the microscope and the germ cultivation, in the hands of the physiologists, that have made it fairer sailing for the surgeon, and have removed many obstacles among his onerous duties. Virchow, Pasteur, Koch and numerous others are they to whom the surgeons of the present owe their allegiance. These investigators have made it possible for their *confrères* to make unheard of assaults on man, and have opened up fields of labor for him which seem almost exhaustless. Under the guiding hands of these geniuses, the surgeon cuts here or there, taking out tissue, in one instance for examination, and in another for demonstration, then boldly hews to the line.

This is not the place to give directions for preparatory measures, when abdominal operations are under advisement. Still, I believe that if the patients be well and considerably nourished, even up to the limit of their capacity, before operation be undertaken, their immediate reaction and consequent convalescence would be a matter of much congratulation to them, as well as to ourselves. For it is no longer a question of doubt in my mind that the preparation of the patient immediately before operation has much to do with the outcome of the attack upon his organism.

It would be the height of folly for us to allow a subject to go under anesthesia without a careful examination of heart and lungs, and without having cleansed their economy by the ingestion of large quantities of pure water. Their wholesome, nourishing food need not be denied them until at least twenty-four hours previous to the time of attack. The water really aids greatly in the excitation to the discharge of gastric juices, dilutes the nourishing materials, and increases assimilation. So I would not starve a patient and then sluice him out with gallons of hot water, but I would follow the plan above, and see the operated one come from under anesthesia more quickly, with a stronger pulse, and with less shock than otherwise. I am convinced that one of the most formidable elements we have to contend with in abdominal surgery is that of intestinal flatus. I am also convinced that a great amount of the annoyance experienced by the patient in enduring it, as well as by the surgeon in endeavoring to combat it, might be eliminated by proper attention to the materials which enter the alimentary canal. Gaseous distention of the intestinal tract may occur equally as readily when we have prohibited the ingestion of food as when we have allowed something which will cause fermentation and consequent tympanitis.

I maintain in conclusion that the absolute observance of the physiology of digestion, the proper selection and careful and regular administration of articles of diet for hygienic results, and the study of such foods as are given for their therapeutic value, will minimize such disturbances and contribute greatly to the comfort and recovery of the patient. Without this due consideration for the complex human machinery and its conservation of energy; without a due allowance for the condition of heart, lungs, brain and kidneys, surgery will continue to be largely unsatisfactory both to surgeon and patient.

DISCUSSION.

Dr. L. DUNCAN BULKLEY of New York said that he was indeed pleased that this very important matter had been so ably presented. It was the greatest mistake to regard only the operative side of surgery. The surgeon should be the accomplished, thinking physician, and as such he could save lives which otherwise were often sacrificed. He stated that Dr. Joseph C. Eastman, in the presence of a number of physicians, had stated that during the past few years he had certainly saved some lives by the rigid employment of the plan of giving milk, warm, pure and alone, as just advocated by the present speaker in his paper. This he did, both before and soon after operations, and found that patients rallied and improved as never before. Dr. Bulkley wished to urge again, and most emphatically, the value of this method of feeding in connection with operations.

Dr. E. STUVER—This is a subject of the very greatest importance. In the selection of food for diseased conditions and especially in those cases where surgical shock is a factor to be considered, great care should be exercised to secure foods containing the greatest amount of tissue-building and force-producing materials, but such as will throw the least strain on the digestive and assimilative organs and at the same time

least interfere with free elimination. Since the great importance and far-reaching consequences of auto-intoxication have been recognized, greater attention is being paid to the excretory organs, and free elimination of toxic materials is now regarded as one of the most important matters in the management of any case. This practice is being followed by excellent results both in surgery and medicine, and many cases, that formerly, owing to improper diet and retained poisons, died, are now being saved.

Dr. PLUMMER in closing the discussion, said the subject was of great importance to him, and ought to be to every thinking physician. His attention had been called to the demand for food by those suffering from shock, by the manner in which dumb animals act when sick or injured. A sick or injured dog refuses food until such a time when his natural appetite calls for it—why should not the human body be supplied on the same principle? The employment of good sense and the following of physiologic teachings should guide us, then our results would be better and more satisfactory.

PHYSIATRICS, OR NATURE'S THERAPY.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY C. F. ULRICH, A.M., M.D.

WHEELING, W. VA.

Nature is, without doubt, the best, the most successful physician, when she is permitted to have full sway and her mandates are obeyed. Almost every disease, every ailment, every departure from the normal condition, exhibits a tendency to recovery. In the human body, as in that of the animal, there exists apparatus for the removal of elements that disturb the healthful working of the internal machinery; such as the depuratory system, i. e., the bowels, the kidneys, and the sudoriferous glands. The work of depuration is not confined to the above named organs, neither is that their only function, since the intestinal tract is largely concerned in digesting the food and preparing it for assimilation, and the system of sudoriferous glands serves to cool the surface of the body during excessive heat and in fevers. The greater number of diseases that afflict man and sometimes cause his death will result in recovery, if circumstances are favorable, and if there is not some unnecessary interference by the patient, his family, or an unskillful physician. I wish not, however, to be understood as insinuating that the physician is a superfluous piece of furniture and should be abolished. Far be it from me to assert any thing so heretic. I will stand up for our beloved profession at all times and under all circumstances. Yet I should be very happy could I live to see an expurgated edition of the medical calendar. In another part of this paper I will endeavor to show how much benefit the skilful, conscientious physician can confer upon his patients, even though he does not cram them daily with poisonous or deleterious drugs; or cut them open, remove certain parts from their bodies, and sew them up again, as the tailor does in repairing an old garment that is wearing out. Unfortunately, he can not imitate the tailor, who inserts a new piece where he has removed the defective part. He can not replace the organ that has been removed by inserting a new and healthy one, thus preserving the natural function. The body, after such a mutilation, necessarily remains an imperfect machine. The occult principle which we call nature or vital force, is the chief motive power in the development, the growth, and also the decline and death of the human body. It may seem somewhat paradoxical to assert that the vital force is instrumental in the induction of decay and death. Yet it is ap-

parent to every careful observer that all vital processes are self-limited, and are continually undergoing changes. From decay and death are developed the elements of a new life, which, in its turn, must submit to the same decline and final dissolution.

We will consider in this paper only the pathologic conditions which result in what we call disease, their detection and their possible cure. Animals and savages, or, as I prefer to call them, children of nature, are not subject to as many diseases, nor to so great a variety of them, as civilized people. Animals die because they are killed and eaten by others, or are destroyed by man, for various reasons. Otherwise they mostly reach the period of life allotted to them by nature's laws. Diseases exist principally among animals that have been domesticated by man, and consequently do not live in a state of nature. The children of nature, or savages, of whom the aborigines of America may be regarded as an average type, are usually born healthy; grow up without requiring much care; and pass their life in a state of health. The men hunt, fish and carry on war; the boys are trained in all the exercises pertaining to war and the chase, spending most of their time in the open air. The women feed and rear their children, cultivate the soil, make the few garments worn and prepare the frugal meals for the family. In this simple manner they pass their lives, very seldom suffering any disturbance of health. When they have accomplished the period of life allotted to them, they quietly lie down and die. This description applies to them when they lived in their native simplicity, before the paleface—the man of civilization—came among them, furnishing them with firearms, that they might have greater facilities for mutual destruction, and with firewater to advance their powers for self-destruction. He inoculated them with hitherto unknown diseases, drove them from their forest homes into less favorable regions, where they pined away, being no longer children of nature. In speaking of the children of nature, their mode of living, their healthy condition, their painless death at the end of their allotted time, I must not be understood as commending the barbarity, the ferocity, the utter disregard for human life that characterizes many of them. Nor would I hold them up as examples to civilized people in anything except their obedience to the laws of nature, which was not due to their having studied hygiene, or having observed sanitary rules on principle, but which arose simply from a natural instinct and an utter ignorance of the artificiality and the conventionalities of civilized life.

I have merely introduced this as an illustration of what will happen when the laws of nature are obeyed, be it from instinct, as among the savages, or as the result of intelligent teaching. Now what is the reason that in civilized countries so many die early, or drag on their miserable, unhappy lives, sick, weak and helpless; requiring the service of a physician from day to day, and from year to year; swallowing incalculable quantities of medicine; then, at last, when they have spent a joyless, painful life, unwillingly entering upon their journey to the unknown Land of the Hereafter? It is because their parents, as well as their more remote ancestors, have lived contrary to the laws and dictates of nature. Nature gives us the sensation of hunger that we may take our food in proper season, in suitable quantities, and of a kind to promote strength, health and long life. Thirst is given us that we may take the necessary liquid to

preserve the fluids of the system, to keep the blood in a state suitable for circulation, so that it may carry the necessary nutriment to all the organs and tissues of the body that have been wasted by their functional activity, also to carry off the worn-out parts that are no longer of any service, but, like foreign substances, set up an irritation and cause disease. When man has exerted himself, either in labor or in amusement, he is overcome by lassitude, which serves as a warning that he should retire to rest in order to recuperate his overtaxed powers, and enable his tired brain, his strained nerves, and his overworked muscles to regain their tone, so that, next morning, refreshed and strengthened, he may resume his daily occupation. While he is thus resting from the toils of the day—whether of the brain or muscles—the internal organism, the digestion, the assimilation, the rebuilding of the wasted and worn forces, both animal and intellectual, are being repaired, for that work goes on, even while the man or woman is taking rest in slumber. In this way his powers are strengthened and his endurance prolonged. To eat when we are hungry; to drink when we are thirsty; to sleep, or at least rest, when tired; these are the great, powerful recuperative agents which are employed by animals, savages, or children of nature, without thought, without reflection, just from natural instinct, undisturbed by the fashions of a modern civilization. As a result of this mode of life, they are afflicted by few diseases, and an attack of illness is a rarity. Unless killed by others, they die of senility, after having gone through the ordinary period of their life.

How is it with the people who call themselves enlightened? Do they eat when they are hungry? Do they select the healthiest, the most nutritious diet? Do they take it in such quantities as will best preserve their health and the strength with which nature has endowed them? Do they drink merely to quench natural thirst, the fluidity of the blood, the natural softness and pliability of all parts of the body? Do they rest when they are fatigued, and retire to sleep in order that the tired organs can recuperate and the internal mechanism, quietly and undisturbed, prosecute its usual work of recuperation? No. They do nothing of the kind. They pay but little regard to nature, or her laws. They take no cognizance of this beneficent healing power. They live altogether in a conventional manner; eat at stated hours, fixed by fashion, three, four or five times a day, be they hungry or not. The nutritious quality of the viands is not considered. They tickle the palate with all sorts of delicacies, which tempt them to take more than is necessary for the growth and preservation of the natural powers. This excessive feeding causes disturbances in the digestive apparatus; constipation or diarrhea, with catarrhal inflammation. Now, when nature rebels against this abuse, and a loss of appetite ensues, they excite and stimulate the stomach with all sorts of condiments, causing irritation, with a temporary increase of the gastric fluid. But now the inevitable takes place; the stomach and digestive tract lose their power through over-stimulation, just as the tired horse, when beaten by the driver, is goaded to greater exertions, until finally exhausted, it is unable to go any farther, and falls to the ground either dead or unfit for further exertion. The civilized man drinks all sorts of stimulating and exciting beverages, which increase, instead of quench, his thirst. Should thirst, however, fail, because an excessive quantity of the

beverage has been taken, it is stimulated by highly seasoned food. The brain is then excited; wit and repartee fly in brilliant coruscations; restraint is dissipated; and men who by nature are sober, dignified, thoughtful and modest, become wild, irrepressible and regardless of the opinion of others. The color is heightened; the blood rises to the head, producing a congestion of the brain. The period of healthy sleep passes away; and when at last the reveller is overwhelmed by drowsiness and yields to the persuasions of Morpheus, he does not enjoy the healthy sleep that recuperates the worn-out powers of mind and body; but sinks into a semi-coma, frequently tormented by awful nightmares and visions of horror, to awake later in the day with a brain-splitting headache, which disqualifies him for a satisfactory performance of his duties. This is the history of many a banquet partaken of by enlightened and highly cultivated gentlemen in civilized countries. Of course, this description does not apply to every social gathering and banquet in our times; but I have given an extreme case, to show to what our modern fashions sometimes lead us. But without doubt, we all violate nature, more or less, in our mode of living; in eating, drinking and taking our rest. Even though we are fully enlightened as to the danger to health and life, we are dragged into the vortex of fashion, and find it difficult, if not impossible, to extricate ourselves from it. The health-, strength-, and life-giving sunlight is lost to us in a great measure, because we spend much of that time in sleep. We live, we pursue our avocations and our pleasures by artificial light, in closed rooms, excluding the pure air which is of such importance to us in the preservation of health and strength, both of body and mind; eat unhealthy food; drink brain-destroying beverages. Is it then a wonder that so many have pale, sallow complexions and weak, excitable nerves, which cause them to toss about in the bed, unable to sleep; to sit at the table without appetite; to suffer fatigue from the least exertion; to have the doctor in the house half the time?

Let us see now what the average physician, the mediocre, who regards his calling as a mere trade out of which he makes his living, will do when called to such a patient. Does he investigate the previous history, by the help of which he could discover the cause of the pathologic condition, thus having before him a picture of the origin, the extent, the course, the probable end of the disease, which would serve him as a safe guide to find ways and means to combat the evil? No. This would be too laborious and perhaps a little beyond his acquired knowledge. He may even fear to offend the patient or his family by trying to know more than they are willing to communicate, which would endanger his prospects of future emolument. He, therefore, treats the disease symptomatically, administering a variety of drugs, mostly of a poisonous nature. Without inquiring into the cause of pain, he gives anodynes, such as morphin, cocain, etc. For asthenia he gives strychnia and other stimulating drugs. For high temperature he gives depressing medicines, without inquiring into the cause of the fever or endeavoring to discover whether it is not the effort of nature to rid the system of some offending substance, in which case a little water, externally and internally applied, would assist nature and relieve the sufferer. It is astonishing what horrible doses are administered by the superficial physician, converting the stomach and alimentary canal into a chemic lab-

oratory, thus gradually sapping the foundations of life.

But let us leave this dreary theme, and see what the well-informed, the sensible, the industrious, the conscientious physician will do. He investigates the hereditary tendencies, the surrounding circumstances that may have exercised an influence in the causation of this particular disease. He does this, regardless of the danger of giving offense, although he employs tact in the pursuit of his investigations. After having made all the necessary inquiries, he enters upon a careful, thorough, and if necessary, prolonged physical examination in order to be sure of his diagnosis before entering upon the treatment. If he discovers that nature is too weak to remove the evil, he assists with innocuous remedies, or even with strong ones, if this is shown to be absolutely necessary. But, if he finds that the natural powers are sufficient to accomplish the work, he does not intervene with a disturbing hand, but permits the healing power of nature, *vis medicatrix nature*, to have full sway.

In the year 1866 I was called to a little girl, two years old, that was laboring under fearful convulsions. The physicians in that section, none of the brightest, had always ordered hot baths and anodynes for convulsions, regardless of the cause. When I arrived, the child was seated in a hot bath and had taken several doses of paregoric. The spasms had lasted for an hour when I arrived, and were getting worse instead of better. I inquired if the child had been subject to such attack, to discover if it were a case of epilepsy. The answer was negative. Had it suffered from constipation or diarrhea? No, it had never been sick. Had it eaten anything that might disagree with it? The parents, who were intelligent people, said they knew of nothing the child had eaten that could have put it in such a state. On further examination I found no fever, no pulmonary trouble, no kidney or bladder disturbance. But the epigastrium was terribly distended and hard, giving evidence of an extremely overloaded stomach. I decided to empty it at once, as no time was to be lost. Owing to its distension, the stomach was incapable of peristalsis. Here, nature being unable to act, assistance became necessary. I administered a simple emetic, followed by a cup of warm water, which induced copious emesis. It was perfectly astounding to see what came out of that poor, afflicted stomach; bread, potatoes, cabbage, sweet potatoes, beef, ham, pickles, dried apples, etc. There was enough in that infant's stomach to serve as a full meal for a hardy laborer. On my inquiring, with some degree of acrimony, how this happened, the cook, a large, fat, colored woman, acknowledged that when she was eating her dinner in the kitchen, she seated the child on the table and encouraged it to eat of everything, enjoying the sport of seeing the greediness with which the little thing swallowed all that was given it, never thinking that it would do the child any harm. I gave it several cups of warm water, until it ceased vomiting and the stomach was completely cleaned out, without the use of the stomach-pump. No other treatment was necessary; the convulsions never returned.

I hope you will not be offended if I bore you with another example. About twenty-eight years ago, an old German shoemaker came to me and said his wife was terribly afflicted with her water. Every attempt to urinate caused her such intense pain that she had to scream out. She could not bear the least touch

about her sexual organs without the most excruciating pain. Dr. A., he said, had treated her with washes, ointments and internal medication, for almost a year without ever examining her. (Dr. A., by the way, posed as a gynecologist.) The old man said: "I have made the doctor and his boys ninety dollar's worth of boots and shoes, and he holds me in his debt yet, while she is getting worse all the time. Now I want you to come to my house, examine her carefully, and either cure her or kill her, for we can't live this way any longer." On examination, I found a caruncle at the orifice of the meatus urinarius, very red, about 3/16 of an inch in diameter, attached by a stem, looking very much like a ripe currant. It was extremely sensitive to the touch, causing a scream every time the finger came in contact with it. I took a pair of scissors, curved on the flat, out of my pocket-case and cut it off, touching the place with a stick of nitrate of silver. The woman was cured, no further treatment being employed, except a simple alkaline remedy to correct the acidity of the urine, which only had to be continued for a short time.

I could relate very many cases where the simplest remedies, judiciously applied, brought about the most astonishing results. Many a time, after the routinist had tried all his best skill in giving strong medicines, and employing heroic treatment without benefit; yes, even with great injury to the patient; the hygienic physician, with the simplest remedies, has accomplished the most surprising cures. The physician who has more regard for the welfare of his patient than for his own reputation as an elaborate therapist, will post himself thoroughly in physiology, or the natural working of the inner machinery of man; with pathology, the disturbance of this same machinery, which causes what we designate disease. Is he fully cognizant of and well instructed in these two branches; does he possess good sound sense, acute and well-practiced powers of observation, intimate acquaintance with the best and safest remedial agents, a mind quick to take in the situation, and fertile in expedients in cases of emergency; and, in addition, an honorable and conscientious character? If so, then the patient may safely trust his health and life to him. He will not poison him nor undermine his constitution, but will, if the disease is not a deadly one, restore him to health in the shortest possible time, and with the least expenditure of medicine. For he relies upon nature and her diversified powers, as far as she is capable of doing the work herself, only intervening with artificial remedies when nature is too weak or perverted. Let not, however, the layman be led to imagine that, because Nature's Therapy is recommended, he can dispense with the services of the physician; for, without such aid and advice, he would not only fail, but, by his ignorant interference, he would pervert the natural processes, and the patient would be in a worse condition than before. Neither must the layman be permitted to think that the man who does not cram his patient, daily and hourly, with strong and poisonous drugs has failed in his duty and is not entitled to reward. For it is a self-evident fact which should, by every possible means, be impressed upon the general public, that the physician who can restore his patient to health without making his body the receptacle for great quantities of destructive poisons, is a much more intelligent and trustworthy medical adviser, and will more surely earn his reward, than the man who, without investigating the nature

of the disease, fills the poor sufferer with strong medicines, regardless of the mischief this course may do in undermining the health and interfering with the future comfort of the victim of such heroic treatment.

The Therapy of Nature, of which I have given a feeble and imperfect picture, will not suffice for all cases. Nature can not remedy all errors nor repair all lesions, although a large majority might be prevented if man would always live according to nature. Yet, since this is not the case, it is essential that other branches of therapeutics should be closely studied and skillfully practiced. Heroic treatment is sometimes indispensable, and the surgeon's knife must now and then be called into requisition. Yet the study of nature and the employment of her methods in medical practice should always hold the highest place in our therapy.

HYGIENIC MANAGEMENT OF CHILDREN.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY A. E. MILLER, M.D.

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This subject is so broad that one hardly knows where to begin. To have children as perfect as possible we should begin several generations back. The Mosaic statement, "visiting the iniquities of the fathers upon the children even unto the third and fourth generation," is a physical fact, which applies no less to the mothers than to the fathers. If parents would have the best possible children, they should get themselves in the best condition previous to the begetting of the children.

It is a humiliating fact that the most important act of a man's life is too often accidental. In the breeding of the lower animals the greatest care is used. If a farmer is breeding for milk, beef, or beauty, he selects the parent stock with the greatest care, with an eye to the particular point to which he is building. It is interesting to note with what care the horse-breeder who is breeding for speed and other fine points selects the animals from which he is to breed. Not only must the sire and dam be all right, but he looks up the pedigree for several generations back to make sure that no trick or taint of blood has existed in the progenitors which may show in the later generation. He is particular that both parents be in the best possible condition at the time of conception, and that the mother be kept in good condition during the period of gestation.

With care, improvements may be made in all breeding. Note the increase in speed of the horse. What would have been considered a fast horse fifty years since would be thought a slow animal now. Even with the hen what wonders have been wrought, both in egg production and marks of beauty. The same is true with fruits and flowers. What large, fine, delicious flavored fruit has been developed from the small, inferior wild progenitors. With flowers what delicate tints and rare perfumes has intelligent cultivation produced.

With all these facts before us as object-lessons, is it not humiliating to see so little improvement in the human animal? Small, deformed, diseased children may be seen all around us, who, if they live, will develop into inferior men and women. What are we as a body of thinking, scientific men and women doing

to remedy this great evil? Perhaps you will say: What has this to do with the management of children? But how can we manage children unless we have them to manage; and it is quite important that we have the right kind to begin with. Take a wild crab-tree, and by judicious pruning, we can improve its appearance, but the result of our labors will be unsatisfactory. On the contrary, take a fine, improved Bartlett pear-tree and a little care will yield us in return the most delicious fruit.

Having a good child to begin with, the first thing to claim our attention is the food. The most natural food is the milk of the mother. But to have this food in a proper condition the mother should be in good health, properly nourished, and free from annoyances which will excite and irritate the nervous system. Milk producers understand the great importance of proper food and drink in determining the quality and quantity of the milk, and also the importance of quiet, gentle treatment for the cow. The same is true of the nursing mother. Plain food and drink with gentle exercise and freedom from nervous excitement will give the best results. It is well known that the improper food and drink of the mother at irregular hours is the cause of many of the ills of the nursing child. Often a fit of anger on the part of the mother will so affect the milk as to cause disease of the child. If from any cause food other than the milk of the mother is to be given to the child, great care should be used in selecting and preparing it.

A great variety of substitute foods have been put upon the market, many of which are very good. I have seen fine, healthy children, whose principal food was Malted Milk or Mellin's Food or some similar preparation. As a rule, I prefer the milk of a healthy cow. The specific gravity of human milk varies from 1.028 to 1.036; that of cow's milk 1.028 to 1.034. The chemic composition of milk is:

	Fats.	Sugar.	Proteids.	Ash.
Human Milk	3.5	6.5	1.6	0.25
Cows' Milk.	3.9	4.7	3.7	0.7

As will be seen by the analysis, the milk of a good cow is too rich in proteids and deficient in sugar for the young child. We usually add an equal quantity of soft or distilled water, and also a little sugar. If the quality of the milk is poor in casein and butter, we add less water. If it is rich, as in the case of the Jersey cow, we add more water. As the child grows older, and sleeps less and exercises more, an increase of proteids is demanded for the development of the bones and muscles, consequently we add less and less water, until the milk may be given undiluted. As a rule, good milk or some of the prepared foods will be sufficient for the first year.

Many mothers derange the digestive organs of the child by giving it bread and other starchy foods too young. As the salivary glands of the infant are not sufficiently active for their secretions to aid in digestion for the first six months, and as the saliva aids in converting starch into sugar, it is evident that no starchy food should be given until after this period. After the salivary glands are sufficiently active the child may have bread and mashed potatoes in moderation. When the teeth are sufficiently developed to masticate the food, fruit and vegetables may be given with advantage. As a rule, the child should have no meat until after the first year. Mothers and nurses often feed children meat when only a few months old. This makes them more excitable. My observa-

tion has been that children who are not fed meat until a year or two of age, are less excitable and more healthy, other circumstances being the same. Strong tea and coffee often make the infant wakeful, fretful and irritable, and sometimes cause constipation; they may be taken through the mother's milk or may be given to the child direct. Many nurses let the child sip strong tea and coffee from their cup when they are drinking it; this should never be done; it is one great cause of nervousness in the child.

Regularity in the hours of feeding is important and should be established at an early age. In rare cases the child may be fed every two hours; usually every three hours is better, and as the child grows older and is able to take more food at a time it may be fed less and less often, but all changes should be regular. Cleanliness and clothing, except with the very ignorant, usually receive proper attention.

The temperature of the rooms of the mother and child should be kept even. Some nurses let the room get too warm, then a free perspiration is produced which makes the patient more sensitive, and with the cooling of the room or the admission of fresh air, a chill is felt. The room should be large enough that a proper supply of fresh air may be admitted without the patient feeling a draught. A cubic space of 1000 feet is desirable for each individual. The average composition of pure atmospheric air per cent. per volume is O 20.96, N 79, CO₂, .04. In addition, there may be traces of ammonia, mineral salts, and organic matters. A healthy, average sized man, at rest, breathes at the rate of seventeen respirations per minute. At each respiration about 30.5 cubic feet of air pass in and out of his lungs. The composition of this respired air is roughly estimated as follows: O 16.96, N 79, and CO₂ 4.04 per cent. The air in the lungs loses on the average 4 per cent. of O and gains 4 per cent. of CO₂, while the N remains unchanged. We should never allow the air in the room to contain more than 6 volumes of CO₂ in 1000. The Boston building law requires every hall, auditorium or room of every building used as a schoolhouse, factory, theater or place of public assembly or entertainment, to have in continuous operation, while occupied, a system of ventilation so contrived as to provide 50 cubic feet per minute of outer air for each individual and for each light other than an electric light.

Sunlight is essential to the healthy development of the child. Plants and animals deprived of sunlight become pale and sickly. The florist understands the importance of sunlight in giving the finest tints to his flowers. Many a child is pale and sickly because it is kept indoors and deprived of sunlight and pure air. If the weather is too severe for the child to go out, give it a sunny room for a playroom. If too young or too feeble to play, keep it where the sun will shine on it a part of the time at least. The love of liquor, which leads to drunkenness, is often born with the child, stamped by the mother during the period of gestation because of the bitters and other alcoholic mixtures which she takes for fancied ills at this time. It may also be acquired by the dosing with cordials, essences, slings, etc., which are often given during the period of infancy. Many nurses administer hot whisky whenever the child has indigestion or is a little worrisome. In some cases the family physician is at fault in recommending hot whisky for colds and brandy for intestinal irritation. These remedies become so attractive that the young

man has his sick spells very often, and at times he is in such mortal fear of the difficulty that he takes the medicine to ward off the dreaded malady. Men have often told me that they had no love for liquor, in fact did not know the taste of the different alcoholic mixtures until it was prescribed by the physician. A young man who became a confirmed drunkard told me not long since that the family doctor was the cause of his downfall. When quite a young man the doctor, on meeting him, would often say, "Fred, you don't look well," or, "you have a bad cold; come into the drugstore and have a little brandy with me." Parents often complain that children are deceptive, disrespectful and falsify. Is this to be wondered at, when, as in some families, the first lessons given the children are in this direction? Parents often dispute and call each other harsh names in the presence of the child. Soon the child thinks it can use the same language to the parents that they use to each other. The mother, in the presence of the child, talks about her neighbors and declares that she never wants to see them again. But when they do call she is all smiles, and urges them to stay longer and to call often. These are lessons which soon bear fruit in the child. As to falsehood, how often the mother says when administering bitter medicine to the child: "This is good, it is sweet; take it, just take this one spoonful and you need not take any more." In an hour a similar dose is repeated with the same story. Will the child believe the mother after this? If the mother can lie to and deceive the child the child will practice the same on the mother. Perhaps an unwelcome caller is seen coming and the child is sent to the door to say, "Mother is not at home."

The brain should not be developed too rapidly. Many a child has the brain developed at the expense of the body. The first care should be to build up a good, strong, healthy body. As a rule the child should not be sent to school under six years of age. Kindergarten exercises, under the care of a sensible teacher, may begin much earlier. In most of the public schools the children have too many studies and too long lessons. Many girls in the high school break down from excess of mental work and become invalids or fill premature graves. Many a fond mother mourns the loss of a brilliant daughter and sees the folly of overcrowding in school work when it is too late. Brilliant mentality requires an active, healthy brain which must have a strong body to support it. A healthy, growing tree must have good roots. Good digestion is as important to the active growing child or to the pupil in the public school as good roots are to the tree. True, some children who have slender bodies make fair progress in school work, but with a good body their record would be much better.

If parents and guardians would give more attention to the strong, healthy development of the body of the child and less to the fashionable follies of life we would have a much better class of men and women.

DISCUSSION.

Dr. E. STUVER—No question merits our earnest attention more than the one so ably presented by the writer of the paper. If we can not go back a couple of hundred years, as recommended by Dr. Oliver Wendell Holmes, to lay a solid physical foundation for our own children and those who come under our professional care, it is at least our duty to use every means in our power to assist them in attaining a strong and symmetric physical and mental development after they do arrive in the world. In the first place I desire to protest in the strongest possible manner against the deleterious practice of administering stimulants and narcotic poisons to infants. In many cases

young children suffer from thirst, and plain cold water, which, by the way, should be given regularly, will do them more good than all the paregoric or soothing cordials that can be given to them. Regularity in feeding is one of the most important matters in securing the healthy development of children, and when this course is adopted immediately after birth it is very easy to follow, and in my experience has given most excellent results. If with regularity is conjoined the proper kind of a dietary, an abundance of pure, fresh air, outdoor exercise and plenty of sleep, children thrive surprisingly. Nor are the good effects confined to the children alone, but the parents, through uninterrupted sleep at night and freedom from worry and care, largely share in the beneficent results. Give the children pure food, pure air, plenty of exercise and sleep and protect them against etimulante and narcotic poisons and we can confidently look the future in the face with the assurance that they will develop their best possibilities.

MANGANESE IN THE TREATMENT OF DYSMENORRHEA.

BY CHARLES O'DONOVAN, A.M., M.D.

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When the athletic young woman of the present day first made her appearance and began to make the fad popular, physicians thought that with the changed conditions of her life would come such an improvement in her general health that most of her minor ailments would disappear of themselves. Of these I wish, for the present, to consider dysmenorrhea as the chief, and the one that appeared to present the best hope of cure. Sermons innumerable had been preached against the high-heeled shoes and the tight lacing of the generation of girls just gone by, attributing to these pernicious influences most of the ills that afflicted women, and now that no heels, and waists of nature's own proportions had become fashionable, it was reasonable to suppose that the attendant train of evils would also disappear with their causes. But it did not follow; in spite of riding, walking, tennis, bicycling, and finally golf, our girls continue to suffer, as did their mothers, from menstrual pains, frequently of great severity.

When tight lacing was in vogue, the cause of this dysmenorrhea was so often some displacement of the uterus, that many claimed for the pain a purely physical origin, and endeavored to relieve it by correcting the malposition mechanically. Retroversions and retroflexions were relieved often by one or other of the many pessaries; antelexions were operated upon in many ways, sometimes with complete relief, sometimes without ameliorating the pain in the slightest possible degree.

With the development of the athletic age it was discovered that bad flexions became much less common, but the frequency and severity of dysmenorrhea were but little changed. Then came those who ascribed most of the pain to ovarian influence, and the fury for removing ovaries spread over the land. Against this insanity arose everywhere the protests of conservative physicians who thought it better to give some time to treatment of these cases before resorting to the knife. The operating gynecologists seemed to forget that medicines existed, and insisted upon surgery as the only hope. Statistics showing the innocuousness of the operation were offered in support of that view, losing sight of the importance of the ovary to the female economy. Many physicians, however, held back, preferring to give drugs a fair trial, and too often it was found that medicines relieved perfectly cases that had been about to lose their ovaries, but which for some reason had slipped out of the

hands of the operators. Cases which submitted to vaginal examination revealed often no discoverable physical cause for the severe pains of each menstrual epoch, and were frequently benefited to such an extent by medicines that no further question of operation was possible. Many young women refused examination altogether and were given remedies empirically, because similar sufferers had been so relieved, and often with complete success. So we may say safely now that young women are not likely to be called upon to select one of several serious operations before a thorough course of medicine has been tried.

Too many drugs have been vaunted as specifics in these disorders, showing by this that no one will give relief always. Sedatives and narcotics will relieve temporarily, but at the expense of leading in many cases to a confirmed habit, so that opiates and the coal-tar derivatives should rarely be used, especially as our modern women are very cunning and soon learn to use drugs of themselves without asking for a physician's leave. If this is to be effected, we must provide them with what is harmless. This excludes also alcohol, with which thousands of women are drugged into semi-consciousness every month.

The great majority of cases of dysmenorrhea occur in anemic young women, who require iron, and frequently under its influence they regain their proper condition of blood and need no other medicine. This remedy, persisted in for a reasonable period, say six months in many cases, to be used again if the same symptoms reappear, is the most important in the treatment of this ailment. But there are many cases in which iron seems not to be required, from the excellent general health and the rich florid color of the skin, and yet the return of each menstrual period means a new period of agony to a woman who is apparently in perfect health. Between the periods nothing is complained of, but every month the trouble recurs, and each month it grows worse. Such cases are met with every day, in all classes of society—among the neurotic young women of high station and luxurious surroundings as well as among sewing women or worn-out shop girls. Nourishment and exercise have no effect upon the dysmenorrhea; they suffer as well during the summer holidays at the seashore or in the country as during the winter fatigues either of social gayety or of paid labor.

The cases to which I refer do not require iron; and if it is given to them experimentally they derive no benefit from it, or may even be made more uncomfortable. In very many of these cases I have obtained excellent results from the use of manganese, generally used alone, but sometimes with viburnum. I speak now of virgins, who should never be subjected to the indignity of a vaginal examination except as a last resort and after a fair trial of drugs. How these women escape becoming drunkards is a mystery to me, for they invariably have been taught by sympathizing companions that some alcoholic intoxicant, oftenest gin or whisky, is the only available medicine for relief at such times: It does not relieve, except in the sense of deadening their sensibility and thus giving time for the dysmenorrhea to pass away. In treating these cases, I have tried a number of remedies, but have reached the conclusion that manganese is to be depended upon far more than any other, and often gives such results as seem truly remarkable. I have today seen a young woman, otherwise healthy and strong, slender but excellently proportioned, whose

activity and energy denote apparently perfect health, but who used to spend the first day of her period every month in a perfect agony of pain, tossing from side to side in her bed, vomiting every few minutes, and crying out with each return of her cramp. Alcohol gave her no relief till she was stupefied, and various remedies that she had tried were useless, or so powerful that she would require a couple of days to recover from their effects. She obtained perfect relief by taking pills of manganese, iron and hyoscyamus for a week before each period, and became so well that she ceased treatment, and paid for her carelessness by a return of her dysmenorrhea nearly as bad as ever. But it may have been the iron or the hyoscyamus. She had been given iron freely before the manganese was added, but without result, and the amount of hyoscyamus was too small— $\frac{1}{3}$ grain of the extract—to have any such effect. In each pill were two grains of black oxid of manganese, and this I consider the efficient drug.

This case is but one of many that I could quote from notes, few as bad, but many approaching it in severity, that I have watched for longer or shorter periods during the past ten years. More extended records can be found in papers on the subject that I have published in the *Medical News* of April 6, 1889, and Nov. 27, 1897, where several very convincing cases are related. The recent histories of these young women continue to bear out the good opinion originally obtained of manganese, for it has proven itself to be a remedy that does good continuously in such cases as it benefits, not losing its effect with prolonged use but, on the contrary, becoming more and more satisfactory in each succeeding month.

The habit of dysmenorrhea tends to intensify itself in neglected cases, growing worse monthly, and harder to relieve; beginning early in the menstrual life and rapidly fastening upon the sufferer such a fear of the recurring pain that life becomes a burden. For this reason it is advisable that treatment should be instituted at as early a period as possible. Dysmenorrhea does not disappear of itself; it always grows worse if let alone. Therefore it is very bad practice to put off the mother of a young girl whose early periods already cause her great pain, by telling her that time will bring relief. It will not; on the contrary, we have every reason to believe that each month will, if let alone, be worse than the last. But the ardor of the operating gynecologist has been such that many mothers, from fear, refrain from mentioning their daughters' ailment. It is in such cases that manganese offers the best means of relief and cure. It is extremely efficient in those young women whose dysmenorrhea seems due to functional neuralgia, beginning almost with the establishment of menstruation. If administered early in the course of the disease great relief is experienced; if persisted in, the habit is, in many cases, readily broken up and the health of the sufferer saved from impairment. Such young girls should never be examined, even by the rectum, unless there is very positive evidence of serious local inflammation, until manganese has been given a full trial.

After the habit of dysmenorrhea has been fully established for years, in older women, it is a more difficult matter to destroy it, but in many instances it can be done. The most important thing to remember is that one should not be too soon discouraged. If a trifling improvement can be seen after two or three months of constant use of manganese, it means that

great relief can be given by it. One need not despair until four or five periods have passed with no benefit from the drug. In many cases it is not necessary to wait so long. If the case is a suitable one, the first succeeding period will be notably easier, and after that little or no pain will occur during the administration of the remedy.

Manganese is offered in various forms, but I have found the black oxid the most satisfactory. It should be given in doses of two grains, by itself or in combination with iron or other adjuvants, about an hour after each meal. It may be used for an indefinite time without any ill effect, and should be given constantly until its efficiency or inefficiency shall have become manifest. If benefit is obtained at once, I then order it to be taken for two weeks before the next period; if that has been nearly painless, it is given during one week before the following period. In successful cases, this is usually enough, and taking the drug during one week just before menstruation insures a painless period. No deleterious effects of any kind follow its use in this manner. It should be continued indefinitely; usually after a few months the patient feels cured and stops taking the pills, but this is apt to cause a return of the dysmenorrhea, especially in those women who have suffered for any length of time. In young girls the habit seems to be more readily destroyed, and the general systemic improvement renders the cure permanent. One must not expect cure, or even relief, in all cases that present themselves, for many will obtain no benefit whatever, but many others will be benefited by manganese after other remedies have been tried unsuccessfully, and when there seemed nothing left to hope for but the sacrifice of the ovaries or some other surgical treatment.

10 E. Read Street.

SOME EXPRESSIONS OF ABORTIVE ATTEMPTS AT INSTRUMENTAL ABORTION.

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Without doubt, of all the cavities of the gynecean body not intended by nature to be invaded with impunity, the impregnated uterine cavity enjoys the distinction of being the most often explored. This is so, not only because of the many delicate perplexities oftentimes presented for differential diagnosis, but also because of the many other less scientific, but ethically regarded purposes.

Most often abortion, with its sequelæ, follows these instrumental invasions. Not seldom, and in the hands of skilled operators, these attempts and even repeated attempts to induce abortion prove abortive, much to the surprise of the patient and discomfiture of the operator; the reaction caused by the attempts passes off and pregnancy continues. In a few cases trauma and infection are caused by these attempts, yet pregnancy continues, but sooner or later and before full term is attained, dangerous inflammatory and septic reaction follow from these traumatisms and infection, which require immediate interruption of the pregnancy to preserve maternal life. Some five years ago¹ I had such a case, where there was a history of repeated instrumental invasion of the impregnated

cavity, with traumata and sepsis, but without interruption to pregnancy. To save life it was necessary to interrupt the pregnancy.

Case 1.—Mrs. X., 5 ft. 6 in., 125 pounds, housewife; temperament nervous, easily hysterical. First pregnancy, normal labor, boy now 8 years old; second pregnancy, normal labor, boy now 6¾ years old. Subsequent pregnancy successfully evaded until present case, when in August, with usual subjective symptoms of menstrual expression, there was no sign of menstruation. To persuade the flow the patient used steam and hot water, sitz baths, douches, much and various medication, all without the hoped for result. Growing desperate, two weeks after regular period a button-hook was employed (Fig. 1A), the immediate result being some flow, ceasing after ten minutes, accompanied with backache and bearing-down pain of some two hours' duration, but gradually subsiding. One afternoon, coming from a professional consultation, during which a sound (Fig. 1B) had been passed and actively moved about, the patient, clad in light summer garments, was caught in a severe rainstorm and thoroughly chilled. Reaching home she was taken with a violent chill, followed by fever, with sensations of warmth and fulness in the pelvic tissues, with sense of bearing-down pain; no signs of blood.

During September the patient experienced at irregular times, sensations of chill followed by fever, nausea, vomiting, and loss of appetite; natural nervousness increased by the thought that she was yet pregnant, notwithstanding the much medication and that the probe had been passed upon three different occasions, to encourage an outlet for the so-called retention. At night especially, she was troubled with unpleasant dreams, high temperature, chills and flightiness, indicative of mild delirium. These were attributed to excessive nervousness and hysteria. Unknown to the usual attendant, another was called in one evening during such a slight delirium, who be-

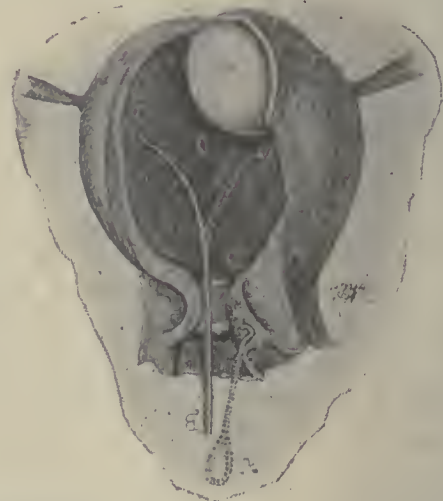


Fig. 1.—Uterus with ovum of about four weeks; a, button-hook, causing lacerations about cervix; b, probe, causing lacerations of the decidua vera at d; c, gestation sac.

lieved there was retention from pregnancy, with sepsis, and proceeded with instruments—which seemed very unclean—to encourage bringing away what was there. He seemed to stretch something (probably the cervix only), causing a slight appearance of blood but not much pain; he called but twice.

When increased pains and nervous disturbances produced by this stretching had quieted, the patient, to encourage the treatment, would lift heavy chairs, boxes and weights, but without effect. Toward the beginning of November, attendant No. 1 suggested that she be removed to the hospital as she was developing typhoid fever, as at this time, beside spasmodic pains with irregular chills and fever, she was seized with vertigo upon the least exertion, followed by loss of consciousness. Thereupon attendant No. 3 was called, who from the patient's account, suggested that there might be extrauterine pregnancy, though he had not examined her, and advised immediate removal to the hospital for chloroform examination and treatment. Instead of complying, the husband removed the patient to another hospital, where attendant No. 4 diagnosed normal pregnancy, with hysteria, accusing the patient of desiring to come there for the express purpose of having the uterus emptied. While here the marked pelvic pains and fullness were much relieved by hot fomentations to the abdomen.

¹ Meeting this patient a short time ago and hearing some compliment extended her because of her splendid physical appearance, I requested and obtained the pleasure of writing her up, hence the "years ago."

The patient left hospital No. 1 after six days. The first night at home she developed such fever and delirium that the husband removed her the next day to hospital No. 2, where attendant No. 3 was in attendance. Here chloroform narcosis established a normally situated pregnancy, ovaries enlarged and swollen; with excessive nervousness. She remained here two weeks; during the latter part of the second week she developed an inflammation of the rectum. After the second week, not improving, the patient again returned home, where attendant No. 5 was called in, who believed the case one of pregnancy with some serious complication, and called but once. Attendant No. 6, upon examination, recognized the rectal abscess. The rectal abscess broke within four days, pus and blood coming away with the frequent stools. Thanks to the rupture of the rectal abscess, attendant No. 6 found the patient much relieved during the two following days, the hope being extended to her that her trouble would soon cease. But after these two days her nervousness, fainting spells, irregular chills and fever, pelvic pain with dysuria, returned with gradual increase. Attendant No. 6 now said that there must be something there (in connection with the pregnancy) which must come away or be brought away, else she would die, but he did not wish to continue the case; he did not make a diagnosis. Thus the case had continued from September, with its various probings and treatments, with its irregular manifestations of hysteria, nausea, vomiting, loss of appetite, marked thirst, chills, fever, pelvic pain and heat with gradual exhaustion and emaciation.

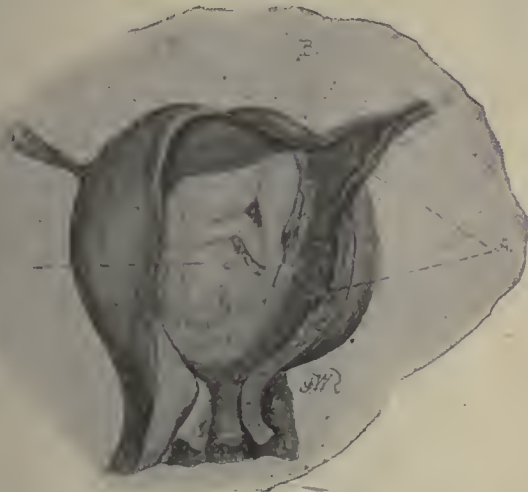


Fig. 2.—Uterus with fetus of about the fourth and a half month; a, pyometro-salpinx; b, fetal membrane; c, fetus; d, left tube; e, uterine wall, normal.

About the middle of December I saw the case for the first time and diagnosed an intrauterine pregnancy (Fig. 2C) with a pyometra (Fig. 2A) extending up into the left tube (Fig. 2D) a pyometro-salpinx (Fig. 2A-D) with chronic systemic intoxication from septic absorption, infection having occurred most probably from the repeated and ineffectual attempts at the induction of abortion (Fig. 1, A-B-D). There was emaciation with cachetic appearance, anemic murmurs and evening temperature, with morning drop. Examination revealed an enlarged four to five months' pregnant uterus with a readily outlined bulging of its left side apparently extending up and into the tube (Fig. 2, A-D) gradually diminishing in size toward the outer third of the tube. The right side of the uterus and pelvis were normal, and not sensitive to the touch, but the left side of the uterus, continuing up to and along the tube, was very sensitive, was tumefied and gave a sensation of a purulent collection. The cervix was firm and closed. There were irregular bearing-down pains, quite strong in character, but not sufficient to cause dilatation of the os or to rupture the pyometro salpinx. Calomel was administered and a 3 per cent. carbolic douche ordered, *t. i. d.*, thinking that from the consistency of the abscess and the well-marked uterine pains the pyometro salpinx would thereby be encouraged to find exit through the cervix: if so, pregnancy might continue to term. After seven days of this treatment the pyometro-salpinx broke through the cervix, pus, blood and clots appearing in greater quantities than in the case of the abscess in the rectum. Relief again followed and I hoped that pregnancy might now continue without further difficulty, therefore I did not rupture the gestation sac; there continued a slight flow of pus and mucus, but again after the third day the old complex of symp-

toms reappeared and increased, notwithstanding the decreased sensitiveness of the uterus and tube of the left side. This I attributed to the irritation between the abscess walls and the growing gestation sac (Fig. 2B-A-D) and the retention of abscess contents above, caused by the pressure of the gestation sac upon the collapsed abscess uterine walls below, thereby cutting off drainage. Therefore I decided to induce premature labor and empty the uterus.

With Dr. Barnard's assistance the patient was chloroformed. She took chloroform very unkindly and was very weak, notwithstanding hypodermic stimulating injections, so much so that we felt it would be better not to conclude the emptying of the uterus, but to rest satisfied with dilatation of the cervix and breaking down of the gestation sac, and remain ready for any emergency, should one arise. With considerable difficulty she was revived. The pains reappeared, but were now more normal in character, the contractions continued to increase in strength and rhythm, until after thirty-six hours, a four and a half months' macerated fetus was expelled without much pain, the patient having been given codein.

After a few hours the exceedingly foul-smelling secundines were expelled without assistance. Relief was so great that the patient immediately fell into a profound slumber from which she awoke with the cry of, "Where am I? Please give me something to eat," the first craving for food in several months. No drainage. Convalescence was slow, but perfectly established by April.

Had she not been in so low a state the uterus would have been emptied at once. From this distance it may seem to have been more judicious to have assumed the risk and have wholly emptied the uterus at the time. I think I would do so should I have another case under like extreme conditions. Yet that the uterus was not wholly emptied was not without its advantages, as with the return of consciousness she appreciated more and more perfectly the increasing severity of the growing uterine contractions. The pain seemed to act as a stimulant, arousing the system to react with splendid physical effect, as was so beautifully shown in the subsequent course of the case.

It reminded me very much of one of my first tracheotomies. It was an emergency case in diphtheria where I had but my pocket-case with me. Picking the unconscious child from off the bed, laying her upon the table, in cutting I noticed that no reaction ensued until I was down upon the trachea, and then only was it necessary to hold her from struggling when the tracheal rings were cut. While waiting for the tracheal tubes to come from my office (twenty-five minutes), I held the artificial rima apart with my pocket-case dressing forceps, and observed that when holding forceps still in keeping the rima open, no reaction, such as increased respiration or cough followed, but when the forceps were moved, causing pain, the little one reacted with increased physical effect, so that by the time the canula arrived the trachea was comparatively clear and the breathing much freer and more regular. She made an early recovery and is alive and well.

Among other striking features this case amply testifies to what extremes, even repeated attempts and long continued inimic intentions may be carried to induce abortion, yet successfully neutralized by the physiologic resistance of the part locally and by the system generally. Here was a case of uninterrupted intrauterine pregnancy, notwithstanding the repeated and severe attempts to induce abortion, with infection from the traumatism dating probably from the application of the button-hook, increased by the chill of the rainstorm, the repeated active probings and the various treatments. Infection gave rise to unilateral septic purulent deciduitis, metritis, salpingitis and cellulitis of the left side (Fig. 2), and what is remark-

able is, that pregnancy should have continued without interruption, the gestation sac, having escaped the intended injuries, apparently acted as a bar (Fig. 2 B) to the further extension of the inflammatory process to the other side.

Another instructive feature of this case is that the unusual and exaggerated nervousness was regarded as only hysteric in nature. It is true the patient was of a hysteric temperament, but such a spasmodically exaggerated form so long continued, characterized by intervals of normal serenity, yet with patient exhibiting irregular chills, fever, nausea, vomiting, tenderness and warm pelvic fullness during the whole time, with such a history of traumatism and intended abortion, it seems to me that such a complex of symptoms might have suggested another more active cause for this increased apparently hysteric manifestation, viz., the systemic intoxication from the local septic process. In proof of this when the rectal abscess broke, when the pyometro-salpinx emptied itself through the cervix, there followed an improvement in the physical as well as in the mental condition of the patient, but only a temporary improvement, as the irritating cause, the pyometro-salpinx, was still active. Emptying the uterus, all was changed; her long-continued dulled but exaggerated mental state immediately cleared up; locally, douching alone cleared away the retention products from the abscess and post-partum walls. Convalescence, though slow, was perfect.

Another very interesting feature of this case is that, when the uterus became emptied of fetus and secundines and pyometro-salpinx, in the collapse of the uterine walls following this emptying, the freshly denuded gestational walls came into close approximation with the septicallly infected and long-continued pyogenetically inclined abscess walls of the other side of the uterus, and of that tube (Fig. 2E-AD); yet no new infection occurred on the side of the freshly denuded surfaces. On the contrary, the local condition gave little more trouble than after an ordinary labor or a benign pelvic abscess, where opening alone will suffice to rapidly restore.

Similar cases of repeated attempts at the induction of abortion with failure, are reported by Dr. H. F. Vickery of Boston and Professor Fritsch of Halle. As these cases present points of interest of more than passing notice it may not be amiss to introduce here short extracts.

In the *Boston Medical and Surgical Journal* of October, 1890, p. 413, Dr. Vickery reports under the head of "A Much Enduring Fetus," as follows:

POINTS OF INTEREST.

1. Conception occurred while mother was nursing a child only 6-8 weeks old.
2. That pregnancy should persist despite so many adverse influences. In November, baby one month old; profuse menstrual flow. December, not appearing, took tansy tea, turpentine, catheter daily effort for three weeks. Toward end of January thought she had succeeded; constant metorrhagiae through February to middle of March; obliged to call her physician, who mitigated the flow by exhibiting ergot; flow continued. Then blunt wire curette for what had been regarded as retained placenta, followed by swabbing inside of womb with Churchill's tincture of iodine. It is probable that this operation did not affect more than the cervix; flow continuing douched with gallon of hot water t. i. d. for four days, still hemorrhage persisted. Patient now profoundly anemic. V. invited to see her and remove obstinate placenta. V. found fundus reaching nearly to the umbilicus—induced labor and emptied uterus—convalescence uninterrupted but slow. Fetus 5-6 months.
3. That the woman escaped sepsis or any permanent injury.

In the *Obl. für Gynekologie*, 1880, p. 197, there appears a case of Professor Fritsch reported under the head of "Ein Hartnäckiges Ei" (referred to him and reported by Dr. Stumpf, *Cent. f. Gyn.*, 1879, p. 457), as follows:

PREVIOUS HISTORY.

A primipara with rachitic pelvis was delivered (December 1877) of a breech presentation fetus, with the assistance of a blunt hook, after much difficulty. A vesico-vaginal fistula soon after developed, which was operated on by Professor Fritsch three different times; finally, in the autumn of 1879, perfect vesical function was attained.

PRESENT CASE.

In 1879 the patient was again pregnant. Consultation of a local physician with Prof. F. determined that because of: 1, rachitic pelvis; 2, danger of rupture of a so hardly won vesico-vaginal cicatrix it was suggested that abortion be induced, to which the patient responded with the request that it be done as soon as possible. Oct. 20, 1879, a sound was passed by the local physician. Considerable pain was felt when the point of the sound entered the os; a laminaria tent was then passed into the cervix and the vagina tamponed. When the tampon and tent were removed there was hemorrhage and it was supposed that the ovum had come away in the clot. The patient not being satisfied that the uterus had been emptied, fourteen days after she traveled to Professor Halle, who passed a sound into the uterine cavity and moved it about in every direction. Some blood came away, yet pregnancy continued. Jan. 14, 1890, a bougie was introduced into the uterus and left there, and abortion of a normally developed four-months' fetus resulted.

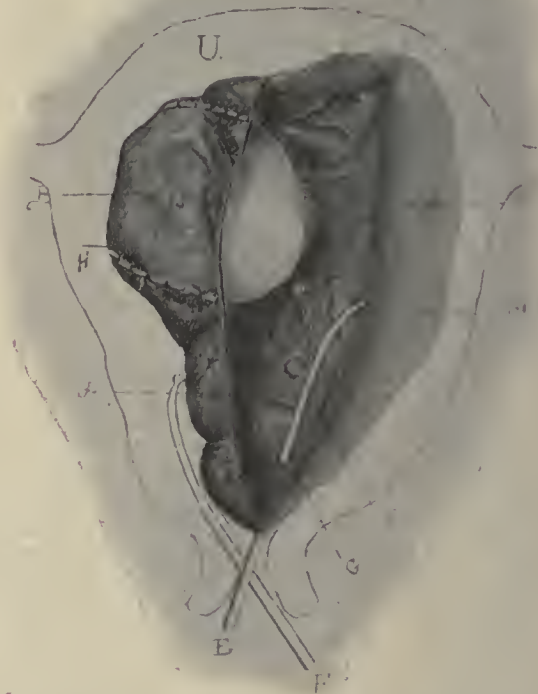


Fig. 3.—Perfect decidual cast from eight to nine weeks abortion; U, uterus (schematic). Decidual cast: a, decidua vera; a', decidua vera cut open and reflected; b, decidua serotina; c, gestation sac; d, peritoneal cavity containing ovum; e, and f, invading probes; g, where probe e, has ruptured through decidua vera; h, fetus.

The ease with which such instrumentation may fail of producing abortion may readily be appreciated by examining Fig. 3, a perfect decidual cast of an eight to nine week pregnancy, containing the gestation sac (C) still unruptured. To induce abortion the usual method is to separate or to rupture the decidua vera (A. G.) and the fetal membrane outlining the gesta-

tion sac (C.) This is done by passing the probe (E. F.) catheter, or other instrument alongside of or through the decidua vera (A. G.) and into the *perioneal* cavity (D), or by the twisting process the probe may be carried to or about the fundus uteri, passing through the decidua vera there, but often missing the gestation sac (as in Fritsch's, Vickery's and present case). The mucoid perioneal or decidual fluid comes away, which is incorrectly regarded as the liquor amnii; some blood flows, followed by pain and other reflex signs and symptoms, but the local physiologic resistance is at times, as in the present cases, so great that it neutralizes the shock of the malignant attempt and, notwithstanding traumatism and perhaps infection, pregnancy continues uninterrupted. Hence the ease with which operators are frequently deceived into thinking their attempts at abortion successful. The uterus is repeatedly entered and actively sounded, reflex signs and symptoms arise but soon subside, yet pregnancy continues. Again, and not seldom, this will explain the unfortunately not few cases of continued and interrupted pregnancies accompanied with complications of a so-called "peculiar type" of enteric fever, peritonitis and typho-peritonitis, with their fearful morbidity and mortality, which follow in the wake of these attempts at abortion.

Again, it is not difficult to understand how these attempts at abortion may occasionally give rise to malformations or monstrosities. The end of the probe or other invading instrument is carried into the perioneal cavity. The point of the extremity may strike the gestation sac, and often does. Where destruction of the sac occurs, death of the embryo, as a rule, follows—abortion usually does; in some few cases, retention is the case. The retention may disappear through absorption or casting off by necrosis, or the retention may undergo other changes.

But in some cases the resistance of the membranes of the gestation sac neutralizes the shock of the invading stroke, or again, the invading stroke may have been an oblique one and thus have glanced off. In both cases the effect would be the same; the membranes would remain intact, perhaps, showing no trace whatever of the traumatic intent. Yet the embryo (Fig. 3 H) within the gestation sac may not be so fortunate as to escape evil consequences. Though the membranes of the sac remain unaffected the potentialities of the abortion stroke may have continued on and been expended upon the embryo, causing trauma, resulting in inflammation or death of a few cells, or of a part or of the whole of the embryo—a condition analogous in later life to the trauma often found in the abdominal cavity following blows, falls, etc., though the effect of the force has left no trace upon the abdominal walls, a part in the abdominal cavity often shows a serious lesion. The effect of inflammation or destruction of a few cells even, during the early stage of embryonic life, as the cells during this period possess the function of germinal cells, may result at a later period in a serious developmental malformation. Writing upon the subject of

the genesis of monstrosities and malformations, Ziegler says:

Malformations may be of two kinds: On the one hand, the ovum may have inherited a tendency to abnormal growth; on the other, a normal embryo may in the course of development be affected by disturbing influences from without which check its progress toward the perfectly developed form. Experience indicates that both events occur. The recurrence of hereditary malformations in the family, such as an excess or absence of fingers, toes, etc., can only be explained by the supposition that the abnormal tendency exists from the first in the embryo, having been transmitted from one or the other parent. On the other hand, the absence of one or more limbs, deficiency of the cranium, etc., are to be accounted for in a satisfactory way only by assuming that external causes of injury have affected the growing fetus. Disturbing influences acting on the otherwise normal embryo play a far more important part than heredity in the genesis of malformations. The pathologic peculiarities transmitted congenitally from parent to child manifest themselves less in anomalies of external form than in deficiency or perverted function of the tissues or in morbid predispositions. Such anomalies are to be detected only by minute anatomic examination, or they are incapable of anatomic demonstration at all. The causes of malformation in any given case can only be approximately determined or referred to this or that hypothetic injury. Monstrosities by defect are commonly malformations by arrest; they owe their existence to a local hindrance to the development of a normally constituted embryo. The earlier the injury the greater is usually its effect. The loss of a few cells in the earlier stages of growth may involve the absence of an entire limb or organ; while later on, after the general form is nearly complete, the same loss might not be noticeable at all. Malformations, in the narrowest sense of the term, originate for the most part in the first three months of fetal life.—Ziegler: *Lehrbuch der Allgem.*, etc.

There is a rapidly developing germ-embryo made up of cells whose sensibilities and function are the greater the earlier the stage of growth. At the first day the sensibility and function of the individual cells are far greater than at the thirtieth or ninetieth day. The earlier an injury occurs to these cells the greater must be its effect; a cell or a few cells impaired or destroyed in the earlier stages of development must certainly pervert and stunt the further development to that proportionate extent, even may involve the absence of an entire limb or organ; but later, as is easily conceivable, the same loss may not be noticed.—(Stahl: "Maternal Impressions."—*Amer. Jour. of Obstetrics*, Vol. xxxiii, No. 4, 1896.)

Personally I have never met with such a case of fetal malformation, due to instrumental attempts at abortion, though I remember having such a case related to me for my opinion as to its probability. A patient was confined of a seventh to eighth months' fetus. Before he had mentioned to her anything about its appearance, the parturient remarked to her physician that she feared to look at it as she was afraid that some mark might be present of the repeated attempts that had been made during the first two months to interrupt the pregnancy. To the sister the physician stated that there were marks about the head showing that violence had been used in some manner, causing deformity, especially about the eyes and forehead.

Dr. T. R. Chambers, in the "Trans. of the N. Y. Path. Society," Vol. iv, p. 117, reports a case of "a four-months' fetus, bearing the imprint of the mechanic means to cause abortion." The fetus had imprints upon the crown of its head, a result of the harsh method employed to induce abortion. She had passed a rather stiff catheter, some two days before. Though his subject title conveys the idea I would advance, his subject matter does not. His subject matter is but the natural sequence of trauma with death, followed by immediate delivery, analogous to the subsequent spontaneous delivery following a previous craniotomy in later labor.

I think the future will show, if it has not already

¹ Dr. Dorland, in his excellent "Manual of Obstetrics," uses *hydroperione* as the term for this fluid; would not *perioneal* (*περι*, around, *ὄν*, ovum) be better and more simple, therefore *perioneal* fluid and *perioneal* cavity? The analogy with pericardial, peritoneal, etc., would be more true, since function and composition of fluid and cavity is similar. *Hydroperione* (*ὑδρ*, water, *περι*, around, and *λέω*, to go.) This term was introduced by Breschet to describe a liquid contained between the decidua vera and decidua reflexa, designed, he thought, to nourish the embryo at an early period of gestation.—(FOSTER.)

been shown, that these attempts at abortion, without necessarily affecting the gestation sac, may affect a few of the germinal cells of the embryo, resulting in their inflammation or death, without seriously affecting the life of the embryo as a whole. The life of the embryo continuing, the further development of the embryo will be stunted in so far as the area is to which these cells give development. Thus a slight destructive effect to a few developmental cells in the embryo may give rise to a serious malformation or monstrosity in the fetus.

Again, but a glance at Figs. 1 and 3 will suffice to explain why in the exceptional case menstruation may occur in the presence of an ovum (intrauterine), and continue through pregnancy; it will likewise explain the origin of a *hydrorrhoea gravidarum*, or, *hydrorrhoea decidualis*, the so-called false waters of pregnancy.

Fig. 3 shows the probe F breaking down the fibrous deciduo-uterine union, and thus more or less breaking open the uterine vessels, exposing them to the entrance of infection and of air. This might explain also the possibility of air emboli or the entrance of air into the circulation with sudden death. Fortunately this fatal expression is rare, and indicates very strongly that mere separation of the decidua and exposure of the sinuses are theoretically more prominent as the causative factor of air emboli than practically seems to be the case. Of the immense number of these cases of instrumental attempts at abortion; in operative labors, as in podalic version with extraction, difficult and rapid forceps delivery, where serious cervical and uterine lacerations are sometimes unavoidable; in ruptures of the uterus and Cæsarean section, or in gynecologic and surgical operations where important vessels are exposed, it is only for a moment, but a moment is sufficient where pathologic desire seeks an opportunity; in these many cases where blood and lymph vessels are opened and exposed it is very seldom, in fact, comparatively speaking, rare, that sudden death occurs due to this cause, entrance of air into the circulation. The conclusion would seem appropriate that where in an exceptional case death does follow from this cause, some other rôle plays the more active though favoring influence than does the mere exposure of the sinuses and channels.

The treatment of this class of cases with infection and retention, whether partial or complete, should be immediate dilatation and emptying of the uterus. Hysterectomy would hardly be called in question.

IRREGULARITIES OF THE DENTAL ARCH.

Presented to the Section on Stomatology, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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Having in the last two decades given much attention to researches on the etiology of the types of faces of most nationalities, I propose to present the causes of irregularities of the dental arch in a concise, practical manner. In studying the etiology of irregularities of the dental arch, I shall discuss the merits and demerits of some of the later theories, including those as to the alleged normal dental arch. Two misleading classifications of what constitutes normal dental arches

have been advanced by able practitioners of dentistry.

"The American System of Dentistry," Vol. ii, page 1030, published in 1887, contains an article entitled "Dental and Facial Types," in which the author, after discussing temperaments, attempts to show that certain forms of dental arches (which he calls types) are characteristic of different temperaments. Thus, "the arch of the bilious temperament from cuspid to cuspid is almost flat, the lines backward from these points divulging in an almost straight line. The dome of the mouth is high and almost square. The sanguinous arch resembles a horseshoe in shape. The dome of the mouth is high and semicircular. The arch of the nervous temperament presents a strong contrast to either of the two preceding, and is sometimes spoken of as gothic, from its pointed character. From the central incisors, which often overlap for want of space, the line of the remaining teeth continues backward with a slight curve, the greatest prominence being between the cuspids and first bicuspids. The roof of the mouth partakes of the same curve and angle as the arch. The lymphatic arch is almost semicircular in its outline, and somewhat resembles the sanguinous temperament. The dome or roof of the mouth is flat and low."

In "The American Text-Book of Operative Dentistry," page 18, the author of the chapter on "The Dental Arch" remarks: "The square arch (which resembles Ivy's arch of the bilious) is found usually in persons of strong osseous organization, of Scotch or Irish descent, of Gaelic extraction. The round square (which resembles Ivy's sanguinous) 'is the medium arch, and is the form usually met with in ordinary well-developed, robust Americans. The round arch is the circular or horseshoe. . . . The arch is quite characteristic in some races, as the brachycephalic, South German. The round V (which resembles Ivy's nervous arch) is constricted in front or narrow, so that the incisors mark a small curve, whose apex is the center. It is the arch of beauty, and that most admired in women of the Latin races."

When the causes which produce the changes in outline and deformities are fully understood, the absurdity of the theories from the standpoint of late researches becomes apparent. Since the frontal arch can not be outlined until all the permanent teeth are in position—as nothing can act except it exists—and as these deformities are never observed in connection with the first set of teeth, in order to study the normal or deformed arch, the person must have reached the age of from 6 to 12 years. It is self-evident, then, that the influences which bring about changes in outline must exert themselves at that period and not earlier. In order, therefore, to understand the normal as well as the abnormal dental arch, the human face and jaws must be studied.

The evolution of the human face and jaws is rather complicated, since their development is the result of two forms of evolution: 1, the evolution of the face and jaws from the embryo to maturity; 2, the evolution of the face and jaws from the anthropoid ape to that of the present man. The human face is modified backward from the vertebrate type. It is an additional illustration of the degeneracy of a series of related structures for the benefit of the organism as a whole. The progress of development of the face in the vertebrates is checked in man: 1. As Minot' remarks, because the upright position renders it unnecessary to

bend the head as in quadrupeds. 2. Because the enormous cerebral development has rendered an enlargement of the brain cavity necessary. This has taken place by extending the cavity over the nose region as well as by enlarging the whole skull. 3. Because the development of the face is arrested at an embryonic stage; the production of a long snout being really an advance in development which does not take place in man.

The human face at birth is so near that of the monkey that if only the heads of both were exposed to view, it would be difficult to distinguish one from the other. Cope² has made the following classification of the head and face for comparative study: "The relative size of the cerebral to the facial regions; the prominence of the forehead; the prominence of the superciliary regions; the prominence of the alveolar borders; the prominence and width of the chin; the relation to width of skull; the prominence of the malar bones; the form of the nose; the relative size of the mouth and lips. At birth in the infant ape, the facial region of the skull is smaller than in the adult, the forehead is more prominent, the superciliary ridges are more prominent, the edges of the jaws are more prominent, the chin is less, while the cheek bones are more prominent, the nose is without a bridge, and has short and flat cartilages, the face is flattened, the orbits are smaller and closer together, the mouth is small and the lips are thin. In the typic infant child, as he begins to develop, the cerebral part of the skull more than in the adult predominates over the facial; the superciliary ridges are not developed; the alveolar borders are not prominent; the malar bones are not prominent; the nose is without a bridge and the cartilages are flat and generally short; the eyes are larger." In this last particular the human infant resembles the lemurs, and thus retains an embryonic tendency. In some degenerates this tendency remains unchecked, and the result is unusually large orbits. In other instances the human fetus passes through this lemurian stage to reach and even exceed the anthropoid in smallness and closeness together.

In a paper read before the Odontographic Society of Chicago and the First District Society of New York, and just published,³ entitled "Degeneracy in its Relations to Deformities of the Jaws and Irregularities of the Teeth," I showed how evolution of the face progressed from the ape to man until it presented a perpendicular line, and that recession of the jaws was still going on. In the evolution of the jaws from birth to maturity there is constant enlargement of the alveolar process brought about by the crowns of the teeth and broadening of the rami by the development of the skull, which is claimed by some writers to stamp the type of jaw. Tonfès⁴ has shown after repeated experiments that the inner surfaces of the fetal jaws remain the same throughout life; that the development and growth are almost entirely upon the outer plate of bone anteriorly and laterally, and that the jaw grows posteriorly for the purpose of containing the molar teeth. It is this growth that is checked by the other forms of evolution which characterize the race. It is this growth that is checked in development at some period in the evolution of the face and jaws from the fetus to maturity, the result of

degeneracy. Having explained the two forms of evolution which take place in the face and jaws, it is fitting at this point to return to the discussion of the type of jaws.

When man was more of an animal than he is today, in other words, when his jaws protruded beyond the perpendicular line, it was possible in brachycephalic and dolichocephalic skulls, to show these distinct forms of dental arches, as represented by Ivy. This, however, could not be relied on, since, as I have shown,⁵ it is possible in one family, to say nothing of nationalities, to change from a complete dolichocephalic head to a most perfect brachycephalic, and vice versa, in four generations. Granting that one parent possessed a brachycephalic and the other a dolichocephalic head, what would be the shape of the jaws in the two intermediate generations? These facts are antagonistic to this theory, since the temperaments change more readily, and since the jaws are affected particularly by constitutional and local effects. Again, I have also found that the tendency of all nationalities is toward the mesocephalic type of head, and is strongly illustrated in the negro race, which is supposed to be a long-headed or dolichocephalic race. In an examination of over 3000 negroes in Chicago, I found only six that were long-headed, and four of these bordered upon the extreme mesocephalic type.

It is easy to see why temperament has very little to do with the shape of the dental arch. Two individuals are married, one a nervous and the other a lymphatic, bilious or sanguinous temperament, all having different jaws, the offspring inherits the jaws of one, the teeth of the other, and the temperament of the child is changed. The local condition is such that the shape of the jaw may change the character of the arch entirely. One child may possess a broad dental arch, but very short, another a very narrow and long dental arch. Hence, classifying the dental arch and vault by temperament is wholly out of the question. Likewise the theory of placing fixed types of jaws with different nationalities is utterly impossible, since all forms of dental arches are observed in each nationality. Some of the primitive races, like the Negro, Chinese, the Latin races, etc., retain the excessive jaws, while the Anglo-Saxon, Scandinavian and Gaelic races in most cases have passed far within the perpendicular line. It is possible for the arrested jaw to be found among the Negro, Chinese and Latin races, and large protruding jaws among the Anglo-Saxon, Scandinavian and Gaelic races. These would be atavistic on the one hand and degenerate on the other.

It remains now to explain how irregularities of the arch are produced, and also why, in the present people (bilious, lymphatic and sanguinary), dental arches can not be fixed and confined to distinct nationalities. It is not that the evolution of the face has assumed the perpendicular line that it becomes of interest to practitioners of dentistry. The teeth do not change (in size) to correspond to the size of the jaws, therefore, at this period, the jaws are as small as they can possibly be to contain them normally. Some years ago,⁶ I divided irregularities of the dental arch into constitutional and local: *Constitutional*, because arrest and excessive development of the maxillary bones may be caused by inherited predisposition, but more frequently by constitutional diseases, at any period

² American Naturalist, 1883.

³ Chicago Dental Review, April, 1898.
Dental Surgery.

⁵ Talbot: The Etiology of Osseous Deformities of the Head, Face, Jaws and Teeth.

⁶ Dental Cosmos, October, 1889.

between birth and the sixth year, resulting in an unstable nervous system. These excessive and arrested jaws may become inherited in succeeding generations. I mention the sixth year because these deformities are never observed in connection with the temporary set of teeth, but invariably after that period. Owing to this unstable condition of the jaws, there may be a lateral arrest of development, with a protrusion of the jaws beyond the perpendicular line. In such cases there may be V and saddle arches, and the face will assume the hatchet shape. *Local*, because irregularities of the teeth may be the result of undue influence of adjoining or occluding teeth. A local condition which might easily be taken for a constitutional cause is when the first permanent molars, from any cause, may move forward, thus diminishing the space required for the anterior teeth.

In the constitutional variety of irregularities of the teeth, arrest of development of the jaws invariably takes place. The jaws being too small to contain all the teeth, nature is trying to overcome this difficulty by dropping the third molars and the lateral incisors, hence almost invariably arrest of development of the jaws exists when these teeth are missing. It not infrequently happens that although the third molars may be missing, there is not sufficient room for the anterior teeth to develop normally. Given a jaw too small for the long diameter of the teeth, a break must take place in the dental arch. After eight years of constant study, watching the development of jaw deformities and making artificially every movement of the teeth which produces them, I showed, in a series of papers,⁷ that irregularities of the teeth were merely a mechanic arrangement, depending entirely upon the jaw on the one hand, and the teeth on the other, and that mouth-breathing, thumb-sucking and other external conditions (which up to that time were supposed to be the cause), had nothing to do with them.

Two typical breaks take place, each depending entirely upon the relation of the cuspid tooth to the other teeth. If the cuspid comes into position after the bicuspids have erupted, the break is in the anterior part of the mouth, producing the V variety, which is atavistic, resembling the reptilian type. If the cuspid erupts before the bicuspids, the break is at the sides, forming the saddle arch, also atavistic, resembling the carnivorian type. Modifications of these types are the result of local arrangement of the teeth as they erupt. One of the most marked examples of this is where the temporary molars are retained too long in the jaw, the roots retaining the crowns of the bicuspids in a smaller circle. When the temporary teeth are removed, the crowns of the bicuspids are deflected inward from want of room by the adjoining teeth. The cause and manner of formation of the local variety of irregularities have been described so often in my papers and books that it seems unnecessary to enter into their discussion at this time.

It will be seen therefore that a race or individual, regardless of temperament, whose face and jaw, in the order of evolution, has become arrested at any point within the perpendicular line—depending upon local and mechanic construction of the dental arch—can not possess fixed dental types of jaws and teeth.

103 State Street.

⁷ Papers on the Etiology of Constitutional Irregularities of the Teeth, Dental Cosmos, 1888, 1889.

A METHOD OF HANDLING ALVEOLAR PYORRHEA.

Presented to the Section on Stomatology at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEO. T. CARPENTER, M.D., D.D.S.

CHICAGO.

In presenting this paper before this Section, I do so with a feeling that the practical side should not be lost sight of while we are eagerly searching out the scientific. Much has been written on the subject of pyorrhea alveolaris and there is a great difference of opinion still existing as to the etiology, pathology, diagnosis and treatment of this disease. It is not my purpose in this paper to discuss the various points above mentioned, but to give a brief outline of a method of handling these cases which has given me the most satisfactory results. It has been my experience that different cases of pyorrhea differ in their treatment. One case may yield readily to a certain treatment, while another may be very persistent in its pathologic behavior. But thoroughness in diagnosis and treatment is the key to success. In diagnosing any case, get a history of it and decide on the predisposing cause, or cause outside the pocket, which is generally from local irritation caused by wooden toothpicks, ligature, wedging of teeth, or ill-fitting plates or crowns, accompanied with neglect of the mouth. These, or other causes should be removed, and any constitutional predisposition should be corrected, and then we should secure the hearty co-operation of the patient. The disease once established is self-sustaining and it is within the pocket that we must look for, find, and remove the exciting cause, which may be serumal deposits, pus-secreting membrane, foreign substances, or diseased or necrosed margins of process. To make a careful and thorough examination of the pockets I secure dryness with bibulous paper, protect the parts with a napkin, and coat the surrounding gum with cosmolin to protect the parts outside the pocket from the action of medicines. Now dry the pocket and pack with cotton slightly moistened with a 4 to 8 per cent. aqueous solution of cocain. After allowing this to remain several minutes, carefully remove the cotton. The pocket will be found to remain open so that an examination can be made with a mouth mirror. Deposits, if present, can be located before instruments are used for their removal. I operate on but one tooth at a time, or on the interproximal space between two teeth, doing all that I intend to do in that immediate locality before directing my attention to other teeth. All loose teeth having lost two-thirds or more of their natural support are extracted. The best instruments to use in the pockets are spoon-shaped excavators with the shanks bent so as to reach every part of the root, or pocket. They must be kept sharp so that deposits can be easily removed, and the root curretted. The soft parts and margin of process can also be curetted if necessary. The pocket should be cleansed with equal parts of peroxid of hydrogen and pasteurin, or 3 per cent. pyrozone and borolyptol, using a flat-pointed syringe, and pass to the bottom of the pocket. This syringe is designed especially to reach pyorrhea pockets, and can be used as successfully on posterior teeth as in the front part of the mouth, and fluids do not escape beside the point until the pocket is distended and all parts are reached. This will not only antiseptically cleanse, but will also

mechanically carry out all free and loosened particles. The gums are now wiped dry and painted with tincture of iodine, which should be repeated about twice a week.¹ The tooth, if loose, is supported by bands, or ligatures, and if moved by occlusion I grind the tooth, or its antagonist, sufficiently to prevent all movement, so as to procure rest for the affected parts. All subsequent treatment of the pocket should be made by the use of a thinly shaved hardwood toothpick, which can be moistened in the antiseptic and bent so as to reach any location. This should be passed into the pocket as deep as possible without injury to the tissue, or causing pain or hemorrhage, and repeat the application once or twice a week, as long as the toothpick can gain entrance to the pocket. I find that it is seldom, if ever, necessary to make incisions through the gums into the pockets and I but seldom resort to the use of dilute or stronger acids as an aid in softening or removing deposits, or to establish resolution. Antiseptic and prophylactic conditions should be established and followed during treatment, and indefinitely continued throughout life. I recommend a thorough rinsing of the mouth and the use of an antiseptic after each meal. I also recommend a medium stiff toothbrush to be carefully used once in twenty-four hours, and that at night before retiring. This time once established will not be substituted for other hours in the day. The brush will have time to dry, and the elasticity of bristles be restored, which will do the best work at the most needed time. A good dentifrice with precipitated chalk as a base should be used on the brush, after which 1 dram of pasteurin or borolyptol should be taken into the mouth and retained for from three to five minutes, at the same time moving the cheeks and lips so as to force it between the teeth and reach all parts of the mouth, then expectorate and retire without rinsing the mouth with water. The time spent in the successful treatment of this disease depends on constitutional condition of the patient and the extent of the disease, or the thoroughness in which the first operation is performed. The recurrence of the disease comes from a failure to remove the predisposing causes. The reproduction of gum tissue² in all interproximal spaces is essential to prevent the lodgment of food or injudicious use of the toothpick. I believe that a thorough removal of the cause, with antiseptic treatment and stimulation of the gum tissue will cure the most persistent case of alveolar pyorrhea.

Columbus Memorial Building.

THE MECHANISM OF MAN—ITS EGO 'AND COSMOS.

Presented to the Section on Physiology and Dietetics at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY SAMUEL KNOX CRAWFORD, M.D., LL.D.

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None but the creative power from which all things sprang can aspire to the construction of something out of nothing, or the reconstruction of an entity into nothing. Chemistry attempts to describe all mate-

rial substances, to tell of their ultimate particles, and formulate the laws which govern their combinations and decompositions, but does not assume to create or annihilate the molecule with which it deals or the atom which it fondles. This is in obedience to the inevitable and immutable law of the indestructibility of matter and force. Matter is tangible; force is intangible. Matter is found in states; force is responsible for the state. Matter is also found in kingdoms; force is again ruling it. The one is made to grow from within by the complicated power of nutrition; the other to increase from without by the simpler but tardier function of accretion.

The organic and inorganic comprise everything that occupies space. Animals and vegetables are the organic, and all else is inorganic. Vegetables feed upon the inorganic, and animals are fed upon the vegetables; thus the vegetable becomes the connecting link between the animal and inorganic kingdoms. Animals also feed upon each other and thus become omnivorous.

Animals and vegetables have many characteristics in common, from the standpoint of nutrition. The vegetable takes the mineral from the earth and sea and sky and elaborates it into an organic compound, and from this the animal is fed and his body reconstructed. This is accomplished by force, of which we understand but the phenomena of its work. The force within the animal enables it to convert compounds prepared by the vegetable into tissue of its own and decompose others into their constituent elements, from which it forms new combinations for its own peculiar purposes. Thus sugars and starches are formed in the vegetable, of carbon, oxygen and hydrogen, to be decomposed into hydrocarbons and carbohydrates in the animal and formed into fat.

Chemic combinations and decompositions are accomplished by force within the body as without. This is but a particular form of the general force to which all matter is subservient, but of which animals and vegetables have the employment in the performance of their functions, and must not be confounded with that other and higher form of the same force which we call vital force. Hence it follows from this that the less decomposition and recombination required to transform vegetable products into pabulum for the animal to assimilate, and the less assimilative force to be employed the greater the conservation of force within the body will be conducted. The hydrocarbons as well as the carbohydrates are heat-producing foods and serve the animal economy in the capacity of fuel. It follows that, to accomplish the final act of combustion and the evolution of heat, the greater economy is, in pabulizing, for the animal, to employ those articles that require the least amount of chemic action; and perforce assimilation demands the minimum amount of vital effort.

This is all on the principle that seasoned wood is more economic fuel than that taken direct from the growing tree. As animal bodies radiate heat from within their fabrics, as do other bodies, in the general equalization of this form of force, it follows that in a climate whose temperature is zero, a much larger amount of heat-producing food will have been required to sustain a given temperature within than in one whose thermal conditions range high toward the third-figure standard. This is a fact attested by common observation. Nature has so managed her affairs in the animal that the redundancies not

¹ Dr. Talbot: Pyorrhea Alveolaris, International Dental Journal, April 1896.

² Reproduction of Gum Tissue: Dental Review, Nov. 1897.

required to sustain temperature may be stored away in odd places about the fabric as so much surplus fuel in stock, and *this is fat*. As a factor in the cosmos, fat plays a conspicuously important part, for good in due proportions and for evil in disproportions.

But the organic kingdom abounds in another class of compounds embracing an additional component element. Nitrogen is the representative of a class of compounds that enter into all the contractile and protective tissues, as carbon is of the heat-evolving principles. Nitrogen, then, may be said to be to the muscular and fibrous system what carbon is to the combustion of the body. Hence the nitrogenous and carbonaceous principles or the nitrogenized and non-nitrogenized organic compounds. Carbon, hydrogen, oxygen and nitrogen are the cardinal elements of the animal economy and for the purposes of this paper the others may largely be eliminated from consideration. Muscular action and physical endurance, then, depend largely upon a due amount of nitrogenous matter in the pabulum from which repairs are to come. In like manner, when resistance to low temperature is required, carbon must have been supplied in amount equal to the waste to be endured from the standpoint of fuel, to contend with the radiation incident to environs. If more food be taken than the economy requires for consumption in molecular action and fuel, the surplus must be stored somewhere about the fabric or be otherwise disposed of, and hence redundancies become matters of the gravest importance, and the overflow becomes a balance of power for health or disease. Overflow deposits are typic as sources of miasms and infections, and hence the more nearly the supply can be made to conform to demand, the more certainly will safety ensue.

The mechanism of man may be said to consist of the spiritual and physical bodies, the one within the other, the one atomic, which is a form of force that, like other forms of intangibles or imponderables, can only be studied by its phenomena. The cosmos may properly embrace the entire mechanism, and the ego, consisting as it does of the spiritual man or soul, is the controlling factor of it all. As the play of the conscious self upon the whole mechanism is the play of the atomic upon the molecular structure or tangible body, it becomes a matter of great concern as to the quality of the matter or molecules entering into the composition of the parts whose functioning leads to the accomplishment of acts desired.

The disposal of surpluses and effete matter eventuates from the various forms of the general force obtaining in the fabric, and therefore, there must be a system of sewage; hence the organs of excretion obtain. If in any instance the work to be accomplished by these emunctories be too onerous for their capacity, it becomes a matter of endurance and a question of time as to impairment, and hence vitiated function. In this age of serious thought and painstaking investigation, every physician will acknowledge and every surgeon accord that diet is of the first importance in the management of the various ailments they are called upon to combat. The hygienist may employ and the sanitarian adopt the most efficient measures at their disposal in the practice of their art, and yet none so good and so masterly effective as that of dietetics. All this is subservient to the inexorable law of waste and repair of life, and the exchanges must, under the various vicissitudes of life, be provided for in proportion to the requirements from function and environment, or the penalties paid.

If an immature man be placed in a climate of high temperature, where moisture abounds in the heated atmosphere; if he be clothed in raiment whose texture poorly conducts the heat from his body at best, fed upon a diet consisting largely of carbohydrates, and required to perform severe and prolonged muscular functions, the balances of waste and repair must become embarrassed and development impeded. The systemic sewerage must of necessity become deficient, and his body a shining mark for infectional miasms. The young soldier in the field in time of war, habited in regulation clothing, fed upon the ration of tradition, fat bacon, hardtack and beans, in a climate of moist atmosphere and scorching sun, with a temperature hovering about the three-figure record in the shade, and required to do but the minimum amount of military duty incident to active campaigning, must soon become an object of disease from head to foot. If he survives the dangers of infection from the numerous foci that menace large armies and unsanitary conditions, generally he will have laid the foundations well and securely for a life of fatty ills too numerous for the vocabulary of most writers to describe. War is a cruelty and defies refinement, but as a necessity it appeals to the impulses of humanitarians and scientists to avoid the cruelties of vicious diet and the filth that betokens culture media.

Science of today does not recommend fat bacon and half-cooked beans as articles of diet from a sanitary standpoint, nor does the spirit of humanity suggest the ordinary army ration of the past as a suitable food for the brave soldier who voluntarily takes his life in his own hands in defense of his country and its honor, and in behalf of human interests and liberties under the tropics. The spirit of the age and the dictates of Christian sentiment deny that an American volunteer soldier becomes a machine at the moment of muster, and thereafter as such, is not entitled to the best sanitation that science may suggest, not incompatible with the exigencies of war. The article of primary importance in all diet lists is pure water, and the purest and best of that is distilled water. The purest ice is the artificial, which is made of distilled water.

A division of soldiers should contain four brigades; each brigade should be composed of four regiments, and no regiment should be allowed to fall far below a thousand men and officers. Every division in the field should have its field-hospital equipped in every regard with up-to-date appliances and conveniences, which would include an abundance of pure water and ice. With these articles as a base for the equipment, all else would be an easy matter of attainment. A division hospital should never be more than a half-hour's march from the remotest regiment of its composition, and if equipped with a good artificial ice machine could be the fountain at all times at which the canteen may be filled with the purest and coolest water for all. Thus armed, an army of invasion would be invincible, even under the equator, not only to a wily human foe, but its surgeons could grapple even-handed with foes of the infective type, which are far more to be dreaded.

The writer feels impelled to press this question in the face of existing conditions, as he knows whereof he speaks, from an experience of years in the field beneath a southern sun, and amidst swamps and in the thickest of miasms. A well-selected diet of articles suited to season and climate and service, whatever

that may be, is the most economic measure that can be adopted in the management of large bodies of men, whether it be in civil or military life, and whether it be viewed from the life-point of the present, the health-point of the months and years to come, or be considered from a commercial point of view.

As a business man, I would be glad of a contract with my government to furnish any division of any corps now organizing for offensive warfare in southern climes, with the purest and best of water and ice throughout the service of the command, for an amount of money equal to the pensions falling due within one year, as a result of the ravages of typhoid fever and other infectious diseases of any other command of equal strength *not* so provided for and under like conditions of service. And as a further factor of the contract I would be glad of the opportunity of accepting the present ration of the same command and furnishing another infinitely more suitable for, and more acceptable to the rank and file of the command, receiving the pensions due in two years to the crippled survivors and widows and orphans of deceased soldiers from sunstroke, rheumatoids and diseases of the brain and spinal cord, from an equal number of men not so dieted, but doing service under like conditions, as compensation for my trouble, and so confident do I feel of this that I would expect to grow immensely rich off the proceeds.

But far above the dollar stands the moral of the equation, and when generations yet unborn are taken as the representative of x , the problem becomes a serious one and the mechanism of the future man with his ego and cosmos bids us move altogether in his interests. Let the door of yesterday be closed and tomorrow's door be opened.

CARDIATION.

Presented to the Section on Physiology and Dietetics, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY EPHRAIM CUTTER, LL.D. M.D.,

HARV. 1856, UNIV. PA., 1857.

NEW YORK CITY.

Cerebration is a general term for the functions of the cerebrum and cerebellum. Manipulation means the functions of hands, and the writer thinks that it would be well if cardiation and its fellow, cardiate, were commonly used.

The heart is an autonomy like the brain, eye, ear, epithelium, etc. Indeed, some concede autonomy to every cell in the human body. Hence it is modest to claim autonomy for the heart on general principles for the following reasons: The heart has nerves enough of its own to run it. Some three hundred years ago a Dutch anatomist executed a life-size copper engraving of the cardiac ganglionic nerve centers. The heart was covered with white ganglia about half an inch in diameter, connected with radiating nerve-fibers, like streets or railways between cities. While a medical student, I killed a fresh-water snapper turtle of about thirty pounds weight. The heart, entirely removed, beat regularly for more than twelve hours. If this is not autonomy, what is? How much more can a live heart undisturbed *in situ naturali* act of itself?

Some years ago, at Hartford, Conn., was a murderer who was to be hanged. He tried suicide, as manifested by curious respiratory symptoms and oppressed heart action. He was treated and executed a few days

after said perplexing symptoms appeared. The autopsy revealed a small, healed narrow scar, one-half inch long, just below the left nipple. In the heart was a blade of a pocket knife three to four inches long, completely buried! Happening to be there I saw both heart and blade. The history seemed incredible, but the high character of the medical gentlemen, and the exhibit are beyond cavil. Here indeed was autonomy allied to that of the above turtle's heart.

The heart not an autonomy? How then does it bent all our lives long, whether we are awake or asleep, conscious or unconscious, active or inactive? Oliver Wendell Holmes taught us to observe the live hearts of land snails in motion, in formation and *in situ naturali*, through the transparent shell of the embryo. It is a marvel of microscopy! I have seen anencephalous babes born at term where the development was perfect, save the entire absence of the cerebrum and of the bones of the cranium above the frontal arches and the ears. If the head is absolutely needful to the heart, these monsters could not be. And yet their hearts and bodies are apparently perfect. Thus we have another item of evidence to prove the heart's autonomy.

If we run on a level ground, ascend heights, lift heavy weights or do anything that requires a greater expenditure of strength, then the heart beats harder and faster. What better reason for this than that the heart nerve-centers know they must supply more force to meet these new demands, or else the united autonomies we call the "body systemic" are imperiled if not killed. The heart has a governor in its nerve ganglia, like a steam engine, but it is a more perfect governor than any other. How often four to twenty times more work is put on the heart suddenly in running up stairs! How long our hearts stand strains which in like proportions would smash the best Corliss steam engine! How quickly the heart ganglions respond! How soon they seem to know when danger comes in overwork! How hard they try to avert it by palpitation, pain, tumultuous action, pounding impulses against the ribs so as to break them (Old Author). The cases were probably old syphilitics with fragile bones.

Sometimes the heart substance ruptures from its own violence specially in psychologic distress, as in the crucifixion of Jesus Christ. The heart is a psychic center of nerve emotions, feelings, passions. In 957 allusions found in the Bible, the heart is referred to mostly as an autonomy in nearly all and sometimes in the strongest language. On the other hand, the Bible has less than 500 allusions to the head as an autonomy. One reference may suffice as evidence—"The fool hath said in his heart there is no God!" It seems he was not such a fool as to say it in his head!

We love, we hate, covet, cherish (even murder), yearn, are happy or sorry, are strong and weak in our hearts far more than our heads. The Bible says our "hearts are deceitful above all things and desperately wicked." Who can know it? The Bible never speaks thus of the head. It calls the heart the "temple of the living God," but the head never has such words said of it.

Every physician knows that the heart will live and work after the head is practically dead. The sympathetic nerves do not wholly control the heart. They could not have had anything to do when the aforesaid turtle's heart beat twelve hours after removal from the

body. The head may drive the heart as the jockey does a horse but the horse will drive itself as an autonomy. I once drove my horse, Billy Pool, off 20 miles in a new direction. Returning I threw the reins over the dasher and the horse drove himself all the way back, turning out for teams both coming and going, and clearing corners just as well as if I drove him. So may the heart drive itself, independent of the head. The heart suffers when other autonomies, the head, liver, kidneys, skin, etc., are out of order and use up so much *dynamis* (vital force) as to steal from the heart that knows no rest.

I think that three-quarters of heart troubles in women come from uterine lesions using up the *dynamis*. This may be over-estimated, but there is so much of this causal relation that no specialist of heart disease can afford to overlook uterine diseases. Note how our vernacular treats the heart as an autonomy. What does the expression "he has no heart" mean but that the heart's compassions are so stifled as not to yearn? But how can this be if the heart is not an independent organ?

We say "hearty food," meaning that such aliment strengthens or dynamizes the heart. Were there no autonomy this would mean but little.

CLINICAL LESSONS TAUGHT BY CARDIATION.

Lessen heart work and then Nature will cure by having dynamis enough to do its work with. It is wonderful how Nature cures this mighty engine while it is running and working. Man made engines stop running and go into the repair shop. "God, in whom we live and move and are," through His laws, i.e. Nature, repairs the unceasingly beating sick heart, a task that is impossible to man who has much to do, as he can destroy if he can not create. In other words rest the heart in and between its beats, by position, by keeping still, by "laying low," figuratively and literally, by freeing the body from all compression and tight environments, by lightening work, by removing all causes of psychical, mental, intellectual, sensual (in its best and worst meaning) and of physical excitement, by lessening the friction of the more than 100,000 miles of capillaries, in an adult male, *a*, making the blood or normal dilution with water, *b*, removing the adhesiveness of the red- and white-blood corpuscles, the massiveness and abundance of the fibrin filaments, the amorphous and crystalline blood gravels or crystallized bodies, such as oxalate of lime, cystine, uric acid and its salts, triple phosphates, cholesterin, etc.; removing thrombi and emboli of fibrin, gravels, fat, leucocytes, cryptogams, in fact, making the blood stream normal by proper feeding and medicines. In this way a heart that has grown large from its overwork will reduce down to normality, and valvular lesions will be restored to health. I have seen this done. If the heart is fattily degenerated, the diseased muscular fibers will be replaced by normal fibers, and if time enough is had even the stony deposits are removed. Nature, not medicine, does these things when chances are given by means of rest and plenty of dynamis being given.

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The Fatty Ills and their Masquerades. John A. Cutter, M.D.

SOCIETY PROCEEDINGS.

San Francisco County Medical Society.

December Meeting.

Dr. KASPAR PISCHEL presented and described a case of

FOREIGN BODY PENETRATING THE EYEBALL.

The foreign body was a chip of iron, and was removed by means of a Habb's magnet which he had made in San Francisco some months ago. The chip of iron entered the eye November 30, at once causing pain and inflammation. This was treated for some days by a general practitioner, the pain subsiding to a great extent, but it was not entirely relieved, and the patient was sent to Dr. Pischel December 6. When seen there was dilatation of the pupil of the right eye, some pain and tenderness, and vision of $\frac{5}{15}$. The wound of entrance could be seen and also a brownish stain in the lens, with an opacity in the posterior portion of the lens, which was cupped. The foreign body could not be seen, and its actual presence could not be detected. The eye was cocaineized and approached near to the big magnet, but successive trials by making and breaking the circuit in the magnet did not elicit any pain nor produce any indication of the presence of the particle. The next day the trial was repeated, but on this occasion the eye was not cocaineized. Making and breaking the circuit at times caused pain and at others did not. After a number of attempts the iris was seen to bulge when the current was thrown on the magnet, and finally it was drawn to the cornea. An incision was then made in the cornea and a small magnet introduced into the wound thus made; it failed, however, to attract the minute iron chip and the tip of the large magnet was introduced. At the first trial with the tip of the large magnet the particle was drawn out of the eye. It was found to weigh .00068 grams. Dr. Pischel called attention to the difficulty of deciding whether there is or is not a foreign body present. In this case the symptom of pain on closing the circuit and making the large mass of iron magnetic, was not present; it has been claimed that when the magnet is approached to an eye which contains a particle of iron or steel pain is always a symptom. This is now shown to be not always the case. The question might be raised, "if there be a foreign body in the eye and there is no inflammatory trouble, why not leave it alone?" The use of the large magnet does not introduce any danger, and we know that there is always possibility of sympathetic ophthalmia when a foreign body is allowed to remain in the eye.

PHILIP MILLS JONES said: The feature of particular interest in this case is the fact that such an exceedingly small particle of iron could be drawn from such a distance, for it must have been lodged behind the lens. In the testing of the magnet which Dr. Pischel used, and which I had the pleasure of designing for him, I found that the action on such very minute particles was very small, and I should not have thought that the magnet would attract a piece of this size at the distance which it must have been. This case goes to show that the big magnets are even more satisfactory than had been supposed. The absence of inflammation may doubtless be explained by the fact that the chip of iron, when struck off by the blow of a hammer, was probably heated to a high temperature. We see such particles flying as sparks when iron is struck by a hammer in the dark. The heating would quite effectually sterilize the chip.

Dr. W. F. SOUTHARD said that he had intended to call attention to the point made by Dr. Jones, as to the sterility of these chips of iron. He had seen a great many of these cases of iron in the eyeball, when connected with the Massachusetts General Eye and Ear Infirmary. Rarely in a case of iron penetrating the ball, when it was in the shape of a chip struck off by a hammer, was there any inflammatory trouble following the injury.

Dr. PHILIP KING BROWN reported to the meeting

A CASE OF ACETANILID POISONING.

The case was of unusual interest for the reason that it had been so carefully studied both before and after death. The patient was a male, 37 years of age. He had been for some years rather constipated, with frequent headaches as a result. About January 22 he called in his lodge doctor, who left a prescription calling for 60 grains of acetanilid in 10 grain powders, with instructions that one powder was to be taken, and if that did not give relief another could be taken at the end of an hour. The man took five of the powders in quick succession, but without relieving the headache. He then became unconscious, cyanotic, vomited, and the family sent for Dr. Kahn, not however, telling him anything of the visit of the lodge doctor, nor of the taking of the acetanilid; indeed, the fact that he had poisoned himself with this drug did not appear till just before his death. For thirty-six hours he remained at home, was delirious, cyanotic, jaundiced, and seemed to complain of pain in the left side of his head and left umbilic region. There was also vomiting, with occasional chills. When removed to the hospital he was carefully examined, but no positive diagnosis could be made. He was then delirious, had chills, jaundice, almost continuous vomiting, with a temperature of 100.2 degrees, pulse 78, and shallow respirations. Cyanosis was marked, but examination of the heart failed to reveal anything. There was considerable cough, with expectoration of thick mucus. The abdomen was flat, but the viscera appeared to be normal. There was no hemorrhage of the mucous membrane. The urine was at first clear, but later became deep red in color, and about two days before death was entirely suppressed. It was alkaline, s. g. 1.016, coagulated on boiling, and contained large numbers of cysts, yellow and brown in color. The thirst, vomiting and cough with expectoration were almost continuous up to the time of death, which occurred on the sixth day after entering the hospital. For the first day he was given milk, and one-sixtieth grain of strychnin hypodermically; but as he vomited all the milk at once, and as the circulation was so poor that the strychnin was not absorbed by the skin, he was subsequently fed by the rectum, and the strychnin was also given in the same manner. The vomit was a thick green mucus. He was perfectly unconscious all the time. The reflexes were at first exaggerated, but later were lowered. The temperature dropped, becoming subnormal and reaching 75.5 degrees just before death. The circulation was at all times very poor, so much so as to prevent any attempt at medication through the skin. After the fourth day blood appeared in the stools. Oxygen was not used. Blood examination made shortly before death showed a very marked destructive process going on in the blood corpuscles, together with evidences of attempts at reparation. The nucleated elements were largely in excess. The blood was examined from time to time throughout the period he was in the hospital, and the destruction of blood-cells was seen to be progressive. Some of the clinical features noted were as follows: There was no anesthesia, and for nine days after taking 50 grains of acetanilid there was marked hyperesthesia; the motor and sensory functions were all right; the arterial pressure was low throughout the time of illness; the respirations were shallow and slowly increased, reaching about thirty six just before death; the temperature was subnormal; the alkalinity of the blood was reduced 80 per cent. The colored matter in the urine was found to be iron-free hematin, on spectroscopic examination. The following conditions were found on autopsy: In the abdomen, the liver and stomach were normal; the spleen was slightly enlarged; the gall-bladder was found filled with dark, sticky, green bile; the kidneys were enlarged and showed a condition of nephritis which seemed to be recent; the heart showed fatty degeneration; the valves were all thickened, though competent; there was a large clot in the right auricle, which was probably antemortem; the lungs showed evidence of previous damage and a catarrhal condition; frothy, bloody mucus could be squeezed out of a cut section; the intestines were the seat of a chronic catarrhal inflammation and were covered with a thick green slime.

Dr. J. HENRY BARBAT said the death is probably only one of a number that have occurred in this city, caused by taking the so-called headache powders. The amount of harm done by these remedies can not be calculated. He had repeatedly seen marked cyanosis follow the use of 10 grains of acetanilid, and while the "acetanilid compound" was somewhat better, he considered it did not contain enough caffeine to counteract the depressant effect of the acetanilid. He usually gave a little digitalis also, when making use of acetanilid. In one case where he had dusted a very small amount of acetanilid powder on the surface of the gut in a child, marked cyanosis followed and persisted for some days.

Dr. M. KROTOSZYNER strenuously objected to the manner in which physicians were making use of the coal-tar products, both those in which the formula was known and those in which it was not known. He also called attention to the fact that many physicians were using a proprietary preparation called "antikamnia," said to be composed largely of acetanilid, but of which the formula was not known. He did not consider it at all ethic for physicians to use and prescribe this remedy, as it is a secret preparation, and because it is sold so commonly to the general public as a headache cure. He considered that acetanilid should be used in all cases with the utmost care, and that five to six grains was a good-sized dose.

Dr. H. D. ROBERTSON had seen a number of fatal cases of poisoning from the use of the coal-tar products, and he gave a résumé of the history of these drugs for the past fifteen or twenty years. The more recent of these productions did not seem to be so dangerous as the older ones, acetanilid, antipyrin, etc. It was a question in his mind, whether the prostration was due to a direct action or to the destruction of the blood elements. He called attention to the marked anemia following the use of trional for long periods, and suggested that the destruction of the blood corpuscles would account for the anemic condition.

Dr. E. E. KELLEY said that he was inclined to think that the powerfully depressing action of acetanilid might be caused by the poisoned condition of the blood. Dr. Brown had showed that the heart's action remained practically normal and also that the blood was profoundly affected. Could not the depressing effect and the later effect on the heart, be due to this primary action on the blood? He also suggested that the complete suppression of urine so long before death would seem to show a previous disease of the kidneys, which may have affected the action of the acetanilid and have had something to do with the cause of death.

Dr. HUNKIN said that the extent to which these headache remedies were being used was most distressing. He had recently been called to see two girls who were feeling very much upset, but could not account for the trouble. They were markedly cyanotic, languid and listless, but complained of no pain. He found that the entire family was given to using large quantities of a remedy which they all took at the slightest provocation, and for almost anything from constipation to backache. They were evidently suffering from coal-tar poisoning.

Dr. HAROLD BRUN said that the question had frequently presented itself to him, Are the coal-tar products, acetanilid, etc., heart depressants or not? He thought they were not, but that, as had been suggested, they owed their depressing action to the effect which they had almost immediately upon the blood.

Dr. SOUTHARD called attention to the personal equation, which seemed to have missed the attention of the previous speakers. In his own case two or three grains of acetanilid would have a maximum effect, and anything more than that was quite depressing.

Dr. E. G. FRISBIE also mentioned the personal equation, stating that he had frequently noticed that some persons could take very large doses of these drugs, while very small doses would have unpleasant effects with other patients.

Dr. BROWN, in closing the discussion, said that there was no doubt of the actual depressing action of these drugs. In the case reported, the administration of strychnin in large doses was all that kept the heart's action up. The drug evidently had a depressant action on the heart muscle direct. He said that susceptibility was a noted characteristic of these drugs, and was most marked in the case of acetanilid. He considered three grains the maximum dose, and that anything more than this amount should be given with great caution. In answer to a question, he said that the bone marrow was not examined in the case reported, but the brain was very carefully examined and showed nothing pathologic. The jaundice was present from the outset, and was progressive. There were no hyaloid nor fine grained casts, and the appearance of the kidneys on postmortem examination showed that the inflammation of those organs was not of long standing. The causes of death were the destruction of the blood corpuscles; the blocked-up kidneys, causing suppression of urine; the heart failure and the persistent vomiting. Starvation played a good part in causing death, and had it been possible to keep the patient nourished he would perhaps have recovered.

Dr. THORNE reported three cases of general peritonitis following pelvic disease, in which the patients were in extremely bad condition when operated upon. He said that they called attention to the fact that operation should be undertaken in many cases when there was apparently no hope whatever of recovery. The result was sometimes marvelous. In the

cases reported the temperatures ranged from 103 to 106 degrees, there were chills, great pain and marked collapse, yet recovery followed in all. The fourth case was one of septic infection from a fibroid, which had broken down and was discharging into the abdominal cavity. In this case the antistreptococcic serum was used for twenty-seven days, but with no good result, and the patient was then operated upon, with recovery. He found that after the injection the temperature rose and then fell. He did not approve of washing out the abdomen, but carefully wiped off the parts with gauze wet in hot salt solution. Drainage should be ample. He called attention to the fact that the healthy peritoneum has a great resistivity to infection, but that after years of repeated attacks of pelvic inflammation it loses this resistivity, and then comes an attack of general peritonitis, often fatal. He considered the danger of operation, due to opening a pus sac, very small.

Dr. BEVERLEY MACMONAGLE said he had listened to a paper at the last meeting of the society, in which a number of cases were reported, the operation per vagina having been performed; most of the cases recovered. The abdominal operation had been performed in all the cases reported by Dr. Thorne, and they too had all recovered; one was therefore in some doubt as to which operation to choose. He thought that the vagina was not the point of choice for operation, however, for one could more easily operate through the abdomen and less damage could be done. Whenever possible, a portion of the ovaries should also be removed, for it was useless and a cause of recurrent trouble in not a few cases. He believed in flushing out the cavity with salt solution, and frequently left a quart of the salt solution in the abdomen, closing the wound entirely. When there was general peritonitis with true septic pus, he believed it was essential to thoroughly wash the cavity and leave the salt solution in when closing the wound.

Dr. J. HENRY BARBAT quite agreed with what Dr. MacMonagle had said, but thought it advisable to make the drainage through the vagina in a large number of these cases. It could be very easily done, was perfectly safe, and gave the best possible drainage.

Cincinnati Academy of Medicine.

Meeting of Nov. 21, 1898.

Dr. JOSEPH RANSOHOFF exhibited a male patient, about 30 years of age, on whom he had performed, a short time before, a partial operation of removal of the urinary bladder. Several years previously a suprapubic operation had been performed for supposed stone, but nothing found, and the patient had improved considerably after the operation, but of late his cardinal symptom, hematuria, had again come on. The blood, as a rule, was intimately mixed with the urine, so that suspicion of the kidney as the organ at fault was at first held. Occasionally, however, clots of blood were expelled, and even pure blood. On opening the bladder by suprapubic section, the trouble was at once discernible: a large tumor situated upon and infiltrating the anterior bladder wall. So extensive was this infiltration that anything like complete removal of the growth could not be performed without also taking away a section of the bladder. Accordingly the abdominal incision was greatly enlarged, and a large oval resection of the anterior wall made, including the tumor. The wound was then closed, the lower part being packed and drained with gauze. Healing ensued, leaving a very small fistula. The microscopic examination showed the tumor to be a carcinoma. As the history of involvement covers a period of about five years in all, it is possible that the primary growth may have been papillomatous in character.

Dr. LOUIS STRIKER read a paper on "The General Practitioner and the Optician vs. the Oculist," which was discussed by Drs. S. C. Ayers, Tangeman, D. T. Vail, Marcus, Drury, DeBeck, Christian, and the essayist.

Dr. ROBERT SATTLER reported a case of a woman who had first presented herself for proptosis. The inferior orbital plate had been pushed upward and forward, and by narrowing the orbital cavity, had caused protrusion of the eyeball. It was thought that the case was one of osteosarcoma, and operation was advised and accepted. The incision was begun a little above and an inch external to the outer margin of the orbit and was extended in a curved manner downward and inward, coming up along the side of the nose about on a level with the beginning of the incision. Exploration of the maxillary sinus revealed nothing beyond excessive rarefaction, so great indeed that a large hen's egg could have been easily introduced into the cavity. The orbital plate was found pushed upward and was relieved. The frontal sinus was also very large, readily admitting the little finger. No fluid or tumor formation was present in connection with either sinus. The external incision

was closed, leaving drain to both cavities. The lids were sutured together with interrupted sutures so as to avoid dangerous proptosis. At the present time, the stitches having been removed, the eye is gradually returning to usefulness.

Dr. F. W. LANGDON presented a patient, aged 71 years, who about a month ago, while in bed, was seized with coma; the rapidity of the seizure was unknown. On recovering it was found that he was afflicted with right hemiplegia involving face, arm and leg; that he also had right homonymous lateral hemianopsia; and anesthesia of the right arm and hand. Since that time he has been rapidly recovering from his paralysis, and is now able to walk, though with an ataxic gait. It was discovered during his recovery, that a peculiar form of aphasia existed, which greatly aided in locating the site of the lesion. He was able to remember but not to recollect. When a spoon was held up for his observation he was able to remember that he had seen such an object before, but could not tell just when nor for what use. Yet he knew what a spoon was when the name was spoken. He was able to say "spoon" without difficulty. He was able to answer simple questions with intelligence, but could not recall the names of objects even when they were put in his hands, and he had the muscular sense in addition to help him solve the riddles. A bell was rung behind him, and he was able to tell instantly what it was; but when the bell was showed to him and put in his hands, the tongue being held to prevent its ringing, he was not able to tell what it was. This condition was diagnosed as subcortical visual paraproxia. There was also alexia present. There were some other symptoms present which made him regard the lesion as a thrombosis affecting the posterior artery of the internal capsule, also interfering to some extent with that part of the optic radiation going to the left angular gyrus. The hemiplegia was due entirely to pressure, for with the removal of pressure the man was regaining the use of his paralyzed limbs.

Dr. JOHNSTON again presented the infant he had brought before the Academy about two months ago (vide JOURNAL, Oct. 1, 1898, p. 807). In the interim he had operated upon the lumbar spina bifida; it was found to be a meningomyelocele, only a few fibers of the cauda, however, being spread out over the sac. A fusiform section was taken out of the membranes and also out of the skin, and both wounds closed by separate rows of sutures. The child, now five months old, made a splendid recovery, healing occurring by first intention. The child had no convulsions after the operation. The wound was constantly contracting into a firm scar. It will be remembered that the child had also congenital clubfeet, congenital hydrocephalus and imperforate anus, the latter having been relieved a few hours after birth. As far as the mother was able to tell he is as intelligent as her former children, all of whom are healthy, were at the same age.

Dr. GUSTAVE ZINKE reported five cases of abdominal section and presented specimens: 1. Large interstitial fibroid, weight twelve pounds. 2. Small superitoneal, multiple fibroids. 3. Ovarian cyst with strangulated pedicle complicated with pregnancy. 4. Ruptured tubal pregnancy (early) with hemorrhage into peritoneal cavity, supposed to have ruptured during a curettment of the uterus; abdomen opened two days after the latter operation; recovery. 5. Small ovarian cyst; small superitoneal fibroid.

Dr. E. H. SHIELDS presented two pictures of skin affections, the first in oil, irradicable pigmentation following a specific eruption. The disease had not been diagnosed by his former physician, and the patient had been taking Fowler's solution for a considerable period. The Doctor thought that the arsenic was probably the cause underlying the pigmentation. He did not think the condition could be relieved. It was but the second instance he had seen in over a thousand cases of syphilis. The second picture was a water-color illustrating a case of herpes tonsurans maculosa. A third case was reported and specimens presented, of small round uric acid stones about forty-five in number, evacuated from the bladder, but presumably from the kidney, though the patient had never had an attack of renal colic.

Detroit Medical and Library Association.

Regular Meeting, December 12.

Dr. L. J. LENNOX read a paper on "Contracted Kidney, with Special Reference to its Syphilitic Etiology," and said that where a chronic condition, resulting in a shrunken kidney, is found with extensive destruction of the tubular substance and overgrowth of the interstitial connective tissue, the condition may be described by any of the following terms: contracted kidney, cirrhotic kidney, granular degeneration of the kidney, red kidney, gouty kidney, arteriosclerotic nephritis and renal sclerosis.

In describing the contracted kidney most authorities claim that in the beginning the disease is obscure, no distinctive symptoms occurring until uremia shows itself, yet some authors speak of the bounding pulse from hypertrophy of the left ventricle of the heart and a slight swelling of the feet and ankles, as directing our attention to the kidney. The urine is acid, copious, except in the last stages, when it is scanty, low in specific gravity, occasionally showing the presence of albumin, which is constantly present later on in the disease. Albumin-like tube-casts are few in number. Hypertrophy of the left heart and sclerosis of the arteries is constantly present. The vision is impaired, the ophthalmologist often being the first to discover the real nature of the disease.

The main symptoms enumerated by the author were dizziness, headache, drowsiness, convulsions, stupor, delirium, vomiting, nausea and restlessness. As to the etiology, gout was placed at the head of the list, then lead poisoning, business care and worry, hereditary influence, valvular heart disease, stone in the kidney, alcoholism, exposure to cold and syphilis. The Doctor stated that most writers admit that the kidneys undergo changes both in the early and late stages of syphilis, but do not give as a cause of contracted kidney enough attention to syphilitic conditions. Syphilitic infection is the most potent cause in the production of arteriosclerosis, which is directly answerable for cardiac, vascular and renal lesions. Syphilis is termed a blood disease, but there is very little change in the blood except in the early stages, when there is a slight diminution in the number of red-blood corpuscles and a corresponding increase in the white.

The Doctor concluded with a history of one case out of three he had seen of contracted kidney, preceded by syphilitic infection, in which the patient inoculated his wife, who passed through all the different stages of the disease. One and a half years after the initial lesion the patient complained of a bad taste, loss of appetite, headache, constipation, accompanying a rise of temperature to 101 degrees; the patient was thought to have typhoid fever. About three weeks afterward the temperature was reduced to normal and even subnormal, but still the lassitude continued. The patient developed great thirst. There was an excessive flow of urine, but analysis showed no albumin nor sugar; casts were absent: specific gravity, 1010 to 1012. Diagnosis was interstitial nephritis. As the symptoms progressed the urine became scanty and indications of uremia appeared. There was no swelling of the feet or ankles, and no albumin was present in the urine. At present there is hypertrophy of the left ventricle of the heart and some paralysis, as dragging of the left foot and difficulty in swallowing and articulation. The diagnosis was changed to that of contracted kidney due to syphilitic lesion.

PRACTICAL NOTES.

Stitch Hole Infection.—Troller finds after extensive investigations that the infection usually proceeds from the skin, and that the most favorable results were obtained with aluminium bronze wire for sutures, which is antiseptic in itself.—*Cbl. f. Chir.*, December 3.

Orthoform for Toothache.—Hildebrandt relates that the raging pain of an exposed pulp in a carious tooth was arrested at once with an application of orthoform, dissolved in warm alcohol, on cotton. There was no further pain for two days, even in eating, when the tampon was renewed, as at first, with the same success.—*Deutsche Med. Woch.*, December 1.

Oxygen to Prevent Vomiting after Chloroform.—Chavannaz reports twenty-three anesthetics, mostly for long and important operations, in which the chloroform was followed by the inhalation of the contents of a bulb of oxygen such as is used in hospitals. In fourteen there was no vomiting; four vomited once, and none vomited enough to interfere with the ingestion of food. *Gazette Méd. Belge*, December 8.

Vaginal Extirpation for Carcinoma Uteri.—E. Fraenkel states that 34.7 per cent. of 311 cases thus operated at the Berlin Univ. Gyn. Clinic have been permanently cured, that is, without recurrence after five years. The percentage of corpus carcinomata cured was still larger, 53. Its benefits are questionable when applied as a merely palliative measure.

Radiographs in Nephrolithiasis.—Ringel has established that oxalate stones cast as distinct a shadow as a bullet; uric acid

stones are less distinct, and phosphate stones cast no shadow at all, hence the absence of a shadow is no proof of the non-existence of a stone. The same is true of stones in the bladder. To ensure the best results the patient should empty his bladder just before being radiographed, and in case of nephrolithiasis, the thigh should be drawn up to the body to reduce the natural lordosis.—*Cbl. f. Chir.*, December 10.

Nafthalan in Eczema.—J. Hirschhorn writes to the *Deutsche Med. Woch.* of December 1 that he has been using nafthalan in fifty-two cases of eczema and found that it arrested acute eczema with copious secretions in forty-eight hours, the skin regaining its normal appearance in three weeks at farthest. In subacute and chronic cases the effect is less rapid, but still extremely satisfactory. It is also valuable in eczema of the scalp, scabies and psoriasis, and especially in professional eczema, enabling the patient to resume his occupation sooner than with any other remedy.

Is a Green Intestine Gangrenous?—Begoins states that he found an eight-day incarcerated loop a "fine green Florentine bronze color" at the herniotomy. The loop was not reduced and the patient died four hours later, when tests of the green portion proved that it was not gangrenous. The portion of the intestine was filled with water at a strong pressure, and only an apparently sound part split. He also states that the intestine can be colored green with bile alone, and that a light green color does not necessarily imply any alteration in the intestinal wall. A yellow green, dark, black or bottle green are of worse significance, but at the same time they do not necessarily indicate a serious deterioration in the intestinal wall.—*Cbl. f. Chir.*, December 2.

The Toxicity of Appendicitis.—Prof. G. Dieulafoy has lately been emphasizing the intense toxicity that may develop in the course of even the most apparently benign case. In its usual benign form the toxicity is evidenced by the subicterus, urobilinuria and albuminuria. Icterus, testifying to the adulteration of the liver, is sometimes the notice of a most serious intoxication, affecting the nervous system, with cerebral, bulbar or typhoid manifestations. The only means to forestall these accidents is to suppress the toxic-infective focus in time. "No one ought ever to die of appendicitis." He distinguishes between the infective and toxic accidents, as the latter are much more rapid and fatal and necessitate more prompt intervention.—*Presse Méd.*, November 9.

A Quinin Wash for the Scalp.—The *Indian Lancet* for September 16 quotes from the *Revue de thérapeutique* the following prescription, which has been used with satisfaction to prevent the falling of the hair:

R Hydrochlorid of quinin	ʒ i	31
Tannic acid.	ʒ iii	493
Alcohol (70 per cent.)	1½ pints	7464
Tincture of cantharides.	ʒ iiss	77
Pure glycerin.	ʒ iiss	77
Eau de cologne.	ʒ x	311
Vanillin.	gr 2	13
Powdered sandalwood	ʒ i	31

This mixture, after being well mixed and shaken, is allowed to stand for four days and is then filtered. It is rubbed into the scalp daily for the purpose named.

Acute Mania After Cataract Operations.—A man, aged 92 years, hitherto healthy, and yet very robust, was submitted to a cataract operation on the right eye. The operation was most successfully and quickly performed. Anesthesia was produced by six drops of a 2 per cent. cocaine solution. In the second night after the operation, severe maniac conditions set in. They lasted sixteen days. Dr. Fromaget attributes these conditions to a persistent constipation and retention of urine (auto-intoxication). During two days anuria prevailed. Afterward a small quantity of urine was voided. After injections of caffeine, the quantity of urine increased. Such psychoses are sometimes observed after cataract operation in old people.—*Annales de la Pol. de Bordeaux*.

Rinsing Apparatus for Microscopic Sections.—G. Cruz of Rio de Janeiro prevents the loss of microscopic sections of tissue which so easily escape during the necessary rinsing, by the following simple contrivance, described and illustrated in the *Zift. f. Wis. Microscopie*, 1898, No. 15: The fragment of tissue is placed in a conic test-glass, and a glass funnel is placed in the glass, just enough smaller in its circumference than the test-glass, to allow water to pass freely between the two, without space enough for the fragment of tissue to be swept along with it. The water enters through a small-sized glass tube, perforated at its lower end, connected by a rubber tube with the receptacle of water, and a larger funnel-shaped vessel below receives the water as it passes upward between the glass and the funnel and pours out over the edge of the former. —*O Brazil Médico*, November 1.

Wagner and Longard's Ether Inhaler.—The upper end of the mask is not open, but is shaped like a funnel with inhalation valves at the lowest part. The ether is dropped into this funnel, passes through the valves and drops below on a very fine wire sieve, on which it rapidly spreads out. A second sieve is at a little distance below, the space between holding a layer of gauze. As the air is inhaled it carries the ether vapor with it in the finest particles, and the anesthesia is complete in a minute and a half to three minutes in women and youths. Men require four to six minutes. The quantity of ether is only 5 to 10 c.c. for children; 15 to 25 c.c. for women and 30 to 50 c.c. for men and hard drinkers. The chief advantage of this inhaler is that the narcosis becomes complete while the patient is still quietly breathing, with entire absence of any period of agitation. —*Cbl. f. Chir.*, December 3.

Rebreyend's Method of Circumcision.—This method is based on the principle of "total resection of the mucous membrane of the prepuce with almost complete conservation of the integument: sacrificing the minimum of skin to the maximum of mucosa." After anesthesia a narrow strip of skin is resected entirely around the preputial orifice, drawn out in front of the gland with forceps above and below. The integument of the penis is then pushed back all around as much as possible, leaving the preputial mucosa attached to the glans fully exposed. This mucosa is then slit from the front backward, with the scissors, to the back of the crown, and the two lateral flaps thus obtained are excised, leaving nothing of the mucous membrane except a narrow retrobalanic collar. The raw edges of this mucous collar and the integument are then sutured with fine catgut. A thin layer of salve or antiseptic powder is applied to the line of suture, which rapidly heals and is always hidden under the new fold of the prepuce, which is exclusively cutaneous. Loumeau reports twenty patients, including children and old men, thus operated, with the most satisfactory results. —*Gaz. Méd. Belge*, December 8.

Electrization as a Purgative.—G. Hunerfauth of Eisenach has found that the galvanic anode introduced into the rectum will cure chronic cases of constipation and produce a prompt evacuation, even in normal persons when the bowels are comparatively empty. The sensation of a desire for defecation lasts after the evacuation and is of the greatest benefit in cases of neurasthenia and hypochondria, who recover their confidence in the restoration of their lost functional activity. Tympanism is abolished, and solid masses, even coprolithic formations, are expelled. The average treatment is two to five minutes in length; the current two to five milliamperes. If there is a sensation of heat, galvano-faradization is best at first, changing to the continuous current later. The patient is usually reclining on his back, the legs lightly flexed on the abdomen, a bolster under his knees if desired: or the treatment can be administered standing. The electrode for insertion in the rectum is large, conforming to the space inside. It is warmed, vaselined, inserted by the patient, and then held by the physi-

cian, who can thus control the contractions and ensure that it is in contact with the rectal mucosa. There are no injurious effects from this treatment, which he asserts is "not only a symptomaticum but a splendid curativum." —*Deutsche Med. Woch.*, December 1.

Antitoxin in Tracheotomy for Diphtheria.—At a recent meeting of the Ulster Medical Society, Mitchell (*Lancet*, Dec. 10, 1898, p. 1551) called attention to the prevalence of laryngeal diphtheria in the north of Ireland, as illustrated by a mortality of 3402 from this disease in Ulster during the past twenty years, while during the same period in all the rest of Ireland the deaths from the same cause numbered only 3320. The annual death-rate per 100,000 in Belfast and the surrounding district is 14, while the death-rate for Dublin is only 7. The beneficial effect of antitoxin in the treatment of diphtheria and the consequent reduction in mortality were pointed out, while the utility of the antitoxin was more strikingly illustrated by the cases in which tracheotomy became necessary. For years there has been a firm conviction in the minds of the profession in Ulster that tracheotomy in diphtheria offers no reasonable prospect of saving life, and it was therefore performed only on rare occasions, and indeed was rarely recommended. Communication with the leading surgeons throughout the province of Ulster resulted in the collection of eighty-two operations performed for this disease prior to the introduction of the antitoxin. Among these there were only six recoveries (7.5 per cent.). A similar list since the introduction of antitoxin yielded a total of twenty operations, with fifteen recoveries (75 per cent.). The value of artificial respiration after the trachea has been opened in cases in which respiration has been suddenly suspended was particularly insisted upon, and records were given of cases in which this measure had resulted in a restoration of vitality in what appeared to be a death-sleep.

Unguentum Crede—Soluble Silver.—G. Schirmer has treated nine cases of cerebrospinal meningitis with inunctions of 30 gm. unguentum Credé in the course of three days, repeating an inunction of 10 gm. at each remission. Combined with this, very hot water compresses were applied to the spine; the nasal cavities were antiseptically cleansed as soon as the patient's condition permitted, and small doses of trional were given, if very restless. All were children, and recovered rapidly, with none of the after-effects so frequently observed with this disease. Edwin Klebs suggests that infection may be carried through the tissues as well as along the lymph and blood system (*N. Y. Med. Monats.*, November), by the leucocytes, which would explain the success of the inunction, and urges tests to demonstrate this, with Credé's soluble silver, as peculiarly applicable for the purpose. O. Werler considers that Credé has succeeded "with his systematically conducted chemico studies and bacteriologic experimentation in filling a gap in therapeutics that has been long and painfully felt by all practitioners, with the discovery of a specific which, without the slightest injury to the vital functions, removes the cause and cures the dreaded septicemic processes by its intense bactericidal power. In this respect Credé's argenteum colloidalis is absolutely without a rival. In this soluble metallic silver we have an internal therapeutic measure that can be relied upon to successfully control the blood-poisoning due to septic infective substances, if the diagnosis is made in time and there are no serious secondary affections." He finds also that the most effective method to apply it is in inunctions, by which means the medicament reaches the blood by percutaneous absorption, where it ensures an universal antiseptics and disinfection of the entire organism, by the formation of powerfully bactericidal silver salts. He only has three cases to report (*Deutsche Med. Woch.*, No. 40): acute sepsis, a septic affection and chronic multiple furunculosis. The progress of the affection was arrested with inunction, and complete recovery followed promptly in every case (vide *JOURNAL*, xxx, p. 1414).

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance	\$ 5.00
Foreign Postage	2.00
Single Copies	10 Cents

In requesting change of address, give old as well as new location.

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SATURDAY, DECEMBER 31, 1898.

DEATH OF JOHN B. HAMILTON, M.D., LL.D.

It is our painful duty to record the death of the Editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION on the evening of Dec. 24, 1898, at his residence at Elgin, Ill. The immediate cause of his decease was hemorrhage from a perforation of the intestine, communicating with a large abscess outside of the bowel, which terminated life after an illness of less than one month.

It seems hardly necessary at the present time to enter upon a detailed narrative of the life of one who was so widely and well known throughout the entire country. Born in Jersey County, Ill., on Dec. 1, 1847, his years numbered only fifty-one; but they were years that were crowded with incidents sufficient for centuries of ordinary human experience. Descended from a long line of distinguished Scottish ancestors, his father's family was brought up on the rich prairies of the Mississippi Valley, enjoying such opportunities for early education as were afforded by the village school, the country academy and the classic courses founded by Prof. JOHN GRANT, a learned Latin teacher from Edinburgh, who had found his way to the heart of America. Thus trained and exercised in all the practical affairs of country life, from the hay-field to the village printing-office and drug store, young HAMILTON, at the age of 17 years, found himself drawn into the vortex of the Civil War, where he acquired that experimental knowledge of military life and discipline that was of such value to him during the remainder of his days. At the

close of the war he returned to civil life, with an appetite for study intensified by the exercises of the field. Entering Rush Medical College, Chicago, he was graduated three years later with high honors, and immediately began the practice of medicine in his native county. Soon, however, he concluded to essay the career of a military surgeon, and returned to the army of the United States as an assistant-surgeon. Transferred from post to post, he rapidly became acquainted with the vast extent of our territory, and in positions of responsibility gave evidence of that rare ability for the organization and direction of great enterprises that was the prominent feature of his character.

In the year 1876 he transferred his connections, upon most honorable terms, to the United States Marine-Hospital Service. In this service his superior powers at once asserted themselves. He was



DR. JOHN B. HAMILTON.

rapidly transferred by promotion through the round of important stations, rising in rank till within three or four years he had reached the position of Surgeon-General of the United States Marine-Hospital Service. This high office he retained through several different administrations of the National government, winning golden opinions alike from political friends and foes. During this period he effected a complete reorganization of the Service, and contended successfully against repeated invasions of the country by epidemic cholera and yellow fever. Under his direction a rational system of quarantine and isolation was adopted, the necessary encampments were established, and panic gave way to intelligent confidence. In the halls of legislation his influence was as beneficently potent as in the field of medical action, and it is no exaggeration to claim that the most important acts for the security of the public

health by the National Legislature during the past twenty years were originated and guided by the enlightened intellect of Surgeon-General HAMILTON.

But the attractions of civil life finally drew DR. HAMILTON from the sphere in which he had been so long pre-eminent. Always fond of books and the scholastic side of existence, his library grew till it became one of the largest private collections in America. He was Professor of Surgery in the University of Georgetown, and was as actively engaged in private surgical practice as the arduous duties of his high office would permit. Called to the chair of the Principles of Surgery in Rush Medical College, he resigned all his positions in Washington, and removed to Chicago in 1892.

It is at this point that the principal interest of the JOURNAL in DR. HAMILTON is centered. For many years an active member of the AMERICAN MEDICAL ASSOCIATION, he was well and widely known to the members of that National body. An almost universal acclamation summoned him to the editorship of the newly-fledged publication which had undertaken to be the organ of communication between the ASSOCIATION and the medical public at large. The JOURNAL was young in years, and its management was inexperienced, and with comparatively little weight beyond the limits of the editorial sanctum. DR. HAMILTON at once deployed all his administrative faculties, placed everything upon a business basis, and before his death enjoyed the satisfaction of seeing the JOURNAL in the front rank of the medical publications of the world.

Could he have remained satisfied with this victory, DR. HAMILTON might possibly have continued for many years upon earth in the full exercise of his beneficent powers. The leading sanitarian of the country, in all matters of National interest, his advice was sought in every quarter. No medical gathering of National or International importance was complete without his presence. His vigorous form, his genial countenance, radiant with energy and good-will, his persuasive voice, were never-to-be-forgotten features in every such assembly. At home his professional duties, his hospital work, his extensive private practice, were enough to wear out any ordinary man; but he was ever ready to expend his energies in behalf of any worthy cause that appealed to him for aid. In this way he gave much time and thought to the organization of the new Public Library in Chicago, and was most efficient as President of its Board of Trustees. To the surprise of his friends, despite this accumulation of cares, he accepted, in 1896-7, the position of Superintendent of the Northern Illinois Hospital for the Insane, at Elgin, Ill.—an office that heretofore was always considered sufficient to occupy the whole time of an ordinary official incumbent. But the DOCTOR speedily showed his mettle by a reorganization of the administration, that secured

improvement in the care of patients, while leaving time for all his other labors—thus illustrating the old observation that among first-class administrators the busiest men still have the most leisure.

Now, alas, this career of action has reached its limit. As we look back upon its years we can more fully than ever appreciate its magnitude and its beneficent efficiency. DR. HAMILTON was fortunate in finding full scope for his remarkable power as a founder and organizer of incipient enterprises. He was fortunate, also, in being permitted to witness the success of his efforts, and he was doubly fortunate in being called to his reward before age or misfortune or any of the ills of life could dim the splendor of his reputation. He has gone, but his works live, and will forever exhibit the impress of his constructive power.

THE PATHOLOGY OF THE PINEAL GLAND.

If the proverb, "Happy is the nation that has no history," be true for other organisms in general, then the pineal body ought to be regarded as a most fortunate organ. That it has had a history and a most curious one, we have abundant proof, but that was long ago, in the Age of Reptiles, to which the memory of man runneth back or reverteth only under the influence of strong drink, and for the last quarter of a million years, at least, it has absolutely ceased to have a physiology or even a pathology. It lies among the brain tissues as inert and almost as irresponsible to the forces about it as a fossil in the chalk beds. That it can continue to so exist generation after generation is proof either of services of extraordinary value rendered in the past, or some as yet unsuspected function in the present. Comparative morphology assures us that it was probably once a median or "vertical" eye, which still exists in some nearly extinct lizards (Hatteria) and possibly at an even remoter period the opening of the primitive mouth, of which its interesting relative, the pituitary body, was the gullet. That it originally reached the roof of the cranium is of course certain, having been pushed down into its present central position by the huge development and backward growth of the originally anterior cerebral hemispheres, which now cover, in our own species, even the cerebellum or "hindmost brain." But unfortunately these facts give us no clue whatever to its possible rôle in the body economy, for it obviously can not now function in any way as either an eye or a mouth, or anything connected with either.

Nor is there any help to be had from a study of its histology. According to the latest researches (OGLE, LORD) it consists of a dense connective tissue capsule from which fibers pass into the interior and form a loose reticulum for the body. In the meshes of this network are lodged rounded and oval nucleated cells,

whose protoplasm shows a tendency to become either colloid or amyloid, and by fusing with that of other cells gives rise to the *corpora amylacea*, or "starch-grain," concentric-layered bodies. In the fibers of the stroma are found the calcareous particles known as "brain sand." Nothing that can be clearly identified as nervous tissue remains, although there are a few large columnar cells resembling the "rods" of the retina. Like its now celebrated congener, the pituitary body, it was originally a hollow organ and occasionally traces of the central cavity are yet found.

On account of its central position and the way in which it is wrapped up in the choroid plexus, any attempt to remove it in animals must be attended by such serious injuries to the brain and its internal circulation as to give little hope of any reliable results from experiments in that direction.

Its pathology seems almost equally characterless. It may perhaps be said to possess the usual tendency of all vestiges to give rise to tumor-formation, for considering its small size and sheltered position, a relatively large number of new growths have been reported. The commonest of these, however, are simple cysts formed by dilatation of the central cavity, then comes sarcomata, then gummata, and the only form that is at all characteristic of the gland is the psammoma, or concentrically-layered tumor, with or without calcareous deposits.

Worse yet, with the possible exception to be mentioned later, none of these tumors have given rise to any recognizable symptoms whatever pointing to any disturbance of brain or glandular function, other than that due to the pressure of the growth upon surrounding tissues.

A recent meeting of the Pathologic Society at London was devoted entirely to the pathology of this gland and fourteen cases were reported by the members present, specimens being shown from ten of them. Seven were cysts, four sarcomata, one glioma, one gummatous enlargement and one calcareous deposit. One of the cysts was interesting from the fact that its inner surface was lined with cells containing large amounts of pigment, in the very situation where the choroid coat lay in the ancestral eye, and curiously enough, several of the sarcomata were pigmented ones. After the reports of cases were all in the president called for remarks upon the general subject, but the absolute silence which followed was eloquent of the state of our knowledge of the gland even today. In all the cases reported there was only one symptom which was in any way peculiar or was common to more than two of them, and that was prolonged drowsiness, which was present in four. This was of long duration, lasting in one case for three months, and was of unusual character, as it never approached coma and the patient could be readily roused at any time, or would even answer questions without apparently awakening. As Dr. OGLE, who

reported six out of the fourteen cases, pointed out, this was most probably due to pressure upon the choroid plexus and interference with the circulation of the ventricles, but it is an interesting coincidence that Dr. PATRICK MANSON has reported the pineal body as found greatly enlarged in two cases of the singular African "sleeping-sickness." The drowsiness of this disease is precisely of this peculiar, easily-roused and chronic character, lasting for months and gradually deepening into asthenia, unconsciousness, convulsions and death. As there are two advanced cases of this disease in the Seamen's Hospital at the Albert Docks at present, the cranial results of the autopsies will be awaited with much interest.

VALUE OF TRANSFUSION.

This operation was known as long ago as the year of the discovery of America, having been performed at that time, according to some authorities, on Pope Innocent VIII. It was not used to any extent, however, until the beginning of the present century, while it has only been of late years that its value in its various modifications has become very widely recognized. At first performed only for dangerous loss of blood, it has in addition proved most valuable in shock, in uremic and diabetic coma, and in the various affections accompanied by sepsis. During the infancy of the operation, direct transfusion of blood from vessel to vessel was practiced, but this was soon discarded on account of its great difficulties and danger, and some bland and harmless solution was substituted. For when blood was transfused, thrombotic and embolic processes were of common occurrence and often resulted disastrously. In addition it was found that the injected blood corpuscles were rapidly disintegrated, naturally giving rise to dangerous embolic symptoms, and further, that any good accomplished was done by the fluid portions of the blood alone. These investigations were pursued still further until it was at length discovered that it was the quantity, and not the quality, to which the beneficent results could be attributed, and that the fluid acted by increasing the intracardiac and intravascular pressure. At the present day a normal or 0.6 per cent. sodium chlorid solution is used.

Another improvement in operation was introduced when it was found that the fluid could be injected into the subcutaneous tissues, preferably those of the right chest, abdomen and buttocks, from which tissues it would be rapidly absorbed. The advantage in this method is that it can be quickly and safely done, and that it can be performed while operative procedures are directed to other parts of the body. The solution is rapidly brought to the boiling point and then cooled to 100 degrees F, when it is ready for using, all instruments having been thoroughly sterilized by heat. Some operators pour the solution into a large funnel connected with the canula by a long rubber tube

and holding the funnel several feet above the patient, use the pressure thus created to enforce the fluid. Perhaps a better way, and certainly a more rapid one, is the use of the ordinary Davidson syringe attached to the canula.

When the indication is most urgent, and particularly where there are septic symptoms to be combated, an emptying of the vessels of their deteriorated blood and the injection of the saline fluid directly into the vessels (veins) has been advocated, and in a case recently reported by YOUNG (*Maryland Med. Journ.*, Nov. 19, 1898), performed with the greatest success. The patient, a boy of 15 years, had been operated on for purulent appendicitis, the pus fortunately having been walled in by extensive adhesions. Immediately after the operation the patient was in fairly good condition, but toward evening rapidly became worse. There were, however, no local signs that the peritoneum had been involved. When the pulse had reached almost 150, with a corresponding high temperature, he was given a nutrient enema, followed by the injection of 700 c.c. of saline solution into the right breast, and by lavage of the stomach. This brought about a considerable improvement in his condition. The next day after the operation he again became progressively worse, and the peritoneum still being apparently free, it was thought that he had developed a general septicemia. Venesection and transfusion were then decided upon for the double purpose of first withdrawing, and secondly diluting the poisonous material remaining in the circulation. The right basilic vein was opened, but only about two and one-half ounces of blood could be abstracted, so weak was the heart's action; 1300 c.c. of saline solution were then slowly injected, and during the operation itself the condition steadily improved. The next morning the symptoms again becoming dangerous, 2500 c.c. were used intravenously, with the result that the boy was soon practically out of danger.

The history of this case has been entered into rather in detail for an article of this kind, but all must admit the importance of the lessons taught by it. In the first place, very few cases, if any, have been reported in which so large an amount of fluid has been injected. One of the most important points in this double method of venesection and transfusion is that they can be done simultaneously, using one arm for the former, the other for the latter. In this manner the blood-pressure can be readily maintained, a most valuable consideration in a state where circulatory functions are so greatly below par. A third point, as suggested by YOUNG, is that the use of large quantities, intravenously, washes out the veins, as it were, and perhaps to a small extent neutralizes the poisons contained in the blood—certainly dilutes them. In most of the conditions in which this method of treatment was employed, the kidneys, as a rule, are not functioning to an extent anything like normal. The

introduction of this fluid into the body by increasing the blood-pressure and the amount of fluid into the body tissues as well, to some degree, acts as a diuretic, and even the smallest gain in this direction often means the saving of the patient. YOUNG also touches upon an important speculation as to how much dilution the blood is able to stand. He estimates that the body of a normal adult man contains about 4500 c.c. of blood. His patient, he feels sure, had much less, yet 4500 c.c. were thrown into his vascular system and with the greatest benefit. He argues from this fact, that his primary injections resulted in but temporary benefit, that large amounts of the salt solution should be used at the beginning, advocating in an adult man as high as 7000 c.c. He does not think that the small quantities so frequently given will ever be very efficacious. Among other conditions in which these injections might prove of service, the toxic conditions commonly observed in the acute infections, typhoid, and particularly the coma of pernicious malarial fever, must receive special consideration. Of their use in the former disease there is no literature at hand, but in malarial coma several cases are on record with favorable results.

Lastly, the injection of these fluids into the arteries deserves brief mention. It was thought by HUNTER that this method lessened the danger by bringing the blood more gradually into the general circulation. Even if some air were admitted it would here work little or no harm, while if air were received into the veins, venous thrombi might form, which would undoubtedly seriously embarrass the heart's action. The radial artery is the one recommended by HALSTEAD for injection, and the latter authority lays particular stress on the value of this form of operation in fat subjects.

BUBONIC PLAGUE.

The appearance of this disease in Vienna has created some sensation, and has startled experimenters and laboratory workers. It appears that Drs. ALBRECHT and GHON brought from Bombay the bacilli of this disease, and began a series of cultivations and experiments in the laboratory. Animals were inoculated and examined after death and the specific bacillus was isolated and transferred to different animals, and inoculation as a means of prevention was studied.

This work has been going on for over a year with many very interesting results. The two physicians and an attendant were the only persons who came in direct contact with the virus. The attendant fed the animals experimented upon, handled them, and cleaned the floors, and observed all the precautions supposed necessary to prevent accident. He also disposed of the carcasses of the animals. Suddenly he was seized with the plague and died. Two nurses who attended him were taken with the same plague

and died also. Dr. MULLER, an expert, who had been in India studying the same epidemic on the spot, and who visited the attendant, was also seized with the same disease and died.

All the three physicians had been engaged in the profuse cultivation of this bacillus in its most virulent form, and in the study of means of prevention, and were experienced bacteriologists. They knew of the danger and had provided against accidents up to this time. It appears from a court examination that the attendant, although a trained man and very careful, was often under the influence of spirits. It is supposed that he must have neglected some sanitary precaution in laying down his pipe in an infected place and using it again, or in failing to wash his hands after handling the animals. The nurses and the doctor were equally incautious and lost their lives through this neglect.

The facts pointed out by the foreign journals commenting on this event are that very few accidents occur in the extensive laboratory examinations now going on in all the large cities. The most virulent poisons and bacilli are cultivated and handled without accidents, showing what intelligent care and exact work can do. Of course this event gives renewed emphasis to the danger from this bacillus, and shows that the plague can be grown and spread in any community by the slightest neglect of sanitary conditions.

The *London Times*, after describing this incident, makes a strong plea for greater caution and care in the many infectious diseases which pervade the community and are neglected. The soil for the growth of diphtheria, tuberculosis, and other diseases, is found in all communities, only needing the germ to start into great activity. The hospitals and other places where medical men are exposed, are not yet managed as they should be to avoid the danger of these virulent germs. Every year physicians and nurses die from neglect and carelessness, both personal and official. The teachings of laboratories are enforcing the fact in many ways, that most diseases are entities which can be provided against and prevented, also that the germs can be transmitted and carried, cultivated and grown with certainty.

The great study of the present time is to trace these germs back to their sources, to stop their growth, to direct and control them. This plague is one of the great epidemics of tropical countries. It is mysterious, virulent, and usually fatal. A study of the bacillus and its culture has already thrown much light on the causes, and gives promise of prevention by inoculation, and also the possibility of some serum being found to render the person immune from its infection. To the investigations of the laboratories we must look for light on the subtle bacterial enemies, and the means to control and prevent them.

COMMENTS ON THE WORK OF THE ARMY MEDICAL DEPARTMENT.

We have read with much interest the comments of our contemporaries on the work of the Army Medical Department during the Spanish War, as presented to the profession in the abstract of the Report of the Surgeon-General published in the *JOURNAL* of December 3. So far as we can learn, the general view of the profession agrees with our own that the document is an able presentation of the facts, and a clear and impartial statement of all the conditions bearing on them, such as might have been expected from a scientific man whose only object was to reach the truth and enable others to do so also. The difficulties which beset the path of the Surgeon-General of the Army are set forth so clearly that one must be an unthinking reader who fails to appreciate the causes which led to unsatisfactory results in particular instances although these causes may not be specified in each particular connection.

The conclusion which we have reached appears to be that which has been attained by most of our contemporaries, that in view of all the facts it is but just to say that "the efforts of the Surgeon-General and his medical officers to meet the terrors of war were extraordinary, and challenge admiration." That these efforts failed to fulfill their intention of preventing the occurrence of preventable diseases was due to the impossibility of controlling the ignorance of the many by the knowledge of the few. We, as a profession, pride ourselves on our recent advances in sanitary knowledge and particularly as to the prevention of typhoid fever, and we teach that sporadic imported cases are the only cases that should be permitted to appear on the hospital registers of a well-disciplined camp. The Surgeon-General of the Army and his officers knew this as thoroughly as we do, but it was impossible for him and them to hold in control the ignorance of the large number of undisciplined men aggregated in our camps during the past few months. We reached this conclusion long before the report of the Surgeon-General was made public. On Sept. 24, 1898, we stated, in these columns: "It is very evident to one who looks on from the outside, that the difficulties encountered by the Army Medical Department were due to the impossibility of having, in so short a time, an experienced and well-disciplined medical force sufficiently strong in numbers to control the sanitary situation in an aggregation of a quarter of a million of men hurriedly thrown together in military camps." Although the profession as a whole may take a high position on sanitary grounds and claim the ability to protect from certain diseases, the ability of the individual medical man is limited by many and powerful combinations of conditions. One medical weekly considers it shameful that typhoid fever should have spread in our camps, but we do not take such high ground as

this. Typhoid fever has heretofore been a dangerous visitant in every camp of newly-raised troops. When sanitary knowledge is generally diffused and sanitary rules are universally appreciated and followed, we may expect a change in this respect; but recent events have shown that it is too soon to expect this now. All we can do is to strive earnestly for betterment. The daily press has thrown the blame of the occurrence of preventable diseases in our camps on the shoulders of the Surgeon-General, forgetful that if the doctor is to be held responsible, it is not the Surgeon-General, but the regimental surgeon who should be arraigned, for if each regimental surgeon had been an efficient practical sanitarian, able to combat successfully against his insanitary surroundings, there would have been no typhoid fever in the brigades, divisions or corps. One New York daily claimed that the difficulties encountered by the Medical Department were due to a want, on the part of the Surgeon-General, of that general executive ability to put his extensive knowledge to effective use. A valued Eastern journal replied pertinently to this by comparing the conditions suddenly placed before the Surgeon-General of the Army at the outbreak of the war, with those confronting the manager of a large department store whose business, suddenly increased ten-fold, had to be carried on by a 900 per cent. addition of awkward and unskilled labor to his regular force of trained workers. The powers of one man, however forceful, intelligent, skilled and highly educated, are limited. He might be capable of directing and organizing an enormous force of trained employees under trained subordinates, but if the bulk of the material is raw, and unused to the special methods and routine of the work, it is beyond the limit of human power that one man should be able to control the working. Not only was the Surgeon-General unable to do this but each of his subordinate officers, chief surgeons of corps and divisions and in charge of large hospitals, had to cope with the same difficult duty of attempting to make bricks without straw, or to make skilled out of unskilled labor, while hampered by an insufficiency of even the raw material.

We regret to find one medical weekly reiterating this charge of the daily paragrapher and laboring heavily to sustain the position assumed, to-wit, that with an earnest and forceful man at the head of affairs the medical history of the war would have read differently. An astonishing amount of ignorance is displayed in the attempt to build up the argument: ignorance of the history of the Medical Department, of the history of the present Surgeon-General, and of the history of the war as stated in the report which gives rise to the criticism. Medical men, in their intercourse with the laity, have frequently occasion to note how the intricacies of a difficult technic subject can be overlooked and the whole

be grasped to his own satisfaction by one who has but little knowledge of the subject. Bold assumptions are brought forward to clear away difficulties and make the path straight. Some thoughts of this kind arise in our mind as we read that the inadequate number of officers of the Medical Department ought to have been recognized by the Surgeon-General before the events of the war forced its recognition upon him. The assumption that nothing was done by Surgeon-General STERNBERG or his predecessors in office is not borne out by the history of the Department. Again, the editor brings into prominence the rush service, which was so creditable to the energy of the Surgeon-General, as demonstrating only a discreditable lack of intelligent preparation. Every newspaper knows that the hands of the Secretary of War, as of the Surgeon-General, were tied until Congress had taken action in the case. The Secretary of War can no more be blamed for failing to have 250,000 disciplined men on hand, prior to the declaration of war than can the Surgeon-General for failing to have a field medical equipment for such an army. Neither could act until Congress had given the authorization and provided the funds. The ignorance displayed becomes somewhat less childlike when the credit given to Lieut.-Col. J. V. D. MIDDLETON for his able management of medical affairs on the Pacific Coast and in fitting out the Philippine expeditions, is twisted into a reflection on Dr. STERNBERG'S administration. The insinuation is made that Dr. MIDDLETON was too far away to be hampered by central office bonds. This is strange and suggestive of an animus, for in the Surgeon-General's report are numerous instances of difficulties surmounted by subordinates as soon as they put themselves in communication with the central office in Washington. The prime reason why the medical supplies of the Philippine expeditions were always on hand when required was because Dr. MIDDLETON was independent of the Quartermaster's Department. His depot was within a block or two of the wharves, and instead of having to turn supplies over to the Quartermaster for transportation, he was able to have them delivered direct.

The existence of an animus suggested by the insinuated assumption just mentioned is strengthened when we find the editorial columns lowered to the following personality:

When a man who had reached the Surgeon-Generalcy through political methods, whose life training had been that of a laboratory man, whose life had been practically devoted to research work in bacteriology—and good work it had been—is brought suddenly face to face with the problem of the nation in war, it is not surprising that he should have found it impossible to meet the conditions.

Those who know most of the history of the Army Medical Department know that politics had nothing to do with Dr. STERNBERG'S elevation to his present high position. His selection by Mr. CLEVELAND was due to the ability which he showed in discharging

duties in connection with National and international sanitation. Nor has his life training been that of a laboratory man, for his work for twenty years had been that of an army surgeon until his assignment on the Havana Commission imposed bacteriologic work upon him; and this new work, as the world knows, was done as efficiently as that earlier work which, though less generally known, sufficed to bring him into prominence as the best man for this important assignment.

Few of our contemporaries have discussed the remedial measures for the conditions described by the Surgeon-General. The medical weekly last cited proposes a vague reorganization with, "A commission of a dozen or more men, leaders in the profession, experts in special branches—in hygiene, sanitation, medicine, surgery, pathology and bacteriology—might be selected throughout the country and made an advisory body." We submit this proposition of a commission of able men who know nothing of military matters for what it is worth. For our own part, the remedial measures appear to be simple: Strengthen the Medical Department of the Army by making its numbers sufficient, and increase its efficiency by liberating it from its dependence on the Quartermaster's Department.

CORRESPONDENCE.

The Commission Evil.

NEW YORK CITY, Dec. 19, 1898.

To the Editor:—In response to my request for specific information about instances in which the specialist has paid commission to the general practitioner for referred cases, I have received several communications which indicate that the practice is not uncommon in a section of our country which is renowned for its "hustling" spirit. Personal inquiry among representative members of the profession in New York convinces me that my first impression was right, and that a division of the fee is never likely to become a practice here, excepting in instances where the patient agrees to pay a definite sum for the entire management of the case. This is rare, and would be an openly conducted transaction. I am in a position to see two sides of the matter. I have dropped from my practice everything excepting operative surgery, but during the year a good many other sorts of cases come in, which are referred to men who I believe are best authority. If any one of these men had been in the habit of offering a commission it certainly would have come to my knowledge, and further, he certainly would never have another one of my cases. On the other hand, I am constantly in contact with physicians who bring cases from all over the country, and not one of them has ever suggested that he would like a commission. As some of these physicians have come from the commission-infected area, they must have lost the symptoms on arrival in our atmosphere.

Payment of commissions would undermine the very pillars and foundation of responsible medical service, and would instantly bring us down into competition with charlatans. It is apparently a fact, however, that the commission evil has gained a foothold in a small part of the country, and perhaps very good land has been invaded by the Russian thistle. In order to keep reputable specialists who are subjected to the unfortunate influence of the commission evil, I propose that at the

next meeting of the AMERICAN MEDICAL ASSOCIATION a resolution be adopted to the effect that any practitioner of medicine who gives or receives a commission for cases referred to or by him, shall be expelled from membership in the ASSOCIATION. I also propose that specially printed, conspicuous cards bearing a copy of this resolution be given to the secretary of the ASSOCIATION for distribution to applicants. Any one who needs to protect himself can display the card in a manner suitable to an occasion.

ROBERT T. MORRIS, M.D.

Carcinoma of Breast and Tubercular Abscess.

SAC CITY, IOWA, Dec. 20, 1898.

To the Editor:—The apparently increasing tendency of tubercular abscess and carcinoma of the mammary region leads the writer to briefly recite the history of a case on whom he operated for such affections:

Mrs. S., white, 30 years of age, called at my office for treatment for rheumatism, complaining of intense pain in the chest. She had constant dread of cancer of the breast. On the right breast, just below the nipple, a growth was noticed, about the size of a walnut. The other breast was normal. There was enlargement of ankle-joint, pain in the fingers, but the glands did not seem to be enlarged. There was discoloration of the right nipple, which was somewhat retracted. There was a history of tuberculosis on the father's side, and one aunt and sister had been operated on for cancer. Her urine was acid in reaction; sp. gr. 1025; excess of urates; pulse 80; temperature 100 degrees. The child had been taking the left breast, so I advised removing it at once and recommended thorough operative interference. She submitted, and on Nov. 28, 1898, I removed the growth from the breast. Abscess was also found in front of the tumor.

She rallied from the effects of the operation, and after three weeks was able to attend to her household duties and seems to be gradually improving.

I examined the specimen and found tubercle bacilli in the abscess around the growth. In the middle of the growth a specimen was taken and prepared for microscopic examination, and the cancer cells could be plainly seen. Is there any connection between tuberculosis and cancer in regard to the germ theory?

LEWIS E. MAKER, M.D.

PUBLIC HEALTH.

Plague Epidemic in Samarcand.—The prompt and effective measures of the Russian Government seem to have stamped out the plague in Russian Turkestan. In the first three weeks 219 died, but only 19 since, and no new cases have been reported of late. Medical observation stations were established all over the country, forming a close cordon around the infected village and along all the roads, stations and ports on the Caspian, with flying medical squadrons constantly on the alert, and reserves of physicians in all the principal Russian and Siberian cities. The *St. Petersburg Med. Woch.* states that the physicians on duty in Samarcand are to receive 3000 roubles for their three months' service.

The Spread of Tuberculosis.—Dr. Russell, city health officer of Glasgow, Scotland, in an official report, corroborates many long entertained views of investigators. He points out that, in respect to phthisis, which is the chief form of tuberculous disease from which arial infection can arise, the measures of prophylaxis may almost be summed up in individual care to prevent the dissemination of dried sputum in dust, and in the general adoption of improved dwellings to avoid overcrowding and to insure ample sunlight and free movement of air; in fact, the risk of direct communication of the disease from the

sick to the healthy is really as nothing, compared with the overloading of the atmosphere with infected dust, which may be introduced with food as well as inhaled. Another notable point made in this report is that of the factor of individual vulnerability—the removal of the natural barriers to the entrance of bacilli by catarrh and ulceration, and the lowered vitality of blood and tissue, which enables the invading microbe to prevail in the struggle for existence.

Notes for Health.—A journal for invalids offers the following *mélange* to its readers: "Rest is a fine medicine. Let your stomach rest, ye dyspeptics; let your brain rest, you wearied and worried men of business (Carlyle). . . A cup of very hot milk taken at bedtime will effectually prevent sleeplessness. . . An old physician once said: 'If people fully realized what it means to themselves to laugh, and then laughed as they should, 98 per cent. of the doctors would have to go out of business'. . . A plentiful diet of onions served in various ways, will protect children from many ills (*Boston Cooking School Magazine*). . . The perfume of flowers adds activity to all organs, especially those of digestion. For this reason, among others, the guests at banquets in ancient times were crowned with roses."

Dangerous Filters.—Persons who rely upon domestic filters to purify water for household use will be interested to learn that, on the authority of the State Board of Health of Maryland, such filters may steadily lose efficiency until they become first-rate culture-beds for bacteria. An example cited is that in the case of a man in Baltimore who sends the whole water-supply of his house through a large filter, and subsequently puts his drinking water through one of the small domestic filters common in the market. A test showed that on a day when the city taps were running 510 bacteria to the cubic centimeter, the large filter was delivering 9900 bacteria in the same quantity of water. When the large filter was repacked, only nine bacteria per centimeter got through it, but this same water, when passed through the small filter came out with seventy-one bacteria per centimeter. A further example cited is from the office of the Baltimore Health Department, where a filter, supposed to be the best in the market, was in use. The effectiveness of that filter was so short-lived that the precaution was observed of boiling the water after it was filtered.—*Sanitary Record*.

New Orleans Board of Health and Yellow Fever.—This Board has published a circular addressed especially to the medical profession, anticipating a visitation by yellow fever the coming year. It signals the importance of educating the public in preventive measures. Some of the suggestions offered are the following: "It is a well-known fact that sunlight and oxygen destroy the germs of disease. In the case of yellow fever, cold is a potent factor in such destruction. Let us then give Nature a chance, during the present winter, to destroy with her own inexpensive agents any possible remaining vestige of infection left over from the summer. Let our houses be thrown open on every cold and clear day as much as is practicable, more especially the bedrooms. Let the clothes and bedding, curtains and all woolen, linen, and cotton materials be frequently aired and sunned. And most particularly let the clothes worn during the past summer be frequently subjected to the disinfecting influences of cold, fresh air and sunlight. Trunks, chests, armors, closets and bureau drawers should be opened and emptied of their contents during cold and clear weather; and fresh, cold air should be permitted to circulate in the remotest corners of the house among articles which can not be moved to the sunlight."—*N. O. Med. Surg. Jour.*, December.

Radical Measures for the Obliteration of Malarial Attacks.—Levkovicz, in the *Przegląd Ckarski*, offers a peculiar recommendation for the radical cinchonization of the entire population of

a fever-infested district. His scheme is to so organize the procedure that during one and the same winter all cases of malarial fever should be brought to a conclusion, either by recovery or, in fatal cases, death. In this way the site of infection would be destroyed, and in the coming spring no new cases of malarial disease would be observed. But, as it is next to impossible to locate all malarial patients in a given region, he suggests and recommends submitting the whole population in said malarial regions, *notens volens*, to a treatment of quinin. For adults, he would prescribe one gram, or 15 grains, per diem; children, according to their age, a corresponding quantity. This treatment should be employed as a prophylactic during a fortnight. In the old paternal governments of Europe such a suggestion, if approved by the home secretary, may become a sanitary police regulation and be enforced; but a similar suggestion would have little chance of successful hearing in these United States, where personal and individual liberty is so highly prized and so jealously guarded that even a universal vaccination of the virus of smallpox can not become, or at least has not become as yet, a matter of legislation, and only by the indirect means of exclusion from the public schools, or in the army and navy by direct regulation, has the administration or have the State sanitary authorities been able to make propaganda in this respect. But the mere idea to submit a whole population, or part of a population, whether they wish it or not, when yet healthy, to such a treatment, would seem to the majority of the people utterly absurd.—*New Orleans Med. and Surg. Jour.*, December.

Medical Inspection in Municipal Schools.—The municipal authorities of Berlin have decided to appoint medical officers to the municipal schools. This step will certainly meet with the general approval of the medical profession, which has for a long time past recommended medical supervision of schools. According to the instructions drawn up by the municipal school board, the duties of these medical officers will be as follows: 1. They will examine children as to their state of health before they enter a school; 2, in cases of bodily or mental abnormalities they may recommend the adoption of special instruction; 3, they will have to look after children who are absent from school without sufficient reasons; 4, they will have to advise the head master in cases of infectious diseases; 5, they must give notice to the school board when they have found the health of the children unfavorably affected by the unhygienic conditions of a school; 6, they will have to be present at a certain hour at the school once a fortnight so that the masters may obtain their advice in individual cases; 7, they will have to control the class rooms without reference to the hours of instruction; 8, all the medical officers of schools will have to meet regularly under the presidency of a member of the school board to discuss matters relative to the hygienic conditions of schools, etc. The duties of these medical officers will thus be rather complex, and a good deal of tact will be required on the part of these gentlemen to avoid friction with the teachers or with the family medical attendants of the children. A large proportion of school managers and teachers is opposed to the appointment of these medical officers because they are anxious that their own authority shall be supreme in everything that belongs to the schools, and they are of opinion that the medical men may eventually undermine discipline. These apprehensions, however, seem to be unfounded, for a similar system has given satisfactory results in other towns, for instance, in Wiesbaden.—*London Lancet*, November 19.

An English Life-Table.—We have before us a recent report by Dr. Tattersall, the medical officer of health of Oldham, in which he has published a life-table for that city that will prove to be an additional evidence that the only completely trustworthy means of measuring the incidence of mortality in a given locality is gradually coming into more general use. This

is the seventh in the series of life-tables dealing with the mortality of different English towns during the decennium 1882-90. These, in the order of their appearance, so far as we can remember, were for Manchester, Brighton, Glasgow, London, Portsmouth and Haydock. According to *Public Health* for October, this latest report is a valuable addition to the list, especially as it is the only one except the life-table for Brighton which is constructed by the graphic method first applied to this purpose by Dr. Newsholme. Dr. Tattersall reproduces the description of the graphic method from the Brighton life-table, and his four plates are excellent practical illustrations of the method, which will be useful to others who decide to adopt this comparatively simple and very elegant method of obtaining the necessary data for a life-table. The method is not only very elegant, but accurate. Some of the main results of the life-table may be briefly mentioned. The expectation of life at birth in Oldham for males is 36.9 years, as compared with 34.7 in Manchester, 35.2 in Glasgow, and 43.6 in Brighton; while at the age of 10 the expectations of life, taking the towns in the same order, are 43.8, 42.7, 44.3 and 40.1 years. It is somewhat surprising to find, as Dr. Tattersall points out, that the expectation of life in Oldham is so little better than in Glasgow, in view of the facts that the population of Oldham is very well paid, well fed and well housed. Something may be due to the bleak and exposed position of the town, on the verge of the Pennines and built on clay. This view is supported by the excessive mortality among the old people, though all ages show an excess. Thus, among 100,000 males born, the number surviving in Oldham at 10 years of age is 67,157, as compared with 81,182 in the healthy districts; while at the age of 60 years there are only 27,308 left, against 52,507 in the healthy districts. Thus, while under favorable conditions more than half the children born are remaining alive at 60 years of age, in Oldham little more than a quarter survive.

Soil Disturbance and Malarial Fever.—The *Indian Medical Record* contains an article by Dr. Moore of Darjeeling, in which he contends that disturbance of the soil has come to be inculcated as the cause of malarial fever more frequently than is just and proper. In the extensive construction of canals and railroads frequent outbreaks of malarial fever occur, but is it not more likely that the cause is the waterlogged condition of the soil due to the subsoil drainage being interfered with, and not the soil disturbance? He cites two instances of outbreaks of malarial fever occurring in France, said to be caused by the extensive disturbance of the soil in constructing railways. When agricultural colonies are founded in Algiers these outbreaks occur. M. Armand, in his very able work, "*L'Algerie Medicale*," explains this as being due to the hardships endured from defective food, less refreshing sleep, exposure, more continued, and more directly the vicissitudes of the climate, to which the rising colony is exposed during the endemic-epidemic season. Considering that the fact of being in camp all the summer has a deteriorating effect upon the health of the men, even when no work is done, how much more will the effect be felt when all the fatigue attending the establishment of a colony has to be encountered. The work of installation and construction does not involve as much disturbance of the soil as the subsequent tillage of the land, yet it is during the first summer that the state of the men's health is least satisfactory. The same statement applied to the troops in the early days of Hong-Kong, and, as in Algiers, the greatest amount of fever did not correspond with the greatest amount of soil disturbance, a point indispensable if the two things are to stand in the relation of cause and effect, while in all cases the men were living under conditions of great exposure and badly housed. There are, then, three distinct classes in which all the cases where soil disturbance has been accused of causing malarial fever may be placed: 1. Where the disturbance of the soil has interfered with subsoil drainage and caused

a marsh or allied condition. 2. Where the outbreaks of fever have been coincident with works executed in the soil, but not due to the simple disturbance of the soil. 3. Where malarial fever has been caused by a specific poison, released and brought into evidence by the breaking up of the soil. Of course, falling into the first category there are plenty, but the author says it is a misnomer to speak of them as caused by soil disturbance. Of the second class there are also plenty; they belong to the type of a gentleman contracting the fever by digging in his garden. These cases are valueless. That malarial fever is caused in the manner specified in the third category there is not sufficient evidence to show.

Ambulance Work in London.—Dr. Heaton Howard, editor of *First Aid*, and the editor of *The Critic* (both of London) are making a struggle for a sensible and up-to-date ambulance service. The "little ward on wheels," as it is found in Paris, Vienna and several American cities, is unknown to London, except so far as the provision that has been made by the Metropolitan Asylum Board for the transportation of the infectious-sick. The editor of *First Aid* advocates the establishment of several stations, having telephone connection, and supplied with either horse or electric motor wagons, having a surgeon and supplies suitable for the "first aid" of those who fall sick or become injured in the streets. "This kind of service," says *The Critic*, "is a matter that should come home to every citizen; for he is, if seized with sudden illness or the victim of accident, absolutely at the mercy of the first good-natured bungler who cares to seize upon him. Even if the guarantee of immediate skilled treatment in case of need should cost double the \$750,000 estimated as necessary for the preliminary organization, and treble the \$200,000 per annum suggested as the cost of maintenance and development, I do not think the average ratepayer would grudge the outlay. He already pays large sums for reading-rooms and museums which he does not always frequent, for parks which he seldom visits, for bands that do not irresistibly attract him, for baths which he does not often enter and many other public purposes, all good in their way, but each intimately affecting a section only of the population. An efficient ambulance service is as necessary as a gas-supply or a fire brigade; and no one can possibly supply it for himself. Thus it becomes a public concern." Another writer advocates an arrangement by means of which horse ambulance wagons are placed at the fire stations and worked by the fire brigade. Local conditions, as noted, unfavorably affect the adoption of any of the first three methods, and the fire brigade, from the nature of its duties, is the most suitable body to undertake the work; the firemen are already trained in the management of horses and in driving rapidly through the streets; the public are also accustomed to clearing the streets to make way for the brigade. The duties of the firemen are more intermittent and less onerous than those of the police: these duties are much less during the day, when accidents are more numerous. Their work also trains the firemen to act with more deliberation in an emergency, a great desideratum in dealing with an accident when surrounded by a crowd of excited people. "Ambulance wagons worked by fire brigades have been in use for some time in the following places among others: Sheffield, Leeds, Leicester, Halifax and York, and have rendered most satisfactory service." The expense, which is always a serious consideration in advocating new departures, is, in this case, not very formidable, as once the initial expense was accounted for, the cost of maintenance would be a very slight addition to the cost of the fire brigade. With regard to the powers of the corporation for incurring expense in this connection, we may cite the following opinion from a report of the chief constable of Liverpool on the police ambulance system recently inaugurated in that city: "It may be well in conclusion to mention that the corporation have been advised that they were legally entitled to take the action they have done, in-

asmuch as the removal of the sick and injured persons from the streets is an important portion of the duty of the police, and that charges for instruction to render them efficient may properly be met the authorities."

Camps on the Pacific Coast.—Sanitary and insanitary conditions at Camps Alger, Thomas, Tampa, and other places in the East, have become familiar by newspaper description and by testimony before the Commission on the Conduct of the War Department, but information from the Pacific Coast has rarely appeared in Eastern journals. The following from the annual report of Gen. H. C. Merriam, by Lieut. Col. I. V. D. Middleton, deputy surgeon-general, is of interest in showing medical conditions on the west side of the Continent:

The first camp on the Presidio Reservation (Camp Merriam) was well located as to soil, drainage and water-supply, the latter coming from one of the city mains and conducted by pipes to every part of the camp. The ground gradually slopes toward the bay and the drainage is excellent. The remaining troops of the expedition are now camped on this location. The weather during the early part of May was moist and chilly, unusually so, and the troops, being unaccustomed to camp life, soon contracted ailments incident to exposure, such as nasal and bronchial catarrh, diarrhea, etc., of which there were many cases. Unfortunately, the Oregon Volunteers brought with them a few cases of measles; these were isolated by being sent to the Presidio and Fort Mason post hospitals, but the disease spread quite rapidly and many cases were treated in the regimental tent hospitals, in consequence of which pneumonia supervened in a few cases, which were sent to the Presidio post hospital. As regiments were arriving daily, it was found necessary to secure a larger camping-ground, and I learned that the military authorities had, without consultation with any officer of the Medical Department as to hygienic conditions, selected the race track and the sand dunes adjoining, designating the encampment as Camp Merritt. It was an objectionable location, on account of its exposure to the wind and fog, its bad drainage and the constant drifting of the sand upon which the tents were pitched. The sinks were improperly located, being on a line with the company kitchens, and I may here remark that the Medical Department had nothing to do with this arrangement. The sand in the vicinity of the kitchens and around the tents, through the carelessness of the men, soon became polluted and was blown into the kitchens and mess tents. Soldiers were permitted to come to the city by the hundred every day, and many of them would return to camp late at night, some under the influence of liquor, riding on the "dummy" of the cable-cars, without overcoats and with their blouses unbuttoned. A large number of men of each regiment reported at sick call every morning, and a large proportion of them were admitted to the sick report, the prevailing ailments being nasal and bronchial irritation due to exposure to cold, and errors of digestion, diarrhea, etc., due to imprudence in eating and drinking. The Tennessee regiment brought measles to this camp, and it spread very rapidly. During the months of June, July and August, the reports on file show 660 cases of measles. This disease complicated most of the serious cases of pneumonia, numbering 145, from which 43 died. Typhoid fever made its appearance during the latter part of May, and 121 cases, with 13 deaths, are recorded for the months of June, July and August. The water was carefully examined from time to time, but was found to contain no bacteria of a pathogenic nature, the disease being propagated in all probability by the contamination of the food by the drifting of polluted sand, and may have been carried into the kitchens and tents by the flies that swarmed in and around the sinks, kitchens and tents. Thirty-six cases of cerebrospinal meningitis also occurred, with sixteen deaths.

The division hospital was established at Camp Merritt June 2, by Lieut.-Col. Henry Lippincott. A sufficient number of hospital tents, placed end-to-end, in pairs, were pitched on the sandy plain to accommodate 100 patients, but soon its capacity was increased for 200, and finally 300 patients. Major W. O. Owen, U. S. V., was in charge of this hospital. As serious cases of pneumonia and typhoid fever could not be properly sheltered and afforded an equable temperature under canvas, they were sent to the Marine and French Hospitals, close by, where they received excellent attention under the direction of Dr. James Gassaway, United States Marine-Hospital Service, and of the superintendent and physicians of the last-named hospital, due acknowledgement of their courtesy and valuable assistance having been expressed in letters to them by Dr. Owen and myself. On several occasions I urged the abandonment of the camp, and on July 21 the division hospital was re-

moved to the new barracks at Presidio, which were vacated by the troops of the garrison in order to accommodate the hospital. Here the patients were placed under far more favorable hygienic conditions than the canvas hospital can possibly afford, and the barracks were soon fitted up with all the comforts and conveniences that would facilitate the recovery of the sick. Wire netting and shades were put in the windows and all articles required for making it a first-class hospital were purchased and put in place. Thirty female nurses were employed, a sufficient number of physicians were contracted with, good cooks were obtained and, under the management of Major W. S. H. Matthews of the Fifty-first Iowa Vols., who has proved himself to be a good administrative officer, the hospital has been put in the very best order and condition obtainable under the circumstances, as the buildings were not constructed for hospital purposes and the ventilation is by no means perfect, the rooms are not of proper size or shape for wards, and the kitchens and mess-rooms are too far distant. The troops moved from Camp Merritt to the Presidio Reservation (Camp Merriam) in the following order: Fifty-first Iowa August 1, Twentieth Kansas August 5, First Tennessee August 18, Seventh California August 24, United States Infantry and Oregon Recruits August 27, and this was the final breaking up of Camp Merritt. This camp (Merriam) is now in excellent condition by being kept as clean as possible. The sinks are at suitable distances, emptied of their contents three times a week, and thoroughly disinfected twice daily; they are unobjectionable and not likely to cause sickness. Water is supplied from a city main and carried to every company, where there is a hydrant, the waste water being conducted off by means of drains. The cooking has been much improved, attention is given to bathing, and the men, better disciplined, are better able to take care of themselves. The sick list has been much diminished.

NECROLOGY.

T. H. HUZZA, M.D., Atlanta, Ga., died in New York December 9, as a result of an operation for appendicitis. Dr. Huzza was born in St. Louis, Sept. 12, 1863, and was graduated from the Jefferson Medical College in 1887, later doing special work in the Philadelphia Lying-in Charity Hospital, the Philadelphia Obstetrical Infirmary and the Pennsylvania School of Anatomy and Surgery, and was a gynecologist of some repute.

C. S. HOYT, M.D., Canandaigua, N. Y., died of pneumonia, December 13. Dr. Hoyt was born in Connecticut in 1822, received his degree of M.D. from the Geneva Medical College, and until the Civil War began practiced in Yates County, N. Y. He then enlisted in the 126th New York Volunteers, resuming his practice after the war. In 1867 he was elected to the Assembly, and in 1868 became Secretary of the New York State Board of Charities, since occupying that position.

JAMES LAWRENCE TYSON, M.D., University of Pennsylvania, 1838, died December 10, at his residence, Penllyn, Pa., in his 86th year. He was a descendant of the Celebrated Dr. Edward Tyeon of London, whose descendant, Rinear Tyson, emigrated to Pennsylvania in 1683. Dr. Tyson was born in Philadelphia, Nov. 19, 1813. In 1854 he was elected professor of medicine and therapeutics in the Philadelphia College of Medicine. For several years he was physician to the Wills Eye Hospital. He was one of the founders of the Howard Hospital, and for many years one of its physicians. While in California he was surgeon-in-chief of a hospital in the northern gold region. He was a member of the Philadelphia College of Physicians before he moved to Montgomery County.

JOEL ALLEN, M.D., Burlington, Vt., a graduate of the Medical Department of the University of Vermont, Class of 1875, died at his home, December 6, aged 48 years. Dr. Allen was a member of the Vermont State Medical Society and the Burlington Clinical Society, and attending physician to the Home for Friendless Women and Home for Destitute Children.

A. S. BALDWIN, M.D., Jacksonville, Fla., died December 8, at the age of 88 years. He was born in New York; located in Jacksonville in 1838, and, at the age of 27 years, served as one of the defenders of the State in the Seminole War. His

early education was secured at Hobart College, Geneva, N. Y., from which he later received the degree of M. D., in 1838. In 1852 he was chosen to represent his county in the Florida State Legislature, and during the first session secured a charter for the Florida Central Railroad, later becoming president of the company organized. In 1858 he became State Senator and, as a member of that body, when the Civil War broke out strenuously opposed secession. He was for twenty years meteorologic correspondent for the Smithsonian Institute, the reports being the first scientific exhibition of Florida clinical literature. He was also corresponding member of the Boston Natural History Society and a member of the American Scientific Association, and is credited with having organized the first medical society in Florida, the Duval County Medical Society, and in 1873 the Florida State Medical Society, of which he was the first president.

DEATHS ABROAD.

VON KLAR of Prague, prominent in official circles and in his specialty, the care of the blind, is dead. He recently added a kindergarten to the Klar Institute for the Training of the Blind, founded by his father, to which he has devoted his best energies all his life.

LAWRENCE B. HOFF, M. D., died in his 40th year, October 9, of cardiac trouble, in Coast Hospital, Little Bay Ultimo, a suburb of Sydney, New South Wales. He was a son of the late Louise Bainbridge and the late Rear Admiral H. K. Hoff, U. S. N. Dr. Hoff was born and brought up in Germantown, Pa. He was his father's chief clerk when the Rear Admiral went to Havana in a United States warship several years ago. Dr. Hoff was a graduate of the University of Pennsylvania and practiced in Germantown. In New York City he was at one time librarian of the Twelfth Regiment New York State Militia. He went to Australia about five years ago. His death only recently became known to his friends through a returned unanswered letter.

SOCIETY NEWS.

First All-Russian Congress of Hydrology and Balneology.—This Congress opened in December, at St. Petersburg, under the most favorable auspices. The government appropriated 18,000 roubles, and members to the number of five hundred were given free first-class passage to and from the Congress at any time between November 20 and January 19.

Society of Washington Ophthalmologists and Otolologists.—The December meeting of this society was recently held at the residence of Dr. Burnett, Dr. J. H. Bryan, vice-president, in the chair. Dr. Burnett read a paper, reporting a case of double nasal hemianopsia. The paper was discussed by Drs. Belt and Muncaster. Dr. Burnett also reported a case of severe injury of the ear, in which he performed a plastic operation, restoring the meatus auditorium externus, which was discussed by Drs. Bryan, Suter and Richardson. Dr. Charles W. Richardson read a paper on "Thrombosis of the Lateral Sinus," and reported a case upon which he had operated, ligating the jugular. The paper was discussed by Drs. Bryan, Burnett and J. J. Richardson.

MISCELLANY.

Examining Michigan Recruits.—"Don't this old injury hurt you when you attempt to run?" asked the examining surgeon of a candidate for enlistment. "Course it does. If yer looking for soldiers what's goin' to run, just count me out."—*Detroit Free Press.*

Sanatorium and Sanitarium.—Some uncertainty apparently exists as to the use and significance of these two words. A "sanatorium" is a place to which the sick go to get well. The word is derived from the Latin, *sanare*, to heal. "Sanitarium" is derived from the Latin, *sanitas*, health, and is considered by lexicographers an improper form for "sanatorium." There is no sound reason in having two words so nearly alike to convey the same idea, particularly when one exists without the sanction of authority. There is, therefore, good ground

for preferring the word "sanatorium" to its counterfeit "sanitarium."

Neurofibroma.—Menke reports a case of a large plexiform neurofibroma above the iliac crest, with others smaller on the neck and trunk. The patient was a vigorous young man, and nothing to explain the etiology was discovered. The head was free.—*Vienna Klin. Rund.*, November 27.

Don't Forget General Wood.—The *Sample Bag* asks, "Why did we beat Spain?" Because we are as strong as Sampson, we are as Schley as a fox, we are Miles long, we possess Merritt, we are Hobson's choice, what more Dewey want? . . . Only this—after the war is about over, the public in General Wood commit the care of the Cuban cities to a medical officer.

Sickness at Manila.—A correspondent of the New York *Herald* writes that sickness is on the increase among our troops at Manila, and adds that there is a rigid censorship as to the health conditions of the forces. The authorities do not censor private letters, and every man in every regiment may write in a much more alarmist fashion than would the newspaper correspondents, in any event. The soldiers must all see the great increase in the sick-rate. The California regiment, which was the healthiest on the ground up to the time the city fell, has more than 150 men ill now, and has been compelled to secure a hospital of its own. There was no more room in the division hospital, which answered all the needs of the Spanish garrison before we came.

A Regrettable Omission.—The "printer's devil," or some other imp, is responsible for the oversight which led to the omission from the list of the newly elected officers of the American Public Health Association, in our report of the recent meeting of that body at Ottawa, Canada (vide *JOURNAL*, p. 988), of the name of the first vice-president for the year 1898-99—Dr. Henry Mitchell of Asbury Park, N. J., secretary of the State Board of Health of New Jersey, who was nominated for the office by the Advisory Council, without a rival candidate. The Association has honored itself by placing in its second office a sanitarian of such recognized merit and a health officer of such indomitable energy.

Sporozoa of Carcinoma.—Jurgens has succeeded in isolating from the mucus surrounding the neoplasm a micro-organism evidently belonging to the Gregarinidæ in a number of cases of cancer of the stomach and one cancer of the bronchi, in which the air-passages were occluded, resulting in a collection of several generations of the sporozoa. It is much larger than the usual Gregarina, which he explains by the discovery of the fact that the micro-organism develops by the conjugation peculiar to this species, the two bodies blending to form a single large one which invades the cell until the shell of the cell, enclosing the micro-organism is all that is left of it. In this condition it resembles Miescher's tubes and Rainey's bodies, and he queries whether they may not be developed Gregarinidæ. Further particulars are given in the *Klin. Therap. Woch.* of November.

Picrotoxin.—The conclusions of a recent study of the cocculus indicus and picrotoxin sent in to the Paris Académie de Médecine are that it is a dangerous poison, with an almost exclusively bulbar action, extremely slow of absorption and impregnation. It is the type of a bulbar convulsive, and has no direct effect upon the muscular fiber. The cardiac and respiratory manifestations depend upon the effect produced on medulla, although to this must be added a certain influence of the toxic substance on the nerves of the vegetative life. The central influence is also responsible for the salivary and intestinal hypersecretion observed in the dog, and the sudoral, salivary and lachrymal hypersecretion in the horse. The writers are extremely pessimistic in regard to its application in therapeutics.—*Bulletin*, November 15.

Ligation of Mesenteric Artery.—One of the rarest lesions in a "buffer accident" is a rupture of a branch of one of the mesenteric arteries. Such an accident occurred recently to a railway porter and he was admitted in a state of collapse into the London Royal Free Hospital. As the collapse seemed to diminish, operation was temporarily postponed, but later, as it was again increasing, it was decided to operate. Mr. Roughton opened the abdomen and found that one of the vasa intestini tenuis had been torn through about one inch from its origin. The distal end was bleeding freely and both ends were tied. The peritoneal cavity contained much blood, and the collapse was so extreme that saline transfusion was resorted to during the operation. The man has so far gone on well, and as ten days have now elapsed since the operation he will in all probability recover.—*Lancet*, October 22.

Meager Diet of Porto Rican Peasantry.—Dr. L. Amadeo, a physician resident in Porto Rico has made a careful report on the mental and physical condition of his fellow-islander. He was well qualified for undertaking the investigation, of which the summarized results were published in the New York journals, for he had both studied and practiced medicine in this country, and, being a Porto Rican by blood and birth, was not likely to see in his people defects that do not exist. What he did see was the effect of insufficient nutrition, extending through the whole working class, i. e., through the whole class, which, thanks to Spanish tariffs, was forced to live on roots and fruits. He implores his new rulers to avoid the murderous policy of their predecessors, and to put within the reach of the toiling thousands in Porto Rico the very food which so horrifies and disgusts the vegetarian monomaniacs. Meat, he says, is the remedy for wasted muscles and inactive brains. This is science; it is also common sense, but it will raise a howl of anger from the unfortunate people to whom the prohibition of good things seems to be the alternative to its abuse.—*New York Times*.

Absorption of Medicines in the Stomach.—Professor Moritz has been studying this subject with sodium salicylate, potassium iodid and pulverized charcoal administered before, during and after meals, investigating the results with the stomach-pump. They confirm the results already empirically established, although he was surprised at the rapidity with which water and any much diluted medicine passes out of the fasting stomach. A medicine given with milk, soup, wine, oil, etc., leaves the stomach much less rapidly; still slower if taken with the meals and so slowly after a meal that in case of hepatic colic, etc., occurring after a meal, morphin should be administered subcutaneously or per rectum. Fluids like soup, milk, oil, etc., cause a secretion of gastric juice and the motor function of the stomach is proportionately less as the secreting function is active. He confirms the benefits of a mucilaginous vehicle in protecting not only the stomach but the intestines from irritation, recommending that digitalis be thus administered, and mentions as progress Sahli's "glutoid capsules" made of gelatin hardened formaldehyde; practically insoluble in the gastric juice but readily dissolved by the pancreatic secretions.—*Munich Méd. Woch.*, November 29.

Suture of Auricle of the Heart.—E. Giordano reports the first case of suture of the left auricle, for a wound in which the knife had passed through the entire thickness of the wall. The condition of the patient rendered immediate intervention imperative and it was impossible to take all the desirable anti-septic precautions. The condition was satisfactory for a few days, but bloody pus then appeared in the drain and death ensued in two weeks. The query whether to lose time preparing the patient for the operation, or to take the chances of infection, is a vital one in such cases. The necropsy showed that the patient had recovered from the wound in his heart, that his purulent pleurisy was also on the way to recovery, and that he

succumbed to a later complication, abscesses in his right lung. The wounds in the auricle and in the pericardium were perfectly closed with a linear cicatrix. Farina of Rome sutured the right ventricle for a wound 5 to 6 millimeters in length, in 1896. The patient succumbed to broncho-pneumonia, but the heart wound was found cicatrized. Rehn's case was cured, also one reported by Parozzani, and another by Parlavacchio. Others that did not result in recovery are reported by Parozzani, Cappelen, Nicolai, Niini, and Longo.—*Presse Méd.*; *Riforma méd.*, September 9 and 10.

Ankylostomum Duodenale.—About two years ago Drs. Ginn and Jacoby published (*Berlin Klin. Woch.*) certain observations which they had made on the presence of the *ankylostomum duodenale* and other parasites in the intestines of natives of India, and they arrived at two main conclusions: 1, when the ankylostomum has gained a hold in a native tribe in India, it spreads with great rapidity among the members of the tribe; and 2, it appears very probable that a person may have the ankylostoma in his intestine without being the subject of ankylostomiasis. In the summer of this year, 1898, the same observers had opportunities of examining the stools of several natives. Of the feces of eight natives of Ceylon, in eight the ova of *ankylostomum duodenale* were found, in seven those of *trichocephalus dispar*, and in six those of the *ascaris*. In the stools of six natives of Madras in six were observed the ova of *ankylostomum duodenale*, in six those of *trichocephalus dispar*, and in five those of *ascaris*, and in two of the Madras natives the larvæ of *anguillula intestinalis* appeared. The first of the above proportions was therefore corroborated by the new investigations. As supporting the second of their conclusions, Drs. Ginn and Jacoby found that a large number of Asiatics and Africans in whose stools the ova of the ankylostomum were found exhibited no signs of anemia. Among certain tribes there seemed to exist a certain immunity from ankylostomiasis, but this immunity was limited in its range and by no means absolute in degree.—*London Lancet*, November 19.

Not Bound to Undergo Serious Operation.—Assuming that the injury complained of in the case of Kehoe against the Allentown & Lehigh Valley Traction Company was the result of a certain accident, the company, which was sued for damages, urged, in defense, that the injury was not of a permanent character, but one that could quickly and permanently be cured by proper medical treatment, namely, by a simple surgical operation, attended with no pain (if anesthetics were used or the patient etherized), and free from serious danger. However, in view of the evidence relating to the subject, the supreme court of Pennsylvania declares, Oct. 17, 1898, that there can not be any doubt of the correctness of the following instructions given the jury: 1. That, if they believed that the surgical operation, necessary to relieve or cure the plaintiff, was a serious or critic operation, necessarily attended with some risk of failure, then the plaintiff was not bound in law to undergo a serious and critic surgical operation, which would necessarily be attended with some risk of failure; and 2, that if they believed that such operation was dangerous and critic, and attended with risk of failure, she was privileged to exercise the liberty of choice, under such circumstances, as to whether suffering and feebleness, resulting from the injury, would be endured, or whether the surgeon's knife should be used.

Communications to Veterinarians Not Privileged.—A veterinary surgeon was asked what the owner of a certain horse had said as to his visiting the horse, and what the report was that had been received from the keeper as to the condition of the horse. To these questions the owner objected, as calling for privileged communications, and the objections were sustained by the trial court, as being in conflict with section 3643 of the Iowa Code

of 1873, prohibiting a disclosure of professional communications. The owner's counsel said in argument, "We have no case exactly in point to cite." And the supreme court of Iowa says, *Hendershott vs. Western Union Telegraph Company*, Oct. 22, 1898, that it thinks that none can be found to sustain the ruling. It holds that the reasons upon which the section referred to is based have no application whatever to a case of this character. Communications, it maintains, are privileged in certain cases for the reason that full and free communication in those cases is necessary and to be encouraged, but that these reasons do not apply to veterinary surgeons called to treat animals.

Donations for Medical Education.—The last report of the Board of Regents of New York summarizes the evidences of improvement in medical teaching in that State. There has been a remarkable increase in the material resources and property among the medical colleges and an increase, since 1898, of more than 100 per cent. in total property, and of nearly 100 per cent. in annual receipts. Since that time this great increase has grown still larger, especially in Greater New York. The University and Bellevue Hospital Medical College has the fine new building erected in 1897 by the faculty of the Bellevue Hospital Medical College. The College of Physicians and Surgeons, with the Vanderbilt Clinic, doubled in size by the additional gift, in 1895, of \$350,000, and the Sloan Maternity Hospital, greatly enlarged in 1897, now make the most complete plant in existence for scientific medical education. The Polhemus Memorial Clinic has been completed and thoroughly equipped since the last report, providing accommodations for the outpatient and medical school departments of the Long Island College Hospital. The intention of Mrs. Polhemus, that everything pertaining to the construction and equipment of this building should be of the most approved type, has certainly been carried out. The New York Medical College and Hospital for Women has just opened its handsome new building in West One Hundred and First Street. Last, but not least, \$1,500,000, the greatest amount ever devoted by one person at one time to purposes of medical instruction, has just been given to build, equip and endow the new medical department of Cornell University in New York City.

Unlawful Practice.—By the Nebraska statute any person not possessing the prescribed qualifications for the practice of medicine, surgery or obstetrics, or any person who has not complied with the provisions of the law relating thereto, who shall engage in the practice of medicine, surgery or obstetrics, or any of the branches thereof, shall be deemed guilty of a misdemeanor, etc. Any person shall be regarded as practicing medicine within the meaning of this statute who shall operate or profess to heal or prescribe for or otherwise treat any physical or mental ailment of another. But nothing therein is to be construed to prohibit gratuitous services in cases of emergency, or to apply to commissioned surgeons in the United States army and navy, or to nurses in their legitimate occupations, or to the administration of ordinary household remedies. Now, under this statute, the supreme court of Nebraska holds, in *State vs. Paul*, Oct. 20, 1898, any person within the exceptions prescribed, and not having complied with the requirements as to certificate and registration, who shall, for a remuneration, operate on, profess to heal, or prescribe for, or otherwise treat any physical or mental ailment of another, is liable to the penalties prescribed, although the operations were performed, and the medicines were administered and given, under the direction and charge of a licensed physician and surgeon. To make one liable to the penalties of the statute, the court further insists, it is not essential that at or before the treatment of the sick, he represented, claimed, or advertised himself to be a regular, legal or competent practitioner of medicine.

Discovery of a Roman Hospital.—Advices from Geneva to Paris are that the remains of a Roman hospital have just been discovered in Baden, in the Canton of Argovie, Switzerland. The ruins, both from an architectural and an antiquarian point of view, are said to be valuable and interesting, since they are the first traces of anything proving the existence of hospital arrangements among the Romans. Neither the remains of Pompeii nor Timgad have led antiquarians to suppose that the Romans ever devoted a building to the exclusive use of invalids. No Latin or Greek author, the Geneva press asserts, has left a description of such an establishment. Hippocrates, alone, in a passage which is very short and rather obscure, alludes to diseases which were treated in the Temple of Esculapius, but it is thought to be impossible to decide therefrom whether there were any places near the sanctuary specially set apart for treating diseases. The arrangement of the ruined structures at Baden leave no doubt as to the use for which they were built. The edifice is composed of fourteen small rooms, in which a large number of medical and surgical instruments, tweezers, tubes, knives for spreading plasters, spoons, measure-glasses, cauterizers, ointment boxes, and the like were found. Antiquarians of Geneva who have visited the ruins assert that everything goes to show that this was the site of the hospital of the Fourth and Fifth Legions, which had their winter quarters in Baden.

Paternal Hereditary Syphilis.—An interesting lecture by Professor Fournier, on the subject of preventive treatment of paternal hereditary syphilis is reported in the *Semaine Méd.* of November 30, in which he states that when a fetus is threatened with paternal syphilis, the mother being healthy, it can be protected by specific treatment of the mother during her pregnancy, if commenced very early. After the fifth month it is useless. The method has been successful in such a large number of cases that the physician should consider it his duty to inaugurate it under such circumstances, even if he has to deceive the mother to conceal the father's condition. The mother-in-law is usually the worst feature of the case, he adds. Mercury should be the base of the treatment, but as the dosing is not for the mother, but for the fetus, minute doses are sufficient, if continued throughout the entire pregnancy. Sublimate sometimes affects the stomach in pills, and disguises by its odor in a solution. He prefers pills of mercurous iodid, under the circumstances, with a daily dose of five centigrams, or even of twenty-five milligrams, suspending treatment for ten days after twenty days of treatment to rest the stomach, continuing it thus to the end of the pregnancy. Pinard prefers mercuric iodid as follows: Mercuric iodid .1 gm., potassium iodid 10 gm., aq. dest., or simple syrup, 250 gm., peppermint water 50 gm. Daily dose, two tablespoons of the solution or two dessertspoons of the syrup, in the middle of the meal. Barthélemy persuades the mother that an injection of serum once a month would benefit her, and thus injects grey oil, every thirty days. No unfavorable effects of this treatment of a healthy woman have been observed by any one. Pinard continues the treatment without interruptions. Others alternate the mercury with potassium iodid. Each method has been successful, and it is usually necessary to conform to individual circumstances in each case.

Acetylene Worry.—The *Independent* has a readable paper on the above title, minifying the causes for anxiety about the coming new illuminant, acetylene gas. The writer points out the great worryment that was caused about sixty-six years ago over the proposed introduction of olefant gas. The timorous people of Philadelphia went so far as to publicly object to the disuse of oil in public lighting. They could not see what should prevent the flame at the jet from backing through the pipes to the house meter or even to the mains and the works' gasometer itself. Direful predictions were also made when

Stephenson proposed the locomotive. The canal and stage proprietors did not wish to be disturbed, and timidity also opposed progress. Stephenson had to talk of a very low speed, not greatly beyond that of the horse, or his bill would have failed in Parliament; but when an opponent in committee declared that even the cows would be driven mad by the glare of the red-hot engine chimney, he could not refrain from asking how they would know the chimney was not red with paint instead of heat. Only a few years ago the bicycle was opposed because horses (as was asserted) could not bear the sight of it, and if the "toy" was to be allowed in the streets every other vehicle must go. And now there is some trouble over acetylene gas and the carbid from which it is obtained. There are potencies of danger in both, and in what is there not? There is a choice in generators; there are ways of treating carbid; that substance is mischievous only as water touches it, and its affinity for moisture is so intense that it must be excluded from air or it slowly spoils; keep it in moderate quantities and securely sealed, and it brings no fire risk. The tallow dip displaced the pine knot, whale-oil displaced the tallow dip; "fluid" succeeded whale-oil; kerosene, gas and electricity have followed, in each step and each illuminant its own hazards, and each disturbing the timid. It is therefore inconsistent, and it will be futile, to resist acetylene. Underwriting must accept it in its turn and deal with it rationally.

Revocation of Certificates.—The Iowa statute designed to regulate the practice of medicine and surgery in that State provides for the issuing by the State Board of Medical Examiners of certificates, and authorizes the Board to revoke a certificate whose holder shall have been convicted of a felony committed in the practice of his profession or in connection therewith, or "for palpable evidence of incompetency." The statute does not prescribe the practice to be followed in cases instituted for the revocation of certificates. It may, when practicable, says the supreme court of Iowa, commenting on this in *Traer vs. State Board of Medical Examiners*, Oct. 24, 1898, follow somewhat the methods of the courts, yet, from the nature of the Board and the character of the duties it is required to perform, a more flexible practice than that allowable in the court must, of necessity, be followed in many cases. The person whose right it is to hold a certificate which has been issued to him should be given a fair opportunity to meet the charges and evidence against him. What would be "palpable evidence of incompetency," within the meaning of the statute, the supreme court further says, is not easy to define, although it must be sufficient to make plain and obvious the incompetency of the accused to practice as a physician and surgeon. In the absence of objection, it is of the opinion that evidence which tends to prove or disprove the competency of the accused may be considered, as affidavits, etc., even though it is not the best evidence which could be produced for that purpose. The provision of the statute which gives to the president or any member of the Board authority to administer oaths and take testimony in matters relating to their duties as examiners, if it applies to the revocation of certificates, the court also holds, is not exclusive, and does not prevent the consideration by the Board of Evidence not so taken. Finally, the court declares within the jurisdiction of the board to determine the competent and sufficiency of the evidence submitted to it, and if it errs in admitting evidence or in giving to it undue weight, the error can not be corrected by certiorari proceedings.

Gleanings.—Large piece of omentum torn out by insane woman after opening her own abdomen exhibited recently before the Paris Soc. de Chirurgie. . . . Tumor of the submaxillary glands in one patient and a dermatitis in another from treatment with potassium iodid, reported by Danlos. . . . Case of severe diarrhea with incarcerated inguinal hernia, persisting until after the hernia was operated on. . . . Case of

chronic primary osteomyelitis of the spine reported by Israel in woman of 27 years (*Deutsche Med. Woch.*, November 24). . . . Fatal osteomyelitis caused by scraps of cloth from gunshot wound twenty-seven years previously. The scraps had evidently been encapsulated and the encapsulation broken by a violent muscular exertion (*Deutsche Mil. Zft.*, July). . . . Ducrey's bacillus has been successfully isolated from soft chancres, resown and inoculated in man by Langlet, who invented a special medium for the purpose (*Presse Méd.*, November 12). . . . Neugenbauer observed a fourteen weeks' extra-uterine embryo extracted by vaginal celiotomy and embryotomy in which, when the breast was opened, the heart was found still rhythmically pulsating, and this automatic action continued for three hours (*Cbl. f. Gyn.*, No. 47). . . . Case of eczema of the lips caused by salol in a tooth-wash (*Deutsche Med. Woch.*, December 1). . . . Tailleur reports fifty-four relapses in 234 herniotomies. He finds that there is least danger of a relapse after umbilic and greatest after femoral hernias. Also that suture of the pillars protects better than the Bassini, against relapses. The cases have been followed since 1890-94. . . . Partial resection of the cesum for localized tuberculous ulcerations. Recovery. Resection of the small intestine and surrounding omentum for chronic tuberculosis adhesences simulating a tumor. Recovery (*Cbl. f. Chir.*, December 3).

American Hypnotic Grasses.—The *New York Medical Journal*, November 12, refers to certain grasses of the genus *Stipa* that appear to have medicinal or poisonous properties. Some of the American species, *Stipa viridula*, found in some parts of the Southern States, especially in New Mexico and Texas, have recently been made the subject of investigation by Dr. A. Lyckhart Gillespie of Edinburgh. He was led to make the examination by information as to the unpleasant and alarming effects of the grass, locally termed "sleepy grass," on horses. The cowboys, he says, driving herds of cattle from one place to another over elevated prairie regions, are often astonished on waking in the morning, to find their horses, and perhaps their cattle also, unfit to proceed on the journey. "The traveler's horse," says Dr. Gillespie, "is a pitiable object. He stands with head and tail drooping, his form quivering, streams of sweat pouring down his sides, respiratory movements hurried and panting, his heart's action increased in force, judging by the evidence of palpation, while his excretion of urine is markedly increased, with symptoms of irritations and strangury accompanying its expulsion." He is incapable of movement and seems about to die, but so far as Dr. Gillespie's informant could say, actual death, either in horses or in cattle, is not known to have been caused by the grass. It seems to have no action on sheep. The acute symptoms pass off in about two days, but the general health of the animal is affected for some time. Dr. Gillespie has found it impracticable thus far to make a thoroughly satisfactory preparation from the grass for pharmacologic experiments. A weak mixture of hydrochloric or acetic acid and water was found to be the most effective menstruum for extracting the substance presumed to contain the active principle, but these acid extracts had to be neutralized partially before they could be used, and this partial neutralization precipitated much of the solid matter present. Alcoholic extracts also were employed. The author gives the details of four experiments, three on frogs and one on a rabbit. They confirmed the accounts of the narcotic and paralyzing action of the grass, and the animals seemed to be affected with hallucinations and great fright. The author also refers to the statement of Haeckel that another American species, *Stipa inebrians*, as well as the *Stipa sibirica* of the Russian steppes, has a similar action.

Toxicologic Relations of the Ptomains.—The discovery, in 1870, by Selmi, of the first of the postmortem alkaloids revolution-

ized the medico-legal operations of the chemist. It made the process of detecting vegetable alkaloids a matter of so great delicacy that, for a time, it was thought it would thenceforth be impossible to prove poisoning from vegetable alkaloids by means of toxicologic investigations. Such an assertion was an exaggeration, the toxicologist who would feel himself at a loss in the presence of ptomains would be altogether incompetent. In fact, no special or very characteristic chemic reaction, as yet, enables us to distinguish the ptomains from vegetable alkaloids; nor is this in any way surprising, as it would be quite illogical to wish to establish between the two orders of alkaloids a difference which nothing can possibly justify, and which reminds us of the distinctions that were insisted on formerly as existing between the two kingdoms, animal and vegetable. The processes of decomposition, splitting up or synthesis, which determine the formation of ptomains are very certainly of the same order as those by virtue of which the vegetable cells fabricate quinin or strychnia. A certain number of the alkaloids most frequently met with in the organism have been equally often met with in vegetables—adenin and exanthin in tea leaves, for instance—and M. Pouchet states that there is little doubt on his part that at no distant date a continued alkaloid series will be found passing from the simplest ptomains as hydroxydic bases on to the most complex vegetable alkaloids. It is only by chemic reaction and physiologic experimentation taken together that we are enabled to succeed in identifying the alkaloids obtained toxicologically, with any particular vegetable alkaloids. No indication, however subtle, should be neglected in the double series of investigations. It was in consequence of attention to this, that, in the celebrated process of General Gibboni, Selmi succeeded in proving the innocence of the incriminated—by establishing the fact that the alkaloid obtained from viscera subjected to medico-legal examination, and which experts alleged was Delphinium, on a chemic reaction alone, in reality consisted of a ptomain which arrested the heart's action at *systole* instead of at *diastole* as in the characteristic action of the Delphinium alkaloid. The putrefactive coniaïn of Liebermann is distinguishable from the true coniaïn in that it is neither volatile nor toxic. It would be easy to multiply examples of that kind. Physiologic experimentation made also comparatively with the isolated products of viscera, and the alkaloids with which the chemic reactions obtained anteriorly seem to justify us, in fact, in disposing of any doubts. We ought consequently to obtain, under the same experimental conditions, results absolutely identic. The methods of physiologic experimentation known up to the present time are sufficiently delicate and exact to enable us to prove or disprove to a certainty deductions based on chemic analyses alone. We must of necessity hold that there never can be complete evidence of identity supplied by comparative chemic and physiologic examination of two alkaloids, unless they be constituted of one and the same substance. This is a fact of experiment which does not admit of dispute.—*The Scalpel*, October.

The Brunette Peoples of Europe.—Sergi has given, in *Science Progress*, the results of his study of the brunette races and their migrations to the Mediterranean belt. To his mind the origin of those races is a question of racial rather than linguistic migration. While admitting that Aryan speech among modern and historic peoples throws the burden of proof on anyone who essays to find an origin other than Aryan for those peoples, Sergi makes bold to assume that the race or races with which Aryan speech originated may have been at all times few in numbers, and may further have been long since extinct; and consequently that all the Aryan-speaking races of historic times may have, at one time or another, learned Aryan speech, without acquiring more than a slight tincture of Aryan blood. The ground is thus left open for an examination of the question from a point of view primarily anthropologic, and based in the

first place on physical, viz., morphologic, criteria of natural kinship between the races to be examined. A survey of the whole Mediterranean shore line has led him to the conclusion that its earliest recognizable inhabitants and their descendants, who form the great mass of the present population, belong to a single closely connected group of races; that their earlier home is to be looked for in the former fertile interior of northern Africa, and not improbably in or near the upper valley of the Nile; and that the peninsulas of South Europe and Asia Minor have been peopled thence along several distinct routes which mainly follow the course of the pliocene land-bridges, or former land connections. The "Mediterranean race," thus described, has the following characteristics common to all its branches: The outer complexion is typically brown; brown skin, brown eyes, brown hair, abundant and always more or less wavy. It is thus equally distinct from the blonde white races which bound it on the north, and from the negro races of Africa. Modifications of the brown tint are found in all branches of the race, but are conceived to be due to intermixture either with the earlier aborigines or with subsequent intruders. The body is well-proportioned, the face oval, the nose rather narrow, the orbits wide and set horizontally, the forehead high and nearly vertic, the cheek-bones neither wide nor very high; the face not flattened, but if anything a little prominent in front; the neck long and well-rounded, and the features mobile and expressive. It is, in fact, the familiar brunette type which every one recognizes who has traveled to any extent along the Mediterranean. Determined by certain types of skull, the "Mediterranean race," appears, wherever it is found, as a collocation, more or less uniformly complete, of a number of such related types; and from this it is inferred that the race was already composite in the farthest area of origin to which it can be traced. This center is placed by Sergi in the upper valley of the Nile, on the ground that here, among the Abyssinians, Gallas and Somalis, the characteristic collocations of types are most completely exhibited; the dusky complexion of a large proportion of these races at the present day being discounted, partly by their long-continued exposure to a more tropic climate than any other branch of the race, and partly by the certainty of continuous infusion of a negroid strain from the south.—*Popular Science News*, November.

Columbus and His Medical Advisers.—It is said of the first of the voyages of Columbus, that out of his slender company, which all told numbered but 120 souls, there were two physicians, Master Alonzo, on board the caraval *Santa Maria*, and Master Juan, on board the *Pinta*. When Columbus returned to Spain, the last named officer remained behind, at Fort Navidad, and made one of the thirty eight victims who were massacred by the natives of San Domingo. The principal medical officer of the second expedition, which consisted of 1500 men, and sailed from Cadiz in the month of September, 1493, was Dr. Diego Alvarez Chanca of Seville, physician in ordinary to the King and Queen of Spain. In a report addressed to Ferdinand, Columbus referred to this officer in the following flattering terms: "I make a point of directing the attention of your Highness to the never-ending work wherewith Dr. Chanca is overwhelmed, in consequence of the heavy sick-roll, together with the dearth of provisions; but in spite of all difficulties he evinces the utmost zeal in everything that concerns his art, Your Highness having left me free to fix the amount of his remuneration (although it is perfectly certain that neither I nor anyone else in my position could give him a sum even approaching what he would gain on land), I have opened for him an annual credit of 50,000 maravedis." Dr. Chanca is given the credit of having cured Columbus of a malignant fever which had brought him to death's door, and he is also said to have been the first person to write a description of the new world, his contribution taking the form of a report to the Municipal Council of Seville. On his return to Spain he produced his

"Commentum Novum in Parabolis Divi Arnoldi de Villanova," which was published at Seville in 1514. But it was not solely to the members of the medical profession who sailed in his company that Columbus expressed his indebtedness. Paolo dal Pozzo Toscanelli, a famous physician and astrologer of Florence, gave him what is described as excellent advice regarding the possibility of reaching India from the West, and in order to simplify matters likewise presented him with a map showing the course he ought to steer. The value of the Florentine's counsel is open to question, but there was another less pretentious practitioner who undoubtedly was able to render the hero an inestimable service at a turning-point in his career. Discouraged by persistent opposition and well-nigh broken-spirited, Columbus had sought asylum in the convent of Santa Maria della Robida, in Andalusia, whereupon the prior, believing him to be mad, sent for Dr. Garcia Fernandez, an unassuming country surgeon from the neighboring hamlet of Palos do Moguer. Happily the village Galen was a man of discernment. He quickly perceived that his patient was no lunatic but a man of genius, and instead of consigning him to chains and a dungeon, after the fashion of the day, he not only restored him to health by his treatment but also won for him the good will of the prior, who furnished him with means and introduced him at Court. It is generally stated that Columbus died from gout, but Dr. de Ybarra disagrees with the authorities who are responsible for this diagnosis. In his opinion death was due to cardiac complication consequent on chronic rheumatism, and in support of this contention he adduces the testimony of several persons who aver that they saw the dying navigator during the last month of his life and that his body was enormously swollen from the chest downward.—London *Lancet*, November 9.

Examination Papers: Army Medical Department.—The following examples of written questions submitted by a recent examining board to candidates for appointment in the Medical Department in the Army will be of interest to many of our younger readers at this time:

ARITHMETIC.

1. Divide 15 by $\frac{1}{15}$. Multiply by $\frac{1}{45}$, and subtract $2\frac{5}{12}$ from the product.
2. Multiply .009 by 90. Divide .009 by 90.
3. A garrison of 450 soldiers have rations for five months only. How many should be detached to make the rations last nine months?
4. Give the metric equivalent of 3 grains: 3 fluidrachms; 3 pounds; 3 quarts; 3 yards.
5. Name and describe briefly four principal kinds of triangles.
6. Which is the larger and by how much, a box 10 x 8 x 6 feet, or a cube of 8 feet?

GEOGRAPHY.

1. Bound the State of Tennessee. What are its principal rivers? Name its capital and its largest cities.
2. Through what States does the Appalachian chain of mountains extend? What and where are the highest elevations?
3. In going from Duluth to Quebec by water, through what lakes and river and canals, and by what States would you pass?
4. What rivers form the principal drainage system of the United States, and into what bodies of water do they flow?
5. What countries border on the Mediterranean Sea.
6. Where is India? How is it governed? Name its principal rivers and cities.

HISTORY AND LITERATURE.

1. Who was Julius Cæsar? When, approximately, did he live? For what was he distinguished?
2. What was Queen Elizabeth's claim to the throne of England? About when did she live? Mention the most important events and writers of her reign.
3. What nations made the earliest settlements in North America, and where were they located?
4. What were the most important events in the career of Benjamin Franklin? When, approximately, did he live?
5. What historians has the United States produced? Mention at least one work of each.

6. Who were the authors of the following works: "Don Quixote," "Faust," "Les Misérables," "The Inferno," "Childe Harold's Pilgrimage," "Paradise Lost," "Evangeline," "Scarlet Letter," "The Autocrat of the Breakfast Table," "The Spy," "Legend of Sleepy Hollow?"

CHEMISTRY.

1. How may hydrogen be obtained? State its color and odor, and its weight as compared with an equal volume of atmospheric air under similar conditions. What is meant by "similar conditions" in the last sentence?
2. How would you obtain a jarful of carbon dioxide for experimental purposes? How would you recognize that the jar contained carbon dioxide? What is its chemical formula; its molecular weight?
3. What is that which is known popularly under the name of "laughing gas"? What is the formula? How is it prepared?
4. What is an anhydride? Give the names and chemical formulas of two anhydrides.
5. How is sal ammoniac prepared commercially?
6. What chemical action takes place when copper turnings are heated with sulphuric acid?
7. What are the principal ores of zinc? What is the formula for zinc chloride; for zinc sulphate?
8. What is glycerin chemically?
9. Explain the chemical action which takes place when gunpowder is exploded.

PHYSICS.

1. Does a given body weigh more near the poles of the earth or near the equator? Give an explanation of the fact.
2. Explain the principle of the hydraulic press.
3. What is meant by a compensating pendulum?
4. What is the dew point? How may it be determined?
5. What are the dark lines of the solar spectrum occasioned by?
6. An observer saw the flash of an explosion, and ten seconds later the sound reached his ears: What was his distance, approximately, from the locality of the explosion?
7. Describe a cell of an electric battery.

ANATOMY.

1. Describe the origin, insertion and action of the several muscles attached to the scapula.
2. Describe the origin, course, branches, distribution and relations to other organs of the nerves of the arm and forearm.
3. Describe the anatomy of the palm of the hand.
4. Describe the origin, course, branches, distribution and relation to other organs of the internal pudic artery.
5. Describe the anatomy of the ankle joint.

PHYSIOLOGY.

1. Tell what you know about the cerebral localization of the functions of motion and locate some of the so-called motor areas.
2. What are the functions of the thyroid gland and the consequences of its removal?
3. What is the composition of atmospheric air and of expired air?
4. Give a list and a short description of some of the animal albuminoids.
5. What is urea? What is the normal quantity in proportion to body weight? How is it estimated?

SURGERY.

1. Give in detail the preparation and several following steps of a so-called aseptic surgical operation.
2. What is the nature and origin of pus? What is sepsis and also antiseptics?
3. Describe Chopart's amputation through the foot, with diagram.
4. Give the points of diagnostic differentiation in cases of lupus ulceration, syphilitic ulceration and epitheliomatous ulceration.
5. Describe the different methods of procedure for the reduction of luxations of the head of the femur.

HYGIENE.

1. What is the normal amount of CO₂ in the atmosphere; how much of this gas is considered admissible in inhabited apartments, and how is the amount determined?
2. What amount of cubic-air space per bed would you consider a suitable allowance in a hospital ward?
3. What substances in well or river water indicate by their presence, contamination from excreta or other organic matter of animal origin.
4. How is the hardness of water eliminated and to what is it due?

5. What are the constituent alimentary substances in milk, and how does cow's milk differ from human milk?
6. What vegetable products used as food contain the largest proportion of carbohydrates and what the largest proportion of proteids?
7. What parasites dangerous to man may be present in the flesh of animals used as food?
8. How would you disinfect the excreta of patients sick with cholera or typhoid fever?

PATHOLOGY AND BACTERIOLOGY.

1. What are the different stages of exudative inflammation and what the products of such inflammation?
2. What are the causes of thrombosis, what the composition and varieties of thrombi, and what changes may they undergo?
3. What pathologic changes are found in the spinal cord in posterior spinal chlorosis?
4. What changes occur in the liver as a result of chronic interstitial hepatitis?
5. What bacteria are commonly found attached to the diseased valves in mycotic endocarditis?
6. What are the morphologic and biologic characters of the bacillus of diphtheria, and what are the evidences of its etiologic relation to this disease?

THERAPEUTICS, MATERIA MEDICA, TOXICOLOGY.

1. By what various agents may antipyresis be produced? Give an example of each class of antipyretics and state how it acts.
2. In a case of typical acute pleurisy state the indications for treatment in its several stages and how you would meet them.
3. What is salol? Give its physiologic action and therapeutic use?
4. Give the source and therapeutic uses of cocaine, the dose in each case, and its dangerous effects.
5. With what condition is poisoning from opium most likely to be confounded? How would you make a diagnosis and how treat such a case?
6. What are the poisonous effects of the lead salts? How is their presence detected? State briefly your plan of treatment.

PRACTICE OF MEDICINE.

1. Give an account of the etiology, symptoms, physical signs and differential diagnosis of lobular pneumonia.
2. Give an account of the etiology, physical signs and treatment of empyema.
3. Give an account of the etiology, symptoms, differential diagnosis and treatment of dilatation of the stomach.
4. What are the causes and symptoms of intestinal obstruction and what is the treatment?
5. What are the causes and results of mitral stenosis and how would you recognize this condition?
6. Give the differential diagnosis between smallpox and measles.

OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN.

1. Describe briefly the usual mechanism of a breech presentation; what dangers are to be guarded against and what difficulties to be met.
2. Under what circumstances is premature delivery demanded and how would you perform it?
3. What symptoms would lead you to suspect the presence of a uterine fibroid? State how an exact diagnosis can be made in such cases.
4. What measure preventive or remedial would you use in a case of puerperal convulsions?
5. What early symptoms indicate probable onset of the chief eruptive fevers in children? In which does temperature range highest; which has the shortest period of incubation, of invasion, of eruption.

Foreign Bodies in the Abdominal Cavity.—Dr. T. S. Bullock has handled this subject quite adroitly in a paper read before one of the Louisville societies. He has been enabled to corral over fifty cases, chiefly American in origin, and largely unreported in the journals, from which experience he deduces the doctrine "Let the surgical Pharisee who is tempted to say, 'I am holier than thou,' beware." In consonance with this teaching is presented the remarkable experience of an honored surgeon in New York City, which was somewhat as follows: Early in his practice, this surgeon had a lesson that led him to adopt every well-considered precaution against leaving any foreign bodies in the abdominal cavity after operating. On one occasion, so careful had he become, he thrice reopened the wound in order to search for a missing sponge, which turned up in a pail.

After this he made it a point never to put a fresh sponge in the cavity until its predecessor had been removed, and then, if possible to keep it under his own eye. He went on in this way for seven or eight years, and says he had begun to think this accident would never happen in his practice; but it did, and when he least expected it. In a simple salpingotomy four gauze pads were used, and although all were accounted for by a most conscientious nurse and two assistants before the sutures were tied, one was left behind. Subsequently a mural abscess developed at the upper angle of the wound, and on opening it the pad presented itself and was removed, the patient making a good recovery. Dr. Bullock reports his own case which hinged on the losing of a large-sized aseptic gauze pad due to a miscount of the pads by a trusted nurse. This misadventure made necessary an operation for the removal of the pad; the patient recovered. Regarding the prognosis in these accidents, the author of the paper finds that much will depend: 1. On whether and when the accident is discovered. If the wound has been closed, it should be reopened and the foreign body removed. If not more than twenty-four or forty-eight hours have elapsed, the case will in all probability proceed as if the accident had not occurred. 2. If not discovered so soon, whether a correct diagnosis is subsequently made. If so, the body should be removed at once, this procedure giving the patient the best possible chance and saving tedious convalescence and much danger and discomfort. If the diagnosis is not made, Nature takes charge of the case, and unless the foreign body is septic, her efforts are generally crowned with success. 3. Whether the body left is aseptic or not. The case just cited shows what methods are employed when the object overlooked is aseptic and nature is not at once overwhelmed. Twenty-one cases reported by Dr. Wilson in 1884, which occurred in pre-aseptic days, with a single exception, died. If the operation is aseptic, the chances of the patient are by no means hopeless as to ultimate recovery. The larger number of the reported cases have ultimately expelled the foreign body and made a good, if slow, recovery. A. McLauren reported seven in 1896, with only one death. 4. If the body left is an instrument, as a forceps or clamp, unless discovered and immediately removed, death invariably ensues, and if found at all, it is at the postmortem. Their weight is too great a handicap for even so good a jockey as Nature, and she is unable to transport them to a suitable place for safe expulsion. I will now report my own case, which affords an additional opportunity for observing our good friend Nature's methods, and call attention to several important diagnostic points, should the accident not be promptly discovered and remedied. The author quotes a remark made by Dr. Coe, who said regarding the inevitable tendency of these accidents to go unreported: "We must not be surprised that only a small proportion of the cases are reported, as it is natural for us to seek to conceal our errors and failures, forgetting that these would be more valuable contributions to medical literature than a long series of successes; and that if we can learn from the mistakes of others, the experience is less costly than when gained by our own mishaps." Up to the present time those of our profession thus philanthropically inclined are in a very small minority. Our brother surgeon is too prone to think aloud some criticism that subsequently makes large drafts on his ingenuity to enable him to escape being arrayed against his friend on the witness stand in the suit filed because of his adverse comment. All hail the day when the medical profession shall face the world as a unit and not as at present—every man for himself, and the devil take the other fellow.—*Am. Prac. and News*, October 15.

DETROIT.

APPOINTMENTS.—Dr. J. E. Clark has been appointed by the auditors of Wayne County as the official chemist, at a salary of \$1000 a year. It will be his duty to make all analyses of material in cases where death by poison is suspected and chemic analysis of stomach contents is ordered by the court.

HEALTH REPORT.—For the week ending December 17, there were reported: Deaths, 75; under 5 years, 24; births, 55, male, 29, female, 26; number of cases of diphtheria, last report, 14, new cases 17, recoveries 9, deaths 1, now sick, 21; scarlet fever, last report, 42, new cases 18, recoveries, 14, no deaths, now sick, 46; smallpox, 1 case.

Cincinnati.

A TIMELY GIFT.—The University of Cincinnati, of which the Ohio Medical College is the medical department, has recently been the recipient of a most valuable library of books from Mr. William A. Proctor. Mr. Proctor purchased outright "The Robert Clarke Collection" of over six thousand volumes, covering a large variety of subjects, and which is estimated to be worth more than \$100,000. The collection was given practically without condition. It is a most timely gift, as the new library building donated by Van Wormer will soon be up, and this gift will doubtless stimulate others to contribute. Indeed, in a discussion of the Board, convened to take action on Mr. Proctor's magnificent donation, several enthusiastic members spoke freely of large gifts of books to be made in the near future.

SMALLPOX.—An epidemic of smallpox recently broke out in Wyoming, but a few miles from Cincinnati. Dr. Probst, secretary of the Ohio State Board of Health, and Dr. Byron Stanton, Cincinnati member, diagnosed the cases as smallpox, however, of a very mild type. It was decided by these officials, in consultation with the local health officer, that a general quarantine would be disastrous to business interests, so that a local quarantine of the districts and houses to which the disease has been confined, preventing ingress and egress of all who had been exposed, was substituted. As regards Cincinnati, Health Officer Tenney directed a general vaccination among school children in both the common and parochial schools, all who are unable to afford the expense to be vaccinated by the district physicians, free of charge. It is supposed that the contagion was conveyed from the cases at Loveland.

DR. PERCY ASHBURN successfully passed the examination for assistant-surgeon, U. S. A., and was one of three successful candidates in a class of twenty five.

Louisville.

KENTUCKY SCHOOL OF MEDICINE.—Some weeks ago it was noticed in these columns that Judge Barker had granted Drs. Woody and Kelly, respectively dean and professor in the Kentucky School of Medicine, an injunction restraining Drs. Cochran and Boyd from claiming to be professors in the school, and Dr. W. H. Wathen from claiming to be dean. At a meeting of the Board of Regents of the College, held a short time before, it had been decided that Drs. Woody and Kelly should be removed; they at once took this action and elected Drs. Cochran and Boyd in their places and Dr. Wathen as dean to succeed Dr. Woody. Because of the fact that Judge Miller, before whom the case was docketed, had been an attorney for Dr. Wathen, and his law partners were at present his attorneys, Drs. Woody and Kelley asked that he not hear the case, and through their attorney attempted to swear him off the bench. He refused to vacate the bench, and the case as to whether the injunction should be dissolved or not was submitted on briefs, and he has just handed down his opinion, which is a voluminous one. He dissolves the injunction granted Drs. Woody and Kelly, and dismisses their petition. The attorney for Drs. Woody and Kelly at once filed a motion of appeal, and Judge Miller will hear an argument as to whether the injunction shall be continued in force pending the appeal. The charter of the Kentucky School conferred upon the Board of Regents the power to remove professors. The plaintiffs claimed that by an amendment of March 25, 1886, the Legislature modified this power to the extent of requiring a majority of the members of the faculty to request the removal. That amendment also named the professors of the school, among them being Drs. Woody and Kelly. On August 1, last, as above mentioned, the Board of Regents, without the action of the faculty, removed Drs. Woody and Kelly from their professorships, and elected Dr. Wathen as dean. The latter's claim to a professorship was not questioned, only his claim to being dean. Judge Miller held that the amendment of 1886 was not accepted by the Kentucky School of Medicine and was of no effect, and that the Board of Regents had acted within the powers conferred by the original charter.

DENTISTS.—The Falls City Dental Club and the Louisville Odontological Society held their first joint meeting on December 10 at the building of the Louisville College of Dentistry. About fifty-five members of the two organizations were in attendance. A number of papers were read and at the conclusion an enjoyable banquet was given. The officers of the two organizations were as follows: Odontological Society, J. W. Clark, president; P. R. Feigel, vice-president; F. J. Gardner, secretary-treasurer. Dental Club: C. G. Edwards, president; E. M. Kettig, vice president; C. K. Runyon, secretary-treasurer.

THE PUBLIC SERVICE.

Movements of Army Medical Officers.—To Manila, P. I.: Lieut. Irving W. Rand, asst.-surgeon U. S. A., from Ft. Dunesne, Utah.

To military posts: To Columbus Bks., Ohio, Capt. Jefferson D. Poin-dexter, asst.-surgeon U. S. A., from Ft. Hamilton, N. Y., to Jefferson Bks., Mo., Acting Asst.-Surgeon Llewellyn P. Williamson from St. Louis, Mo.; to Ft. Riley, Kan., Acting Asst.-Surgeon F. A. Disney from Washington, D. C.; to Ft. Sam Houston, Texas, Major Charles L. Heizmann, surgeon U. S. A., from Ft. Adams, R. I.

To regiments: Lieut. Leigh A. Foller, asst.-surgeon U. S. A., to the Second U. S. Artillery at Savannah, Ga.; Acting Asst.-Surgeons Elmer Anderson Dean and Arthur W. Smith to the Third U. S. Infantry at Ft. Snelling, Minn., from the general hospital at Ft. Thomas, Ky.; Acting Asst.-Surgeon A. M. Fernandez de Ybarra to the Third U. S. Vol. Engineers at Tampa, Fla.; Acting Asst.-Surgeon W. H. Spiller to the U. S. transport *Mohawk* at Bath, Maine.

To general hospitals: Acting Asst.-Surgeon J. Herbert from Washington, D. C., to the hospital at Ft. McPherson, Ga.

To mustering-out duty: Acting Asst.-Surgeon Matthew Leepere from the John Blair Gibbs hospital, Lexington, Ky., for duty in that city.

To special service: Capt. Thomas U. Raymond, asst.-surgeon U. S. A., as superintendent Army transportation service at San Francisco, Cal.

Leave granted or extended: Major David C. Peyton, brigadesurgeon. Vols. from Philadelphia, Pa.; Capt. Benjamin L. Ten Eyck, asst.-surgeon U. S. A., from Ft. Riley, Kan.; and Acting Asst.-Surgeon Azel Ames from Porto Rico.

Sick leave granted or extended: Major Philip G. Wales, brigade surgeon Vols.; Major H. Wells, surgeon Second Arkansas Infantry; and Acting Asst.-Surgeon Henry R. Carter.

Honorably discharged: Major R. Emmitt Griffin, chief surgeon Vols. Resignation revoked: Lieut. John W. Cox, asst.-surgeon Sixth U. S. Vol. Infantry.

Retired from active service: Lieut.-Col. William H. Gardner, deputy Surgeon-General U. S. A., after thirty years' service.

Contract annulled: Acting Asst.-Surgeon Donald Maclean, Jr., of Detroit, Mich.

CHANGE OF ADDRESS.

Burkhart, L., from 582 to 1134 South Meridian St., Indianapolis, Ind.

Calc, G. W., from Pittsburg, Kans., to Springfield, Mo.

Hanley, J. J., from Boston to Rock Island, Mass.

Jackson, G. E., from Wheaton, to Chatfield, Minn.

Jordan, A., from Gaines Mill to 117 Broad St., Richmond, Va.

Knapp, M. S., from Fenton to Flint, Mich.

Kenpla, L. A., from 1305½ Polk to 1121 Sutter St., San Francisco, Cal.

Lamb, D. H., from Owosso, Mich., to Fort Myer, Va.

Mereness, H. D., from Carnarvon to Thompson, Ia.

Miracle, W. T., from Long Creek to Richland, Ore.

Richards, C., from 321 Belmont to 259 Prospect St., Fall River, Mass.

Sheddan, W. K., from Williamsport to Columbia, Tenn.

Smith, H. H., from Beatrice to San Diego, Calif.

Thraillkill, G. H., from Central City, Colo., to Galena, Kans.

LETTERS RECEIVED.

American Therapeutic Co. (2), New York City; Aldrich, W. H., Marlboro, N. H.; Ayer & Son, N. W. (2), Philadelphia, Pa.

Baldessarelli, P., San Antonio, Tex.; Burr, C. B., Flint, Mich.; Bischoff & Co., New York, N. Y.

Carson, A., Elliott, Ia.

Dewey, C. R., Coloma, Mich.; Dios Chemical Co., St. Louis, Mo.; Davol Rubber Co., Providence, R. I.; Denkinger, J. A., Boston, Mass.

Erwin, J. J., Cleveland, Ohio; Erwin, A. J., Mansfield, Ohio; Edison Mfg. Co., New York, N. Y.

Fort, I. A., North Platte, Neb.; Farwell & Rbines, Watertown, N. Y.

Gilpin, Langdon & Co., Baltimore, Md.; Goodrich Co., The B. F., Akron, Ohio; Green, Dr. E. M., Louisville, Ky.

Hicks, Wm., New York, N. Y.; Hyde, Geo. B., Silao, Mex.; Hill, Edgar A., Chicago, Ill.; Huber, Frank, Brooklyn, N. Y.; Hall & Co., N. C., New York, N. Y.; Hull & Co., W. H. H., New York, N. Y.; Hummel, A. L., Advertising Agency, New York, N. Y.

Jelks, J. T., Hot Springs, Ark.

Kress & Owen Co., New York, N. Y.; Kell, J. B., Limaville, Ohio.

Lord & Thomas, Chicago, Ill.; Lautenbach, L. J., Philadelphia, Pa.; Lee, Elmer, New York, N. Y.; Lilly & Co., Eli, Indianapolis, Ind.

Meyer & Co., C., New York, N. Y.; Merrill Chemical Co., W. S., Cincinnati, Ohio; Martin, J. W., Unionport, Ohio; Maltine Mfg. Co., New York, N. Y.; Monthly Retrospect of Medicine and Pharmacy, Philadelphia, Pa.; Malt-Diastase Co., New York, N. Y.; Mariani & Co., New York, N. Y.; McKenzie, C. D., Sabina, Ohio; Mellin's Food Co., Boston, Mass.

Norwich Pharmaceutical Co., Norwich, N. Y.; Negelpach, Otto, Holmesville, Ohio.

Owens, J. M., Somerset, Ky.; Osborne, J. W., Dyersville, Iowa; Osborn, O. O., Chicago, Ill.

Peacock Chemical Co., St. Louis, Mo.; Phenique Chemical Co., St. Louis, Mo.; Parke, Davis & Co. (2), Detroit, Mich.; Peck, H. H., Chicago, Ill.; Pope Manufacturing Co., Hartford, Conn.

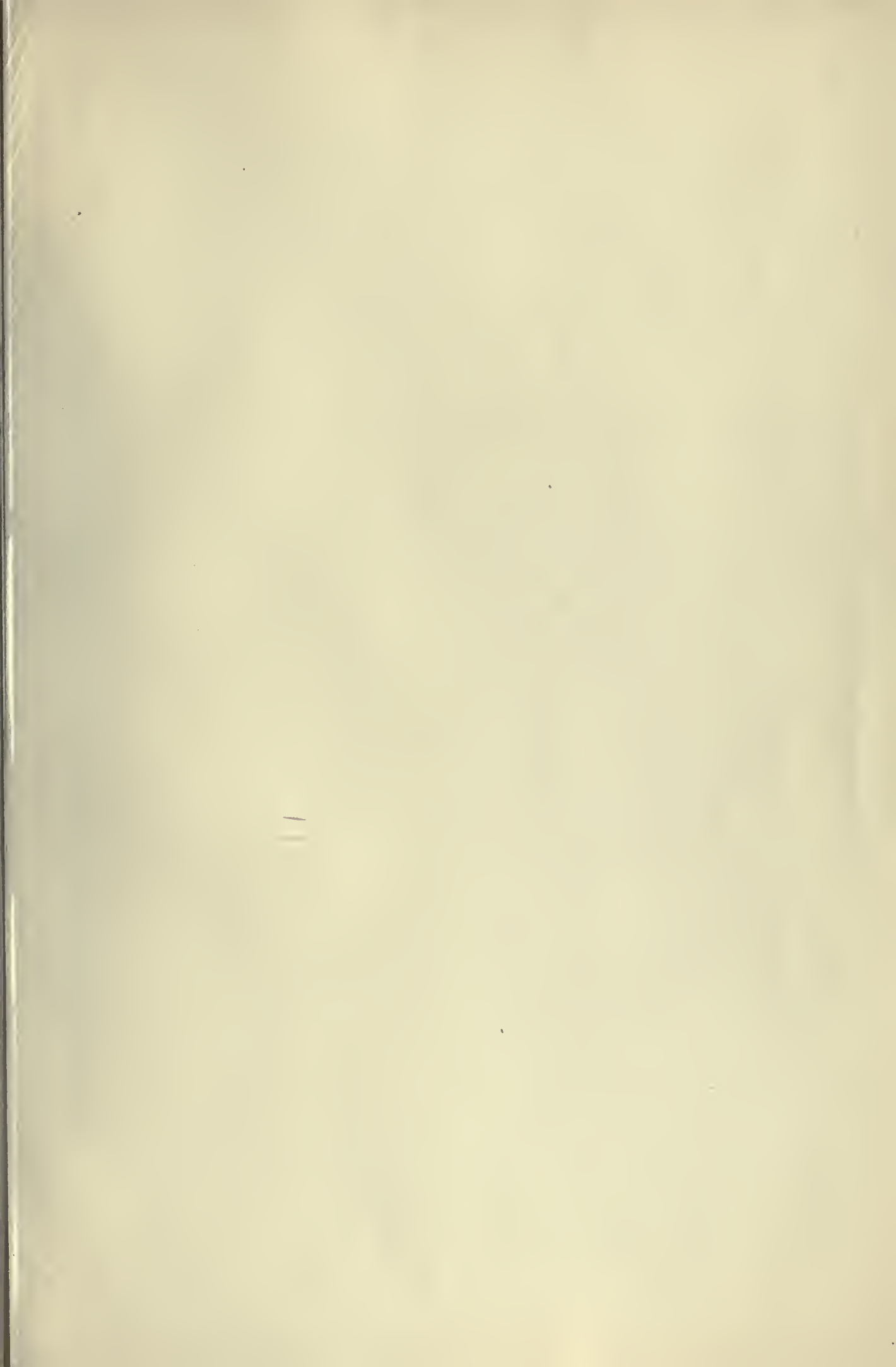
Rorick, E. H., Athens, Ohio; Ren, E. H., Irondale, Ohio; Robinson, L. A., Glenwood Springs, Colo.; Runford Chemical Works, Providence, R. I.

Saunders, N. J., Cawker City, Kans.

Tucker, C. F., Syracuse, N. Y.

Viskolein Company, New York, N. Y.

Williams Co., The J. B., Glastonbury, Conn.; Wampole & Co., H. K., Philadelphia, Pa.; Woldert, A., Philadelphia, Pa.; Wadner, H., La Porte, Ind.; Weeks Drug and Chemical Co., Jackson, Mich.; Wells, W. S., Tiffin, Ohio; Western-Medical Supply Co., Chicago, Ill.



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